

**Sustainable Social and Health Development  
in the Nordic Countries**

*Seminar 27th May 2003, Stockholm*



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*Seminar 27<sup>th</sup> May 2003, Stockholm*

## Sustainable development in the Nordic Countries

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# Preface

On 27 May 2003, NOMESCO and NOSOSCO arranged a seminar on Sustainable Social and Health Development in Stockholm.

The seminar was a follow-up of a project in 2002 where NOMESCO & NOSOSCO drew up a set of proposals for Nordic Indicators concerning Sustainable Social and Health Development. In 2003, these proposals were followed up by a production of statistics on the proposed indicators.

Both the proposals and the statistics were presented at the seminar, supplemented by some more specific topics that all had relevance to a sustainable social and health development.

In the present report, the main background papers from the seminar are presented.

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**PREFACE**

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# Summary and recommendations

## Summary

Christer Eriksson, the Ministry of Health and Social Affairs, Sweden, started by giving an introduction to the concept of sustainable development.

Underlining that there is no one definition of the concept, he outlined the approaches used in e.g. the UN, including the Agenda 21, which is the UN's programme for actions towards sustainable development.

Went through some examples of how the concept of sustainable development has been practiced nationally, and the OECD's approach, where social sustainability at the individual level is characterized as being of an inter-temporal nature of many social problems.

Then explained the follow-up on the Agenda 21 at the World Summit at Johannesburg as well as the OECD strategy – and later – the EU strategy, as prepared at the Summit at Lisbon.

The Nordic Council of Ministers have drawn up the most recent strategy for sustainable development in all fields of cooperation for the period 2001-2004, where the purpose of this seminar is to discuss and present a set of indicators for the Social and Health Sector.

Torben Fridberg, SFI, Denmark, then presented the proposed indicators and the proposed social indicators.

In all, proposals were presented for seven general indicators that indicate basic demographic and economic circumstances in society.

Proposals were presented for nine social indicators that are to indicate the extent (resource requirement) in the social protection system and whether or not the resource demand is sustainable /non-sustainable over time.

Subsequently, Niels Kr. Rasmussen, SIF, Denmark, presented proposals for 10 health indicators (general and specific), which had been selected in such a way that they were especially to supply key information on the sustainability of the health situation.



Demonstrated that sustainable health must i.a. take into consideration the individual's possibilities of effectively contributing to the social production of society and that it is not sufficient to consider life expectancy, mortality and morbidity, but also the individual's ability to function, which was introduced by the WHO in the ICIDH and the ICF and implemented in the EU's ECHI programme.

The Nordic Socio-political Committee wished for indicators for the sustainability of the health sector to be developed, and as a result, Johannes Nielsen, NOMESCO & NOSOSCO's Secretariat, presented a proposal for nine indicators for the health sector, which especially indicate the sector's service level, capacity, productivity, requirement and trend towards new treatment methods.

Helge Brunborg, Ssb, Norway; clarified the demographic aspects of the ageing population and posed the question whether or not the demographic development is sustainable. He then went on to demonstrate that it is not, as the population rate must be expected to decrease in future years as a result of the low fertility rate. There is also a decline in the mortality rates, which leads to an increasing ageing population with consequences for the pension systems.

Also clarified that in all of Europe, the fertility rate has declined to below the reproduction level, just as life expectancy has been increasing during the last 100 years. This is anticipated to continue, just as the anticipated remaining life expectancy for the 60-year-olds is increasing.

Migration in the Nordic countries has, however, been of some importance to the demographic development – especially in Norway and Sweden – but an increasing number of elderly must be expected.

Concluded by giving some examples of what might influence and remedy the problems.

Subsequently, two Nordic studies were presented, especially with a focus on the elderly.

Marja-Lisa Parjanne, Ministry of Social Affairs and Health presented the Ministry's study with various scenarios for the Finnish social protection system until 2050.

In the study, it is demonstrated that many factors decide whether or not the social system will be burdened, and of these not least:

- Degree of employment
- Withdrawal from working life
- Migration
- Care and nursing requirements for the elderly.

## SUMMARY AND RECOMMENDATIONS

In the paper, it is concluded that although the health technology has contributed to increasing the social expenditure, it will contribute to a reduction of it in the long run.

Ilija Batljan, Ministry of Social Affairs and Health, subsequently introduced a Swedish study with scenarios concerning Swedish society from 2000 to 2030.

Pointed out that Sweden is among those countries having a very old population.

It is, however, not quite obvious which consequences this will have, as what matters is the health condition among the elderly.

Furthermore, it turns out that the population projection – including the number of the oldest of the elderly – in time is underestimated.

Then demonstrated a number of models aimed at illustrating the health situation, of which several studies show a strong improvement of the health situation among the elderly.

Underlined, however, the significance of the necessary labour being at hand in order for the necessary resources to be available for the necessary public requirement on social and health services.

Concluded that it, in order to ensure a sustainable social service, is necessary to maintain the elderly longer in the labour market, just as a higher participation rate will be necessary, especially in relation to the marginal groups in the labour market, as well as a healthy life for the elderly will alleviate the problem.

Gunilla Ringbäck Weitoft, National Board of Health and Welfare, Sweden, presented a Swedish study concerning differences in mortality, morbidity and educational level among children of single parents.

The study demonstrated the family's importance to a sustainable societal development as it clearly pointed out remarkable differences in mortality, morbidity and educational level among children of single parents.

Then Torben Fridberg SFI, Denmark; presented the available studies and indicators concerning poverty and low incomes.

The poverty concept in the Nordic countries is not quite simple, as it must be regarded as a relative factor.

Both the OECD and the EU have developed models for poverty risks, which with the existing uncertainty show, however, distinct, but rather uniform, risks of becoming affected by poverty in the Nordic countries.

Henrik Brønnum Hansen, SIF, Denmark, presented a Danish study on life expectancy with good health.

The studies and theories rest on longer life expectancy with bad health versus a situation where the time in which one lives with bad health be-

comes postponed to later in life. The studies show no uniform conclusions, but a trend towards the fact that one may expect more good years with a good health.

Lastly, Seppo Koskinen, National Public Health Institute, Finland, presented the Finnish health programme until 2015. The programme is based on five age-specific indicators and three indicators for the entire population (eight in all). Each key indicator includes a number of sub-indicators with different types of data sources and update frequency. Some of the sub-indicators are gathered municipally or regionally while others are data covering the entire country. In the future work with the indicators it will turn out whether or not they are realistic and measure what they were really intended to measure.

## Recommendations

It seems relevant to let NOMESCO & NOSOSCO gather the proposed indicators for sustainable development.

However, the validity of the gathered indicators should still be discussed, and where needed, the quality should be improved, if possible.

The seminar demonstrated that surveillance of the general demographic development is especially important, not least of the:

- net reproduction
- net migration
- participation in working life and integration of the marginal groups of the labour market
- families and their structures
- withdrawal pattern from working life
- population and its health
- extent and health of the elderly population and scenarios for expenditure on the social services.

In order for the gathered data to become relevant to the political debate, it is suggested that means be allocated during 2004 for the development of a model/models, which monitor the trend towards sustainable/non-sustainable development.

*Christer Eriksson*

# Socially Sustainable Development

## 1. Sustainable Development

### *Definitions and Points of Departure*

It is difficult to define the concept sustainable development, as there exists no unambiguous definition, but an important point in this connection is the process of change.

Attempts of defining sustainable development have, however, been made by several bodies:

The Brundtland Commission: *“Humanity has the ability to make the development sustainable – to ensure that it meets the needs of the present generation without compromising the capacity of future generations to satisfy their own needs”* (1987) (this is by far the most widely-accepted definition of sustainable development);

Agenda 21, UN's Programme of Action for Sustainable Development: *“Humans are at the centre of concerns of sustainable development”*; *“A sustainable development is an effect of four mutually interdependent dimensions; ecological sustainability, economic sustainability, social sustainability and cultural sustainability”* (1992);

the UN's World Summit for Social Development in Copenhagen: *“Economic development, social development and environmental protection and environmental protection are interdependent and mutually reinforcing components of sustainable development”* (1996); and

the UN's Fourth World Conference on Women: *“We should commit ourselves to ensuring that a gender perspective is reflected in all our policies and pro-*

*grammes*”, “*Equitable social development that recognize empowering the poor, especially women living in poverty, to utilize environmental resources sustainably is a necessary foundation for sustainable development*”.

The development of the notion of sustainable development from 1992 and onwards shows, at least in the framework of official international declarations, that sustainable development is not only a question about biological diversity, climate and agriculture. Although some of the above quotations indicate obvious ambitions to carry out a holistic and multi-disciplinary oriented approach to sustainable development, the fact is that the ecological dimension is still dominating the practical work related to sustainable development.

New dimensions have been added, such as sustainable transport systems, sustainable work life, sustainable production and consumption patterns, sustainable global development, etc.

One *conclusive observation* must be that the ecological dimension is not the only key to sustainable development.

## 2. Theoretical Considerations

One over-arching ambition is to identify the interfaces between the three dimensions, the synergetic links and areas of intersection as well as which measures encompassing all three dimensions provide added value that is greater than the sum of the single measures.

One example is the ecological tourism that includes all three dimensions.

### *Growth-Oriented Social Protection Systems*

Social sustainability is very often associated with long-term social commitments, such as the Scandinavian welfare state and stability in social and cultural systems as well as investments in labour market policies and life-long learning, good working conditions and social protection systems that redistribute risk-taking over the life-cycle and promote employment and discourage dependence on social welfare, combining mobility, flexibility and security; in short: *growth-oriented social protection systems*.

## *Social Sustainability - An End or a Means?*

The question is whether social sustainability should be considered as an end in itself or as a means to achieve environmental goals.

