The Nordic Experience: Welfare States and Public Health (NEWS)

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Health Equity Studies No 12
Centre for Health Equity Studies (CHESS)
Stockholm University/Karolinska Institutet
August 2008
Executive summary

The idea

- The Nordic welfare states are distinguished by their emphasis on universal social policies rather than through a reliance on targeted, selective and means-tested policies.
- The Nordic countries have been successful in reducing poverty and fostering equality of opportunity as well as equality of outcomes, both with regard to class, income and gender.
- By providing many citizens with welfare resources through welfare state institutions, universal social policies are also likely to affect public health.
- The analytical approach has been both historical and comparative, which will add to the applicability of the findings.
- The importance of specific social policies and interventions for health and survival has been studied by analysing qualitative differences between policy schemes, not only by comparing clusters of countries with different types of welfare state.

The Nordic countries, past and present

- The Nordic countries share many historical experiences. Over long periods of history they were united in various constellations, something which is also likely to have resulted in many cultural and societal similarities.
- The Nordic welfare states were gradually developed from the mid 20th century and onwards. They have many similar characteristics at the institutional level and with regard to policy ambition and equality. Typical features include universalistic social programs, a broad scope of public services, provision of services mainly by the public sector at local level, financing through taxes, and relatively small inequalities both between social classes and between women and men.
- The Nordic countries are often seen as one distinct cluster of welfare states. The general approach in this study is to go beyond cluster
comparisons and focus on more specific characteristics of welfare arrangements and analyse their impact on population health.

- The Nordic welfare states can be characterised by three common features: they are comprehensive, institutionalised and universalistic.

### Population health development

- Over the 20th century we find a spectacular decrease in infant mortality. In Finland, for example, there was a fifty-fold decline during the 20th century. The Nordic countries are in the lead in infant survival.
- The gains in life expectancy at age 65 over the last four decades have been lower in Nordic countries than in many others, partly because of a fairly slow increase in Denmark.
- In terms of individual variability in age at death, Nordic countries are performing better than others, with the United States in particular performing less well.
- In relative terms, inequalities between social groups are not smaller in the Nordic countries than in other European nations, but in terms of absolute levels of mortality among manual workers Norway and Sweden are faring better than most other countries.

### General impact of social policy, poverty and inequality

- Nordic countries have internationally low poverty rates, an outcome that seems to be strongly influenced by the welfare state redistributive system.
- The Nordic countries are distinctive for their low poverty rates among socially vulnerable groups, such as families with many children, single parents and the elderly.
- Low poverty rates and a compressed income distribution are beneficial to public health, if we assume that there is a curvilinear association between income and health. This association is likely to be the product of a multitude of factors. In general, command over the resources by which we can control and consciously direct our conditions of life is of vital importance to health. These resources include both the material and the intangible.
- Various indicators of welfare state characteristics and ambitions, such as social spending and the coverage of social insurances, have a significant impact on overall life expectancy when studied across 17 OECD-countries between 1900 and 2000.
Specific impact of social policy across the life course

- Nordic countries managed to dramatically reduce infant and child mortality as far back as the 19th century while they were still relatively poor. Important factors behind this include early monitoring of births and deaths, successful implementation of new ideas and techniques, and a combination of central government and local-level actors, including NGOs. This combination is likely to have increased compliance.

- An analysis of reductions in child diarrhoea mortality in Stockholm around 1900 highlights that economic progress must be translated into specific health-improving interventions. When these interventions were general, affecting the whole population, they also benefited lower social classes more.

- Family policy legislation, in particular dual-earner family support, seems to have become of importance for cross-national differences in infant mortality in present day OECD-countries, while GDP seems to have become less important. These family policies are particularly developed in the Nordic countries.

- With the exception of Denmark there is a Nordic model of alcohol control that is linked to lower levels of consumption, lower levels of liver cirrhosis mortality and other alcohol-related mortality, and social problems due to alcohol.

- Comparing countries, excess mortality among the elderly in the post-war period is related to changes in public pension rights, when the economic development of the country is controlled for. The more generous the basic security pensions the lower the excess mortality among the old. In countries with more generous pensions there is less ill-health among the elderly.

Lessons to be learned

- Universal social policies, in particular income transfer programmes, have positive health consequences. This conclusion is of relevance also from a global perspective.

- Systems and structures for data collection and processing are important preconditions for social and public health policies. Vital statistics and monitoring of mortality, health and social conditions should provide a knowledge basis for policy formation.

- While the effect on public health of each specific policy might be small, the combined effect of all policies and institutions is likely to be substantial. This is especially true from a life-course perspective, where a life with access to resources provided by the welfare state,
in addition to the resources of the market and the family, is likely to be longer.

- Alcohol consumption is rising in many countries, and alcohol is estimated to be the most important contributor to the burden of death also in middle-income countries. Hence, alcohol control policies are one example of a policy area in which the Nordic experience is of obvious interest.

- Few of the policies reviewed were specific Nordic inventions but rather ideas imported from other countries. The successful implementation of policies appears to be the key factor. The short distance between local actors and the population in the Nordic countries seems to have increased public acceptance and compliance.

- The Nordic countries are not alone in doing well in terms of public health, which suggest that there are a number of recipes for success. On the other hand our results suggest that residual social policies are a less efficient road to good public health.
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The idea to map out the Nordic experience of welfare policy and public health was launched in a dialogue between researchers at the Centre of Health Equity Studies (CHESS) and the Director of the WHO Commission on Social Determinants of Health (CSDH), Professor Sir Michael Marmot. A letter from Professor Marmot to Professor Denny Vågerö, dated April 6 2005, confirms that the CSDH asks for a study “... of the long-term impact of Swedish and Nordic welfare and egalitarian policies on health”. The project, which was given the name The Nordic Experience: Welfare States and public health (in short the NEWS project) started officially during fall 2005 when the Swedish Ministry of Health and Social Affairs agreed on financing the project, on the request of the CSDH. Since then a considerable amount of people, all of them at the front line of social policy and health equity research, have been involved in the process of writing this report.

The project has been coordinated by a core team of researchers at CHESS under the leadership of Olle Lundberg, Professor of Health Equity Studies and Johan Fritzell, Professor of Sociology. A Nordic group of experts comprising researchers from several disciplines were appointed early. This group has taken part actively in the work throughout the project by contributing ideas, by producing papers and by discussing individual papers as well as drafts of the final report.

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The first step in the work process was to identify key policy areas and issues to be included in the report. This was done in close collaboration with the Nordic expert group. To cover these policy areas, researchers with expertise within specific knowledge fields and experience of comparative research were contacted and commissioned to write papers on key topics to be treated in the report. Altogether 15 papers were commissioned and delivered to the project by external researchers (see Appendix 1). In order to ensure scientific quality and relevance all of these papers have been discussed at scientific seminars where external commentators have been invited. In addition to the writers and commentators the Nordic expert group and the core team have participated in these seminars. The commissioned papers will be published separately.

In a second step commissioned papers as well as in-house reports have formed the basis for this final report from the NEWS project. In this process the core team at CHESS has identified and extracted the essential theoretical arguments and the key findings from the material available, including also the published literature. The report thereby produced has been discussed at different stages with the Nordic expert group, and has been subject to comments from external commentators at a final seminar in March 2007.

During this process the CSDH has been informed on the progress of the work. Preliminary results were presented at a seminar at University College London in June 2006 and at the 6th meeting of the Commission held in Rio de Janeiro in September 2006. The main findings of the report were presented at a seminar at University College London on October 5 2007.

The core funding for the project has been supplied by the Swedish Ministry of Health and Social Affairs and by CHESS. In addition the Finnish National Research and Development centre for Welfare and Health (STAKES) has supported the project by letting Mikko Kautto and Pasi Moisio undertake work for the project. Likewise, the Norwegian Directorate for Health and Social Affairs supported the project financially by funding the work

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undertaken by Jon Ivar Elstad for the project. We have also benefited from the support by the Institute for Futures Studies, Stockholm.

When writing the report we have benefited from all our colleagues at CHESS – you provide a truly stimulating and friendly work environment! In particular we would like to thank Gabriella Olsson for assistance on various matters and Ylva Almquist for skilful work with text, layout and cover during the final phase of the work. We also thank Judith Black for her professional work with language editing.

This report is to a large extent based on the commissioned papers, and important input has also been made by our colleagues in the Nordic Expert Group and by the external commentators. Also Denny Vågerö and other individual members of the CSDH have given comments on parts of the report. However, the authors are fully responsible for the results, conclusions and discussions presented in this report. The opinions expressed are not necessarily shared by the researchers who have contributed, by the organisations who have contributed to the funding of the project or by the CSDH.

Stockholm in August 2008

The authors
I. INTRODUCTION

Although diseases and their consequences in terms of suffering, reduced function and premature mortality are biological events taking place in human organs, their ultimate causes are often social rather than biological in nature. The social aspects of disease and mortality are particularly central when we discuss ways to improve the health of nations and populations. Biological disease processes are clearly important, but the distribution of health risks, including biological ones such as exposure to certain bacteria, is usually socially determined. Prevention, therefore, is largely an issue of social rather than biological change. This is also true for the treatment of disease as long as the availability of medical care and proper medication are not distributed on the basis of need only.

Hence, the social distribution of determinants of health is central to the improvement of public health, both inside and between countries. For example, the consequences of HIV for the human immune system are certainly the result of biological processes, while the AIDS epidemic is very much a consequence of poverty, poor education and unequal power relations between men and women. The same could be said for TB and other contagious diseases throughout history; improving people’s social conditions through schooling, poverty reduction and better housing, are important means for combating disease. Needless to say, medical interventions such as immunisation and treatment are also important, but there is a social dimension to these services too. While the examples above refer to infectious diseases, there is a social distribution of determinants also for chronic diseases, and this is true for rich and poor countries alike.

Over the past century, social developments have brought about massive improvements in economic, social and political conditions for most people in many countries. The ‘state’ has been transformed into the ‘welfare state’, and ‘citizenship’ into ‘social citizenship’ (see Marshall, 1950), at least in the West. However, while many countries have become richer and implemented social and political reforms, there are clear differences in the way they have designed their welfare state institutions. These differences tend to be characterised according to the differing relative importance of the market, the state and the family for the provision of protection and services. In other
words, the main responsibility for common problems faced by most individuals in all societies, such as care of small children and of the old, health care, schooling, and economic security for the sick, the unemployed and the old, can be given primarily to the individual through the market, or to the family, or to the state. The Nordic countries are usually seen as a specific type of welfare state in which the state has assumed a greater than usual responsibility for social protection and care services. The Nordic welfare states have also been regarded as consciously promoting class and gender equality, high labour market participation, low poverty rates and a high degree of social participation.

How might the Nordic experience of social development through active policy-making be of relevance for the WHO and its Commission on Social Determinants of Health? There are at least two points we wish to highlight here. Firstly, the growth of the welfare state in the Nordic countries has been accompanied by considerable improvements in public health. Several of the Nordic countries were world leaders in life expectancy and infant mortality throughout the 20th century. Secondly, the Nordic welfare state model has had the explicit goal of strengthening and expanding the resources available to its citizens through welfare state institutions. Rather than being solely dependent on the resources generated by the market or within the family, Nordic citizens have in addition been able to draw on resources provided by the welfare state. Thus, the economic consequences of reduced working ability due to sickness or old age have been cushioned, the professionalization of care for children and the old has relieved families of care burdens, and public day-care and public schooling of high quality for all children has evened out differences in life chances.

Although many of these social policies were implemented to achieve a better society for the majority of citizens rather than primarily to improve public health, they seem incidentally to have targeted factors that constitute the core social determinants of health. But while an association between social policies and public health seems highly plausible there is a need for more systematic evidence on the issue. In this report we will therefore make a first attempt to provide analyses of the extent to which the Nordic welfare state model has actually contributed to improved public health, and we will do so on basis of new as well as existing research from a variety of disciplines.

1.1 Why is the Nordic Experience interesting?

When addressing the Social Determinants of Health we explicitly focus on the social distribution of structural conditions that are important for health as
well as more direct health risks, both within and between countries. The social determinants include a range of factors such as literacy, poverty and access to clean water. Hence, policies for tackling the social determinants of health must address factors such as water supply and immunization programs as well as more general social, educational and economic policies. While such more general policies have been studied with regard to their importance for e.g. poverty or economic growth, very few systematic analyses of their importance for public health have been carried out.

Denmark, Finland, Iceland, Norway and Sweden are a group of countries that are not only geographically distinct but also in part share a common history. They have developed institutionally, economically and politically into a specific Nordic model with certain distinct and globally quite unusual characteristics. The degree of similarity between the Nordic countries is quite often exaggerated and detailed analyses of these countries do indeed reveal major differences (e.g. Kautto et al. 1999; 2001), including public health. We nevertheless believe that the similarities are great enough to enable us to analyze the common Nordic experience and its possible long-term impact on public health.

What, then, are these common characteristics and their achievements, and why do we believe that the Nordic experience is relevant not only for developed countries but also for countries and citizens around the globe? It is the social achievements of the Nordic model that have tended to interest politicians and scientists. The Nordic countries are often found among the world’s leading nations in terms of economic and social performance, for example according to the Human Development Index, the World Economic Forum’s Gender Gap index and Competitiveness Report, and Transparency International’s corruption index. While economic performance, social development and fair play are important aspects of a good society in their own right, they are also important components of macro-level social determinants of health.
While the Nordic countries do not top all population health indicators, it is safe to say that their public health experience, which has long been reflected in major population health statistics, is good enough to be of international interest. A good first illustration of this are the life expectancy figures for Sweden, France and England & Wales from 1800 and onwards (Figure 1.1).

As can be seen from the figure, there has been a Swedish advantage in male life expectancy at least since 1860, an advantage that lasts into present times although differences become smaller as life expectancy improves in all three countries. Looking more closely on the development since the early 1960s we find that the Nordic countries (with the exception of Finland) have been among the leading countries in terms of over-all life expectancy (Figure 1.2). In general there have been considerable improvements of life expectancy during this period in all of the 15 countries included here. Although the Nordic experience is somewhat mixed, and partly overshadowed by the Japanese development, it is of interest to note that in particular Sweden and Iceland, but also Norway, continues to be among the international leaders in terms of life expectancy at birth for both sexes combined (see further section 3.1).
Figure 1.2 Life expectancy at birth (e0), total for both sexes, 1960-2003/04, in fifteen high-income countries. Average, five-year periods. Source: Human Mortality Database (HMD 2006).

Figure 1.3 Under-five mortality among selected countries, 2004. Source WHO.
Figure 1.3 presents under-five mortality per 1,000 live births for selected countries around the world in comparison with the Nordic countries. Under-five mortality is one of the population health indicators targeted in the Millennium Goals of the UN. Although there are very small differences between developed countries, the five Nordic countries are nevertheless, together with Japan, all among the top nations. In a global ranking, Iceland and Singapore are the only two countries with a rate of 3/1000, while Finland, Norway and Sweden are among the seven countries with a rate of 4/1000 (the other four are Japan, Monaco, San Marino and Slovenia).

How, then, can we explain the public health status of the Nordic countries? This brings us back to the social and economic achievements of these countries, and more specifically to the type of welfare state model that has developed there. Some features, such as low poverty rates and equality of opportunity, are of great importance and value in their own right but can also be regarded as crucial social determinants of population health. We will accordingly pay close attention to these social characteristics and outcomes later in this report (a more in-depth description of the Nordic model is presented in section 2.1; for discussions of poverty see section 4.2; of women’s health see for example section 5.1.5).

A further reason for being interested in the Nordic welfare states is their macro-economic performance. Macro-economic development is fundamental for improving population health, even though there are large variations in public health between countries on the same economic level. Throughout the post-war era the Nordic states (with the exception of Finland) have been among the rich countries of the world. Lately they have attracted particular international interest for their economic performance. A number of supranational organisations have pointed out that the Nordic countries seem to have characteristics, institutions and populations that not only create relatively high levels of well-being and social equality but also foster economic growth. International comparisons have recently highlighted the economic competitiveness of the Nordic countries. The latest Global Competitiveness Report (2006-2007) from the World Economic Forum (2006), for example, ranks Switzerland, Finland, Sweden and Denmark as the world’s four most competitive economies. Thus, while it is sometimes claimed that expensive, comprehensive welfare states should find it difficult to survive in a globalised world, it may rather be argued that the Nordic countries are in fact better adapted to meet the challenges of globalisation, at least from a European perspective.

In what way, then, is the experience of the Nordic countries relevant for the WHO and for leaders and policymakers from low- and middle-income
countries? While historical circumstances are likely to differ considerably, in terms of political, economic and technical conditions, we would argue that the experiences accumulated in the Nordic countries over the past 100 years or more are highly relevant for today’s discussions about social and economic development and how to strengthen democratic processes around the world (see also Mkandawire 2005 on this point). While it is certainly true that the Nordic countries are among the richest in the world, with social protection programs in a class of their own, it is important to realise that this has not always been the case. In fact, many social reforms started as modest forms at a time when these countries were still fairly poor. We will return to the issue of the applicability of the Nordic experience in the final part of this report.

A more detailed account of the history, institutional characteristics and outcomes of the Nordic model will be presented in Chapter II. We will begin here, however, by considering the principle which most analysts see as being at the heart of the Nordic model, namely universalism (for a thorough conceptual discussion of universalism see e.g. Kildal & Kuhnle 2005). Universalism (and its opposite pole of selective, means-testing, residual, targeting) is always central to any discussion of whether any Nordic country has moved away from the ideal, typical Nordic welfare model. What, then, is universalism? And, more specifically, how might it be related to public health?

Universalism embodies the idea of social citizenship or social rights. As citizens in a society we have the right to certain benefits or social provisions. In welfare state theory the idea of citizenship and rights is very much linked to the writings of T-H Marshall (1950), who distinguished between civil rights, political rights and social rights. The welfare state programs that were developed in 20th century Europe tended to focus on social rights. A right is something fundamentally different from the old poor laws and services that many countries had introduced earlier. The adoption of universalism and social rights also touches upon more subtle, psychological issues of dignity and self-respect (see Titmuss 2001).

The basic difference between universal and targeted social policies is that the latter aim to protect only the poorest, and therefore apply means-testing, while the former cover larger segments of the population. In Nordic

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5 The concept of citizenship, often used in welfare state discussions, highlights a problematic feature of the present and future global world. If migration is to be increased should then universalism imply that social protection schemes should be allocated on other grounds of membership than citizenship?
countries social policy programs tend be general, in the sense that they include the whole population or the relevant section of it (for example, people permanently outside the labour market are not covered by unemployment insurance; people without children are not eligible for child benefits). An income transfer program such as the child benefit paid out to every household with children, irrespective of income or marital status, is a typical example. Public primary schools with no fees and public health services of good standard are examples of universal welfare services. Universal policies do not necessarily imply that all citizens get the same, yet all citizens at risk are insured and benefits are not at a minimum level or subject to means-testing. It should be noted, however, that even in Nordic countries, selective, residual programs based on means-testing often exist as complements to the universal programs.

Theoretically speaking there are numerous pros and cons to the principle of universalism versus more marginal, residual approaches. The major arguments in favour of universalism are linked to the belief that services and social insurances should be provided on the basis of social rights rather than the richer giving to the poor out of pity. This has been strongly stated by Richard Titmuss (2001, p. 117):

"There should be no sense of inferiority, pauperism, shame or stigma in the use of publicly provided service; no attribution that one was being or becoming a 'public burden'. Hence the emphasis on the social rights of all citizens to use or not to use as responsible people the services made available by the community in respect of certain needs which the private market and the family were unable or unwilling to provide universally. If these services were not provided for everybody by everybody, they would either not be available at all or only for those who could afford them, and for others on such terms as would involve the infliction of a sense of inferiority and stigma."

On the other hand, universalistic models are more expensive and require higher taxes, which have been seen as an economic disincentive and a hindrance to economic growth. However, these arguments have been questioned (e.g. Korpi 2005), and the higher degree of social security that universalistic models provide for large parts of the population seem rather to be associated with higher growth rates. It has been argued that universal social policies are less efficient because they include those who are not explicitly poor – resources that could have been used for the poor are “wasted” on the middle classes (see e.g. Le Grand 1982). However, this argument assumes that the amount of resources that can be used for social policies is fixed, irrespective of the share of the population that is eligible -
and this is certainly not the case. In fact, universal programmes that include the middle classes ensure that large parts of the population are also prepared to pay the taxes needed to sustain universal and generous policies. In other words, the total redistributive impact of the welfare state depends not only on how redistribution is organised (universal or targeted) but also on the size of the redistributive budget obtained from tax contributions (see also section 4.2). Thus, a system that pays out a large share of the benefits to the poor through means-tested programs is not necessarily better for the poor in terms of the absolute size of benefits or the economic resources the poor end up with. It is rather the case that the number of relatively poor tends to be smaller with universal policies, and that the poor in these systems tend to be better off in absolute terms (see further Chapter IV).

The issue of universalism versus selective or targeted social policies is also highly relevant for public health for at least two reasons. Firstly, if universal social insurance schemes are more efficient in poverty reduction, and if poverty is a key social determinant of health, then these are the kind of schemes that should be in focus when we look to address social determinants of health. This line of thought will be explored extensively in the forthcoming chapters.

Secondly, if poverty can be shown to vary systematically between countries on the universal-residual continuum, it would be worthwhile studying whether this is paralleled by a similar relationship between more specific public health policies and public health. In other words, it is important to study whether public health interventions at a general, structural level are more efficient than interventions directed at targeted vulnerable groups or deprived areas.

It should be noted that the term ‘targeting’ is often used and interpreted differently in public health and social policy contexts. In both cases it is highly relevant to ‘target’ only the relevant pat of the population – that is to offer an immunisation programme only to people or groups not yet immunised or unemployment insurance only to those on the labour market. However, it is also common in public health to see recommendations for all sorts of interventions to be ‘targeted’ simply because there are some groups that are at higher risk. However, as discussed above, this is not necessarily the best way to reach and improve the conditions for these high risk groups. Rather, a general policy may well be better also for high-risk groups. There is a clear parallel here with the popular upstream-downstream metaphor. It is important to realise, we would argue, that while risk factors or mechanisms may clearly be ‘downstream’, such as health related behaviours, the best way to tackle these risk factors may still be ‘upstream (or ‘universal’).
This point is well illustrated by alcohol and tobacco use. Drinking and smoking are clearly health risks at an individual (‘downstream’) level, and certain groups clearly smoke and drink more than others. This does not, however, mean that implementing measures directed (‘targeted’) solely at these groups or the areas where they live is the best way to tackle this problem. Furthermore, it is certainly not the case that measures at individual level, such as counselling or smoking cessation classes, will give the best results. Rather, the evidence suggests that the regulation of prices and availability at society level are the best way to reduce consumption and damage. Hence, ‘upstream’ or ‘universal’ policies can be the best way to deal with ‘downstream’ health risks.

We will return to the importance of ‘universal’ Nordic alcohol policies later in the report (see Chapter 5.2). But first we will turn to the issue of smoking cessation, which further illustrates our point. Given that people in lower social strata and in poorer areas smoke more, it might be tempting to design and implement policies directed exclusively at those people and areas. A more universal approach, adopted by more and more countries today, is a general ban on smoking in public spaces. This ban is directed at everyone and not only the poor or other vulnerable minorities, yet the impact on these groups in terms of their ability to quit or reduce smoking can be expected to be greater with universal rather than with more targeted programs. The reason for this is that everyone is included, which in turn reduces the influence of low compliance as well as the potential stigma associated with targeted policies. Furthermore, a general reduction in exposure to tobacco smoke is likely to have a greater impact on public health than any targeted intervention because of the greater reduction in passive smoking.

The merits of universal as opposed to targeted social policies are ultimately an empirical question of facts and figures. While strong normative and ideological issues are certainly at stake when it comes to choosing one or other type of policy, such political choices should in our view be guided by the empirical evidence about the pros and cons of different types of social policy. In this report we will provide evidence of this kind.

1.2 The analytical framework

When addressing the issue of the importance of the Nordic welfare state model for public health we face a number of theoretical and methodological challenges. One issue is how we conceptualise the ways in which differences in the architecture of welfare state institutions translate into different public health responses. Another issue is the methodological approaches we have
chosen and the reasons for them, which we will discuss in the following section.

1.2.1 Welfare state institutions and public health outcomes – a general model

In a very general sense we would suggest that the social determinants of health at individual level can be expressed by the concept of welfare resources. Such resources can be defined as “/…/ the command over resources in terms of money, possessions, knowledge, psychological and physical energy, social relations, security and so on by means of which the individual can control and consciously direct her conditions of life” (Johansson 1970, p. 25). The resources that an individual can command may thus be strictly personal (e.g. knowledge or psychological energy), or generated by the individual herself on the market (e.g. income or prestige) or through the family (e.g. family income, possessions or social relations). All such ‘individual’ resources – personal, market or familial – are of course important in all societies.

In addition, however, individuals can also draw on the ‘collective’ resources provided by welfare state institutions. Such institutions are intended to assist citizens with “/…/the collective matters that arise from the demands and possibilities that all individuals in all societies are facing during the life cycle” (Johansson 1979, p. 56). More specifically such resources include social insurances designed to cover income loss due to illness, unemployment and old age (the ‘cash’ side of the welfare state), as well as welfare services supplied free of charge or heavily subsidised, e.g. child care, health care, care for the old and disabled (the ‘care’ side). The supply and quality of such resources are likely to influence people’s ability to sustain their health and wellbeing.

The social right to claim support when needed, whether as cash or care, is often defined in relation to health problems and their consequences in terms of a reduced ability to support oneself through work. This two-way relationship between health and social conditions has been a focal point of the development of the welfare state in Scandinavia. It has also been clear that the policy entry points to support better health and social development involve many actors and sectors. For this reason, it might be helpful to clarify the main mechanisms and policy entry points involved in such a development. Diderichsen et al. (2001) presented one such framework that might be useful in empirical research into causal mechanisms and policy impact as well as for use in the development of public policies for population
health. Other frameworks have also been presented (for an overview see Mackenbach et al. 2002).

The model includes five mechanisms (I-V) and five policy entry-points (A-E). The model distinguishes between mechanisms at individual and at societal level, including health determinants within the structure, culture and the function of societies and the policies developed.

**I: Social stratification**: Society allocates power and wealth to social positions in terms of occupations, and individuals will be more or less able to compete for and occupy these positions depending on their age, sex, ethnicity, social background, education etc. At the contextual level, educational opportunities and discrimination in the labour market are examples of factors which have an impact on social stratification (Sørensen 1994).

**II: Differential exposure**: An individual’s position in society will influence the degree to which they are exposed to a large number of physical,
chemical, psychosocial, behavioural and biological exposures which have a causal impact on disease and injury risk. Workers’ safety regulations, sanitation, restrictions on alcohol and tobacco sales and family policies are examples of arrangements at the contextual level which influence the level and distribution of exposure.

III: Differential susceptibility: The effect of a specific exposure depends on the susceptibility of the individual. Susceptibility can be determined by genetic variations or immunological factors. For most disorders with a multifactorial aetiology, exposure to other causes on the same pathway will determine the effect of or vulnerability to a single exposure. Emotional and social conditions in infancy and childhood are determinants of life-long susceptibility to later psychosocial exposures. The strength of networks and support within families and communities is another important determinant.

IV: Differential consequences. Many diseases and injuries imply shorter survival or prolonged functional limitations and disability for the individual. Sometimes the cost of care will involve a heavy economic burden on individuals and their families. The concrete consequences for survival, employment, economy and social participation will however be strongly dependent on the social position of the individual. Health care services, sickness insurance and labour market flexibility for the disabled are policies with a major impact on the consequences of disease.

V: Impact of consequences: Some socioeconomic consequences such as participation or exclusion from the labour market are important for rehabilitation and the further course of disease. Social exclusion might thus be very negative for a patient with mental disorders compared to a situation where he or she participates in work and social life. At macro-level, low levels of population health could hinder economic growth in society. Rehabilitation programmes and access to the labour and housing markets for the disabled will be important contextual conditions.

The policy entry points A-E in Figure 1.4 illustrate where different policies and interventions can modify the causal mechanisms which generate population health and health equity. As discussed earlier, general social policies as well as more direct interventions modify these mechanisms through the amount of resources, both individual and collective, at the individuals’ disposal. As the model indicates, these resources may be directed at very different levels. In evaluating the importance of the Nordic model for public health, focus is on how welfare resources and welfare services can modify the impact of social stratification and differential susceptibility, exposure and consequences. In section 2.2 we will return to a
more detailed discussion of how different designs of welfare state institutions could translate into differences in resources and public health, and how the Nordic countries might differ in this respect.

1.2.2 Comparisons across time and space – country clusters and institutional variability

Our overriding question is whether, the Nordic experience of welfare state institutions has contributed to improvements in public health - and if so, how. Irrespective of whether this question is applied to specific policies or to the welfare state \textit{in toto} there are two main approaches to studying relationships between policies and health outcomes at national level, namely cross-country comparisons and historical comparisons. Both of these methods have been extensively applied in studies of social policy and its relation to, for example, poverty. This is because both approaches assume that any analysis of relationships, and ultimately effects, is based on variation. If we want to study whether policy X is related to public health outcomes we must compare countries exposed to X with countries not exposed to X. This comparison can then be made across time before and after the introduction of policy X, or between countries that have and have not implemented policy X.

While this is a pretty straight-forward strategy in principle, there are several complications to it in reality. The first has to do with the way we treat our independent variable, in other words welfare state characteristics. Social policies are not standardised commodities that countries either do or do not adopt. There is, rather, a variation in both the basic principles for any given program as well as its specific characteristics in terms of coverage, generosity and eligibility.

In welfare state research, where much attention has been paid to the welfare state as a dependent variable, it has been common to focus on basic principles and to cluster countries accordingly into different ‘models’ or ‘regimes’ (Esping-Andersen 1990). Such clusters may be powerful as analytical concepts, they imply a focus on a limited number of important dimensions along which the clusters are formed, and they emphasize similarities within these dimensions. Other characteristics that may differ between countries in the same cluster are disregarded. The main strength of this approach is analytical clarity, but there are at least two other consequences that should be underscored. Firstly, no single country really fulfils all of the ‘ideal type’ characteristics of, for example the Nordic welfare model. Countries develop and change differently and there is an ongoing discussion about the continuing uniqueness of the Nordic approach.
Secondly, the clustering of countries according to a certain principle might work well for one purpose, such as analyses of poverty, but this does not necessarily mean that it works well for analyses of public health. One example of this is Great Britain, which is distinctively different from the Nordic countries in terms of social insurance policies, and hence is often used as a prime example of what is known as ‘the Liberal model’ (Esping-Andersen 1990). On the other hand, where health care policies are concerned, Britain is not that different from the Nordic countries. While certain features of the policy profile of one country may affect public health in a negative way, others may counteract or even overshadow this effect.

Thus, while country cluster comparisons are an important method of addressing our main question, they must be supplemented by other approaches. One of these is to focus on social rights and welfare institutions and programs directly, rather than countries. Instead of combining countries on the basis of their unemployment insurance or pension schemes we might, for example, classify these policy programmes according to their coverage and generosity. These qualities therefore become variables which we can analyse along with other variables such as growth rate and real wages. This is an approach adopted for many of the multivariate analyses in this report.

As mentioned above, a general problem in comparative analysis is that we are restricted to a small number of observations (countries) and that the wide range of other types of differences across these countries makes it difficult to standardise for potential confounders. This may be less of a problem in studies of poverty reduction and income maintenance programs, for example, where there is a close relationship between the policy and the studied outcome. For the type of analysis we aim at, it is probably more of a problem, since there are a large number of possible mediating factors between social policies and health outcomes.

One way to increase the number of observations and the variation in the studied variables is to combine the variable approach described above with a historical perspective. This means that information on the generosity, coverage and other attributes of a range of social policies is collected for a number of countries at a number of different points in time during the 20th century. This strategy has enabled us to analyse the relation between specific policies such as family policies and pensions and public health outcomes such as infant mortality and mortality among the elderly. It has, in addition, enabled us to conduct analyses of the combined effects of all policy schemes.
In general, we have aimed for a long historical perspective in our analyses. This is due in part to the methodological considerations discussed above, but mainly because of our ambition to improve the applicability of the Nordic experience. While the Nordic countries are among the richest in the world today, they were certainly late to become industrialised, and hence they developed from low- or medium-income to high income countries fairly quickly. This is of interest for a range of countries that are going through the same development today. But it also means that social policies that are today part of a comprehensive welfare state package often started at fairly modest levels (although the ambition in terms of the costs for social protection as a share of GDP was often quite high, see Kangas and Palme 2005). Furthermore, the Nordic welfare state as we know it did not come out of nowhere. There is a pre-history of reforms, public movements and public health measures that goes back to at least the 18th century. It is important to highlight this fact, especially since some of the hallmarks of the Nordic welfare states (such as egalitarianism and good population registers) can be traced back to long before the birth of the present welfare states.

While such insights may help us to see the conditions under which the Nordic welfare states and their specific policy traits were born, it is also important to be aware of the complications involved in applying historical parallels from Nordic history to the situation in other countries today. We believe it is essential to study the experiences of other countries and the methods they have tried in order to avoid making the same mistakes. And while every country at any point in time may be unique in terms of socio-political context, prevailing ideas and technological know-how, there may nevertheless be lessons to be learned in terms of what actually works. For example, even if the high rates of literacy in the Nordic countries as far back as the late 18th century were a specific and unique consequence of the Lutheran reformation, the importance of literacy for public health improvements may still be an important lesson from the Nordic experience. At the same time, it is important not to focus too much on the underlying historical causes and the chains of events through which they have operated. One reason is that we will most likely end up with historical processes that are truly unique, impossible to copy, and therefore also un-applicable to other countries. Another reason is that the historic processes that lead to the present situation can appear to be inevitable when looked at from our present position in time. At each point in history, however, choices can be made, and what may seem ‘historical necessities’ in retrospect were not usually self-evident choices or courses of action at the time.
This report will accordingly be based on a number of historical case studies as well as quantitative inter-country comparisons covering at least the post World War II era.

1.3 The report – what it is and what it is not

The issue of welfare state characteristics and their potential impact on public health is as large and multi-facetted as it is important. It has therefore been necessary to focus and restrict our work. The present report is thus not the final statement on these matters, but rather a first serious attempt to combine expertise, insights and data from research into social policy and welfare states with corresponding expertise, insights and data from public health research. We hope that our report can contribute to and broaden the knowledge base available to the CSDH.

1.3.1 Delimitations and choices

A point of departure for our work was the concept of welfare resources supplied by the welfare state, and that these make a difference in terms of improving living conditions in general and health in particular. In this general sense, welfare services – education, health care and care of children and the old – are at least as important as transfer systems (pensions, unemployment insurance and the like). However, we have chosen to focus on the cash side, and we believe that there are several good reasons for this.

Firstly, money is an important resource since it can be transformed into all kinds of goods and services. Transfer systems and their design are therefore likely to be of utmost importance (this argument is developed at length in Chapter IV).

Secondly, welfare state research and research into social policies has traditionally been more interested in transfer systems and poverty alleviation than with welfare services such as education and health care. Welfare state theories and comparative data on transfer systems are consequently more developed and hence a better starting point for an amalgamation of welfare state perspectives on public health issues. While there is certainly a great wealth of research into welfare services, not least health care, we have chosen to begin with some detailed analyses of transfer systems.

Thirdly, our priorities have been guided by the ambition to minimise overlapping by placing less emphasis on areas and issues covered by the Knowledge Networks linked to the CSDH. We consequently pay scant
attention to health care and working life despite their clear importance for the health of individuals and populations.

Even with these restrictions, there are a number of welfare institutions at each entry point suggested by the Diderichsen model that are of potential interest, and it was clearly not possible to analyse the potential impact on public health of all these on an international comparative basis. We have thus tried to focus on policies that supply resources of special importance for health and survival at crucial points across the life course, and to select policy areas in which the Nordic countries tend to differ clearly from other types of welfare state. Again, this has led us to a focus on income transfer programs and to put a strong emphasis on policies of special importance for children, women and the old (family policies and pension policies).

The Nordic countries are well-known for their ambition to reduce inequalities. Redistribution and universalism run as a common thread throughout the present report. However, most of the analyses presented here deal with cross-national differences in levels of health or mortality rather than differences in health inequalities. While the latter are a very important issue that we have written on extensively elsewhere, there are several reasons why health inequalities have not been given the same attention as levels of health in this report. One is simply the lack of internationally comparative data for more than a few European countries (findings from analyses of these data are reported in Chapter III). In addition, there is a lack of agreement about the effects one should expect welfare state policies to have on health inequalities. In our view, this lack of agreement is in part caused by a lack of theoretical understanding of the processes involved as well as a disagreement around conceptual and measurement issues. Some of these issues are touched upon in sections 3.2 and 3.3.

Finally, a few words about the outcomes we have chosen to focus on. Our ambition to study the Nordic experience both across countries and over time obliges us to rely on mortality statistics as our main indicator of public health achievements. Even so, there are restrictions to the data available. It has, for example, proved difficult to obtain long and reliable time-series of under-5 mortality for most countries. Our focus on life expectancy, overall mortality and mortality in certain age-groups (infant mortality, mortality over 65 years of age) does not mean that we disregard other aspects of public health. Where possible we have used cause-specific mortality to increase the analytical precision, and in some instances we have used data on morbidity to discuss more recent trends. However, the availability of both cause-specific mortality data and morbidity data is limited, which restricts the scope of our analyses both in terms of number of countries and the time span
that can be studied. Such analyses are therefore chiefly included as complements to analyses of overall mortality.

1.3.2 Structure of the report

The rest of the report is organised as follows. In Chapter II we give a short presentation of the Nordic countries and of welfare state research and highlight some central features that distinguish the Nordic countries from other types of welfare state.

Chapter III addresses the long-term development of mortality and life expectancy in the Nordic and other countries. We also cover cross-national differences in individual variability in age-at-death and social inequalities in mortality.

Chapter IV starts with a detailed discussion of the role of income and poverty in different types of welfare state, income as a social determinant of health even in richer countries, and the mechanisms involved at individual and contextual level. The chapter ends with a general analysis of how economic growth and welfare state characteristics were linked to mortality throughout the 20th century in 17 OECD countries.

Chapter V presents analyses of the importance for public health of more specific social policies. These are organised more or less in a life course sequence, starting with those aimed at children and families and including a section on women’s health in relation to labour force participation. The chapter continues with sections on alcohol policies, health and dental care, and ends with analyses of pension systems and mortality and morbidity among the old.

Finally, in Chapter VI, we summarise our main findings in relation to the analytical model discussed above and discuss the applicability of the Nordic experience and the main principles behind it. We conclude with a number of general conclusions.
The Nordic countries share many similarities both with regard to climate, geography, economic prosperity, history and population density. For many, however, it is perhaps the welfare state programs of the Nordic countries that are most distinctive. The purpose of this chapter is to give a brief resumé of the Nordic countries’ historical roots, highlighting factors which we believe to have been crucial for the formation of the Nordic welfare state model. We will present some of these countries’ chief institutional characteristics and how these are believed to produce certain outcomes, not least with regard to inequality.

In order to claim that the Nordic social policy model is distinctly different from those of other countries we must of course make comparisons. In welfare state research it has long been claimed that there are indeed differences in kind and not just in degree. In other words, there are qualitative differences between the policies adopted. We will shortly present the basic arguments and ideas behind the clustering of welfare states into welfare regime typologies. This report will, however, look behind the notion of welfare regimes and focus on more specific welfare state institutions and their characteristics - an approach which will be presented in this chapter.

2.1 The Nordic countries, past and present

The Nordic countries consist of Denmark (including the autonomous territories of the Faroe Islands and Greenland), Norway, Finland (including Åland), Sweden and Iceland. The population size at present (2006) is Denmark 5.4 million, Finland 5.3 million, Iceland 0.3 million, Norway 4.7 million and Sweden 9.1 million. The Nordic countries are sometimes used synonymously with Scandinavia. However, geographically-speaking, Denmark, southern Finland, the Faroe Islands, Greenland and Iceland are not part of Scandinavia, while Finnish is not linguistically part of what is defined as the Scandinavian language family. However, a shared history has resulted in many societal and cultural similarities between these countries.
Figure 2.1 Map of the Nordic countries.

Having being united under one monarch since the late 14th century, Denmark, Norway (with Iceland) and Sweden (with Finland) all followed the Protestant reformation and adopted Lutheran state churches in the 16th century. The Kalmar Union was dissolved when Sweden formed a separate Kingdom under Gustav Vasa (1523), and Norway became a Danish province (1536). Norway was ceded to Sweden in 1814 while Iceland, Greenland and the Faroe Islands remained Danish. After a period as a Great Power in 17th century Northern Europe, Sweden successively lost its dominions, culminating with the loss of Finland in 1809, when it became an autonomous Grand Duchy under the Russian tsar. Finland gained independence from Bolshevik Russia in 1917, the personal union between Sweden and Norway was peacefully dissolved in 1905, and Iceland eventually gained its independence from Denmark in 1944.

The common political and administrative past of the Nordic countries has resulted in common traits that have influenced the development of the Nordic model of social policy. There are historical explanations for why the state in the Nordic countries is given the legitimacy to intervene in the
individual’s or in family life to an extent that might seem far beyond reasonable to people used to other socio-political contexts.

