Indicators for health inequality in the Nordic countries

Nordic Welfare Centre

NIPH
Norwegian Institute of Public Health

Indicators for health inequality in the Nordic countries

Published by
Nordic Welfare Centre

Project manager: Helena Lohmann

Authors and project group: Else Karin Grøholt (project leader), Heidi Lyshol, Arnfinn Helleve, Kari Alver, Marie Hagle, Nora Rusås-Heyerdahl, Norwegian Institute of Public Health

Reference group: Nina Lindqvist (Public Health Agency of Sweden), Suvi Parikka/ Katri Kilpeläinen (National Institute for Health and Welfare, THL, in Finland), Lau Caspar Thygesen (National Institute of Public Health in Denmark), Janne Strandrud (Norwegian Directorate of Health), Guðrún Kristín Guðfinnsdóttir (Icelandic Directorate of Health)

Thanks to Heine Strand at the Norwegian Institute of Public Health for valuable comments to the report.

Responsible publisher: Eva Franzén

Graphic design: Accomplice AB

ISBN: 978-91-88213-41-9

Subject heading (MeSH): Nordic, Social inequality, Indicators

Citation: Norwegian Institute of Public Health. Indicators for health inequality in the Nordic countries. [Indikatorer på sosial ulikhet i de nordiske landene] Report 2019. Oslo: Norwegian Institute of Public Health, 2019.

The report is available from nordicwelfare.org/en/publikationer and fhi.no/publ/

Nordic Welfare Centre Sweden
Box 1073, SE-101 39 Stockholm
Visiting Adress: Drottninggatan 30
Phone: +46 8 545 536 00
info@nordicwelfare.org

Nordic Welfare Centre Finland
c/o Folkhälsan, FI-00250 Helsinki
Visiting Adress: Topeliuksenkatu 20
Phone: +358 20 741 08 80
info@nordicwelfare.org

Contents

Key messages 4
Executive summary 5
Sammendrag 6
Preface 7
Introduction and background 8
Project organization 10
Aim of the project 11
Method 12
Results 14
Presentation of the indicators 15
The way forward 28
References 30
Annex 1: Selection criteria 33
Annex 2: Draft indicator list 35
Annex 3: Metadata by indicator 37
Annex 4: Data sources 44

Key messages

Indicators on social inequality in health can and should be followed over time in the five Nordic countries.

The indicators selected by this sub-project deal with life expectancy, people at risk of poverty and/or social exclusion, self-assessed health, vegetable consumption and smoking, all according to educational attainment; physical activity in 15-year-olds according to Family Affluence Scale; and the Gini-coefficient, which describes income inequality within countries.

These indicators should be collected regularly and followed over time, and a convenient way of doing this could be for NOMESCO and NOSOSCO to adopt them for presentation in their database.

Executive summary

In 2017 the Nordic Arena for Public Health Issues initiated a project on social inequalities in health in the Nordic countries; Sweden, Denmark, Iceland, Finland and Norway. As a part of this work, the Norwegian Institute of Public Health (NIPH) was asked to make a list of approximately six different indicators on social inequality in health and suggest a way these indicators can be presented in the future. The indicators should be based on data collected regularly in international data sources.

The project has been organised with a project group at the NIPH and a reference group with representatives from the five Nordic countries. The Nordic Council of Ministers has financed the project.

Around 170 possible indicators were found through searching international data sources. More or less identical indicators from the different sources were removed, and the remaining indicators were evaluated according to a set of specific selection criteria, such as validity, relevance, accessibility, comprehensibility etc.

The final list consists of seven indicators showing social inequalities in health in the Nordic countries. The list includes indicators on both health outcomes and impact factors:

- Life expectancy at age 30 years, by education
- At risk of poverty or social exclusion in the age group 25–59 years, by education
- Self-assessed health in the age group 25–64 years, by education
- Smoking in the age group 25–64 years, by education
- Daily intake of vegetables in the age group 25–64 years, by education
- Physical activity at 15 years of age, according to Family Affluence Scale
- Gini coefficient on income inequality

As a follow up, we suggest that the selected indicators should be included in each country's publication of data on social inequalities in health. We also suggest that the selected indicators should be included in NOMESCO/NOSOSCO's statistics bank for regular reporting.

Sammendrag

Nordisk folkehelsearena initierte i 2017 et prosjekt om sosiale ulikheter i helse i de nordiske landene; Sverige, Danmark, Island, Finland og Norge. Som en del av dette arbeidet har Folkehelseinstituttet (FHI) hatt i oppdrag å lage en liste over omlag seks utvalgte indikatorer på sosiale helseforskjeller, og foreslå en måte de kan presenteres på framover. Indikatorene skulle være basert på regelmessig innsamlede data i internasjonale datakilder.

Prosjektet har vært organisert med en prosjektgruppe på FHI og en referansegruppe med representanter fra de fem nordiske landene. Prosjektet har vært finansiert fra Nordisk Ministerråd.

Rundt 170 mulige indikatorer ble funnet gjennom et søk i internasjonale datakilder. Mer eller mindre identiske indikatorer fra de ulike kildene ble fjernet, og de resterende indikatorene ble vurdert i henhold til et sett med utvalgte seleksjonskriterier som validitet, relevans, tilgjengelighet, forståelighet mm.

Den endelige listen består av sju indikatorer som viser sosiale ulikheter i helse i de nordiske landene. Listen inneholder både indikatorer på helseutfall og påvirkningsfaktorer:

- Forventet levealder ved 30 års alder, etter utdanning
- Risiko for fattigdom eller sosial eksklusjon i aldersgruppen 25–59 år, etter utdanning
- Selvrapportert helse i aldersgruppen 25–64 år, etter utdanning
- Røyking i aldersgruppen 25–64 år, etter utdanning
- Daglig inntak av grønnsaker i aldersgruppen 25–64 år, etter utdanning
- Fysisk aktivitet ved 15 års alder, etter Family Affluence Scale
- Gini-koeffisienten som mål på inntekstulikhet
-

Som en oppfølging foreslår vi at de utvalgte indikatorene inngår som del av de enkelte lands publisering av statistikk på sosiale helseforskjeller. Vi foreslår også at de utvalgte indikatorene tas med i NOMESKO/NOSOSKOs database for jevnlig rapportering.

Preface

Social inequality is an important topic within the field of public health.

It is important for the authorities to monitor social inequalities in health, and indicators are vital both to set a baseline for work alleviating such inequalities and to formulate policies that will improve public health for all groups.

The Nordic countries are known as egalitarian states with good social welfare, but social inequalities in health persist and may even be growing. Having knowledge about both the occurrence and the social gradient in each Nordic country could help to identify interventions and other measures that may help to flatten the gradients in health. Indicators are a prerequisite in this work.

This report describes a project aimed at identifying a set of indicators that could be used to scrutinize social inequalities in health in the Nordic context. The project has been organised with a project group at the Norwegian Institute of Public Health and a reference group with representatives from all the five Nordic countries.

The Norwegian Institute of Public Health would like to thank the Nordic Council of Ministers for putting the topic of health inequality on the agenda and funding this project, the Nordic Welfare Centre for administrating the project, and the Nordic reference group for helping to fulfil the objectives of the NIPH sub-project about health indicators.

My thanks also go to the NIPH working group.

Oslo, December 2018

Knut-Inge Klepp,
Executive Director
Division of Mental and Physical Health
Norwegian Institute of Public Health

Introduction and background

When comparing socio-economic groups in society, we find systematic differences in health. The higher the education and income the group has, the higher the proportion of the group's members have good health (Norwegian Directorate of Health, 2005; Huisman, 2005; Dahl, 2014). These differences are known as social inequalities in health.

Social inequalities in health apply to almost all diseases, injuries and ailments. We see differences among all age groups and among men and women. Social inequalities in health involve many lost days and years of good health and quality of life. Thus, levelling of social inequalities in health has a great potential for improvement of public health.

The Nordic countries belong to a group of countries, which, according to Esping-Andersen, exemplify the Nordic welfare model (Esping-Andersen, 1990). The model is based on an egalitarian ideology associated with a broad scope of public social policy, which implies that all citizens have universal access to relatively generous services and benefits. The Nordic welfare model has developed since the 1930s, and its stated goals have been to provide uniform social protection and a democratic right to adequate living conditions for the whole population. The countries have also been emphasized as countries with high standards of living and small social and economic differences. At the same time, growing inequalities in health have emerged. Over the last 30 years, the health of all groups has improved, but the improvement in health has been greatest for individuals with high education and high income (Norwegian Institute of Public health, 2018). There is social inequality both in the risk of becoming ill and in the consequences of being ill.

The comparative report "Tackling Health Inequalities Locally - The Scandinavian Experience" (Diderichsen et al, 2015) gives a review of how the Nordic countries have worked with health equity, mainly based on the municipal level. The report provides 11 recommendations for future work:

- A comprehensive approach
- Policies built on the premises of each sector
- Support for generic policies
- Knowledge of cost-effectiveness
- Equity indicators linked to each sector

- Build policymaking skills
- Legislation matters
- Whole-of-society approach
- Involve all sectors early on equal terms
- Vertical collaboration and support
- Long-term commitment

In 2017 the Nordic Arena for Public Health Issues initiated the project "Equal Health – Prerequisites at National Level". Based on the eleven recommendation, listed earlier, the project aims to create better conditions for working towards increased equality in health at the national level.