Some examples of social aspects as *ends* in themselves would be: social justice, avoiding poverty, right to work and good health:

*Example 1: The Lisbon Strategy* – employment targets, an increase in the effective average retirement age, childcare targets, removal of barriers within the labour market, promotion of employability, adaptability and mobility, fighting social exclusion, etc. The progress must be followed up by means of the open method of coordination; score-boards, indicators and reporting, etc;

*Example 2:* A national (Swedish) action programme for better health in working life and a reduction of the number of sick days between the years 2002 and 2008 by 50 %; etc;

*Example 3:* Public Health Objectives (Sweden) – the Government has defined eleven targets for all work in the public health field, among them increased physical activity, good eating habits and safe food stuffs and reduced use of tobacco and alcohol, etc;

*Example 4:* Global targets – reduction of the number of poor people (living on less than one dollar/day) by 50% by the year 2015, compulsory school attendance for all by the year 2015 and fighting AIDS and other contagious diseases, etc.

Some examples of social sustainability as *means* could be: focus on resources that make it easier for future generations to solve their problems:

*Example 1:* Global development and international co-operation to reduce poverty, and the Swedish policy for global sustainability as a means to fulfil the development goals contained in the UN Millennium Development Declaration;

*Example 2:* EU-coordination to assist Member States to construct financially sustainable and adequate pension systems in order to meet social as well as economic goals.

## *The OECD-Approach*

The OECD-approach: Social sustainability at the level of individuals is characterised by the “inter-temporal nature” of many social problems, such as the social heritage: an individuals’ life-chances are to a high extent affected by their own previous experience, in terms of labour-market outcome, schooling, poverty and family formation. The experience of poverty

in childhood and youth may have consequences for later labour-market failures. The life-chances of individuals are also shaped by the experience of their parents, through education, the inheritance of economic and cultural resources and the transmission of role models. At the level of generations, inter-generational relationships underlie the contract embodied in current systems of retirement income provision.

A younger generation pays for the support provided for an older generation expecting future generations to do the same. Conversely, the investment in education represents an inter-generational transfer to the benefit of future generations.

This life-course approach to social policies is based on the idea that social protection should be considered an asset and a productive factor and not a burden – an approach similar to the Nordic one.

One test of a society's social sustainability is its capacity to manage changes over time and its ability to balance competing goals. From this perspective, investments, or lack of investments, in human capital may have long-term consequences affecting the future formation of society.

### 3. International Strategies Emphasising Social Sustainability - Examples

*The follow-up of Agenda 21/Johannesburg World Summit of Sustainable Development* contributed immensely to the definitive recognition of all three dimensions inherent in sustainable development, last but not least social sustainability.

A plan of implementation was adopted with a 10-year programme for sustainable patterns of production and consumption, safe handling of chemicals, enhanced policy integration of sustainable development, special emphasis on health and poverty reduction; fight against AIDS, sexual and reproductive health, gender issues, employment, corporate social responsibility, strengthening of the institutional framework, a strengthened role of the Commission on Sustainable Development and reference to the ILO labour Conventions (2003).

**Conclusion:** a strong emphasis on social and public health issues.

*The OECD's strategy for sustainable development* has a predominant environmental focus, i.e. a mandate from the OECD Member States' Ministers for Environment adopted in 2001, which provides the framework. The

ministers asked the organisation to develop agreed indicators, measuring all three dimensions of sustainable development, to identify obstacles to policy reforms and in particular to reduce environmentally harmful substances, analyse the social aspects of sustainable development and provide guidance for the achievement of improved economic, environmental and social policy coherence and integration.

**Conclusion:** an academically solid base for future work on social sustainability provided by the OECD and a theoretically interesting analysis to find the interface between the three dimensions of sustainable development.

*The EU/Lisbon Strategy (year 2000).* The Union's strategic goal for the next decade is to "become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable growth and more and better jobs and greater social cohesion".

There was full agreement that an economic reform, employment and social policies are mutually reinforcing. Later (see below), the environmental dimension was also added. The open method of coordination was highlighted as a tool for progress as well as the Commission's annual synthesis reports based on structural indicators.

The social aspects of the Lisbon strategy has later continuously been reinforced, e.g. by the conclusions adopted by the Stockholm European Council in 2001, encouraging Member States "to develop safe and sustainable social protection systems and develop indicators for quality in work and poverty reduction". An EU Strategy for Sustainable Development was endorsed by the Heads of State at the Gothenburg European Council in 2001, thus adding environmentally-related aspects to the economic and social (including employment) dimensions of the Lisbon strategy. The public health aspects have been addressed (chemicals, sustainable transport, etc).

**Conclusion:** a fully developed emphasis on all three dimensions and especially the social aspects as an indispensable dimension of an economy in growth.

*Nordic Strategy for Sustainable Development 2001 –2004* mainly involves environmental questions (climate, chemicals, biological diversity, forestry and fisheries). The Scandinavian welfare model is addressed, combining economic growth with social justice.

However, the welfare model is challenged by changes in family and work-life patterns, the demographic development and the globalisation. A Nordic group has been assigned to revise the strategy, and a new revised version will be presented in March 2004. The Nordic ministers stressed in



their mandate that the revised strategy should attach greater importance to the social and economic dimensions as well as make references to current international strategies for sustainable development.

**Conclusion:** A basically environmentally-oriented strategy with a possible embryonic social dimension.

*The National (Swedish) strategy for sustainable development, 2002.* The social dimension is well taken care of, including issues such as the demographic development and its effects on employment and the pension systems; public health, labour market, welfare and educational policy and crime, etc.

The development of the Swedish welfare state is described as an early example of a national strategy for sustainable development, albeit without a clear-cut environmental dimension. Indicators have been presented in “Sustainable Development – Indicators for Sweden – a first set 2001” (Statistics Sweden).

**Conclusion:** a balanced presentation of all three dimensions.

## 4. Summary – An Attempt to Categorize the Strategies

*An inter-generational perspective/a life-course-perspective* may include demography, social protection, employment, family policy, education, pension systems, economic transfer payments as well as attempts to analyse the welfare systems’ ability to cope with new economic and demographic challenges, especially in developed countries (the national strategy, the EU, the OECD and the ILO).

*A globalisation perspective* may include poverty eradication, employment, the social dimension in international trade, fundamental rights and labour law (the national strategy, the UN, the ILO, the WTO, the ILO and the EU).

*A public health perspective* may include equality in health, preventive health care, access to health care and infectious diseases (the UN, the EU and the national strategy).

*A multi-dimensional approach* may include systematic attempts to find the synergetic areas of intersection between the three dimensions (the OECD, the EU and the national strategy).

## 5. From Theory to Practice

*What has been done so far and which Indicators are used?*

### *Agenda 21*

58 indicators, mostly environmentally oriented, have been developed. 50% of the Swedish municipalities have so far implemented local action programmes for sustainable development. A number of tangible results and activities can be presented, especially in the ecological field.

### *The OECD*

The analytical work continues, and so far some theoretically very valuable documents in order to pinpoint the notion of social sustainability have been produced and discussed within the framework of a special ad-hoc group on sustainable development in collaboration with the Employment, Labour and Social Affairs Committee. One of these documents is the report, "The social aspects of sustainable development" (2002), and another one, "Building sustainable societies: the role of social protection" (2003), also containing some 40 social indicators.

### *The EU*

The social dimension of the Lisbon strategy evolves gradually, the latest example being the streamlining of the three open methods of coordination-based processes of social exclusion, pensions and health care into one single process supplementing the economic and environmental dimensions, thereby strengthening the social dimension.

Progress is presented by the Commission in its annual synthesis reports and in 36 structural indicators, measuring i.a. long-term employment, income distribution. The work on specific indicators on pensions and social exclusion continues.

### *The Nordic Strategy*

A revision is under way with the aim of introducing more developed social aspects to the basically environmentally-oriented strategy. There are no social indicators so far.

### *The Choice of Indicators*

The sustainable development indicators used cover to a high extent environmental and ecological issues. The social dimension is less developed (reference is made to an OECD-document from September 2002 “Overview of sustainable development indicators used by national and international agencies“). The economic and monetary indicators such as employment rate, unemployment rate and income distribution are more frequent than pure social indicators.

Age structure, health status, fertility rate, effective retirement age, women’s pay relative to men and public expenditure in social protection are some examples of frequent social indicators. The UN's social indicators are more relevant for developing countries.

One conclusion to be made is that a holistic perspective, trying to identify indicators considering all three dimensions of sustainable development, is desirable.

### *Conclusions*

This short survey shows that the social dimension of sustainable development is a very topical issue in several international strategies for sustainable development. Commendable attempts are being made to go deeper into the question as to what exactly we are talking about when we refer to the social dimension.

Still, it is obvious that this is not enough. The social dimension of sustainable development must be further strengthened, analysed and made more visible. As has been stated above, perhaps one of the key issues is to identify the inter-faces between the three dimensions and emphasize those specific criteria/indicators that at the same time reflect possible consequences for human activity as well as cost and benefits for the ecological systems in monetary and non-monetary terms. When searching for these criteria one should not disregard possible conflicts of interest between different economic, social and/or ecological actors. To be successful these conflicts should be challenged and properly handled.

*Torben Fridberg*

# Proposal for a Set of General and Social Indicators for the Nordic Countries

Although the Nordic Council of Ministers have never been engaged in formulating a common policy for development of the welfare state in the Nordic countries, it is to some extent a common understanding of what a Nordic welfare state should accomplish.

In recent years, government reports on national policies have been aiming at securing a socially and economically sustainable society, an efficient and dynamic society with an efficient and comprehensive system of social security and social services. The concern is often based on the risks to the welfare state imposed by demographic trends and internationalisation, and in focus for policy initiatives are the aims of a large part of the population, which is economically active.