By the mid-18th century the Swedish and Danish central administrations (thus by the time including Finland, Norway and Iceland) had already developed population censuses for military and taxation purposes. Taxes were collected at local level and the parishes could keep some of the revenue to use for welfare interventions at municipal level. Later, many welfare state programmes covering the whole population would evolve from local civil society initiatives. A strong central government thus worked in parallel with a strong local democracy, which in the long run guaranteed the legitimacy of public sector activities at grass-root level and secured a relatively effective bureaucracy (Kangas & Palme 2005).

The Nordic countries also had a particular class structure in which, beside the industrial working class and the bourgeoisie, an independent peasantry traditionally had a strong influence over the political agenda. Neither the royal family nor the aristocracy had absolute power in Scandinavia; both had to seek alliance with the independent and land-owning peasantry to gain influence. This particular power balance ensured the peasantry a voice both at local level and in the national assembly. Thus, the state was later used both by the peasantry and by the industrial working class to defend their interests vis-à-vis the urban bourgeoisie (Kangas & Palme 2005).

All the above is likely to have been of great importance for the development of the Nordic model, although the major characteristics of the model (see further below) go back to the 1930s and then the postwar era. The particular power balance described above is a prime example of historical circumstances influencing the evolution of a model. The political coalition between the working-class movement and the agrarian parties later became an important platform for many social democratic governments in Sweden. It enabled them to pursue a model of extensive social legislation that, as a consequence, covered not only industrial workers but the entire population (Åmark 2005; Kangas & Palme 2005). A similar strategy was later pursued for white-collar workers. In an analysis of why Sweden and Austria developed so differently despite similar strong worker-mobilisation indicators, Esping-Andersen and Korpi (1984) highlight the importance of this possibility to ally with farmers, while hegemonic bourgeois parties prevented any such alliances in Austria.

The Nordic countries were not especially early in their first implementation of large social insurance systems, the prime exception being the early pension reform in Denmark in the late 19th century. While Finland in most
respects can be seen as a latecomer, one can at the same time say that Finland in terms of modernisation process developed most social reforms earlier than expected.

Needless to say, the World Wars in the 20th century are of importance both in terms of Nordic social policy development, but also with regard to population health outcomes. In this respect the Nordic countries indeed have different historical circumstances; experiences that still are likely to have an impact (see e.g. Chapter 4.3). While Sweden remained neutral in both the world wars, Denmark and Norway were invaded and occupied by Germany between 1940 and 1945. Finland fought the Soviet Union and later had to force German troops out of Northern Finland in 1944-45. One dramatic example of the consequences of war is that life expectancy for males in Finland fell by 13.5 years between 1939 and 1940.

A more recent event that shook Finland and Sweden was the severe recession in the early 1990s. During the first year of that decade, employment levels fell dramatically and unemployment figures skyrocketed to levels that had been unthinkable in these countries. Although the absolute level was higher in Finland, the increases were about five-fold in both countries (Kautto 2000). The social consequences of the economic crisis in Sweden, which also led to a crisis in state finances, have been investigated in detail by a Governmental welfare commission (Palme et al. 2002, 2003; SOU 2001:79). The central assignment for the welfare commission was to produce a comprehensive assessment of welfare developments and the political responses to the economic crisis to serve as a basis for the discussion of the future direction for welfare policy. A critical topic then was also to assess whether the turbulent decade also meant that the Scandinavian welfare model was abandoned. Most social provisions became less generous, but was there also a fundamental change of underlying principles, a difference in kind not just in degree? Nordic research has tended to suggest that this was not the case (Kautto et al. 2001; Kuhnle 2000; Palme et al. 2002). Universal social services and benefits still dominate the system, and from an outcome perspective income inequality did not change dramatically (Fritzell 2001).
2.2 Characteristics of the Nordic model

What, then, are the chief characteristics of the Nordic model? The concept ‘Nordic (or Scandinavian) model’ is a well-known, albeit somewhat vague concept. It is often used in one way or another to refer to a broad public responsibility within the realm of a market economy. In the 1980s, the Nordic model was sometimes seen as representing a third way between liberalism and communism. In the most general sense, the Nordic model referred to a society combining good economic development with a high level of social rights.

For many people today the Nordic model is still almost a synonym for broad public responsibility and legislated collective policies to ensure welfare development and equity goals. Ambitious policies are not cheap, so their legitimacy rests on good performance. The model is also characterised by the resulting costs, and the financing of these costs chiefly by taxation. As almost everybody is supposed to contribute to and benefit from the system design, different characteristics of the system have contributed to each other's existence. Such a self-enforcing chain logic may have indirect effects on health. The Nordic model is only fully comprehensible when one studies these characteristics as a whole. Only together do they constitute the Nordic model (Esping-Andersen & Korpi 1987).

It is important always to bear in mind that marked differences nevertheless exist between the Nordic countries (Kautto et al. 1999), and it is not the case that they all have all the characteristics of the model. The countries are thus more or less similar to each other. It is up to research to reveal exactly which kinds of characteristic seem to distinguish the Nordic countries from others. A collection of such characteristics may be used to form an ideal-typical Nordic model in the Weberian sense. In other words, the concept of ‘the Nordic model’ is often used in the attempt to distill the essential characteristics from the more complex empirical reality. The abundant list of characteristics that have been linked to the Nordic model in existing research also underlines the need to look at similarities and differences between countries using a variety of criteria, especially if the intention is to generalise to the level of a Nordic model.

Empirical research has provided abundant evidence of the fact that the Nordic countries do indeed share certain common characteristics, not only at the system design level in terms of the socio-political income-transfer and

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6 This section is mainly based on the paper by Mikko Kautto and Pasi Moisio commissioned by the NEWS-project, see Appendix 1.
service-delivery systems, but also with regard to the level and distribution of welfare among citizens (Erikson et al. 1987; Esping-Andersen 1999; Kangas & Palme 2005; Kautto et al. 1999, 2001; Korpi & Palme 1998; Kuhnle 2000). The comparative research literature on social policy reveals the following common institutional characteristics:

- A broad range of public sector activities
- A high level of public and social expenditure
- Income transfer systems with a high coverage
- A high contribution rate of income transfers in relation to income levels
- A broad range of public services
- High quality, accessible professional services
- The provision of services by the public sector, mainly local authorities
- The important role of tax funding in financing the institutions

With regard to policy goals and outcomes, the literature has highlighted:

- Commitment to full employment, seen both as precondition for and goal of the model
- Universalism as a policy goal (citizens have equal rights to benefits and services)
- A relatively compressed income distribution and the absence of large differences in living standards at both individual and population level
- A low level of social exclusion
- A high level of gender equality
- A strong and uniform popular support

The Nordic welfare states can be summed up by three fundamental features (Esping-Andersen & Korpi 1984; Kildal & Kuhnle 2005), they are namely comprehensive, institutionalized and universal.

It is important to note that welfare state comparisons are not commensurate with trivial listings of the distinguishing characteristics of apples and pears. The characteristics applied in welfare state comparisons often have an explicit or implicit normative content. As poverty and income distribution, for instance, have been shown to have a strong association with the functioning of the welfare state, normative elements are usually, if not always, present even at the level of describing the characteristics of the system. The institutional characteristics strongly affect outcomes. The
interest in following trends in welfare among citizens and/or relevant policy developments is often in itself motivated by such normative concerns.

This having been said, one should be aware of the difference between goals and the means to reach these goals. Institutional characteristics and social programs may not work according to intention and their performance should be questioned by scrutinizing the empirical evidence (Kangas & Palme 2005; Palme 2006). Furthermore, we should, once again, remember that when going from the ideal-typical model to the practical realities of social policy we never find that the latter fully resembles the former. Reality, as always, is more complex than any theoretical model.

2.2.1 The Nordic model and welfare state typologies

The development of social institutions in industrialized countries during the 20th century has led to fundamental social changes. The state has taken a greater responsibility for people’s welfare and social expenditures have increased enormously. Despite this overall welfare state expansion it has long been argued that we cannot solely understand cross-national variations in welfare state development as linear, as more or less. It is rather the case that there is sufficient variation along chief dimensions to indicate qualitative differences between the policies and methods adopted by different countries.

The idea of differences in kind rather than just in degree has deep roots. Richard Titmuss provided one early typology (outlined in Titmuss 1974), and the notion of the Scandinavian model has long existed in the welfare research literature (e.g. Erikson et al. 1987; Korpi 1983). Esping-Andersen and Korpi (1987) outlined how Scandinavian social policy developed into a distinct institutional model, in contrast with the marginal/residual welfare states, broadly using Titmuss’ concepts. However, the great boom in the welfare state typology discussion came with the influential book Three Worlds of Welfare Capitalism, in which a general theory of welfare regimes was presented (Esping-Andersen 1990). The regime theory is a general theory that is still topical and is often referred to in the EU, for instance in discussions of the European social model and when comparing the European welfare states and other industrial countries, particularly the United States and Japan.

The empirical elements of the regime theory consist of a typology of welfare regimes. After a comparison of differences and similarities between countries, Esping-Andersen grouped welfare states into three clusters based on criteria related to de-commodification and stratification. De-
commodification has to do with reducing dependence on the market. It “/…/ occurs when a service is rendered as a matter of right, and when a person can maintain a livelihood without reliance on the market” (Esping-Andersen 1990, pp. 21-22).

The clusters identified differed from each other qualitatively in terms of the factors that had contributed to their development, as well as the welfare policy pursued and its outcomes. Drawing on his empirical analysis, Esping-Andersen distinguished between three regimes, named by him on the basis of political ideologies as the Liberal, Social Democratic and Conservative (also labelled corporatist) regimes. Ultimately, the concept of welfare regimes refers to the various roles and importance of family, market and state for people’s welfare (Esping-Andersen 1999).

These regimes can be outlined as follows:

- **The Liberal regime** gives the primary role to the market. The welfare of the vast majority is primarily safeguarded by private arrangements. State interference is the second-best alternative and limited to those who for one reason or another are not able to take care of themselves by participating in the market. The main or only public responsibility is to guarantee a – means-tested - minimum income. Benefits are low or moderate, income distribution is uneven and a high level of poverty prevails. Children's opportunities in life are strongly determined by the family's position in the market. Society is strongly stratified, especially between the poor and others. An archetypical country of this model is the United States.

- **The Conservative-Corporatist regime** values the family and immediate community as the key units of society. Policy design aims to safeguard their position and relies on their solidarity. The emphasis in social policy is on the insurance relationship formed on the basis of an employment relationship. The regime is characterized by an emphasis on employment- and income-related benefits. Merits and the central role of the male breadwinner help to maintain class- and gender-based social differences. The Conservative regime has also been called the Corporatist regime as it gives an important role to agreements between employers' and employees' organizations and social insurance systems run by social partners. Families can use social insurances to meet their service needs in ways that best suit them. The provision of services is thus mostly outside the public responsibility, being taken care of by families themselves, or by private provision, or more often by church and civil organizations. An archetypical country of this model is Germany.
In the Social Democratic regime the role of the state is to control the operations of the market and interfere with the distributive patterns generated by the market. The state also has a major role in influencing welfare. Policy is universalistic, aimed at the population at large. The level of cash benefits (degree of compensation for loss of income) is high and the services cater for many needs, all the population and are supposedly of high quality. Collective solutions and reliance on public sector solutions lead to high taxation. On the other hand, the regime is characterized by an even distribution of income and a low level of inequality and poverty (see further Chapter 4.2.). An archetypical country of this model is Sweden.

The latter regime type and how it differs is perhaps best illustrated by quoting Esping-Andersen (1990, p. 27):

“/…/ those countries in which the principles of universalism and decommodification of social rights were extended also to the new middle classes. We may call it the ‘social democratic’ regime-type since, in these nations, social democracy was clearly the dominant force behind social reform. Rather than tolerate a dualism between state and market, between working class and middle class, the social democrats pursued a welfare state that would promote an equality of the highest standards, not an equality of minimal needs as was pursued elsewhere.”

2.3 Welfare regimes or institutional characteristics?

Although it seems impossible today to discuss cross-national differences in welfare arrangements without reference to welfare regimes, we use the concept of welfare regimes quite tentatively in this report. We are not primarily engaged in the business of evaluating the merits and shortcomings of welfare typologies as explanatory factors. We will, rather, sometimes use welfare regimes as descriptive categories, or simply to group countries. Our prime reason for this choice is that using welfare regimes to explain cross-national variation in outcomes does not really open the black box (Kangas 2006). While an overall view can sometimes be nicely achieved with the regime approach, it does not tell us what it is inside the black box that produces an outcome (cf. Mayer 2005).

Instead we aim to link more specific institutional characteristics, programs and features to the outcomes in question. This means, for example, that we link the mortality risks among old age people to specific characteristics of the pension systems rather than merely grouping cross-welfare regimes
variation among the elderly. By linking welfare state characteristics to outcomes in analyses that sometimes require quite complex statistical methods, we increase the likelihood of achieving relevant results.

A second important reason for our chosen approach is the issue of the applicability and transferability of our study. It seems to us futile to suggest that the Nordic model in toto can be applied to widely varying cultural, economic, social contexts. We do, however, believe that one can learn from the experiences of the Nordic countries - both from welfare programs, general characteristics, institution building or even their basic intentions. This approach makes our findings of relevance for countries at various levels of economic development (see further section 6.2).

2.4 Education, equality and stratification

As was mentioned above, the Nordic countries have a special reputation with regard to equality of living conditions. We will accordingly pay particular attention to cross-national differences in poverty and income inequality, since we have reason to expect that these have repercussions for population health. Another area that always attracts attention in the public health discussion is education. In line with our earlier discussion, education and the school system obviously constitute one of the most important welfare state institutions for providing the individual with resources. Thus, this ‘collective’ resource’ (and its scope and quality) is one of the ways in which the welfare state can influence people’s health and well-being. Education also plays a major role in stratification processes. In modern societies, education is the crucial link between one’s social position in childhood and in adult life. The educational system is thereby also the institution which perhaps more than any other gives the individual opportunities for social mobility in the social structure.

The relations between the socio-economic position of the family of origin on the one hand, and educational attainment and social position in adult life on the other hand, are key issues in the sociological enterprise. Whereas income inequality, for example, is a key aspect of inequality of outcome, the relations between social origin and social position reflect the degree of inequality of opportunity in a society. The latter are, then, often seen as the prime indication of the openness of a society. A society in which the family into which you are born is of minor importance to your educational attainment and your socio-economic position in adult life is an open society in which the playing field is level. What, then, can be said to be distinctive about the Nordic countries in this regard?
A first observation is that these kinds of inequality of opportunity are found in every society which has been empirically studied. Erikson & Goldthorpe’s (1992) main, and surprising, conclusion in their major work on intergenerational social mobility in some Western countries (neatly summarized in their title *The Constant Flux*), was that the differences between countries were quite small, even over time. Although later social mobility research has contested some of their conclusions (see Breen 2004), it is fair to say that inter-country differences in inequality of opportunity seem to be less marked than inter-country differences in inequality of outcome. In a recent review, Breen and Jonsson (2005:232) scrutinize the evidence to see whether any particular cluster of countries is most rigid or most open:

“Germany, France and Italy tend to represent the rigid pole in such a ranking. The Scandinavian countries (particularly Sweden and Norway) together with Hungary and Poland appear to be consistently among the most open societies.”

A particularly interesting case with regard to social mobility is the United States. The American dream rests on the view that everybody can succeed and that one can therefore accept a high degree of inequality of outcome. Erikson and Goldthorpe (1985), however, found that the US was not particularly exceptional. Later studies have compared income mobility in Scandinavia with the US (mostly with regard to father to son correlations) (Björklund & Jäntti 2000; Solon 2002). The United States is clearly more rigid than Sweden and Finland in terms of income, whereas the difference in class mobility is small. One explanation for these apparently paradoxical results is that income differences are much larger in the United States. The American system is thereby comes more costly to the disadvantaged and more privileged to upper strata (Breen & Jonsson 2005).

Education is of course not only relevant for social mobility; it also gives the citizen skills and knowledge. This facet of the educational system is of utmost importance for public health. Later in this report we will discuss the role of the school system from a more historical perspective. Unlike many low income countries today, the literacy rate was very high in the Nordic countries at a time when they were still very poor; one important factor for implementing public health policies (see further section 5). What, then, can be said today about educational performance from a cross-national perspective? Is educational performance in the Nordic countries distinctive in any way? Two major comparative studies are of particular interest here, namely the PISA-study and the International Adult Literacy Survey (IALS). The PISA-study is performed by the OECD and contains detailed
information about educational and cognitive performance, primarily for 15-16 years-olds, while the IALS contains cognitive information for the adult population (16-65), in both cases for a large number of countries. The PISA-study has found Finland to be especially successful among the OECD-countries. More generally, the PISA-study suggests that the students in the Nordic countries tend to produce better than average performances and more equal outcomes.

IALS focused on literacy levels in adult populations. This gives us a measure of the historical performance of educational systems cross-nationally. An analysis of average literacy test results for different birth cohorts reveals some trends. As in PISA, the Nordic countries generally come out very well. Finland, Norway and Sweden have the best results in the OECD in the youngest cohort, although cross-national differences in the rich world are not that large. It is troubling to note, incidentally, that the cohort comparisons indicate a negative trend in the United States (Institute for Futures Studies, 2006; see especially Figure 3:11 and 3:12).

It is of course difficult to fully explain the cross-national differences in educational performance, both with regard to helping children from low income families into higher education and in producing good average and relatively equal test results. How schooling is organized has been seen as one explanation. A comprehensive school system in which early decisions are postponed is likely to be equalizing, whereas a dual system with early tracking probably leads to greater inequalities in opportunity and educational performance (Esping-Andersen 2005). Moreover, evidence suggests that segregation, an issue we will return to in section 4.1.4, is likely to further foster such inequalities (see e.g. Hanushek et al. 2003).

To summarize, education, and skills more generally, are usually regarded as a main social determinant of health. It is interesting to note that there are some distinctive Nordic features in these fields, both today and historically. We will now turn to cross-national differences in life expectancy and mortality across the life-span.
III. HEALTH AND HEALTH INEQUALITIES: THE NORDIC COUNTRIES IN A COMPARATIVE PERSPECTIVE

In this chapter we address the Nordic countries’ experience of public health. More precisely, we will try to establish to what extent the general levels and distribution of health in these populations have differed from those in most or at least many other countries. First, we will describe trends in life expectancy and mortality in the Nordic and other comparable countries, both in general and by age group. Second, we will discuss to what extent Nordic countries are different with respect to variation in mortality, both in terms of the individual variability in age at death and in terms of inequalities in mortality between socio-economic groups.

3.1 Levels and trends in life expectancy and mortality

Starting with the general level of population health, our main question is to what extent Nordic countries differ in terms of levels of life expectancy (mean age of death, calculated from life tables) and mortality from other types of welfare state and whether any differences remain over time. Population health is a complex concept which certainly has many other aspects than mortality patterns. In a sense, mortality is not a health indicator, but rather an indicator of ultimate health failure. Especially in the latter part of the 20th century, when most of the populations in the countries considered here survive into old age, it is often argued that indicators of morbidity, functional level, perceived overall health status, etc., give a better description of population health than does mortality.

Nevertheless, mortality is certainly relevant; it signifies the overall influence of health risks experienced through life, and for the individual it is of course of extreme importance for life quality whether death occurs at age 60 or at age 80. Moreover, for analyses combining both historical and comparative

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This section is mainly based on the paper by Jon Ivar Elstad commissioned by the NEWS-project, see Appendix 1.
perspectives, mortality – relatively easily defined and fairly scrupulously registered in most developed countries – is in practice the only feasible indicator. In recent decades, many developed countries have conducted health surveys, but their comparability is always doubtful, and they cannot shed light on long-term historical trends, but only on the health situation in the immediate past. In the EU, for instance, efforts are being made to develop indicators of disability-free life expectancy (Robine et al. 2005). If successful, this will certainly be more relevant for surveying population health than mortality, but at present there are obviously large problems as regards comparability; the time series go back only a decade or so and do not allow for analyses of long-term trends.

Data presented here rely to a large extent on data downloaded from internet resources, mainly the Human Mortality Database (for a description see Appendix 2). No attempt to independently evaluate the validity of these data is made, but these data bases are known for their high quality and are regularly used for academic publications. (This does not, of course, preclude the occurrence of errors; the data bases are however continually updated if errors are discovered or new data become available). When considering the design of this overview, it should be remembered that the choice of countries, time periods, and indicators is limited to what is available.

3.1.1 Development of life expectancy and mortality in the Nordic countries during the 20th century

Before turning to comparisons, it is relevant to look at the development of population health in the Nordic region from a longer perspective. Figure 3.1 shows how life expectancy at birth (\(e_0\)) increased from 1900 to the beginning of the 21st century in the five Nordic countries (total for men and women). Sweden gained about 26 years of increased life expectancy from the early 1900s to the early 2000s, and the gains in the other Nordic countries are around that magnitude – Finland, starting from a poorer position, actually gained about 33 years (or a 73 per cent increase) in life expectancy during this period. Some two thirds of the improvement took place in the first half of the century. Sweden, for instance, gained about 17.5 years from the early 1900s to the early 1950s and about 8.5 years during the next 50 years; similar gains for Finland were about 22 years and 12 years, respectively.

At the beginning of the 20th century, Sweden, Norway and Denmark had a clearly higher life expectancy (54 – 55 years) than Iceland (approx. 50 years) and Finland (approx. 45). From about 1940, Iceland had practically caught up with the three Scandinavian countries, and Finland more or less joined the
others around 1980. With the exception of a few dips there has been a continuous rise. The Spanish flu (around 1918) led to a temporary fall in life expectancy (exception: Iceland), and the plunge in life expectancy was particularly dramatic in Finland where the civil war also took its toll, especially among men (in 1918, life expectancy among Finnish men was as low as 26 years). The Second World War also had a negative effect in Norway and especially in Finland, primarily because of higher male mortality. Since the 1970s, Denmark has lagged somewhat behind and has ranked last among the Nordic countries since the late 1980s. At present (i.e. average for 2000 to 2002 or 2003 or 2004 – the year for the latest figures differs between the countries) Iceland (80.3) and Sweden (80.0) are in the lead in terms of life expectancy at birth, followed by Norway (78.9), Finland (78.1) and Denmark (77.3).

Figure 3.1 Life expectancy at birth (e0), total for both sexes, 1900-2002/2004, in Sweden, Norway, Denmark, Finland and Iceland. Average, five-years periods. Source: Human Mortality Database (HMD 2006).

As in all Western countries, female life expectancy was higher than men’s in the Nordic countries throughout the 20th century. During the first decades of the century, women’s life expectancy was some 2.5-3.5 years higher than
men’s (the difference was larger in Iceland). The post-Second World War period, from about 1950 to about 1980, saw a marked increase in the female-male difference from about 3 to about or above 6 years. The gap became smaller in the last decades of the century, but is still some 4.5 to 5 years, i.e., markedly higher than during the first half of the 20th century. Finland deviates somewhat however; the time trend for female-male differences has been more or less similar to the other four countries, but the female advantage has been consistently higher and was 6.8 years at the start of the 21st century.

The improvements in life expectancy have been due to mortality reductions in all age categories, with decreases in infant and childhood mortality playing a particularly big role. In Norway, for instance, it can be estimated that some 13 of the 22 years of overall increase in life expectancy during the 20th century were due to reductions in mortality up to age 14. Table 3.1 shows the spectacular fall in infant mortality. At the start of the 20th century, some 8 per cent (Norway) to 14 per cent (Finland) of newborns died within the first year; at the start of the 21st century, infant mortality was extremely low (varied from 0.26 to 0.47 per cent).

Table 3.1 Deaths during first year per 1,000 live births in the Nordic countries 1900-2003/2004, selected ten-year periods. Source: Human Mortality Database (HMD 2006).

<table>
<thead>
<tr>
<th></th>
<th>Sweden</th>
<th>Norway</th>
<th>Denmark</th>
<th>Finland</th>
<th>Iceland</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900-1909</td>
<td>92.3</td>
<td>73.8</td>
<td>126.4</td>
<td>139.6</td>
<td>121.1</td>
</tr>
<tr>
<td>1920-1929</td>
<td>61.6</td>
<td>48.5</td>
<td>87.2</td>
<td>101.5</td>
<td>59.6</td>
</tr>
<tr>
<td>1940-1949</td>
<td>30.0</td>
<td>33.1</td>
<td>46.4</td>
<td>62.8</td>
<td>33.5</td>
</tr>
<tr>
<td>1960-1969</td>
<td>14.2</td>
<td>15.5</td>
<td>18.7</td>
<td>17.7</td>
<td>15.3</td>
</tr>
<tr>
<td>1980-1989</td>
<td>6.5</td>
<td>8.0</td>
<td>8.0</td>
<td>6.3</td>
<td>6.1</td>
</tr>
<tr>
<td>2000-ca.2003</td>
<td>3.4</td>
<td>3.7</td>
<td>4.7</td>
<td>3.3</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Reductions in childhood and adolescent mortality were similarly large, resulting in increasing survival into adulthood. At the start of the 20th century not more than 80-85 per cent of birth cohorts could expect to reach the age of 15 (only 73 per cent in Finland), while the corresponding figure was uniformly close to 99.5 per cent at the start of the 21st century.

Reductions in middle-age mortality have also contributed significantly to the overall increases in life expectancy. At the start of the 20th century, some 16 – 20 percent of those alive at age 45 could expect to die during the next 15 years; at the start of the 21st century, this percentage varied from 5.1 per cent (Iceland) and 5.2 per cent (Sweden) to 7.6 per cent (Denmark). The development in Finland has been somewhat different. Middle-age mortality
reached a peak during the Spanish flu/civil war years and was markedly higher than that of its Nordic neighbours up to the 1970s. Since the 1980s, however, Finland has become much more similar to its neighbours. Denmark, on the other hand, experienced slightly increasing mortality from the 1950s to the 1980s. While reductions in middle-age mortality slowed down or even stagnated in Norway, Sweden and Iceland during the 1950s, 1960s and 1970s, these countries have since then demonstrated a fall in middle-age mortality. As a consequence, Denmark has diverged from the middle-age mortality level in Norway, Sweden and Iceland. The reasons for this have been debated, and are likely to include differences in smoking and alcohol consumption between Denmark and other Nordic countries (see e.g. Juel, Bjerregaard & Madsen 2000).

Life expectancy in the older part of the population has increased for all Nordic countries, although the differences are clearly greater for old age mortality than, for example, for mortality before age 15. Generally, with the exception of Iceland, it is furthermore interesting to note that improvements in life expectancy at age 65 (e65) were relatively slow during the first part of the century, but accelerated somewhat since the 1930s. Hence, while life expectancy at birth (e0) had less growth in the second half of the century than in the first half, e65 shows the opposite pattern: more growth during the second half of the century than during the first.

3.1.2 Mortality and life expectancy: the Nordic countries compared to other high-income countries

Mortality developments during the 20th century in the Nordic countries were, overall, extremely positive. However, this does not imply that the Nordic experience was entirely unique. In order to examine this theme we will compare levels and trends in mortality and life expectancy in the Nordic countries to those of other developed countries — countries which constitute, in Esping-Andersen’s terminology (Esping-Andersen 1990), alternative forms of welfare capitalism or different welfare models. In addition to the five Nordic countries we have chosen ten other developed countries: Netherlands, Belgium, West Germany (although Germany was reunited in 1991, we treat West Germany separately because of the history of Eastern Germany), Austria, France, Spain, Italy, United Kingdom (represented by data for England/Wales), USA, and Japan. These countries are grouped in five broad categories: the Nordic countries, the Continental countries (Netherlands, Belgium, France, West Germany, Austria), Mediterranean (Italy, Spain – data for Portugal and Greece are not available), Anglo-Saxon (United Kingdom represented by England/Wales and USA, data for Ireland are not available) and finally Japan (Japan is sometimes classified as
belonging to the conservative type of welfare capitalism, but here we treat Japan separately).

One may say that mature types of welfare model did not come into existence before around the 1950s. The comparisons between the Nordic welfare state models and other types of welfare capitalism will therefore focus on the period since about 1960. Another reason for this focus is a practical one: the data utilised here lack mortality information for the first half of the 20th century for USA, Japan and Germany. First, therefore, we will describe mortality developments in Western Europe for the period 1900-1959. Here, the point is to describe the historical background, or, in other words, to show how life expectancy developed before the various types of welfare regime had been fully developed.

### Overall life expectancy in Western Europe 1900-1959

In Figure 3.2 overall life expectancy (e0) 1900-1959 is presented for the Scandinavian countries (Sweden, Norway and Denmark) together with eight other Western European countries. For five of these (England/Wales, Netherlands, France, Italy and Switzerland) there is data for the entire century, while mortality time series are shorter for Spain (starting in 1908), Belgium (1931) and Austria (1946).

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**Figure 3.2** Life expectancy at birth (e0), total for both sexes, 1900-1959, in Sweden, Norway, Denmark and eight non-Nordic Western European countries. Averages for five-year periods. Source: Human Mortality Database (HMD 2006).
With so many countries shown in one figure, it is of course difficult to see clearly how the mortality trajectories differ between the countries. The main purpose of the figure, however, is to demonstrate that the Scandinavian countries had a very particular mortality pattern. At the start of the 20th century, life expectancy was higher in the Scandinavian countries than in any other country in Europe. For the period 1900-1904, \( e_0 \) was 54-55 years in these Nordic countries, but considerably shorter in other European countries for which data are available – about five years shorter in the Netherlands, seven years in France, almost 12 years in Italy. It could be claimed that life expectancy in the Scandinavian countries was the highest in the world at that time – perhaps only challenged by the non-Maori population of New Zealand who had even higher life expectancy around 1900 (Vaupel et al. 2006).

This lasted well into the 1960s. The Netherlands caught up with countries in the 1920s, Iceland did so in the 1940s. Nevertheless, the position of the Scandinavian countries was uniquely favourable for the first two thirds of the century. In the early 1960s (1960-1964), Iceland, Norway, Netherlands, Sweden and Denmark, in that order, topped the longevity ranking not only of Europe but of the entire world (ranging from 72.4 to 73.6 years).

Changes in overall life expectancy 1960-2004 in fifteen high-income countries: the changing position of the Nordic countries

The most striking feature of the period from 1960 onwards is the general upward trend, with all the analysed countries experiencing considerably higher life expectancy. The average increase among these 15 countries was more than nine years in 40 years (Table 3.2). At the same time the standard deviation has also decreased, indicating that a general tendency of convergence between countries has occurred in addition to the general increase in life expectancy (see further section 3.2.1).

In addition to the general improvement we can distinguish some special trajectories. In Denmark, for instance, there has been a relatively small improvement, while Japan demonstrates a spectacular development with regard to life expectancy. Since the 1950s, Japan has been transformed from a country with an ‘ordinary’ level of life expectancy to the number one position in the world – a position held since the late 1980s which seems to persist into the 21st century.

Beside Japan, the Mediterranean countries of Italy and Spain have also experienced great increases. The Nordic countries, on average, started at a higher level than most other countries, and maybe because of this the Nordic countries have experienced somewhat smaller improvements than other
countries. It can be noted that Denmark, Netherlands and Norway – almost at the top of the longevity ranking in the early 1960s – also experienced the smallest increase in life expectancy during the following four decades (4.9, 5.2 and 5.4 years, respectively). Sweden and Iceland, on the other hand, have experienced increases of more than 6.5 years despite high initial levels, while Finland improved by nine years and is nowadays on a par with the Nordic average.

Table 3.2 Overall life expectancy (e0), total for both sex, in fifteen high-income countries, average for 1960-64 and 2000-03/04. Unweighted average for categories of countries. Source: Human Mortality Database (HMD 2006).

<table>
<thead>
<tr>
<th>Country</th>
<th>1960-64</th>
<th>Average</th>
<th>2000-03/04</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>73.4</td>
<td></td>
<td>80.0</td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td>73.5</td>
<td>72.4</td>
<td>78.9</td>
<td>78.9</td>
</tr>
<tr>
<td>Denmark</td>
<td>72.4</td>
<td></td>
<td>77.3</td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>69.1</td>
<td></td>
<td>78.1</td>
<td></td>
</tr>
<tr>
<td>Iceland</td>
<td>73.6</td>
<td></td>
<td>80.3</td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>73.5</td>
<td></td>
<td>78.7</td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>70.3</td>
<td></td>
<td>78.2</td>
<td></td>
</tr>
<tr>
<td>West Germany</td>
<td>70.0</td>
<td>70.8</td>
<td>78.7</td>
<td>78.7</td>
</tr>
<tr>
<td>Austria</td>
<td>69.6</td>
<td></td>
<td>78.7</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>70.7</td>
<td></td>
<td>79.4</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>69.6</td>
<td>69.7</td>
<td>79.8</td>
<td>79.7</td>
</tr>
<tr>
<td>Spain</td>
<td>69.8</td>
<td></td>
<td>79.6</td>
<td></td>
</tr>
<tr>
<td>England/Wales</td>
<td>71.3</td>
<td>70.7</td>
<td>78.6</td>
<td>77.9</td>
</tr>
<tr>
<td>USA</td>
<td>70.2</td>
<td></td>
<td>77.2</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>69.0</td>
<td>69.0</td>
<td>81.7</td>
<td>81.7</td>
</tr>
</tbody>
</table>

In terms of life-expectancy increase, it may be said that all the countries shown in Table 3.2 have done reasonably well – even those with the smallest growth (Denmark, Netherlands, Norway) have experienced clear improvements. If one takes a very broad, long-term, view, it could be said that the variations observed should not overshadow the fact that all these countries had, during the latter half of the 20th century, a strong, fairly parallel development which has tended towards convergence (the situation in the high-income countries becoming more similar) and catch-up (previously disadvantaged countries have had a somewhat higher rate of improvement than previously more advantaged countries). This is the overall view given by several mortality researchers (Oeppen & Vaupel 2002; White 2002). As a consequence, the Nordic advantage in terms of longevity has decreased or even disappeared.
Converging infant and childhood mortality at a very low level

One of the reasons why Japan, Italy and several other countries have attained, and partly surpassed, life expectancy in the Nordic countries, is the improvement in infant and childhood mortality and the reduction in inter-country differences for these indicators. Measurements of life expectancy are strongly influenced by deaths early in life (Edwards & Tuljapurkar 2005). The Nordic countries attained a fairly low level of infant mortality relatively early, which in a sense also means that they, in a way, ‘exhausted’ a source of further rapid improvement at an earlier stage.

![Graph showing infant mortality over time](image)

**Figure 3.3** Infant mortality (deaths during first year per 1,000 live births), total for both sexes, 1960-2003/04, in fifteen high-income countries. Average, ten-year periods. Source: Human Mortality Database (HMD 2006), death rates.

This is illustrated in Figure 3.3, showing the fairly large variation among the fifteen countries examined here during the 1960s and the gradual convergence, at a very low level, towards the end of the studied period. The Nordic countries are drawn with thicker lines, and it can be seen that they occupied a very favourable position during the 1960s. Other countries have practically caught up in recent decades, and as the improvement rate slows down as the limit (infant mortality = zero) is approached, the differences between countries tend to disappear in absolute terms. Nevertheless, national
differences in infant mortality between these 15 wealthy nations do exist. They may not be terribly important in a global or historical perspective, but they are clearly recognisable. Thus, in the first years of the 21st century England/Wales (5.4) and USA (7.0) had an infant mortality that was 1.5 and 2 times respectively above the Nordic average (3.5).

Likewise, childhood and adolescent mortality has been strongly reduced in all these countries. This development was, by and large, fronted by the Nordic countries, and then followed by the others. Thus, during the 1960s, 97.7 per cent of newborns could expect to survive through age 14 in the Nordic countries, and although some other countries had similar survival rates at that time (e.g. Netherlands, England/Wales), other countries lagged somewhat behind (range 95.1 in Spain to 97.0 in France). At the start of the 21st century, however, estimated survival through age 14 had become very high (about 99.5 per cent) and there was a variation of only 0.2 per cent among fourteen of the countries examined here – only USA lags behind a little, with a survival rate of 99.0 per cent.

**Middle-age mortality since the 1960s**

Turning to differences in middle-age mortality across countries, here defined as the probability of dying aged 45-59 as a percentage of those alive at age 45, a somewhat different picture emerges. Convergence and catching-up during the last four decades of the 20th century cannot be observed here in the same clear-cut manner as for infant and childhood/adolescent mortality – although the range in the 1960s (from 8.3 to 13.8 per cent) was clearly higher than the range during the 2000-2004 period (5.1 to 7.6 per cent).

The position of the Nordic countries in the 1960s was, on average, not markedly ahead of other countries, mainly due to the high middle-age mortality of Finland at that time (which was in fact the highest among these fifteen countries). At that time, however, Sweden and Norway had the lowest middle-age mortality of all the countries. All countries have improved markedly, but the situation in Japan and the Mediterranean countries was somewhat better in the first years of the 21st century than the average for the other groups of countries. The lowest middle-age mortality figures in 2000-2003/04 were found for Iceland, Sweden, Japan and Italy (ranging from 5.1 to 5.4) while the highest mortality levels were found in the US (7.9) and Denmark (7.6). As noted below, the smallest improvement among these countries is found in Denmark, while the greatest is found in Finland.
Table 3.3 Estimated mortality at age 45-59 (both sexes) in per cent of those alive at age 45, in fifteen high-income countries, average for 1960-69 and 2000-03/04. Unweighted average for categories of country. Source: Human Mortality Database (HMD 2006), life tables (period).

<table>
<thead>
<tr>
<th>Country</th>
<th>1960-69</th>
<th>Average</th>
<th>2000-03/04</th>
<th>Average</th>
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</thead>
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<td>5.2</td>
<td></td>
</tr>
<tr>
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<td></td>
<td>5.6</td>
<td></td>
</tr>
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<td>9.7</td>
<td>10.0</td>
<td>7.6</td>
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</tr>
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<td></td>
</tr>
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<td></td>
<td>5.1</td>
<td></td>
</tr>
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<td></td>
<td>6.0</td>
<td></td>
</tr>
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</tr>
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<td></td>
</tr>
<tr>
<td>France</td>
<td>11.8</td>
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<td>5.3</td>
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</tr>
</tbody>
</table>

Life expectancy at age 65

Lastly, in this review of mortality developments in these fifteen countries, we describe mortality among the elderly. Here, we present a gender-specific analysis, with Table 3.4 showing life expectancy at age 65 (e65) for men and women in the 1960s and the first years of the 21st century.

Generally, the Nordic countries had attained relatively high life expectancy among the elderly in the 1960s (although the relatively low figures for Finland pull the average down a little). Overall, however, the gains made during the last four decades of the century were lower among the Nordic countries than in many other countries, partly because increases were fairly slow in Denmark. Japan’s growth has been particularly remarkable, with life expectancy for men, and even more for women, among the elderly clearly surpassing that of other countries. In the first years of the 21st century, elderly Nordic men’s life expectancy, on average, was about the average level for elderly men in Continental, Mediterranean and Anglo-Saxon countries, while elderly Nordic women’s life expectancy seems to be lagging somewhat behind – note the current low mortality among elderly French, Spanish and Italian women – and of course the ‘extreme’ low mortality among elderly Japanese women.
Table 3.4 Life expectancy at age 65 (e65), separate for men and women, in fifteen high-income countries, average for 1960-69 and 2000-03/04. Unweighted average for categories of countries. Source: Human Mortality Database (HMD 2006), life tables (period).

<table>
<thead>
<tr>
<th>Country</th>
<th>1960-69</th>
<th>Average</th>
<th>2000-03/04</th>
<th>Average</th>
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</table>

3.2 The size of and trends in mortality variations across countries

Up to now, this chapter has focussed on averages – life expectancy, average mortality in different age groups, etc. But variability is also a characteristic of the mortality situation, and this theme constitutes to some extent an alternative angle to international comparisons of mortality. There are at least two approaches to the issue of variations in mortality, namely a focus on individual-level variability and a focus on inequalities in mortality between socially-defined groups. Although these two issues are clearly related, we believe that they should not be confused. Where individual variability in the age of death is driven by a number of different factors contributing to mortality risks, inequalities between social classes or educational groups are much more likely to be the result of social determinants and the social distribution of health risks. In a technical sense, this also means that individual variability includes all of the dispersion of age at death around the mean, while social inequalities refer to the between-group dispersion only. In the following we will address these two aspects of variations in mortality, both in terms of the size and to some extent also the trends over time of such variations.
3.2.1 Variability in the age of death – the individual level

Demographic research has long been studying the compression of mortality and how it should be measured (Kannisto 2000). The compression of mortality is related to the epidemiological transition. When childhood mortality was high and infectious diseases killed many across the entire life span, deaths were spread across many age categories. With socioeconomic progress and the huge reduction in infectious diseases, mortality has fallen drastically in infancy and childhood, and also substantially in adulthood. This implies that a large proportion of deaths are compressed within an even more narrow age span comprising late middle- and old-age. Using the example of Norway, for instance, during the 1920s about 55 per cent of all deaths occurred between age 65 and 89; the corresponding figure for 2000-03 was about 68 per cent.