Among the recommendations is highlighting (the surveillance of) socio-economic inequalities in all policy areas through relevant indicators. Surveillance of social inequality is vital to highlight the existence of health inequalities. It is also essential to evaluate whether the efforts made to reduce health differences in the population are sufficient.

Statistics on inequality in health are not co-ordinated between the Nordic countries and meaningful comparisons between the countries are not easy to make. The lack of comparable statistics may function like a barrier to the exchange of experience and knowledge within the public health field. This project "Indicators for health inequality in the Nordic countries" seeks to improve this situation.

This report describes indicators that can be used to monitor and compare trends in health inequality in and between the Nordic countries over time.

Project organization

The project was financed by the Nordic Council of Ministers and has been organised with a project group based at the Norwegian Institute of Public Health, consisting of Kari Alver, Else Karin Grøholt, Marie Hagle, Arnfinn Helleve, Heidi Lyshol and Nora Rusås-Heyerdahl.

In addition to the project group, a reference group with members from all the five Nordic countries were established. The members, representing their respective countries, were Nina Lindqvist from the Public Health Agency of Sweden, Suvi Parikka/Katri Kilpeläinen from The National Institute for Health and Welfare (THL) in Finland, Lau Caspar Thygesen from the National Institute of Public Health in Denmark, Janne Strandrud from the Norwegian Directorate of Health, and Guðrún Kristín Guðfinnsdóttir from the Icelandic Directorate of Health.

Aim of the project

The aim of the project was to identify a small set of indicators (approximately six) that could be used to monitor and compare trends in health inequality in and between the Nordic countries. The indicators should be derived from existing data sources registered or collected on a regular basis. In addition, the indicators should cover health outcomes as well as risk and protective factors.

Method

The online search for indicators

An online search for potential indicators for social inequality was carried out in autumn 2017, consisting of specific searches in reports and articles and on web pages from the WHO, OECD, EUROSTAT, and other major international players within the health information field.

A list of possible indicator sources was made, listing names of reports or web pages, with links to all the identified sources. Each source was searched for the words "indicator", "social", "income" and "education"; the latter two being the most common way of identifying social inequalities. We did not include the word occupation in the search. Compared to education and income, occupation is difficult to follow over time. Professions differ between countries and change over time. Occupation also varies with economic fluctuations. Education is also difficult to compare over time, since the percentage of people who have higher education has increased, which makes age an important factor when looking at educational differences. The project group has attempted to reduce the importance of this by looking at the age groups 25–59/64, but the problem remains.

Each identified indicator was cursorily examined. Indicators that were clearly out of scope in the Nordic context, such as "Wealth-based inequality in births attended by skilled health personnel" (WHO's Handbook on Health Inequality Monitoring) were removed, while all indicators that could conceivably be useful were listed, with source, link and definition in addition to the indicator name.

A total of around 170 potentially useful indicators were identified in the first online search. Many of the indicators, such as smoking by educational attainment, were multiples or more or less equivalent indicators, but defined by different international agencies. The list was therefore sorted, maintaining the links to the multiple definitions and sources, but removing all multiples. This elimination of multiple indicators resulted in 91 distinct indicators, sorted into 65 indicators for adults, and 26 indicators for children or youth.

Assessment of indicators

A set of criteria was established prior to the assessment of the indicators, see annex 1. The criteria were based on existing lists of criteria applied in Sweden

(The National Board of Health and Welfare, 2017) and Norway (Norwegian Directorate of Health, 2018). The list of criteria includes validity, availability, relevance for social inequality in health, easily understandable, possible to influence by policy, indicator available to distribute according to socio-economic variables and Nordic relevance. The list of criteria was presented and discussed with the Nordic reference group, and was, after minor revisions, considered to be approved as suitable for the work done by the NIPH.

Out of the 91 identified indicators considered according to the list of criteria, 23 indicators were selected for further consideration. These were subdivided under the headings Health behaviours, Health and illness, School and social environment, and Working life – see annex 2. The list of 23 indicators was sent to the Nordic reference group for their assessments, as well as for comments about availability and suitability for each of the five countries. By February 2018, an annotated list of the 23 indicators was available, including notes on availability and suitability of each indicator for each of the five Nordic countries.

Final selection of indicators

The final set of seven indicators was selected after an assessment of whether they demonstrated clear differences between social groups in the countries as well as differences between the Nordic countries.

We also tried to balance the final list so that both health outcomes as well as risk and protective factors were covered. The final list includes indicators for both children/young people and adults. When relevant, each indicator can be presented for men and women in addition to both sexes combined.

Data have not always been easily available to describe trends, but every single indicator stems from ongoing registries and/or surveys and will be available for follow-up in the future.

Results

The seven suggested indicators on health inequality are presented in table 1. The list presents a picture of the state of health inequalities in the Nordic countries, looking at both risk and protective factors, such as smoking and vegetable consumption, and outcomes, such as life expectancy. Regarding the prevention aspect, we have tried to look at indicators where both "upstream" and "downstream" prevention could be used; i.e. both strategies that focus on improving fundamental social structures and ones that focus on providing equitable access to care and services to mitigate the negative impacts of disadvantage on health.

All the indicators are collected on a regular basis and available from international sources. See annex 3 for metadata on each indicator.

Table 1. The list of suggested indicators

Indicator	Age group	Dimension of inequality	Main data source*
Life expectancy	30 years	Education	OECD
At risk of poverty or social exclusion	25–59 years	Education	EUROSTAT/EU-SILC
Self-assessed health	25–64 years	Education	EUROSTAT/EU-SILC
Smoking	25–64 years	Education	EUROSTAT/EHIS
Vegetable consumption	25–64 years	Education	EUROSTAT/EHIS
Physical activity	15 years	Family Affluence Scale	HBSC
Gini coefficient	-	-	OECD

**For a description of the data sources, see annex 4.*

Below, each indicator is presented individually, with illustrations from the available data. When only one diagram is used, the diagram is always based on the most recent data. For daily smoking, we have chosen to show developments over time in addition. It would be possible to show similar time trends for several of the other indicators as well.

Presentation of the indicators

1. ***Life expectancy (age 30 years)***

Definition: Gap in expected years of life at age 30 years between adults with the highest and the lowest level of education.

Dimension of inequality: Education is classified using the International standard classification of education (ISCED) (UNESCO, 2012). The lowest educational level refers to people who have not completed their secondary education (ISCED 0–2). The highest educational level refers to people who have completed a tertiary education (ISCED 6–8).

Data source: Health at a Glance (OECD, Health at a Glance 2018), supplemented by data directly from Statistics Iceland.

OECD regularly collects this indicator from the national statistics agencies, except for Iceland. Data are also available by gender.

About the indicator: Life expectancy is the age a person is expected to live according to current mortality rates. Life expectancy is calculated using age dependent probabilities of death.

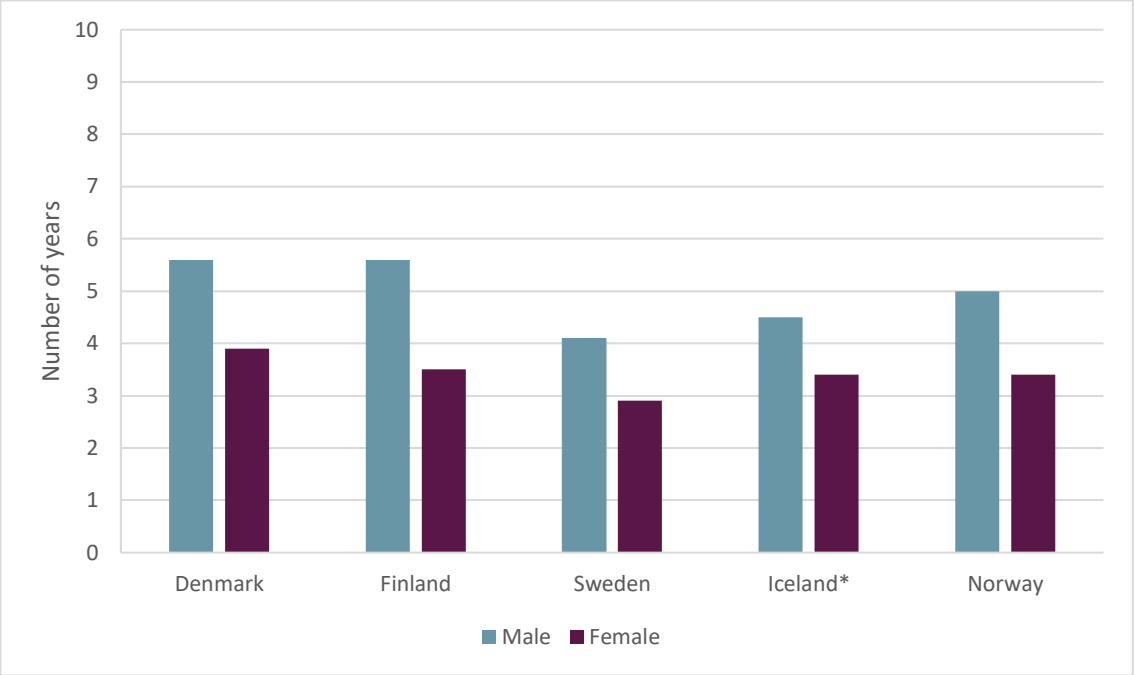

Figure 1.1 Educational gap in life expectancy at age 30 years by gender, 2016 or latest available year. Data disaggregated by education level are only available for a subset of the population for Norway. Thus, the large share of the deceased population with missing information about their education level can affect the accuracy of the data in Norway. Source: OECD, Health at a Glance, 2018. *Data for Iceland are preliminary and an average for the years 2013-2017. Source: Statistics Iceland.