The proposed set of indicators is the result of the work carried out within the group appointed by the Nordic Council of Ministers. The working group has to a great extent leaned to the work already carried out within international settings – particularly the EC's Social Protection Committee and the OECD - but has been adapted to the Nordic context. This implies a particular interest in the sustainability of the welfare state in economic terms, a particular interest in the share of the population who is economically active and an interest in the provision of services e.g. day care and home help.

## Principles for Selecting Indicators<sup>1</sup>

It has been attempted to select the indicators in accordance with the following principles:

- An indicator should capture the essence of the problem and have a clear and accepted normative interpretation.
- An indicator should be robust and statistically validated.
- An indicator should be measurable in a sufficiently comparable way cross-country, and comparable as far as practicable with the standards applied internationally.
- As far as possible time series should be included
- The measurement of an indicator should not impose too large a burden.
- The number of indicators should be short, but comprehensive enough to capture trends of interest.

In all, it is suggested to include 7 general indicators, 9 social indicators and 10 health indicators + 9 further health indicators.

## General Indicators

1. Fertility
2. Child mortality
3. Life expectancy at birth
4. GDP per capita and real growth rate
5. Social expenditure per capita and as % of the GDP
6. Health expenditure per capita and as % of the GDP
7. Labour productivity

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<sup>1</sup> The list of principles has been inspired by the list worked out by the Social Protection Committee: See European Commission, DG Employment and Social affairs, Social Protection Committee, Report on Indicators in the field of poverty and social exclusion. October 2001.

*General Indicators*

Indicator	Aim – relevance	Definition	Source
1. Fertility	Has a strong influence on the size of the various generations	Net reproduction rate: The number of girls born by 1 woman in the fertile age 15-49 years corrected for expected mortality calculated from the age-specific birth rates of the current period  <i>Supplementary indicator:</i> Total fertility rate: The number of births given by 1000 women, provided they lived to be 50 years, calculated from the age-specific birth rates of the current period.	Council of Europe    NOMESCO: Health Statistics in the Nordic countries

**Proposal:** Both definitions are widely used. In order to secure the comparability with other countries it is suggested to include both of them.

Indicator	Aim – relevance	Definition	Source
2. Child mortality	Included as either an explicit or implicit measure in all health programmes	Infant mortality: Deaths per 1000 live births, total under 1 year. Computed by year of death.  <i>And/or:</i> Deaths per 1000 live births, total under 1 year. Computed by year of birth.	NOMESCO: Health Statistics in the Nordic countries

**Proposal:** There is no established tradition for a preference between the two definitions. It is suggested to include both of them.

Indicator	Aim – relevance	Definition	Source
3. Life expectancy at birth	Is the most global and viable measure of a society's health status	Life expectancy at birth for men and women: Average further number of years that a 0-year-old boy/girl can be expected to live, assuming that the mortality rate remains constant.	NOMESCO: Health Statistics in the Nordic countries

**Proposal:** It is suggested to include the two tables as life expectancy almost always is calculated separately for men and women.

Indicator	Aim – relevance	Definition	Source
4. GDP per capita (EUR) and real GDP growth rate	Internationally comparable and accepted indicator for the economy	1. Gross domestic product at market prices per capita in Euro. 2000 price level calculated by using the consumer price index. 2. Annual increase in GDP.	NOSOSCO: Social protection in the Nordic countries

**Proposal:** It is suggested to include both indicators.

Indicator	Aim – relevance	Definition	Source
5. Social expenditure per capita (EUR) and as per cent of the GDP	European comparable indicator for the social expenditure	1. Net social expenditure per capita according to the ESSPROS classification. 2. Annual net social expenditure per capita according to the ESSPROS classification as a percentage of GDP at market prices.	NOSOSCO: Social protection in the Nordic countries

**Proposal:** It is suggested to include both indicators.

Indicator	Aim – relevance	Definition	Source
6. Health expenditure per capita (EUR) and as per cent of GDP	Comparable indicator for the expenditure on health in the OECD countries	1. Gross health expenditure according to the definitions in the OECD manual: A System of Health Accounts. 2. Gross health expenditure according to the definitions in the OECD manual: A System of Health Accounts as a percentage of GDP at market prices.	NOMESCO: Health Statistics in the Nordic countries

**Proposal:** It is suggested to include both indicators.

Indicator	Aim – relevance	Definition	Source
7. Labour productivity (per person employed and per hour worked)	Growth in productivity is necessary because of future lack of man-power	1. The GDP in PPS per employed person. 2. The GDP in PPS per hour worked.	EUROSTAT Only published as relative to EU-15, but EUROSTAT is willing to give the absolute figures behind.

**Proposal:** During the Stockholm seminar, it was suggested to replace this indicator with the first of the Social Indicators listed under the headline Preconditions for a sustainable welfare state. The proposal here is to follow this suggestion.

## Social Indicators

### *Short List*

Originally, a list of 33 indicators were suggested, but as 33 indicators were considered to be too many for a quick overall indication of the sustainability of the welfare state, a short list of 9 indicators is proposed under the following headlines:

#### *A) Preconditions for a Sustainable Welfare State:*

A large economically active proportion of the population.

1. Dependency ratio (non-active population in relation to total population)
2. Non-active population 16-64 years in relation to age group
3. Retirement – Percentage of men and women aged 50-66 years in employment.

#### *B) Sustainability in Social Expenditure*

4. Social protection expenditure as a percentage of the GDP broken down by main areas (Families and children, Unemployment, Illness, Elderly, disabled and survivors, Housing, Social exclusion).
5. Composition of old age pensions (1st, 2nd and 3rd tier).

#### *C) Indicators of Outcome in Relation to Prevention of Poverty and Provision of Social Services*

6. Low-income rate (total, age-groups, family type)
7. Per cent of people 65+, 80+ receiving home help/care
8. Rate of children in full time day care (0-6,).

#### *D) Legitimacy*

9. Per cent of population supporting the welfare state or think that it has gone too far.



*Social indicators*

Indicator	Aim – relevance	Definition	Source
1. Depend- ency ratio	Precondition for a sustain- able welfare state: A large economically active propor- tion of the population.	Non-active popula- tion in relation to total population	NOSOSCO

**Proposal:** It is suggested to move this indicator to the General indicators and here replace the indicator on labour productivity.

Indicator	Aim – relevance	Definition	Source
2. Non-active population 16-64 years in relation to age group	In the Nordic countries, most of the non-active population 16-64 years re- ceive some kind of social se- curity.	Non-active popula- tion 16-64 years in re- lation to age group	NOSOSCO Social Protection in the Nordic countries

**Proposal:** It is suggested to include this indicator.

Indicator	Aim – relevance	Definition	Source
3. Per cent ac- tive popula- tion 50-66 years	Main labour market reserve may be found among the older age groups.	Men and women 50- 66 years in employ- ment	NOSOSCO Social Protection in the Nordic Countries

**Proposal:** It is suggested to include this indicator. The indicator is reported in one table, but in 10 graphs. The graphs, however, are very instructive and should be included.

Indicator	Aim – relevance	Definition	Source
4. Social protection expenditure as a per- centage of the GDP, broken down by main areas.	Sustainability in so- cial expenditure.	Net social protection expendi- ture as a percentage of the GDP at market prices- broken down by main areas according to the ESSPROS classification: Families and children, Unemployment, Illness, Elderly, disabled and survivors, Housing, Social exclusion.	NOSOSCO Social Protection in the Nordic Countries

**Proposal:** It is suggested to include these indicators, although they amount to 6 tables and graphs.

Indicator	Aim – relevance	Definition	Source
5. Composition (1st, 2nd and 3rd tier) of old age pensions	The composition indicates how robust the pension system is	Net social expenditure on old-age pensions broken down by basic, employment and supplementary pensions.	NOSOSCO Social Security in the Nordic Countries

**Proposal:** It is suggested to include this indicator

Indicator	Aim – relevance	Definition	Source
6. Low-income rate (total, age-groups, family type)	Indicators of outcome in relation to prevention of poverty	Low-income rate – after social transfers. The share of persons with an equalised disposable income below the risk-at-poverty threshold, set at 40, 50 and 60% of median equivalent disposable income.	EUROSTAT ECHP /EU-SILC <i>or</i> OECD harmonised tables based on national micro-data.

**Proposal:** It is suggested to include an indicator on low-income rate. However, it is not yet decided on which data the calculations should be based. The calculations from EUROSTAT and the calculations from the OECD end up with almost identical figures as demonstrated in the conference paper on this.

It is here suggested to see if the calculations could be based on the data already used in the annual report from NOSOSCO. It is furthermore suggested to use the method as specified for the EUROSTAT EU-SILC calculations.

Indicator	Aim – relevance	Definition	Source
7. Per cent of people 65+, 80+ receiving home help/care	Provision of social services	Per cent of people 65+, 80+ years receiving home help/care	NOSOSCO Social Protection in the Nordic Countries

**Proposal:** It is suggested to include this indicator.

Indicator	Aim – relevance	Definition	Source
8. Rate of children in day-care places	Provision of social services	Children enrolled in day-care institutions and family day-care aged 0-6 years as a percentage of the age group. Additional age groups could be 0-2, 4-6 years.	NOSOSCO Social Protection in the Nordic Countries

**Proposal:** It is suggested to include this indicator.

Indicator	Aim – relevance	Definition	Source
9. Per cent of population supporting the welfare state or think that it has gone too far	Legitimacy	Different questions in each country (see below). The different national questions are likely to be repeated. Updating will necessitate contact with national experts. Per cent of population willing to spend the same or more on different welfare state provisions is an alternative, but time series are not available.	To be gathered from surveys in the Nordic countries. However, it turns out that comparable data are not available.