Figure 3.4 Distribution of ages at death in Sweden and the United States, men and women combined, 1999. Source: Figure 1 in Edwards and Tuljapurkar (2005, p. 647).

This indicates that life expectancy (the mean) should be supported by some measure of dispersion in order to give a fuller picture of the processes behind differences in levels and trends of life expectancy. This is illustrated by an example provided by Edwards and Tuljapurkar (2005), in which the distribution of ages at death in Sweden is compared to that of the US (Figure 3.4). Despite the fact that the over-all pattern is similar and the most typical age of death (the modal value) is almost the same (86 in Sweden and 85 in the US), life expectancy at birth is not similar (79.5 in Sweden and 76.8 in the US). The major reason for this is the difference in shape of the bell
curves, with a higher concentration around the modal value in Sweden and higher mortality at all ages between 15 and 75 in the US. Hence the larger variation points to a public health problem in the latter population that is brought about by differences in the shape of the distribution of ages at death.

**Measuring the variability in age of death**

In the following, we will present a comparison between the fifteen countries of developments since the 1960s in the variability in the age of death (in other words, how mortality is compressed in these countries). A number of suggestions have been made as to how the compression of mortality should be measured (see e.g. Kannisto 2000). Here, we will focus on a measurement proposed by Edwards & Tuljapurkar (2005), namely the standard deviation in the life-table age of death past age 10 (termed S10). The reason for not using S0 (standard deviation in the age of death across all ages) is that the age distribution of all deaths deviates from an approximate normal distribution because of the spike in mortality during infancy generated by the relatively many deaths occurring during the first weeks and months after birth. When deaths below the age of ten are removed, the remaining curve approximates a normal distribution, making the standard deviation a reasonable measurement of how ages of death vary around the mean. However, it must be remembered that reduction in this measurement will not always be considered an improvement: a reduction in mortality among the very old, usually regarded as a positive development, will tend to elevate S10.

Thus, for our fifteen countries, we utilise the period life tables in the Human Mortality Database, remove the figures for deaths below the age of ten, and calculate mean age of death and the standard deviation around this mean for the remaining distribution of deaths age 10-100 (all deaths occurring at age 100 and above are set to age 102). We calculate this from life table numbers of deaths for five-year age spans.

**Variability in age of death since the 1960s**

The general trends in individual variability in age at death (as measured by S10) measured as the average over ten-year periods is presented in Figure 3.5, where the variability in age at death has been much more stable than the means, and that there is considerable variation across the 15 countries included here. If anything, however, there seems to have been a slight increase from the 1960s to the 1970s, followed by a tendency to somewhat declining variability in recent decades. Thus, deaths have become somewhat more equally distributed in the age structure, but this is not true for all countries. In fact, there are no signs of convergence between countries in terms of individual variation in age at death. Some of the Nordic countries
are among the countries with the lowest variability throughout the studied period, and Sweden and Iceland display stronger reductions than most other countries.

**Figure 3.5** Standard deviation in age of death above the age of ten (S10), total for both sexes, 1960-2003/04, in fifteen high-income countries. Average, ten-year periods. Source: Human Mortality Database (HMD 2006).

The cross-national differences are addressed more comprehensively in Table 3.5. During the 1960s, S10 varied between the fifteen countries from 13.56 (Sweden) to 15.40 (USA). The corresponding variation in the early years of the 21st century was from 12.90 (Sweden, Netherlands) to 15.15 (USA). In all countries except Denmark and Belgium there has been a reduction in the variability in age at death since the 1960s. When looking at the countries, grouped into categories, we can note that the Nordic countries have the lowest average in both periods (although the average for the two Mediterranean countries was almost as low in the latter period). Thus, this analysis suggests that the variation in age of death has been fairly low in the Nordic countries. But it must also be noted that the difference within the Nordic family (notably between Sweden, most equal according to this measurement, and Finland) is not insignificant, and moreover that variability in age of death in several other European countries is about the same low level as the average in the Nordic countries.
Table 3.5 Variability in age of death above age ten (S10), both sexes, in fifteen high-income countries, average for 1960-69 and 2000-03/04. Source: Human Mortality Database (HMD 2006), life tables (period).

<table>
<thead>
<tr>
<th>Country</th>
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<td>14.41</td>
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</tbody>
</table>

On the other hand, some countries have a fairly high variability in age of death, in particular USA. France also has a relatively high S10 value in the latter period, and this is probably the result of relatively high middle-age mortality in combination with fairly low old-age mortality.

Levels and variations combined - Life expectancy and variability in age of death

One could argue that the goal of health policies should be to combine high life expectancy with a low level of variability in the age of death, thereby striving for a rectangularization of the life curve. While life expectancy has often been used as an indicator for population health, it is less common for variability to be included among the prominent indicators when levels of population health are described.

8 The concept of rectangularization of the survival curve refers to a gradual shift towards a situation where very few deaths occur in younger ages and the overwhelming number of deaths happen within a fairly narrow age span in old age. With a perfectly rectangular survival curve everyone dies at the same (high) age (see e.g. Fries 1980; Kannisto 2000). The concept presupposes that there is a “natural” limit to the human life span, although it is debated whether such a limit exists (Oeppen & Vaupel 2002). For many decades the rate of improvement in life expectancy in “best practice” countries has been 0.20 – 0.25 years annually (Lee 2003), and there has been no special reduction in the rate of increase in recent decades.
Figure 3.6 Life expectancy at birth and variability in age of death above the age of ten, during 2000-03/04, total for both sexes, in fifteen high-income countries. Source: Human Mortality Database (HMD 2006). (Labels lacking for West Germany, Austria – the two circles between Norway and England/Wales).

The combination of these two measurements for the first years of the 21st century is shown in Figure 3.6. Following the arguments above, one could say that the closer to the upper left corner in this figure, the better is the public health performance. Sweden, Iceland, Japan and Italy are fairly well located in this sense - although also somewhat differently located. Of the other Nordic countries, Norway is around the average on both indicators, while Finland and Denmark are a little closer to the lower-right corner, i.e. the extreme location is occupied by USA, which combines a relatively low level of life expectancy with fairly high variability in the age of death.

3.2.2 Social inequalities in mortality

While individual variability in the age of death is an important and often overlooked complement to life expectancy figures, it does not explicitly

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9 This section is mainly based on the paper by Espen Dahl, Jon Ivar Elstad, Eero Lahelma and Pekka Martikainen commissioned by the NEWS-project, see Appendix I.
distinguish socially determined variation. Social inequalities in health and mortality between social classes or educational groups, on the other hand, do not reflect all socially determined variation. Nevertheless, social inequalities are of special interest from the point of view of the Nordic experience. Since social equality has often been regarded an important goal of social policy in the Nordic countries, it might be especially relevant to study how these countries perform in terms of health inequalities.

Possible links between welfare state regimes and health inequalities are a much-discussed issue. The Black report, originally published in 1980, pointed to Norway and Sweden as two countries where health inequalities were significantly smaller than in Britain (Townsend & Davidson 1982). Some early comparative studies also indicated that at least some of the Nordic countries had smaller class inequalities in health and mortality than those found in Britain (Vågerö & Lundberg 1989). However, later and more comprehensive comparisons have not supported these earlier findings, at least not in terms of relative inequalities. Some overviews of the current knowledge on health inequalities in a comparative perspective (Dahl et al. 2006; Mackenbach 2005) have been published recently. By and large these reviews conclude that social inequalities in health and mortality prevail in all countries studied in Europe and elsewhere. However, these reviews find little evidence to suggest that more egalitarian countries also have smaller inequalities in health and mortality, at least when inequalities are understood in relative terms.

In order to get an updated picture of our current understanding of the size and trends of health inequalities in countries belonging to different types of welfare state regime, a new review was conducted. This review included the following steps; 1) deciding selection criteria, 2) conducting a literature search in Medline, Cinahl, Global Health and Web of Science, 3) selecting relevant publications, and 4) reviewing studies and compiling results.

The selection criteria applied were 1) Studies that have been conducted over the past 20 years, 2) Studies that look at one or more of the following socioeconomic indicators: Social class, occupational class, education, and income, 3) Studies that address mortality, and/or cause-specific mortality, and 4) Studies that include at least two countries, one of which is a Nordic country. The third criterion is perhaps the one that is most exclusive. It was applied because of the comparability problems that are usually involved in international comparisons of self-reported measures of morbidity, and because of the general focus on mortality adopted in this report. Based on a literature search scanning the recent literature and personal contacts with leading researchers in the field, 26 studies were identified as meeting these
inclusion criteria (see Appendix 3). Each study was reviewed by only one reviewer, but all reviewers had access to all studies. For each study relevant information was collected by means of an extraction form.

Overview of the studies identified

Most of the studies include Western European countries and include men of working age only. Only three studies focus on infant mortality; there were no comparative studies of inequalities among children and adolescents (age 1 to 20), while only a handful of studies address inequalities in mortality among the elderly. The lack of knowledge about infant mortality in a comparative perspective is further accentuated by the fact that only one of three studies includes countries outside Scandinavia. The merits of these studies are therefore first and foremost that they point out differences (and similarities) within the Nordic camp. Sweden has the lowest inequality in infant mortality - lower even than the UK - especially in absolute terms.

The majority of the studies look at overall mortality. Some of them also contain information about cause-specific mortality. One should further note that occupational class and education are the most frequently used measures of socioeconomic status. None of the studies has used income as an indicator of socioeconomic position.

The size of inequalities – relative and absolute

In general, the findings referred to earlier still apply. There are inequalities in all the countries studied, and the Nordic countries do not systematically turn out to have smaller inequalities on a relative scale, for example when measured as rate ratios or odds ratios. Both absolute and relative inequalities in mortality persist into old age. However, relative inequalities in older age groups generally decrease by age, while absolute inequalities increase by age. Among women the reduction in inequalities by age is not observed in many populations. The studies that address elderly people indicate that the size of relative and absolute inequalities by education in Finland and Denmark is intermediate, but in Norway inequalities tend to be larger, particularly among women.

If we turn to absolute inequalities (differences between crude rates), no clear picture emerges. Some of the earlier studies (no 8 and 10 in Appendix 3) indicate that Sweden in particular is better off if we look at absolute measures instead of relative ones. This is a point made by several scholars (Fritzell & Lundberg 2005; Vägerö & Erikson 1997), but it must also be recognised that it applies to a smaller degree to other Nordic countries, and hardly at all to Finland. Furthermore, studies dating from the early 1980s did
not acknowledge the difference between relative and absolute measures and did not report on absolute inequalities.

From a policy evaluation point of view, this discussion is still highly important, since the question of failure or success of policies is not necessarily well captured by relative measures of inequality. This has been illustrated by a couple of studies (Fritzell & Lundberg 2005; Lundberg 2003). By reorganizing the data presented by Kunst et al. (1998) it becomes clear that very different pictures emerge depending on whether we base the presentation on relative inequalities, absolute inequalities or, as a third option, on the absolute level of mortality among the less privileged in society, here manual workers. While not being a measure of inequality at all, the absolute level of or trend in mortality among unskilled workers or some other group representing the unprivileged may be seen as an important test of the policies pursued. Relative inequalities may increase just because the mortality rate among the better off drops faster, and the same applies to absolute differences, although to a lesser extent. The level and trends among the worse off in a society, on the other hand, will better reflect whether the situation or the development is positive or not. A country with a comparatively low mortality rate among manual workers is a better place to live than a country with a high mortality level in this group, especially of course from the manual workers’ point of view. This is the case irrespective of how much lower mortality is among white collar workers in that country, and hence, we would argue, the mortality level among workers is a better way to evaluate policies from a comparative perspective than are rates or differences.

With respect to relative inequalities (rate ratios) the countries with the lowest inequality were Denmark and Norway (RR=1.33), with Sweden in an intermediate position (RR=1.40) and with Finland lagging behind (RR=1.52). France had the largest inequality (RR=1.70), while Italy, Portugal, Spain, Ireland and England/Wales are in the range 1.33-1.45. As regards absolute inequalities (rate differences) Norway and Sweden ranked at the top (lowest inequality). Denmark was now in the middle and Finland was still near the bottom. France was once again at the bottom. Looking at the crude mortality rate among workers, the lowest rates were found in Sweden and Norway. Denmark was slightly below the middle, whereas Finland again was next to the bottom. Ireland was at the bottom with the highest mortality rates among manual workers. While Ireland and Sweden had the same relative differences between manuals and non-manuals, the difference in mortality rates among manual workers were very great – the cumulative mortality risk among men between 45 and 65 years of age was 19.7 in Sweden and 29.1 in Ireland. For the purpose of discussing or even
evaluating policies, relative inequalities therefore appear to be of limited value, as was argued above.

On the other hand, it is also clear that there are rather large differences within the Nordic camp regardless of whether we consider the consequences of inequality as relative differences, absolute differences or absolute levels among workers. Finland in particular, a latecomer to the Nordic welfare model and with a long history of higher mortality levels (especially among men) and large individual variability in the age of death, also stands out as more unequal. However, Finland has improved considerably in life expectancy since the 1980s. So what exactly are the trends in health inequalities across these countries?

Unfortunately, there are not much comparative data on changes in inequalities in mortality over time. One of the few papers of this kind was published by Mackenbach et al. (2003). Table 3.6 shows our reworked results from this study, which includes changes in inequality of mortality from the 1980s to the 1990s. In line with the discussion above, it shows the changes in absolute and relative differences as well as the level among manual workers.


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<td>5.2 (2) 4.3 (2)</td>
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<tr>
<td>Denmark</td>
<td>1.44 (4) 1.42 (2)</td>
<td>1.9 (5) 1.8 (5)</td>
<td>6.2 (5) 5.7 (5)</td>
</tr>
<tr>
<td>England/Wales</td>
<td>1.36 (2) 1.53 (3)</td>
<td>1.4 (2) 1.6 (3)</td>
<td>5.3 (3) 4.6 (4)</td>
</tr>
<tr>
<td>Turin (Italy)</td>
<td>1.33 (1) 1.43 (1)</td>
<td>1.3 (1) 1.3 (1)</td>
<td>5.3 (3) 4.3 (2)</td>
</tr>
</tbody>
</table>

Since in these papers the Nordic countries can only be compared with England and Wales and Turin, the conclusions that can be drawn must be interpreted with caution. Still, the results are very much in line with the ones discussed above – Finland has a poor position in all three dimensions, whereas Sweden and Norway do well in terms of mortality rates among manual workers but have fairly large relative inequalities. Thus also in the 1990s, therefore, the Nordic experience in terms of inequalities in mortality among middle-aged men appears to be a mixed one. With respect to the most
policy relevant indicator, however, Sweden and Norway have comparatively low mortality rates among male manual workers. These findings are mainly repeated for cardiovascular disease mortality (Mackenbach et al. 2003) and stroke mortality (Avendaño et al. 2005).

One conclusion from this review of comparative studies of inequalities in mortality is that there are still only a few studies available. Generally, though, it can be said that inequalities in mortality between social classes or educational groups exist in all countries, regardless of welfare state model. When studied as relative differences (ratios) the Nordic countries perform no better, or perhaps even worse, than other countries. In terms of absolute differences or the mortality level among manual workers, however, at least Sweden and Norway seem to perform better than many other countries. Although Table 3.6 indicates that this may remain true, the comparative analysis for the 1990s is based on only four Nordic countries, England/Wales and Turin. Therefore, this observation is mainly based on analyses of data from the 1980s, and more analyses are needed to prove that this is still the case. Finally, the review suggests that the Nordic countries have fairly different experiences, with Norway and Sweden fulfilling the expectation of better conditions among workers, while Denmark and especially Finland, do not.

3.3 Mortality in Nordic countries – Concluding discussion

Generally, Nordic mortality history in the 20th century is a success story about the opportunity for living a long life. Some particular trends can be observed within the Nordic family. One interesting trajectory is that of Finland. During the first three quarters of the century, the situation was markedly worse in Finland than in the other Nordic countries. The special history of Finland, with its higher poverty levels and its more devastating experiences of war are some of the plausible explanations for this. But during the latter third of the century, Finland experienced a remarkable catch-up in terms of mortality levels, while simultaneously also expanding the welfare state and become more similar to other Nordic countries as regards public welfare institutions (Kangas & Palme 2005).

Denmark also constitutes a special case, with a development of life expectancy that was clearly less favourable in the second half of the century, especially from the 1950s to the 1980s. To fully explain why this happened is of course difficult. Analyses seem to suggest that a higher prevalence of harmful consumption patterns among middle-aged Danes played an important part (Juel et al. 2000). The negative mortality developments were
mainly due to higher mortality in the 35-74 years age groups. This excess 
mortality is driven by heart disease, but also by lung cancer among women, 
and to some extent by liver cirrhosis. In Denmark, economic development 
was hardly slower and the welfare state was no less developed during the 
1950-1990 period than for instance in Sweden or Norway. This suggests that 
special life-style factors may have been what distinguished Denmark from 
its Nordic neighbours. However, such life style factors are likely to be 
affected by the policy regimes adopted, for example in terms of taxation and 
availability of alcohol, a policy area in which Denmark throughout the 20th 
century differed substantially from the other Nordic countries.

While the development of mortality and life expectancy has generally been 
very favourable in the Nordic countries, this has been the case in many other 
countries as well. Thus the Nordic advantage in this sense has shrunk or 
even ceased to exist. A major contribution to this was the catch-up in terms 
of infant, childhood and adolescent mortality in Continental Europe, the 
Mediterranean countries and Japan. At least in part this is likely to be the 
result of a ceiling effect, perhaps most clearly seen for infant mortality – 
with infant mortality levels of 3 per 1000 as are found for several Nordic 
countries it is difficult to reduce the level much further. However, the Nordic 
countries remain among the top countries in the world with regard to infant 
and child mortality.

If the Nordic countries form a fairly distinct cluster in terms of infant and 
child mortality, there is more of a duality in middle-age mortality because of 
the unfavourable trend in Denmark and the still uncompleted Finnish catch-
up. Hence, if we look at recent figures for survival through childhood, 
adolescence and adulthood the three countries topping the list with 88.6 to 
88.8 per cent survivors through age 64 are Japan, Sweden and Iceland. Italy, 
Norway and Spain follow some 1.0 – 1.5 per cent behind. Thus, of the 
fifteen countries analysed here, half of the six ‘leading countries’ in terms of 
mortality during pre-retirement age are Nordic.

Thus, the impression that the Nordic countries have ‘lost their lead’ arises to 
a substantial degree from a somewhat less favourable development in old 
age mortality. Several countries – most notably Japan, but also France, Italy 
and Spain – have experienced larger reductions in mortality among the 
elderly in recent decades than the Nordic countries have. This pertains above 
all to elderly women. Elderly French, Spanish and Italian women – and in 
particular Japanese – have during recent decades attained a level of mortality 
which is lower even than that in the ‘best’ of the Nordic countries (i.e. 
Sweden, Iceland).
The very high overall life expectancy in Japan, compared to Iceland and Sweden, is almost solely generated by the ‘extreme’ low mortality among elderly Japanese women. The most recent figures (2000-2003/04) for overall life expectancy among women was 84.9 in Japan, 82.3 in Sweden and 82.2 in Iceland – a difference of some 2.6 years. Practically the same difference also existed at age 65, when life expectancy among women was 22.7 in Japan, 20.2 in Sweden and 20.4 in Iceland (Table 3.4). In other words, all the Japanese advantage in women’s life expectancy originates in life after age 65. Similarly, overall life expectancy among French women was 82.9 years in 2000-2003, some 0.6 years longer than in Iceland and Sweden. But the difference at age 65 was about one year (Table 3.4), indicating that women’s mortality up to age 65 was slightly higher in France than in Sweden and Iceland.

The explanations for such developments are certainly complex, and will not be discussed here. It demonstrates that many countries representing what could be characterised as the Continental or Mediterranean models – and of course the Japanese model – have recently been capable of contributing to healthy environments at more or less the same level as the Nordic countries. While this points to the fact that there are more than one road to success, it should also be noted that all roads are not equally successful. The Scandinavian countries did have an early advantage for some reasons, and they are still among the top countries in the world regarding life expectancy as well as infant and child mortality. On the other hand, the two Anglo-Saxon countries UK and USA, usually characterised as ‘liberal’ welfare states, have been less successful than many other countries in terms of mortality. This applies especially to USA. Although the differences are often not large, the figures indicate that USA has, of these fifteen countries, the highest infant mortality, the lowest survival through age 14, the highest middle-age mortality and the lowest overall life expectancy. Sometimes, this situation has been attributed to particularly unfavourable health among particular subsections of the US population (e.g., the poor). A recent analysis demonstrates, however, that relatively unfavourable mortality trends in USA also exist for subsections of the population which are advantageously placed in the social structure (e.g., white women in high-income US states) (Vaupel et al. 2006).

As for variability in mortality the results presented suggest that in the Nordic countries, again with the exception of Finland, the distribution of age of death around the mean (life expectancy) is somewhat narrower than in other countries. Hence, the catch-up phenomenon observed for life expectancy is not as clear in terms of individual variability. In Japan, for example, the development of life expectancy has been much faster than in Sweden since
the 1960s, while the Swedish advantage in variability (S10) has remained constant. This indicates that the fast development of life expectancy in Japan is not driven by all women living to high ages, but rather that some are living extremely long while other women (and men) are dying at much younger ages. Again, it can be noted that the Liberal countries, and especially the US, are performing less well.

The main conclusion from our attempts to study health inequalities between social groups from a comparative perspective must be that data are sparse and only available for a limited number of countries at a few points in time. However, the common notion that the Nordic countries, due to the egalitarian welfare state model, are doing better than other countries with regard to relative inequalities in mortality must be questioned. Although some early studies indeed suggested that this actually was the case, more comprehensive attempts to compare European countries rather indicate similarities between countries in relative inequalities. It has been suggested that relative inequalities are of little use when trying to assess the results of policies (see Lynch et al. 2006; Fritzell & Lundberg 2005; Vågerö & Erikson 1997); for that purpose the absolute levels are what matters: “Relative risk is not what decision-taking requires /.../ relative risk is only for researchers; decisions call for absolute measures.” (Rose 1992, p. 19). However, this is not to say that we can be inequality-blind; we must on the contrary study the absolute levels in several social strata and not only the average levels.

The main message of this chapter is that Sweden, Norway and Denmark had a public health advantage well before the foundation of the Nordic welfare state model, that the good public health in terms of longevity has by and large persisted in these countries, but that Finland as well as a number of other countries has caught up recently. There seem to be smaller individual differences in the Nordic countries, while relative inequalities in mortality between social groups are not smaller than elsewhere. However, in terms of the absolute levels of mortality among manual workers, Sweden and Norway have a better position than many other countries, while Finland is still lagging behind.
Although people’s welfare and well-being stem from material as well as intangible resources, economic resources are of course a key ingredient for the ability to live a decent life, mainly due to the possibility to convert income into goods and services. Consequently, it has also been shown that economic resources play a central role for people’s living conditions in many other areas of life (Fritzell & Lundberg 2000, 2005). Therefore, income redistribution has been a key feature of the welfare state. The goal of social policy, and different models of social policy, has traditionally been made with reference to redistribution (Titmuss 1958).

As a social determinant of health, fighting poverty and its consequences has been at the forefront of the public health discussion historically. In modern society, the importance of income is seen in both material living conditions, as well as the social participation and status that higher incomes can buy. In addition to such individual-level effects, there is also evidence of the importance of the level and distribution of income at national or regional level for public health. It therefore appears that small income inequalities and low poverty rates are linked to better population health through a number of mechanisms.

Relatively small income differences and low poverty rates have traditionally been a key feature of the Nordic countries, even though income differences seem to have increased somewhat in recent decades (Brandolini & Smeeding 2007; Fritzell 2001). A relatively even income distribution, especially regarding post-tax and post-transfer disposable income, may be seen as an important outcome of the Nordic welfare states (see e.g. Kautto et al. 1999, and Chapter 2).

Since poverty and income are often seen as crucial social factors influencing health, and since a general feature of welfare state programs is to create a buffer against income loss and to redistribute income both over the life course and between individuals, we obviously have one general path in how welfare states might affect population health. Moreover, the redistributive
aspects of the Nordic model, the focus of much attention, make the performance of the Nordic countries particularly interesting.

In this chapter, therefore, we will discuss general features of the Nordic experience regarding income redistribution and health. First we present some facts on cross-national differences in income inequality and poverty rates, scrutinizing the role played by welfare state redistribution for the cross-national variation. Second, we present a theoretical discussion of possible mechanisms, including how welfare state interventions may matter. This is a two-part discussion, starting with the relation between income and health at individual level, and continuing with a discussion about the possible detrimental effects on health of income inequality *per se*. Third, we present the results of analyses of the general effects of differences in welfare state programs on the development of life expectancy in 17 OECD countries over the whole 20th century. From this we are able draw some more general conclusions about the extent to which the policy principles that have characterised the Nordic experience have had an impact on life expectancy, net of GDP and other relevant factors. This analysis will then form the general background for the more policy-specific analyses collected in Chapter V.

4.1 Poverty, income redistribution and health

4.1.1 Poverty risks and poverty alleviation

The most elementary intention of the welfare state has traditionally been the elimination of poverty. According to Seabohm Rowntree’s (1901) classical study of working-class families a worker’s risk of poverty was especially high during three stages of his life-cycle: childhood, child-rearing, and old age. The welfare state and many social programs have since then been introduced to combat these risks. These efforts have in many respects been very successful, with family and pension schemes being particularly effective in mitigating the life-stage-dependent incidence of poverty. Nevertheless, at the beginning of the 21st century, after at least a hundred years of effort in the rich world, the question of poverty and social exclusion is at the centre of the ‘social dimension’ of Europe (Atkinson et al. 2002). The reason for this is mainly the fact that the significance and usefulness of a given income is very much relative to the economic and social context.

The main issue to be addressed in this first section is whether and to what extent the poverty risks are lower in the Nordic countries and, secondly, to what extent the Nordic countries differ from countries belonging to other
regime types in terms of size of welfare state redistribution via taxes and transfers.

**Relative poverty in a comparative perspective**

The literature on how to define, operationalize and measure poverty is enormous, and a thorough discussion of this topic is well-beyond this report. We will here confine ourselves to income poverty measurements (Jäntti & Danziger 2000), and we will define poverty relatively. Theoretically, this means that a “poverty line” is drawn with reference to what is customary in the society to which one belongs (Townsend 1979). In practice this means that we define poverty as having an annual income below a certain fraction of the median income in the country. Moreover, we will study low income for one year only. One should thus see our measurement as an indicator of being at risk of poverty rather than being in a state of poverty (Atkinson et al. 2002). The income measure is based on the household taking economies of scale into account by means of an equivalence scale.

While the relative approach to poverty is adopted by most in the research community, this type of such an approach is in some senses quite different from the common global measure of poverty adopted by the World Bank: i.e. having an income below 1 or 2 dollars a day. In 2001, 1.1 billion people had consumption levels below $1 a day and 2.7 billion lived on less than $2 a day (World Bank 2004). The latter is more in line with an absolute understanding of poverty and, as pointed out by Amartya Sen (1981, p. 17), “There is an irreducible core of absolute deprivation in our idea of poverty, which translates reports of starvation, malnutrition and visible hardship into a diagnosis of poverty without having to ascertain first the relative picture”. However, Sen also forcefully argues that the difference between the absolute poverty experienced by many people around the world and the relative poverty experienced by someone with a low income in a rich country is not that different: “Relative deprivation in the space of incomes can yield absolute deprivation in the space of capabilities. In a country that is generally rich, more income may be needed to buy commodities to achieve the same social functioning” (Sen 1992, p. 115).

Starting with an overview of poverty and the impact of welfare state redistribution in different countries (Fritzell & Ritakallio 2004)\(^\text{10}\), we present

\(^{10}\) The data comes from the Luxembourg Income Study (LIS), regarded as the most reliable source of cross-national comparisons of income inequality and poverty (for a thorough presentation see e.g. Atkinson et al. 1995). These data lack information from certain countries such as Iceland. The figures presented here do not include Denmark since there was no recent data for Denmark in the LIS at the time these figures were calculated. Other, less comparable cross-national analyses, do suggest
poverty rates calculated on basis of market incomes (the total bar), the poverty rates after taxes and transfers (the black part of the bar), as well as the percentage reduction in poverty caused by welfare states (Figure 4.1). The data refer to the year 2000, or the year nearest to that for which data from LIS is available.

Starting with the pre-tax and pre-transfer poverty rates – the ‘market poor’- it is indeed difficult to see any association between type of welfare state and prevalence of market poor. In fact, the market poverty rate is even slightly higher in Finland and Sweden than in Canada and the U.S.

Figure 4.1 Proportion below poverty threshold (60% of median equivalent disposable income) before and after welfare state redistribution and the size of poverty reduction in 11 countries around year 2000. Equivalence scale; traditional OECD-scale. Source: Fritzell and Ritakallio (2004). Data from the Luxembourg Income Study. *For these countries the poverty threshold before redistribution is calculated on incomes net income taxes.

The rates are much higher in the two Mediterranean countries, but this is mainly an artefact produced by the way in which income is measured.  

that Denmark has inequality and poverty estimates of around the same magnitude as the other Nordic countries. In fact a recent OECD-report suggests that Denmark has the lowest degree of income inequality and the lowest poverty estimates of all OECD-countries (Foerster & Mira d’Ercole 2005).

11 The pre-tax and transfer incomes (market incomes) for Italy and Spain are only available net of taxes, i.e. they are really post-tax, pre-transfer incomes. Thereby the
Interestingly enough, we find an increase in market poverty in all countries in which we can measure a change in these indices between around 1980 and 2000 (not shown in the figure). This is likely to be an outcome of at least two processes: the ageing of society, and a more problematic labour market attachment for a relatively larger proportion of people of working age.

We then turn to the post-tax and transfer incomes we find instead large cross-national variation as well as a systematic order. The Nordic countries tend to have the lowest rates after taxes and transfers are taken into account, the continental ones come in-between, while Italy and Spain together with the Anglo-Saxon countries form a third group with levels well above 15 per cent. Fritzell and Ritakallio found this overall pattern to be traceable over the last 20 years. If anything the data suggests that the regime differences were more pronounced around 2000 than in the early 1980s.

Hence, countries do not differ much in the degree to which the market produces poverty, but rather in the extent to which welfare state programs are designed to counterbalance the poverty generated by the distribution of market incomes. The poverty reduction produced by the income redistribution system therefore also indicates a clear dividing line between the different clusters of nations we have identified. The relative reduction shown in Figure 4.1 divides the countries into four clusters; the Nordic countries with a reduction rate of about 70 per cent, Continental Europe around 60, Southern Europe as well as Canada and the United Kingdom around 50, and the U.S. in a league of its own with a reduction rate just below 25 per cent, which gives the highest relative poverty rates of all the countries included in the analysis.

Against this type of analysis it can be argued that in countries with a higher average standard of living all citizens will be better off, even if the poor are poorer in relative terms. If that argument is correct, the poor in the U.S. in particular should have better living standards than suggested by the relative poverty rates. In other words, due to the fact that the pie is so much bigger, the poor of the U.S. should nevertheless get more pie despite the fact that their share is smaller than in other countries. This issue can to some extent be addressed by comparing real incomes, where incomes have been deflated using Purchasing Power Parities (PPPs). Such analyses should be interpreted with caution, however, since the comparability achieved by using PPPs is far from perfect. For example, it does not take into account the value of welfare fraction market incomes poor of the population in these countries are biased upwards in comparison to the other countries. This does not, however, affect the poverty rates when welfare state redistribution is taken into account (Figure 4.1).
services like education and health care, for which the part paid out of the individual’s pocket differ substantially between nations. Brandolini and Smeeding (2007) find that people with low incomes (in the 10th percentile) in Denmark and Norway have better real incomes than their US counterparts, while poor people in Finland and Sweden have about the same income standard in real terms. In summary, the authors claim that “while the rich in America are truly well off by any measure of living standards, many poor Americans at the same time have living standards below those in other nations which are not as rich as the United States” (Brandolini and Smeeding 2007, p. 11). Thus these analyses do not support the idea that in the U.S. the poor are better off in absolute terms despite the larger degree of income inequality; it rather appears that it is mainly the rich who benefit from the bigger pie. If differences in out of pocket payments for services like education and care could be properly taken into account, these findings would most likely be reinforced.

Although static and simplified, the figures on relative poverty presented above can be seen as indicative of the importance of welfare state programs for the incidence of poverty. Nevertheless such an analysis does not tell the full story. The differences in poverty rates between the Nordic countries on the one hand and other European countries on the other are much more marked for certain population groups, not least children and single mothers. Furthermore, more fine-graded analyses have also shown that not only welfare state redistribution but also female labour market participation are of significance for the relatively low poverty rates in the Scandinavian countries (Bäckman 2005; Fritzell & Ritakallio 2004; Jäntti & Danziger 2000; Micklewright 2004). Female labour market participation, especially among mothers, is in turn strongly influenced by welfare state characteristics and institutions, an issue we will return to in Chapter 5.2.

**Poverty cycles in modern age**

As was mentioned earlier in this section, the classic study by Rowntree (1901) highlighted the cyclical nature of poverty over the life course. Poverty risks were extremely high in childhood, among families with (many) children, and particularly among the elderly. A study by Kangas and Palme (2000) highlighted that such a picture is no longer evident in all countries due to the social protection systems that have evolved. On the other hand, since the early 20th century new social risk groups have appeared that were less visible back then, with single parents being perhaps the most obvious one.

A fruitful way to understand cross-national variation in poverty risks and the influence of welfare state redistribution is to take a closer look at the poverty
risks in high-risk categories. In Figure 4.2 we compare the relative poverty rates among single parents, families with 3 or more children, and those 65 years of age or above.

**Figure 4.2** Relative poverty rates for three “social risk categories” in 11 countries around 2000. Poverty threshold = 60% of median equivalent disposable income. Equivalence scale; traditional OECD-scale. Source: Fritzell and Ritakallio (2005). Data from the Luxembourg Income Study.

What is evident in Figure 4.2 is that the Nordic countries have fairly low poverty rates for all three sub-categories. For those aged 65 or above we find fairly low proportions generally, with the United Kingdom and the United States as the exceptions. In most Western European countries nowadays the elderly do not have a higher risk of poverty than the population at large. Big family size has traditionally been linked to a higher risk of poverty. By and large this still holds true. In all eight countries the poverty risk for large families is higher than the population average. Once again we find a systematic pattern in which the Nordic countries have lower figures than the central European ones and Italy and the UK have very high risks for the population category under scrutiny.

For single parents too (the majority being mothers) we can note extremely high figures for the U.K. and the U.S., and relatively low poverty rates for the Nordic countries. It is important to highlight that this great difference is not only caused by welfare state redistribution but by a more indirect welfare state institution effect, namely the extent to which one can make a living on the labour market. Consequently, for example Micklewright (2004),
highlights that what is especially striking in many English-speaking countries is the low labour incomes.

The only demographic group in the Nordic countries which seems to have high rates is young adults (not seen in the figure). While such a period of poverty for most young people is merely a passing stage it may be worrisome for at least two reasons. First, a fraction of these young people run the risk of never getting a firm labour market position, thereby also risking more permanent poverty and social exclusion. Second, if young people are at high risk of poverty this may strongly influence how they orient themselves towards their future, perhaps especially with regard to reproductive behaviour. Otherwise, it is evident that the Nordic countries are particularly successful in alleviating poverty risks for high-risk population.

**Redistribution and poverty alleviation – the Nordic experience**

Why, then, do the redistribution systems in the Nordic countries appear to be so successful in alleviating poverty, especially in comparison with Anglo-Saxon countries? One hypothesis could be that the redistribution is more targeted towards the lower end of the income distribution in the Nordic countries. However, this hypothesis is not supported by data. Instead we must remember that the total redistributive effect is the outcome of both the size of the pie to be redistributed and how it is ‘distributed’. In general, transfers, and indeed taxes, in the Nordic countries are not more progressive or targeted than in most other countries, but the redistributive size is much larger (see Atkinson, Rainwater & Smeeding 1995; Fritzell 2001; Korpi & Palme 1998). In that sense the data supports what Korpi and Palme labelled the paradox of redistribution: The essence of that paradox is that a system designed to target benefits to the poor ends up with higher poverty rates. They explain this paradox by three often overlooked facts: First, that the size of the redistributive budget is not fixed but rather influenced by welfare state characteristics; second, there is usually a trade-off between the extent of targeting towards the poor and the size of the budget; and thirdly, marked-dominated systems of distribution tend to be more unequal than earnings-related social insurance systems.

There is at any rate, ample evidence that the Nordic countries have been successful in reducing poverty and equalising the distribution of income more generally. We will now look at why relative poverty, and income inequality, may also be of importance for population health.
4.1.2 Income redistribution and health

While the design of welfare state institutions in the Nordic countries and the income redistribution they produce clearly results in lower poverty rates as well as low income inequality, our question is to what extent this levelling of incomes also results in improved public health. From a theoretical point of view, Rodgers (1979) presented a model of how smaller income disparities at societal level are linked to better public health through differential impact on individual health status among low- and high-income earners. He argues that the health returns by income are diminishing at higher income levels, implying that this relation is curvilinear (Rodgers 1979; Kawachi 2000). In Rodgers example (Figure 4.3) the curvilinear relationship implies that the health of the low-income person $x_1$ is much poorer than that of the high-income person $x_2$ before income redistribution (i.e. at $t_1$). Redistributing income from $x_2$ to $x_1$ at $t_2$ will result in an unchanged average income ($\bar{x}$), while average health ($\bar{y}$) improves. This is simply the result of the health gain among the poor being larger than the health loss among the rich as a consequence of this income redistribution.

![Figure 4.3](image_url)

**Figure 4.3** Theoretical connections between individual and aggregate level relationships between income and health (Adapted from Rodgers 1979).

Hence, a curvilinear relationship at individual level is sufficient to create an aggregate level relationship between income inequality and population health. In other words, we should find better average health in countries with more redistribution as a result of the poor being less poor and therefore
healthier. Furthermore, there may be contextual effects of income inequality *per se* on average health. While such effects may be small at individual level they may be of importance for public health since all in a society are exposed to income inequalities. Income redistribution will be of importance for health as long as at least one of these two mechanisms is operating; we will discuss both of them in more detail below.

The importance of income redistribution is conditional upon two assumptions. First, that the relationship at individual level really is curvilinear. If the individual-level relation between income and health is linear instead of curvilinear, transferring money from rich to poor would reduce disparities in income but not lead to a better average health status in that society. Of the relatively few studies that have looked into this relationship, those which have modelled income as a continuous variable have tended report a curvilinear relationship (Åberg Yngwe & Lundberg 2007; Deaton 2003; Ecob & Davey Smith 1999; Fritzell, Nermo & Lundberg 2004; Mackenbach et al. 2005), while studies using income in deciles or quartiles tend to report more linear relationships (see e.g. Andersen et al. 2003; Martikainen et al. 2001).

The second assumption, that the relation between income and health is not spurious but rather causal and directed from income to health. In so far as the link is the product of reversed causality or explained by other factor reducing income inequality obviously does not help. As discussed by e.g. Deaton (2003) many economists in particular remain sceptical about such a causal association. If we take a more orthodox view on this matter one could say that it is close to impossible to prove causality, but a more pragmatic standpoint would be to acknowledge that the relationships observed are partly due to causal processes, or to quote Deaton (2003, p. 121): “It is clear that there are influences between income and health that run in both directions, and that, in some cases, the lags can be as long as a human lifetime. In such circumstances, establishing clear causal patterns is a matter of great difficulty.”

4.1.3 Income and health – evidence and explanations for the individual level relationship

**Money as a marker or maker of health?**

Economic resources are important for individuals and families for several reasons. They can be transformed into other forms of resource; a higher income provides more choices, a higher degree of control and the ability to control ones circumstances – factors which are probably closely related to a lower degree of stress in life (Marmot 2005), as well as making it easier to
live a healthier life in many respects. The welfare state impacts on the relation between income and health mainly through redistribution and welfare resources. People are faced with various situations across life course which, depending on welfare state arrangements, benefit from collective solutions such as access to health care, education and social security. Access to these collective resources enables the individual to make choices in accordance with preferences and will also reduce the importance of the individual’s own economic resources.

In research on health inequalities, income is often used as an indicator of social position that is more or less interchangeable with other indicators like social class or education. Even though it is correct to say that these three reflect the stratification of individuals in a society, they also represent different dimensions of stratification. Whereas social class represents a basic structure, education is important for achieving a position in this structure while income can be seen as an important reward attached to such positions. Therefore these indicators of social position not only represent different stages in a process of social stratification, but they are also likely to affect health through different causal mechanisms (Geyer et al. 2006). Therefore it is not surprising that studies that have tried to isolate these effects have concluded that income does have an independent effect even when education and social class are controlled for (Ecob & Davey Smith, 1999; Erikson 2001; Geyer et al. 2006; Rahkonen et al. 2002). Thereby it has repeatedly been shown that income matters for health across the whole income distribution, although with diminishing returns in the highest income groups. Despite some differences between men and women, these data suggest that even when we consider household income where welfare state transfers as well as taxes are taken into account, there are clear differences in health between income layers.