Figure 1.1 shows the gap in life expectancy between 30-years-old men and women with the highest and lowest levels of education.

From the figure, we can see that there is a clear educational gap in life expectancy in all the countries, both among men and women. The educational gap in life expectancy is lowest in Sweden.

Preliminary data for Iceland show that the gap in life expectancy is 4.5 years between men with the highest and lowest levels of education. For women there is a corresponding gap of 3.4 years (Statistics Iceland). The figures, which are based on an average for the years 2013–2017, are thus not fully comparable with the figures for the other Nordic countries.

2. *At risk of poverty or social exclusion (AROPE) (ages 25–59 years)*

Definition: The proportion of people in the age group 25–59 years at risk of poverty or social exclusion (AROPE), according to education.

The "AROPE" indicator is a multifactorial, or composite, indicator, comprised of the following three components, in themselves indicators (Eurostat):

- People at risk of poverty, after social transfers

The at risk of poverty rate is the share of people whose available household income is below the at risk of poverty threshold, which is set at 60 percent of the national income. This component stems from registry information. The indicator does not measure wealth or absolute poverty, but low income in comparison to other residents in that country.

- People living in households with very low work intensity

This indicator is defined as households where the adults worked less than 20 percent of their total work potential in the year before the survey.

- People living in households with severe material deprivation rate

This indicator is defined as the proportion of people not being able to afford to pay their bills, keep their home warm enough, or take a week's holiday away from home.

A person is counted as at risk of poverty or social exclusion if he or she scores on at least one of the three components.

The cross-sectional and longitudinal (initial sample) data are based on a nationally representative probability sample of the population residing in private households within the country, irrespective of language, nationality or legal residence status (Eurostat, Glossary).

Dimension of inequality: Education is classified using the International standard classification of education (ISCED) (UNESCO, 2012). The lowest level is ISCED levels 0–2 (less than primary, primary and lower secondary education), the medium level is ISCED levels 3–4 (upper secondary and post-secondary non-tertiary education) and the highest level is ISCED levels 5–8 (tertiary education).

Data source: European Union Statistics on Income and Living Conditions survey (Eurostat EU-SILC).

Eurostat's EU-SILC has been implemented in all of the five Nordic countries since 2004 and is performed annually (Eurostat, Methodology; Eurostat, 2010). Eurostat can supply data by gender and by different age groups. The project group selected an age group old enough that one can assume that people with plans for higher education will have attended at least some tertiary education, but not so old that higher education was a privilege to which only a very small percentage of the population could aspire.

About the indicator: The AROPE indicator was chosen because it includes three different axes of the spectrum of social and material deprivation. In addition, AROPE is an indicator on vulnerability.

Figure 2.1 shows people in the age group 25–59 years at risk of poverty and social exclusion in the five Nordic countries from 2003 to 2017. The figure shows that the proportion of people at risk has been highest in Denmark and lowest in Norway and Iceland during the most of this period.

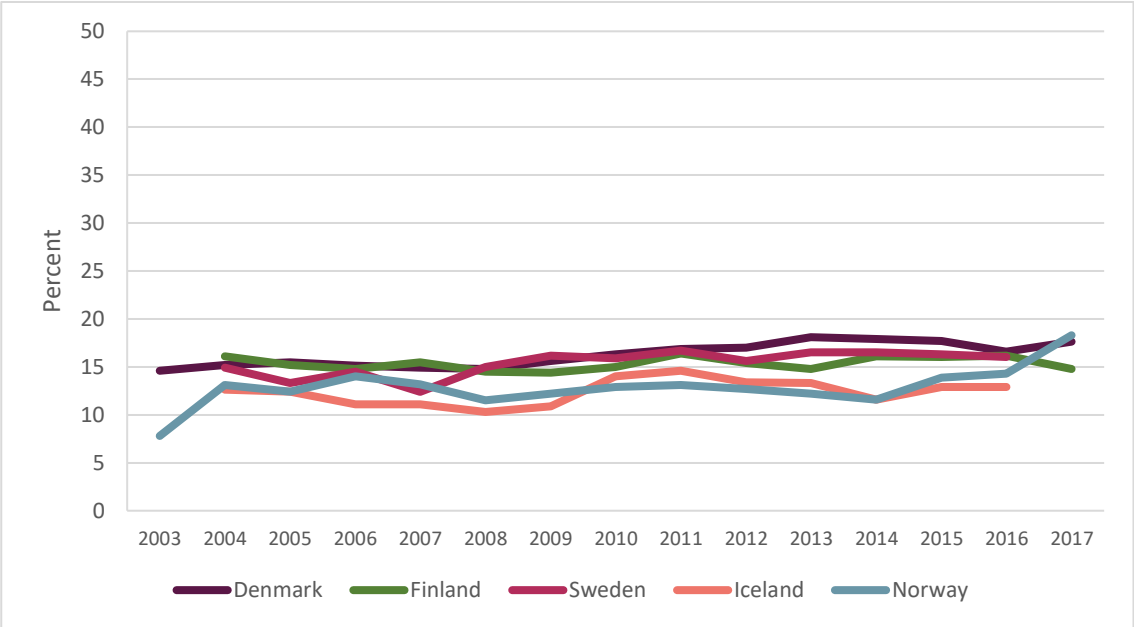

Figure 2.1 People (25–59 years) at risk of poverty or social exclusion in the Nordic countries, both genders, 2003–2017. Source: Eurostat, European Survey on Income and Living Conditions (EU-SILC). Database.

Figure 2.2 shows people in the age group 25–59 years at risk of poverty or social exclusion by educational attainment. From the figure, we can see that the proportion is highest among people with primary education in all the five Nordic countries. There is also a clear gradient from the highest to the lowest level of education.

The difference between the groups with tertiary and primary educational level is highest in Finland and Sweden and lowest in Denmark and Iceland.

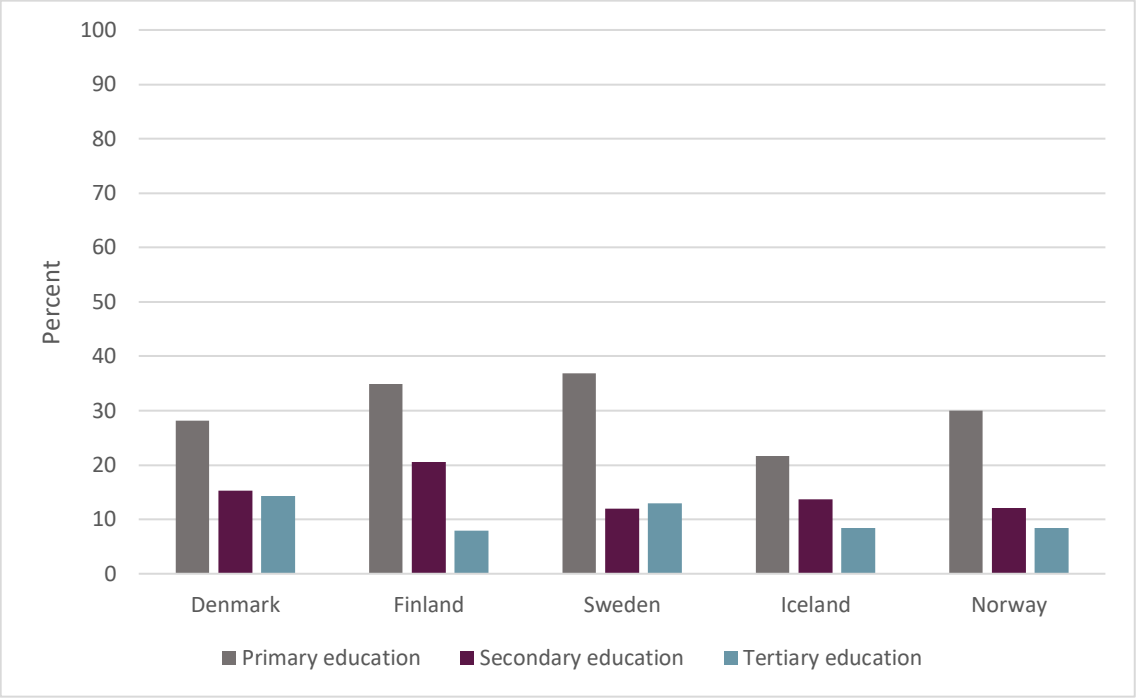

Figure 2.2 People (25–59 years) at risk of poverty or social exclusion by educational attainment, 2016. Primary education: ISCED levels 0–2, secondary education: ISCED levels 3–4, tertiary education: ISCED levels 5–8. Source: Eurostat, European Survey on Income and Living Conditions (EU-SILC) Database.