**Proposal:** It is suggested to include an indicator on the legitimacy of the welfare state among the Sustainable Social and Health Indicators. However, it turns out that comparable data for the Nordic countries are not available. In a research project published in 1999 and financed by Nordic means<sup>2</sup>, however, an attempt is made to compare the trends in welfare state support between the countries, although it was impossible to compare the levels of support. This is due to the fact that each country has its tradition in measuring the support. The national surveys have used different questions and also the study designs have varied.

In *Denmark*, the survey sample has been asked: First a question about government spending on social programmes. A says: Social reforms have gone too far in this country. More than now, people should manage without social support and support from the government. B says: Those social reforms that have been made in our country should be maintained at least to the same extent as now. Do you agree mostly with A or B?

A decrease in 1973 following the rapid expansion in 1968-71 and while populist politician Mogens Glistrup showed up.

But a long term upwards trend in support.

In *Finland*: The development of social security in recent years has been too fast, appropriate or too slow (1975-92); what do you think about the current level of social security in Finland? Is it too high, appropriate or too slow? (1993-96).

<sup>2</sup> Jørgen Goul Andersen, Per Arnt Pettersen, Stefan Svallfors & Hannu Uusitalo (1999): "The legitimacy of the Nordic welfare states – Trends variations and cleavages". In: Mikko Kautto, Matti Heikkilä, Bjørn Hvinden, Staffan Marklund & Niels Ploug (eds.), "Nordic Social Policy – Changing Welfare States". London and New York: Routledge.

Fiscal constraints in the 1990's explain the declining trend until 1995. Temporal changes have between those who want more welfare state and those who are satisfied with the present situation.

In *Norway*: It is not a successive survey on attitudes towards the welfare state but on support to the social security system:

Many people think that by now we have more than enough social security benefits, and we should attempt to limit them in the future, while others claim that we should maintain our social benefit programmes and if necessary extend them ... What is your opinion?

As in Denmark and Finland, the diminishing support for expansion has not turned into opposition but to satisfaction with the present situation.

In *Sweden*: Have social reforms gone so far in this country that the Government should reduce rather than increase social support and benefits in the future?

In all the countries, a long-term trend towards less support is not found – but less are in favour of expansion and more are satisfied with the present situation. But many fluctuations determined by economic and political fluctuations.

An alternative would be to use attitudes towards the spending on different welfare sectors or programmes, e.g. Health service, Public old age pensions, Child day-care, Child allowances, Sickness insurance, Unemployment benefits, Social assistance, Housing allowance (see Table 10.1 in Goul Andersen et al. (1999)). Obviously, some programmes are more popular than others. However, time series are not available.

*Niels Kr. Rasmussen*

# Introduction to the proposed Health Indicators

## The Proposed Indicators

Health and sustainable development have both an individual and a societal or social system's aspect. Basically and ultimately, the health, well being and functioning of the individual human being is synonymous with sustainability of the individual. Derived from this, sustainability of the individual also encompasses the ability of the individual to act healthy, health protecting and health promoting and in accordance with the usual roles without health-related restrictions.

The direct health-related sustainability of a society concerns not only the demographic consequences of the state of health, e.g. mortality, fertility and, thus, total reproduction and sustainability, but also and especially the consequences of the individual's opportunity to effectively enter into the material and social production processes in society.

Up until now, much of the work in developing health indicators has been marked by the one-dimensional idea that reducing mortality and morbidity and increasing life expectancy are an indisputable good. This is reflected in the fact that many countries' health indicators are comprised of mortality rates, life expectancies, etc. The World Health Organization's 'Health for all' programme introduced and legitimised other dimensions by which a population's health status could be measured. It was not just the total number of years a person lived that mattered, but also the quality of those years. With the introduction of the so-called ICIDH-classification (International Classification of Impairment, Disability and Handicap), which was later changed to ICF (International Classification of Functioning, Disability and Health), the consequence of illness and disease to the carrying-out of everyday activities and social roles was seen as a necessary health indicator. This development of the concept of health recognizes that illness and disease influence the sustainability of the social system.

The proposed health indicators can be divided into five main categories, which have been adapted from ongoing work of the European Community Health Indicators (ECHI) project under the European Union's Health Monitoring Program. The proposed set of specific indicators does not cover all the main categories because of problems regarding availability of comparable and easy-to-interpret data and indicators. To the fullest extent possible, the proposed indicators are those, which are agreed upon in international fora, and which are already developed or will be developed in the near future.

1. Indicators concerning general population sustainability.
2. Indicators concerning the health-related aspects of the individual's social function and, thus, contribution to the social system.
3. Indicators concerning the most important determinants of health and illness/disease.
4. Indicators concerning society's efforts to handle and rectify ill health and illness/disease.
5. Multi-disciplinary and integration indicators that address the polarization and/or differences among social groups.

As a supplement to the proposed indicators on sustainable health development, the Nordic Committee for Social Policy has suggested inclusion of indicators with special relevance to the health sector, namely indicators of manpower and other resources and indicators of the activity in the health-care sector.

Table 1 presents the various general and specific indicators.

**Table 1**

<i>General health indicators</i>
Fertility
Child mortality
Life expectancy at birth
<i>Specific health indicators</i>
Healthy-life expectancy
Chronic or long-term illness
Restriction in daily activities because of illness
Smoking
Alcohol use
Obesity
Unmet need for treatment
Self-assessed health
Social differences in long-term illness
Social differences in self-assessed health
<i>Supplementary indicators</i>
Health-care indicators

The general indicators relate primarily to the quantitative aspect of sustainability: that the size of the population is reproduced. The specific indicators on healthy-life expectancy, illness and restriction in daily activities and self-assessed health relate to the quality and value of life. Smoking, alcohol use and obesity are some of the major health hazards of modern life. An important aspect of the health picture is the social distribution of health and unhealth. Therefore, the indicators of social differences in long-term illness and in self-assessed health are included. As mentioned above, some indicators of resources and activities in the health-care sector are included.

All the proposed indicators are either already available or will be available in the near future from NOMESCO or from EUROSTAT building either on national surveys and statistics or on European surveys.

## Statistics on Selected Indicators

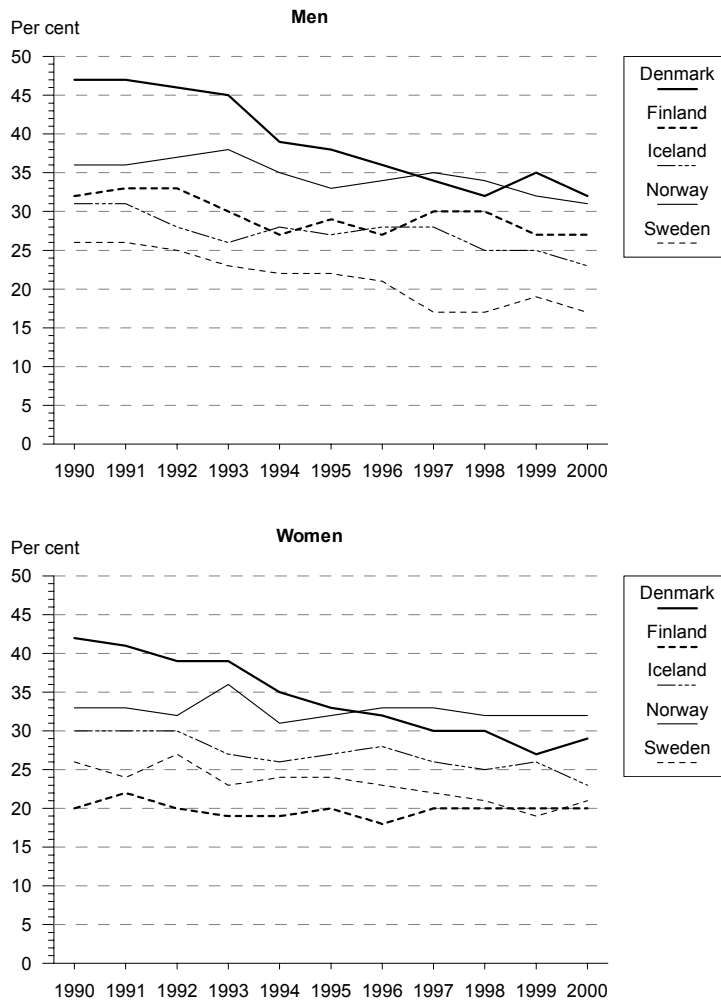
In the following, some of the proposed indicators will be illustrated with data that are available now.

**Table 2 Percentage among men and women with chronic or long-term self-reported illness**

	Denmark	Finland	Iceland	Norway	Sweden
Men 18+ years	40.5	51.5	..	34.8	46.0
Women 18+ years	41.7	53.2	..	39.1	51.5

In all the countries that have provided data, it appears that a large proportion of the adult population has a long-term or chronic illness, and that the proportion is largest among women. There are clear differences between the countries, with the highest prevalence in Finland. The differences are probably caused by differences in the specific methods used in the surveys that have provided the data. This stresses the necessity for data that are going to be used in the indicator programme deriving from standardised and harmonised surveys and survey methodology

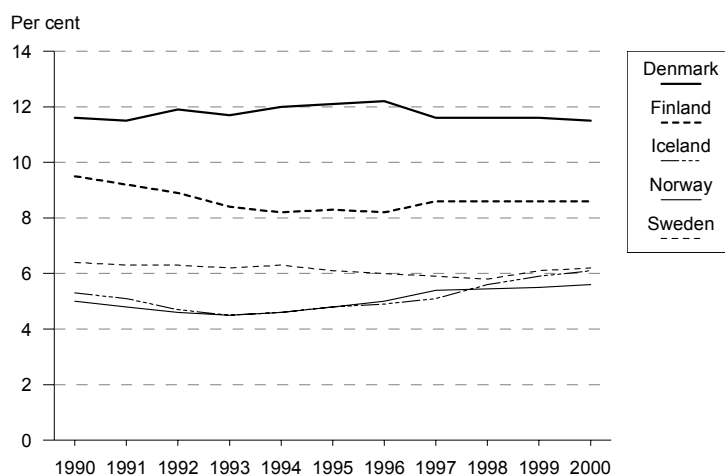
**Figure 1 Percentage daily smokers among men and women, 1990-2000**



The figure clearly shows that the rate of smoking has gone down in all the Nordic countries among men, and that the highest level is found in Denmark and Norway, and that the lowest level is seen in Sweden. Among women, almost the same pattern is seen though the situation for the Finnish women, who have the lowest level, is unchanged in the observed period. And the Norwegian women have taken over the lead from the Danish women.