Not only may social indicators as education, occupation and income be related to different causal mechanisms, but also income as such may be related to health in a variety of ways. How and why income is of importance for health even in rich countries has been discussed at length over the past decade or so. The two competing perspectives have been the neo-material and the psycho-social perspective. The neo-material explanation would suggest that an increasing material standard is of importance for health even after the more basic needs have been fulfilled, for example through the ability to afford food of higher quality, better housing and living in a safer area (Lynch et al. 2003). A psycho-social explanation would acknowledge this, but also argue that this could hardly explain health differentials in the upper half of the income distribution in richer countries, and that various psycho-social reactions to the restrictions to choices and social participation
associated with small economic resources will actually be of importance for
health throughout the whole income distribution (Marmot 2004).

We believe that the existing evidence supports both of these views, and that
an understanding of the reasons behind the remaining income-health
relationship in richer countries requires an integrated approach. The common
denominator to the material and the psycho-social perspective is that they
both refer to resources, explicitly or implicitly. Material, social and
psychological factors all represent resources by which people can control
and consciously direct the conditions of life, and as such they are all likely to
be of vital importance to health (see further Fritzell, Lennartsson &
Lundberg 2006). People with higher incomes, and occupying higher social
positions, command more resources, both material and intangible. Higher
incomes generate greater scope for action and fewer restraints, which is
likely to affect health by both these general mechanisms. In general, then, we
would propose that a lower income may be related to poorer health because
a) it causes people to refrain from buying goods or services that are
important for maintaining and restoring health, or forces them to purchase
cheaper goods or services that increase health risks (a direct consumption
effect), b) it prevents people from participating in the life or social group that
they feel they belong to because they cannot afford the goods or services
most people in that group can afford (a combined consumption-status effect),
or c) it gives people a lower rank in society (a direct status effect).

While it is certainly difficult to disentangle these different pathways between
income and health in empirical analyses, the model in Figure 4.4 is an
attempt to explain these three pathways and enables us to discuss more
specific mechanisms within these pathways. Part of the relation between
income and health could also be due to reversed causality, meaning ill health
leading to lower income.

The model is an attempt to illustrate the three pathways listed below. Hence,
the direct consumption effect, (drawn with solid lines), includes those kinds
of consumption whereby poorer people or their families will run higher
health risks as a direct consequence of the economic priorities that they are
forced to make. While many of the most obvious cases of this kind, such as
health care costs or costs arising from unemployment, are buffered by the
welfare state (albeit to varying degrees), there are still a range of instances in
which a shortage of economic resources will result in greater health risks.
These might include less nutritious food, unsafe household equipment, or
effects derived from a person’s ‘choice’ of where to live. The direct status
effect on the other hand (marked by the dashed arrows) is a result of income
position through comparisons with other persons in the income distribution,
generating poor health through stress-responses triggered by relative deprivation. One concrete example could be perceived unjust income differentials at the work-place causing effort-reward imbalance (Siegrist 1996) and, in a longer perspective, poor health.

Figure 4.4 Model for pathways and mechanism linking income and health.

However, the bulk of the relation between income and health, we would suggest, is likely to arise from a combination of these pathways, depicted by the dotted arrows in the model. In short, this means that most psycho-social effects are actually triggered by the inability to purchase certain goods or participate in certain activities, while at the same time these goods and activities are also important for health in their own right. People who live under more restricted economic circumstances will simply have poorer health because of these circumstances and because they do not fulfil their own or society’s expectations. This brings us back to the quotation by Sen in section 4.1.1, that in a generally rich country, a higher income is required to buy the commodities needed to take part in the community. Poverty in the form of reduced capability can thus be experienced at many income levels.

Let us give a few examples of this. First, a number of consumption items are linked to with high status. Being able to afford such items (a nice car or a
house in an attractive area) will boost status and make you feel better, but will at the same time have some direct advantages in terms of car safety or neighbourhood quality. Second, the striving to keep up with the norm will sometimes cause people to prioritise commodities that signal social participation at the expense of other costs which may be important for health such as dental care. This type of ‘crowding out’-effect can be exemplified by the ‘sneaker deficiency problem’ discussed by Marmot (2004); the poor single mother buying a pair of popular brand sneakers for her son will force her to cut down on other things, like home insurance. Third, not being able to keep up with norms or own expectations may trigger compensatory behaviours that in turn are damaging to health. Young people in a group who cannot afford the right cell phones or the right jacket could perhaps compensate this by being extra tough, using alcohol or drugs and taking larger risks in order to show off in front of their peers.

In general, many health-related behaviours are likely to be of great importance for many arrows in the model. It seems reasonable to assume that they are influenced by both physical and psycho-social causal chains. Lynch et al. (1997) show health behaviour and psychosocial characteristics to be related to socio-economic conditions throughout the life course and they suggest that childhood, adolescence as well as adulthood are potentially important stages for attempts to alter adult health-related behaviour. Nevertheless, in many western countries today lower socioeconomic groups, groups with less purchasing power, show a higher rate of tobacco consumption.

To conclude this discussion concerning individual level mechanisms, we suggest that it is a misconception to present the main alternative explanations as opposite and mutually exclusive. Instead we believe the general theoretical construct of command over resources helps us to better understand the mechanisms involved. The possible health effects of Nordic-type social policies may thus be seen as a function of the degree to which such policies increase the amount of resources available to individuals in general. In this respect, income redistribution and subsidised services may increase resources and options in a way that improves health through both material and psycho-social mechanisms.

**Income and health in the Nordic welfare states – previous findings from the Nordic countries.**

Although few, if any, directly comparative studies have been published, a relation between income and health has been found in previous studies in the Nordic welfare states and elsewhere. Comparing self-reported morbidity by income level in six European countries, Cavelaars et al. (1998) found higher
morbidity rates in lower income groups, but smaller health inequalities by income in Sweden and Finland compared to Great Britain and the Netherlands. They conclude that social policies in the Nordic countries may have been more effective in reducing health inequalities in relation to income compared to health inequalities in relation to education or social class.

Andersen et al. (2003) analysed low income as a risk factor for IHD (ischemic heart disease) using longitudinal data from Denmark, and found that in a large middle-income group income was not associated with risk of IHD. They discuss this finding as a possible effect of the study being conducted in a welfare society with a rather fair distribution of the public resources that influence health. They hypothesise that measuring social position by education or occupation might disclose a gradient in health in this large middle-income group. In a study comparing Sweden and Britain, the magnitude of social inequalities in self-rated health was similar in size, but the share of these inequalities explained by poverty and income was larger in Britain than in Sweden, being partly due to the different degrees of exposure to low income in the two countries. (Åberg Yngwe et al. 2001)

In a recent study by Elo, Martikainen and Smith (2006) the relationship between family income and mortality was analysed for Finland and the US during the 1980s and early 1990s. In general their results point to similarities rather than differences between the countries – in both there is a curvilinear relation between income and mortality, and the slopes are similar. However, the U.S. sample is restricted to non-Hispanic whites, which is likely to reduce the variation in both incomes and mortality in the data for the U.S. Nevertheless, the authors conclude that income appears to be slightly more important for mortality in the U.S than in Finland.

To summarize these results, from a European perspective income seems, in an absolute sense, to have less impact in Sweden, Finland and Denmark than elsewhere, while the Finnish-U.S. comparison is less conclusive. However, the number of comparative studies is small, especially where mortality is used as an outcome. While we can be certain that money matters, the importance of welfare state redistribution is less certain. However, a basic feature of the welfare state is income redistribution, causing final disposable incomes to be more equally distributed than market incomes. In addition, access to subsidised services, like education or health care, will reduce the importance of the individual’s own economic assets and will probably impact on the relation between income and health. Person and families on low income will end up with better economic resources than the market alone can provide them with. With regard to consumption effects, this would
lead us to hypothesize a weaker association between disposable income and health than between earnings and health—which has also been shown to be the case.

Figure 4.5 Odds-ratios for poor self-rated health by income deciles, men aged 25-64, Sweden. Standardised for age, population density, educational attainment, social class and employment status.

Figure 4.5 presents the relationship for Swedish men between individual market earnings and equivalent disposable household income on the one hand and less-than-good health on the other (Fritzell, Nermo & Lundberg 2004). The figure shows odds-ratios of ill health for deciles of each income measure, controlling for age, population density, educational attainment, social class and employment status. The general finding is that differences in health according to income are larger before income redistribution (earnings) than after (household income). However, this is the case only in the lower part of the income distribution, which gives empirical support to the individual-level consequences of income redistribution that can be derived from Rodgers’ model (see Figure 4.3). This is the case for men; the results for women are less conclusive.

Following from the lines of thought and results presented above, countries with less redistributive systems, where household incomes are more dependent on earnings from the market, should also have a steeper relationship between income and health. This is at least the case for direct consumption effects. Given that part of the relationship between income and health is generated by combined consumption-status effects, or even by direct status effects, predictions regarding the impact of the welfare state are
more difficult to make. This is because the effects of income on health originating in social exclusion or status hierarchies are also likely to exist when the income distribution is more compressed. While the relative importance of status and exclusion-driven effects of income and health have yet to be established, smaller income differentials are still likely to be linked to a weaker association between income and health as long as the relationship is not entirely created by status effects.

4.1.4 Income inequality and health

While reduced income inequality is likely to affect public health because of a reduction in the number of relatively poor, income inequality may also have an effect per se, over and above the individual-level effect. This issue has received intense attention lately. Not only have a large number of studies been published - a recent review includes 168 studies (Wilkinson & Pickett 2006) – but a heated debate has also flourished, both about the basic idea and the mechanisms behind it. The hypothesis was, by and large, elaborated by Wilkinson (1992, 1996), although much of the basic idea was already presented by Preston (1975) and Rodgers (1979). Wilkinson argued that among rich countries it is not economic prosperity as such that matters but rather how you distribute that wealth. In other words, it is income distribution rather than GDP that is of importance for population health. The importance of the distribution of income is implied in the Rodgers-curve presented earlier. The relative unimportance of GDP is suggested in the Preston-curves linking GDP and some basic population health indicator, globally (see e.g. Deaton 2003; Kawachi & Kennedy 2002). Accordingly, both in a micro- and macro- analysis you would find curvilinear relations between income and health. At the macro-level in the rich countries you would at present find that the cross-country association between GDP and life expectancy is slightly negative (see further Chapters 4.2 and 5.2).

Our intention here is not so much to review the literature (for some major reviews see Deaton 2003; Lynch et al. 2004; Subramanian & Kawachi 2004; Wilkinson & Pickett 2006), but rather to discuss a number of methodological and theoretical issues with special reference to public health and the Nordic welfare states. These reviews, at least in part, reach varying conclusions about the impact of income inequality on population health.

Proper design to proper question

The idea that income inequality might have a crucial impact on population health has, over the years, come to be replaced by the question of whether or not there is a ‘truly’ contextual effect over and above the individual association between income and health. It is often argued that the most solid
evidence is a multi-level study in which we control for all possible individual confounders, taking the individual-level relation between income and health into account, and then analyse whether any effect of income inequality on some morbidity or mortality outcome remains. This is sometime also referred to as trying to distinguish the concavity-induced effect from the pollution effect (Subramanian & Kawachi 2004). This is indeed a scientifically interesting question which naturally has policy implications. It is not, however, the most salient question from a policy perspective.

As was hopefully evident from the arithmetic in Figure 4.3, the curvilinear relation implies that health gains are achieved by an equalised distribution of income. If the association between income and health at individual level reflects a causal relation and if the shape of this relation is truly curvilinear, redistribution from rich to poor will indubitably improve population health. Its policy relevance is thereby inherent. This remains true even if a proper multi-level analysis fails to prove that income inequality has an independent contextual effect, i.e. the pollution effect.

A second important topic, also highlighted by Wilkinson and Pickett (2006), is the level of aggregation. The question of income inequality and health suffers from the usual small-n problem in cross-national research, and given the complexity of the issue and the fact that any given level of income inequality will also serve as an indicator of a wide range of features in the national context, it is hardly surprising that the relation is contested. Any correlation may be strongly affected by a single case and obviously correlation is not the same as causation. A recent study by De Vogli et al. (2005) claims that the cross-national correlation between income inequality and life expectancy that existed in the early 1980s but disappeared in the early 1990s now has returned. They give a substantial interpretation for that finding but, not least given the small-n plus all other complexities involved, it might of course just be random fluctuation. This inherent problem has led the research community rather to analyse data at any level of aggregation without much reflection about which level of aggregation you would expect income inequality to matter from a theoretical perspective. Lieberson (1985:108) has thoroughly discussed this issue in more general terms: “If the conceptual or theoretical issue is on a given level of analyses, then the empirical evidence obtained on a lower level will not be relevant for determining the merit or validity of the theory.”

Although it is not self-evident which level would be most appropriate, we would argue that the area should at least be large enough to constitute
business and labour markets, such as larger metropolitan areas or economic regions. The study of income inequality effects at the neighbourhood level is a good illustration of the issue. Whether or not in a multi-level analysis we can find effects from average income and income inequality at a neighbourhood level controlling for individual confounders is indeed scientifically important and intriguing. But it can hardly be seen as a test of the income inequality hypothesis. Even if the effect of income inequality change sign at the lowest level of aggregation it could very well be in accordance with the income inequality hypothesis (Fritzell 2005; Stjärne et al. 2006). This is in fact not as surprising as it may sound. Inequality within a small area is rather a measure of socio-economic heterogeneity, or what is often termed a socially mixed area, and thereby indicative of a lower degree of segregation within a larger unit such as an economic region.

If all poor (and rich) people live in the same neighbourhoods we will have an extreme residential segregation. This, in turn, is likely to foster an increase in income inequality and the level of income inequality, in turn, is likely to be related to a number of social processes even at lower aggregation levels. One central process is residential segregation. While it is important to stress that there is not a one-to-one relation between income inequality and segregation it seems reasonable to assume that there is a relationship (Kawachi 2002), and segregation is sometimes regarded as the spatial expression of income inequality (Ross 2004). If segregation is causally related to income inequality and income inequality is related to health, we would assume that income level would be of great importance at the neighbourhood level while the inequality effect might be negligible or even change direction.

But why should heterogeneity within a small area be positive? The literature on segregation is of interest here. In general both social trust and social infrastructure may be seen as key factors. Not least, a certain number of middle/upper-class inhabitants are sometimes seen as necessary for the basic institutions of an area (cf. Wilson 1987). The idea of the advantages of socially mixed areas is linked not only to social integration but also to educational achievements and inequality. If the local school has pupils from different social classes, those from lower strata, unfamiliar with higher education will possibly, be influenced by their peers’ aspirations and interests and accordingly see higher education as possible choice for them.

Consequently, there have been many political attempts to reduce segregation, which in essence means increasing neighbourhood inequality. Although housing policies and city planning are likely to influence
segregation processes, more general factors like income redistribution policies undoubtedly also affects these processes.

![Figure 4.6](image)

**Figure 4.6** Hypothetical relation between income level, income distribution and health outcomes at different levels of aggregation.

The empirical cross-national evidence about differences in degrees of segregation is much sparse and more unreliable than the evidence about poverty rates or income inequality. Nevertheless, in a review Musterd (2005) concludes that there is clear evidence that socioeconomic segregation is lower in European cities than in the U.S.

In their review Wilkinson and Pickett (2006) point to the fact that the level of aggregation in which a study is performed is strongly related to whether or not income inequality hypothesis receives support (see also Dahl et al. 2006). A general conclusion would then be that the relative importance of income level and income distribution change as modelled in Figure 4.6.

In the literature it has also been suggested that a threshold effect exists in the relation between income inequality and health (Lynch et al. 2004). A
comparison between metropolitan areas in Canada and the U.S. suggested, for example, that an expected relation was found in the US but not in Canada (Ross et al. 2000; Ross 2004). However, a recent study by Dahl et al. (2006) casts some doubts on this interpretation, since they found an effect in Norway.

4.1.5 Poverty, income redistribution and health – summing up the discussion

In this section we have shown that market incomes are unevenly distributed in all countries, but that the levels of poverty after income redistribution vary a great deal. Further, poverty and lower incomes on the individual level is clearly linked to health, and while the nature of the relationship is still unclear we would argue with Deaton that a substantial part of the relationship is likely to be causal. If the relationship between income and health is partially causal and curvilinear as several studies have suggested, then income redistribution will generate positive public health effects.

But instead of focussing on these two central issues (causation vs. selection and linearity vs. curvilinearity) the bulk of research during the past few years have focused on contextual effects. While such effects over and above the individual effects could in principal be important even with small effect sizes due to the fact that all in a society are supposed to be exposed, we have argued that the debate to date have overlooked the issue of level of aggregation. It is fully possible, we would argue, that many of the seemingly contradictory findings reported in the literature could be caused by the use of different aggregation levels. As we have tried to show, a high degree of income equality on a national level might well be linked to relatively high levels of income inequality on local levels, due to a lower degree of economic residential segregation. Therefore, the relationship between income inequality and health or mortality might actually change sign as we move from local residential areas over regions and up to the national level.

While the literature by and large have tended to report no or at best small effects of income inequality per se on health and mortality, it is therefore too early to conclude that such effects over and above the individual effects are not there. Universal social protection will increase recourses for a large number of citizens across a large part of the income range during periods of life where such protection is of greatest importance from a health point of view, mainly during childhood, parenthood and old age. Only based on what we know about the individual level relationship between income and health this would lead us to believe that there is health gains to be made from social policies that reach larger segments of the population, as well as from policies
that have high replacement levels. More universal and more generous social protection, especially of a kind protecting children and the older parts of the population, are therefore likely to be linked to better health and lower mortality.

While this could be true also without effects over and above the individual level, the hypothesis would of course gain credibility if there were more conclusive evidence on income inequality effects. However, some support for contextual effects can be found from international comparisons suggesting that universal welfare states have positive implications for various aspects of social cohesion. For example, it has been reported that trust in other people is higher in the universal and Nordic countries than in countries where needs-testing social programmes dominate (Kääriäinen & Lehtonen 2006; van Oorschot & Arts 2005; van Oorschot et al. 2006; Pichler & Wallace 2007; Rostila 2007). This has been suggested to reflect that contacts with universal welfare-state institutions tend to increase social trust, whereas experiences with needs-tested social programmes undermine it (Kumlin & Rothstein 2005). Welfare states relying mainly on universal social policies also tend to have higher levels of other aspects of social cohesion such as participation in voluntary associations (Kääriäinen & Lehtonen 2006; van Oorschot & Arts 2005;), social support and social contacts (van Oorschot & Arts 2005; van Oorschot et al. 2006; Pichler & Wallace 2007).

In this report we have chosen not to rely so much on cross-national comparisons of income inequality and health, or segregation and health, but rather to focus on the social rights regarding insurance against various social risks. There are several reasons for this more indirect approach, not least the complexity and the small-n problem, i.e. the number of observations will be small. Reliable comparative income distribution tends not to be available before the 1980s, while reliable comparative segregation data hardly exist at all. Therefore, our strategy is to focus on those direct welfare state measures which aim to redistribute income and to study whether we can find any evidence that they influence population health. In the following section we present an empirical analysis of the coverage and generosity of welfare state programs and how these aspects relate to life expectancy. In Chapter V we will focus on more specific programs and their association with population health.
4.2 Welfare state development and life expectancy\textsuperscript{12}

How much evidence is there then, that welfare state development is linked to the increase in life expectancy in OECD-countries throughout the 20th century? Given the central importance of economic growth, the central research question can be rephrased as; what, if any, is the impact of the welfare state on life-expectancy net of economic growth? The period studied covers an entire century: we have gathered data on life-expectancy, economic indicators and welfare-state related dimensions for the period 1900-2000 in 17 OECD countries.

It is generally accepted that economic growth is essential to reducing mortality. However, several researchers in the field are sceptical or at least warn against too simplistic a view of the relation. Szreter (1997, p. 693) points out that growth “entails critical challenges and threats to the health and welfare of the populations involved and does not, therefore, necessarily produce development”. In recent times it seems in fact quite easy to find examples in which the relation between growth and health consequences are muddled. Marmot (2004) highlights the post-communist countries as a prime example. Deaton (2006) notes that both China and India have seen slower improvements in mortality after their tremendous economic growth than in earlier periods with little growth. He further notes that there is no cross-country correlation between reduction in child mortality and economic growth.

In any event, economic growth is also intertwined with other factors commonly used to measure human development and social progress. Thus, GDP growth not only demonstrates the more narrow impact of money but also reflects a wider phenomenon of general democratization and modernization process (Mkandawire 2004).

The primary role of economic growth has also been a debated issue in the welfare state literature. The underpinning idea in the “logic of industrialism” (e.g. Wilensky 1975, 2002), is that the ultimate driving force behind welfare state development has been the increase in economic prosperity. According to Harold Wilensky’s widely cited books, GDP growth and the age of social protection systems are the best predictors of welfare outcomes. The specific kinds of welfare state and social policy program that are in operation are not so important; the crucial point is the growth of GDP that facilitates the expansion of social policies, and these two interwoven phenomena explain

\textsuperscript{12} This section is mainly based on the paper by Olli Kangas commissioned by the NEWS-project, see Appendix 1.
almost everything that is happening in welfare-related fields, including health and longevity. Needless to say this is a contested ‘logic’ and many others have claimed the importance of political actors in shaping welfare state development (Korpi 1989; Esping-Andersen 1990).

The data used in this section are for 1900, 1920, 1940, 1950, 1960, 1980 and 2000. The research questions are: To what extent, if any, is life expectancy associated with a) GDP per capita; b) level of welfare state development (explained later); c) the size of the welfare state measured as a share of social spending of GDP and d) indicators of generosity and universalism. We start by describing and visualising associations between longevity, economic prosperity and a number of welfare state characteristics (merged cross-sectional analysis), and we will also present results from pooled cross-sectional time series analyses.

The sample of countries comprises 17 OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the UK and the USA).13 Such a sample contains countries that are sufficiently different in their welfare state characteristics to make these comparisons fruitful and interesting. In line with what was discussed earlier we use welfare regimes as descriptive or grouping categories, rather than as explanations of empirical outcomes. As categories such as ‘the Nordic’, ‘Liberal’, or ‘Conservative’ welfare states do not explain exactly what the outcomes are, consequently the categories are like black boxes. To avoid this black box problem, empirical analyses of the impact of the welfare state are based on more accurate indicators, such as the size of the welfare state and the generosity and universality of benefits. We will here outline the general

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13 The data on male, female and total population life expectancy for 1900-2000 in this section is derived from the Human Mortality Database (www.mortality.org), which was created in order to provide freely accessible mortality and population data. This database contains original calculations of death rates and life tables for national populations, as well as the raw data used in constructing those tables. The raw data consist of death counts from vital statistics, plus census counts, birth counts, and population estimates from various sources. For a few countries/time periods data from OECD has been used. Data on social rights and the implementation of social insurance systems have been compiled within the Social Citizenship Indicator Project (SCIP) conducted at the Swedish Institute for Social Research, Stockholm University (for a more detailed description, see Korpi 1989; Palme 1990; Kangas 1991). Data on social spending originates mostly from OECD but have been adjusted to increase comparability and a number of additional sources have been used (see further Kangas 2006 for details).
development over a century and try to see whether the welfare state plays any role in the ‘big story’. More detailed analyses will be found in Chapter V.

**Table 4.2.** Development of life expectancy in 17 OECD countries 1900-2000. Source: Human Mortality Database.

<table>
<thead>
<tr>
<th></th>
<th>Females</th>
<th></th>
<th>Males</th>
<th></th>
<th>Total</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>St.dev.</td>
<td>M</td>
<td>St.dev.</td>
<td>M</td>
<td>St.dev.</td>
</tr>
<tr>
<td>1900</td>
<td>49.0</td>
<td>4.6</td>
<td>46.2</td>
<td>4.1</td>
<td>47.6</td>
<td>4.4</td>
</tr>
<tr>
<td>1920</td>
<td>56.6</td>
<td>4.9</td>
<td>53.8</td>
<td>4.9</td>
<td>55.2</td>
<td>4.9</td>
</tr>
<tr>
<td>1940</td>
<td>64.5</td>
<td>3.9</td>
<td>58.1</td>
<td>8.5</td>
<td>61.1</td>
<td>6.5</td>
</tr>
<tr>
<td>1960</td>
<td>73.4</td>
<td>1.5</td>
<td>68.0</td>
<td>2.1</td>
<td>70.7</td>
<td>1.7</td>
</tr>
<tr>
<td>1980</td>
<td>77.8</td>
<td>1.1</td>
<td>71.0</td>
<td>1.3</td>
<td>74.4</td>
<td>1.1</td>
</tr>
<tr>
<td>2000</td>
<td>81.5</td>
<td>1.3</td>
<td>75.9</td>
<td>1.1</td>
<td>78.9</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Life expectancy at birth has almost doubled in the West over the last century (Table 4.2). On average, from 1900 to 2000 Westerners have been able to postpone their deaths by 31.3 years. With this increase being somewhat higher for females than for males. During the 1940s, gender differences as well as cross-national differences between men increased. In the 1920s the gender difference was 2.8 years to women’s advantage, whereas it was 6.4 years in 1940. Due to highly divergent exposure to the Second World War, the cross-national standard deviation among men almost doubled. Some countries came through the war without very large reductions in life expectancy, while other countries were hit extremely hard. Due to the war against Soviet Union, Finnish males lost as much as 13.5 years between 1939 to 1940 and again 11.6 years from 1943 to 1944 (www.mortality.org). Unfortunately, we lack comparable data for Germany and Japan, where the impact of the war was most probably even greater than in Finland. This indicates that in our subsequent causal analyses, we have to introduce a measure that tries to capture the detrimental impact of war on longevity, particularly among men. Setting the war period(s) aside, in the wake of improved health, cross-national differences have decreased, as indicated by standard deviations in Table 4.2. The same trend is evident for both sexes.

While it seems reasonable to assume that economic growth played a major role in this long-term development it also seems reasonable that additional factors are of importance. In the subsequent sections we try to shed some light about the debate on the relative impact of growing national wealth and various aspects of the welfare state on the increase in longevity over the course of the 20th century.
4.2.1 GDP and life expectancy

Over most of the period covered here GDP and life expectancy have been positively associated, although at present this correlation has disappeared.

Figure 4.7 shows the relation between GDP per capita and life expectancy for 1900, 1950 and 2000. In the first cross-section, the correlation between the two variables is weakly positive (r = .20) and the GDP levels ‘explain’ 13 percent of the variation in life expectancy (R² = .130). In the 1950 data, the association is statistically significant (r = .67**) and the variance explained is substantial (R² = .445), while in the most recent data the association turns out to be negative and non-significant, and the variance explained is much smaller (r = -.31; R² = .097). Thus the testimony from the cross-sectional inspection in Figure 4.7 is partially contradictory. If we pool the three cross-sections together – and feign for a while that our observations represent different cases – we find a strong correlation (r = .83**) and GDP per capita now explains as much as 69 percent of the variation in life-expectancy (R² = .689).

![Figure 4.7 GDP per capita and life expectancy 1900, 1950 and 2000 in 17 OECD countries.](image)

14 The indication of statistical significance is the usual one: * pertains to significance at 5% level; ** pertains to significance at 1% level and *** pertains to significance at 0.1% level.
We could in principle construct a full time series for all countries and for all years. If that were the case, we could merge 100 cross-sections to get a complete picture of 1700 ‘cases’. However, for time and work load reasons, we have to be satisfied with a less comprehensive approach and utilise the above-mentioned seven cross-sections. Figure 4.8 presents both the observed relation and curve estimations from both linear and logarithmic regression models.

**Figure 4.8** Observed, linear and logarithmic curve estimations of the relationship between GDP and life expectancy 1900-2000.

The reason for the latter is that there is a clear curvilinear association in this association. An increase in income by one to 10 000 dollars contributes more to longevity, after which the effect levels off. The very same curvilinear pattern emerges from bivariate scatter plots based on global worldwide samples (Deaton 2003; Fritzell & Lundberg 2005). Both linear and logarithmic regressions produce statistically highly significant results. In the case of female life expectancy, the linear model explains 65 percent, while the fit of the logarithmic model is somewhat better and the variance explained is 81 percent. In the male sample, the corresponding figures are 62 and 76 percent.

### 4.2.2 Age of the social insurance system and life expectancy

In his influential analysis on determinants of the welfare state expansion and increased social spending, Harold Wilensky (1975) argued that in addition to
economic growth the age of the national social security system is of decisive importance: Once a nation has adopted a social security program, the program begins to follow its own inherent logic and expands. In our case an important welfare state indicator should be the age of the social security system that captures the maturation effects of the implemented social policy programs. The older the system, the better the social policy and the greater the consequences in terms of increased longevity. This line resembles recent debates in the welfare state literature about path dependency (Pierson 2001).

As a rule, the implementation of social insurance programs has followed a particular sequential pattern (see Kangas 2006 for a detailed description). Typically, work accident insurance is introduced first, followed by sickness insurance and old-age pensions, whereas unemployment insurance usually came later. Family benefits tend to be a real latecomer. The Nordic group is by no means a homogeneous regime, characterized by early timing of social insurance programs for example. In some cases, some of the Nordic countries were among the first implementors: pensions and unemployment insurance in Denmark or work accident in Norway and sickness insurance in Sweden. However sometimes they have lagged behind: sickness and pensions in Finland, family benefits in Denmark, pensions in Norway and legislating unemployment protection systems in Sweden.

![Fig 4.9 Observed, linear and logarithmic curve estimations of the relationship between the age of social insurance systems and life expectancy 1900-2000.](image)

The relation between the age of the system and life expectancy is reported in Figure 4.9 in the same manner as was shown for GDP in Figure 4.8. This bivariate exercise lends some support to Wilensky’s idea. Both linear and
logarithmic estimations produce highly significant coefficients and there are no substantial differences between the methods. The linear regression explains 73 percent of the variation in female and 68 percent of male life expectancy. The corresponding figures for the logarithmic models are 72 and 64 percent. Since curvilinear variables perform better in equations that also include a number of other explanatory factors, we will use them later on as the indicator for the system’s age.

Out of the five insurance programs from which the ‘system age’ variable is constructed, work accident and perhaps unemployment insurance are of less importance, while sickness insurance, which in most cases also covers health care costs, is more relevant. The same goes for pensions. It can be assumed that improvements in pension benefits, enable the elderly to escape poverty and improve their command over their lives, an issue we will return to in section 5.4.

4.2.3 Social spending and life expectancy

Social spending, in some form or the other, is no doubt the most common indicator of welfare state effort. It is nevertheless important to note that this indicator is in many ways a problematic one. Perhaps the most serious problem is that it does not necessarily say much about the qualitative aspects of social policy. High levels of social spending can be achieved for example by slowing down economic growth, increasing the number of beneficiaries and reducing benefit levels. Thus, there are a number of intervening variables that may contaminate the validity of the indicator (Kangas & Palme 2005). It is in a sense both ahistorical and atheoretical. The development of welfare states has over more than 100 years in many respects been a struggle and a compromise between political actors. Esping-Andersen (1990, p. 21) puts it well: “If our aim is to test causal theories that involve actors, we should begin with the demands that were actually promoted by those actors that we deem critical in the history of welfare-state development. It is difficult to imagine that anyone struggled of spending per se”.

On the other hand, social expenditure is a measure that exists over the whole period and it can to some extent be seen as a necessary but not a sufficient condition. The big welfare state is not necessarily the best, but the small is seldom beautiful (Kangas 1991). A further advantage of social spending is that it includes both the ‘cash’ and the ‘care’ side of the welfare state. Figure 4.10 shows how social spending is associated with life expectancy in the same manner as was reported earlier for GDP and the age of the social insurance systems. The finding is once again similar. As seen in the figure,
where the individual years are merged together, the association is strong and the logarithmic transformations also produce better fits than the linear models. The explained variance in the linear models is 64 percent for women and 63 for men, while the logarithmic models yield 83 and 74 percent respectively; that is, we see once again decreasing marginal utility. The initial investment in social policy leads to greater output and after a certain level of spending the extra spending does not contribute that much.

Figure 4.10. Observed, linear and logarithmic curve estimations of social spending (% of GDP) and life expectancy 1900-2000 in 17 OECD countries.

4.2.4 Social rights and life expectancy

The concept of social rights, based on Marshall’s (1950) notion of the sequential enlargement of citizenship rights, refers to legislated social provisions aimed at guaranteeing citizens' economic welfare and security (Korpi 1989; Marshall 1950, p. 11). As the growth of social rights has taken place via modern social policy, and eligibility to benefits is established in legislation, the data collection is limited to statutory or ‘public’ welfare programs. The SCIP data base thus excludes all labour-market based, collective and individual insurance programs.

When calculating the quality of social rights, we thus concentrate upon schemes characterized by being created via national legislation or involving direct public participation in financing; private alternatives and functional equivalences have been avoided. The time span for which SCIP-data has been collected stretches from 1930 to, for the purpose of this paper, 2000 as a rule, with observation points at five-year intervals. For the period 1900 to
1920 benefits were calculated by using various national sources in the countries whose social security programs had been implemented before 1920 (see Kangas 2006).

For each scheme, we have information about the degree of the coverage (the proportion of those who are in principle entitled to benefits); the qualifying conditions regulating access to the benefits (how long one must be member of a scheme, for how long a period contributions must be paid for, residency criteria, income/means-testing etc.); the number of unpaid waiting days (for sickness, unemployment and work injury benefits); the length of the benefit period (for sickness, unemployment and work injury benefits); and the amount of benefit paid. Benefits are calculated for a number of ‘typical’ cases, the earnings of an ‘average production worker's wage’ in manufacturing industry, household composition (single person and four-person family with one wage earner/couple in the case of pensions), and the length of work incapacity (relevant for sickness, work injury, and unemployment - in these cases benefits are separately calculated for 1 week and 26-week absences). Since benefits were previously non-taxable income, but are today taxed in many countries (with few exceptions), it is necessary to take the effects of taxation into account. Therefore, net benefits – that is, benefits after taxes and social security contributions – are related to the net wage (for details of taxation, see Palme 1990, p. 26-36). In this report we are interested in two general indicators: 1) generosity, i.e. the level of income loss compensation the major social insurance schemes guarantee, and 2) the degree of universalism which, in turn, refers to the proportion of the population covered under these schemes. For all four insurance schemes (pensions, sickness, unemployment and work accident insurance) two measures of the degree of universalism and generosity respectively were constructed. Both measures vary between 0 (no entitlements, no benefits) and 100 (total population covered, benefits = income).

In pooled cross-sections both welfare-state quality measures are strongly associated with life expectancy. In contrast now however, the shape of the associations is more linear, and the linear regression fit is better than curvilinear in spite of the visual inspection that hints at curvilinearity. According to a linear model, universalism explains 67 percent, and according to a logarithmic model, it explains 42 percent of the variation in female life expectancy; for males the figures are 65 and 38 percent respectively. The corresponding numbers for generosity are slightly lower: 64 and 37 percent for women and 60 and 32 percent for men.
As expected, there is a clear correlation between generosity and universalism ($r = .80^*$), therefore, and for descriptive purposes, we constructed a compound measure by adding these qualitative indicators together. The compound indicator bears a close resemblance to the decommodification index constructed by Esping-Andersen (1990). Consequently, the interpretation of our additive ‘decommodification index’ is straightforward: a value of 0 indicates no rights at all, and a value of 100 indicates that everybody gets everything. Needless to say, this decommodification index is
anything but a perfect measure of statutory social policy that affects life expectancy. The index covers only income transfers, whereas the whole service sector, which certainly has an important impact, remains outside the analyses. Total social spending also covers services and is therefore a better indicator of the overall social responsibility the welfare states have taken on in different countries.

Figure 4.12 Decommodification and life expectancy 1900-2000 in 17 OECD countries.

There are some interesting deviations from the general pattern. First, in liberal regime countries – notably Australia and New Zealand – life expectancy is higher than country scores for decommodification would predict. The same goes for Japan, while for some Central European countries longevity records are too poor in relation to their achievements regarding social protection. The Nordic block behaves mostly as the model predicts, or to be more accurate Norway and Sweden do somewhat better and Denmark under-performs slightly in life-expectancy. The overall story told by Figure 4.12 is that statutory social policies may contribute to health, but there are many other factors that are also important, by either enhancing or inhibiting increases in longevity.
4.2.5 Pooled cross-sectional time-series analysis

In the preceding sections we examined whether the effects of the explanatory variables on the dependent ones have changed from one point in time to another, mainly relying on merged cross-sectional comparisons of levels. The analysis was based on correlations and ordinary OLS-regression applications. Analyzed in this way, all the broad indicators seem to be of importance. To make more efficient use of our data we will now report results from pooled cross-sectional time-series analyses. The term ‘pooling’ refers to a procedure whereby successive cross-sections are collapsed into one larger data base, i.e., the cross-sectional data (observation years 1900, 1920, 1940, 1950, 1960, 1980 and 2000) were merged, and this pooled data was analyzed as a panel which provides multiple observations for each country in the sample. By pooling data we obtain additional information about the variation between countries as well as over time, and we can ‘increase’ the number of observations (e.g. Hicks 1994; Hsiao 1990; Micklewright 1994). In this particular case the number of observations will increase from 17 to 119 (7 x 17).\(^{15}\) As the cases do not form a sample of any defined universe, statistical significance tests should only be treated as a heuristic device for evaluating the obtained results.

The results are displayed in Table 4.3. Model 1 includes logarithmic GDP as well as the size of the welfare state (social spending) and the age of the social security system which all contribute significantly to the increase in life expectancy, while the impact of the war has the opposite effect. This model ‘explains’ about 74 per cent of the life expectancy variation. Model 2 also includes dummies for welfare state typology. When we control for the variables in Model 1, including social spending, the welfare state typologies do not help us to explain cross-national life expectancy differences and their development over time. This is of course not to say that welfare state variation does not matter, since both social spending and the age effect of the welfare state remain significant. In Model 3, the two general indicators of universalism and generosity are included. Both contribute significantly to the increase in life expectancy after adjustment for GDP and War impact. In other words, at any given level of economic development the coverage and generosity of pensions, sickness, unemployment and work accident insurance (taken together) have a positive impact on life expectancy.

\(^{15}\) A number of regression techniques are available to deal with the special problems of analyzing pooled data. Not surprisingly, each of them has its weaknesses and results seem to be highly sensitive to the specific method applied (see e.g. Hsiao 1990; Huber and Stephens 2000). Pooled regressions were run by the STATA 9 (STATA 2005, 226-235) cross-sectional time-series package using Prais-Winsten regressions on correlated panels and corrected standard errors (PSCE).
In Model 4 we instead take a closer look at health care regimes. When different categories of healthcare regimes are included as dummy variables with ‘other’ as reference category (mutual funds, no insurance at all, mixed model) all health care regimes have a positive impact after adjustment for GDP and War impact. However, in an expanded model including dummies for health care regimes together with all variables in Model 1, only health insurance have a significant positive effect on life expectancy over and above the effect of social spending and the mature of social policy programs (Model not shown). This result shows that health insurance systems where coverage is universal has stronger impact on life expectancy than other forms of health protection systems.

Further analyses (not reported here, see Kangas 2006) indicates the importance of declining infant mortality as a factor in the increase in longevity. However, including infant mortality in the models above does not change the main message of Table 4.3. Although infant mortality is a key aspect of the variations in and development of life expectancy, the results indicate that the welfare state is also important for life expectancy over and above the first year. In the forthcoming Chapters we will present results from more detailed analyses in which we try to link more specific social programs and reforms to mortality variations in different age spans.

In conclusion it appears that social spending and the age of the system, which can perhaps both be seen as proxies for the ambition of the welfare have a positive effect on life expectancy. But beside these general effects we also have presented results supporting a universalist interpretation, not least the fact that health insurance has proved to be significant in the analyses presented above. Generally speaking, for the life expectancy of a population to improve, it is better to have wider coverage or universal access to care, than to have more generous benefits channeled to a limited circle of

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16 We classified countries according to the way they finance health care, using a previous classification (Gordon 1988, p. 203-205). The reference category includes countries with no insurance in force, those with mutual sickness funds or on country-specific mixed solutions (exemplified by Australia, Japan, and Switzerland). The majority of countries follow three main lines: 1) In many Central-European countries (Austria, Belgium, Germany, France, the Netherlands) they follow the traditional line (sick insurance) that are mainly for employed persons and can vary according to funds or locality. The ‘national health insurance’ (health insurance) is nationwide and covers all citizenry homogenously (as in Canada, Finland, Norway and Sweden) or they have established a national health service system (as in Denmark, Italy, New Zealand, and the UK) where the public sector is responsible for providing care.
recipients. The very same story is told by pension take-up rates (see further Chapter 5.5): As so eloquently summarised by Kangas (2006): it is better to give decently to all than lavishly to few.

