

Health Inequalities in the Nordic Countries: What We Know and What We Can Do

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ABSTRACT

Health inequalities represent a major societal threat and research has established that as long as we have social inequalities, we will have health inequalities. The Nordic countries are at the forefront of having created societies that highlight equality. They have done so across multiple axis of inequalities with the greatest focus perhaps having been set on class- and gender-based inequalities. Despite this, research consistently finds persistent health inequalities in the Nordic countries and what is perhaps more puzzling is that these inequalities are sometimes larger than the one observed in countries with higher levels of inequality. To respond to this, the Nordic Arena for Public Health Issues initiated a collection of indicators for health inequalities in 2017, and after reviewing 170 possible indicators, seven indicators were selected. The indicators are: life expectancy, self-assessed health, vegetable consumption, smoking and people at risk of poverty and/or social exclusion, all based on educational attainment; physical activity among 15-year-olds based on family affluence scale and the Gini coefficient which is a standard measure to compare income inequality across countries. The goal is that all Nordic countries collect these indicators regularly and over-time. The purpose of this report is to deepen our understanding of the indicators by providing a theoretical and empirical overview of each indicator. This includes, as appropriate, a discussion of why each indicator is an important measure to be collected and provides insights into what we know about the indicator within and outside of the Nordic countries. While the selection of the indicators represents an important first step in understanding health inequalities across the Nordic countries, they can only serve as the beginning. It is important to consider both other indicators and other sources of inequalities, for example based on immigration status. Similarly, the Nordic countries like the rest of the world face multiple challenges that are likely to increase societal inequalities and therefore have implications for health inequalities. This report highlights global climate change and the COVID-19 pandemic as specific threats to our societies and consequently our health. While the exact consequences of these two large scale social developments remain unknown, one thing is certain. They will not affect all groups in society equally and those who are more vulnerable already, will almost certainly be more vulnerable to negative consequences of these two large scale events. The Nordic countries are in a unique position to reduce these consequences and promote social equality, but that only happens through careful policymaking, that at least in part is based on the best theoretical development and empirical evidence that we have about social inequality and how it translates into health inequality.

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INTRODUCTION

The most equal societies – not the richest ones – tend to enjoy the best population health (Wilkinson 1996). Thus, we might be tempted to infer that better population health also brings less inequality in health, yet that is not always the case. While life expectancy is generally high in more equal countries, some health outcomes are less favorable and, in some cases, various health inequalities are greater there than in less equal countries (Bambra et al. 2009, Mackenbach 2012, Olafsdottir 2017). In fact, scholars have pointed out that relative inequalities in mortality tend to increase when the overall mortality of a population decreases because the declines are often larger in the higher socioeconomic groups (Mackenbach et al. 2017). To address this paradox, and thus to understand health inequalities in the Nordic countries better, seven indicators were selected for collection and comparison across the countries. Specifically, they focus on health outcomes, lifestyle and inequalities (life expectancy, self-assessed health, smoking, fruit consumption, physical activity, risk of poverty or social exclusion and the Gini coefficient). But why do those indicators represent good comparable measures across contexts? For example, what exactly do we understand about health if we know differences in life expectancy and how is that different from the kind of information we obtain if we measure self-assessed health?

Sociologists and other scholars have provided multiple explanations for why the relationship between inequality and health persists. They focus on the social determinants of health, i.e. all of the non-medical factors that help us understand health outcomes. Much of the debate has focused on upstream factors – e.g. social life, family life, and neighborhood life – highlighting the importance of changing the social structure itself, rather than simply getting individuals to change their behavior. The emphasis in the Nordic countries on building up extensive welfare services and actively intervening in the inequality created in the market would be an example of such a focus. Link and Phelan (1995) coined the term ‘fundamental causes of health disparities’, arguing that as long as we have social inequalities, even within welfare states, we will have health inequalities. They highlight the importance of contextualizing risk factors, showing for example that avoiding certain behavior can be easier for some individuals as compared to others and point out that some factors have such a strong and persistent relationship with health outcomes that we should consider them fundamental causes of disease. Various axes of inequality, including those based on socio-economic status, gender and race/ethnicity, fall into this category.

We know much about health inequalities, but the ultimate question must be, what can we do to reduce them? Here, we can think about individual-level factors, societal and community-level factors and the interaction between the two. Our health behavior and lifestyle are significant for our health and a large body of research has shown that social support has health benefits. However, these individual-level factors exist within a specific context, and we must understand the broader institutional arrangements, historical trajectories and cultural traditions if we want to understand health and health inequalities within and across countries. That is, the same individual-level causes of disease matter differently in different social and political contexts. Much research has focused on social inequalities and how they shape health outcomes, but newer challenges include technological developments and environmental challenges. More specifically: which groups have greater scope for using technology to advance their health status, and are we all equally vulnerable to the health challenges that result from environmental factors, including climate change, regardless where we live? Finally, understanding the context that shapes our health outcomes is critical for an understanding of what groups within society may be particularly vulnerable, as different kinds of contexts create different vulnerabilities, since they determine what kind of benefits and services individuals have access to and who is viewed as an insider or outsider in society.

Research is the key to being able to answer questions of this kind, and comparative qualitative and quantitative work is important for achieving the goal of understanding and reducing health inequalities. Collecting the seven indicators systematically across the Nordic countries is a first step in evaluating what kind of health-related inequalities exist in each country; combined with an in-depth scholarly understanding of what they represent, they can guide policy making within and across the Nordic countries.

WHAT TO COMPARE: THE SEVEN INDICATORS

The Nordic Welfare Centre published a report, *Indicators for health inequality in the Nordic countries*, in 2019. After considering 170 possible indicators, the authors decided to focus on seven that were to be collected systematically across the Nordic countries for comparative purposes. These indicators focus on health outcomes and disease causes that can be divided into lifestyle measures and social inequality measures. Specifically, the indicators are: 1) life expectancy at age 30, by education; 2) self-assessed health in the age group 25-64 years, by education; 3) smoking in the age group 25-64 years, by education; 4) daily intake of vegetables in the age group 25-64, by education; 5) physical activity at age 15, according to

Family Affluence Scale; 6) Risk of poverty or social exclusion in the age group 25-59, by education; and 7) Gini coefficient on income inequality (Norwegian Institute of Public Health, 2019).

The selection of comparative inequalities can be broken down in three steps: 1) selecting the indicators; 2) selecting which groups to compare; and 3) choosing the methodological approach to quantify the inequality (James, Devaux and Sassi 2017). The previous report completed this important step; this report builds upon that work by providing a broader, theoretical discussion of what we know about those indicators, what they measure, what they mean, and why it is important to collect and compare them across the Nordic countries, to guide science-informed policymaking.

HEALTH OUTCOMES

There are many potential candidates for health outcomes, but the two selected were life expectancy at age 30 and self-assessed health for 25 to 64-year-olds, by education.

Life expectancy: Life expectancy is perhaps the most obvious starting point for examining the relationship between inequality and health, as longevity can be viewed as the ultimate measure of health (Raleigh 2018). Some have even gone as far as to state that life expectancy may be the most important health statistic about a country, especially as it provides insight into the existence of wider social problems (Hiam et al. 2018). It is therefore not surprising that some of the earliest work on the relationship between inequality and health outcomes focused on population-aggregated life expectancy and infant mortality rates. Early on, Richard Wilkinson (1996) argued and provided some empirical support for the notion that it was not the richest countries in the world that enjoyed the best aggregate-average health (life expectancy and infant mortality), but the most equal ones. Not surprisingly, this resulted in many believing that the Nordic countries had found the key to maximizing the healthy lives of their citizens. However, other research has contradicted this hypothesis and showed, using better data and more appropriate methods, that the relationship is not that simple and, in fact, may not exist (Beckfield 2004).

What exactly, then, does life expectancy measure and what does it tell us? In some ways, we can say that it is the crudest measure of population health, because life expectancy derives from age-specific mortality rates. It is important to make a theoretical and empirical point about aggregative measures. Simply put, they indicate that you have aggregated all the

individual outcomes within a country to one measure. Therefore, even small differences in life expectancy across countries, or between groups within society, can in fact reflect major differences in the health and well-being of the population as a whole, or of segments of the population. Not surprisingly, much research effort has been devoted to understanding both what factors impact life expectancy, including national-level and individual-level factors.

The general trend in life expectancy is that it has increased (Crimmins and Zhang 2019); overall, it has increased by over ten years, on average, since 1970 among the OECD countries. At the macro-level, the factors contributing positively to this development have included health expenditure, income and education, whereas smoking and alcohol consumption have contributed negatively. What continues to give grounds for concern, however, is that large social inequalities in life expectancy remain, both within and between countries. For example, better educated people live, on average, six years longer across OECD countries than their less educated counterparts. The differences between educational groups are particularly large for men and in several Eastern European countries (James, Devaux and Sassi 2017).

The group focused on selecting health indicators in the Nordic countries opted for a measure of inequalities in life expectancy by education. Of course, education is only one source of potential inequalities, but it has proven a powerful indicator of health differences across contexts. One reason is that higher levels of education likely result in better jobs, with better work conditions and higher pay, but researchers have also pointed out other reasons why education may be linked to health inequalities: regardless of the economic rewards, the better educated are better informed about various health risks, are better placed to act on the information, and possess a wider array of flexible resources that can be used to improve health (Link and Phelan 1995). Research has also shown that education may improve management of chronic illnesses and those with higher levels of education may be in a better position to understand the health care system and available services, particularly regarding preventive and specialist care (Goldman and Smith 2002, Lutfey and Freese 2005)

The indicator selected for the Nordic comparison, the educational gap in life expectancy at age 30 by gender, is larger than might be expected from the Nordic welfare states. The figure shows the difference in life expectancy between those with the lowest level of education and those with the highest level. The difference is greater for men than for women, ranging from just about 4 years in Sweden to 6.5 years in Denmark and Finland. Among women, the difference is just under 3 years in Sweden but almost 4 in Denmark.

Therefore, the gap among both those with higher and lower levels of education is larger for men than for women, and there is a variation across the Nordic countries in terms of the education gap. An important question arises: why does education play a greater role in improving the life expectancy of men than of women?

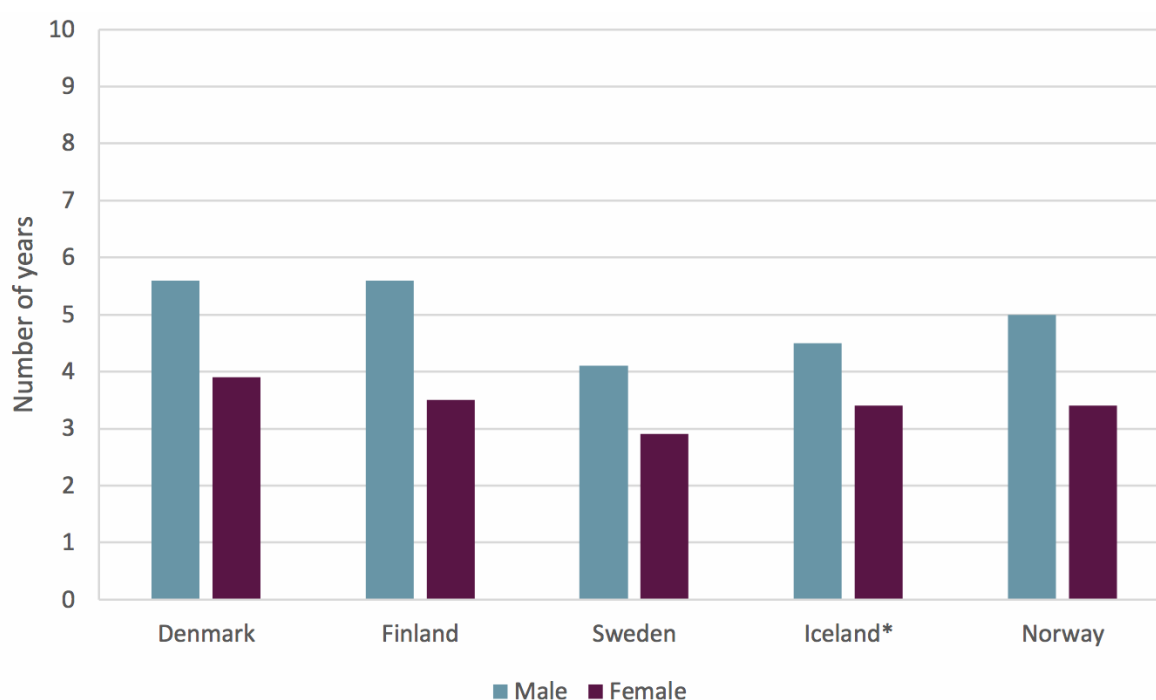


Figure 1. Educational gap in life expectancy at age 30 by gender, 2016 or latest available year. Data disaggregated by educational level are only available for a subset of the population for Norway. Thus, the large share of the deceased population with missing information about their education level can affect the accuracy of the data in Norway.