**Figure 2 Sales of pure alcohol per capita aged 15 years and over (litres), 1990-2000**



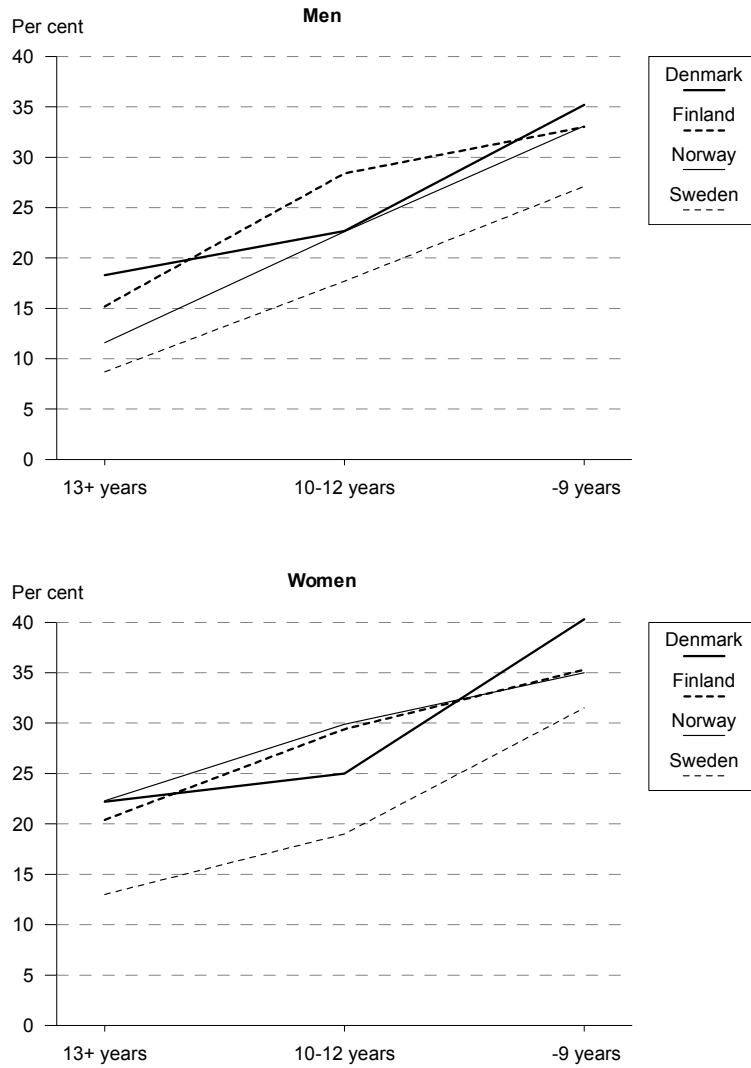
Also the alcohol consumption shows very distinct differences among the Nordic countries with Denmark at the top and on a constant level over the years. The level in Iceland, Norway and Sweden is almost the same, and Finland has an intermediate position.

**Table 3 Percentages among men and women with good or very good self-assessed health**

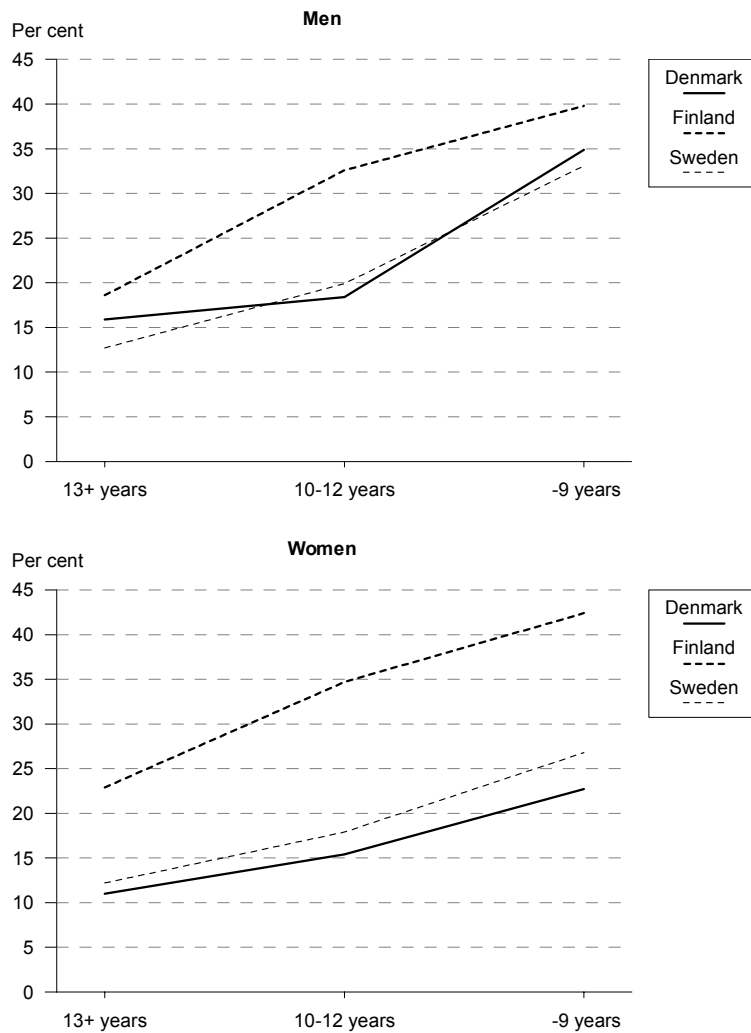
	Denmark	Finland	Iceland	Norway	Sweden
Men	79.5	65.8	81.3	81.1	77.3
Women	76.3	68.2	82.6	78.2	72.2

In all the Nordic countries, a substantial proportion of the adult population perceive their health as being good or very good. In Denmark, Norway and Sweden, the rate among men is higher than among women, whereas it is the opposite in Iceland and Finland. That the level in Finland is somewhat lower than in the other countries could be an indication of different methodologies having been used, which again stress the importance of using data collected by harmonised and standardised methods.

**Figure 3 Social differences in limiting longstanding illness, men and women**



**Figure 4 Social differences in poor self-assessed health, men and women**



In a Nordic collaborative study, the social differences in perceived health and limiting longstanding illness was analysed (Roos et al. 2001). Figures 7 and 8 show differences according to educational level.

It is very striking how similar the differences are in the Nordic countries. In Finland, Denmark and Norway, 20-25% of those with 13+ years of combined school and vocational education has a limiting longstanding illness whereas it is 35-40% of those with the shortest education. The general

level is somewhat lower in Sweden, but the differences between the educational groups are similar to what is seen in the other Nordic countries. The picture of the differences in levels of poor self-assessed health is similar.

## References

E. Roos, K. Kivelä, E. Lahelma, T. Tuominen, E. Dahl, F. Diderichsen, J. I. Elstad, I. Lissau, Lund Sorensen, O. Lundberg, O. Rahkonen, N. Kr. Rasmussen, and M. Åberg Yngwe: Liten Förändring av hälsoskillnader i norden under 1980- och 1990-talen. *Läkartidningen* 98 (21): 2576-2584, 2001.

*Johannes Nielsen*

# Proposal for a Set of Health Service Indicators for the Nordic Countries

At the presentation of the proposal for Social and Health Indicators for the Nordic Committee for Social Policy, a wish was expressed that some indicators for a sustainable health sector should be developed in addition to the proposed indicators.

To give a realistic picture of the health sector by means of a few satisfactory indicators is, however, quite difficult, as it is first and foremost the sum of very detailed information (as in Health Statistics in the Nordic Countries) that makes it possible to paint a picture of the health sector.

Consequently, we have made a picture in the following on the development of some main resources, such as the number of active physicians, dentists, beds, bed days, etc., seen in relation to the population.

The figures are above all a picture of the service level, the capacity and productivity and trends towards new treatment methods.

It should be mentioned that one of the major problems is that the differentiation between physicians and nurses and beds in medicine, etc. differs somewhat from one country to another.

Indicator	Aim – relevance	Definition	Source
1. Population per active physician	A key indicator giving a picture of the level of services	Number of people per active physician	NOMESCO
2. Population per active dentist	A key indicator giving a picture of the level of services	Number of people per active dentist	NOMESCO

Indicators 1 and 2 are the traditional ones for the service level given by physicians and dentists. During the last 25 years, the picture shows a much higher coverage, but one should take into consideration that the hours worked per physician have decreased during this period, and if one uses working hours in relation to the population, quite a different picture will appear.

Indicators 2 and 3 are pictures of a number of authorized hospital beds for medicine and surgery. Especially for surgery, there has been a decrease over the last 20 years.