3. Self-assessed health (ages 25–64 years)

Definition: Proportion of people who perceive their health as good or very good (25–64 years), according to education.

Dimension of inequality: Education is classified using the International standard classification of education (ISCED) (UNESCO, 2012). The lowest level is ISCED levels 0–2 (less than primary, primary and lower secondary education),

the medium level is ISCED levels 3–4 (upper secondary and post-secondary non-tertiary education) and the highest level is ISCED levels 5–8 (tertiary education).

Data source: European Union Statistics on Income and Living Conditions survey (EU-SILC) (Eurostat, EU-SILC).

The indicator is available annually and can be stratified by age and gender.

About the indicator: Self-assessed health status is a commonly used measure of overall health. The indicator reflects a person's perception of his or her own health at a given point in time and provides a broad picture of a population's overall health. Self-assessed health is one of the most frequently used health measures in social science research (Au and Johnston, 2014).

Figure 3.1 shows the proportion of people aged 25–54 years in the five Nordic countries who perceive their health as good or very good by educational attainment. There is a clear gradient in all the countries, with the highest proportion among people with tertiary education and lowest among people with primary education.

The gap between the groups with tertiary and primary education is highest in Finland and lowest in Sweden.

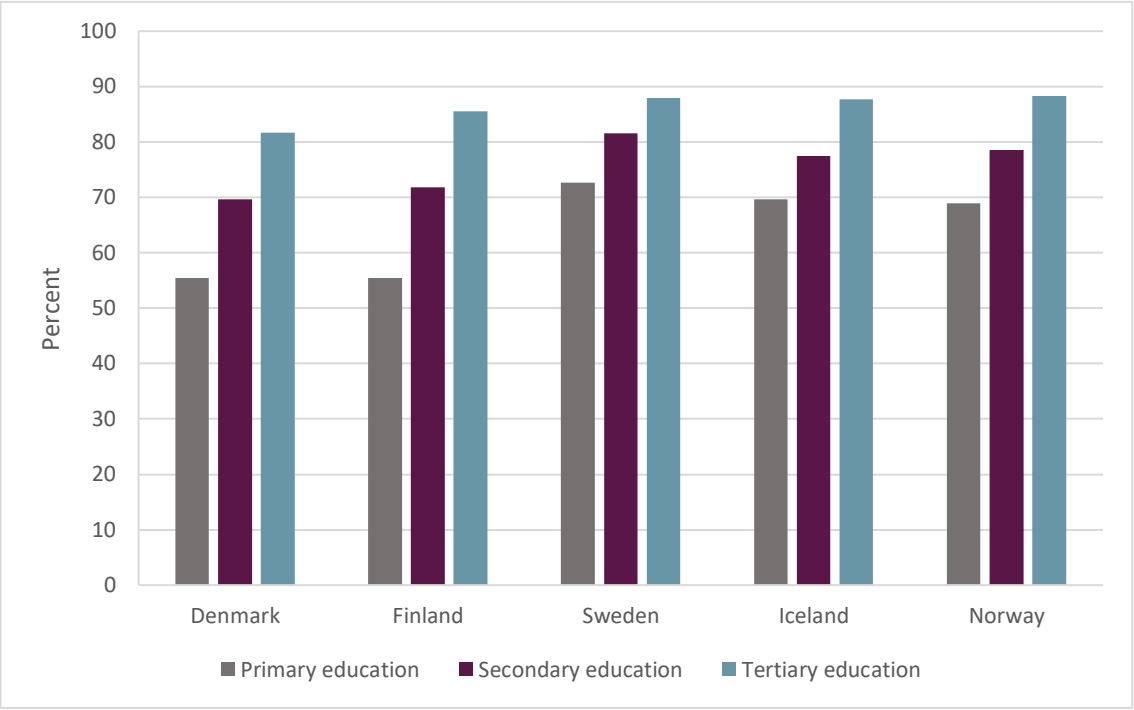

Figure 3.1 Proportion of people 25–64 years who perceive their health as good or very good by educational attainment, 2015. Primary education: ISCED levels 0–2, secondary education: ISCED levels 3–4, tertiary education: ISCED levels 5–8. Source: Eurostat, European Survey on Income and Living Conditions (EU-SILC) Database.

4. Smoking (ages 25–64 years)

Definition: The proportion of people in the age group 25–64 years smoking daily, according to education.

Dimension of inequality: Education is classified using the International standard classification of education (ISCED) (UNESCO 2012). The lowest level is ISCED levels 0–2 (less than primary, primary and lower secondary education), the medium level is ISCED levels 3–4 (upper secondary and post-secondary non-tertiary education) and the highest level is ISCED levels 5–8 (tertiary education).

Data source: Eurostat, European Health Interview Survey (Eurostat, EHIS).

The EHIS survey is performed every 3–4 years, and data can be delivered according to gender and age group, depending on participation rates in each country. In general, Eurostat will only deliver data where the quality is considered quite high. Only data from the 2014 national EHIS surveys are

available from the online database as of November 2018, but more data can be supplied (Eurostat, 2013; Eurostat, EHIS wave 2).

About the indicator: Smoking is regarded as one of the principal causes of impaired health and reduced life expectancy. Around half of those who smoke daily for many years die of tobacco-related diseases. In addition, many are afflicted by diseases which cause significantly impaired health and reduced quality of life (Vollset et al, 2006).

There is a significant social gradient for daily smoking. The shorter the education, the higher the proportion of daily smokers. Redressing this imbalance poses a major challenge for public health efforts (Norwegian Institute of Public Health, 2018).

Below we present two different figures on smoking.

Figure 4.1 shows that the proportion of smokers is declining in all the Nordic countries. There are no big differences between Norway, Iceland and Sweden. In the Nordic countries, Denmark and Finland have the highest proportion of daily smokers. Finland has had the weakest decline in smoking in the last decade, but the Nordic differences in daily smokers are now less than before.

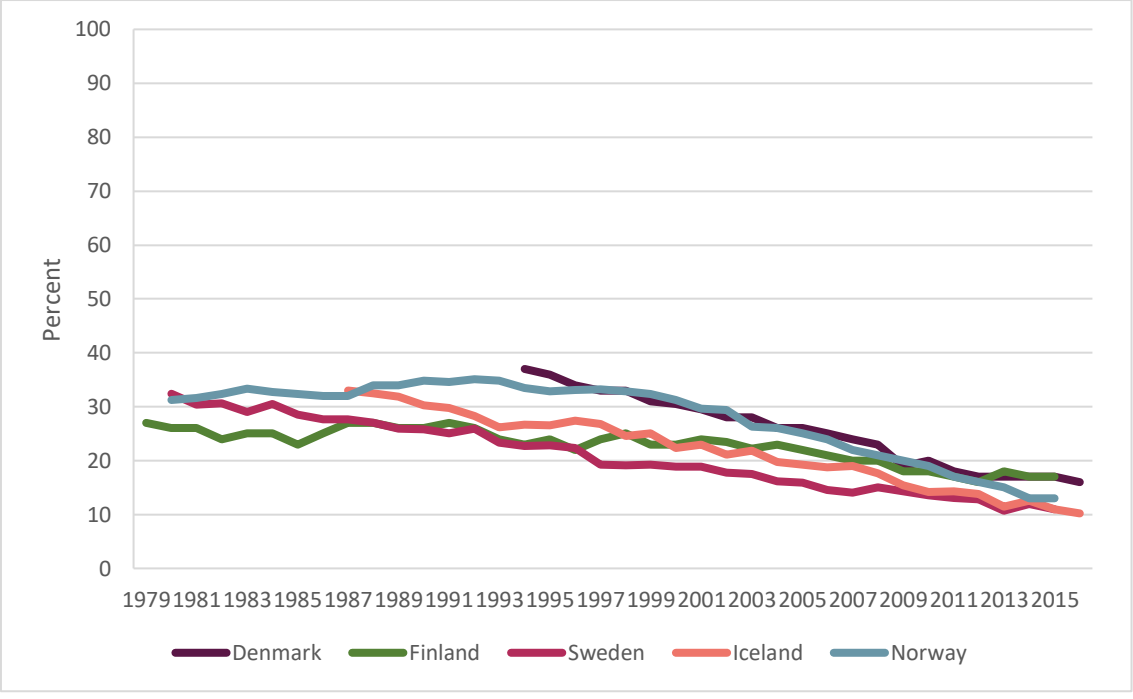

Figure 4.1 Proportion of regular daily smokers, aged 15+, in the Nordic countries, 1979–2015. Both genders. Source: WHO Health for All Database.

Figure 4.2 shows the prevalence of total smoking in the five Nordic countries by educational attainment. Smoking prevalence is highest in Denmark and lowest in Sweden.

Though smoking has decreased in the populations aged 25–64, there are great socio-economic differences in smoking in the Nordic countries.