Source: Norwegian Institute of Public Health. 2019. Indicators for Health Inequality in the Nordic Countries (Indikatorer Pa Sosial Ulikhet I De Nordiske Landene). Oslo: Norwegian Institute of Public Health. Based on: OECD, Health at a Glance, 2018 *Data for Iceland are preliminary and an average for the years 2013-2017, based on Statistics Iceland.

Another cause for concern is that there has been a decline in life expectancy in certain countries – indicating that we are not on a natural path to ever-increasing life expectancy, but that the ways in which we organize our societies can have an impact on the trend. The COVID pandemic has of course demonstrated rather clearly that how we organize our societies is a matter of life and death. Pre-COVID, life expectancy declined in the USSR in the 1980s (Eberstadt 1990), with a drastic decline for both men and women between 1990 and 1994. Various explanations have been offered, including economic and social instability as well as lifestyle factors (Notzon et al. 1998). It might be tempting to dismiss this as a unique case, but note that similar trends have been observed in some European countries and

in the U.S. since 2010. While observers disagree about whether the decline in the U.K. is a cause for major concern, some researchers have raised important points to explain why this is happening. They have looked to broader environmental and social causes, including the particularly cold winter of 2015, which resulted in the death of vulnerable elderly people (Raleigh 2018) and the underfunding of welfare systems since 2010 (Hiam et al. 2018). Figure 2 illustrates how life expectancy has changed since 2010 in the Nordic countries, showing a relatively steady increase in Denmark, Finland, and Norway, and even Sweden, but drops in Iceland especially in 2013 and 2016. However, it is important to note that due to the small population in Iceland, yearly fluctuations can appear larger than they actually are, in some cases making it more appropriate to focus on the average of few years (Guðfinnsdóttir, Sigbjörnsdóttir and Haraldsdóttir 2015).

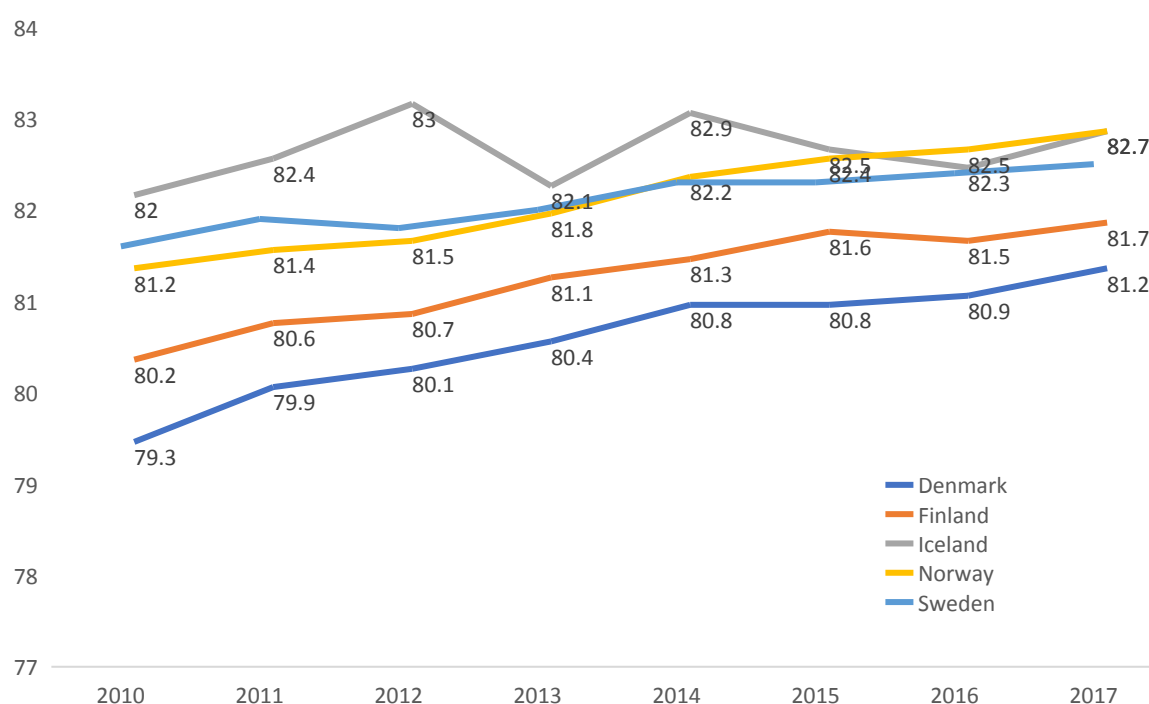


Figure 2. Life expectancies in the Nordic Countries 2010-2017. Source: OECD

Some have pointed out that we might just be at the limit of possible life expectancy, but that is somewhat refuted by life expectancies from other countries and in fact, Japan and Australia are currently in the lead with life expectancy, at 84.2 and 83.6 respectively. Of course, all the Nordic countries do enjoy high life expectancy, and Denmark had the most room for improvement in 2010. Nevertheless, empirically observing how this overall measure of population health is impacted by political, social, cultural and environmental factors makes it

important to monitor, evaluate and explain any decline in life expectancy in the Nordic countries.

Self-assessed health: The simple question “In general, how would you rate your health?” is used to establish self-assessed health and is one of the most frequently used health measures in the social sciences (Au and Johnston 2014). Like all measures, it has advantages and disadvantages. Its inclusive, comprehensive nature is clearly an advantage (Jylhä 2009), but at the same time it is not completely clear which factors individuals take into account when they evaluate their own health (Au and Johnson 2014). Of course, there are many national and international studies that focus on health-related measures, for example the 2011 (and planned 2021) *Health and Healthcare* module of the International Social Survey Programme (ISSP) and the 2016 *Social inequalities in health* module of the European Social Survey (ESS), but in non-health-focused studies, self-assessed health is frequently the only (or one of very few) health measure available. Naturally, this makes the measure appealing to social scientists, although unfortunately for Nordic comparisons, Iceland was the only Nordic country that did not participate in the 2011 ISSP or the 2016 ESS.

Given the popularity of self-assessed health, it is not surprising that much research has been conducted to theorize its meaning and evaluate its validity. Quesnel-Vallée (2007) points out that researchers have perhaps been too focused on linking self-assessed health to mortality data, viewing that as a proof that self-assessed health really measured “true” health. This focus does not reflect the WHO definition of health as “a complete physical, mental and social well-being and not merely the absence of disease and infirmity” as we would not expect that an individual who experiences some pain, chronic illness, or depression would die in the near future. One of the most important questions regarding self-assessed health may therefore be, what are individuals expressing when they say their health is excellent, good or poor? One of the first studies to focus on the reliability of self-assessed health was conducted in Sweden and found that the reliability of self-assessed health was good across age groups and genders (Lundberg and Manderbacka 1996). More recently, and using Australian data, Au and Johnston (2014) found that the most important component of individuals’ evaluation of their health was vitality, i.e., whether they are feeling full of life and energy. After that, the most important considerations are feeling pain and having limited mobility. It appears that individuals consider both their physical and mental health in this global question of health; however, an interesting pattern emerges where those who are generally unhealthy put higher

value on physical health, while those who are generally healthy assign a higher value to mental health.

Empirical questions surrounding self-assessed health have largely focused on two aspects: 1) how does it predict other health conditions (esp. mortality)? and 2) do different groups within and across societies evaluate their health in the same way? Beginning with the first question, the most comprehensive meta-analysis to date showed that rating your health as poor, as compared to excellent, resulted in a two-fold risk of mortality from all causes (DeSalvo et al. 2006). An updated review confirmed the finding that self-assessed health is associated with mortality and does not disappear when other factors are controlled for. This has been shown for different populations and across different national contexts, including China, Finland, Italy, Indonesia and Japan. Yet, while this association appears universal in all populations, there appears to be a relative difference between them (Jylhä 2009). For example, the association appears stronger for men than women and in higher, as compared to lower, socio-economic groups (Huisman, van Lenthe and Mackenbach 2007). It has been suggested that this association is so persistent due to its inclusiveness of health aspects related to survival that are not present in other health indicators (Idler and Benyamini 1997, Mackenbach et al. 2002).

For the second question, researchers have examined whether men and women respond differently ((Baćak and Ólafsdóttir 2017, Grol-Prokopczyk, Freese and Hauser 2011) and whether there is a difference between respondents based on socio-economic status (SES) (Quesnel-Vallée 2007) or across cultural contexts (Bacak and Olafsdottir 2017). Regarding gender, research in Wisconsin has shown that women may rate their health better because of their greater health-optimism (Grol-Prokopczyk et al. 2011) and research on European countries has shown that self-assessed health is most strongly associated with health problems in 11 out of 19 countries examined. Studies between the relationship of self-assessed health and mortality by SES have shown mixed findings. For example, research conducted in France showed that it was a better predictor among those with lower SES (Singh-Manoux et al. 2007), studies conducted in the Netherlands and the U.S. showed that it was a better predictor among those with higher SES (Dowd and Zajacova 2007, Huisman, van Lenthe and Mackenbach 2007), while two studies from Sweden showed no difference between the groups (Burström and Fredlund 2001, van Doorslaer and Gerdtham 2003).

Researchers have attempted to quantify the size of various inequalities in health across contexts, including examining the size of the educational inequalities in self-assessed

health around 48 countries globally. Figure 3 shows large cross-national differences in the self-rated health between those with the highest levels of education and those with the lowest levels of education, and these differences are significant in all countries but Iraq. The largest differences between those with the highest and lowest educational levels are observed in Chile, Bulgaria, Guatemala, and South Africa. The only Nordic countries available in this analysis are Sweden and Finland. The results show that the differences are larger in Finland (13th out of 48 countries) than in Sweden (33rd out of 48 countries) (Beckfield, Olafsdottir and Bakhtiari 2013).

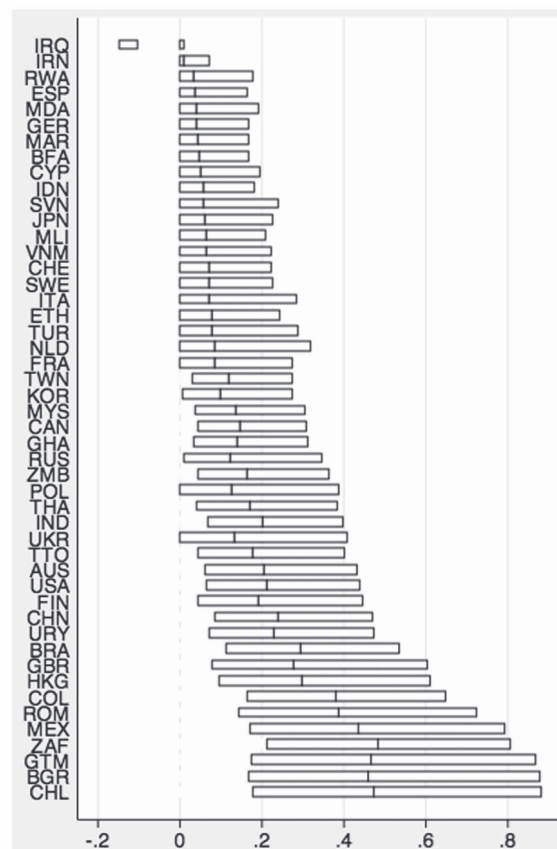


Figure 3. Health inequalities based on education.