The number of hospital beds is a traditional indicator of the capacity in the health sector, where the decrease in the number of beds has to be seen in relation to indicators 5, 6 and 7. These three indicators together give a picture of how new technology and methods for treatment have reduced the length of stay necessary for treatment at hospitals.

However, especially in the Nordic countries the care for the elderly is separated from hospital treatment, and this has reduced the need for care of the elderly at the hospitals.

<b>Indicator</b>	<b>Aim – relevance</b>	<b>Definition</b>	<b>Source</b>
3. Number of authorized hospital beds (medicine) per 100,000 inhabitants	A key indicator giving a picture of the volume for treatment of in-patients	Number of authorized hospital beds (medicine) per 100,000 inhabitants	NOMESCO
4. Number of authorized hospital beds (surgery) per 100,000 inhabitants	A key indicator giving a picture of the volume for surgical treatment of in-patients	Number of authorized hospital beds (surgery) per 100,000 inhabitants	NOMESCO
5. Number of discharges from somatic hospital wards per 1 000 inhabitants	A key indicator giving a picture of the productivity for treatment of in-patients	Number of discharges from somatic hospital wards per 1 000 inhabitants	NOMESCO
6. Number of bed days in somatic hospital wards per 1 000 inhabitants	A key indicator giving a picture of the effectiveness in treatment of in-patients	Number of bed days in somatic hospital wards per 1 000 inhabitants	NOMESCO

<b>Indicator</b>	<b>Aim – relevance</b>	<b>Definition</b>	<b>Source</b>
7. Average length of stay in somatic hospital wards	A key indicator giving a picture of the development of treatment of in-patients	Average length of stay in somatic hospital wards	NOMESCO
8. Total use of medicine DDD/1 000 inhabitants/day	A key indicator giving a picture of the development in using medicine	Total use of medicine DDD/1 000 inhabitants/day	NOMESCO

The figures for the total use of medicine are data of a very high quality, showing a growth in all countries, but also real differences among the countries in the total use of medicine. The development does not indicate that more and more people use medicine, but first and foremost that more and more medicine is available providing possibilities of a better and also more expensive treatment.

<b>Indicator</b>	<b>Aim – relevance</b>	<b>Definition</b>	<b>Source</b>
9. Per cent of cataract surgery procedures and arthroscopic on meniscus of knee carried out as day surgery	A key indicator giving a picture of the development in surgical procedures	Per cent of cataract surgery procedures and arthroscopic on meniscus of knee carried out as day surgery	NOMESCO

The last indicator for day surgery illustrates how new technology makes surgical procedures possible without admission to a hospital. This trend will continue in the coming years and lead to a dramatic change in the hospital structure.

Discussion:

- New technology and methods of treatment will in the coming years lead to dramatic changes in the hospital sector with less need for hospital beds, reduced working hours per patient because of reduced need for care. On the other hand, there will be a need for high investments in new technology and a demand for the newest (and more expensive) medicine producing the best result.

*Helge Brunborg*

# The Ageing Population<sup>3</sup>

## Introduction

Since the focus of the seminar is on "Sustainable Social and Health Development", it seems natural to ask if the population development in the Nordic countries is sustainable. The first, but unqualified, answer to this is that it is certainly not. The population size is most probably going to start declining in the next decades, and the population structure is ageing rapidly, as a consequence of sub-replacement fertility. Declining mortality is also contributing to the ageing of the population. The financing of the pension system will be affected dramatically by the growing elderly population, and it is, therefore, also natural to ask if the pension system is sustainable. This question is more difficult to answer, however. In several Nordic countries, the present system does not seem sustainable, but reforms, which will have to come, may change this. This paper will look at the causes of population ageing and discuss the options for solving the pension and other problems caused by this ageing.

## Background

The ageing of the population and the resulting problems for the pension system are becoming quite well known and are receiving a lot of attention. A recent article in the leading Norwegian newspaper *Aftenposten* was titled "The age wave is crushing the state budget" (19 May 2003). The article referred to recent estimates of the futures pension expenditure by the Ministry of Finance. The estimates were based on new population projections from Statistics Norway that show that the number of elderly people, 67

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<sup>3</sup> I am grateful for comments from my colleagues Erik Nymoene and Lars Østby.



years and older, has been adjusted upwards by 200,000 persons because we live longer than previously assumed. The number of the oldest old, 90 years and older, will multiply between 3 and 6 times by 2050. The labour force will be almost constant, resulting in a decline in the ratio between labour force and pensioners from a little less than 3 in 2000 to a little less than 2 in 2050 (see Figure 1).

The article also noted that in 2050, 1/5 of the mainland national product would be spent on old-age and disability pensions, as against 1/10 in 2002 (see Table 1), according to projections by the National Insurance Administration (Rikstrygdeverket). If the expenditure on health and old-age care is also included, 1/3 of the GNP will be spent on pensions and health/care, which is a doubling from the current levels. The expenditure on old-age pensions will triple in Norway until 2050 if the present system continues (see Figure 1 and Tables 2 and 3). Even with unchanged standards in old-age care and hospitals, the need for labour in this sector will grow by 60 percent until 2050. The large flow of oil and gas revenue cannot pay for the increasing elderly population. In the long run, the interest from the petroleum fund can only cover one third of the old-age pensions.

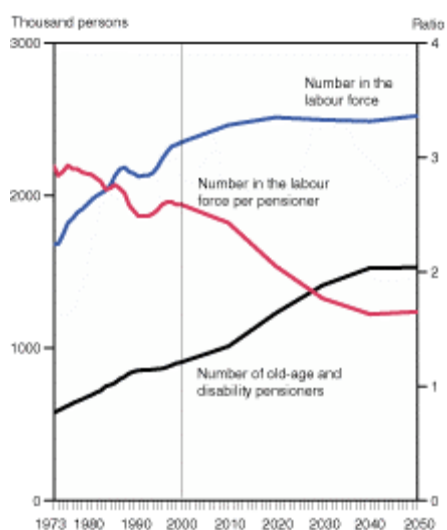
The situation is more or less the same in the other Nordic countries, with the exception of the petroleum revenue, which will alleviate the pension expenditure problems in Norway - but not solve them.

**Table 1 Pensions from the National Insurance Administration in per cent of the Gross National Product**

	1972	1980	2000	2010	2030	2050
Old-age pensions	3.2	3.9	4.5	5.7	11.4	13.5
Disability pensions	2.1	1.6	2.3	3.5	4.4	4.3
Total	5.3	5.5	6.8	9.2	15.8	17.8

Source: The Long-Term Programme 2002-2005, Ministry of Finance.

**Figure 1** Number of pensioners and the labour force, 1973-2050



Source: The Long-Term Programme 2002-2005, Ministry of Finance.

**Table 2** Number of old-age and disability pensioners in 1000 persons and the average pension measured by the number of basic amounts (G)

	1972	1980	1999	2010	2030	2050
Number of old-age pensioners	346	520	631	643	1010	1139
Average old-age pension	1.1	1.4	2.1	2.4	2.7	2.8
Number of disability pensioners	154	160	270	369	402	391
Average disability pension	1.6	1.8	2.3	2.4	2.5	2.5

Source: Pensjonskommisjonen.

Source: The Long-Term Programme 2002-2005, Ministry of Finance

**Table 3** Age-related public expenditure in some OECD countries

	2000			Change 2000-2050, percentage points		
	Total	Old-age pensions	Early retirement pensions	Total	Old-age pensions	Early retirement pensions
Australia	3.9	3.0	0.9	1.8	1.6	0.2
Belgium	9.9	8.8	1.1	3.4	3.3	0.1
Canada	5.1	5.1	..	5.8	5.8	..
Denmark	10.1	6.1	4.0	2.9	2.7	0.2
Finland	11.2	8.1	3.1	4.7	4.8	-0.1
France	..	12.1	..	..	3.9	..
Germany	..	11.8	..	..	5.0	..
Italy	..	14.2	..	..	-0.3	..
Netherlands	6.4	5.2	1.2	5.2	4.8	0.4
New Zealand	4.8	4.8	..	5.7	5.7	..
Spain	..	9.4	..	..	8.0	..
Sweden	11.1	9.2	1.9	1.2	1.6	-0.4
United Kingdom	4.3	4.3	..	-0.7	-0.7	0.0
USA	4.6	4.4	0.2	2.1	1.8	0.3
Austria	..	9.5	..	..	2.2	..
Average of above countries	9.3	7.5	1.8	3.4	3.3	0.1
Norway	7.3	4.9	2.4	9.6	8.0	1.6

Source: The OECD.

Source: Pensjonskommissjonen (2002).

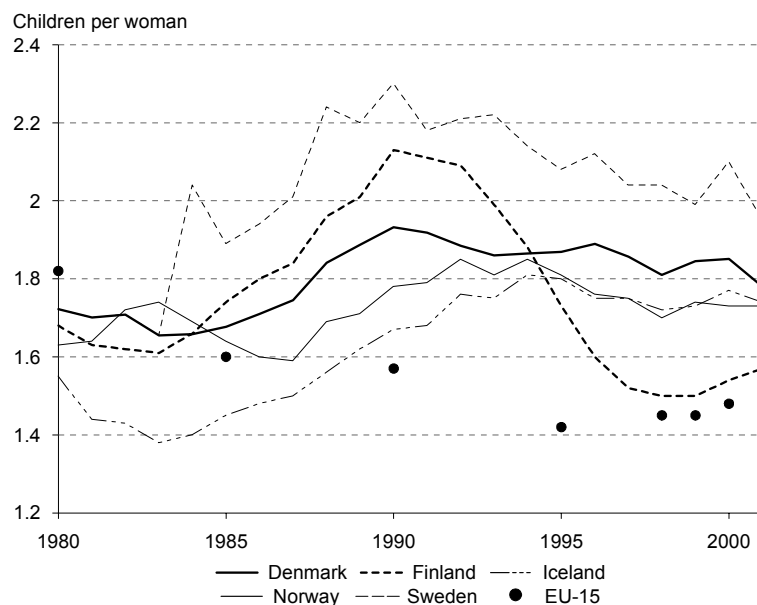
The major reason for the growth in the proportion of old people is the fertility decline, which started more than one hundred years ago. In recent years, declining mortality is contributing more and more to the growth of the elderly population, while immigration has the opposite effect. I will consider these factors in the next sections before looking at the uncertainty about the future ageing and discussing the options.