**Table 4.3.** Pooled cross-sectional times-series analysis on the determinants of life expectancy in 17 OECD countries 1900-2000.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1: System logic</th>
<th>Model 2: Regimes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef</td>
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<tr>
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<tr>
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</tr>
<tr>
<td>System age (^1)</td>
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</tr>
<tr>
<td>War impact</td>
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<td>-5.68</td>
</tr>
<tr>
<td>Nordic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporatist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universalism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sickness insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health service</td>
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<td></td>
</tr>
<tr>
<td>Constant</td>
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<td>.07</td>
</tr>
<tr>
<td>Adj R(^2)</td>
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<td></td>
</tr>
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</table>

\(^1\) Logarithmic

<table>
<thead>
<tr>
<th>Variables</th>
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<th>Model 4: Insurance</th>
</tr>
</thead>
<tbody>
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<td>5.76</td>
</tr>
<tr>
<td>Social spending (^1)</td>
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</tr>
<tr>
<td>System age (^1)</td>
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<td></td>
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<tr>
<td>War impact</td>
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<td>-3.32</td>
</tr>
<tr>
<td>Nordic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporatist</td>
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<td></td>
</tr>
<tr>
<td>Generosity</td>
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<td>3.15</td>
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<td>Universalism</td>
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<td>3.59</td>
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<td>Sickness insurance</td>
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</tr>
<tr>
<td>Health insurance</td>
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<td></td>
</tr>
<tr>
<td>Health service</td>
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<td></td>
</tr>
<tr>
<td>Constant</td>
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</tr>
<tr>
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</tr>
</tbody>
</table>

\(^1\) Logarithmic
V. POLICY AREAS

In the previous chapter we tried to outline the general features linking social protection programs to health, both theoretically and through a more general test of welfare state characteristics and their relation to overall mortality throughout the 20th century. Although the results from research on income and health strongly suggest that income redistribution contributes to improved health via a variety of mechanisms, this is of course not in itself a sufficient test of the impact of the Nordic type of welfare state. And although the general analysis presented in Section 4.2 also suggests that the welfare state features that are most typical for the Nordic type of welfare state are indeed linked to life expectancy when economic growth and a range of other factors are adjusted for, it is important to go beyond this very general analysis. Therefore, this chapter goes through in more detail a range of more specific policy areas, and discusses and tests their potential impact on health and mortality for more specific outcomes.

The policy areas included for more detailed scrutiny have been selected on several grounds. First, they range over the whole life-course, but with an emphasis on children and the old, since this is the emphasis of the welfare state as well. Second, since the report focuses on the Nordic experience, policy areas have been chosen in which the Nordic countries tend to differ from other types of welfare state. Third, we treat larger policy areas rather than specific programs, which mean that we, for example, discuss and analyse the general features in terms of design and generosity of pension systems rather than specific interventions directed at old people. Fourth, in order to minimize overlap and double work we have put our emphasis on policy areas that are not directly covered by Knowledge Networks or other projects associated with the CSDH. Consequently, working life and health care has received less attention than otherwise would have been justified.

The chapter is organised around five policy areas, namely families and children, alcohol, health care and pensions.
5.1 Family and Children

The purpose of this section is to analyse the long-term historical development of infant mortality and the public health measures that were initiated to save children’s lives. We take a long historical perspective in this section for several reasons. As noted in previous chapters, the Nordic countries early on had a comparatively high level of population health, although the mortality risks for infants were extreme by today’s standard. The mortality decline was visible long before the construction of the welfare state, which indicates that we should pay some attention to the forerunners of the Nordic welfare state that have intentionally and unintentionally influenced and improved the prerequisites for the health of the population. In fact we would argue that several of the features that were important for the mortality decline are also those that facilitated the construction of what later became known as the Nordic welfare state model. Once we reach the era of welfare state expansion we will proceed and present results from comparative analyses in which we focus on the possible links between family policy legislation and welfare state institutions and cross-national and cross-temporal variation in infant mortality. We further evaluate whether various family policy models are associated with the level of female labour force participation and possible consequences for women’s health.

Figure 5.1 shows the levels of and decline in infant mortality in all Nordic countries together with Britain and France from 1801 to 2000. During the 19th century there was an approximately twofold increase of the population in the Nordic countries. The number of people who belonged to the poor strata of the community grew rapidly. In the mid 19th century a mass emigration started from Sweden/Finland to North America that went on until the first decades of the 20th century. In spite of economic and social hardship and extreme levels of infant mortality at the beginning of the 19th century, when every fifth child in Sweden and Finland died within their first year and as many as every third in Iceland, the infant mortality decline had a very early onset in these countries. In comparison, Denmark and Norway started off at lower levels but, like both Britain and France, the substantial decline lasted until the beginning of the 20th century. At the turn of the century, the level of infant mortality was lower in all Nordic countries than in Britain and France.

Economic development is often seen as the most important determinant of the historical decline in child mortality. It has been suggested that improved nutrition and a general rise in the standard of living had an effect on child mortality, mainly through a decline in tuberculosis mortality (McKeown 1976). This is however disputed and a different opinion is that the decline is mainly due to a decline in diarrhoea mortality. Lithell (1999) has suggested
that the early decline was rather a consequence of changes in nursing habits (i.e. prolonged breastfeeding) both in poorer and wealthier times. Breastfeeding campaigns driven by a strong state in interplay with local actors were crucial for this change. Organised public health and sanitary reforms at the turn of the nineteenth century, including specific interventions such as improved water and sanitation, have been seen as crucial for the improvement of child health (Nathanson 1995; Szreter 1988, 2002).

In the 20th century, Sweden and Norway started out with the lowest infant mortality rates, (100 per 1000 live born) and after the first decade Iceland followed the same curve. However, it was not until the 1960s that Denmark and Finland reached the same level and all Nordic countries once again had lower levels than Britain and France.

**Figure 5.1** Infant mortality rates\(^\text{17}\) from 1801 to 2000 in all Nordic countries and Britain and France, calculated as mean values over five year periods.

The mortality pattern in the later part of the 20th century differs by cause from those discussed above. As infant mortality falls, the fraction of non

\(^{17}\) Infant mortality rate is the number of live newborns dying under one year of age per one thousand live births.
preventable deaths will increase. However, even if infant mortality rates fell dramatically in all welfare democracies during the 20th century there were still substantial cross-national differences at the end of the period. This can of course be seen as an indication of a persisting amount of preventable death among infants. Figure 5.2 displays the decline and variation in infant mortality rates in 18 OECD countries. In the early 1950s average infant mortality was 40 per 1000; by the turn of the century it had dropped to 5 per 1000. The measure of dispersion (CV) indicates that at the end of the period there was substantial cross-national variation.

**Figure 5.2** Average and dispersion of infant mortality in 18 OECD countries 1950-2000. Deaths per 1000 population. Dispersion is measured by the coefficient of variation (CV). Source: Ferrarini & Norström’s report to the project, see Appendix 1.

Section 5.1 consists of three empirical examples introduced by theoretical overviews. We start by giving an historical background, were we discuss a few of the good examples of how the society have tried to influence the survival of infants throughout time. By looking at these interventions in the political, social and economic context over a long time period it is possible

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18 The countries included are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States.
to trace common features that distinguish the Nordic countries. This is followed by the first theoretical example: a case study of urban childhood diarrhoea mortality in Stockholm, Sweden, at the end of the 19th century. We then move over to a cross-national approach to enable comparisons of different family policy models. As was touched upon in the earlier chapters, welfare state family support of different kinds is the late comer among major types of social policy program. We also find a substantial cross-national variation in family programs, which often either support the male breadwinner model or a dual earner model. After a brief theoretical introduction we present the second and third empirical examples.

The second theoretical example is a cross-national and cross-temporal analysis of infant mortality highlighting the influence of family policy. The data used cover the later part of the 20th century. The third example focuses on female labour force participation. Here we analyse the extent to which female life-expectancy and self-rated health is associated with female labour force participation across 18 OECD-countries.

5.1.1 From population policy to family policy institutions – the historical background

Prior to the welfare state (c.1750- c.1870)

In the 17th and 18th centuries European rulers had adopted the economic theory of mercantilism, according to which a large and vigorous population was highly valued. A large and healthy population increased the state’s wealth because of its potential as labour, armed forces or tax payers. In order to make an inventory of the assets of the Swedish kingdom, the newly founded National Statistics Bureau (Tabellverket 1749) made yearly collections of information about births and deaths in Swedish and Finnish parishes (Bengtsson Levin 2005; Johannisson 1990).

The authorities in Denmark followed the Swedish example and conducted regular population censuses from 1769. As both Norway and Iceland at this time belonged to Denmark, population statistics in there were influenced by

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19 This section is mainly based on the paper by Magdalena Bengtsson Levin commissioned by the NEWS project, see Appendix 1.

20 The constellation of the Nordic countries has changed over the centuries. In the 18th century Finland belonged to Sweden and Norway and Iceland were parts of Denmark. In the 19th century the picture had changed once more; now Sweden and Norway were united and Finland belonged to Russia. In the 20th century the Nordic states finally became independent states (see further section 2.1).
the mother country. The very first recording of vital statistics (mostly regional) was however initiated as early as the 17th century in the Nordic countries, as a consequence of the early state formation in conjunction with the Protestant church. This unusually long tradition of collecting population statistics is an important common feature of the development of the Nordic countries.

In Sweden and Finland the statistical analyses performed by the National Statistics Bureau made it clear that infant mortality was extremely high and would threaten population growth seriously; as much as a quarter of the population died before the age of one. To stop the negative population growth it was necessary to combat the high infant mortality and a number of measures were accordingly taken.

**Information campaigns for improved childcare**

Nursing habits, hygiene and childcare in general were early identified as important factors behind the high infant mortality. Feeding with a milk substitute was widely practised all over Europe in the 18th and 19th century, both among the peasantry and among women of the upper class. The main reasons were heavy workload, other duties (for the upper class), as well as an ignorance of infants’ needs and cultural factors (Lithell 1999). In Sweden and Finland campaigns promoting breastfeeding and giving information about child care and common diseases among children was launched in the mid 18th century. As the number of physicians was very limited, the authorities had to rely on other officials to spread the information. Beside the clergy, midwives came to play an important role. Over a 40-year period, infant mortality was halved and deaths from diarrhoea were reduced noticeably. During this period midwives tried to persuade mothers to abandon horn feeding with cow’s milk, a practice that was widespread, in favour of breastfeeding (Brändström 1984).

In Finland the compliance was lower and the change in feeding habits was slower. The authorities therefore took extra action and involved both the clergy and other local officials to promote breast feeding and inform women about the dangers associated with horn feeding. Although it has been difficult to estimate in detail the effects of these campaigns on infant mortality, there is evidence of a dramatic decline in mortality in areas where horn-feeding had been practised, and little or no decline in other areas (Turpeinen 1979).

In Denmark the literature promoting infant care and breastfeeding appeared somewhat later, namely at the end of the 18th century. It formed part of the reformist literature (that was largely focused on improvements in agriculture
and animal husbandry etc.) and was aimed at the literate upper classes. The general public was not addressed until the second half of the 19th century. Furthermore, the midwife’s role in the promotion of breastfeeding was not discussed until the 1840’s in Denmark and Iceland.

Literacy rates were of course an important factor when it came to the efficiency of public health campaigns. In general, the Nordic countries have a long tradition of public schooling. The Protestant church wanted its members to be able to read religious texts and therefore took responsibility for the teaching reading. In Sweden and Finland the Lutheran state church had been responsible for education of children as early as the 17th century and pietistic influences led to an intensified reading campaign in the 18th century in Denmark/Norway and Iceland. It is generally believed that the majority of the Nordic population could read at the beginning of the 19th century and it has been estimated that around 85 percent of the Swedish population could read and 25 percent were able to write in 1800 (Gustafsson 1997).

Expansion of positions for physicians, changes in training standards and examination of midwives

In spite of the expansion of the number of district physicians and their duties by the mid 18th century, there was still a lack of doctors. Other professions, for example priests and church assistants, had to take on some medical tasks. In addition to the district physicians, the clergy was charged with reporting outbreaks of epidemics, spreading information about remedies and supervising the parish pharmacy as well as smallpox vaccinations (Bergström 1991; Carlsson 1987; Dahmén 1943; Hjelt 1892; Skölöd 1996). The church had a well-functioning local administration and a strong support among the population. The clergy could act in two directions, both as arms of the state, when giving information about health issues, agricultural techniques or animal husbandry, and as a representative for the local population. The number of priests, incidentally, by far exceeded the number of physicians (Brändström 1984; Hjelt 1892; Puranen 1984; Romlid 1998). At medico-theological faculties in Sweden, graduates of theology until 1830 were able to apply for grants in order to obtain the necessary medical training (Romlid 1998). In Denmark, the authorities relied on midwives rather than the clergy. By 1820 the number of district midwives exceeded the number of district physicians by ten times (Løkke 1998).

The training and examination of midwives was an important measure in the battle against infant mortality. In 1810 Denmark introduced a midwife training system, which fulfilled the goal of having a trained midwife in each midwifery district around 1820. In Sweden a regulation from 1777 states that
only examined and approved midwives were allowed to assist at deliveries. However the lack of trained midwives made it difficult to achieve the goal of having a trained midwife in every Swedish parish, but in 1819 the requirement was reintroduced (Romlid 1998; Vallgård 1996). Swedish midwives had a unique status as they were allowed to use surgical instruments and were not obliged to send for a physician at complicated deliveries (Garðarsdóttir 2002; Öberg 1996). The early expansion of the institution of midwifery has been mentioned as one explanation of the early onset of the decline in infant mortality in Sweden compared with other European countries (Corsini & Viazzo 1994).

Smallpox inoculation and vaccination
When the National Statistics Bureau in the mid 18th century presented figures of high mortality from smallpox, inoculation became a widespread technique performed by Swedish priests and church assistants, followed by Jenner’s smallpox vaccination. In 1805, church assistants were obliged to learn how to vaccinate and from 1816 a law stipulated that all children under 2 years of age should be vaccinated against smallpox. It has been estimated that as many as 90 percent were vaccinated by the age of two and that the rest were soon thereafter (Sköld 1996). In Sweden, inoculation and vaccination had an impact on child mortality, although infant mortality from smallpox was less affected. This can partly be explained by the fact that relatively few infants were vaccinated (Sköld 2005). In Finland, vaccination is believed to have been very important for the initial decline in mortality (Pitkänen et al. 1989). In Copenhagen, where smallpox vaccination was made compulsory in 1810, the effect on mortality was clearly visible. It has been estimated that this measure led to a period of 40 years free from smallpox deaths (Mercer 1990).

On the threshold of the welfare state (c.1870- c.1930)
In the later part of the 19th century, the apprehension of society’s responsibilities for children began to change. As the Nordic societies were transformed from agrarian to industrial, families left the countryside for the growing cities. The technical developments of agrarian society led to important changes in the work structure: fewer people were needed in agriculture at the same time as the industrializing and expanding cities demanded labourers. For a large part of the population, working conditions, housing and social relations all changed. The proletarianization of the countryside led to an increase of poverty in the population, something that, together with the overpopulation of the cities, would put social problems on the political agenda.
During this period, the health of small children became a concern for philanthropic organisations, which often had the mission to save children from urban dangers such as criminality and prostitution. These associations mainly addressed themselves to vulnerable mothers (poor and single). Gouttes de lait (Mjölkdroppen/Drops of milk) was one of the more influential organisations in Sweden, modelled on its French forerunner. Initially its centres were intended for poor mothers who were unable to breast-feed. These mothers were given a day’s ration of sterilized cow’s milk for their infant. Later the centres ran campaigns for breastfeeding, gave advice on child care and offered physical examinations (Weiner 1995).

In Denmark the childcare centres (Børneplejestationerne) became popular. The work at the centres was based on scientific principles and became the core of a campaign for breastfeeding, but only infants who were breastfed were welcomed. Mothers were given extra rations of food and milk and could, thanks to this support, afford to follow the instructions they were given about cleanliness (Løkke 1998).

In Iceland a number of charity organisations were active, one of them being The Committee for the Support of Mothers (Mæðrastyrsnefnd), founded in 1928. The purpose of the committee was to promote social policy and especially to improve the conditions for single mothers. The goal was that all women in this position should be ensured a mother’s allowance, amounting to the coverage of household expenses. The committee opened up a counselling and advocacy service for single mothers, widows and the wives of sick husbands (Kristinsdóttir 1991, p. 137).

It is evident that the initiatives to establish welfare institutions in the late 19th century, such as children’s hospitals and child care centres, came from below, from private persons and philanthropic organisations, rather than from above. The Danish medical child care program was the first organised attempt made by the authorities to improve the health of children in this period. The program challenged old traditions and practices and based its work on scientific knowledge such as statistical evidence about the relationship between infant mortality and childcare and feeding practices. Cleanliness was an important part of the program, both the recommendations about personal hygiene and the advice on sterilizing cow’s milk when feeding with a breastmilk substitute was unavoidable. Another important aspect of the program was its ambition to reach all parts of Denmark. In the 1920’s the National Health Board printed a brochure with recommendations about infant care to be given free to all women having their first baby. The message to the mothers in Denmark were that the health of their children was an important issue for the state, that physicians were the obvious experts
on infant care and that to improve children’s health it was important to persuade mothers to act rationally and in line with scientific knowledge (Løkke 1998). During this period views on child care also changed, as the advice became based on scientific knowledge more than before. Of course these changes reflect the scientific developments of the time, but they also reflect an increased interest from the medical profession in matters of infant health and a concern to reach all mothers. Not only did these interventions reach many families, but they also led to a growing understanding of the notion that infant and child mortality were preventable.

The state’s initiative to improve children’s living conditions was demonstrated, indirectly by legislation on poverty and public health and directly in laws concerning child protection and the legal status of illegitimate children. In 1896, Norway became the first country in the world to have a law on public child protection. The Act relating to child protection stated that every municipality should ensure that children at risk were supervised by a child welfare board. Other tasks of the boards were to warn and exhort children and their parents, to remove parental authority, to separate children from their families and place them in foster homes, orphanages or community homes. Two reasons for the board taking such action were parental neglect of if the home was morally degraded (Dahl 1992). Sweden and Denmark followed the Norwegian example and introduced child protection laws (1902 and 1905) with a similar content (Seip 1984; Sundkvist 1994). In Iceland it took until 1932 for a child welfare act to be introduced (Kristinsdóttir 1991). In the 1910’s and 1920’s Norwegian, Finnish, Danish and Swedish laws stated that the father should automatically give maintenance to the mother, who in turn was obliged to reveal the father’s identity. Illegitimate children were given the right of inheritance of their father and they could choose between their father’s or mother’s surname name (Blom 2004; Forssén 1998; Løkke 1998; Weiner 1995;).

The public school became an important institution for public health work through promotion, prevention and supervision. Together with philanthropists, teachers represented a new category of public health agent in this period. Children’s places of work were also put under the microscope at this time. This development was not only influenced by a general interest in occupational safety and health but was also the result of a campaign to save children. The dirty and noisy factories were regarded as unhealthy places for children as the work was often hard and involved considerable risks. In Sweden in 1881 and in Norway in 1892, children’s industrial work was regulated so that only children aged 12 years and older could work in factories. The number of working hours was also restricted, to 6 hours for
those aged 12-14 and 10 hours for 14-18-year-olds (Olsson 1980; Seip 1984).

**The welfare state under construction (c.1930- c.1950)**

In the 1930’s and 1940’s the Nordic societies underwent a significant transformation. In the aftermath of the depression of the 1930’s came unemployment, economic crisis and social problems. One solution was to adopt Keynes’ economic ideas of an unbalanced budget; it was now that the Nordic welfare states as we know them gradually began to take shape.

The main aim of the Nordic welfare states in the 1930’s was to improve overall living conditions for the population and increase population growth. One of the reasons for this originated in population politics: the birth rate in most of the Nordic countries had begun to fall around 1870, which affected population growth in a negative way.

Reforms aiming to boost population growth were directed specifically at families with children. The debate following the book *Crisis in the population question* written in 1934 by the Swedish social scientists Gunnar and Alva Myrdal, drew special attention to the low population growth. Family planning became an important political matter, partly explained by the insufficient population growth, but also by the increasing medicalization of society. Because of developments in medicine, medical interventions were seen as important tools for solving all kinds of problems in society.

In 1935, committees were set up in Denmark and Sweden to investigate how to achieve a healthy population growth. A number of measures were suggested: assistance to pregnant women and mothers, information on sexual matters, investments in day care services and housing (Gustafsson 1997). Especially in Sweden, maternal care was regarded as the key to increasing survival among infants. Other suggested measures were family planning and a leveling out of the regional variations in infant mortality. As well the Finnish family policy contributed from the ideas of Gunnar and Alva Myrdal. By their prediction of negative population growth family policies were proposed that should secure the well-being of families with children (Forssén 1998).

In Sweden the privately financed Mjölkdroppen were replaced by publicly financed maternity and child care guidance centres (Mödra- och barnavårdscentral) in the late 1930’s. These were placed near maternity or children’s hospitals or near a general hospital. In rural areas the centres were situated by the surgery of the district physician. The main objectives of these centres were to observe medical risks for the mothers and to give advice on
hygiene, child care and feeding practices (Milton 2001). As in the case of the Danish Børneplejestationer the services at the Swedish maternity and child care guidance centres were utilized by all parents, and almost every child visited a centre to be examined. However, the supervision and control aspect was more prominent in Denmark, where medical examinations were compulsory and midwives made home calls.

Financial aid was also given to mothers during this period. The first maternity grants in Finland (1937) were directed towards poor mothers, but in 1949 the grants became universal and could be enjoyed by all mothers (Forssén 1998). Swedish mothers could receive at least two different kinds of maternity grants in the 1930’s. These were Mödrahjälp (1938) and Moderskapspenning (1938-1955). The first consisted of a grant in kind, for example clothes, and was given to mothers after a means test. The second was a grant for mothers who were not members of a recognised health insurance fund. The need for assessment ceased in 1955 and all mothers were given the grants (Bengtsson Levin 2005).

**Crucial structural conditions up to the 1950s**

In essence, we have identified some of the organisational, political and economic conditions that were common to the Nordic countries and that were of importance for successful public health interventions;

A strong state administration and a well established social organisation from national to regional and local level meant an efficient organisation that could act at all levels. The national church spread information from the authorities to the people, and the church officials could also act as state servants. The church played therefore an important role in spreading both religious and political messages. A shortage of physicians per capita in the Nordic countries led to an expansion of midwifery and an increased usage of other professional groups (priests, church assistants) to perform public health work, a strategy that proved to be successful.

The early introduction of a mandatory public school together with the development of non-governmental organizations was crucial political conditions that contributed to the process of democratization in late nineteenth century. Behind the fight for increased political influence there was a growing concern for human rights and vulnerable groups, among which children were one.

The strong economic development during the industrial movement of the late nineteenth century was an important factor. The economic expansion
coincided with the modernization of society in general, facilitating the construction of welfare systems in the Nordic societies.

**5.1.2 Stockholm at the turn of the 19th century – a case study of infant vulnerability in an urban context**

In certain respects, the social and demographic developments in Stockholm around the turn of the 19th century were similar to those of many cities in poor countries today. The population grew rapidly, primarily through immigration from rural areas, from 135,000 inhabitants in the 1870s to 340,000 in 1910. The city industrialised in a short period of time; there was a severe housing shortage which resulted in crowded living conditions. There was a shortage of clean water and sanitation, particularly at the beginning of the period. Causes of infant and child mortality reflected the miserable living conditions of the majority of the population; most deaths were caused by infectious diseases like diarrhoea, pneumonia, measles, tuberculosis, whooping cough – diseases which also today cause the majority of deaths among children in poor countries. However, infant and child mortality declined dramatically from 1870 to 1920, largely due to a decline in diarrhoea mortality (Burström & Bernhardt 2001).

Diarrhoea is still a main cause of infant and child death in many low-income countries today (Black et al. 2003). In the rapid urbanisation currently taking place, a majority of the world’s biggest cities are in developing countries, and a large proportion of their population live in urban slums. Many are migrants from rural areas with poor housing, poor water supply and sanitation and poor access to health services (Awasthi & Agarwal 2003). There are therefore obvious similarities between the living conditions of the majority of the population in 19th century Stockholm and those of the populations of urban slums in low-income countries today.

The purpose of this analysis is to analyse and discuss the decline of diarrhoea mortality in Stockholm 1878-1925. We evaluate the possible role of institutions and policies involved in health promotion that resulted in improvements in water and sanitation and changes in hygienic perception and behaviour. We conclude with a discussion of the possible relevance these findings might have for countries facing high diarrhoea mortality today.

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21 This section is mainly based on the paper by Bo Burström and Lisa Öberg commissioned by the NEWS project. see Appendix 1.
Interventions 1878-1925

The development of health-promoting policies in Stockholm by the turn of the last century can be divided into three stages;

First stage - During the introduction of health-promoting policies 1878-1892, piped water and sewage systems were extended, and the city intervened on a general scale mainly against unhealthy environmental conditions such as garbage heaps, cess-pools, ill-functioning or absent gutters and sewers (Öberg 2004). A ‘sanitary police’ was instituted as part of the new emphasis on improvements in environmental hygiene. This authority was charged with food and milk inspection and the inspection of adherence to the local ordinance act with respect to cleanliness and tidiness of outdoor premises. It made 50,000 to 100,000 inspection visits in a year. Sewage was removed from the city to central latrine terminals, from which some of it was sold as manure to farmers. New and uniform latrine vessels were introduced, which could more easily be transported and cleaned. The cost of the improved sanitation was comparatively minor as the improvements were to a large extent achieved through improved logistics and management. The sale of manure even generated a profit.

In the mid 19th century the population of Stockholm got its water from wells and from surface water and wastewater was discharged into open ditches, some covered with planks or stones. Piped water was introduced to meet the needs for improved hygiene, reduction of the risk of epidemics, improved industrial access to water and water for fire fighting. Water posts providing water free of charge were successively installed across the city, along with the extension of water pipes to all inhabited parts of the city, where piped water became available indoors, in courtyards, streets and squares (Cronström 1986). The sewerage system was built some 10-20 years after the piped water system. In 1909 the city decided to grant permission to connect water closets to the municipal sewerage system. About the same time the first wastewater treatment plant was constructed (Dufwa & Pehrson 1989). In relation to recent debates about the effects on health of various sanitation interventions in non-industrialised countries (Cairncross & Kolsky 1997; Esrey 1996) it is evident that in Stockholm most of the diarrhoea mortality decline occurred before the expansion of water closets. Hygienically organised removal of human excreta without water closets seems sufficient to reduce diarrhoea mortality.

A voluntary organisation modelled on the Sanitary Institute of Great Britain was formed in 1881, bringing together physicians, lawyers, scientists and engineers with representatives of charitable organisations. The organisation became an influential body which exerted pressure on local policy makers to
carry out improvements conducive to health. These measures were expected to improve health conditions generally and were not especially aimed at children. As discussed in earlier sections of this chapter, measures to improve infant and child health care were typically initiated and financed by voluntary organisations rather than by the city council. (Öberg 2004)

Second stage – During the period 1893-1909 political measures were taken that targeted children in general, and especially those born out of wedlock or taken into foster care (Öberg 2004). From the 1890s, the remit of the city council expanded from being a purely economic one to include a social dimension which looked to the health of the population (Sheiban 2002). There was a growing general awareness of the importance of cleanliness, e.g. washing of hands, bodies and clothes, propagated in print and encouraged by the city both in propaganda and by providing public baths, school baths and occasionally public laundries (Dahlgren 1897; Eriksson 2002; Stavenow-Hidemark 1970).

In 1901 and 1904 the first well-baby clinics (Mjölkdroppen) were opened in Stockholm, providing prophylactic health care and distributing inspected milk to infants and small children (Gunther 1966). It was at this time that the city introduced financial support for infant and child health care charities.

Third stage - The establishment of policies to promote health characterised the years 1910-1925. Both targeted and general interventions became a frequent feature of Stockholm city politics. Medico-political action on a wider scale to reduce negative socio-economic effects on child health date back to this period, as does the breakthrough of political mass organisations. Many charities and public health organisations were founded during these years, as well as societies to specifically promote the welfare of infants and children. An umbrella organisation was formed in Stockholm for more than 70 organisations, local and national, many of which worked for the enhancement of infants’ and children’s physical and psychological needs and the reduction of child mortality. In the Swedish parliament important legal measures were taken to provide the legal means to intervene against baby-farming and foster homes which were considered sub-standard by city inspectors. During this period both economic and social motives determined city politics (Öberg 2004). A child-care office was opened by the city providing advice and aid in particular to lone mothers. Around two hundred organisations helped to support deprived children. The city employed housing inspectors. Baby-farming became rare, and the inspection of foster homes was now a well-known phenomenon. In 1918-20 a set of new laws enhanced the rights of children, especially children born out of wedlock, and unwed mothers (Weiner 1995).
The methods of health reformers

Education and negotiation may well prove most effective in societies such as Sweden where solving conflicts by consensus is seen as important. From the turn of the 19th century adopting a hygienic life-style became not only an opportunity for the individual but increasingly also a social obligation. The upper and middle classes were influenced first by hygienic attitudes which subsequently trickled down to less privileged groups of society. Activities which allegedly caused poor health were demonised. This resulted in the militarization of health movements, creating “modern health crusades” which waged battles against habits deemed old-fashioned and unhygienic. Threats and the creation of fear were probably integral parts of the politicised public health movement, and were of course standard methods of making people obey medical staff. In 19th century rural Sweden, district doctors were supplied with military uniforms (Kock 1989) and Stockholm city health inspectors were called “the health police”.

Data and methods

Empirical quantitative analyses of the decline of diarrhoea mortality in relation to improved water supply were based on individual data on children and their families and on information about the provision of piped water which was obtained from the historical records of Stockholm city waterworks. The child mortality analysis is based on individual entries from computerised records originally collected for civil registration purposes in Stockholm for the period 1878–1925 (the Roteman Archives). Members of the same household are kept together by means of a special file number given to the household in the original register.

From this information we used individual data on date of birth, date of moving into and out of the parish, the occupational title of the head of the household and the date of death. These data were linked to computerised death certificates with information about the cause of death through the date of birth and identity number. The dataset includes all children aged 0–9 years who lived for any time in the Södermalm district of Stockholm, in all 88,157 children before 1900 and 102,814 children from 1901-1925 (a total of 724,253 person years of follow up and 16,574 deaths among the children aged 0–9 years).

This study focuses on deaths from diarrhoea. The age distribution of children who died from diarrhoea showed that 94 per cent were aged less than 2 years. The study was therefore restricted to this age group. The study base was the follow-up time generated by children aged less than 2 years residing for some period of time in Södermalm during the period of the study (1878–1925). The outcome measure was death occurring in children measured as
the incidence rate of death. Age- and cause-specific mortality rates were
calculated for each year of study, and data were pooled into periods of years

Death from diarrhoea was defined as any death for which the cause of death
was given as cholera, colitis, diarrhoea, gastritis, gastroenteritis, enteritis,
intestinal inflammation or typhoid fever. With this classification, diarrhoea
was one of the main causes of death. Out of the total 16,574 deaths, 3,799
(22.9 per cent) were due to diarrhoea. Among children under 2 years of age,
the proportion of deaths from diarrhoea was 30.2 per cent (3,569 out of the
total 11,816).

The occupational title of the head of household from the original data was
used for a subsequent classification into social class, based on the Erikson
Goldthorpe (EGP) system of classification.

The overall mortality rates and diarrhoea mortality rates were calculated by
year and are presented as rates per 1,000 person years. Finally, Cox
regression analysis was used to obtain the risk of death (referred to as
relative risk of death, RR) by social class group in relation to the risk of
death of children in social class 1.

**Results**

The overall mortality rate declined from an average of 130 per 1000 in 1878-
82 to 31 per 1000 in 1918-25, while the diarrhoea mortality rate declined
from 59 per 1000 to 2 per 1000 over the same time (Figure 5.3).

**Figure 5.3**Decline in overall and diarrhoea mortality among children aged <2 years,
Stockholm 1878-1925.
Figure 5.4 shows the cumulative expansion of new water pipes and the daily average water consumption per capita in relation to the annual diarrhoea mortality rate from 1878-1925. By 1900 more than half of all new pipes were in place, and nearly all of the 7,000 water pipe connections installed from 1875 to 1920 were completed by 1915. The local expansion of water pipes partly followed the expansion of the water mains, which went north to south and east to west. However, the expansion was partly patchy. The water consumption increased from about 40 litres per person at the beginning of the period to about 80 litres per person by 1900, and declined again to about 60 litres in 1920. The decline in water consumption after the turn of the century was partly due to the introduction of water meters, charging at the point of consumption; and to thrift campaigns at the time of World War I (Öberg 2004).

Figure 5.4 Diarrhoea mortality rate among children <2 years, average daily per capita water consumption and cumulative number of new water pipe connections, Stockholm 1878-1925.

The decline in diarrhoea mortality was initially more rapid in social class 1, causing increasing social differentials (Figure 5.5). However, children in the other social classes also benefited considerably and there were soon no significant social class differences in the risk of dying from diarrhoea. Diarrhoea was virtually eliminated by 1925 as a cause of death, from having been one of the major causes of infant and childhood death before the turn of
the century. The concentration of diarrhoea deaths to the very young suggests that breastfeeding was not generally practised during the first months of life. The average age at death from diarrhoea was 6 months before 1900 and 5.4 months after 1900. Children born out of wedlock died slightly younger than those born in wedlock. There is unfortunately very little data on the prevalence of breastfeeding in Stockholm; however a 1870s survey of the entire country found that there was ‘partial breastfeeding’ in Stockholm (Brändström & Edvinsson 2000) and the intensive campaigns by doctors against bottle-feeding support that statement (Öberg 2004).

![Figure 5.5](image)

**Figure 5.5** Diarrhoea mortality among children aged <2 years by social class, Stockholm 1878-1925.

The class differences in overall mortality rates are shown in Figure 5.6, with a similar pattern as for diarrhoea mortality in the first periods. However, unlike the pattern for diarrhoea mortality, the stepwise social class gradient in overall mortality rates remained throughout the study period, and the differences were statistically significant also in 1918-1925.
Figure 5.6. Overall child mortality rates among children <2 years by social class, Stockholm 1878-1925.

Conclusions
History shows us examples of factors reducing child mortality in European countries in the absence of specific medical interventions. Historical analyses may therefore help us to understand what drives mortality decline. In spite of the powerful interventions and action which took place, the impact in terms of decline of diarrhoea mortality in Stockholm took quite a long time to happen. This demonstrates the need for patience when evaluating large scale intervention projects in low-income countries today.

One factor of great importance in Stockholm, was the strong local political commitment to improvements in the sanitary environment, public education and the enforcement of sanitary laws and regulations. This political commitment coincided with a raised awareness of improved hygiene among the public and non-governmental organisations. Technical improvements in water and sanitation alone may not be sufficient unless accompanied by changes in health behaviour and adherence to sanitation guidelines. Economic development per se does not seem to bring about a reduction in diarrhoea mortality. The implementation in recent decades of structural adjustment programmes to improve economic growth in poor countries has not brought about a beneficial impact on the health of wider sections of the population (Kanji et al 1996; Peabody 1996). Economic improvement may contribute to mortality decline, but it must be translated into specific interventions which impact on risk factors or causes of mortality. In this respect, our findings regarding the mortality decline in Stockholm are more
in line with those of Szreter (1988, 2002), who underlines the importance of specific public health interventions (e.g., improved water and sanitation) rather than mere economic improvement.

Should the initiatives be regarded as universal or targeted interventions? Large interventions with expansion of access to water and concurrent improvements of sanitation, such as described in Stockholm, have been found to have greater impact than more limited interventions. The social class gradient prevailed throughout the period for overall mortality rates, while it diminished in the last two periods for diarrhoea mortality rates. Improvements in water and sanitation and other related interventions conducive to the decline of diarrhoea mortality which were implemented concurrently resulted in an equalisation of the mortality risk from diarrhoea but not the risk of death from other causes. Furthermore, most of these improvements and interventions were implemented universally and not in a targeted way. Some specific reforms were however designed to support single mothers of illegitimate children and foster families. This meant specific targeting of the most vulnerable groups of children. On the other hand, the equalisation of mortality risks suggests that wide sections of the lower social classes benefited to a greater extent from the universal interventions than did the higher social class.

**Particular conditions**

- In Sweden, an overwhelming proportion of the population was already literate in the 19th century, while in many low-income countries high levels of illiteracy, not least among females, is still a problem today. The high literacy rate in Sweden is likely to have facilitated public access to information and the implementation of health promotion campaigns.
- Breastfeeding was not practised as extensively in Sweden as is often the case in low-income countries today.
- Sweden had a structured organisation in the 19th century, with many institutions and channels for implementing policies, and authoritarian measures could be applied to achieve certain goals. In this regard, low-income countries today vary greatly. In the city of Stockholm, there was a powerful legal apparatus backing up the implementation of the sanitary ordinances. The enforcement and everyday implementation of practical public health policies, such as the removal of sewages and garbage may be one key to reducing exposure to infectious agents from the fecally contaminated environment. The implementation of such policies needs to be guided by appropriate local research.
“The Swedish public health model has often involved cooperation between central government and local actors possessing a certain amount of public advocacy and legitimacy. In this way top-down decrees could also be communicated to the local community.” (Sundin et al. 2005). Public health improvement has come from the synergy effects of collaboration between actors at different levels in society. Non-governmental organisations (NGOs) played an important role in health promotion in Sweden, and often do so in low-income countries today. Many NGO initiatives in Sweden were subsequently incorporated into state or municipal policies. In low-income countries today, however, NGOs may often have a different position and role than in historical Sweden. Some major NGOs are funded by external donors, do not originate from the country in which they are active and may have other cultural and political roots.

5.1.3 Modern family policy in a comparative perspective

Historically, family policies are the late-comer among welfare state programs. Whereas the expansion of other parts of social policy systems in post-war welfare states typically came to a halt in the 1970s - with even a reversal being seen in the following decades - family policy systems on the whole continued to expand during the last decades of the 20th century. In spite of this general development, little proof can be found for a broad cross-national convergence in the latter area of social policy. Indeed, substantial inter-country differences in family policy legislation exist among the advanced welfare democracies today; in other words, Western welfare states have developed different models of family policy (Korpi 2000; Ferrarini 2006).

The expansion of family policies is also central to two of the greatest concerns in most Western societies at present, namely how to create policies for reconciling parenthood and work (Gornick & Meyers 2003) and how to alleviate poverty risks. This is central both from a micro and macro perspective. In other words, raising low fertility rates is often seen as key social policy issue; it now it seems as if high female labour force participation is related both to lower poverty risks and higher fertility levels.

Like elsewhere the norm of the female home worker and the male breadwinner was predominant in the Nordic countries (although less so in

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22 This section is mainly based on the paper by Tommy Ferrarini and Thor Norström commissioned by the NEWS project, see Appendix 1.
Finland) until the 1960’s. The dual earner model, which included working mothers from all social classes, became the norm in the Nordic countries only some 30-40 years ago (Nousiainen 2000).

Along with tax reforms that favoured dual earner families, gender neutral and generous family policies such as a paid and comprehensive parental leave and the extension of collective and universal preschool care provision were fundamental for women’s employment. Since the 1980’s Nordic male and female labour force participation has stabilized on almost equal levels even among women with small children, except for in Norway where the activity rate among mothers did not catch up until the 1990’s (Lewis 2003). To encourage a more equal sharing of parental leave and to promote gender equality at household level, a proportion designated exclusively to fathers, the ‘daddy month’, was introduced in all the Nordic countries in the 1990’s.\(^{23}\) (Lewis 2003; Bergman & Hobson 2002).

<table>
<thead>
<tr>
<th>Support to highly gendered divisions of labour</th>
<th>General family policy model</th>
<th>Contradictory</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Austria, Belgium, France, Germany, Ireland, Italy, the Netherlands</td>
<td>Non-existent family policy model</td>
</tr>
<tr>
<td>Low</td>
<td>Market-oriented family policy model</td>
<td>Dual earner family policy model</td>
</tr>
<tr>
<td>Low</td>
<td>Australia, Canada, Japan, New Zealand, Switzerland, the UK, USA</td>
<td>Denmark, Finland Norway, Sweden</td>
</tr>
</tbody>
</table>

![Figure 5.7 Models of family policy in 18 countries around the year of 2000.](image)

\(^{23}\) Although it was abandoned in Denmark in 2002 by the right-wing government.
Some welfare states, such as the Continental European ones, saw the introduction of a more general family policy model by the expansion of support to highly gendered divisions of labour within families, for example through flat-rate child care leave benefits that encourage women to stay at home and tax deductions for the economically less dependent spouse. Other welfare states, mainly the English-speaking ones, maintained all types of public family support at low levels, thereby largely leaving family support and child care to be dealt with by families through the market. Taken together, these developments have strengthened the broader models of family policy as described by Korpi (2000). Figure 5.7 arranges 18 OECD countries according to the model of family policy implemented by the end of the 20th century.

Figure 5.8 Average family policy generosity in countries with differing models of family policy 1950-2000. Benefit generosity of transfers as a percentage of an average production worker’s net wage.

The different national models of family policy are also characterized by distinct differences in the generosity of family policy benefits. Figure 5.8
displays the average generosity of family policy transfers from 1950 to 2000 in countries which have differing family policy models. The benefits are expressed as yearly family policy benefits net of taxation and have been calculated on the basis of different type case families (for a more thorough description see section 5.1.4)

In the early post-war decades average differences in family policy generosity between the countries were small, something which is due to the fact that the clear institutional differences between family policy models had not yet emerged. From the mid 1960s, patterns began to change more rapidly. From this point in time, the Nordic countries with dual earner models of family policy had the highest and most rapidly increasing generosity of family policy transfers, something that is mainly due to the expansion of earnings-related parental leave benefits. The increases in benefit generosity in countries with general family policy models began a decade later and are primarily explained by the introduction of flat-rate child care leave benefits and the expansion of tax benefits for a working male with a dependent spouse. Countries with market-oriented models typically demonstrated only modest changes in family policy benefit generosity throughout the entire period. Thus, the development of total benefit generosity reflects different underlying motives of family policy legislation.