Source: Beckfield, Jason, Sigrun Olafsdottir and Elyas Bakhtiari. 2013. "Health Inequalities in Global Context." *American Behavioral Scientist* 57(8):1014-39.

Moving to the European context, the 2014 European Social Survey provides a unique opportunity to evaluate health inequalities across 21 countries. Focusing on educational inequalities in self-assessed health, research has shown that there are absolute and relative health differences between education groups, though they vary in size. Taking into account the size of the differences between the two groups, it is possible to distinguish between 4 groups of countries, ranging from where inequality is greatest to where it is least.

Specifically, the groups are: 1) Ireland and Switzerland (with most inequality in self-assessed health based on education); 2) Denmark, Belgium, Sweden, Norway, the UK, Austria, Netherlands, and Israel; 3) Finland, Spain, Poland, the Czech Republic, France and Germany; and 4) Portugal, Lithuania, Slovenia, Estonia and Hungary (most equal). The four Nordic countries available for analysis fall into the middle, with less inequality in Denmark, Sweden and Norway, as compared to Finland (Balaj et al. 2017).

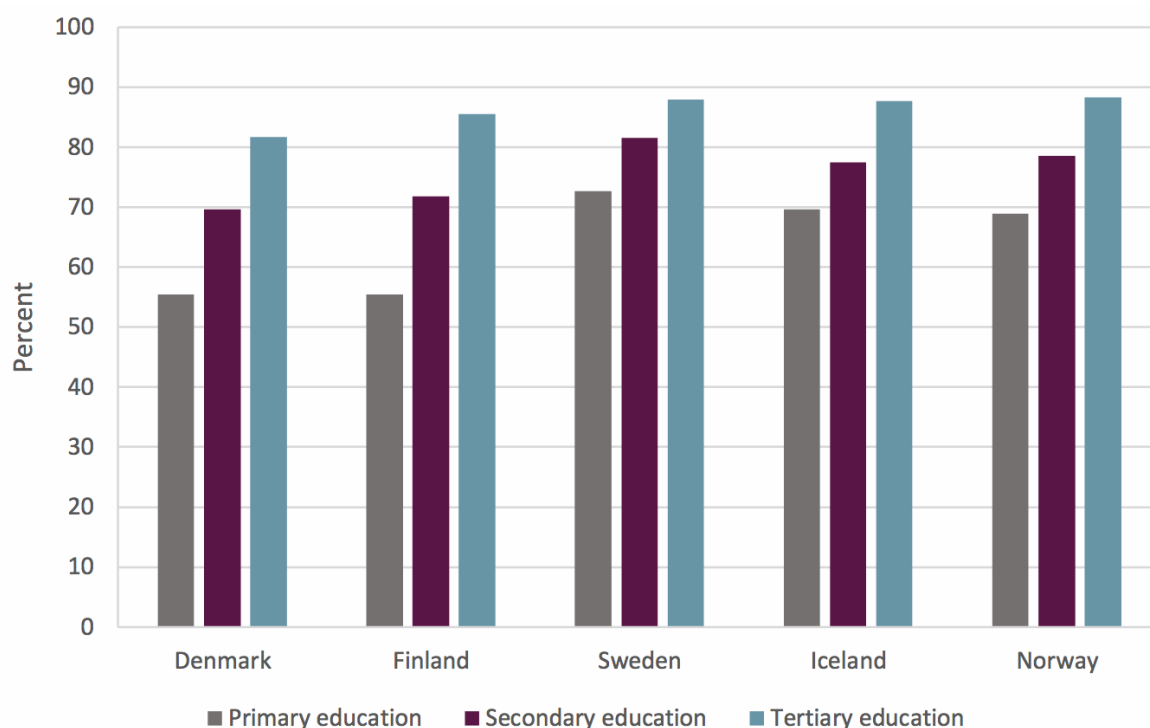


Figure 4. Proportion of people aged 25-64 who perceive their health as good or very good by educational attainment, 2015. Primary Education: ISCED levels 0-2, secondary education: ISCED levels 3-4, tertiary education: ISCED levels 5-8.

Source: Norwegian Institute of Public Health. 2019. Indicators for Health Inequality in the Nordic Countries (Indikatorer Pa Sosial Ulikhet I De Nordiske Landene). Oslo: Norwegian Institute of Public Health. Based on: Eurostat; European Survey on Income and Living Conditions (EU-SILC) Database.

Figure 4 shows the educational gradient in self-assessed health across the Nordic countries. The pattern is clear: those with tertiary education report the best health, followed by those with secondary education; those with primary education report the poorest health. The gap between the primary and tertiary educational groups is smallest in Sweden, followed by Iceland, Norway and Denmark; it is largest in Finland.

To conclude, we may wonder when and how self-assessed health reporting should be used. Jyllhä (2009) suggests it should be used for comparison between groups and in clinical trials and practice. What is most relevant here is population studies, where she argues that it

is the most inclusive, informative and feasible measure. Of course, researchers should be aware that the measure may not be directly comparable between all cultural and social groups. In sum, we should not make more of self-assessed health than it is, but we should also not make less of it than it is.

LIFESTYLE FACTORS

Decades of research have shown health inequalities both within and across countries. While biomedical and genetic factors have a role, it is clear that social and behavioral determinants play a major role (Huijts et al. 2017b). One stream of research has focused on lifestyle factors, both by showing that healthier lifestyle generally has a positive impact on a wide array of health outcomes and that lifestyle factors can play a role in explaining health inequalities. A somewhat surprising finding has been that health inequalities are not smallest in the equal Nordic countries. Of course, there are multiple possible explanations, but scholars have identified health-related lifestyles at least as a partial explanation (Bambra 2011, Mackenbach 2012). While research has long focused on lifestyle, one of the first attempts to systematically evaluate the lifestyle of Europeans was done in the 7th round of the European Social Survey, with a special module on the social determinants of health (Eikemo et al. 2016). The ESS is a nationally representative survey, conducted across European countries, and great care is taken to secure methodological, conceptual and cultural comparability.

In 2014, 21 countries participated in the survey, including four out of the five Nordic countries. To measure lifestyle, four factors frequently associated with health outcomes were measured specifically: smoking, alcohol consumption, physical activity and fruit and vegetable consumption. Out of these four, three were selected for the Nordic comparison: smoking and vegetable consumption for 25–64-year-olds by education, and physical activity among 15-year-olds, by family affluence scale. In what follows, those indicators will be put into a European perspective using data from the European Social Survey.

Figure 5 shows the percentage of current smokers across countries (those who smoke daily and those who smoke, but not daily, combined) by gender. The chart has been organized in such a way that those countries with the lowest percentage of combined smokers (men and women) are towards the left and with the highest percentage on the right. This means that the chart shows that Sweden and Norway have the lowest percentage of smokers, while Hungary and Germany have the highest. Denmark and Finland are higher than Sweden

and Norway, but still below the average of all European countries combined. An interesting pattern that emerges is the existence of large gender differences in some countries but not others. The largest differences appear in some Eastern European countries, but are smaller in the Nordic countries. This is especially true for Sweden and Norway, but compared to several countries, the gender difference is also relatively small in Denmark and Finland.

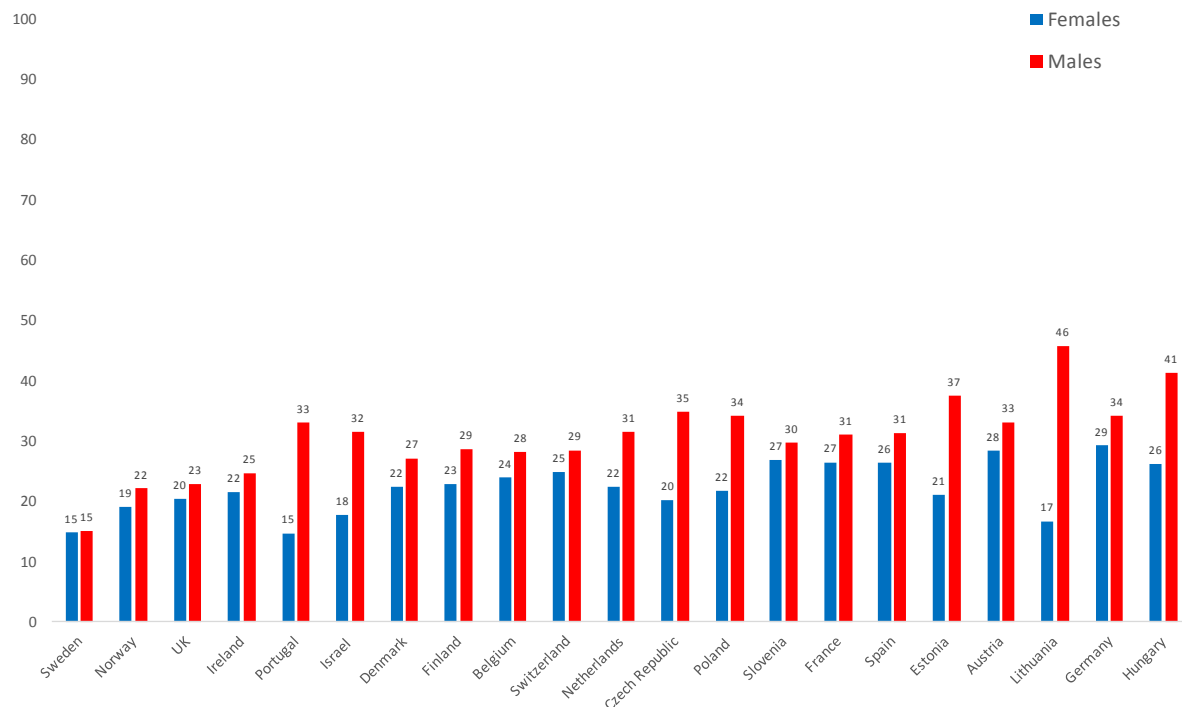


Figure 5. Percentage of smokers, by gender, in Europe.

Source for graph: European Social Survey 2014

Figure 6 shows the percentage of men and women who eat fruit and vegetables at least once a day, and again the graph is organized from the countries with the lowest combined consumption towards the left and with the highest combined consumption on the right. The figure shows both a large variation in fruit and vegetable consumption across Europe as well as clear gender differences. The results show that those living in Hungary, the Czech Republic and Austria consume the least fruit and vegetables, whereas those in Portugal, Slovenia and Switzerland consume the most. In all countries, a higher proportion of women consume fruit and vegetables daily, and the difference is smallest (4%) in Hungary and largest (20%) in Denmark and Sweden. The Nordic countries lie around the middle of the distribution, with the highest overall consumption in Norway, followed by Finland, Denmark and Sweden. The large gender differences are interesting, and while they are larger in

Denmark and Sweden, the percentage point gap between men and women is still 16% in Finland and 15% in Norway.