## Fertility

Like in most European countries, the fertility level in the Nordic countries passed the reproduction level, i.e. a TFR (total fertility rate) of about 2.08, in the late 1960s or early 1970s. The only exception to this is Iceland, where fertility has remained relatively high until recent years, but is now slightly below the reproduction level. After very low fertility in the Nordic countries in the

1980s, there was some recovery until the early 1990s. With the exception of Sweden, where the period TFR has fluctuated strongly due to family reforms and changing economic conditions, fertility in the Nordic countries has remained stable since the 1990s, perhaps with a small decline, see Figure 2. Fertility in the Nordic countries is still high in a European context. This is generally explained by our "family-friendly" policies, although Nordic fertility is not quite as unique as it was 10 or 15 years ago. France, which is known to have promulgated pro-natalist policies for a long time, now has one of the highest TFRs in Europe, only surpassed by Ireland, Iceland and Albania.

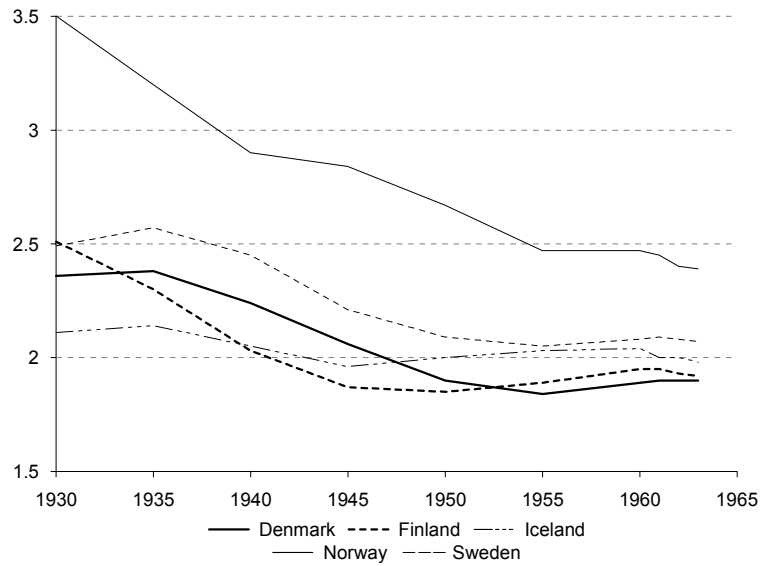
**Figure 2 Total fertility rate in the Nordic countries and the EU**



Source: Eurostat (2001).

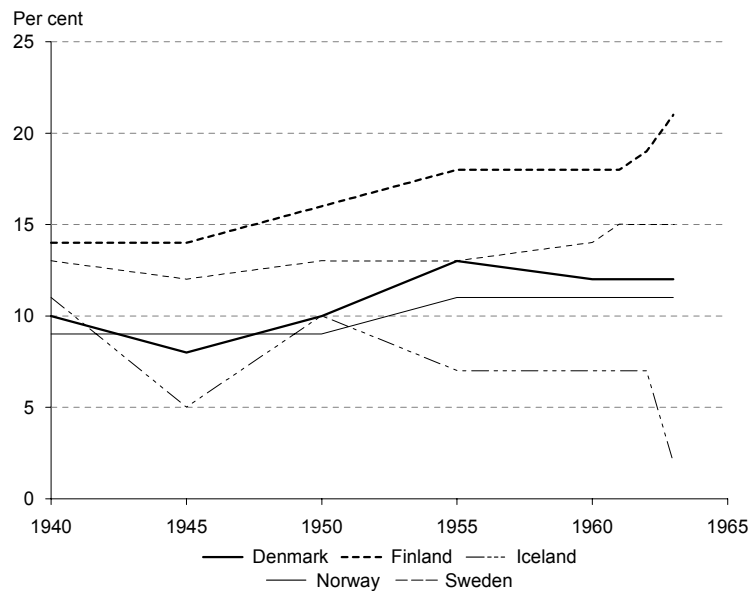
The fertility trends appear more stable if we look at the completed fertility of cohorts (generations), see Figure 3. The number of children born by each cohort is on or slightly below the reproduction level in all the Nordic countries. Thus, we should not over-dramatise annual changes in the fertility level, which may be due to changes in the timing of births, particularly postponement of births until higher ages. The same can be said about childlessness, which has also been relatively stable but with a gradual increase, as shown in Figure 4. (The sharp changes in Finland and Iceland for recent cohorts are probably due to data problems.)

**Figure 3 Completed fertility by generation (birth cohort)**



Source: Eurostat (2001).

**Figure 4 Proportion of childless women by generation (birth cohort)**



Source: Eurostat (2001).

On the other hand, it is period fertility that produces the annual number of births and which will result in a declining population size in the long run, if the period fertility is low. Schoen and Jonsson (2003) have shown that a dynamic population model can have period fertility that is always below replacement, and cohort fertility that is always above replacement, and that such a population will become smaller. The reason for this paradox is a declining cohort size. Thus, cohort fertility above replacement may not be sufficient for continued population growth.

Although the fertility trends in the Nordic countries have been relatively stable in recent years, there are few, if any, signs of recovery. On the other hand, the fertility level could easily drop to much lower levels, close to what we are seeing in Southern and Eastern Europe, 1.1-1.3 children per woman. Thus, the Nordic countries will have to learn to live with fertility somewhat below the replacement level, and adjust to the accompanying consequences of population ageing.

## Mortality

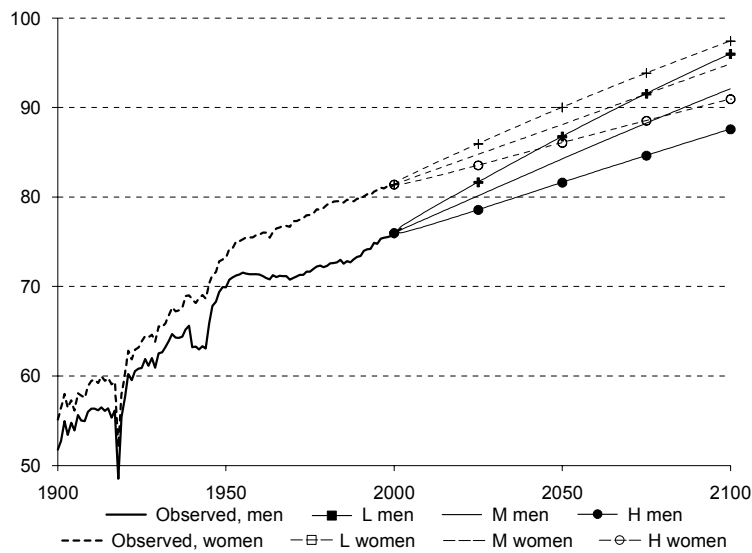
Life expectancy in the Nordic countries has been increasing for about two hundred years. Demographers and others are asking for how long this can continue. The answer is, of course, that we do not know. Population forecasts have frequently been found to be wrong in the past, almost always projecting too low life expectancies. The application of advanced medical technology, including the results of genetic research, has led the most optimistic to forecast a life expectancy of one hundred years or more. On the other hand, epidemics and unhealthy lifestyles may, according to some observers, cause a stagnating or perhaps even a negative growth in the life expectancy. Figure 5 shows the assumed life expectancies in the most recent Norwegian projections until 2050 and the extension of this to 2100. (The letters H, M and L stand for High, Medium and Low life expectancies, respectively, with values given in Table 3.)

Recent work by Oeppen and Vaupel (2002) shows that the life expectancy in the record-holding country in the world has been increasing linearly for more than 160 years, by almost  $\frac{1}{4}$  year per calendar year, for both women and men, see Figure 6. The Nordic countries have done very well in this "competition". For women, Norway had the highest life expectancy for the period 1840-1875, except for Sweden and Australia in a few scattered years. New Zealand had the leadership in 1876-1940, except for a few years when Danish, Swedish, Norwegian or Australian women lived the longest. Nor-

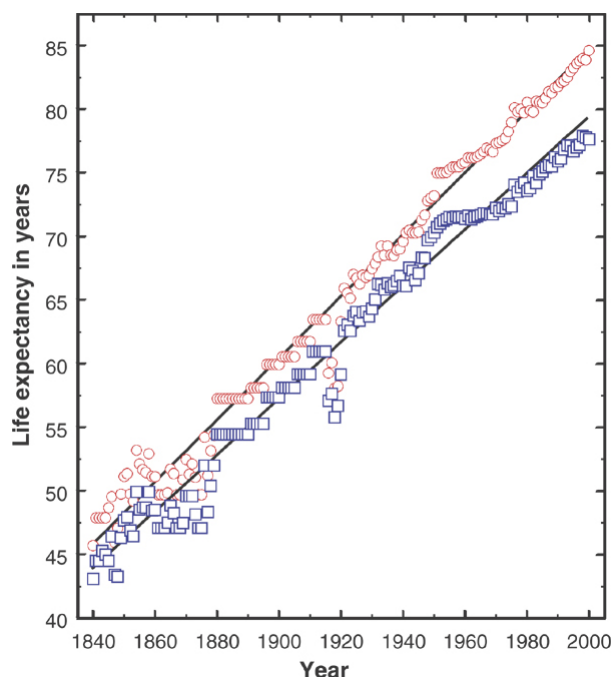
way, Iceland and Sweden came out best during 1941-1984, except for The Netherlands in 1964 and Switzerland in 1985. Since then Japanese women have lived longer than any other nationality in the world. The picture is more or less the same for men, except that Irish, Dutch and Greek men occasionally have had top life expectancies, and that Japanese and Icelandic men have been competing about the leading position since 1980.