The generosity of family policy benefits is likely not only to indicate the institutional structure of the cash transfer system but also to function as an indicator of the wider family policy matrix. In particular the generous earnings-related parental leave transfers of the kind developed in Nordic countries are often combined with high coverage of public services for the youngest children and the elderly (Ferrarini 2006). This means that families, and in particular women, are helped with childcare and caring for older relatives. It should be emphasized that family policy interventions may thereby affect the behaviour and well-being of mothers during the entire period of pregnancy and not only during the postnatal phase.

The redistributive effect of family policy

The structure of family policy legislation has been shown to have an impact on cross-national patterns of child poverty (Ferrarini 2006; Ferrarini & Forssén 2005; Forssén 1998; Immervoll et al. 2001; Kangas & Palme 2000). If we look at family policy generosity and poverty among children in 15 countries (Figure 5.9) we can see a clear negative association between

24 This section is mainly based on the paper by Ola Sjöberg and Tommy Ferrarini commissioned by the NEWS project, see Appendix 1.
25 The poverty threshold is here set at 50% of median equivalized disposable income.
family policy generosity and child poverty. In other words, countries with generous family policies have lower child poverty rates. If we look at the details, we find that this association is mainly due to policies that support dual earner families (described in section 5.1.4, table 5.1). The contribution of this type of family policy transfer to household income may of course either be direct through the amount of benefits paid or indirect by supporting two earners and thereby raising the market income of the household. In any way, family policy transfers seem to have distributive consequences.

**Figure 5.9** Total family policy generosity and child poverty in 15 countries around 2000. Net benefit generosity of transfers as a percentage of an average net production workers’ wage. Poverty line 50 percent of median equivalized disposable income. Sources: SCIP, LIS.

**Family policy and child health**

Even if the finding that income transfers affect poverty rates seems to be consistent (see also figures 4.1 and 4.2), we know little about the relation between income transfer policies and the survival of infants and children. A reasonable hypothesis, however, is that income transfers affect child health outcomes by reducing poverty rates. In Figure 5.10 we plot total family policy generosity and infant mortality rates for 18 countries around 2000. The plot indicates a negative association between family policy and infant mortality – in other words, the more generous a country’s family policy the lower its infant mortality rates. In similarity with the previous example of
childhood poverty, most of this association is explained by the generosity of earnings-related parental leave as measured by dual earner support.

**Figure 5.10** Total family policy generosity and infant mortality in 18 countries around 2000. Net benefit generosity of transfers as a percentage of an average net production worker’s wage. Infant mortality expressed as deaths per 1000 individuals. Sources: SCIP, Mortality database, WHO.

Another indicator of child health is the death risk from injuries. Here one can imagine that the generosity of family policy benefits increase the amount of time that parents can spend with their children and invest in secure environments that in turn reduce the risk of fatal injuries. If we look at the association between family policy generosity and the death risk from injuries among children under the age of 14 (Figure 5.11) we can see that there is a negative correlation similar to the one found for infant mortality. Even if these plots are crude and tentative they point in an interesting direction and we will therefore elaborate this question further in the empirical example following this section.
Figure 5.11 Total family policy generosity and child injury death rates in 24 countries in the mid 1990s. Net benefit generosity of transfers as a percentage of an average net production worker’s wage. Child injuries expressed as deaths from injuries among 1-14 year old children per 100000 individuals in the age group. Sources: SCIP, UNICEF (2001).

5.1.4 The impact of family policy institutions on infant mortality – comparative analyses of 18 OECD countries

Infant mortality (IM) rates have fallen dramatically in the advanced welfare democracies during the past century, yet cross-national differences in child mortality still persist, and much research has been devoted to explaining the variation over time and between countries in IM. A good deal of this research effort has focused on economic factors, with the main conclusion being that the secular decline in IM is closely linked to the general economic growth, as reflected by the gross domestic product (GDP). As a country gets richer there are simply more resources to improve sanitation, housing,

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26 This section is mainly based on the paper by Tommy Ferrarini and Thor Norström commissioned by the NEWS project, see Appendix 1.
education, food quality, medical care and other conditions that are related to better health (Pritchett & Summers 1996)

However, at a given level of economic development countries vary in their health achievements. It seems reasonable, that there is a diminishing health return to economic growth; in other words that above a certain level, further improvements in a nation’s economy have little impact on population health (Preston 1975). A countercyclical effect on population health has also been found, according to which economic upturns seem to be associated with poorer population health (Chay & Greenstone 2003; Dehejia & Lleras-Muney 2004; Tapia Granados 2005). In other words, how infant mortality responds to economic development is still a highly debated issue, and it is likely that the impact of economic growth on health outcomes is mediated by other social institutions. An increasing number of studies have pointed to family policy legislation as an important partial explanation of variability in infant mortality (Chung & Muntaner 2006; Ruhm 1998; Tanaka 2005; Wennemo 1994).

There are several possible pathways linking family policy institutions and infant mortality. Firstly, they structure the time parents can spend with their children. Increased parental time with the youngest children can be expected to improve child health and reduce mortality risks, for example by increasing opportunities for breastfeeding and monitoring the child. The main family policy transfer that increases parental time with young children is of course parental leave benefits, which enable mothers, and in several countries fathers too, to take wage- compensated leave from work during the early phase of the child’s life. Parental leave has also been shown to have a positive effect on mothers’ breastfeeding (Roe et al. 1999), while early maternal return to work (within 6 weeks after birth) tends to reduce breastfeeding (Berger et al. 2005). Breastfeeding in the early life phase has been linked to lower post neonatal mortality even if such behaviour cannot be completely separated from other individual characteristics of mother and child (Chen & Rogan 2004). Secondly, family policy transfers have a positive effect on household income. The degree to which such legislation provides economic resources affects a family’s ability to purchase household commodities that improve health, for example food or goods that improve child safety.

Although parental leave benefits are in most countries the most substantial public transfer for households with infants, other alternative or complementary family policy transfers also exist. For example child benefits paid in cash or distributed via the tax system or tax reductions for a dependent spouse. Regardless of their underlying motives, what is common
to all these family benefits is that they have redistributive effects, both between income segments and generations. The analysis of links between family policy and child health may thereby have more to do with the distribution of economic resources than the level of economic resources in society. The purpose of this study is to analyse to what degree family policy institutions and economic development can be linked to IM in post-war welfare democracies.

Earlier comparative studies of links between family policy legislation and infant mortality indicate a positive relationship between policy and outcome (Chung & Muntaner 2006; Pampel & Williamson 1986; Ruhm 2000; Tanaka 2005; Wennemo 1994; Winegarden and Bracy, 1995). A major problem with several of the earlier studies of links between social rights of family policy and child health is that very narrow indicators of family policy are used. Utilising only parental leave indicators may cause us to overlook the fact that several countries have developed other family policy benefits that work as complementary or alternative strategies in the provision of resources to families with young children. It should be noted that indicators of family policy may function as more or less direct measures of broader family policy models, for example public services.

**Data and methods**

In these analyses new institutional information about family policy legislation is combined with data about economic development and infant mortality for 18 welfare democracies from 1950 to 2000. The included countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States. Infant mortality rates are derived from The Human Mortality Database, and the family policy data are part of the Social Citizenship Indicator Program (SCIP) at the Swedish Institute for Social Research.

The generosity of different types of family policy benefit is indicated by the use of strategically chosen type case families and expressed as annual family policy benefits net of taxation in percentage of an average production worker’s net wage. Parental leave benefits are calculated on the basis of a family with two earners and two children, where one parent is on parental leave during the second child’s first year of life. Flat-rate or lump-sum benefits such as child allowances, maternity grants and tax deductions for a worker with dependent spouse have been calculated on the basis of a family with one main earner and an economically non-active spouse with two children aged two and seven to capture the degree to which such benefits support a highly gendered division of labour. This also facilitates separate
analyses of support for dual earner families and for more traditional highly
gendered family patterns, in accordance with Korpis’s family policy
typology presented earlier.

Table 5.1 describes the categorisation of typical institutional features that
was used to construct measures of the two family policy dimensions; *Dual
earner support* and *General family support*. Family policy data is available
for every fifth year (for further description see Ferrarini 2006).

**Table 5.1** Family policy dimension and typical institutional characteristics of
different types of family policy transfer.

<table>
<thead>
<tr>
<th>Type of benefit</th>
<th>Family policy dimension</th>
<th>Typical institutional features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternity insurance</td>
<td><em>Dual earner support</em></td>
<td>Earnings-related benefit paid to mother before and after confinement.</td>
</tr>
<tr>
<td>Parental insurance</td>
<td><em>Dual earner support</em></td>
<td>Earnings-related benefit paid to mothers and fathers after confinement, sometimes with partial individual entitlement.</td>
</tr>
<tr>
<td>Paternity Insurance</td>
<td><em>Dual earner support</em></td>
<td>Earnings-related benefit paid to be used by father in connection with confinement, simultaneously with maternity insurance.</td>
</tr>
<tr>
<td>Childcare leave</td>
<td><em>General family support</em></td>
<td>Flat-rate benefit paid after termination of parental insurance benefit.</td>
</tr>
<tr>
<td>Child benefits</td>
<td><em>General family support</em></td>
<td>Flat-rate benefit frequently paid throughout primary school-age period</td>
</tr>
<tr>
<td>Marriage subsidy</td>
<td><em>General family support</em></td>
<td>Tax transfer to wage earner with dependent spouse</td>
</tr>
<tr>
<td>Maternity grant</td>
<td><em>General family support</em></td>
<td>Flat-rate and lump-sum payment in connection with confinement.</td>
</tr>
</tbody>
</table>

Additional indicators considered in the analyses are: gross domestic product, GDP (obtained from Angus Maddison’s data bank), female labour force participation (obtained from ILO Labor Statistics), and unemployment (obtained from OECD Labor force statistics).

The association between change in infant mortality rates and dimensions of family policy generosity are estimated by means of pooled cross-sectional time series analyses. This technique combines cross-sectional data with time series and is useful in comparative research with few countries since it increases the number of available observations. Analyses of first differences were applied to remove non-stationary trends (Podesta 2006). Further, panel
corrected standard errors were used to avoid the estimation problems that occur in analyses with fewer observations than time points. Country dummies are included to adjust for country-specific omitted variables.

**Cross-national correlation between GDP and IM**

Figure 5.12 show a bivariate plot of the cross-national correlation between GDP and IM at two points in time. While there was a marked negative correlation between economic development and infant mortality in the early part of the period, this had become a zero correlation by the turn of the century. The plot reflect a gradual shift from a situation in which countries with a high GDP tended to have a low infant mortality rate to one in which there was no match between GDP and mortality.

![Figure 5.12 Bivariate correlation between GDP and IM in 1950 and 2000.](image)

**Cross-national correlation between family policy generosity and IM**

In Figure 5.13 a-b, bivariate plots between family policy generosity and infant mortality are presented. Here we see the reverse of the shift we noted for GDP and mortality. In the early postwar period, there was no relation
between family policy legislation and infant mortality, while by the turn of the century the relation had become negative.

a) 1950

![Graph showing bivariate correlation between family policy generosity and IM in 1950.](image)

b) 2000

![Graph showing bivariate correlation between family policy generosity and IM in 2000.](image)

**Figure 5.13 a-b** Bivariate correlation between family policy generosity and IM in 1950 and 2000.
The effect of two dimensions of family policy on infant mortality

The scatter plots displayed in Figure 5.12 suggested that economic development may have had different effects in the early and the late 20th century; furthermore, family policy models did not begin to emerge until the 1970s. We accordingly performed separate analyses for the period 1975-2000. For this later period, information about important socio-economic factors such as unemployment and the labour force participation of mothers of prime childbearing ages is also available. Such factors may impact on both the health behaviour of mothers and the selection of childbearing mothers, first and foremost affecting early post-neonatal mortality. Female labour force participation and unemployment were thus included as control variables.

Table 5.2 Estimated effects of family policy generosity on infant mortality.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>.345</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.272)</td>
<td>(.306)</td>
<td>(.298)</td>
<td>(.300)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total family</td>
<td>-2.840(*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>policy generosity</td>
<td>(1.705)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dual earner support</td>
<td>-4.256**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.881)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General family support</td>
<td>-1.129</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.755)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female labour force</td>
<td>-2.101</td>
<td>-1.123</td>
<td>-1.263</td>
<td>-1.813</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(20-44)</td>
<td>(6.136)</td>
<td>(4.979)</td>
<td>(5.055)</td>
<td>(5.122)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment</td>
<td>-17.51(*)</td>
<td>-17.441</td>
<td>-17.30(*)</td>
<td>-15.77(*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(9.401)</td>
<td>(9.858)</td>
<td>(9.740)</td>
<td>(9.534)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.215</td>
<td>0.231</td>
<td>0.239</td>
<td>0.211</td>
<td>0.216</td>
<td>0.294</td>
<td>0.313</td>
<td>0.320</td>
<td>0.298</td>
</tr>
</tbody>
</table>

Country dummies not reported, standard errors in parentheses.

*** p<0.001, ** p<0.01, * p<0.05, (*) p<0.10

Table 5.2 shows the results of pooled time series regressions of IM in 18 countries for the period 1975-2000. The first six models display unadjusted

To validate the effect estimates of social policy models on infant mortality, sensitivity analyses were carried out to assess whether these results have been influenced by the type of method used. Pooled time series cross section regressions using levels or a lagged dependent variable both show consistent negative and significant correlations between family policy institutions and infant mortality, while GDP has no significant effect.
estimates of each indicator. The results indicates negative effects of family policy, while no association with GDP is found; in other words, the generosity of transfers is associated with a reduction of infant mortality but economic development has no impact. In the multivariate models (7-9) family policy legislation that supports dual earner families are seen, after adjustment for GDP, unemployment and female labour force participation, as having a significant effect on infant mortality. It is noteworthy that the dual earner support’s point estimate is larger than the estimate of total family policy.

Conclusion

The results presented here indicate that the level of resources in society as expressed by economic development has become a less important explanatory factor for cross-national differences in IM over time. Instead, more complex mechanisms may be at work which produce the particular patterns of infant mortality observed by the end of the 20th century. The results from these analyses suggest that family policy legislation, which affects the distribution of resources in society, and in particular policies supporting a family with two earners, have become a more important factor for explaining the cross-national differences in infant mortality.

5.1.5 Family policy institutions, labour force participation and health among women – cross sectional comparisons of 18 OECD countries

Social as well as gender equality is often seen as particularly advanced in the Nordic countries. In the gender empowerment measure of the United Nation’s Human Development report of 2005, Norway, Denmark, Sweden, Iceland and Finland all rank in the top five. When the World Economic Forum (Lopez-Carlos & Zahidi 2005) looked into gender differences within the areas of economic participation – economic opportunity, political empowerment, educational attainment and health and well-being – the Nordic countries ranked as the countries with the smallest gender gap.

Female labour force participation is commonly used as an indicator of female economic participation within this type of research. It is argued that female labour force participation reduces disproportionate poverty among

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28 This section is mainly based on the paper by Lisa Björk and Örjan Hemström commissioned by the NEWS project, see appendix 1.
29 “A composite index measuring gender inequality in three basic dimensions of empowerment - economic participation and decision making, political participation and decision making and power over economic resources.” (UNDP 2005, p. 356)
women, raises household income and enhances economic development on a national level (Lopez-Carlos & Zahidi 2005). There seems to be some empirical support for the claim that the Nordic countries have common characteristics in their social policies that tend to facilitate women’s employment and make it possible to reconcile work and family (Esping-Andersen 1999; Korpi 2000; Navarro & Shi 2001; Ferrarini 2003).

However, two contradictory hypotheses exist about the potential mechanisms at individual level that link female labour force participation and women’s health status. These suggest on the one hand that women’s involvement in gainful employment is related to better health in line with the multiple role theory; on the other hand it is also suggested that women could have a greater total workload which might rather increase the risk of poor health (Hall, 1992; Verbrugge 1989). These main hypotheses stem from differing views about whether, on balance, gainful employment promotes good health or rather represents a health hazard because of poor working conditions. Social support, own income, social identity and social status are often seen as the beneficial aspects of work (Hibbard & Pope 1992; Jahoda 1982; Ross & Mirowski 1995). Some of the harmful aspects are high mental and physical demands, time pressure and double workload (Artazcoz et al. 2001; Hall 1989, 1992; Krantz et al. 2005).

The aim of this analysis is to evaluate whether there is a Nordic welfare state model related to women’s status in society as indicated by measures of labour force participation. A further aim is to analyse and discuss the possible consequences of the level of labour force participation for women’s health and survival. When analysing the effect on mortality we take into account the possible modifying effect of cigarette smoking (through lung cancer mortality) which can arise from a change in health-related behaviours when one enters the labour market.

This is a cross-national study of the associations between family policy institutions, female labour-force participation and health outcomes based on data from 22 OECD countries (listed in Table 5.3). To evaluate differences in female labour-force participation rates across welfare state models, nations are classified in line with Korpi’s family policy model which was introduced in Section 5.1.1, with an addition of what Navarro and Shi (2001) defined as ex-fascist countries (Greece, Spain and Portugal) in our typology, representing a Southern European model.

Outcome data was collected from several sources: female life expectancy at birth, age specific lung cancer mortality (ICD-10, C33-C34) from 1997 to 2002 and size of populations are derived from WHO (2005, 2006); fertility

Information about female labour-force participation is derived from the OECD (2006). Female labour-force participation is given as the percentage of women 15-64 years of age active on the labour market at three points in time; around 1970, 1990 and 2003.\textsuperscript{31} Information from Iceland is for a wider age interval (15-74 years) and for the year 1971 and was obtained from Statistics Iceland 2006. In order to present a more nuanced view of female labour-force participation as an indicator of women’s social status in society in the most recent period (2003), we also analyse country differences in the proportion of women working part time (less than 30 hrs per week) and full time, and female labour-force participation in two age groups (25-54 and 55-64 years).

The association between the different health outcomes and female labour-force participation was estimated by means of ordinary least square regression analyses. Lung cancer mortality rates are included because it has previously been argued that the spread of smoking among women in various countries could bias a hypothesized positive association between female labour force participation and life expectancy (Nathanson 1995). Lung cancer mortality is therefore treated as a confounder in the relation between female labour-force participation and life expectancy, and it should be seen as a measure of the cumulative effect of female smoking up to the most recent point in time. A direct standardisation of lung cancer mortality was performed using the European standard population (WHO 2005).

**Family policy models and female labour-force participation**

Figure 5.14 displays the changes in female labour force participation by family policy model. This figure indicates that women in dual earner (Nordic) countries have had higher labour force participation rates throughout the period than women in other countries. In 1970, 54 per cent of women in the former countries were in gainful employment compared to 48 per cent of women in liberal/market oriented countries, 42 per cent in countries with the general family support model and 29 per cent in Southern European countries.\textsuperscript{32} The leading position of the Nordic countries was most

\textsuperscript{30} World value survey: Japan and Canada 2000, US 1999 and European social survey: Denmark, Finland, Norway, Sweden, Switzerland, UK, Austria, Belgium, France, Germany, Ireland, Italy, the Netherlands, Greece, Portugal and Spain 2002/2003.
\textsuperscript{31} Data are missing for the Netherlands, Greece and Portugal in 1970, and for Austria in 1990.
\textsuperscript{32} In 1970, data only for Spain.
pronounced in 1990, when all Nordic countries had a female labour force participation of over 70 per cent (something that was not observed in any of the other countries included in the study). However, between 1990 and 2003 female labour force participation fell somewhat in Denmark, Finland and Sweden. Canada and Switzerland had joined the Nordic-type group with a female labour force participation of more than 70 per cent in 2003. It should be noted that Norwegian women had much lower labour force participation than women in the other Nordic countries in 1970, something that contributed to Nordic countries being the most heterogeneous group in 1970. By 1990, however, Norwegian female labour force participation had reached a similar level to that of the other Nordic countries, and thereby the Nordic countries became the most homogenous group in terms of female labour force participation in 2003.

![Figure 5.14](image.png)

Figure 5.14 Mean development of female labour force participation 1970-2003 by family policy model.

When one analyses other indicators of female labour force participation — the proportion of working women who work part-time (that is less than 30 hours per week), full-time labour force participation, and labour force participation in two age groups (25-54 and 55-64 years) — the Nordic countries demonstrate the highest fulltime participation rates (58%) and the lowest proportion of part-time workers (24%). Southern European women have the lowest labour force participation, but high full-time labour force

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33 One obvious reason for this is the severe recession that hit Sweden and in particular Finland in the beginning of 1990.
participation (49%) and low proportion of part-time workers (13%). Countries belonging to the liberal/market oriented- and general family support model have quite high proportions of part-time workers (37%). When it comes to female labour force participation in the older age group (55-64 years), there is a considerably higher proportion in the Nordic countries than in the liberal (51%), Southern European (32%) and general family support countries (28%) (data not shown).

In sum, the Nordic countries appear to have created greater opportunities for women to participate in the labour force, including participation on a full-time basis and at advanced ages (55-64 years). However, we did observe that Norway was late to join the other Nordic countries in terms of labour force participation and it still has the highest share of part-time workers within the Nordic group.

Female labour force participation in relation to health and survival

When we compare the four family policy models in relation to health outcomes we find minor differences for life expectancy (81.67 to 82.29 years), major differences for lung cancer (16.56 to 53.15 deaths per 100000 in the population), and intermediate differences for self-rated health (2.00 to 2.42). It should be observed that there is considerable heterogeneity within each family policy model, in particular for lung cancer mortality and self-rated health (Table 5.3).
Table 5.3 Life expectancy at birth, standardised lung cancer mortality 35+ yrs, and self-rated health 1997-2002 by family policy model and country (mean and SD).

<table>
<thead>
<tr>
<th>Family policy model</th>
<th>Country</th>
<th>Life expectancy</th>
<th>Lung cancer mortality 35+*</th>
<th>Self-rated health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual-earner</td>
<td>Denmark</td>
<td>80</td>
<td>81.67</td>
<td>1.91</td>
</tr>
<tr>
<td></td>
<td>Finland</td>
<td>82</td>
<td>24.20</td>
<td>2.17</td>
</tr>
<tr>
<td></td>
<td>Iceland</td>
<td>82</td>
<td>70.40</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Norway</td>
<td>82</td>
<td>47.47</td>
<td>2.05</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>83</td>
<td>42.01</td>
<td>2.10</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>81.80 (1.1)</td>
<td>53.15 (22.9)</td>
<td>2.06 (0.11)</td>
</tr>
<tr>
<td>Liberal/Market</td>
<td>Australia</td>
<td>83</td>
<td>42.09</td>
<td>-</td>
</tr>
<tr>
<td>oriented family</td>
<td>Canada</td>
<td>82</td>
<td>72.95</td>
<td>1.83</td>
</tr>
<tr>
<td>support</td>
<td>Japan</td>
<td>85</td>
<td>26.01</td>
<td>1.82</td>
</tr>
<tr>
<td></td>
<td>New Zealand</td>
<td>82</td>
<td>51.44</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Switzerland</td>
<td>83</td>
<td>31.65</td>
<td>2.10</td>
</tr>
<tr>
<td></td>
<td>United Kingdom</td>
<td>81</td>
<td>60.20</td>
<td>2.32</td>
</tr>
<tr>
<td></td>
<td>United States</td>
<td>80</td>
<td>78.35</td>
<td>1.95</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>82.29 (1.6)</td>
<td>51.81 (20.0)</td>
<td>2.00 (0.21)</td>
</tr>
<tr>
<td>General family</td>
<td>Austria</td>
<td>82</td>
<td>31.73</td>
<td>1.98</td>
</tr>
<tr>
<td>support</td>
<td>Belgium</td>
<td>82</td>
<td>30.54</td>
<td>2.04</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>84</td>
<td>21.04</td>
<td>2.35</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
<td>82</td>
<td>31.76</td>
<td>2.44</td>
</tr>
<tr>
<td></td>
<td>Ireland</td>
<td>81</td>
<td>51.22</td>
<td>1.79</td>
</tr>
<tr>
<td></td>
<td>Italy</td>
<td>84</td>
<td>25.56</td>
<td>2.37</td>
</tr>
<tr>
<td></td>
<td>Netherlands</td>
<td>81</td>
<td>51.49</td>
<td>2.18</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>82.29 (1.3)</td>
<td>34.76 (12.0)</td>
<td>2.16 (0.24)</td>
</tr>
<tr>
<td>Southern European</td>
<td>Greece</td>
<td>81</td>
<td>20.53</td>
<td>2.12</td>
</tr>
<tr>
<td></td>
<td>Portugal</td>
<td>81</td>
<td>15.45</td>
<td>2.72</td>
</tr>
<tr>
<td></td>
<td>Spain</td>
<td>83</td>
<td>13.70</td>
<td>2.43</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>81.67 (1.2)</td>
<td>16.56 (3.6)</td>
<td>2.42 (0.30)</td>
</tr>
<tr>
<td>All countries</td>
<td>Mean (SD)</td>
<td>82.09 (1.3)</td>
<td>41.88 (20.7)</td>
<td>2.14 (0.25)</td>
</tr>
</tbody>
</table>

* Standardised cause-specific mortality rate per 100 000 population 35+ years (standardised using a European standard population, 10-year age groups, and the direct method). Sources: WHO 2005 for life expectancy, WHO 2006 for age-specific lung cancer deaths and population size; World Value Survey and European Social Survey for self-rated health.

There was no significant association between various measures of female labour force participation and life expectancy or self-rated health, but a clearly significant positive association between female labour force participation and lung cancer mortality in regression analyses (Table 5.4). This means that countries with high female labour force participation rates are characterised by simultaneously displaying high rates of lung cancer mortality.
Table 5.4 Relation between three measures of female labour force participation and three population health outcomes after OLS regressions for 22 OECD countries.

<table>
<thead>
<tr>
<th></th>
<th>Life expectancy</th>
<th>Lung cancer mortality</th>
<th>Self-rated health§</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>B</td>
</tr>
<tr>
<td>FLFP</td>
<td>-0.037</td>
<td>0.031</td>
<td>1.419***</td>
</tr>
<tr>
<td>% part-time work</td>
<td>0.005</td>
<td>0.021</td>
<td>0.355</td>
</tr>
<tr>
<td>Full-time LFP</td>
<td>-0.025</td>
<td>0.027</td>
<td>0.389</td>
</tr>
<tr>
<td>N</td>
<td>22</td>
<td>22</td>
<td>19</td>
</tr>
</tbody>
</table>

*** p<0.01 § Data missing for Iceland, Australia and New Zealand

It is important that female labour force participation is *significantly* related to lung cancer mortality, which clearly goes against our general hypothesis that women’s improved status in society leads to improved life expectancy, also reported in previous studies (Hemström 1999; Navarro et al. 2004). The result could be seen as supporting the hypothesis presented by Pampel and Zimmer (1989), namely that as women’s status improves they will take up previously predominantly male risk taking behaviours, of which smoking is an important one.

Figure 5.15 Association between female labour force participation and self-rated global health (high score = poorer mean health) in 17 OECD countries.
The initial insignificant association between female labour force participation and self-rated health (performed for 19 of the 22 countries) was also analysed after two significant outliers had been excluded, namely Portugal with the poorest mean health (2.72) and Ireland with the best mean health (1.79) of the countries included. For the remaining 17 countries, there was a significant inverse association ($B = -0.009$, $SE = 0.003$, $p = 0.022$). In other words, the mean self-reported health among women tends to be somewhat better in countries with a somewhat higher female labour force participation rate (see Figure 5.15).

In order to test whether increased smoking tends to mask any positive effect of high female labour force participation, we stratified the analyses by country level of lung cancer mortality. We found a significant positive association between female labour force participation and life expectancy in countries with a lung cancer mortality of more than 30 per 100 000 (15 countries), and a significant inverse association between lung cancer mortality and life expectancy (Table 5.5). No association with life expectancy was found in countries with low lung cancer mortality (Finland, Japan, France, Italy, Greece, Portugal and Spain). Four of the latter countries are in the lead in terms life expectancy, something that may have to do with the low rates of female smoking in these countries (see for example Nathanson 1995). The two countries with the shortest life expectancy (USA and Denmark) also display the highest lung cancer mortality rates. There are however a number of deviant countries, in particular Portugal, Finland and Greece. Finland and Portugal have high female labour force participation rates, low lung cancer mortality and relatively short life expectancy.

**Table 5.5** Regression analyses of female labour force participation and life expectancy stratified by level of lung cancer mortality (35+ years) 22 OECD countries.

<table>
<thead>
<tr>
<th></th>
<th>Lung cancer mortality &gt;30 per 100 000</th>
<th>Lung cancer mortality &lt;30 per 100 000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>FLFP</td>
<td>0.074**</td>
<td>0.024</td>
</tr>
<tr>
<td>Lung cancer mortality</td>
<td>-0.051***</td>
<td>0.010</td>
</tr>
<tr>
<td>N</td>
<td>15</td>
<td>7</td>
</tr>
</tbody>
</table>

*** p<0.01  ** p<0.05

These analyses are crude and based on a cross-sectional sample and we acknowledge that there are a number of residual factors that might determine a specific country’s level of life expectancy. Sex-specific long-term demographic trends in life expectancy show that Finland, Portugal and Greece have for long periods had a shorter life expectancy than neighbouring countries (Navarro et al. 2004; Vallin & Meslé 2001). Women in Finland,
Portugal, Greece (and Ireland) have experienced great improvements in life expectancy in recent years — compared with neighbours — but are still characterised by relatively short LE. It is possible that a poor past has contributed to these countries still having a shorter life expectancy than might be expected given their low rates of female smoking and high female labour force participation rate.

Conclusion

These analyses suggest that the Nordic countries have facilitated women’s labour force participation. In the initial analysis there are no associations between various measures of female labour force participation and women’s life expectancy or self-rated health but there is an inverse association between female labour force participation and the level of female lung cancer mortality. This has been reported and discussed for an earlier period by Nathanson (1995). High female labour force participation has been related to an increase in female smoking, something that has clearly counteracted any survival benefits from increased labour force participation. However, when countries with a high level of lung cancer mortality (15 countries) were analysed separately from those with low lung cancer mortality (7 countries), a significant positive association between female labour force participation and life expectancy was observed along with an inverse effect of lung cancer mortality in the former group. In the latter group of countries, we found no associations with female life expectancy. The analysis of the relation between female labour force participation and self-rated health levels in 19 countries demonstrated a relationship in the expected direction — better self-rated health in countries with high female labour force participation — but only after two outliers were excluded from the analysis. It is questionable whether we can draw any clear conclusion from this finding. It does, at least, indicate that high female labour force participation is not related to deteriorating health among women in the welfare states included here. The findings for self-rated health in relation to life expectancy indicate that there are significant differences in how countries rank in one or the other of the public health outcomes.

5.2 Nordic alcohol policies and the welfare state

The World Health Organization’s studies of the Global Burden of Disease (Ezzati et al. 2002; Rehm et al. 2004) have recently underlined the substantial extent of alcohol problems in much of the world. In developed

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34 This section is mainly based on the paper by Robin Room and Christoffer Tigerstedt commissioned by the NEWS-project, see Appendix 1.
countries, alcohol ranked fourth in a comparison of risk factors for public health and safety. Considering patterns of drinking around the world, alcohol consumption is generally higher in Europe and in countries with a population largely of European descent. This in part reflects the fact most of these societies are relatively affluent, drinking is deeply enculturated, and a majority of adults are alcohol consumers. Accordingly, alcohol is a particularly significant contributor to the burden of disease and disability in these countries.

5.2.1 Two centuries of waves of alcohol consumption: serious problems and strong responses

In many developed countries, alcohol consumption today is considerably greater than it was 70 years ago. But in a longer historical perspective, alcohol consumption levels in the 1930s were the trough of a wave of what has been called the ‘long waves of alcohol consumption’ (Mäkelä et al. 1981) in the modern era. The relatively low consumption levels in northern and north-western Europe were the outcome of a struggle throughout the preceding century over the place of alcohol in society.

The traditional production of alcoholic beverages was mostly on a relatively small scale, and often for immediate consumption. This changed with the shift of distilled spirits from medicinal to recreational use around the 1600s and the industrialization of spirits and beer production in the early stages of the industrial revolution. The commercialization of alcohol production and sale, and its relatively free availability, combined with an improving economy and drinking patterns which emphasized intoxication, had serious consequences. In many of the countries most affected by these waves of heavy consumption, there was eventually a strong social response. In the Nordic and English-speaking countries, the temperance movement became a mass movement with broad popularity. Spreading often in conjunction with Protestant religious revivalism, the movement intersected with many of the major progressive movements of the era: for the abolition of slavery, for the rights of women, and for the rights of workers (Room 1985b). Particularly in the Nordic countries (other than Denmark), temperance became strongly intermeshed with the strong worker’s movements, and in Finland, Norway and Iceland also with the project of nation-building (Johansson 2000).

The political high-point of temperance movements came around 1910-1920. In Finland, Norway and Iceland, as well as in the U.S., Canada and Russia, the result was a period of national prohibition of all alcoholic beverages, although there was a quick retreat to restrict the prohibition to spirits in Norway, Iceland, and parts of Canada. In Sweden, the alternative solution of
a strict control system was adopted in 1912, and on this basis a referendum on prohibition was narrowly defeated in 1922. As the other countries which had adopted prohibition retreated from it, versions of the same alternative, a more or less strict alcohol control regime, were put in its place (Room 1985a; 2004). The existence of a distinctive Nordic approach to alcohol control thus dates from about a century ago.

**Nordic alcohol control before 1955**

The alcohol control systems operating in Finland, Sweden, Norway and Iceland after the early 1930s shared some main features, although each had its own peculiarities (Olsson et al. 2002; Tigerstedt et al. 2006):

*Disinterestedness.* The state took a commanding role for itself in the alcohol market. Private interests were minimized in off-premise retail sales (other than of relatively low-strength beer), in importing and wholesaling, and in the production of spirits. On-premise retail sales were heavily regulated.

*Restricting economic availability.* Alcoholic beverages were made relatively expensive, with a high implicit or explicit tax.

*Restricting physical availability.* The number of sales outlets for alcohol was limited, particularly for strong alcoholic beverages for off-premise consumption. Opening hours and days for retail sales were also restricted.

*Restricted availability for stronger beverages.* Through taxes and other dimensions of availability, weaker beverages were given preference over stronger beverages. Taxes on spirits, in particular, were much greater per unit of alcohol. Different classes of beer, defined in terms of alcoholic strength, were treated quite differently in terms of taxation and how widely they were sold. The exception to this was Iceland, where all beer remained prohibited, in line with an early version of a ‘stepping-stone theory’, until 1989 (Ólafsdóttir & Leifman 2002).

The features mentioned so far are still recognizable in the Nordic alcohol control systems today. The alcohol control systems of the 1930s-1950s had other features which were dropped 40 or 50 years ago, namely;

*Individualized sales controls.* Included in the retail monopoly systems were individualized controls of the alcohol consumer. In Sweden a ration-book set a maximum purchase limit each month for spirits (Frånberg 1987), in Finland the ‘buyer surveillance’ system sent inspectors out on home visits to large purchasers (Järvinen 1991) and in Norway, individualized sales controls were in force during the Second World War (Hamran & Myrvang 1998). These control systems were abandoned in the 1940s and 1950s.

*Alcohol-specific social controls.* A system of lay community Temperance Boards in Finland, Norway, Sweden and Iceland exercised individual social
control over problematic drinkers, using both advice and coercion (Christie 1965; Rosenqvist & Takala 1987). The function of the Temperance Boards were transferred to the general welfare system in the 1960s (the 1980s in Iceland).

Denmark is the exception among Nordic countries in terms of alcohol policy. Alcohol controls were instituted in Denmark, but with a much narrower range of measures, particularly focused on taxation. During World War I, a very high tax on spirits was imposed, while beer taxes were raised much less. The result was that Denmark switched from a spirits-drinking to a beer-drinking culture more or less overnight: spirits dropped from 75% of alcohol consumption to 12% (Bruun et al. 1975). While one explanation of why Denmark has been an exception with regard to alcohol policy points to differences in the orientation of Lutheranism in Denmark (Eriksen 1990), another has noted that the Danish labour movement was less radical and less supportive of the temperance movement than in the other Nordic countries (Johansson 2000).

These days Nordic alcohol policies are usually considered to be an integral part of the Nordic welfare state. However, the main lines of Nordic alcohol control were laid down prior to the rise of the welfare state. This is probably because alcohol policy – or, as it used to be, temperance policy – already stood out as a political field of its own at the very beginning of the 1900s. In addition, Swedish alcohol policy actually separated alcoholism treatment from poor relief, whose reorganization and development was one of the main tasks of the Swedish welfare state (Stenius 1999). As a result, alcohol policy never really became part of the general welfare state debate, but rather stayed at its margins (Tigerstedt 2001). In the late 1910s, when Finland became independent, its social security lagged behind Nordic standards. In these circumstances the idea of ‘public temperance’, manifested in the Prohibition Act (1919-1932), tended to replace the idea of a welfare state: temperance would do away with social problems in general, it was supposed (Haatanen 1992). The Prohibition Act was succeeded by the establishment of a very powerful, separate institution – the alcohol monopoly – with far-reaching rights to control the drinking of individuals and populations. The monopoly’s status of a state within the state helped to keep Finnish alcohol policies at the margins of the development of mainstream welfare policy.

5.2.2 Social class and the old Nordic alcohol control systems

While the social class location of heavy drinking varies by time and place, there is a strong tendency for social and health harm to be more associated with the drinking of poor people, and particularly of poor marginalized
people, than of the affluent (Room 2004). Differences in drinking patterns may account for some of the discrepancy, but much of it is accounted for by class differences in access to resources and to social capital, including the power to define what is out of bounds. A rich man’s son can escape the long-term consequences of the drinking of his hell-raising years; a poor man’s son may not so easily do so.

Restrictions on the availability of alcohol also have more effect on poor than on affluent drinkers. This is obvious in the case of alcohol taxes, but also applies to other general restrictions on availability. The earlier Nordic systems clearly added to these disparities a differential emphasis on regulating the drinking of the poor. The individualized controls of the Nordic systems of the 1930s and 1940s tended to direct their control efforts down and not up the class structure (Frånberg 1987). The regulation of on-premise drinking, too, was above all directed at working-class drinking places (Koskikallio 1985). In fact, the view that the liquor question (alkoholfrågan) was first and foremost a working-class (family) problem was largely accepted in Sweden both by the temperance movement and by those in favour of the rationing book.

On the other hand, it can with some justice be argued that the strength of Nordic temperance movements, and political support for the eventual alcohol control structures in response to the temperance impulse, depended on the support of workers’ movements (Johansson 2000). Temperance was one expression, for instance, of the ideal of skötsamhet (conscientiousness) held by the Swedish worker’s movement. Consequently, the open and legal discrimination in terms of class, and also gender, was very seldom questioned, not even by workers or women themselves.

In general, we may conclude that the connection between alcohol policy and the welfare state is obvious but not straightforward. Generally speaking Nordic alcohol control policy has shared many basic features with the welfare state ideology and the so-called Scandinavian Model (Mäkelä & Tigerstedt 1993). They are related not only through a strong orientation towards non-market based policies, but also by a (paternalistic) universalistic strategy, as restrictions have tended to cover the entire population. From this point of view, the implementation of tight regulations has been intended to protect socially and economically deprived people, who run a greater risk of suffering alcohol-related harms. Built into this has been the idea of not stigmatizing socially and economically marginalised people and placing blame on individual drinkers (Mäkelä & Tigerstedt 1993). Nevertheless, the ideology of constraint which the system embodied also affected the behaviour of middle-class people.
Differential effects by social class of dismantling the old control system

The differential effects by social class of the old Nordic alcohol control systems may be studied by examining what happened at moments when they were dismantled – the end of alcohol rationing in 1955 in Sweden, and the free sale of 4.7% beer in grocery stores in 1969 in Finland. At both of these moments, there was a very substantial increase in alcohol consumption in the population as a whole – by 25% in Sweden during the two first years, by 46% in Finland during the first year (Mäkelä et al. 2002). In Finland, the immediate effect of liberalization was greater in absolute terms for higher-status than for lower-status Finns (Mäkelä 2002). A more recent change, the introduction of full-strength beer in Iceland in March 1989, also had a greater stimulating effect on consumption among the better educated (Ólafsdóttir & Leifman 2002).