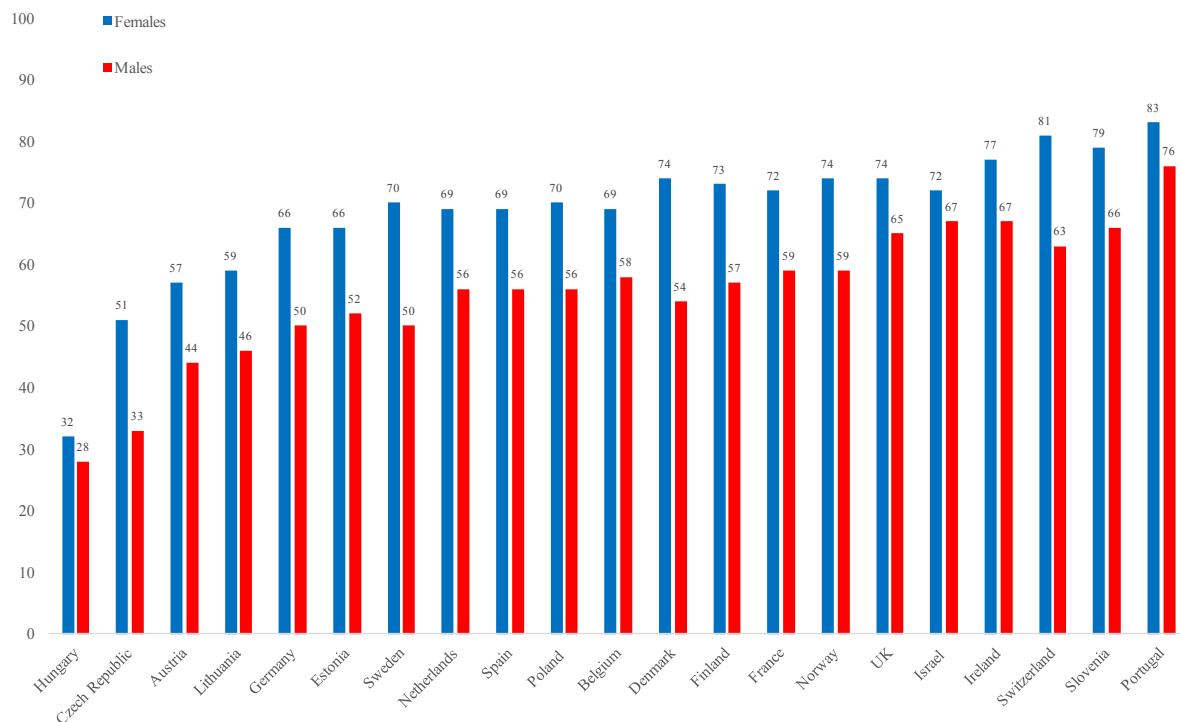


Figure 6. Percentage that consum fruit and vegetables daily, by gender, in Europe.
Source for graph: European Social Survey 2014

Figure 7 shows the percentage of men and women who engage in physical activity, defined as walking quickly, doing sports or other physical activity for 30 minutes or longer. Once again, the graph is arranged with nations with the lowest percentage overall for men and women towards the left and the highest on the right. It shows that those in Portugal, Hungary and Poland are toward the low end of the continuum, whereas those residing in Finland, Norway and Ireland are toward the high end. In most countries, men exercise more than women, but the gender differences appear rather small. Despite those differences, there are no clear significant country or gender differences across Europe in physical activity (Huijts et al. 2017b). All the Nordic countries are above the mean for all countries, with Sweden being fourth highest and Denmark the eighth highest. It is noticeable that while still being rather small, the gender differences are among the highest in Denmark where the percentage point difference between men and women is 5%. The same number is 3% in Finland, 2% in Sweden and the same percentage reports activity in Norway.

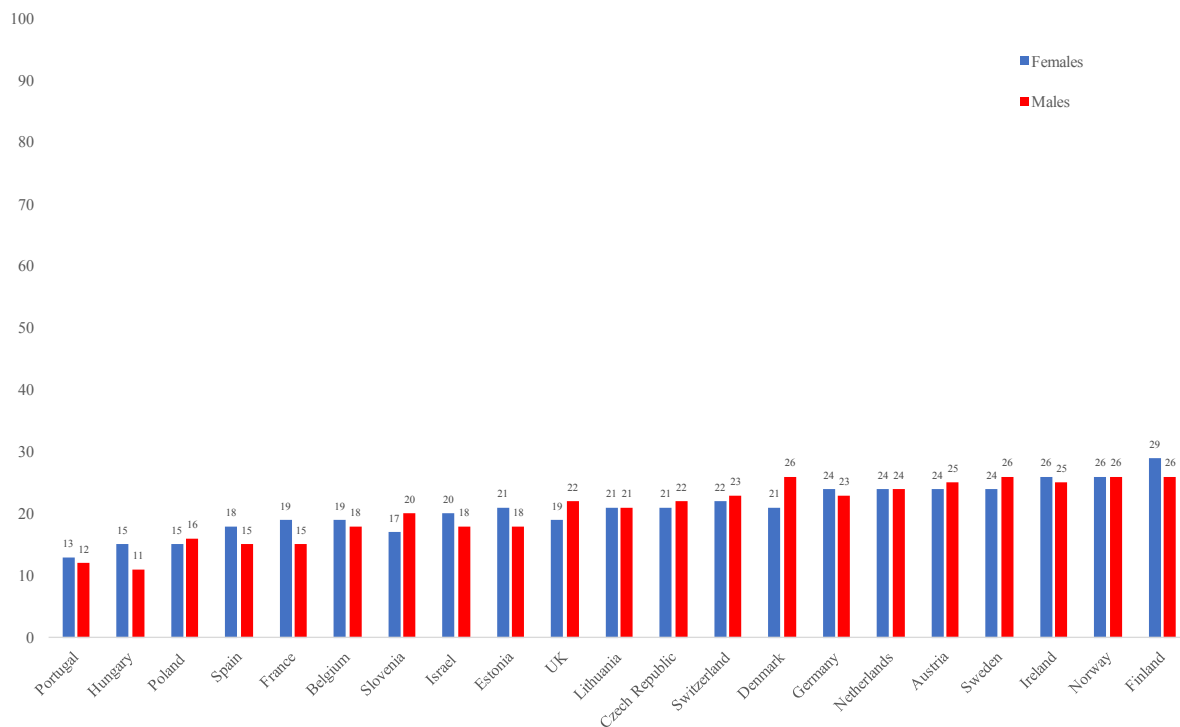


Figure 7. Percentage that engages in physical activity 3-4 times a week, by gender, in Europe.
Source for graph: European Social Survey 2014

The descriptive results are informative and locate four out of the five Nordic countries within the European context. The next section will discuss in more detail the correlation between each of these indicators and various health outcomes, with a focus on life-expectancy and self-assessed health.

Smoking: A large body of research has shown that smoking impacts a wide array of health outcomes, but not surprisingly the focus has often been on mortality, and specifically the well-established association between smoking and lung cancer. Research has been conducted within countries, on different samples, and over time. Shaw, Horrace and Vogel (2005) examined the factors that determine life expectancy, drawing on data from 29 OECD countries covering the period 1960-1999. While their focus was on pharmaceutical consumption, they also evaluated the impact of lifestyle factors, including smoking and fruit and vegetable consumption. They concluded that those factors have important impacts on life expectancy, after wealth and health care consumption have been controlled for. For example, they found that average women at age 40 would add a year of life expectancy if they reduced smoking by 36% from the OECD average, as well as an additional year if they increased fruit and vegetable consumption by 30%.

One of the most established findings in health scholarship is the fact that women live longer than men. While many factors contribute to this, researchers have long focused on the role smoking might play in explaining the sex differences in life expectancy. The earliest research was carried out in the U.S. and Canada, but research has explored this for the Nordic countries at least since the 1970s. A comparison of the effects of smoking on the sex differences in life expectancy at age 35 across Denmark, Finland, Norway, Sweden and the Netherlands from 1970 to 1989 revealed both over-time changes and differences across countries. In the time period from 1970 to 1974, it was estimated that 2.4 years of the difference was attributable to smoking in the five countries, but this figure had dropped to 1.8 years in the time period 1985-1989. Across countries, the contribution was greatest in the Netherlands and smallest in Sweden (Valkonen and Van Poppel 1997).

The Nordic indicator selected focuses on educational inequalities in life expectancy. Studies looking at this over time have been carried out in Denmark, Finland and Sweden, specifically using registry data to evaluate the association between smoking and social inequalities and mortality. Overall, life expectancy increased in Denmark from 1985 to 2009, but two important trends appear. First, there was an overall increase in smoking-related deaths in Denmark, from 21.4% in 1985-1989, to 23.5% in 2005-2009. More specifically, smoking-related deaths accounted for 28% of all deaths among men from 1985-1989, with the number declining over time; it was 23% in 2005-2009. The trend is reversed for women: in 1985-1989, smoking accounted for 14% of all deaths among them, while in 2005-2009 the percentage was 24%. This increase in smoking-related deaths for women accounts for the overall increase in smoking-related mortality. Second, inequalities in mortality based on education have increased during the time period. While alcohol is the main reason for the increase in inequality in mortality between men with higher and lower levels of education, smoking is the largest explanatory factor for the inequality among women. In fact, 72.5% of the increase in inequality is due to smoking (Koch et al. 2015).

In Finland, deaths due to smoking accounted for 27% of all deaths among men over 50 at the beginning of the 1970s but had declined to 17% in 2006 to 2010. For women, the corresponding numbers were 1% and 4%. Just as in Denmark, those with higher education were more likely to not smoke than those with lower levels of education, resulting in an increased inequality based on education in Finland. For example, the contribution of smoking to educational differences in mortality among women was negligible in 1971-1975, but was 16% in 2006 to 2010 (Martikainen et al. 2013). A similar pattern emerged in Sweden in the

period 1991-2008. Here, smoking-related deaths decreased among men but increased among women. However, this was not true for all women but particularly those with lower levels of education, and the widening gap in mortality between women with higher and lower levels of education is largely due to smoking (Östergren, Martikainen and Lundberg 2018).

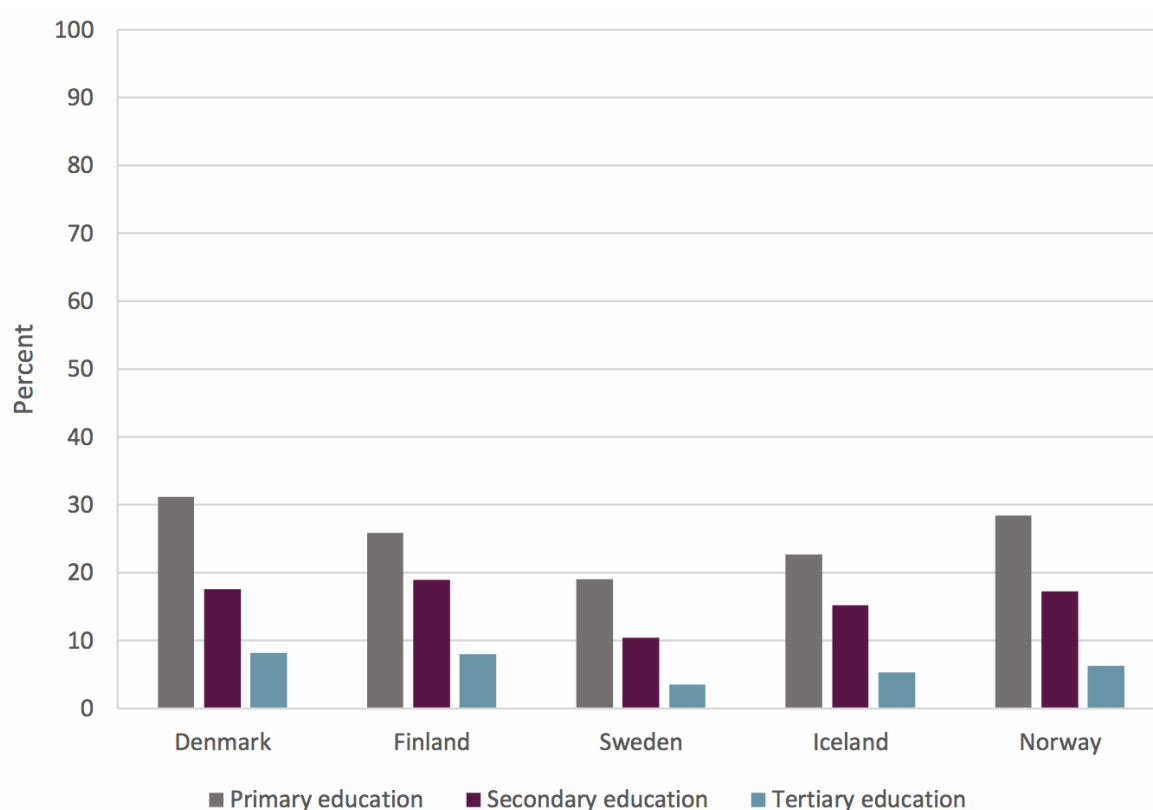


Figure 8. Proportion of daily smokers in the Nordic countries by educational attainment, 2014. Both genders, 25-64 years. Primary education: ISCED levels 0-2, secondary education: ISCED levels 3-4, tertiary education: ISCED levels 5-8.

Source: Norwegian Institute of Public Health, 2019. Indicators for Health Inequality in the Nordic Countries (Indikatorer Pa Sosial Ulikhet I De Nordiske Landene). Oslo: Norwegian Institute of Public Health. Based on: Eurostat; European Health Interview Survey (EHIS) Database.