All the countries show a gradient for smoking according to educational attainment, though the angle of the gradient varies. The figures are from Eurostat's EHIS 2 survey, performed in cooperation with the national statistical agencies in all the countries.

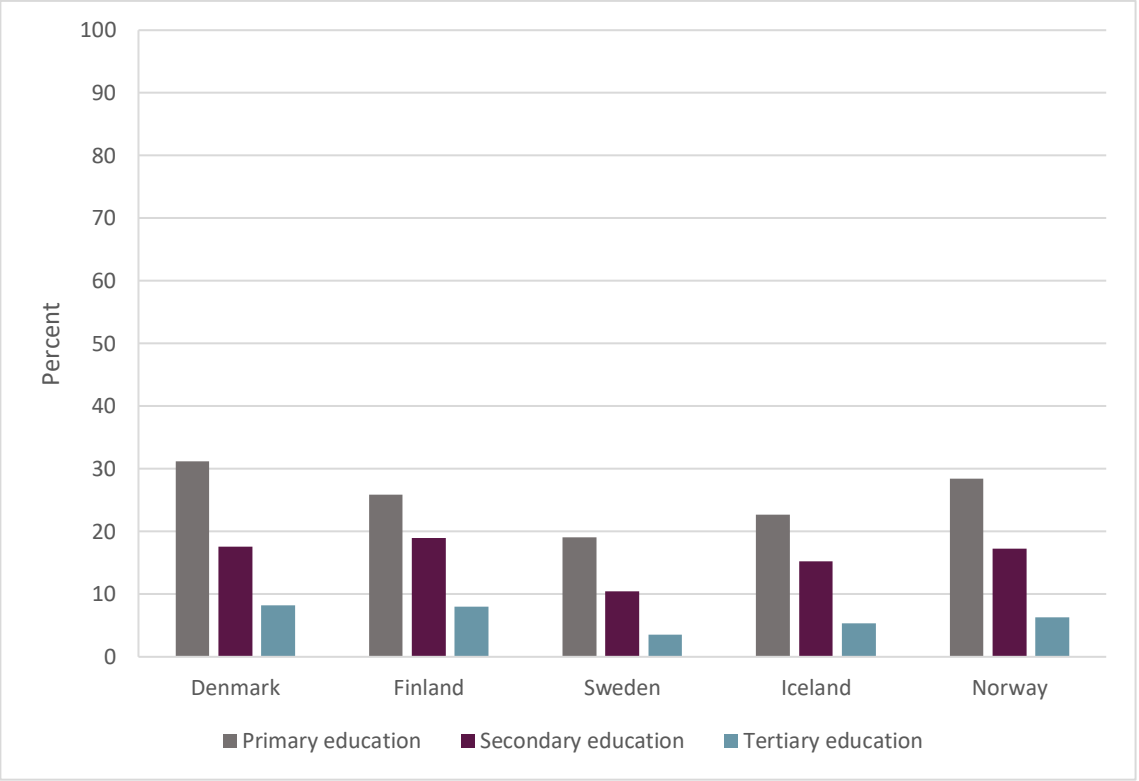

Figure 4.2. Proportion of daily smokers in the Nordic countries by educational attainment, 2014. Both genders, 25–64 years. Primary education: ISCED levels 0-2, secondary education: ISCED levels 3–4, tertiary education: ISCED levels 5–8. Source: Eurostat, European Health Interview Survey (EHIS) Database.

5. Consumption of vegetables (ages 25–64 years)

Definition: Proportion of people in the age group 25–64 years who report that they consume vegetables at least daily, according to education.

Dimension of inequality: Education is classified using the International standard classification of education (ISCED) (UNESCO 2012). The lowest level is ISCED levels 0–2 (less than primary, primary and lower secondary education), the medium level is ISCED levels 3–4 (upper secondary and post-secondary non-tertiary education) and the highest level is ISCED levels 5–8 (tertiary education).

Data source: Eurostat, European Health Interview Survey (Eurostat, EHIS).

The EHIS survey is performed every 3–4 years, and data can be delivered according to gender and age group, depending on participation rates in each country. In general, Eurostat will only deliver data where the quality is considered quite high. Only data from the 2014 national EHIS surveys are available from the online database as of November 2018, but more data can be supplied (Eurostat, 2013; Eurostat, EHIS wave 2).

About the indicator: Nordic authorities recommend eating at least 500 grams of vegetables, fruit and berries every day, half of which should be vegetables (Nordic Council of Ministers, 2014). A diet rich in fruit, vegetables and berries can reduce the risk of cardiovascular disease and various cancers. In addition, the risk of overweight and obesity is reduced by eating low-energy foods.

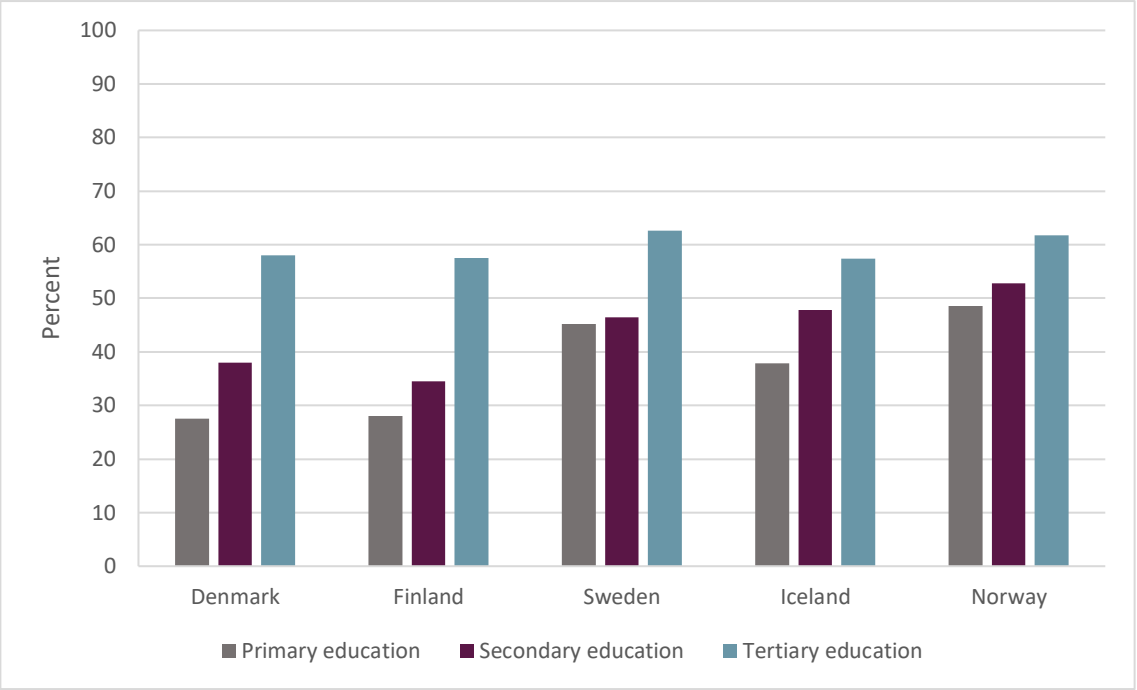

Figure 5.1. Proportion of people who report that they consume vegetables at least daily, 2014. Both genders, 25–64 years old. Primary education: ISCED levels 0–2, secondary education: ISCED levels 3–4, tertiary education: ISCED levels 5–8. Source: Eurostat, European Health Interview Survey (EHIS) Database.

Figure 5.1 shows the proportion of people in the age group 25–64 years consuming vegetables at least daily, by educational attainment. In all the Nordic countries, there is a clear gradient with the highest proportion in the group with tertiary education.

The gap between the group with tertiary education and the group with primary education is highest in Denmark and Finland, and lowest in Norway.

6. Physical activity among 15-year-olds

Definition: Proportion of 15-year-olds who report at least 60 minutes of moderate-to-vigorous physical activity daily (recommended guideline), according to FAS.

Dimension of inequality: Family Affluence Scale (FAS) was used as the indicator for social inequality (Inchley et al. 2016).

The Health Behaviour in School-aged Children (HBSC) study originally produced a Family Affluence Scale (FAS) in 1998 to measure the participants' access to material resources as a proxy for socioeconomic status (Currie et al. 1997). It has been revised twice to include new possessions, such as computers, but (seen from a Nordic perspective) could need a revision.

Nevertheless, material conditions in the five Nordic countries regarding such possessions as computers in the home and attitudes to holiday travel are similar enough that the reference group has not argued against the use of FAS to describe social inequalities in the composition of the surveyed youngsters.

The present-day version of the FAS places so many families in the highest groups that it was decided to regard the 20 percent lowest as "FAS low" and the 20 percent highest as "FAS high" to ensure that the existing social inequalities would be visible in the graph.

Data source: Health Behaviour in School-aged Children (HBSC).

The WHO-supported Health Behaviour in School-aged Children study has provided information about the health, well-being, social environment and health behaviour of 11-, 13- and 15-year-old boys and girls in 44 countries over the past 30 years. The international secretariat at the HEMIL Centre at the University of Bergen can supply data on request. The findings from this large school-based study are published every four years. Participation rates are very high, and data quality is considered very high (HBSC, website).