However, in terms of adverse social and health consequences, it seems to have been the most marginalized heavy drinkers who were most held in check by the old control systems. The distribution of alcohol consumption during the Swedish rationing period was clearly more evenly spread than without such purchase restrictions. The system, “had substantial effects on the level of alcohol-related harm” (Lenke 1985, p. 330; 336), because heavy drinkers were prevented from accounting for as big a share of aggregate consumption as they did either before or after the system was in force. This thesis, in turn, is supported by trends in alcohol-related harm, i.e. in the immediate rise in the number of cases of delirium tremens, cirrhosis mortality, and repeated drunkenness and alcohol-involved criminal offences (Lenke 1985, p. 330-333; Mäkelä et al. 2002; Norström 1987). This implies that although the rationing system was primarily perceived in the public debate as a form of individual control, it nevertheless had noticeable effects on the distribution of alcohol consumption at population level (Bruun & Frånberg 1985, p. 344). In Finland also, after 1968, the statistics for alcohol-related problems tended to rise more than proportionately to the rise in consumption. In Finland after 1968, deaths from alcohol-specific causes rose by 58%, and arrests for drunkenness went up by 160% (Mäkelä et al. 2002). Analyses of more recent Swedish and Finnish data (Mäkelä 1999; Norström & Romelsjö 1998) have shown that such consequences are much more prevalent among the poorer and more marginalized, and studies of more recent changes in Nordic alcohol controls have often found a stronger effect among more marginalized drinkers (Mäkelä et al. 2002; Room et al. 2002). It is thus very likely that the loosening of the earlier Nordic model had a greater effect on the health of the poor than of the more affluent.
In their earlier forms, then, Nordic alcohol policies seem to have been differentially effective in holding down rates of alcohol problems among the poor. The measures they included were either directed primarily at the poor or were felt more heavily by the poor; their fiscal aspects amounted to a regressive taxation. By the same token, Nordic alcohol policies of half a century ago were effective in reducing health inequalities.

5.2.3 Nordic alcohol controls in recent decades: The total consumption model

The retreat from the individualized controls of the earlier policies used in the Nordic countries was accompanied by the emergence of a new ideology for Nordic alcohol control: what became known in Sweden as the ‘total consumption approach’ (Tigerstedt 2000). In an era when drinking habits were increasingly viewed as a private rather than a public matter, there was growing unease about the intervention in individual lives of ‘buyer surveillance’ and other such systems, and a lively awareness among social scientists of the potential adverse effects of singling out and labelling individuals. The total consumption approach deflected attention instead to patterns in the whole population, and emphasized control measures such as taxes or hours of sale which were general rather than individualized in their application. Rates of alcohol-related problems are seen as rising and falling in step with changes in the overall consumption. The approach emerged in Finland as the untoward effects of the liberalization of 1969 became clear (Tigerstedt 2000). In recent years, there has also been an emphasis on patterns as well as levels of drinking (Norström & Skog 2001). But this has not been seen as changing the immediate policy significance of the model, since patterns of drinking in a particular population change only slowly (Simpura 2001).

The opposite line of argument, which does not favour the total consumption model, claims that high rates of alcohol problems in Nordic societies are a result of the alcohol control policies, and would diminish if the controls were relaxed (Olsson 1990). It has also been claimed that the public health framing of the total consumption model focused attention on the health effects of alcohol on the drinker him- or herself, while the most politically powerful arguments for strong alcohol policies have always focussed on social harms, i.e. the effects of drinking on family members, friends, strangers etc. (Hauge 1999). From this perspective, the total consumption model is seen as having contributed to the weakening rather than the buttressing of restrictive alcohol policies.
In recent years, the arguments for relaxing Nordic alcohol control structures have changed as a result of outside imperatives, for example changes forced by membership in the European Union or - for Norway and Iceland - the European Economic Area (Sutton 1998). The most conspicuous responses to the new market context emerging within the EU are the Danish 45 % and the Finnish 44 % reductions in excise duties on spirits, implemented in October 2003 and March 2004 respectively. In Sweden an official investigation recommended a 40 % drop in Swedish spirits taxes in 2005 to counter the effects of EU rules allowing large amounts of cross-border importation by travellers from Denmark or Germany (Härstedt 2005), though the recommendation has not been implemented. Several scholarly studies (e.g. Holder et al. 1998; Karlsson et al. 2005; Sulkunen et al. 2000) have described the step-by-step weakening of Nordic controls in the years after 1994.

Nevertheless, some basic structures of control remain in place in the Nordic countries. In a comparative perspective it is still meaningful to talk of a ‘Nordic model’ of alcohol control, which includes a generally high level of public and political concern about alcohol problems, active state intervention in the alcohol market, (monopolization of retail sales and other controls), and alcohol tax rates still generally higher than elsewhere in Europe. Thus Finland, Norway and Sweden still ranked highest in a scale of the extent of alcohol controls in 15 western European countries in 2000, as they had in 1950 (Karlsson & Österberg 2001). There have even been some signs Denmark moving towards the other Nordic countries, for instance in the joint Nordic approach to strengthening alcohol policies in the European Union, public health action on alcohol through the World Health Organization (Nordic Council 2004), and the introduction of age limits in retail sales of packaged alcohol.

In relation to this, it is tempting to ask whether the Nordic alcohol policy model led to low levels of consumption as well as low rates of alcohol-related harm. One example of the public health consequences of the Nordic alcohol policy model is given in the table below. Sweden, Norway and Finland (Iceland is missing from the data) have been ranked as having a high level of alcohol control throughout the period of 1950-1995. In contrast, Denmark ranked as having low alcohol control in the 1950s, 1960s and 1970s, and average control since the 1980s. Austria went from low to average control in the 1960s and the same eventually happened in Portugal, but not until the 2000s (Karlsson & Östberg 2001). It is clearly shown that the average per capita consumption throughout the period is higher in Denmark, Austria and Portugal than in the high-control Nordic countries. The levels of cirrhosis mortality differ considerably between men and
women throughout the period in all countries, women having lower cirrhosis mortality than men. But the overall lower rates of cirrhosis mortality in the high-control countries, both as an average of the whole period and in absolute numbers in 1995 (despite what seems like a somewhat untoward development in Finland and Denmark among both men and women) is even more striking (Table 5.6).

Table 5.6 Levels of consumption and alcohol-related harm rates.

<table>
<thead>
<tr>
<th>Country</th>
<th>Consumption*</th>
<th>Male cirrhosis mortality**</th>
<th>Female cirrhosis mortality**</th>
<th>Male cirrhosis mortality**</th>
<th>Female cirrhosis mortality**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norway (H)</td>
<td>4.4</td>
<td>7.6</td>
<td>4.6</td>
<td>7.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Sweden (H)</td>
<td>6.1</td>
<td>13.3</td>
<td>6.7</td>
<td>9.3</td>
<td>4.9</td>
</tr>
<tr>
<td>Finland (H)</td>
<td>6.2</td>
<td>10.6</td>
<td>4.9</td>
<td>19.7</td>
<td>5.8</td>
</tr>
<tr>
<td>Denmark (L→M)</td>
<td>9.0</td>
<td>15.7</td>
<td>10.9</td>
<td>27.7</td>
<td>13.3</td>
</tr>
<tr>
<td>Austria (L→M)</td>
<td>12.4</td>
<td>52.9</td>
<td>18.9</td>
<td>47.1</td>
<td>15.1</td>
</tr>
<tr>
<td>Portugal (L)</td>
<td>16.0</td>
<td>55.8</td>
<td>22.9</td>
<td>42.5</td>
<td>12.1</td>
</tr>
</tbody>
</table>

* litres per capita

** age-adjusted liver cirrhosis mortality per 100,000 inhabitants aged 15+

Examples with data from ECAS 1950-95 (Ramstedt, 2001), and 1995 (Ramstedt 2002)

Classification of the countries in accordance to the level of alcohol control (Karlsson & Österberg 2001)

(H) = high alcohol control, (M) = average/medium alcohol control, (L) = low alcohol control

5.2.4 Nordic alcohol policies today, in a broad perspective

An unusual feature of Nordic alcohol policy, in international terms, has been the relatively close connection between evaluative research and policy discussions. To a certain extent, this is a reflection of the general commitment of Nordic societies to utilitarian rather than symbolic policymaking (Room 2005b). It also reflects the specific situation in Finland, which led the way in social alcohol research in the last half-century, with social alcohol research organized as a department of the same institution, the Finnish alcohol monopoly, which was the executive agency for alcohol policy (Olsson et al. 2002). The Finnish tradition of having a centre for alcohol policy research became a model for Norway and eventually for Sweden.

‘Alcohol policy’, however, is often thought of only in partial terms, to refer to control of the alcohol market and activities directed at prevention. There is no doubt that the Nordic states exercise less control over alcohol availability now than at any time in the last 90 years. The level of taxation
has been reduced (less in Norway and Iceland than elsewhere), and the
effects of the remaining taxes have been diluted by increased affluence.
Alcohol is available for longer hours and on more days of the week, in part
because of the growth of on-premise consumption and changes in the
conditions for off-premise sales.

Nevertheless, as noted earlier, a distinctive tradition of Nordic alcohol policy
may be said to survive in the area of alcohol controls. Differences in taxes
and availability by strength of beverage, for instance, remain quite strong.
Sweden has a highly differentiated system of grading beer according to
alcohol strength, each grade with its own regulations for availability and
taxation. Elements of such systems of differentiation also survive in Norway
and Finland. At the most general level, in the long sweep of the 20th century,
we can say that each Nordic country (including Denmark) sooner or later
succeeded in a conscious policy aim of switching the dominant alcoholic
beverage from spirits to a weaker beverage. Unfortunately, there is no good
evaluation of whether this was in the end a gain for public health or safety.
Though it may have had some beneficial effects, the hope that the switch
would somehow tame Nordic drinking styles is far from having been
realized.

Drinking-driving countermeasures, though often discussed separately from
alcohol controls, is another area in which a distinctive Nordic tradition may
be identified. Nordic countries pioneered ‘per se’ laws, which outlaw driving
above a stated blood-alcohol level, and have been at the forefront of
lowering permissible blood-alcohol levels and of enforcement of the limits.
The laws have had broad social acceptance and compliance.

In a recent attempt to analyse the link between the strength of a country’s
alcohol control policy and alcohol consumption in 30 OECD countries,
Brand et al. (2007) formed an Alcohol Policy Index. The Index generated
scores for each country, based on five areas related to alcohol control:
availability of alcohol, drinking context, alcohol prices, alcohol advertising
and the operation of motor vehicles. The highest possible score for each
country was 100, and the median score among the 30 OECD countries was
42.4. The lowest score was found in Luxembourg (14.5) and the highest in
Norway (67.3). Hence, even though the Nordic countries might today have
less control over alcohol availability than during the previous 90 years, these
results indicate that Norway, Sweden and Iceland are among the top five
countries, with Finland at number 7. With the exception of Denmark (ranked
24), the study also indicates that even if the Nordic countries get high scores,
there seems to be a continuous falling scale rather than distinct clusters of
policy. In a second step, analysing these scores in relation to alcohol
consumption gave the results shown in Figure 5.16. Based on the slope in the figure, the authors suggest that if the United States introduced taxes that would raise alcohol prices by 50\%, their alcohol policy score would rise from 43 to 48, which in turn would theoretically result in a 7\% drop in alcohol consumption.

Figure 5.16 Score versus Alcohol Consumption. Scatter plot shows the relationship between alcohol policy score and annual per capita alcohol consumption. The regression line has a slope of -0.10 (p = 0.001), signifying a decrease in consumption of 1.0 l absolute alcohol for each 10-point increase in the score (95\% CI 0.4 – 1.5 l) Arcs show 95\% confidence limits. Figure adopted from Brand et al. (2007).

Lastly, and least discussed in usual discussions of Nordic alcohol policy, is the issue of the social handling of alcohol problems. This arena has some distinctive features in Nordic societies. In all the Nordic societies the leading social institution with responsibility for alcohol problems is the social services. The tendency to regard alcohol problems as fundamentally problems of social welfare predates the Temperance Board era; a century ago, Swedish doctors readily recognized that there were medical consequences of drinking, but regarded alcohol problems as fundamentally a social rather than a medical issue (Nycander 1996; Rosenqvist 1986). This disposition set Nordic societies apart from elsewhere in Europe (Baumohl & Room 1987), and continues to do so. Despite strong currents of medicalization from the English-, German- and Romance language-speaking worlds, it remains true today that two-thirds of Swedish alcohol treatment is
provided by the social services system (Room et al. 2003). Another aspect of the social response to problematic drinking is the handling of public intoxication. As in many other countries, public drunkenness had been criminalized in the course of the 19th century, backed up by Vagrancy Acts that put poor drunkards into work camps (Christie 1960), and these measures became a major tool for disciplining the poor. In line with international trends, public drunkenness was generally decriminalized and the work camps abolished or transformed in the 1960s and 1970s, but it was often left to the police to deal with those found drunk in public places.

Compared with elsewhere, spending on alcohol treatment and counselling is quite high in the Nordic countries (Takala et al. 1992). It appears that in all the Nordic countries, except Iceland (Ólafsdóttir 1995), most of those receiving alcohol treatment, whether in the health or social services systems, are poor and relatively marginalized (Nuorvala et al. 2004; Storbjörk & Room 2006). In this sense, it presumably reduces health inequalities by providing help for the serious health problems of the marginalized heavy drinkers (Mäkelä 1999). However, it may be asked whether, in the circumstances, alcohol treatment can also be seen as a marker and instrument of marginalization and stigmatization (Room 2005a).

In Finland, where it has perhaps been best studied, alcohol is a major factor in explaining present-day health differences by socio-economic status. In the early 1990s, alcohol-related mortality accounted for one quarter of the differences in male life expectancy between upper non-manual workers and manual workers. The corresponding share among women was one tenth. Where accidents and violent behaviour leading to death are concerned, alcohol discriminates strongly between social groups. More recently, differences in life expectancy have tended to increase, alcohol-related mortality being one of the key determining variables (Mäkelä 1999). Concerning future developments in socio-economic health differences, it has been remarked that much will depend expressly on future drinking patterns in different social groups (Lahelma & Koskinen 2002, p. 36).

5.3 Health care and dental care systems

From a global perspective the importance of health care is central and there is a vast amount of knowledge on this issue. However, since this area is covered by one of the Knowledge Network linked to CSDH (see Gilson et al. 2007) we have not prioritised health care in our report. The purpose here is rather to point at some key aspects in what health care can contribute with, but also not contribute with, for reducing social inequalities in health.
Whitehead and Dahlgren (2006) argue that the goals for equity in health and equity in health care are quite different. While eliminating socioeconomic differences in health is the goal for equity in health, the goal for equity in health care would rather be to ensure that health services can meet up to the level of need, which could be to give higher priority to groups were the needs tend to be greater. Giving higher priority to groups were need is greater does not go against previous discussions on universalism. Everyone should have the same right to receive health care when needed, but needs differ and therefore equity in health care implies that the use of health care should differ.

With reference to the model presented in chapter 1.2.1 health care policies would impact social inequalities in health foremost by reducing the social consequences of disease and injury. First, through minimizing the increased costs for health care pushing individuals into the poverty trap and, second, that care and rehabilitation improves the possibilities to return to work. This also have relevance in relation to figure 4.5 (chapter IV) on pathways linking income and health, regarding the pathway indicating reversed causation. Poor health will not only result in reduced income from work, but also in higher expenditures for health services, medical treatment and drugs. As noted by Whitehead and Dahlgren (2006) the financial and social consequences of increasing costs for the individual could be increased debts, deepened poverty, reduced food consumption and sale of capital goods.

The role of health care policies is therefore one important road for individuals out of the vicious circle of poverty and ill health. In order to alleviate part of the excess health burden in groups with lower socioeconomic status and reducing the risk for individuals ending up in the poverty trap, adequate finance health care policies and avoiding upfront payments has been put forward as crucial (Mackenbach & Bakker 2002, p. 34).

From an equity perspective, health care financing can be regarded as fundamental out of two reasons. First, it determines the availability and access of health care and, second, it protects patients against huge costs of illness. Both high-income and low-income countries finance health care using a mixture of five possible sources with different importance for equity in health: general tax revenues, social insurance, private insurance, out-of-pocket payment (user fees and patients’ direct payment to private providers) and community financing. However, there is not a full overlap between welfare state regimes and health care system. One example of this is Britain a liberal welfare state with a health care system characterised by universalism.
Between the Nordic welfare states, but also between countries in general, health care systems differ regarding access, availability and quality. These differences are a result of differences in both social policy and financing. The question is how can these differences be of importance for health inequalities? First we could argue that health care would probably not have any significant impact on health inequalities in disease incidence, but rather on if recovering/death is unevenly distributed. If access and availability to health care is equal, could we presume that also recovering/death is evenly distributed across social classes? For some diseases, however, also preventive action such as vaccination, pap smear, screening for breast cancer could effect disease incidence if access differs across social classes.

Equal access to health care does not necessarily imply equal use, since there are underlying differences related to culture and attitudes towards health care. However, the equality in access between socioeconomic groups might among other things be influenced by the patient costs sharing. From the 1980s several Western European countries started to use patient costs in trying to impact the demand for health care. A rather important increase in cost sharing was introduced in Sweden, Denmark, Greece, Italy, the Netherlands and Portugal. Even though rates differ between countries and cost sharing could also be means tested or levelled out at a certain maxima, in European health care services today patient cost sharing have an important role, especially for adult dental care where patient cost sharing often is high. (Louckx 2002). In the following we turn to the dental care and dental health more specifically, being a policy area with common traits among the Nordic countries and a field that is not covered specifically by the CSDH Knowledge Networks.

5.3.1 The Nordic experience of dental care and dental health

For somewhat peculiar reason oral health is often regarded as something qualitative different from any other health care and health outcome topic. Thus, oral health is typically performed by a specific profession and usually has its own insurance logic and system. At ay rate, it seems that dental health and the organisation of public dental service is of obvious interest. Indeed, it seems as if we, by and large, are able to distinguish a Nordic model of dental care. The most salient feature of such a model is a public dental service offering free regular dental examination and treatment for all children and adolescents 0-18/20 years of age. Moreover, the public dental service offers dental care to persons with serious medical diagnoses, mentally handicapped

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This section is mainly based on the paper by Dorthe Holst commissioned by the NEWS-prjekct, see Appendix 1.
persons, and groups of elderly in old-age institutions. This is combined with a private sector where adults and old age people can demand dental care by private practitioners with part of the treatment expenditures reimbursed by national health insurance. The combination of a highly regulated public dental service for all target populations and a modestly regulated private sector for adults and old people is the tax financed Nordic model (Holst 1997; Holst & Grytten 1993).

There are differences between the Nordic countries in the timing and the process of implementing public dental care, introduction of legislation, age group specifications and responsible administrative tier of the public dental service. Further, there are and have been differences between the countries with regard to how dental care is financed and regulated in the private sector. As children’s oral health was increasingly deteriorated by caries as a consequence of the availability of industrial sugar in the late 19th century, dental care for school children started out of charity from private dentists (Holst 2004; Lindblom 2004). Universal public dental care for children developed into the essential solution to the issue and came the dominate over the alternative of low patient charges (Erichsen 1990; Holst 2004). It was only after The Second World War that Nordic welfare schemes and public dental care were made truly universal encompassing everyone in defined brackets of the population (Kildal & Kuhnle 2005). New acts, mainly implemented during the 1980’s, when a higher output of dentists made it possible for urban municipalities to improve the equal distribution of dental services, were characterized by the responsibility of regional or local chief dental officers to secure adequate planning, flexibility and coordinated of public and private dental resources. With these acts, goals shifted from equal access to equality of outcome (Holst 2004).

What about dental health outcome? The service objectives have been full coverage, supply of necessary preventive and treatment services and good oral health. The challenges of sorting out individual, cultural and societal level effects from oral health care systems effects are immense and no model of dental care has so far been chosen the best by normative judgment or empirical documentation. Although assessment of efficiency of the model as a whole has proven difficult (Jönsson & Karlsson 1994), studies have indicated that the oral health of Nordic children is comparatively good (Arnljot 1985; WHO 1999). Arnljot’s cross-country (10) comparison in which Norway was the only the Nordic country showed that Norway had the

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36 Extensive public dental service programmes were implemented in Sweden 1938, Norway 1951, Finland 1957 and Denmark 1972.
highest successful treatment-to-need ratio among children. A study of oral health changes - or more specifically the change in the number of decayed, missing or filled permanent teeth (DMFT) among children from the 1960s to the 1980s - in 18 industrialized countries revealed that all the four Nordic countries were among the best performers (Nadanovsky & Sheiham 1995). Accordingly, their data indicates that the annual rate of decline was largest in Denmark followed by Finland and Norway. Their analysis shows that it is rather broad socioeconomic or societal factors than dental services that explain the cross-national variation. This result, however, is well in line with the general approach we take in this report that population health is affected by broad societal factors, such as the overall social policy system, rather than the specificities of the health sector system.

5.4 Pension systems and health of elderly people

Dramatically reduced mortality rates in the advanced welfare democracies in the last century, coinciding with economic growth and the expansion of public social security, have brought an entirely new stage to the life-course, in which elderly people enjoy greatly improved income and health. From this perspective a ‘democratization’ of ageing can be said to have taken place, and retired persons in their ‘third age’ today may more appropriately be described as “the young old, who retire early enough and in sufficiently good health to enjoy an unprecedented period of cultivation, creativity and leisure” (Troyansky 1997, p. 50).

Yet, in parallel with the democratization of ageing, there is also differentiation. Societal inequalities not only reproduce, but amplify with old age (Vincent 1995, p. 23-24). In many countries poverty as well as low incomes still persist among older people, and from a comparative perspective the ageing trend is also characterized by wide cross-national variations in pensioners’ living standards with the differentiation relating closely to how pension policy solutions have been differentially successful in reducing poverty (Higgs 1997, p. 122; Kangas & Palme 2000; Korpi & Palme 1998; Quadagno and Reid 1999; Vincent 1995, p. 28) and in particular gender-based and generational inequalities (see e.g. Daly 2001; Ginn et al. 2001; Walker & Maltby 1997:53).

Since socioeconomic stratification processes are in significant ways influenced by welfare state institutions, we may expect individuals’ health to be related to welfare state provision in general and the health of the retired to the provision of public pensions specifically. The potential of public pensions to influence elderly people’s health follows from the fact that more
generous pension benefits provide a higher income among the elderly, thus more resources that can be invested in products and activities that enhance health. Furthermore, a more generous pension system also has a redistributive impact, which reduces income differences in society, particularly among the elderly.

5.4.1 Pension rights and their potential importance for health

For historical and political reasons, countries have followed different paths in the development of pension systems. This has led to somewhat different profiles in the level and distribution of benefits. For analytical purposes we will focus on the two different goals of these development paths; basic security and income security. The former is aimed at providing basic economic security for all, although in some countries this basic security is conditional on means-testing or entitlement through gainful employment. The latter is linked to earnings, aiming at maintaining economic standards after retirement. Although most western countries today have some kind of combination of these types of pension rights, there are still differences in terms of the mix between these two, as well as differences in terms of the generosity of replacement levels.

Table 5.7 Grouping of countries according to the dominating pension regime.

<table>
<thead>
<tr>
<th>Regime 1: Encompassing</th>
<th>Regime 2: State corporatist</th>
<th>Regime 3: Basic/targeted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>Austria</td>
<td>Australia</td>
</tr>
<tr>
<td>Norway</td>
<td>Belgium</td>
<td>Canada</td>
</tr>
<tr>
<td>Sweden</td>
<td>France</td>
<td>Denmark</td>
</tr>
<tr>
<td></td>
<td>Italy</td>
<td>Ireland</td>
</tr>
<tr>
<td></td>
<td>Japan</td>
<td>Switzerland</td>
</tr>
<tr>
<td></td>
<td>West Germany</td>
<td>The Netherlands</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New Zealand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>U.K.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>U.S.</td>
</tr>
</tbody>
</table>

For the main analyses below we will use the degree of generosity of basic security schemes and income security schemes as variables. For some of the descriptive purposes, however, we will also classify countries into three broad categories (cf. Korpi and Palme 1998, Table 5.7). The basic/targeted model only awards basic benefits, thus allowing private pensions a large role. The state corporatist model delivers earnings-related benefits, i.e.

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37 This section is mainly based on the paper by Thor Norström and Joakim Palme commissioned for the NEWS-project, see Appendix 1.
income security, separately for different corporations. The *encompassing* model relies on a combination of universal basic benefits and earnings-related social insurance benefits.

It should be noted here that these groupings are based on the character of the countries’ pension systems during the later stages of the post-war period. Finland, Norway and Sweden, for example, would have been assigned to the Basic security category if we had relied on the situation in the 1950s.

Data on pension rights were obtained from the Social Citizenship Indicator Program (SCIP). This data-base provides comparable and multidimensional information on welfare state institutions as well as on income distribution. The concepts of basic security and income security discussed above have been operationalized in following way: The *basic security index* (denoted BASIC in the analyses) reflects the situation of person(s) with no or small earnings records and is an average of net replacement rates for different type cases. They thus reflect three types of benefit; (i) *citizenship pension* which is paid without needs-testing or any requirement of previous earnings, (ii) *minimum pension* which, in addition to citizenship based benefits, may include needs-tested components, and (iii) *worker minimum pension* which requires the fulfilment of a minimum number of years of work/contribution records. The *income security index* (denoted INCOME in the analyses) is also an average of replacement rates for type cases that reflect the situations of average income earners, single householders as well as married couples. They reflect two types of benefit; (i) *worker pension* which is the benefit given on the basis of 35 years of work/contributions with average production-worker earnings, (ii) *full worker pension* which takes a full contribution record into account but assumes average production-worker earnings. A comprehensive indicator of pension rights was constructed as PENSION = (BASIC + INCOME). The pension data pertain to every fifth year between 1950 and 2000. In this context, two things should be emphasised: The countries that score highest on the basic security index have a universal (citizenship based) component in their basic benefits provisions. There is a weak positive correlation between the basic and income security indicators suggesting that there is no trade-off between providing basic security or incomes security, on the contrary it appears possible to do both. In all analyses of the relationship between the pension indicators and mortality, the annual mortality data were averaged over five-year periods. This means that for 1950, say, while the pension indicators express the conditions that year, the mortality indicators express the average mortality during the period 1950-1954. In this way a plausible lag-effect is incorporated into the analyses.
Public pension rights have the potential to affect old-age mortality through two main mechanisms: (i) the more generous the pension benefits, the higher the income in the elderly population. This provides more resources that can be invested in products and activities that enhance health; (ii) a more generous pension system has, in addition, a redistributive impact, and thus reduces income differences in society, and particularly among the elderly.

5.4.2 Public pensions and old-age mortality

Mortality rates have decreased dramatically in the advanced welfare democracies during the past century. Nevertheless, substantial cross-national differences in mortality persist, also when it comes to the elderly. Likewise, there is a marked variation across countries in the rate of the mortality decrease. The main purpose of this analysis is to investigate whether this variation across time and space in old-age mortality is related to variations in pension rights as they were described above. In other words, to what extent is the type of pension regime (basic, corporatist or encompassing) important for old-age mortality, and to what extent is the generosity of pension benefits in terms of both basic security and income security important for old-age mortality.

The study comprises 18 OECD-countries, including Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States. The observation period is 1950-2000. Annual age-specific data on all-cause mortality for men and women were obtained from the WHO Mortality Data Base (www.who.int/en/) and The Human Mortality Database (www.mortality.org). Age-standardised mortality rates (number of deaths per 100 000 population) were constructed for the categories 65 years and above, and 30-59 years. Data on GDP per capita were obtained from Angus Maddison’s data bank (www.ggdc.net/ Maddison).

Methods

Generally we use old-age excess mortality as the outcome, defined as the ratio of the mortality rate in the age-group 65 years and above to the mortality rate in the age-group 30-59 years. There are two reasons for this approach. Firstly, the pension rights indicators are operationalized in terms of benefits that are relative to the economic conditions for the working population. Secondly, this approach is a way of controlling for the heterogeneity among countries in the general level of mortality that might distort the outcome. The hypothetical example in Table 5.8 illustrates the point. Country B has a more generous pension system, as well as lower old-
age mortality than country A. If this tendency is noted for a larger set of
countries, one might infer that the more generous the pension system, the
lower the old-age mortality. However, the lower mortality among old people
in country B might simply be a reflection of a generally lower mortality in
that country that is unrelated to pension benefits. In Table 5.8, this generally
lower mortality is indicated by the mortality rate in the age-group 30-59
years being lower in country B than in country A. Getting the full picture, it
is clear that our inference of the beneficial health impact of the pension
system is erroneous. We also see that one way of avoiding this error is to
factor in adult mortality by focusing on old-age excess mortality, rather than
old-age mortality per se. This will also reduce the risk of omitted variable
bias, since the mortality in the age-group 30-59 years can be regarded as a
proxy for other etiological factors affecting mortality among the elderly as
well as the middle-aged.

Table 5.8 Hypothetical example of an apparent relationship between pension
generosity and old-age mortality.

<table>
<thead>
<tr>
<th>Country</th>
<th>Pension benefits index</th>
<th>Mortality 65+</th>
<th>Mortality 30-59</th>
<th>Old-age excess mortality (65+/30-59)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>9 000</td>
<td>600</td>
<td>15</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>8 000</td>
<td>533</td>
<td>15</td>
</tr>
</tbody>
</table>

As mentioned earlier, pension data are for every fifth year; this yields too
few observations for time-series analysis. To estimate the impact of pension
rights on mortality we will therefore apply pooled cross-sectional time-series
analysis, which combines cross-sectional and time-series data. This
technique is useful in comparative research with few countries since it
increases the number of available observations. As before, the strongest
possible restrictions are imposed on the model in order to minimize the
influence of different kinds of bias.38

Results
There has been a steady decline in old-age mortality since 1950 in all the
countries analysed, but it is more marked for women (annual decrease of
1.8%) than for men (annual decrease of 0.9%). Further, the decline is
stronger in the country group that has the highest initial level (state
corporatist model). However, the trends in old-age excess mortality (the ratio

38 The data used is differenced, and country dummies included. Further, panel
corrected standard errors are used to avoid the estimation problems that occur in
analyses with fewer observations than time points (for a description, see Beck &
Katz 1995). Finally, panel-specific estimation of residual autocorrelation is
performed.
of mortality in the age-group 65 years and above to the mortality in the age-
group 30-59 years) shows a more diverse picture. Male excess mortality has
increased, while excess mortality for women increased until the late 1960s,
when it started to decrease.

Figure 5.17 Net replacement rates for Basic security pensions, expressed as per cent
of average workers wage, by pension regime type.

Figures 5.17 and 5.18 show the development of the pension rights indicators
in the three country-groups. Until the mid-1980s there was a general increase
in the generosity of the Basic security pensions in all three country-groups,
although replacement rates increased most in the (Nordic) countries in the
Encompassing group. Also, the basic security pensions have been fairly
modest in the State corporatist group of countries.

Income security pensions have also increased for all three types of countries
(Figure 5.18). Not surprisingly, the State corporatist countries had more
generous pension rights of this kind, but since 1980 this type of pensions has
also been more generous in the Encompassing group. Hence, although the
countries with an encompassing regime only gradually develop higher
benefit levels of both kinds, they end up with on average higher replacement
levels for both BASIC and INCOME security than the basic security and
state corporatist regimes respectively.
If we now turn to the main analysis, four models are estimated, separately for males and females. In all models GDP is included as a control. It should be emphasised that we rely here on the indicators (variables) and not the country classification into three groups. The first model included the comprehensive indicator of all pension rights (PENSION); this turned out to be insignificant for both women and men (Table 5.9). Next, the more specific indicators BASIC and INCOME are included one by one. The latter proved to be statistically insignificant, but not the former. This means that an increase in the replacement rate of Basic security pensions was associated with a reduction in old-age excess mortality. The final model, which included BASIC as well as INCOME, confirmed the significant effect of BASIC. Excluding the country dummies did not alter the outcome, which suggests that the device of using excess mortality was sufficient to control for country differences.

Another sensitivity test is to exclude some country which is extreme in some respect and may thus have affected the outcome. Japan is an obvious candidate here due to its exceptionally strong mortality decline: 1.7% per year for men and 2.4% for women during the study period (corresponding figures for all countries are 0.9% and 1.8%). However, leaving out Japan of the analyses did not have any noticeable effect on the estimates. Finally, as a test of the internal validity of the result, we re-estimated the final model.
(Model 4) but with infant mortality as outcome. As would be expected if the results for old-age mortality were not artefactual, none of the pension indicators were significantly related to infant mortality.

Here we have investigated how old-age excess mortality in post-war welfare democracies responds to changes in public pension rights and economic development. We made a distinction between two goal-dimensions of pension benefits: providing basic security and providing income security. The results suggest that an increase in GDP per capita is associated with reduced old-age excess mortality. Over and above the effect of economic growth, however, we find that the design of pension rights can make a difference to mortality among the old. More precisely, the more generous the Basic security pension the lower the excess mortality among the old. Generosity in income security pensions did not prove to have a beneficial impact. The effect of GDP per capita is significant in all equations for men and significant and close to significant in the equations for women. In the case of old-age excess mortality, the outcome seems not to be compatible with Preston’s (1975) finding, that above a certain level, further improvements in a nation’s economy have little impact on population health. Beyond these effects of levels of resources for consumption, our analysis suggests that we also should take distributional aspects into consideration.


<table>
<thead>
<tr>
<th></th>
<th>Females</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.19</td>
<td>-0.19</td>
<td>-0.19</td>
<td>-0.20**</td>
<td>-0.15**</td>
<td>-0.14**</td>
<td>-0.15**</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(0.12)</td>
<td>(0.12)</td>
<td>(0.12)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>PENSION</td>
<td>-0.54 (1.16)</td>
<td>-2.33 (1.12)</td>
<td>-2.01***</td>
<td>-2.47***</td>
<td>-3.67 (7.00)</td>
<td>9.59 (7.46)</td>
<td></td>
</tr>
<tr>
<td>BASIC</td>
<td>-1.94* (1.16)</td>
<td>-0.73 (0.80)</td>
<td>-0.10 (0.52)</td>
<td>0.80 (0.48)</td>
<td>-3.36 (7.46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INCOME</td>
<td>0.04 (0.85)</td>
<td>0.73 (0.80)</td>
<td>0.10 (0.52)</td>
<td>0.80 (0.48)</td>
<td>-3.36 (7.46)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** p<0.001, ** p<0.01, * p<0.05, (*) p<0.10

The estimated effect of BASIC is somewhat hard to interpret. Conversion into an elasticity coefficient yields a value of -0.05. That is, a 1% increase in BASIC would reduce old-age mortality by 0.05%. (The elasticity is about the same for men and women. Although the outcome measure is old-age excess mortality, we can also interpret mortality per se, assuming that adult
mortality, the denominator, is constant.) This may seem to be a fairly modest effect, but in the context of an outcome with such an inherently multi-faceted aetiology as all-cause mortality, we cannot expect any single determinant to exert a very strong influence. Nevertheless, there is a marked difference if BASIC increases from the lowest to the highest value observed in our data; such a leap would entail an old-age mortality reduction of about 10% for men and women.

5.4.3 Public pensions and ill-health among retired persons

In previous part we suggested that generous pensions granted on a citizenship basis are related to lower mortality in the older part of the population. The purpose of this section is to continue these analyses of morbidity data by analysing how variations in public pension institutions are related to self-rated health among retired persons, using the same institutional data on social rights. Where the previous analysis operated on an ecological level, relating pension rights to mortality rates in different countries at different points in time, we will here combine survey data on self-rated health with information regarding pension rights and GDP. Hence, the multi-level approach allows us to examine how aspects of public pensions may have contextual effects on individuals’ self-rated health at the national level, once individual compositional differences – demographic and socio-economic – and the level of economic development (at the macro-level) are taken into account. Since the main issue here is whether we can establish any influence of pension rights on ill-health over and above the individual level determinants, we will not focus on how certain micro-level factors are related to ill-health. Individual-level factors are rather included as control variables, taking into account compositional differences across countries and thus facilitating analysis at the macro level of cross-national variation in health as explained by country-level characteristics.

Data and methods

Data on pension rights are described in Section 5.3.2, and include an indicator of basic security pensions and an indicator of income security pensions. The pension data here pertains the year 2000. The survey data used is from the first round of the European Social Survey (ESS) of 2002/3. Available institutional macro-level data allowed comparisons of thirteen European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom.

39 This section is mainly based on the paper by Ingrid Esser and Joakim Palme commissioned for the NEWS-project, see Appendix 1.
The ESS-data was gathered from face to face interviews between September 1, 2002 and June 30, 2003 and draws on national random samples of persons above 15 years. From this data retired persons aged 65 and over were selected for comparison. In total this sub-set includes 4045 persons across 13 countries. Average response rate across these countries is 61%, mainly varying between 50 and 80 percent, which (apart from being quite usual) in comparative attitudinal research is usually judged as acceptable. Caution is needed in relation to the Swiss and Italian cases where response rates are below 50% (33.5% and 43.7% respectively). None of the reported results were, however, found to be sensitive to the exclusion of these countries from analysis.

At the individual level, analysis controls for age, cohabiting conditions and socioeconomic status in terms of education and social class. Age was recoded into three groups, comparing newly retired persons aged 65-69 with persons aged 70-79 and the oldest old aged 80 and over. Cohabitation discriminates between persons living alone and those living with a partner (spouse or other). Socio-economic indicators include measures of education and social class. Education was measured by four comparable groups based on the International Standard Classification of Education (ISCED-97, UNESCO, 1997), which includes primary education (either incomplete or complete), lower level secondary or second stage of basic education, upper secondary or post-secondary education, and lastly any type of tertiary education. Social class is measured by a recoding of occupational class into a six-category EGP-classification scheme (see e.g. Erikson & Goldthorpe 1992). This scheme distinguishes between unskilled workers, skilled workers, routine non-manual employees, service classes I and II (higher- or lower-level controllers and administrators), and the self-employed. Due to many missing cases in the measurement of women’s social class, this indicator was dropped from analyses of women’s health.

The health measure used here is self-rated health based on the question “How is your health in general?” with five response alternatives (“very good”, “good”, “fair”, “bad”, “very bad”). Ill-health has been defined as less-than-good self-rated health (fair, bad, very bad). Self-rated health has been shown to be reliable (Lundberg & Manderbacka 1996) and to have predictive validity, consistently predicting e.g. survival chances (see e.g. Kaplan et al. 1988; Mackenbach et al. 2002; Salthouse et al. 1990) and mortality (see e.g. Idler & Benyamini 1997; Jylha et al. 1998). There is nevertheless the issue of how to avoid cultural bias in responses in

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40 The data was weighted by design weights (but not population weights), to make results nationally representative.
comparative studies. Therefore, a relative measure of ill-health was constructed in relation to how younger persons, by country and gender, report ill-health. Following the terminology of section 5.5.2 this measure is termed excess ill-health, defined as the ratio of ill-health of a person aged over 64 divided by the average ill-health of the corresponding group of men or women in the age-group 30-59 years. This procedure will control for the heterogeneity between countries in the general level of population health that might distort the outcome.

Because we are interested in with examining differences in individuals’ health as clustered within thirteen countries, multi-level regression modelling is appropriate. This takes into account how variables are defined at different levels and allows for analyses combining micro and macro level factors in a single statistical model (see e.g. Jones & Duncan 1998). For analyses of ill-health and functional ill-health in their dichotomized versions, simple two-level random coefficient logistic regression models were estimated. Excess ill-health, is analysed by random intercepts models, allowing average ill-health to vary across countries. As there are only thirteen higher-level units (countries), the number of macro-level variables is limited to include two in each model, for a reasonable accuracy of estimates.

**Results**

On average more than 50% of persons aged over 64 report ill-health in the 13 European countries, and with few exceptions the proportion of women is somewhat larger than the proportion of men in each country (on average 55% and 44% respectively). Exceptions include Norway and the United Kingdom where differences are small and/or insignificant. Ill-health is somewhat lower in basic security welfare states, whereas it is difficult to discriminate systematic differences between encompassing and state-corporatist welfare states – both clusters displaying a great deal of within-country-cluster variation. Highest proportions of ill-health (above 70%) are found among women in Finland, France, Germany and Italy. In these countries we also find the largest proportions of men reporting ill-health. Fairly large proportions of women reporting ill-health are also found in Sweden and Austria (over 50%).

However, country variations in the absolute levels of self-rated health are difficult to interpret, and we will therefore in the following focus on excess ill-health instead. In Figure 5.19 we can note that there is substantial within-country-cluster variation, while the differences between country-clusters in excess ill health among old people are small. Women’s excess ill-health is

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41 All analyses were performed using the software package MLWin (version 2.0).
still in general larger than men’s, with exceptions in Norway, Belgium and Ireland. Highest excess ill-health is found among women in Finland and Austria.

![Graph showing excess ill health among retired persons aged over 64 (as ratio to ill-health of persons 30-59), 13 European countries in 2002.](image)

**Figure 5.19.** Excess ill health among retired persons aged over 64 (as ratio to ill-health of persons 30-59), 13 European countries in 2002.

In a first analysis of the relationship between basic pensions and income security pensions on the one hand and excess ill-health on the other, Figures 5.20-5.22 presents the simple bi-variate correlations. Unbroken and broken lines in figures pertain to the (linear) relationship of male and female ill-health respectively. The figures indicate that excess ill-health is lower in countries with basic security, while there is no relationship between excess ill-health and income security pension. Similar, but less clear relationships are found for the absolute measure of ill-health (not shown).
Figure 5.20. Correlations between excess ill-health (ill-health among retired persons aged over 64 as ratio to ill-health of persons 30-59), and basic pension, 13 European countries in 2002.