It is clear that smoking is an important indicator to examine within the Nordic context, and it appears that greater gender equality has removed the traditional gender gap in smoking and that smoking appears to be a key reason for educational inequalities in mortality within the Nordic context. Figure 8 shows the educational differences in smoking across the five Nordic countries. There is a clear education gradient in smoking in all five countries. Smoking prevalence is highest in Denmark, where roughly 30% of those with primary education smoke, and lowest in Sweden, where about 20% of those with primary education smoke. In comparison, about 8% of those with tertiary education smoke in Denmark and less than 5% in Sweden.

Consumption of vegetables: Consumption of fruit and vegetables has been established as being positive for health outcomes, as it decreases the likelihood of various non-life-threatening and life-threatening diseases. A comprehensive literature analysis, conducted on published articles between 2007 and 2011, found strong evidence that consumption of fruit and vegetables reduces the risk of coronary heart disease, hypertension and stroke, and probable evidence that the same holds true for cancer. There is also possible evidence that such consumption may prevent body weight gain, which may indirectly reduce type 2 diabetes mellitus. Other diseases associated with consumption of fruit and vegetables include certain eye diseases, dementia, osteoporosis and asthma (Boeing et al. 2012).

Although it is generally accepted that consumption of fruit and vegetables has health benefits, it is unclear how much should be recommended and in fact, recommended dosages vary between countries and organizations. A meta-analysis of 95 studies showed that cardiovascular disease and all-cause mortality was reduced by an intake of up to 800 g/day of combined fruit and vegetables, whereas there were no further reductions for cancer after 600 g/day (Aune et al. 2017). Research has shown that consumption of fruit and vegetables varies by educational groups. For example, analysis based on the 2014 European Social Survey showed that the lowest educational group was less likely to consume fruit and vegetables at least daily across 21 European countries, although the relationship was either modest or non-significant in most countries (Huijts et al. 2017a). An evaluation of the impact of bringing the consumption of the low-educated group into line with the consumption of the high-education group, across 10 European countries, found a small, but positive, effect on total life expectancy and disability-free life expectancy in most countries examined (Baars et al. 2019).

When selecting indicators for the Nordic countries, the focus was exclusively on consumption of vegetables. Figure 9 shows the proportion of people aged 25-64 who report that they consume vegetables at least daily, by education level. The results show that a higher proportion of those with higher levels of education consume vegetables at least daily, but the difference between the groups varies. Specifically, it is highest in Denmark and Finland and lowest in Norway. This can be explained by a greater variation in the proportion among those with primary education only, as less than 30% in this group report consuming vegetables daily in Denmark and Finland, compared to almost 50% in Norway. For those with tertiary education, the variation is only from a little under 60% in Denmark, Finland and Iceland to a little above 60% in Sweden and Norway.

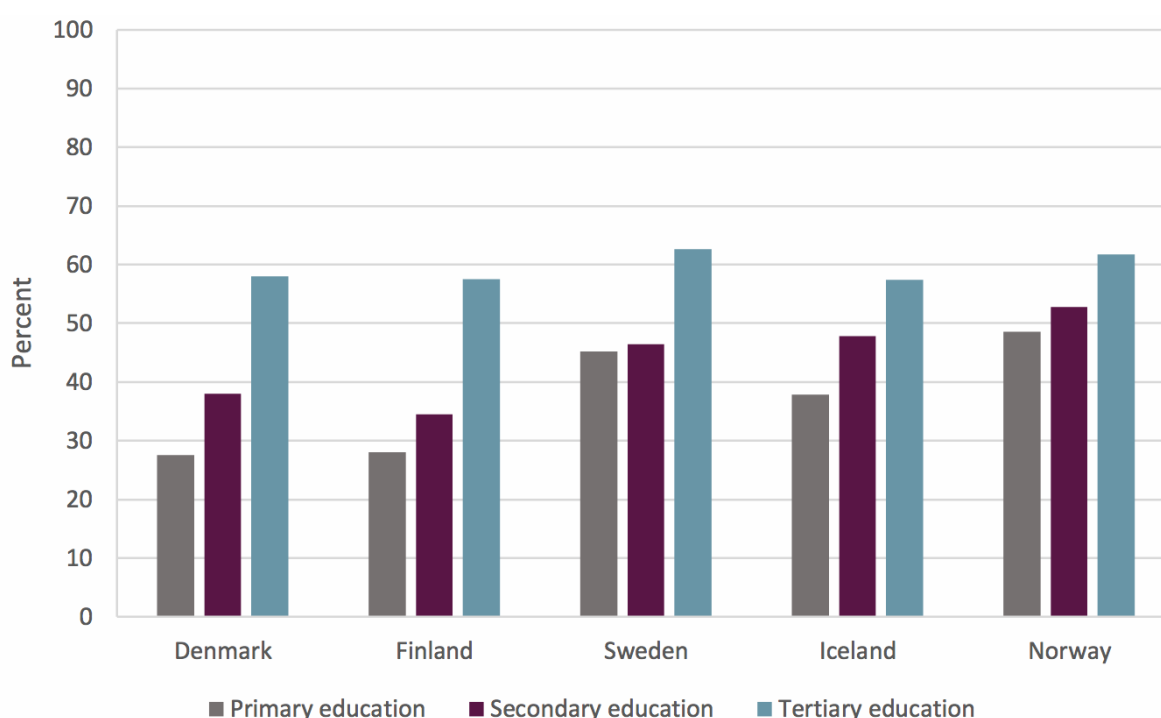


Figure 9. Proportion of people who report that they consume vegetables at least daily, 2014. Primary education: ISCED levels 0-2, secondary education: ISCED levels 3-4, tertiary education: ISCED levels 5-8.

Source: Norwegian Institute of Public Health. 2019. Indicators for Health Inequality in the Nordic Countries (Indikatorer Pa Sosial Ulikhet I De Nordiske Landene). Oslo: Norwegian Institute of Public Health. Based on: Eurostat; European Health Interview Survey (EHIS) Database.

Physical activity among 15-year-olds: Research has shown that regular physical activity reduces the risk of various diseases and/or improves various health conditions. These include conditions such as coronary heart disease, hypertension, diabetes mellitus type 2 and various cancers. It has been estimated that the relative risk of death is about 20-35% lower in physically active persons and that an increase in life expectancy of 3.5 to 4 years can be expected (Reimers, Knapp and Reimers 2012). An estimate of physical inactivity on various major non-communicable diseases worldwide has led to the conclusion that 6-10% of coronary heart disease, type 2 diabetes, and breast and colon cancer are caused by physical inactivity. Specific estimates are available for four of the Nordic countries, with all-cause mortality caused by physical inactivity ranging from 9.4% in Denmark to 10.1% in Finland and then to 11.8% in Norway and Sweden. The same analysis estimated that the life expectancy of the world's population would increase by .68 years if deaths due to physical inactivity were eliminated. While this may seem low, it must be taken into account that these estimates are for the population as a whole, but the increase is only for those who would

change their activity level from inactive to active. Estimates for the Nordic countries show an increase in life expectancy of .64 years in Denmark, .66 years in Finland, .67 years in Sweden and .68 years in Norway (Lee et al. 2012).

As might be expected, a link between physical activity among adolescents and family status has been established. A study in Finland showed that the impact of family income disappeared when the parents' education was taken into account (Kantomaa et al. 2007) and similarly it was found that the impact of higher social class on physical activity among Icelandic adolescents was explained by less activity among parents in lower classes as well as slightly more engagement in paid work and TV-watching among lower class adolescents (Vilhjalmsson and Thorlindsson 1998). One of the reasons for relatively small differences may be that differences between social class are relatively small in Finland and the government supports child and youth sports financially in various ways (Kantomaa et al. 2007). The same is likely to be the case in Iceland and the other Nordic countries. Finally, research conducted in 8 European cities established an indirect link between family income and childhood obesity through physical activity and availability of green spaces, showing that lower-income children may have less access to open green spaces in their neighbourhoods, which may lead them to be less physically active (Evans et al. 2012).

The indicator selected was for 15-year-olds; research has shown that physical activity is linked to various health indicators in this age group. This includes several cardiometabolic biomarkers, physical fitness and bone health. There is also some support for a positive impact on indicators such as psychological distress, quality of life and motor skill development. While most research has focused on medium, high or total physical activity, there is some evidence that even low physical activity may be beneficial for health among adolescents, as compared with no physical activity (Poitras et al. 2016). Family affluence is used as the indicator of inequality, and has been shown to be a robust indicator of adolescent health. In the HBSC 2013/2014, the scale comprised six item assessments of common activities or assets. Specifically, the participants were asked: 1) whether their family owned a car, van or a truck; 2) if they had their own bedroom; 3) how many times they and their family traveled for a holiday the previous year; 4) how many computers the family had; 5) whether the family had a dishwasher and 6) how many bathrooms with showers there were in the home (Inchley et al. 2016). It has been suggested that this scale may need to be revised for the Nordic countries (Norwegian Institute of Public Health 2019). The reason may be that it is hard to design a comparable measure over-time and contexts, as standards of living vary greatly. As

an example, multiple computers may be standard in some societies whereas many homes may lack such equipment in others. The Nordic countries are among the richest in the world which makes it important to adjust such comparative measures.

Figure 10 shows the proportion of 15-year-olds that reported moderate to vigorous physical activity daily by the family affluence scale. The results show that about under 10% of adolescents with the lowest family affluence reported daily physical activity in Denmark and Norway, a little over 10% in Sweden and between 15 and 20% in Iceland and Finland. The results for the highest family affluence show that under 15% of adolescents in Denmark reported daily physical activity, between 15 and 20% in Sweden and Norway, a little over 20% in Finland and about 25% in Iceland. The gap between the highest and the lowest family affluence groups is largest in Norway and smallest in Finland.



Figure 10. 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: Norwegian Institute of Public Health. 2019. Indicators for Health Inequality in the Nordic Countries (Indikatorer Pa Sosial Ulikhet I De Nordiske Landene). Oslo: Norwegian Institute of Public Health. Based on: Health Behavior in School-aged Children (HBSC) Databank.

SOCIAL INEQUALITY

Two indicators were selected as a measure of social inequality itself: 1) Risk of poverty or social exclusion among 25-59-year-olds and; 2) Income inequality measured by the GINI coefficient.

Risk of poverty or social exclusion: Europe 2020 is a strategy developed by the European Union to foster sustainable development in its member countries. One of the major goals of this strategy is the improvement of living conditions and reduction of poverty. In order to achieve this, a set of economic and social indicators are provided, including one measuring the “at risk of poverty or social exclusion” rate (AROPE). This indicator aggregates three sub-indicators to create a measure of the share of the population that lives under poor social and economic conditions (Nikolka 2013). For a person to be at risk of poverty or social exclusion, one or more of three conditions must apply: 1) Disposable income of the person is below 60% of the national median net income (after social transfers); 2) Living under material deprivation, defined as not being able to afford at least four out of nine items viewed fundamental for a basic standard of living. The items include, among others, affording a car, a TV, being able to make payments on loans and mortgages and ability to heat the home; and 3) Living in a household with very low work intensity, defined as working less than 20 per cent of one’s work potential over a year for the working-age, non-student population (Eurostat 2013).