About the indicator: Physical activity is a requisite for health, and social inequalities in the amount of physical activity people carry out have been reported in many studies (Dahl et al, 2014; Diderichsen et al, 2011). The project group has chosen to include the indicator for 15-year-olds, an age group on the cusp of adulthood, an age at which many habits for adult life are being formed.

Figure 6.1 shows the proportion of 15-year-olds who report at least 60 minutes of moderate-to-vigorous physical activity daily (recommended guideline) by family affluence scale (FAS). There is a gradient in most of the countries, with the highest proportion in the group with highest FAS-score.

The gap between 15-year-olds belonging to the highest and lowest FAS-group is highest in Norway and lowest in Finland.

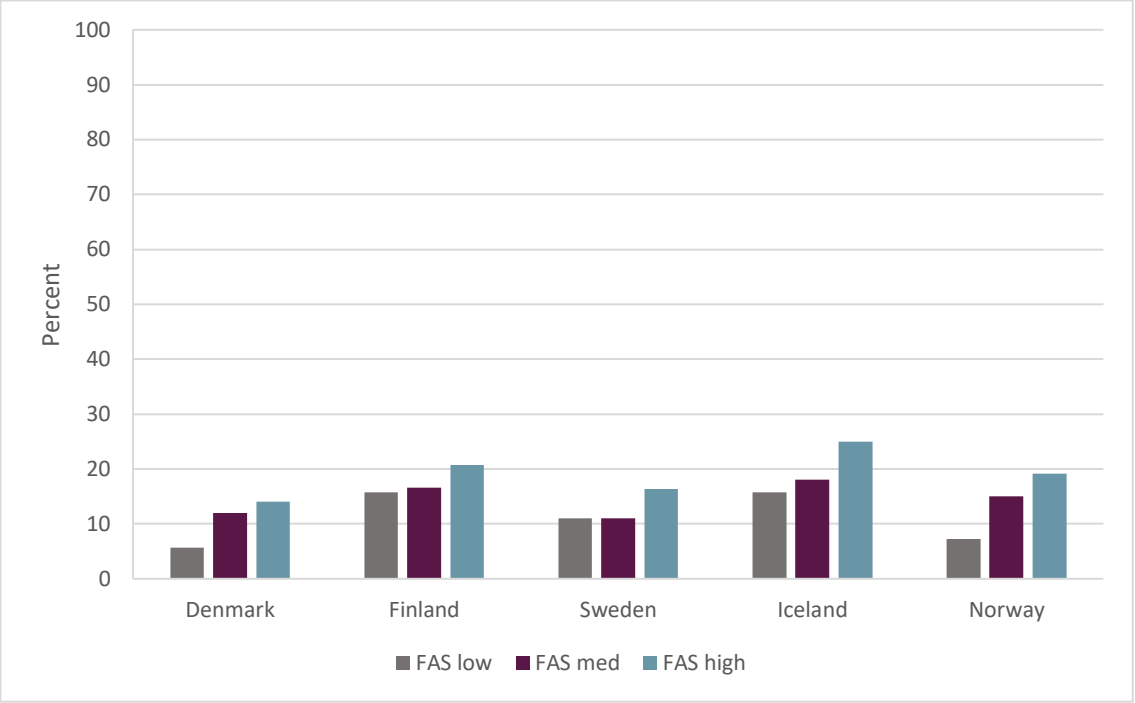

Figure 6.1. Proportion of 15-year-olds who report at least 60 minutes of moderate-to-vigorous physical activity daily (recommended guideline) by family affluence scale, 2014. Both genders. Source: Health Behaviour in School-aged Children (HBSC) Databank.

7. Gini coefficient on income inequality

Definition: As proposed by the Italian statistician Corrado Gini in 1912, the Gini coefficient is a common measure of economic inequality and will consist of a number between 0 (perfect equality) and 1 (one person has all the economic resources) (OECD, 2011; Ceriani and Verme, 2012). It consists of earnings, self-employment and capital income and public cash transfers; income taxes and social security contributions paid by households are deducted.

Dimension of inequality: None.
Data source: OECD, data on income inequality (OECD, Income Inequality).

About the indicator: The Gini index measures the extent to which the distribution of income among the individuals within an economy deviates from an equal distribution.

Greater income inequality may be an indication that there are also major social inequalities in health. For instance, the group with higher education and high

income has higher life expectancy than people with less education and lower income (Norwegian Institute of Public Health, 2018).

Income and economy are fundamental determinants of health (Dahl, 2014).

Figure 7.1 shows the Gini coefficient in the five Nordic countries from 2010 to 2016. Only Finland has data for the whole period.

The figure shows that the Gini coefficient is highest in Sweden and lowest in Iceland. The Gini coefficient is also quite stable over time, especially in Finland.

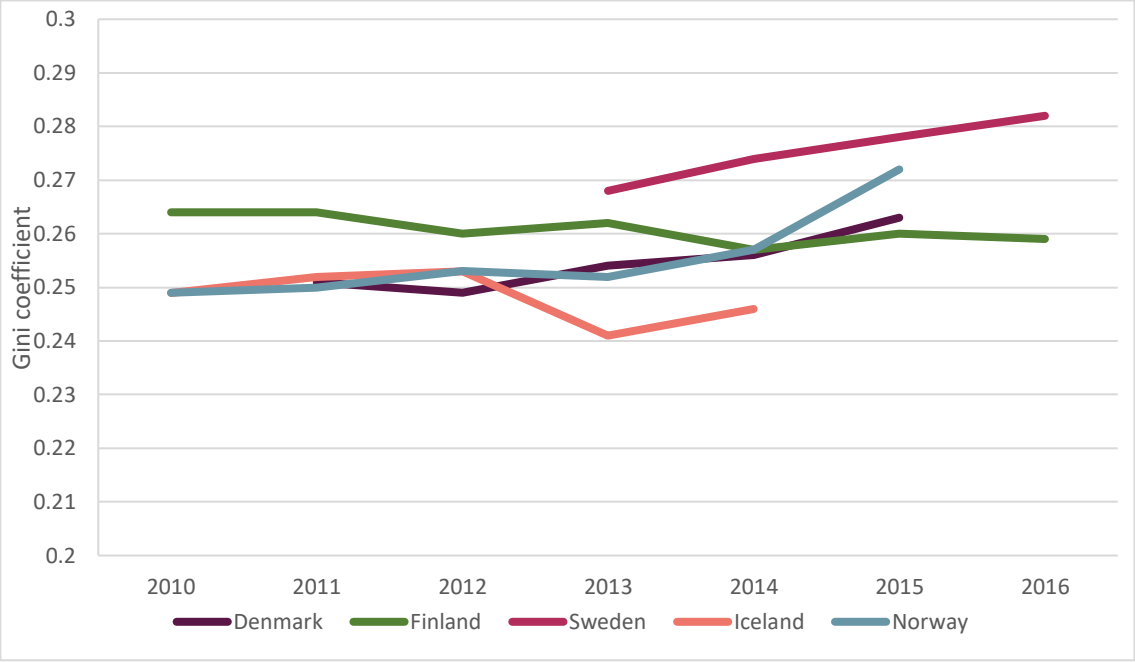

Figure 7.1 Income inequality (Gini coefficient) in the Nordic countries, 2003–2015.
Source: OECD, Income Inequality.

The way forward

This report proposes seven indicators for the monitoring and comparison of trends in health inequality in and between the Nordic countries. The Nordic dimension and comparison in usage of the indicators may raise consciousness among policy- and decision-makers about social inequalities in health in the Nordic region.

All but one of the proposed indicators (Physical activity at age 15 years) are based either wholly or partially on data that are available in the participating countries' national statistics. Commitment from national statistics offices is therefore a prerequisite for being able to provide data for the indicators in question.

To establish the use of the indicators the project group suggests that:

- Each Nordic country include the suggested indicators as part of nation-specific reporting routines to highlight the Nordic comparisons in social inequality of health.

- NOMESCO/NOSOSCO consider presenting the set of indicators at their common website and statistics bank. Both NOMESCO, the Nordic Medico-Statistical Committee and NOSOSCO, the Nordic Social-Statistical Committee, are committees under the Nordic Council of Ministers.

- Each Nordic country ensure that national data for the indicators are made available in their present form, as well as carried forward in new surveys, so that it will be possible to see developments over time using internationally comparable indicators.

- The set of indicators should be regularly assessed, revised and eventually extended, depending on data availability from all Nordic countries. Possible future indicators to consider include mental health as well as health of the elderly. Other dimensions of social inequality should likewise be considered, such as income, ethnical background, and occupation.

- A structure for regular updating will be required in the future.

We also suggest that the various indicators be described in more detail in a fact sheet or web article. In this way, policy makers and local authorities are provided information about status and development over time for data on the individual indicators within the Nordic countries. The fact sheets need to be updated in accordance with the update of data on the individual indicators.

References

Au N, Johnston DW. Self-assessed health: what does it mean and what does it hide. Soc Sci Med 2014; 121: 21-8. doi: 10.1016/j.socscimed.2014.10.007.