Figure 5.21. Correlations between excess ill-health (ill-health among retired persons aged over 64 as ratio to ill-health of persons 30-59), and income security pension, 13 European countries in 2002.
Figure 5.22. Correlations between excess ill-health (ill-health among retired persons aged over 64 as ratio to ill-health of persons 30-59), and total pension index respectively, 13 European countries in 2002.

Turning to the multivariate analysis, macro-level effects of contextual variables are evaluated when added to full micro-level models pertaining to the sub-sample of men and women respectively. In an analysis of excess ill-health (Table 5.10) all pension measures, with one exception (Model 6), are significant, implying better health in countries with higher pensions regardless of which type of pension measure is considered.

Effects of income security pensions on men’s excess ill-health are somewhat stronger than the effect of basic pensions, which is also confirmed by Model 4, when basic and income security pensions are included in the same model. Women’s health appears instead to be more strongly related to basic security pensions. When the sensitivity of the results to the exclusion of country outliers (in terms of both health outcomes and pension generosity) were checked, the (negative) effect of basic pensions (Model 6), proved to be inconsistently significant. In sum, men’s health is better in countries with more generous pensions, where the generosity of income security pensions appears to be of more importance. For women’s health, only basic security pensions

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42 Results were sensitive to the exclusion of the Austrian, Finnish and Irish cases.
pension seems to be of some importance, although the results are inconsistent.

All together we found the expected effects of public pensions on health (i.e. better health with more generous pensions) when excess ill-health among retired persons aged over 64 was evaluated, i.e. when the health of older persons is measured relative to the health of younger persons by country and gender. Not only does this measure take into account the general level of ill-health in each country, but arguably it adjusts also for potential cultural differences in how people answer this survey question, i.e. as long as such cultural bias is not systematically related to age.

The purpose of this section was to analyse the link between public pension institutions and self-rated health among the elderly in the 13 OECD-countries around 2000. Firstly, it needs to be pointed out that cross-national comparisons of self-rated health need to be regarded with caution. Although self-rated health in many studies has been shown to be an inclusive and effective within-country measure and predictor of ‘real’ health outcomes in terms of for example; life-expectancy and mortality, a comparative perspective challenges the measure in a number of ways. Cultural differences prevail that may generate country differences in the way people perceive their health as well as how questions about health and well-being are interpreted and responded to. Here, this was tackled by constructing a measure of excess ill-health – a measure of older persons’ health relative to the health of younger persons by country and gender. Results in relation to excess ill-health by and large suggest that better health among the old is found in countries with more generous pensions. Whereas income security pensions seem to be more important than basic security pensions for men’s health, women’s health is only related to basic security pensions, although results were not robust to the exclusion of country outliers. These results are to some extent congruent with the analysis of pensions and mortality differences among the elderly (5.5.2 above).
Table 5.10 Macro-level determinants for excess ill-health among retired persons aged over 64 in 13 welfare states, 2002/3 (standard errors within parentheses).43

<table>
<thead>
<tr>
<th>Model</th>
<th>Men</th>
<th></th>
<th></th>
<th></th>
<th>Women</th>
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<td>-0.037</td>
<td>-0.180*</td>
<td>-0.152*</td>
<td>-0.328*</td>
<td>-0.282*</td>
<td>-0.118</td>
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<td>(0.078)</td>
<td>(0.093)</td>
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<td>(0.128)</td>
<td>(0.141)</td>
<td>(0.112)</td>
<td>(0.126)</td>
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<td>0.014</td>
<td>-0.146**</td>
<td>-0.107*</td>
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<td>(0.064)</td>
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<td>(0.005)</td>
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<tr>
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<td>1924</td>
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</table>

°/ */ ** significant at 10/ 5/ 1%-level respectively. Notes: not reported in table: estimates of full micro-levels (see Table 2). Sources: ESS 2002/3; SCIP; OECD 2004.

43 Excess ill-health is the ratio of the retired person’s self-rated ill-health to the average ill-health of men or women in the age-group 30-59 years.
VI. LESSONS LEARNED

6.1. Welfare policy and health development – summarizing findings with the help of a conceptual framework

In this chapter we will summarize our general findings and discuss them with regard to the mission of the CSDH, focussing on the usefulness and applicability of the policy and health experiences of the Nordic countries from a global perspective. When summarising our findings we will return to the theoretical model by Diderichsen presented in Chapter 1, and discuss these as well as more general observations in relation to the five policy entry points that this model highlights.

6.1.1 Social determinants and consequences of ill-health - a chronic issue in welfare policies

In the 1890s, the 1930s and the 1990s there was widespread recognition that health policies for reducing the unequal burden of disease is an important challenge not only because health is a source of individual freedom and capability but also because population health is a determinant of a strong economy. When the Nordic welfare states in the final years of the 19th century and the first years of the 20th introduced the first social insurance laws, health-issues were at the political frontline. The first reforms were sickness insurance against the impoverishing consequences of work accidents and illness. The political preconditions for broad coalitions were favourable and the legislation was introduced when the Nordic countries were still at a comparatively early stage of industrialization and urbanization. The first Swedish and Danish legislation 1891-92 introduced some limited state subsidies to existing mutual and the voluntary insurance funds. At the same time the political discussion also focused strongly on the determinants of ill health – for example the extremely dangerous industrial working conditions and unregulated working hours. The May Day demonstrations in

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44 This section is written in collaboration with Finn Diderichsen, based on his paper commissioned by the NEWS-project, see Appendix 1.
1896 in Sweden, for example, had an 8-hour working day as the central political issue. The large social inequalities and the social determinants of child mortality were again an issue in the 1930s debate about the “population issue” in Sweden, while in the 1990s and the persisting social gradient in health was a major issue in national health policy documents in Denmark, Sweden, Norway and Finland. The social and economic consequences of ill health have also been in focus more recently. Rising levels of sickness absence and declining employment levels among the older segments of the workforce have been discussed as major threats to the national economy in all the Nordic countries.

6.1.2 Policy entry points illustrated by examples of Nordic social and health policy.

In section 1.2.1 *Welfare state institutions and public health outcomes – a general model* we presented a model for the two-way relationship between health and social conditions, which illustrates that the policy entry points to support better health and social development involve many actors and sectors. We will return to this model, which distinguishes five mechanisms (I-V) and five policy entry-points (A-E) at individual and societal level.

![Figure 6.1 A model for causal pathways (I-V) from social context societies and social position of individuals to health outcome. Entry-points for policy (A-E). (Diderichsen et al. 2001).](image)
A: Modifying social stratification

Social stratification is generated by two processes of allocation. Societies allocate power, status and wealth to different social positions; individuals will, depending on their age, sex, ethnicity, social background, education etc., be more or less able to compete for and occupy these positions. Examples of policy fields that modify social stratification are educational opportunities and discrimination in the labour market as well as the major income redistribution system that we have discussed at length. In Chapter 2 we discussed the chief characteristics of the Nordic model specifically as outlined by the welfare regime typology of Esping-Andersen (1990). It is noteworthy that he put much emphasis on the role of social stratification and how, in contrast to the other types of welfare state, it is modified by the universal and relatively generous systems of income maintenance. An important outcome of these redistribution systems is their major impact on poverty rates and income inequality.

In modern societies educational attainment is decisive for life chances and health over the life-course. Parent’s education, family poverty during childhood, parental social and cultural resources, access to and quality of schools, and the social resources of the local community are all factors of importance for educational attainment. The Nordic countries introduced compulsory basic education for men and women already at turn of the 19th century (section 5.1). Where family poverty during childhood is concerned, we show that relative poverty rates among families with 3 or more children as well as in single parents families are fairly low in the Nordic countries (figure 4.2 in section 4.1.1). Parents’ education is connected to the child’s likelihood to choose higher education. We argue that socially mixed areas are important for educational achievement, since pupils from lower social strata are given the opportunity to see higher education as an option when influenced by peers more familiar with higher education. Efforts to limit residential segregation and school segregation are therefore important for social stratification (see section 4.1.4).

Where labour market policies are concerned, we have shown in section 5.1.4 (figure 5.14) that women in Nordic countries (dual-earner family policy model) have had a high labour force participation rate since the 1970s. In 1990 all the Nordic countries had a female labour force participation rate of over 70 percent, even though it then fell somewhat in Denmark, Finland and Sweden due to the recession that followed in the early 1990s. However, this did not strongly affect the male/female ratio of labour force participation, which stayed close to one throughout the decade (Kjeldstad 2001).
There are inevitably issues related to modifying social stratification that we have not covered within the frame of the NEWS report. Successful policies to break the social inheritance have been notoriously difficult to develop and implement. Many countries have implemented educational reforms to this end. Educational opportunities have expanded dramatically but the association between parents’ and children’s social position has persisted. Under-funding of schools systems, early tracking and segmentation in schools based on social class or ethnicity all reinforce stratification. Universal access to education, including vocational training and retraining, have given opened new opportunities for the unemployed to return to work. Social stratification is thus influenced by a broad range of policies related to families, housing, education and the labour market.

B: Modifying exposure levels and distribution
The individual will be exposed to varying degrees of physical, chemical, psychosocial, behavioural and biological exposure with causal impact on disease and injury risk depending on his or her position in society. Safety regulations, sanitation, restrictions on alcohol and tobacco sales and family policies are examples of policy areas that can modify the levels and distribution of such exposures.

This is the classical intervention point of public health policies which aim to protect the population from exposure to a broad range of risks. More than 150 years of legislation to improve sanitation, housing, nutrition, workers’ protection and environmental protection are all examples of this type of policy, underpinned by national legislation combined with politically and administratively strong local municipalities. In section 5.1.2 we exemplify this by analysing the decline in diarrhoea mortality in 19th century Stockholm. Local political commitment played an important role in improving the sanitary environment and in the enforcement of sanitary regulations. Economic development in itself does not seem to be sufficient to reduce diarrhoea mortality. Alongside economic development there is a need for health interventions at the local level, such as better hygiene, water and sanitation. In Stockholm between 1878-1925, the expansion of new water pipes and rising daily water consumption are associated with the decline in diarrhoea mortality among children. From having been one of the major causes of infant and childhood mortality before the turn of the century, by 1925 diarrhoea was virtually eliminated as a cause of death. Our review of the conditions for children at the turn of the century (1870-1930) demonstrates that the Nordic countries initiated measures to improve children’s living conditions such as child protection legislation, laws to protect illegitimate children, and anti-poverty legislation.
Policies to restrict access to alcohol, which have had a profound impact on health developments in the Nordic countries, are an additional pathway for modifying differential exposure. Temperance movements and labour unions have influenced these policies in close collaboration with political institutions, and we show in section 5.3 that the Nordic alcohol policies of half a century ago were effective in reducing health inequalities. The Nordic model of alcohol control features a generally high level of public and political concern about alcohol problems, active state intervention in the alcohol market, and alcohol tax rates which are generally higher than in the rest of Europe. This is interesting from a comparative perspective. Denmark is the exception among the Nordic countries in this respect, with a higher average per capita consumption. The Nordic high control countries (table 5.6), demonstrated lower levels of liver cirrhosis throughout the period 1950-95 than countries with low control. However, it should be noted that alcohol remains a major factor in explaining health-differences by social position in these countries also.

Social policies have reduced exposure to poverty, unemployment and social exclusion and have had a profound impact on population health, particularly among lower socioeconomic groups. The combination of universal social policies, high employment rates including women and the older segments of the workforce (5.1.4), combined with economic growth, has formed the basis of these efforts, primarily implemented for other reasons than health, but nevertheless with a strong impact on health developments. As discussed above, the findings presented here indicate that the Nordic countries are particularly successful in reducing poverty risks for high risk population groups. Even though economic resources and income could be argued to be an indicator of social position, it is more fruitful here to discuss income as an important reward attached to such positions. In the model (Figure 6.1), income and poverty can be seen as a “specific exposure” with a major role in mediating the effects of social position on health. In section 4.1.3 we address the relation between income and health, pointing to the importance of income given that it can be transformed into other forms of resource. We argue that income impacts on health both through a direct consumption effect and through a status effect as well as through a combination of the two. The importance of income for the ability to control one’s circumstances depends on the collective resources provided by society. We found the differences in health in relation to income to be larger before than after income redistribution (Figure 4.5 in section 4.1.2). All the policies aimed at poverty reduction and income redistribution discussed in this report, e.g. family policies and pensions, therefore influence health and health inequalities because income is a major determinant of many other mediating causes related to housing, nutrition, social stress etc. Where pensions are
concerned we found in Chapter 5.5 that the retired populations in countries with more generous pensions demonstrate lower levels of ill-health. We also found that the design of pension rights has an impact on mortality, after controlling for economic growth, with more generous basic security pensions apparently associated with lower excess mortality among the elderly (Chapter 5.5).

C: Modifying susceptibility

The effect of a specific exposure depends on the susceptibility of the individual. Susceptibility can be determined by genetic variations or immunological factors, and for most disorders with a multi-factorial aetiology, the exposure to other causes on the same pathway will determine the effect of a single exposure. Emotional and social conditions in infancy and childhood are determinants of life-long susceptibility to later psychosocial exposures. The strength of networks and support within families and communities is another important determinant.

Health policy is not only about protecting the population against unhealthy exposures; it also involves a range of measures aiming to reduce susceptibility and increase resistance and the ability to cope with the health effects of those exposures. An early example is the smallpox vaccination programmes that created immunity in the population against this serious disease. Smallpox vaccination appears to have been an important factor for mortality decline in the Nordic countries at the beginning of the 19th century (see the discussion in section 5.1.1).

Epidemiology has taught us that exposures early in life – in-utero, during infancy and in childhood – not only have an impact on health later in life but also modify the effect of exposures later in life. Nutritional deficiencies and infections in foetal life increase the risk of cardiovascular and immunological disorders later. Breastfeeding, which has long been promoted, protects against intestinal diseases in childhood and has other long-term beneficial effects. Strong emotional attachment to parents in infancy protects against the effects on mental health of later psycho-social exposures. A number of policies have been implemented as a result of these early life consequences. Universal access to mother and child-care including vaccination, screening and advice has been in place since the 1930s (section 5.1.1). Child health care in all the Scandinavian countries is free of charge, and includes active outreach strategies in the form of home visits to every new born child. Particular emphasis is given to families where poverty or disability might affect parental skills.
Where parent-child attachment is concerned, parental leave from work is likely to increase the amount of time parents spend with their children during infancy (section 5.1.3) and has been an important precondition for many of the susceptibility reducing conditions in infancy. In the 1990s a proportion of the parental leave was earmarked for fathers in all Nordic countries in order to achieve a more equal sharing of parental leave and household responsibilities. In our report (section 5.1.1) we have analysed the generosity of family policies in relation to infant mortality in 18 countries; the results reveal that infant mortality rates are lower in countries with more generous family policies, especially when they are directed at dual-earner families. There is also an association between family policy generosity and death from childhood injuries, which generates the hypothesis that family policy benefits enable parents to spend more time with their children and invest in secure environments (figures 5.5 and 5.6). More time with parents and secure surroundings are likely to modify the effect of specific exposures.

A number of studies have argued that strong social support and networks that contain various dimensions of social cohesion at the contextual level not only protect health but also modify the effect on health of other exposures. There are, for example, studies which indicate that the effect of poverty is weaker in societies with small income inequalities and strong universal welfare policies. Other studies have focused on the ability of control and influence over working conditions and other life-spheres to reduce the effects on health of high physical and mental demands. Thus, a decommodifying social policy may not only protect against poverty but also improve people’s ability to cope with the social stress that arises when their ability to compete in the labour market is reduced (see discussion in section 4.2.4). Contextual factors related to macroeconomic conditions, social policies, and workplace organisation are thus all example of conditions that might counteract the health effects of specific exposures such as poverty and work demands. We will return to this in E: Modifying social context.

Behavioural and psychosocial risk factors tend to cluster in lower socioeconomic groups. They often interact in the sense that the absolute effect of one risk factor depends on exposure to other risk factors over the life course. This is why in some countries the incidence of alcohol-related disorders shows a strong social gradient in spite of the fact that alcohol consumption is evenly distributed. One of the important public health implications of this is that universal programmes which reduce exposure to major risk factors such as alcohol and smoking equally across groups may still contribute to the reduction of social inequality in health. Inasmuch as social policies and their contextual effects are protective and everybody is
exposed to them they will have the same positive effect on public health and health equity.

**D: Modifying the consequences of disease**

Many diseases and injuries imply shorter survival, or prolonged functional limitation and disability for the individual. The cost of care will sometimes impose a heavy economic burden on individuals and their families. The concrete consequences for survival, employment, economy and social participation will, however, strongly depend on the social position of the individual. Subsidised health care services, sickness insurance and labour market flexibility for the disabled are policies with a major impact on the consequences of disease.

Three policy areas are crucial to the reduction of the biological, mental, social and economic consequences of disease – curative and rehabilitative health care services, sickness insurance and labour market policies. None of these is addressed in depth in this report, for reasons explained in section 1.3. The burden of disease concept refers to life lost in premature death as well as disability. Consequences of disease are therefore essential in itself. In addition the overall burden of disease might have a macroeconomic impact (see mechanism V).

The discussion of dental care in section 5.4.2 suggests that the Nordic model of dental care has managed not only to treat oral diseases, but also to equalise and promote oral health. Where the problems associated with alcohol are concerned, one distinctive feature of Nordic alcohol policy is that treatment is provided by the social services, rather than the health care system, as in many countries. One can assume that this has an impact on the consequences of disease, or in this case, alcohol problems, since the social services focus on the individual’s ability to function in society.

Access to health care, as well as its quality and effect, is of utmost importance for disease duration, survival, health-related quality of life and functional ability or disability. Limitations in access are determined not only by economic factors but also by geographical, structural and cultural ones. Labour markets can also be more or less open and flexible vis à vis persons with disabilities.

**E: Modifying the social context**

Mechanism V in figure 6.1 indicates how the consequences of disease and injury will in turn impact on society. At macro-level a less healthy population may impede the economic growth of society. Some socioeconomic consequences, such as participation in or exclusion from the
labour market, are important for rehabilitation and the further course of disease. Improved social capital, social cohesion and social participation can also have a positive social impact.

Several studies have indicated that high levels of social participation, social cohesion and social capital have beneficial effects on population health (for a review see e.g. Rostila 2008) and may protect against some of the effects of poverty, unemployment and social exclusion. Based on the Rodger’s curve we discuss in section 4.1.2 how a curvilinear relationship between income and health at individual level may theoretically be sufficient to create an aggregate level relationship between income inequality and population health. Average health in countries with less inequality should thus be better. These are also likely to be contextual effects of income inequality per se on average health, although this is a matter for debate. In section 4.1.4 we discuss income inequality effects at neighbourhood level, including residential segregation and social integration. It seems plausible that general factors such as income redistribution policies affect these processes, while housing policies and city planning are also likely to impact on segregation. It might also be argued that greater investments on the part of the welfare state, such as social spending and social insurances, can have an impact on these kinds of process. In section 4.2.5, where we analyse overall life expectancy across 17 OECD countries between 1900 and 2000, we find that social spending and social insurance coverage have a significant impact. These can be seen as indicators of welfare state effort and ambition, and are thereby likely to have a positive impact on social context.

6.2 Applicability

In the introductory part of this report we briefly touched upon the notion of applicability or the potential to apply and transfer the experience of the Nordic countries to other countries or regions at other levels of economic development. This topic is of course central to the work of the Commission on Social Determinants of Health and we therefore devote this section to this complex issue. At the most concrete level one can discuss whether it is possible to transfer a policy exactly from one setting to another. At the higher and more abstract level one can discuss whether it is possible to implement ideas, policy goals, or whether the learning process more has to do with the building of institutions and infrastructure in order to achieve some policy goals. We start this section with the latter, that is a general, theoretical discussion of the extent to which we can learn from each other, with particular reference to the institutions and characteristics of the welfare state. In the second part of the section we focus on the specific findings
arising from the NEWS-project to discuss whether, and how, they may be transferable to other countries. It is, of course, of paramount importance to delineate their relevance for countries at different levels of economic development. We will therefore frequently discuss relevance in relation to high, middle and low-income countries.

6.2.1 Applicability, development and type of relevance

Let us immediately clarify our position on what can be regarded as the two most extreme standpoints. The first can be raised by asking the question: Can we really apply the full Nordic model to another region with a different economic, social and political history? The answer to this question is surely no. It is certainly not possible to fully apply, or copy, the model developed in the Nordic countries to any other country or region, irrespective of economic level. This is so because, as we hopefully have shown, the Nordic model has been implemented gradually, in a specific setting which combines local actors with a great deal of autonomy and power and a relatively strong state. Moreover, the content of the model is not fixed object but rather constantly changing.

The other extreme standpoint, perhaps more common, argues that every country has a unique history and is more or less destined to follow a specific path. Accordingly, Nordic experience and Nordic policies are irrelevant for other regions and. Moreover, such a standpoint also means that cross-national comparisons are a futile exercise. We also see this view as unrealistic. We hope, rather, that the NEWS report will help to support the view that cross-national comparisons are meaningful and that the Nordic experience and policies are of relevance for other countries also from a development context. While we understand that it is impossible to implement the full model, we would argue that the Nordic experience, and the policies and contexts we have analysed and presented here are of general relevance. Further we would argue they are of relevance also, or indeed in particular, for low and middle-income countries.

We seem often to believe that social policy innovations or institutions would be especially difficult to implement in another region or social context; in contrast to the beliefs on economic policy. Supranational organisations rarely worry about applying economic and technological innovations internationally. In a sense one could perhaps argue that while policy makers are too keen to uncritically implement economic and technological policies irrespective of the social context, they are too afraid of implementing good and effective social policies. We should of course aim to avoid making the same mistakes with social and health policies that have been made when
imposing economic adjustments on countries. Social and economic policies must always be seen in relation to the social context. For example, certain actors or social protection arrangements that are hardly of relevance in rich Western welfare states are extremely important in many developing countries. Microfinance is one such example.

Because of cost constraints, a poor country can obviously not implement the specific details of policies implemented in many rich countries, whether they be child benefits, pensions or health insurance. However, underlying principles may be transferable; principle policy goals may be highly relevant irrespective of social context.

In a series of volumes, the United Nations Research Institute for Social Development (UNRISD) has discussed and analysed social policy in a development context (e.g. Kangas & Palme 2005; Kwon 2005; Mkandawire 2004). A first reflection is that there is a “Chinese Wall” between development studies and studies of the welfare state (Mkandawire 2005). The work undertaken by UNRISD suggests that much can be learnt by applying the social policy discussion centred on the Western welfare state literature to problems of development. Mackintosh and Tibandebage (2004, p. 145) for example note that: “In the development context, the health policy literature is strongly characterized by an emphasis on egalitarian objectives and by repeated demonstration of redistributive failure.” But, according to the authors, this literature has not sought to explain this failure, partly due to the absence of any clear idea or theory about how social policies are embedded in the social structure and how they relate to economic and social processes and context. The authors characterize this field as “thick prescription, thin explanation”. The welfare state literature instead provides a theoretical basis and analytical tools. When we pay more attention to history and time we see social policy and social progress more generally as a process which highly influences other issues like democracy and equality and economic growth. The experiences of the Nordic countries are particularly interesting for developing nations, since these countries too can be characterised as “late industrializers” (Vartiainen 2004). These latecomers, which have been the focus of attention in this report, are also the ones which pioneered social policy, and, furthermore, took the institutions of the welfare states to a new level in terms of social rights.

In order to see the relevance of the Nordic welfare states and their development one should start with the interrelation between social policy and social and economic progress in general. Social policy, in its broadest sense, is not something that should be seen as a mere luxury good that only can be put in place when all the basic economic problems have been solved.
Social policy is, rather, intertwined with economic policy, and is much more than mere consumption and cost. It should be seen as a social investment which may, for example by investing in children’s education, lead to economic growth in the future. Similarly, the importance of population health in economic growth has also been underlined in recent years (Sachs 2001; Suhrcke et al. 2006). Thus, policies with the potential to affect population health will, in turn, also enhance economic growth (Sachs 2001).

For population health on a more concrete level it is of course the historical characteristics of the Nordic countries which are of particular interest for low and middle-income countries, even though the world is a different place today with, in particular, medical-technological innovations unknown back in the late 19th century. In this report we have focussed on the role of social entitlements in rich Western welfare states and how these are related to population health. Social insurances of the kind we have analysed are undoubtedly less developed in other regions of the world. It is estimated that more than 90 per cent of the population in Sub-Saharan Africa is not covered by social insurance. The estimates for middle-income development countries are between 20 and 60 per cent (van Ginneken 1999; ECLAC 2006). Nevertheless, if there is anything to be learned more generally from the 20th century in Europe and the rest of the affluent world it is that stable and trustworthy social institutions are crucial for capital accumulation of both economic and social character.

6.2.2 Applicability and relevance of specific analyses and results

We now turn from a general discussion of applicability to more specific results of the study and their relevance for other countries. Although we focus especially on low and middle income countries our point of departure is the affluent world, which has been the focus of attention in most of our analyses.

High income countries – lessons to be learned

In absolute terms, the overall public health experience of the Nordic countries has been successful seen over the past century and more. However, if we now compare the performances of these countries with typical population health statistics and relate them to other affluent welfare states it seems reasonable to conclude that the road taken by the Nordic welfare states is not the only road to success.

Nevertheless, we do believe that our results have some bearing for high-income countries also. First, our findings about poverty differentials, and the
possible benefits of having a relatively equal income distribution, indicate that the Nordic countries outperform other countries. This, of course, is a merit per se and our analysis indicates further that welfare state programs are a prime key to these cross-national differences. It is reasonable to assume that these differentials have an impact on health. It is especially important to analyse and discuss these differentials from a life-course perspective. High child poverty rates today are likely to have an impact on population health in the long term.

Secondly, our cross-national and cross-temporal analyses in which we link specific social insurance programs and their characteristics to mortality differences suggest that universalistic programs have a beneficial effect on health. These effects are found despite the fact that the statistical design of our analyses tends to give highly conservative results. The effects of each specific policy may seem small, yet the combined effect can be substantial.

Thirdly, if our description of how life expectancy has evolved over the last century suggests that there is more than one path to success, they also reveal that some paths are less successful than others. The United States is often seen as the archetype of the liberal welfare regime. Existing cross-national differences in child mortality, the markedly higher American poverty rates, and our findings on the advantages of universalism suggest that the U.S. approach has been less than optimal.

Low and middle income countries – lessons to be learned
When it comes to low and middle-income countries and what they can learn from the Nordic experience it is not least the historical examples that are of interest. As late industrializers the Nordic countries were quite poor when they began to implement social and health policies. We believe that certain important societal characteristics facilitated the implementation of policies to improve health and living conditions. Firstly, the ability, or capacity, of the state to coordinate, plan and implement policies; secondly, local actors that actually delivered many public goods; and thirdly, a population that was largely already literate in the 19th century. This three-level tier is an extremely important part if the explanation of the relative success of early public health interventions in the Nordic countries.

Looking at actual policies, our case study of Stockholm in the late 19th century is an especially interesting one. Needless to say, one should be extremely cautious when making comparisons with low-income countries today; there are many major differences between low-income countries today and Stockholm more than hundred years ago. These differences refer both when looking at “within comparison”, i.e. comparing the characteristics
a city in a low income country today with Stockholm then, but these differences also refer to the surrounding context both in both in social, global, medical and technological sense. Nevertheless the similarities are obvious. Child mortality rates in late 19th century Stockholm were not that different from those of low-income countries today and diarrhoea is still a main cause of infant and child death in many low-income countries today (Black et al 2003; Macassa 2004). In the rapid urbanisation currently taking place, most of the world’s biggest cities are located in developing countries and a large proportion of their population live in urban slums. Many are migrants from rural areas and are exposed to poor housing, poor water supply and sanitation and poor access to health services (Awasthi & Agarwal 2003). Accordingly, there are obvious similarities in the living conditions of the majority of the population in 19th century Stockholm and the living conditions of the population in urban slums in low-income countries today.

One conclusion that can be drawn is that economic growth alone is not enough. Economic development must be transformed into more specific health interventions (in this case improved water and sanitation), which of course requires social actors and social actions. Another feature highlighted by our study is that piped water was extended to all segments of the population. Consequently the policy had a universal basis although some targeted interventions to reach lower social classes occurred also. This combination seems also to have reduced health inequalities, a finding that stands in quite stark contrast to many interventions of low-income countries of today.

We have lately witnessed a number of interesting large scale social policy reforms, not least in middle-income countries. Of course, in many cases it is unrealistic to implement universal social policy programs immediately; therefore a gradual implementation is perhaps necessary. Many such recent interesting programs, such as Bolsa Familia in Brazil (Marmot 2007), are definitely targeted at the poor but at the same time they represent a scaling up of programs coordinated across sectors, not unlike some of the first attempts at social policy in the Nordic countries. Although this and other similar reforms are promising it should also be noted that a targeted approach is not without problems. Comparative welfare state research has revealed a strong tendency to inertia, often referred to as path dependency (Pierson 2000). This means that the way in which policies are designed shapes the actions and preferences of citizens and politicians, which in turn will generate a self-reinforcing situation. As systems stay in place for some time, they become increasingly difficult to modify. While it may be virtually impossible to start new policy initiatives covering the whole population in low- and mid-income countries, it should be recognised that it may be
equally difficult to transform a targeted system into a universal one further down the road.

In line with what was touched upon earlier, the institutional structure and the relationships between different sectors are crucial issues. Better coordination between the health sector and other sectors is vital if the full impact of infrastructure investments is to be realised. In a MDG assessment in India, the impact of improved access to piped water on diarrhoea prevalence among children showed a selectively greater reduction in the highest income quintiles, and an absence of effect in the poorest sections (World Bank 2004). Infrastructure investments must therefore be coupled with behaviour change programmes on how to utilise water if the full health benefit is to be achieved (Magnussen et al. 2004). This seems to have been the case in 19th century Stockholm. In addition, as the example in our study suggests, better access to piped water may be more effective if implemented in a comprehensive setting as part of a broader package of improved sanitation, better awareness of personal hygiene and food handling and general socio-economic development.

Another obvious example, which is highly relevant for developing countries today, is the need of alcohol control policies. Alcohol consumption is rising rapidly in Asia, and alcohol is estimated to be the most important contributor to the burden of death and disability in middle-income countries (Ezzati et al. 2002). Therefore, in many ways the situation is present for popular involvements against drinking problems, of the kind that emerged in the Nordic countries long ago. A substantial impediment to the emergence of such systems has been the triumph of free-market ideologies which, through mechanisms such as structural adjustment regimes imposed by supranational agencies, have actually forced existing alcohol control systems in parts of the developing world to be dismantled (e.g. Jernigan 1999). The conflict between trade liberalization and alcohol control policies is obvious both inside and outside the EU.

Thus, both with regard to the general character of social policy and with regard to specific policy areas, the Nordic experience is indeed relevant also from a more global perspective.

6.3 Conclusion and general observations

In this chapter we have tried to summarise our main substantial findings in relation to the policy entry points suggested in the Diderichsen model presented in section 1.2. We have discussed how the Nordic experience
might be transferred to other countries and regions at different levels of economic development. In this final section we will try to draw more general conclusions from our work and discuss them in relation to policy formation.

6.3.1 Policy foundations – the importance of data and monitoring

In order to discuss social problems we need to see and acknowledge them. Likewise, any attempt to design policies to tackle these problems and then evaluate the policies, rests on our ability to identify and quantify the social problems. Reliable data and systems for the analysis of these data are therefore prerequisites for successful political discussions, policy making and policy evaluation. In relation to public health, the Nordic countries established national systems for vital statistics very early. These statistics were also instrumental in the identification of public health problems and the discussions about policies aimed at improving public health. Nevertheless, even the Nordic countries must continue to develop their monitoring of public health and its social determinants, especially with regard to levels of and trends in inequalities.

As a general observation, therefore, we would strongly emphasise the importance of systems and structures for data collection and processing as a prerequisite for social and public health policies. Without information about where we stand and where we are heading it is difficult to judge whether our societies are moving in a positive or negative direction. Knowledge based on valid data is therefore a foundation for policy formation.

6.3.2 Policy content – important general features

As was discussed in section 6.1, this report presents a number of specific findings regarding social policy institutions and their importance for public health. While all the policies studied differ in terms of target groups, design and content our results, suggest that more generous programs directed at larger segments of the population benefit public health. In this sense, the general idea of universalism as an important feature of social policies, highlighted for example by Richard Titmuss, seems also to apply when social policies are seen as means to improve not only living conditions in general but also health and longevity.

The importance of coverage and generosity in social insurance schemes also reveals the importance of resources in general and economic resources in particular for public health. As was discussed at length in Chapter IV, money is of special importance as a social determinant because of its
transformability into other resources. Consequently, both the general economic level of a society and the distribution of economic resources between its citizens are of central importance. Redistributive policies are thus crucial in several ways, for example by reducing differential exposure, differential vulnerability and the differential consequences of disease. The fact that income and income transfer programs – the cash side of the welfare state – in this way appear in several parts of the Diderichsen model demonstrates, we would argue, the strength of these programs rather than the weakness of the model. Policies such as family policies or pensions that ensure decent economic standards in phases of life that would otherwise be characterised by poverty will contribute to better health in the population groups covered. With better coverage and more generous programs the more vulnerable groups in society will benefit more in an absolute sense, with improved general public health as a result.

Having said that, we would also suggest that policies directed at infants, children and youth, whether directly or via their parents, will be of immediate importance but will also be an investment in future population health. The Nordic experience is rich in such examples, including the early use of midwives, breastfeeding campaigns, child allowances and modern dual-earner family policies, as well as alcohol policies that were largely prompted by a concern for the wives and children of drinking men.

It should also be recognised that while the health effect of each specific policy may be small, as several of the empirical analyses have shown, the combined effect of all the policies and institutions is likely to be substantial. This is especially true from a life-course perspective, where a life from the cradle to the grave with access to a range of resources provided by the welfare state, in addition to the resources of the market and the family, is likely to be longer than it would otherwise have been. While this point is not easy to test empirically for a number of methodological and practical reasons, it is nevertheless a logical consequence of many small effects adding up to a greater whole.

Of course, this is not to deny the importance of other factors, including historical experience, natural resources, production regimes, general economic level and growth, and social and political structures. There will always be many factors at the societal level that shape life chances at the individual level. However, we would claim on the basis of the experiences collected and analysed in this report that the way in which social policies are designed and the ambition by which they are implemented tend to make a difference for population health. Again, this is something we can observe both at an early stage, before the rise of the modern welfare state (for
example by public education) as well as fairly recently in the development of the Nordic welfare states (for example dual-earner family policies). This, in turn, suggests that while money is important, much can be done at fairly modest levels of economic development.

6.3.3 Policy implementation – how to make it happen

Although not a key focus of our report, the Nordic experience suggests that the way policies and programs are implemented may be at least as important as their content. This is especially evident in the experiences from the 19th and early 20th centuries, for example regarding the implementation of vaccination programs or restrictions in the availability of alcohol. Two features seem to stand out, the first of them being the importance of an interplay between the central state and local actors/authorities, including NGO’s. Many of the interventions were not specifically Nordic inventions, but rather ideas imported from other countries, including vaccination, well-baby clinics (inspired by the French ‘Gouttes de lait’), hygienic reform movements (inspired by the British Sanitary Institute), to mention just a few. The difference, if any, was the strong local support and leadership shown by the clergy and local officials such as perish clerks and teachers. The decentralised nature of the Nordic welfare states, where welfare services are almost exclusively provided by municipalities and counties, has a long historical tradition. Hence, the implementation of policies has been facilitated by local knowledge and a short distance between the local elite and the population, which in turn appears to have increased public acceptance and compliance.

While implementation has relied on a combination of central and local state activities, it should also be recognised that many started by voluntary NGO’s, and then gradually taken over by the public sector. Several of the early reform programs, for example concerning hygiene and alcohol, also demonstrate the importance of combined approaches, with structural changes (water supply or alcohol availability) being implemented alongside individual and collective control measures (alcohol rationing and sanitary police). This is perhaps especially interesting for modern welfare states, where the individual modification of health-related behaviours has become the focal point for interventions and public health policies.

6.3.4 Policy evaluation – what is good and what is not

Policy evaluation is difficult, even if the policies to be evaluated are well-defined programs directed at a specific group. Even more difficult is to evaluate the public health impact of social policies such as pension schemes,
whose primary aims are poverty reduction and income security rather than public health gains. Yet, it is important that major welfare state programs are not overlooked with regard to public health, and it is therefore also important to discuss and empirically test the health consequences of different types of welfare scheme and the institutional characteristics. This report is a contribution to the attempts to assess more systematically the links between welfare state design and population health outcomes. In doing so, it is important to identify the attainable goal properly. In other words, to be meaningful, the criteria by which welfare states are judged and ultimately ranked must be chosen to reflect important policy goals. Equality at high standards has been the overarching goal of the Nordic welfare states, albeit to varying degrees. Applied to public health this goal can primarily be expressed as low mortality and high life expectancy for all segments of the population. However, we have also argued that it is important also to look at variability and inequality. While social inequalities in morbidity and mortality are essential to study, we have argued that relative inequalities are not well suited for policy evaluations. We see the level of mortality or poor health in socially less privileged groups as a more sensitive indicator of welfare state performance. From our reviews of the existing comparative research it appears that Sweden and Norway are performing well in this respect; the fact that relative inequalities there remain at a level comparable to other European countries is no reason to dismiss the Nordic welfare state.

6.3.5 General observations and final remarks

While this report has focussed on the Nordic experience of welfare policies and public health, it has done so from a historical and comparative perspective. From this perspective it is clear that the Nordic countries are not alone in doing well in terms of population health. Several other countries, which share basic similarities in terms of economic development and ambitious welfare state programs, albeit with different levels of generosity and coverage, are doing as well or even better in terms of survival and mortality. One can either conclude from this that these countries have adopted some of the features that worked in the Nordic countries, or that they have found other routes to population health improvement. It is therefore important to stress that the Nordic experience as described and analysed in this report is not the ultimate answer. It is clear that there are many recipes for success, and that leaders and policymakers around the world should study each others’ experiences and learn from them. However, our comparisons suggest that marginal social policies in their purest form, mainly exemplified by the U.S., constitute a less efficient path to good population health than any other model found among the high income countries.
Finally, we would like to stress that the welfare state project in general, and perhaps the Nordic model in particular, is one whose ultimate goal is to break dependencies and improve opportunities for freedom for all citizens through welfare state institutions and the resources they provide. This is an important goal in itself, but because many of the resources that welfare state institutions provide and the freedoms that these resources bring are also important social determinants of health, the welfare state project is important for public health. This is especially the case, we would argue, because the welfare state programs aim at bringing resources and freedoms to people who would not otherwise have any. This, in turn, enables us to make better use of the human capital that all nations possess. While it has been beyond the scope of this report to prove this thesis once and for all, we hope that we have managed to present enough circumstantial evidence to support the proposal that the Nordic experience of the welfare state and public health continue to be highly important for policy making and research into the social determinants of health in the 21st century.
Appendix 1

REPORTS COMMISSIONED BY THE NEWS PROJECT

3. Burström, Bo & Öberg, Lisa. Institutions and policies affecting the decline of urban childhood diarrhoea mortality in Sweden and other countries.
4. Dahl, Espen; Elstad, Jon Ivar; Lahelma, Eero & Martikainen, Pekka. Social inequalities in mortality in Western nations with a focus on the Nordic countries – a systematic review.
10. Kangas, Olli. One Hundred Years of Money welfare and death.
15. Sjöberg, Ola & Ferarrini, Tommy Welfare state development and health in transition countries.
Appendix 2

**KEY DATA SOURCES**

The Human Mortality Database (www.mortality.org) was created in order to provide freely accessible mortality and population data. It is maintained by Department of Demography at the University of California, Berkeley (USA), and the Max Planck Institute for Demographic Research in Rostock (Germany) and the goal of the joint venture is to gather demographic data on births, deaths and longevity in approximately 26 countries. This database contains original calculations of death rates and life tables for national populations, as well as the raw data used in constructing those tables. The raw data consist of death counts from vital statistics, plus census counts, birth counts, and population estimates from various sources.

The Social Citizenship Indicator Project (SCIP) conducted at the Swedish Institute for Social Research, Stockholm University was used for analyzing pension rights, social rights and the implementation of social insurance systems. This data-base provides comparable and multidimensional information on welfare state institutions as well as income distribution, and has been collected and coded for 18 OECD countries at every 5th year throughout the 20th century. (For a more detailed description, see Korpi 1989; Palme 1990; Kangas 1991)

Other data sources include: Angus Maddison’s data bank, European Social Survey, ILO Labor Statistics, the Luxembourg Income Study, OECD Labor force Statistics, the Roteman Archives in Stockholm, data from UNICEF; WHO mortality database; World Value Survey.
Appendix 3

PAPERS INCLUDED IN COMMISSIONED REPORT 4


REFERENCES


Ross, N. A. (2004) *What have we learned studying income inequality and population health?* Canadian Institute for Health Information.