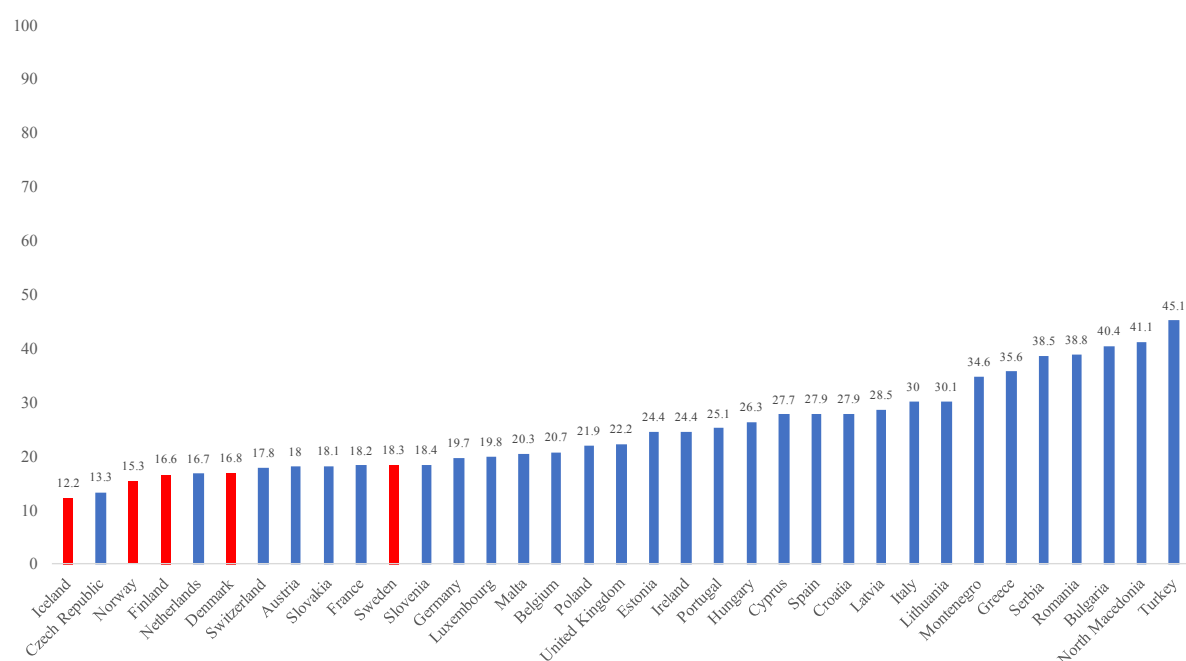


Figure 11. Proportion at risk of poverty or social exclusion in Europe in 2016.

Source: Eurostat

Figure 11 shows the proportions of populations in Europe that were at risk of poverty or social exclusion in 2016. Approximately 23% across the European Union fall into this category, but the variation is great, ranging from 12.2% in Iceland to over 40% in Bulgaria,

North Macedonia, and Turkey. The Nordic countries all have a relatively small proportion and four of the Nordic countries are among the six countries with the lowest proportion. Only Sweden is somewhat higher, and is the 11th lowest country, with 18.3% at risk of poverty or social exclusion.

Figure 12 shows the proportion of people at risk of poverty by educational level. The figure shows a clear gradient in all countries, where the highest proportion of those with only primary education being at risk of poverty or social exclusion. The difference between those with primary and tertiary education is largest in Finland and Sweden and smallest in Denmark and Iceland. Specifically, the range of the proportion at risk among those with only primary education ranges from a little over 20% in Iceland to over 35% in Sweden. The range for those with tertiary education is from under 10% in Finland, Iceland and Norway, to close to 15% in Denmark.

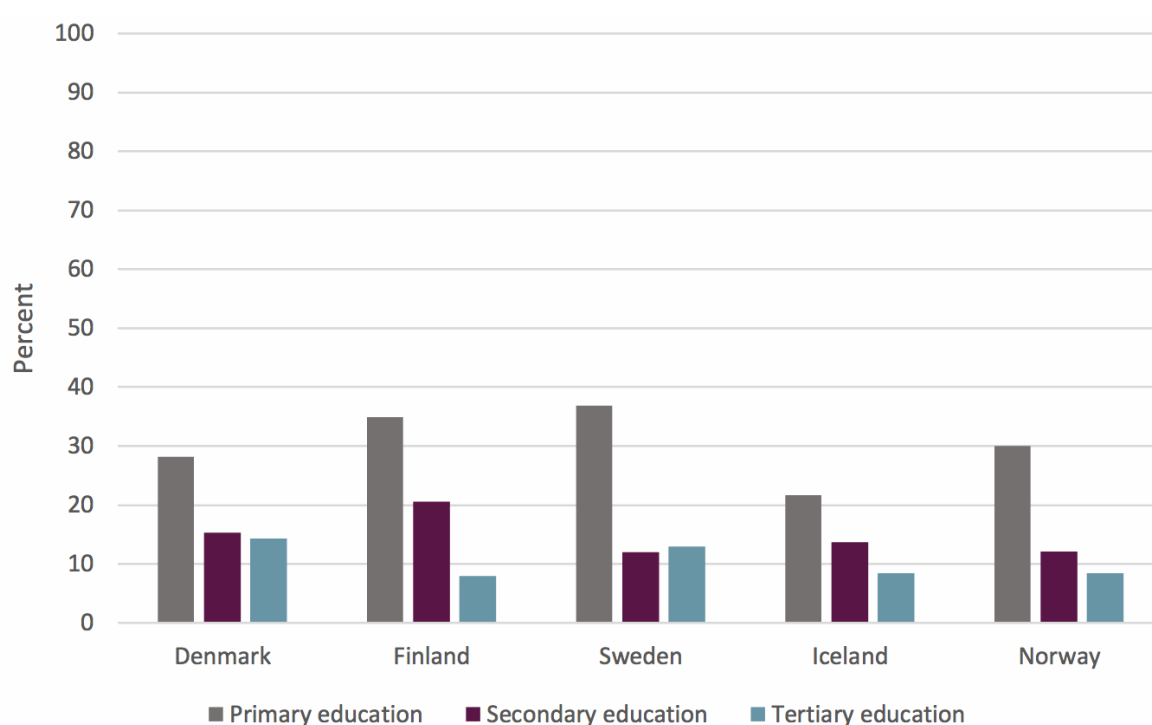
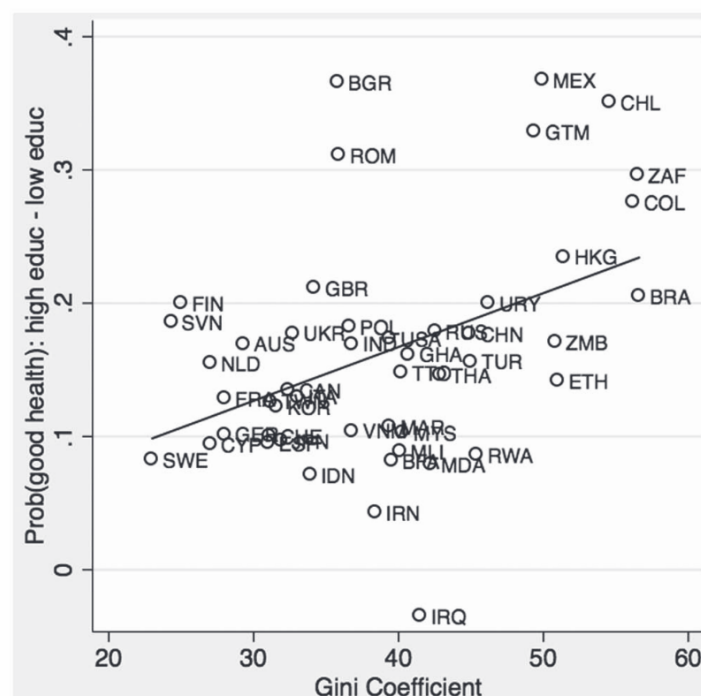


Figure 12. People (25-59 years) at risk of poverty or social exclusion by educational attainment. Primary education: ISCED levels 0-2, secondary education: ISCED levels 3-4, tertiary education: ISCED levels 5-8.

Source: Norwegian Institute of Public Health. 2019. Indicators for Health Inequality in the Nordic Countries (Indikatorer Pa Sosial Ulikhet I De Nordiske Landene). Oslo: Norwegian Institute of Public Health. Based on: Eurostat, European Survey on Income and Living Conditions (EU-SILC) Database.

Income inequality: The notion that income inequality is bad for our health has been one of the most tested hypotheses in medical sociology and public health for the past 40 years, or

ever since the first paper that showed a cross-sectional association between income inequality and aggregate health outcomes (Rodgers 1979). Richard Wilkinson has published most extensively on the hypothesis, arguing that it is not the richest societies in the world that are the healthiest, but rather those that are the most equal (Wilkinson 1996). Building upon this work, Wilkinson and colleagues have argued for specific mechanisms linking income equality and health, including social cohesion. The overall conclusion of this work is that there is no doubt that income inequality is associated with poorer health (Pickett and Wilkinson 2015), but there is still debate over whether this association is causal, and if it is causal, what mechanisms connect cause and effect.



the sizes of health inequalities between those with low education in a country and high education? Out of the four health inequalities, the strongest correlation was between income inequality and health inequalities based on education ($r = .43$), as illustrated in Figure 13 (Beckfield, Olafsdottir and Bakhtiari 2013).

Others have reached similar conclusions, leading sociologists to argue for the importance of evaluating both the direct and indirect effects of income inequality, where direct effects operate through changes in individual's own income, while indirect effects operate through changes in other people's income. The latter has a potential to change the larger structures of society, including political and economic institutions, social cohesion and culture. If a deeper understanding of the impact of income inequality is to be reached, we may also need to change how we think about the indicators we use and the methods we employ. What is particularly important here is to consider lag effects, as we may only be able to observe policy impact many years after specific policies are enacted (Truesdale and Jencks 2016), especially with highly-aggregated, on-average indicators such as life expectancy.

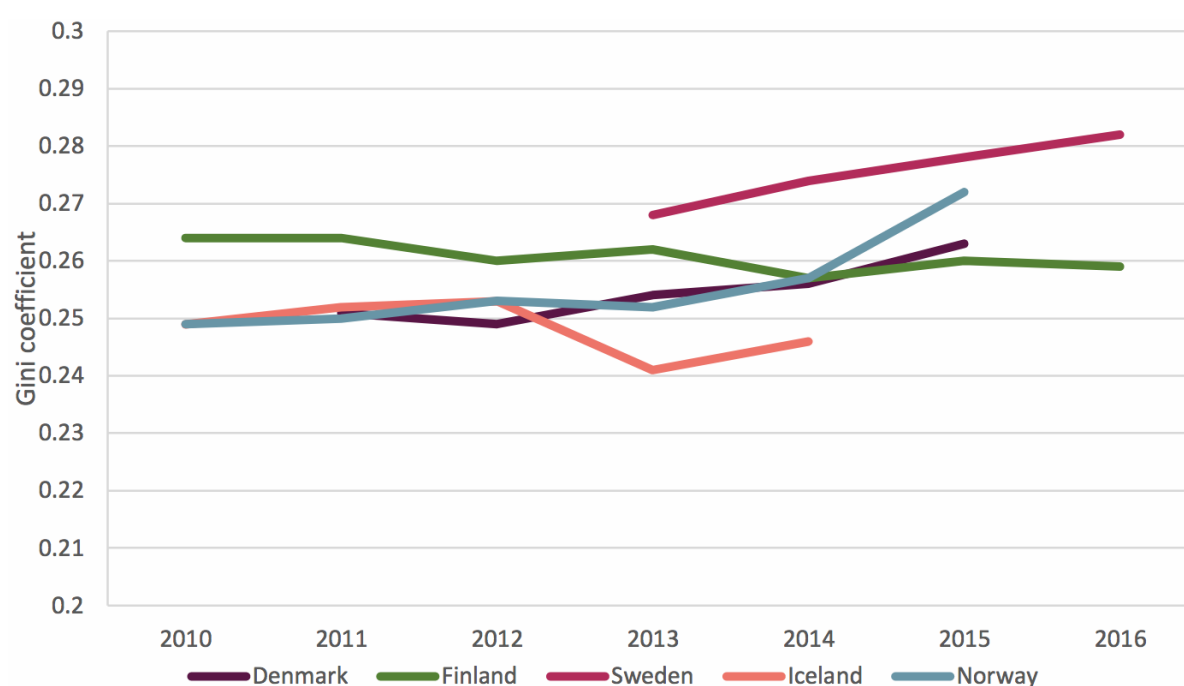


Figure 14. Income inequality (Gini coefficient in the Nordic countries, 2003-2015).

Source: Norwegian Institute of Public Health. 2019. Indicators for Health Inequality in the Nordic Countries (Indikatorer Pa Sosial Ulikhet I De Nordiske Landene). Oslo: Norwegian Institute of Public Health. Based on: OECD, Income Inequality.