Ceriani, L, Verme, P. 2012. "The origins of the Gini index: extracts from Variabilità e Mutabilità (1912) by Corrado Gini," The Journal of Economic Inequality, Springer; Society for the Study of Economic Inequality, vol. 10 (3), pages 421-443, September. Available at: https://ideas.repec.org/a/kap/jecinq/v10y2012i3p421-443.html

Currie CE, Elton RA, Todd J, Platt S. Indicators of socio-economic status for adolescents: the WHO Health Behaviour in School-aged Children Survey. Health Education Research. 1997;12 (3):385–397. doi: 10.1093/her/12.3.385.

Dahl E, Bergsli H, van der Wel KA. Sosial ulikhet i helse: En norsk kunnskapsoversikt (Hovedrapport). Oslo: Høgskolen i Oslo og Akershus; 2014. Available at: http://www.hioa.no

Diderichsen, F, Andersen I, Manuel C. Ulighed i sundhed – årsager og indsatser. København: Sundhedsstyrelsen 2011

Diderichsen F, Ellin Scheele C, Gundersen Little I. 2015. Tackling health inequalities locally: the Scandinavian experience. University of Copenhagen. Available at: https://www.sst.dk/da/planlaegning/ulighed/nordisk-konference/~/media/245A6E83D9C34146A338FBFB932B490C.ashx

Esping-Andersen, G. The three worlds of welfare capitalism. Cambridge: Polity Press, 1990.

Eurostat, European Union Survey of Income and Living Conditions (EU-SILC). Database. Available at: https://ec.europa.eu/eurostat/data/database

Eurostat, European Health Interview Survey (EHIS). Database. Available at: https://ec.europa.eu/eurostat/data/database

Eurostat, 2010. Income and living conditions in Europe. edited by Atkinsonand Marlier. Available at: https://ec.europa.eu/eurostat/documents/3217494/5722557/KS-31-10-555-EN.PDF

Eurostat. EU statistics on income and living conditions (EU-SILC). Methodology – data quality. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/EU_statistics_on_income_and_living_conditions_(EU-SILC)_methodology_%E2%80%93_data_quality

Eurostat, Glossary: At risk of poverty or social exclusion (AROPE). Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:At_risk_of_poverty_or_social_exclusion_(AROPE)

Eurostat, 2013. European Health Interview Survey (EHIS wave 2) Methodological manual. DOI: 10.2785/43280

Eurostat, European Health Interview Survey (EHIS-wave 2). Available at: https://ec.europa.eu/eurostat/cache/metadata/en/hlth_det_esms.htm

Health Behaviour in School-aged Children (HBSC). Website. Available at http://www.hbsc.org/

Health Behaviour in School-aged Children (HBSC). Databank. Available at http://hbsc-nesstar.nsd.no/webview/

Huisman, M., Kunst, A. E., Bopp, M., Borgan, J. K., Borrell, C., Costa, G., et al. Educational inequalities in cause-specific mortality in middle-aged and older men and women in eight western European populations. Lancet 2005, 365 (9458); 493-500.

Inchley, J et al. 2016. Growing up unequal: gender and socioeconomic differences in young people's health and well-being." Health Behaviour in School-aged Children (HBSC) study: international report from the 2013-14 study. World health Organization publication. Available at: http://www.euro.who.int/__data/assets/pdf_file/0003/303438/HSBC-No.7-Growing-up-unequal-Full-Report.pdf?ua=1

International Standard Classification of Education (ISCED). Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/International_Standard_Classification_of_Education_%28ISCED%29

Nordic Council of Ministers, 2014. Nordic Nutrition Recommendations 2012. Integrating nutrition and physical activity. Available at: http://dx.doi.org/10.6027/Nord2014-002

Norwegian Directorate of Health, 2005. Gradientutfordringen. Sosial- og helsedirektoratets handlingsplan mot sosiale ulikheter i helse. Rapport IS-1229.

Norwegian Directorate of Health, 2018. Folkehelsepolitisk rapport 2017. Indikatorer for det tverrsektorielle folkehelsearbeidet. Rapport IS-2698.

Norwegian Institute of Public Health. Public Health Report: Health Status in Norway 2018. Oslo: Norwegian Institute of Public Health, 2018.

OECD, 2011. An Overview of Growing Income Inequalities in OECD Countries. Available at: https://www.oecd.org/els/soc/49499779.pdf

OECD, Income inequality. Available at: https://data.oecd.org/inequality/income-inequality.htm

OECD/EU (2018), Health at a Glance: Europe 2018: State of Health in the EU Cycle, OECD Publishing, Paris. Available at: https://doi.org/10.1787/health_glance_eur-2018-en

The National Board of Health and Welfare (Socialstyrelsen), 2017. Om indikatorer. Available at: https://www.socialstyrelsen.se/indikatorer/omindikatorer

Vollset, Selmer, Tverdal og Gjessing. 2006. Hvor dødelig er røyking? Rapport om dødsfall og tapte leveår som skyldes røyking. The Norwegian Institute of Public Health, Report 2006:4. Available at: https://www.fhi.no/globalassets/dokumenterfiler/rapporter/2009-og-eldre/rapport-20064.pdf

UNESCO Institute for Statistics, 2012. International standard classification of education: ISCED 2011. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/International_Standard_Classification_of_Education_%28ISCED%29

World Health Organization (WHO), 2017. National health inequality monitoring: a step-by-step manual. Available at: http://apps.who.int/iris/bitstream/handle/10665/255652/9789241512183-eng.pdf?sequence=1

World Health Organisation (WHO) Health for All Database (HFA-DB). Available at: https://gateway.euro.who.int/en/datasets/european-health-for-all-database/

Annex 1: Selection criteria

The criteria are mainly based on the Norwegian Directorate of Health report «Folkehelsepolitisk rapport 2015» and the Swedish National Board of Health and Welfare's requirements for indicator selection.

Criteria	Explanation
Validity	The indicator measures what it is supposed to measure (high sensitivity and specificity) and measures the same thing over time.
Relevance	The indicator should be relevant and direct attention to inequalities in health or health determinants, which it is important to do something about. Policy relevant.
May be influenced	Changes in the indicator should entirely or partly be attributable to preventative measures. This means that the indicator should be sensitive to changes so that it is possible, to a certain extent, to evaluate the effect of interventions.
Understandable	The indicator must be easy to understand and have a clear interpretation.
Available	The indicator should be based on regularly collected statistics in all five Nordic countries so that it is possible to follow over time. It may also be in accordance with indicators already in use.
Dimension of inequality	The indicator must be possible to break down according to socioeconomic groups (i.e. education and/or income), possibly gender, age and geography.
Nordic perspective/ relevance	The indicator should highlight topics within social inequality that are central in the Nordic countries, but where countries have different occurrence or distribution of the indicator.

Requirements for the indicator set:
The indicators should reflect a nuanced picture of inequalities (both health status, risk/protective factors, other health determinants), have a life-course perspective, use different data sources, apply different variables for social status, and say something about vulnerable groups and about the gradient.

Norwegian Directorate of Health (Helsedirektoratet). 2015. Folkehelsepolitisk rapport 2015. Available at: https://helsedirektoratet.no/Lists/Publikasjoner/Attachments/1130/Folkehelsepolitisk-rapport-2015-IS-2776.pdf

The National Board of Health and Welfare (Socialstyrelsen). 2017. Om indikatorer. Available at: https://www.socialstyrelsen.se/indikatorer/omindikatorer

Annex 2: Draft indicator list

Indicator list as of mid-December 2017, sent to the Nordic Reference group

Topic	Output	Indicator name	Inequality measure	Population
Health and illness	Life expectancy	Life expectancy	Education, employment category, income	Adults
		Life expectancy at age 65	Education Income	Adults
		Life expectancy at birth	Education Income	Children
	Self-reported health	Self-rated disability	Education Income	Adults
		Self-assessed health	Education Income	Adults
		Long-standing health problem: Suffer from any illness or health problem of a duration of at least six months	Education Income	Adults
		Self-rated health	Parental income	Children
	Accidents	Injury-related mortality: Age-adjusted mortality rates due to intentional and unintentional injuries	Education Income	Adults
		Occurrence of road traffic/home/leisure accident in the past 12 months	Education Income	Adults
	Hospitalisations	Hospital admission indicators – ambulatory care sensitive conditions, diabetes, chronic obstructive pulmonary disease (20 years of age or older), asthma in children, injuries, land transport accidents, mental health (acute care hospitalization only, not psychiatric hospitals), anxiety disorders, affective disorders, substance-related dis-orders, low birth weight	Education Income	Adults