Despite this criticism, income inequality continues to be an important macro-level indicator of health inequalities in a cross-national perspective. Income inequality is most frequently

measured using the Gini coefficient, originally proposed by Corrado Gini in 1912. It ranges from 0 to 1, where 0 means that there is perfect equality and everyone in society owns the same, and 1 refers to complete inequality where one person owns everything. Figure 14 shows changes in income inequality across the Nordic countries from 2003 to 2015. Based on this figure, income inequality was lowest in Iceland in 2014, and highest in Sweden.

UNDERSTANDING SOCIAL INEQUALITY IN CONTEXT

While it is critical to understand the relationship between various types of potential social inequality and different health outcomes, the key to reducing such inequalities lies in an understanding of the broader social context that individuals live in. Recently, Lynch (2020) points out the unbreakable relationship between health inequalities and other types of inequalities, arguing that the same mechanisms that are needed to reduce inequality in general also reduce health inequalities. Similarly, sociologists have criticized disease-specific risk-factor epidemiology, and instead proposed a broader way to understand social inequalities in health. Along those lines, Link and Phelan (1995) proposed the perspective of fundamental causes of health inequalities. They highlight the importance of turning the focus away from individual risk factors toward a more comprehensive understanding of the social context in which individuals reside. This can be done in two ways, specifically by: a) contextualizing risk factors; and b) considering the health effects of certain factors (e.g., class, gender or race/ethnicity) so profound and long-lasting that we should think about them as fundamental causes of health inequalities.

Contextualizing risk factors underscores the importance of understanding individual lives in contexts. This means that we need to understand how and why individuals make certain decisions that impact their health. A decision that comes easily to one individual may be nearly impossible for another one. For example, a request to practice safe sex is not the same request made by a woman forced into prostitution by a third-party, compared to a woman choosing to have sex with a partner in a loving relationship. Similarly, a decision to go for a run is different based on whether a person lives in a safe or a dangerous neighborhood (Link and Phelan 1995). Once we have directed our focus to the social context of health inequalities, Link and Phelan (1995) further argue that the relationship between certain factors and health are so persistent that they should be thought of as fundamental causes of health disparities. While their elaborations have largely focused on social class, multiple other factors can be thought of as fundamental causes including gender and race. In

more recent development, they have specified four essential features of a fundamental cause of health inequalities. First, a fundamental cause influences multiple disease outcomes. Second, it does so through multiple mechanisms, or links in causal chains. Third, it contains access to resources that help people to avoid risks or minimize the consequences of a disease if it occurs. And finally, it is reproduced over time, indicating that socially advantaged people can attain better health even when specific disease threats change, as in for instance the COVID pandemic. Such resources include knowledge, money, power, prestige and social connections. The key is that these resources are flexible, beneficial in multiple situations, and can be used repeatedly (Phelan, Link and Tehranifar 2010).

Empirical tests of the theory have largely been quantitative, often within a single society. This research has shown larger socio-economic differences for health conditions that are preventable, indicating that individuals with more resources can indeed transfer these into better health for conditions where that is possible (Phelan and Link 2005). A specific example illustrates that while socioeconomic differences were absent in rates of cervical and breast cancer, differences based on education and income emerged once screening became available. The reason was that those with more of these resources were more likely to be screened for cancer once that advantage was available (Link et al. 1998). Moving into a cross-national context, a study comparing 20 European populations found that, just as in the U.S., relative declines in mortality are larger among those with higher levels of education, compared to those with lower levels of education, and that inequalities in mortality declines are higher among preventable causes of death (Mackenbach et al. 2017).

While research has often supported the fundamental cause perspective, it is important to understand the specific mechanisms and processes that produce health inequalities. This can be done in multiple ways, but two approaches include more nuanced quantitative comparisons of fewer countries and a qualitative approach using a case study. For the former, a comparison of the U.S. and Iceland, two capitalist countries with drastically different approaches to inequalities, found that education and living in relative poverty had the same effect on self-assessed health in the two societies. However, and in support of fundamental cause theory, the results indicated that those living in relative affluence could translate their resources into better health in the U.S., but not in Iceland. Extending the notion of a fundamental cause to gender and family status, the findings further indicated that being a parent, especially a single parent, was significantly better for health in Iceland than in the U.S. Figure 15 illustrates this relationship in more detail, showing that the gap between those

who are more advanced, in terms of education and income, is smaller in Iceland, when examined across gender and family status. This may indicate that the more extensive family policies and less stigma surrounding single parenthood in Iceland may act as a buffer against the negative health consequences of single parenthood (Olafsdottir 2007).

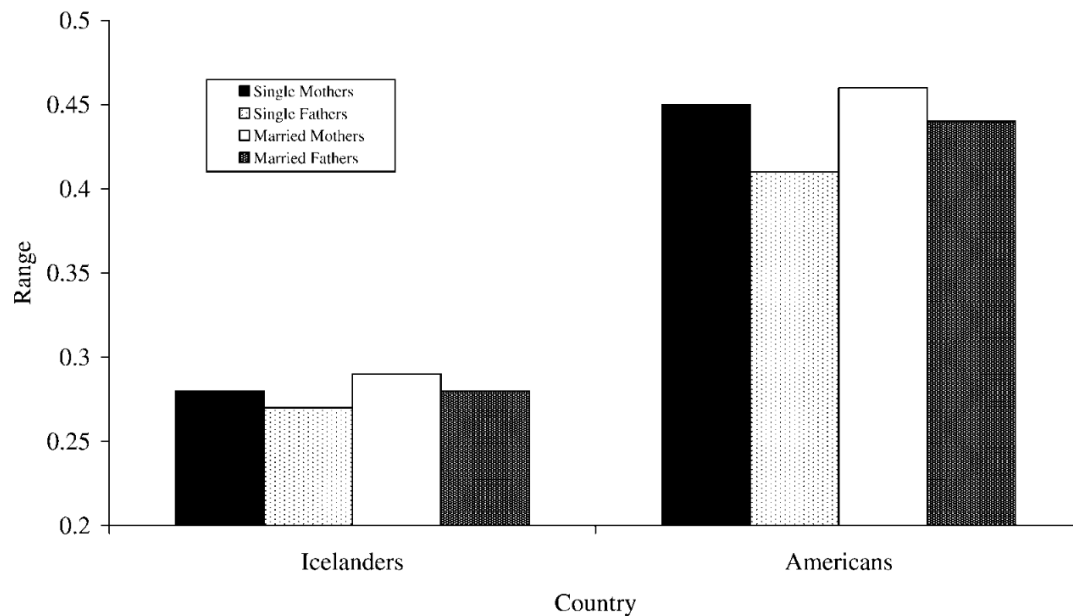


Figure 15. The gap between those disadvantaged and advantaged for reporting very good health, by gender and family status. Source: Olafsdottir 2007.

Qualitative case studies have provided important insights into how multiple decisions, or non-decisions, made by individuals translate into health outcomes. Studying two diabetes clinics in a single metropolitan area, Lutfey and Freese (2005) show that multiple disadvantages experienced by those of lower socioeconomic status, for example in terms of being able to get off work, having continuous care or capabilities to store insulin, translated into multiple disadvantages when it came to following the regimen required to manage the diabetes. Similarly, research on diabetes patients in Ireland showed that those with higher socioeconomic status were better equipped to address barriers encountered by all patients that would stand in the way of managing their diabetes (O'Donnell 2020).

In sum, the fundamental cause perspective is a contemporary, well-supported theory of the creation and maintenance of health inequalities. It highlights two key aspects that need to be addressed if we want to understand and combat health inequalities: consider health inequalities within social context, and use theory to understand why certain relationships, for example between social class and health, remain across contexts and over-time. This mirrors what Krieger (2001) pointed out almost 20 years ago, arguing that much research on health

inequalities suffers from a lack of theory and too much focus on finding relationships. This is problematic as theory is our tool to think critically and systematically about what causes health inequalities and to know which questions to ask within and across contexts. Therefore, careful theoretical development of what creates and maintains health inequalities is crucial for successful policy making within the Nordic context, as an understanding of why certain relationships emerge and/or remain is the key to combating health inequalities.

CURRENT THREATS TO HEALTH: CLIMATE CHANGE AND COVID-19

The relationship between climate change and health

Climate change represents the social problem of our times. Scholars, across disciplines, have addressed this in varying ways, including what the consequences are likely to be on human lives and communities throughout the world. In turn, research focusing on the health consequences of climate change have begun to appear (Friel 2018). A potential link between the environment and health outcomes has long been identified, including that environmental threats such as presence of hazardous waste sites and facilities or exposure to pollution and environmental hazards is not equally distributed throughout the population, where individual position in the class and/or racial hierarchy clearly matters (Brown 1995). Along these lines, Klinenberg (2002) examined the 1995 heatwave in Chicago asking the question why so many elderly people died alone. His conclusion was that the social organization of neighborhoods, as well as social isolation of people within these neighborhoods, played a key role in the ways in how heatwave deaths were distributed in the city. Concerns about environmental impacts on health and health inequalities are therefore not new, but take a different form under the threat of climate change.

Researchers have pointed out and empirically verified how various factors related to climate change and the environment can impact health and health inequalities, with the general consensus being that the negative impact is most likely to be felt the hardest in countries that contribute the least to the problem (Friel 2019). This means that wealthy countries, including the Nordic countries, contribute the most to the processes that are causing climate change, but the burden of the negative health consequences falls disproportionately on poorer nations closer to the equator. But what are the specific issues related to global climate change that impact health and health inequalities? Various factors have been pointed out, including the effects of extreme temperatures in both directions, the effects of flooding and drought, and how the environmental changes we are going through

may change the spread of various infectious diseases (Sunyer and Grimalt 2006). Focusing on the U.K., Paavola (2017) points out that the effects of climate change will be to exacerbate existing health problems and health inequalities and identifies hotter summers, heatwaves, milder winters, pollen, flooding, air pollution, emerging infections and food safety as the most important factors related to climate change that will influence health. What is even more important is that these factors will not affect the whole population in the same manner but will instead put the most vulnerable at higher risk due to different levels of exposure, vulnerability and capacity. Age, pre-existing medical conditions, social exclusion, gender, location of residence, isolation, and marginalization all impact vulnerability.

While the problems associated with climate change are global in nature, they are of course also local and different societies face different challenges. A review comparing how the Nordic countries are vulnerable in terms of infrastructure due to extreme weather effects has identified threats that are relevant in all Nordic countries as well as more specific to certain countries. For example, windstorms threaten electricity distribution and information and communication technology in all Nordic countries, while flooding is a potential problem in all countries but likely to impact different types of infrastructure. It threatens water infrastructure in Denmark; roads and housing infrastructure in Finland; transport, agriculture and housing infrastructure in Iceland; and railroads, paved and forest roads, bridges, dams and culverts in Norway. Other threats identified are high precipitation, melting snow, snowfall, wildfires and water level rise (Silvast et al. 2021). All these can and do threaten the lives and well-being of the population and importantly, some segments of the population will be better equipped to ameliorate negative effects. The theory of fundamental causes of health inequalities anticipates this, in predicting that those with more resources will be better equipped to avoid the risk of these events as well as to minimize the consequences of them if they do occur in their lives.

The threat of climate change is not only relevant for health outcomes but can also threaten the health system itself. The potential health problems that arise from environmental changes can put pressures on health and social systems, that in many cases already face multiple challenges (Curtis et al. 2017) and those pressures can be related to both physical and mental health problems (Paavola 2017). It is clear that the environmental challenges that we face are likely to impact health and well-being of people in the Nordic countries and the policies that are designed to address climate change will likely have both negative and positive consequences for the population. If they are well designed, they may result in

economic and social benefits with the potential to reduce poverty and address health inequalities. But just as climate change impacts groups differently, so can the policies designed to address it and poor and marginalized groups may be at most risk for negative impact of poorly designed policies (Markkanen and Anger-Kraavi 2019). While it may be somewhat uncertain what particular health threats will emerge in the Nordic countries due to climate change, it is certain that they will not affect all groups equally and it is crucial for policymakers to identify vulnerable groups and to rely on insights from theory and research to understand how and why those groups are likely to be particularly vulnerable. Such an approach may well challenge the universalist approach to social policy that has been the hallmark of the Nordic welfare state, in that it requires attention not just to equality, but also to equity.

COVID-19 and health inequalities

While health threats of climate change will play out over decades and more, the health threats of COVID-19 were sudden and seemed to transform societies overnight. The first set of concerns were clearly health related, as the threat of contracting the virus, getting sick and potentially dying from it was real and immediate. The second set of concerns followed quickly as societies and economies around the world shut down to a varying degree. Livelihoods were threatened, and again we saw how some groups in society are clearly more vulnerable. The third set of concerns is what the pandemic does to our social lives, as one of the main strategies in preventing the spread of the outbreak has been physical distancing and isolation, which may affect mental and physical health for years to come.

Contradicting the myth that a pandemic can be a great equalizer in that a virus targets all humans rich and poor, research on pandemics has long shown that they do not impact us all equally. For example, in the 1918 influenza pandemic, mortality rates were highest in the working-class districts in Oslo. Similar inequalities were shown in the 2009 H1N1 influenza pandemic. Research conducted thus far on COVID-19 illustrates similar patterns (Bambra et al. 2020). As an example, research in the U.S. has shown that the risk of death from COVID-19 is highest in the most deprived areas (Chen and Krieger 2020). For instance, the mortality rate from COVID-19 is 34.8 per 100,000 population for Blacks in segregated Chicago, vs. 8.2 per 100,000 for whites in the same city (Bambra et al. 2020).

It can be argued that the COVID-19 pandemic has not created new set of problems, but rather made social problems and inequalities already existing more visible. Bambra et al

(2020) argue that COVID-19 acts as a syndemic, where the new health threat interacts and exaggerates the pre-existing health problems and social conditions. The groups that they mention as particularly vulnerable include minority racialized/ethnic groups and people living in socioeconomic deprivation and poverty, as these groups suffer higher rates of pre-existing conditions that are, at least in part, caused by a more vulnerable position in where they 'live, work, grow and age' (Bambra et al 2020:965).

The Nordic countries responded quite differently to the COVID-19 pandemic, and thus the rates of infections and death rates vary. Figure 16 shows the number of deaths per 100,000 population across the Nordic countries. The figure shows that death rates are higher in Sweden than the other countries (139,93 per 100,000 population) and lowest in Iceland (8,24 per population). The other countries fall in between, with both Norway and Finland a little higher than Iceland and Denmark substantially higher (43,21 per 100,000 population).

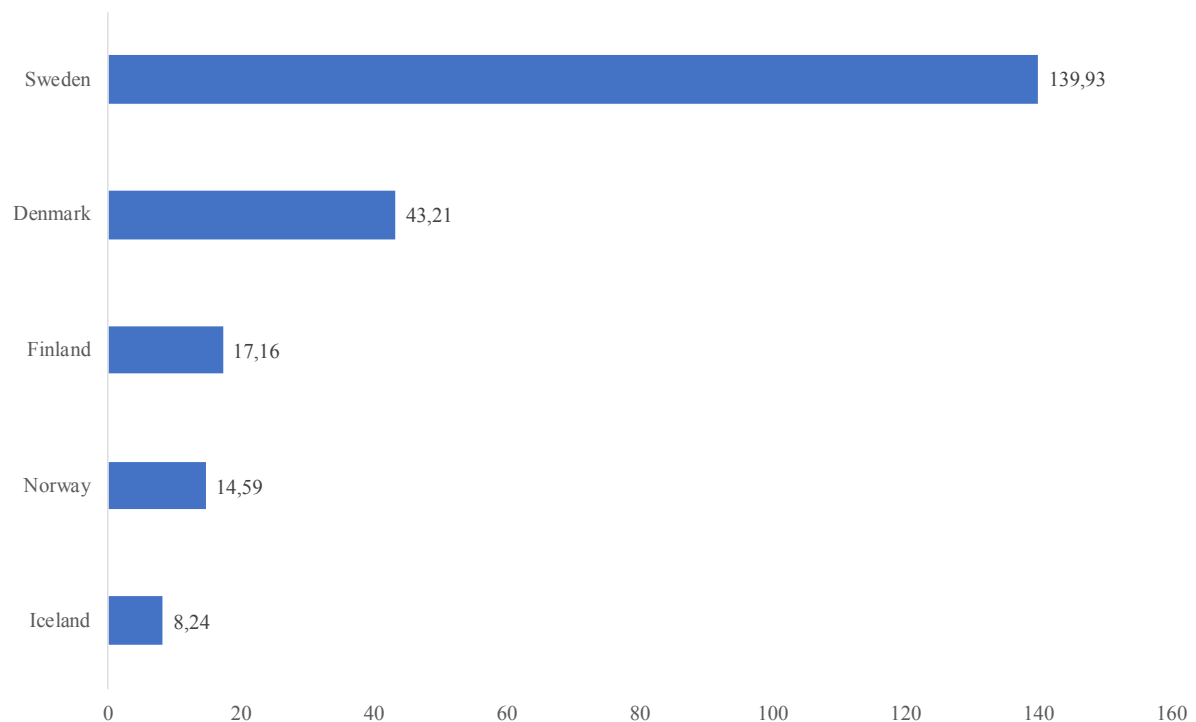


Figure 16. Number of deaths from COVID-19 per 100,000 population in the Nordic countries.

Source: World Health Organization

Such differences raise important questions for the research community to answer in the coming years. It seems likely that policy plays a role, although interestingly Iceland and Sweden took a relatively softer measures than the other countries. The first case of COVID-19 was reported in Iceland on February 28th and authorities acted quickly, for example by daily

press conferences that were led by a trio of experts. The Icelandic authorities relied on evidence-based measures, including quarantine and isolation for infected persons, bans on gatherings, and closures of schools, especially at the upper-levels. However, Iceland avoided complete lockdown (Ólafsson 2021). In this way at least, the Icelandic approach resonated with the Swedish approach, with a strong reliance on public health authorities and an emphasis on recommendations, rather than legal restrictions and lockdowns. However, and surprisingly, it became clear that Sweden was unable to accomplish the planned targeted protection of their most vulnerable groups. It is important to note that one reason for the Swedish approach is different regulations when it comes to declaring stages of emergency, which can only be done during wartime (Johanson and Vigsø 2021). In contrast, the Norwegian government implemented a lockdown of society on March 12th, under the *Act on Prevention of Transmittable Diseases* and later granted more extensive permissions to the government by passing a specific *Corona Act* (Kalsnes and Skogerbø).

Resulting from these different responses, Iceland has been held up as an exemplar of effective responses to the pandemic in some international media (e.g., (Kolbert 2020), while Sweden has been among the countries that have been criticized most harshly (e.g., (Milne 2020)). What the pandemic has revealed across societies is that in addition to creating new problems, it also worsened existing societal problems, including health inequalities (Bambra et al. 2020). Swedish refugees were already facing various challenges before the pandemic hit, including disadvantage in the labor market, poor health, bad living conditions, less access to health care and difficulties understanding health information effectively. This situation has, not surprisingly, resulted in higher death rates among migrants than among the rest of the population (Elisabeth, Maneesh and Michael 2020). Looking at specific national groups, Valeriani and colleagues (2020) show that the incidence rates are highest among those born in Turkey (753 per 100,000 population), followed by Ethiopia (742 per 100,000 population) and Somalia (660 per 100,000 population). The comparison with those born in Sweden shows that the incident rate for that group is a much lower 189 per 100,000 people. Gender differences also matter: whereas women born in Ethiopia and Somalia have higher incidence rates than men, men born in Turkey and Ethiopia have higher incidence rates than women. These inequalities likely generalize beyond Sweden, since pre-existing health inequalities, including by class, gender or race/ethnicity/migration status, usually grow in pandemics.

The social threats of COVID-19 extend to many domains of life beyond health and healthcare. The social and economic consequences have already been enormous and we may be dealing with them for years to come. Some may be rather obvious, for example the impact on those who have lost their jobs or even their careers, but others may be more subtle, impacting how we live and organize our daily lives. For instance, research is emerging, both internationally and within the Nordic countries, on the gendered aspects of COVID-19 that result for more negative consequences on the lives of women. The reasons include that women are more likely to be employed in many of the jobs that are most demanding during the pandemic and that they usually carry a heavier load related to managing family life during times of COVID-19. More specifically, research in the U.S. has shown that mothers with young children reduced their work hours four to five times the amount that fathers reduced theirs (Collins et al. 2021b). Additionally, the gender gap in labor force participation between mothers and fathers grew more in states where schools were not operating (Collins et al. 2021a). Comparative research shows that COVID-19 seems to have eroded traditional gender roles in Australia, with fathers participating more in childcare and housework, while those roles have been reinforced in the U.S., with responsibility related to children and family mostly falling on women's shoulders (Ruppanner et al. 2021). Iceland, at the top of the Gender Gap index for the past several years, shows similar trends. Icelandic mothers took on greater mental and emotional work than before and viewed it as their role to keep everyone calm and safe. This situation often resulted in stress and frustration, which has been shown to result in negative long-term health consequences (Hjálmsdóttir and Bjarnadóttir 2021).

It is clear that COVID-19 will have major health implications around the world in the years to come, and based on everything we know from research, they will be patterned by health inequalities. We already know much about what kind of inequalities exist in the Nordic countries and have identified the groups that already are vulnerable. These findings should be kept in mind when we consider the impact of COVID-19 on health and our responses should be designed with these pre-existing inequalities in mind. It is also important to highlight the pandemic as a much broader threat than a health threat, as the economic and social consequences may impact our lives and our health for years to come. Finally, we must consider how the events that take place during the pandemic impact different groups, as highlighted in the example of gendered reality of COVID-19, even in the country where gender equality is often ranked as number one in the world.

CONCLUSION

In this report, the first task was to give an overview of the seven indicators that were selected as key measures to compare health inequalities in the Nordic countries and provide insights into what research has found regarding these indicators and why they are theoretically good indicators to evaluate health inequalities. The task of the group that selected the indicators was nearly impossible, with limiting the selection to only seven. While the selection of them is commendable, it must also be kept in mind that there are multiple sources of inequalities that are important to monitor but are not captured in the indicators. In addition, it is critical to consider the intersectionality of inequalities. Individuals can have advantage on one axis but disadvantages on another, cumulative multiple advantages as in the case of native-born Nordic men, or multiple disadvantages as in the case of migrant service-class women.

The second task was to briefly consider some key issues that currently threaten our health and are likely to impact health inequalities. Here, I selected climate change and COVID-19. While research in these areas is only emerging and the long-term consequences are speculative, we can gain insights from previous work on how major societal shocks have affected health and health inequalities. Along these lines, Copeland and colleagues (2015) have shown that the 1990 and 2007 recessions in England and Sweden impacted the health of women in a positive way, but not men. More importantly, the patterns of improvements varied with education: in England the health of more educated women improved while the health of less educated women declined. In Sweden, the health of all women improved, and more so for highly educated women. Research has also shown that what governments do to respond to economic crises matters and the adverse population health effects in countries. For instance, Iceland and the U.S. each provided economic stimulus following the 2008 recession, and saw smaller increases in inequality than in Spain, Greece or the United Kingdom, which each implemented austerity (Stuckler and Basu). Similar patterns were found of the 1990s recession in Scandinavia, where more generous provision resulted in less negative health effects, and especially less health inequality (Lahelma et al. 2002).

When thinking about policies, it is important to distinguish between equality and equity. The former refers to distributing the same resources to all, while the latter prioritizes those with the greatest need (Markkanen and Anger-Kraavi 2019). The Nordic welfare state emphasizes universality in its policymaking, which has multiple advantage when it comes to the well-being of the population. However, in the times of great challenges, it may be more effective to strike a balance between equality and equity, to make sure that those who are

most vulnerable in society are reached. Research has shown that the goals of improving population health and reducing health inequalities are not always compatible. For example, it has been shown that a more encompassing welfare state improves the average health of society but does little to decrease the inequalities between immigrants and the native population (Bakhtiari, Olafsdottir and Beckfield 2018). Social policy must keep pace with social problems.

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