Topic	Output	Indicator name	Inequality measure	Population
Health behaviours	Fruit/vegetables	Number of portions of vegetables or salad, excluding juice and potatoes a day	Education, Income	Adults
	Fruit/vegetables	Consumption of fruit	Parental income	Children/youth
	Physical activity	Physical activity/exercise	Education, Income	Adults
	Physical activity	Physical activity (several indicators)	Parental income	Children/youth
	Smoking	Smoking	Education	Adults
	Alcohol/drugs	Been drunk X times or more, 6th–10th grade	Parental education, household income	Children
	Overweight	Weight and height (BMI)	Education, Income	Adults
	Underweight	Low birthweight infants	Maternal education; household income, ethnicity	Children
	Overweight	Overweight and obesity in 8-year-olds	Maternal education	Children/youth
School and environment	School	High-school dropouts	Parental education	Children/Youth
	Social support	Social support	Education, income, immigrant status	Adults
Working life	Poverty	People at risk of poverty or social exclusion	Education	Adults (18–64 years)
	Employment	Employment rate	Education	Adults

Annex 3: Metadata by indicator

Indicator name	Life expectancy
Definition	Gap in expected years of life at age 30 between adults with the lowest and the highest level of education The lowest education level refers to people who have not completed their secondary education (ISCED 0–2). The highest education level refers to people who have completed a tertiary education (ISCED 6–8).
Reason for inclusion	Life expectancy provides information about the health of the population. At national levels, this is a stable and reliable indicator providing information about changes in health over time and about differences between population groups.
Data source	OECD, Health at a Glance
Data collection	Data reported by national statistics agencies, and submitted to OECD
Data quality	Considered to be high
Year	year - year
Gender	Male and female
Age groups	Age 30
Inequality measure	Educational attainment
Frequency of updates	Data calculated by OECD at irregular intervals
Last updated	(date)

Indicator name	At risk of poverty or social exclusion
Definition	The proportion of the population at risk of poverty or social exclusion. This indicator is comprised of the following three components: • People at risk of poverty, after social transfers (registry data) • People living in households with very low work intensity • People living in households with severe material deprivation rate A person is counted as at risk of poverty or social exclusion if he or she scores on at least one of the three components.
Reason for inclusion	This indicator includes three different axes of the spectrum of social and material deprivation and is also an indicator of vulnerability.
Data source	Eurostat: European Union Statistics on Income and Living Conditions (EU-SILC)
Data collection	Collected by national statistics agencies and submitted to Eurostat
Data quality	National and European quality control performed annually
Year	year - year
Gender	Male, female and both genders
Age groups	25-59 years
Inequality measure	Educational attainment
Frequency of updates	Annually
Last updated	(date)

Indicator name	Self-assessed health
Definition	Proportion of people who perceive their health as good or very good
Reason for inclusion	Self-assessed health status is a commonly used measure of overall health and reflects a person's perception of his or her own health at a given point in time. Self-assessed health provides a broad picture of a population's overall health.
Data source	Eurostat: European Union Statistics on Income and Living Conditions (EU-SILC)
Data collection	Collected by national statistics agencies and submitted to Eurostat
Data quality	National and European quality control performed annually
Year	year - year
Gender	Male, female and both genders
Age groups	25–64 years
Inequality measure	Educational attainment
Frequency of updates	Annually
Last updated	(date)

Indicator name	Smoking
Definition	The proportion of people smoking daily
Reason for inclusion	Smoking is one of the principal causes of impaired health and reduced life expectancy. Around half of those who smoke daily for many years die of tobacco-related diseases. In addition, many are afflicted by diseases which cause significantly impaired health and reduced quality of life.
Data source	Eurostat: European Health Interview Survey (EHIS)
Data collection	Collected by national statistics agencies and submitted to Eurostat
Data quality	Considered to be high
Year	year - year
Gender	Male, female and both genders
Age groups	25–64 years
Inequality measure	Educational attainment
Frequency of updates	Every four years
Last updated	(date)

Indicator name	Vegetable consumption
Definition	Proportion of people who report that they consume vegetables at least once a day
Reason for inclusion	A diet with a lot of fruits, vegetables and berries can reduce the risk of cardiovascular disease and various cancers and reduce the risk of overweight and obesity.
Data source	Eurostat: European Health Interview Survey (EHIS)
Data collection	Collected by national statistics agencies and submitted to Eurostat
Data quality	Considered to be high
Year	year - year
Gender	Male, female and both genders
Age groups	25–64 years
Inequality measure	Educational attainment
Frequency of updates	Every four years
Last updated	(date)

Indicator name	Physical activity
Definition	Proportion of youth who report at least 60 minutes of moderate-to-vigorous physical activity daily. 15-year-olds are asked to report the number of days over the past week during which they were physically active for a total of at least 60 minutes. Physical activity is defined as any activity that increases the heart rate and makes the person get out of breath some of the time, with examples provided.
Reason for inclusion	Physical activity is important for health. The indicator is shown for 15-year-olds on the cusp of adulthood, an age where many habits for adult life are being formed
Data source	WHO's Health Behaviour in School-aged Children survey (HBSC)
Data collection	Surveys administered in schools in all participating countries
Data quality	Excellent participation rates
Year	year - year
Gender	Male, female and both genders
Age groups	15-year-olds
Inequality measure	Family Affluence Scale
Frequency of updates	Every 3–4 years
Last updated	(date)

Indicator name	Gini coefficient
Definition	The Gini coefficient measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution.
Reason for inclusion	Greater income inequality may be an indication of major social inequalities in health. Income and economy are fundamental determinants of health, and equality in the distribution of economic resources presumably affects other social factors positively.
Data source	OECD, Social and Welfare Statistics
Data collection	Collected by national statistics agencies and submitted to OECD
Data quality	Note that the World Bank also publishes this indicator. Care must be taken with definitions.
Year	year - year
Gender	Not possible to divide by gender
Age groups	Not possible to divide by age groups
Inequality measure	
Frequency of updates	Annually
Last updated	(date)

Annex 4: Data sources

European Health Interview Survey (EHIS)

The European Health Interview (EHIS) Survey is planned to run every five years and consists of four modules on health status, use of health care, health determinants and socio-economic background variables. The participants are aged 15 and over.

The background variables, which cover sex, age, education and labour status, make it possible to use EHIS as a good source for socio-economic differences, both in health outcome and in risk and protective factors.

Questions asked in the health status module include self-perceived health, chronic conditions, limitation in usual activities, disease specific morbidity and physical and sensory functional limitations. The module on health care includes data about hospitalisation, GP and specialist consultations, unmet needs, use of medicines, etc.

Risk and protective health determinants included in EFIS are BMI (calculated on the basis of height and weight, consumption of fruit and vegetables, smoking and alcohol consumption.

The first wave of EHIS was conducted between 2006 and 2009 in 17 European countries.

The second wave of EHIS was conducted between 2013 and 2015 in all the EU member states plus Iceland and Norway, and this is the survey that the two indicators we have selected for the Nordic indicator list stem from.

There is now a European Commission Regulation (141/2013), which ensures that the survey will be repeated every five years.

Data from EHIS2 are available from a database on Eurostat's web pages.

European Union Statistics on Income and Living Conditions (EU-SILC)

The European Union Statistics on Income and Living Conditions (EU-SILC) is a survey anchored in the European Statistical System (ESS).

EU-SILC provides both cross-sectional data, with variables on income, poverty, social exclusion and other living conditions, and longitudinal data on individual-level changes over time, observed periodically over a four-year period.

Social exclusion and housing condition information is collected mainly at household level, while the rest of the indicators are collected on a personal level for people aged 16+.

The EU-SILC- survey was launched in 2003. Norway and Denmark took part in the first wave, which has been repeated annually. The other three Nordic countries joined up in 2004.

Eurostat's online database includes data from 2009 onwards, but earlier data are available upon request.

OECD, Health at a Glance: Europe

Every second year from 2010, OECD has published a summary report for 35 European countries with data reported by the different countries' statistics agencies.

In 2016, the European Commission relaunched the series in cooperation with OECD.

Even-numbered years there will be a common report with a special emphasis on improving the health care systems of each country, while there will be separate reports on each country, the Country Health Profiles, odd-numbered years. Country Health Profiles are not yet available for Norway and Iceland.

Social inequality is included in the common report to a certain degree.

The indicator on gap in life expectancy with data for Norway, Sweden, Denmark and Finland stems from the Health at a Glance report.

OECD, Social and Welfare Statistics

This database includes internationally comparable statistics on many different topics, including public and private social expenditure.

The Gini coefficient for the five Nordic countries stems from this dataset.

Health Behaviour in School aged Children

WHO's Health Behaviour in School-aged Children (HBSC) study has provided information about the health, well-being, social environment and health behaviour of 11-, 13- and 15-year-old boys and girls in 44 countries over three decades. Comparable data are available from 2002. The data are collected by an international alliance of cross-disciplinary researchers using questionnaires directly filled in by children and adolescents at school, which ensures that the response rate consistently have been very good.

The findings are collected and published every four years by the WHO Regional Office for Europe.

Data are collected on 11-, 13- and 15-year-old boys and girls on a broad range of indicators covering health, well-being, social environment and health-related behaviours. The HBSC study focuses on understanding health in a social context and attempts to monitor the health and health-related behaviours of the participants while they are moving from childhood into young adulthood.

Since the participants themselves haven't finished their schooling, an indicator on their families' socio-economic positions, *Family Affluence Scale*, is used.

The HBSC study has found family affluence to be an important predictor of young people's health and participation in physical activities (HBSC, website).

Nordic Welfare Centre

Norwegian Institute of Public Health