The findings of Oeppen and Vaupel (2002) indicate that we cannot say that the life expectancy will cease to increase. We do not know by how much it will increase, however.

**Figure 5 Life expectancy at birth in Norway. Registered 1900-2001 and projected 2002-2100**



Source: Brunborg and Texmon (2003).

**Figure 6** Life expectancy in the record-holding country

Female (circles) and male (squares).

Source: Oeppen and Vaupel (2002).

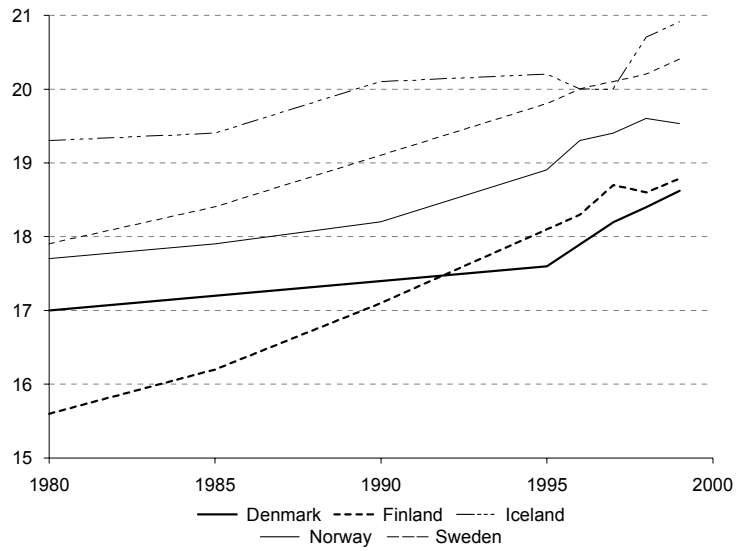
The life expectancy was previously heavily influenced by the mortality among infants and children. This mortality is now so low in western countries, however, that further decline will contribute very little to the life expectancy. Consequently, it is mortality of older people that will have to decline to produce further gains in life expectancy. And indeed, this has become the case. After little improvement during the 19th and most of the 20th century, the remaining life expectancy for old people has started to increase, see Figures 7-9.

This improvement needs to be taken into account when new pension schemes are designed, such as the Swedish, where the annual old-age pension depends, inter alia, on the remaining life expectancy at the age of retirement.

Figure 10 shows, however, that, at least in Norway, there has not been much, if any, mortality improvement for the very old, 90 and older. The reasons for this are not understood. Thus, there seems to be room for further decline amongst the oldest old.

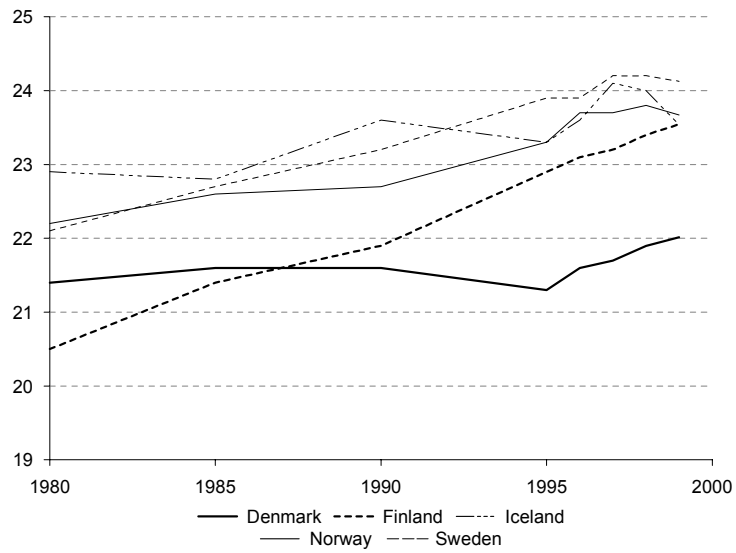


**Figure 7 Remaining life expectancy at age 60 for men**



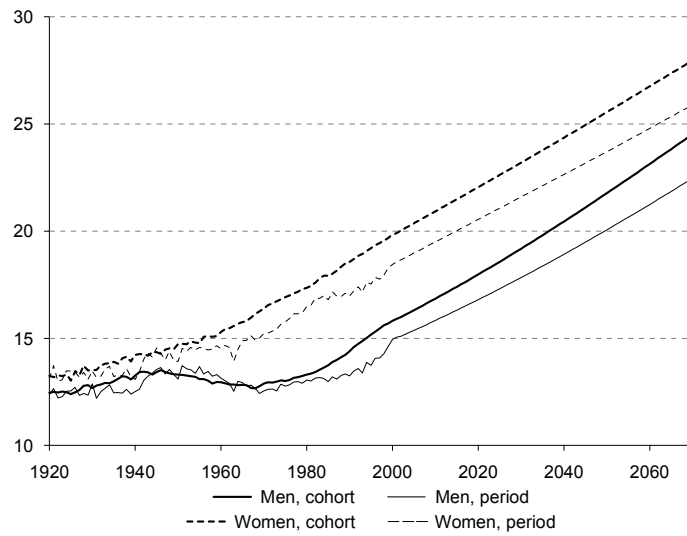
Source: Eurostat (2001).

**Figure 8 Remaining life expectancy at age 60 for women**



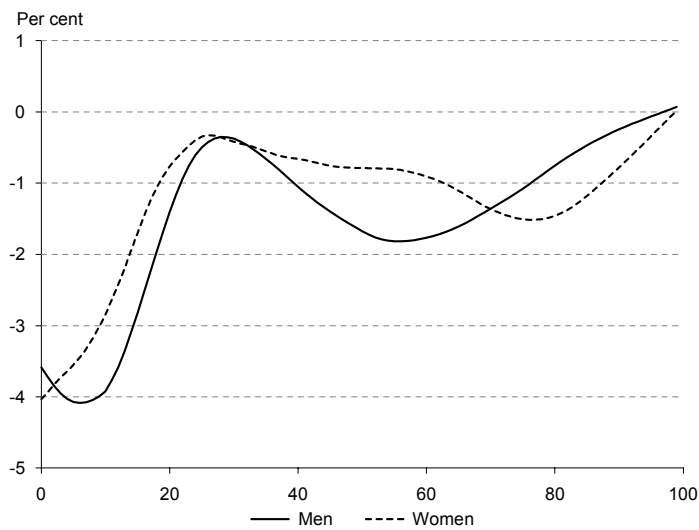
Source: Eurostat (2001).

**Figure 9 Remaining life expectancy at age 67 for periods and cohorts, by the year the cohort was 67 years old. Based on observations for 1850-2001 and projections for 2002-2100**



Source: Population projections, Statistics Norway.

**Figure 10 Change in the probability of death, from around 1974 to around 1999. Smoothed. Per cent per year**



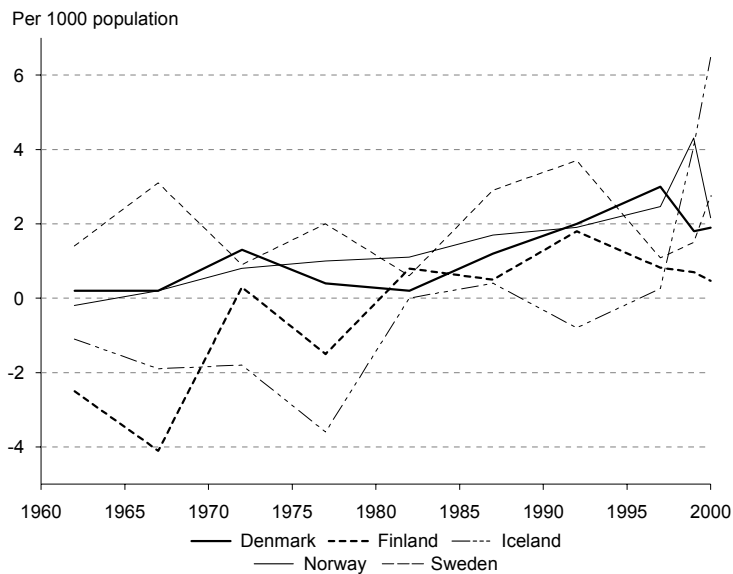
Source: Brunborg (2002).

## Migration

There is substantial net migration to the Nordic countries, especially to Sweden and Norway, see Figure 11. This mitigates to some extent the slow or negative population growth due to low fertility. The Swedish population would have been declining for several years if there had been no net immigration. In Norway, the expected population decline in the future is postponed by several decades due to immigration.

Immigration also affects the age structure, since immigrants are on average younger than the resident population. According to projections for Norway the mean age of the population will be 1.4 years higher in 2050 than if there is no migration to and from Norway after 2002. The proportion of the population 65 years and older will be 26.7 per cent if there is no migration, against 24.4 per cent with migration, *ceteris paribus* (medium series MMMM, see [http://www.ssb.no/english/subjects/02/03/folkfram\\_en/](http://www.ssb.no/english/subjects/02/03/folkfram_en/)).

**Figure 11 Crude rate of net migration to the Nordic countries**



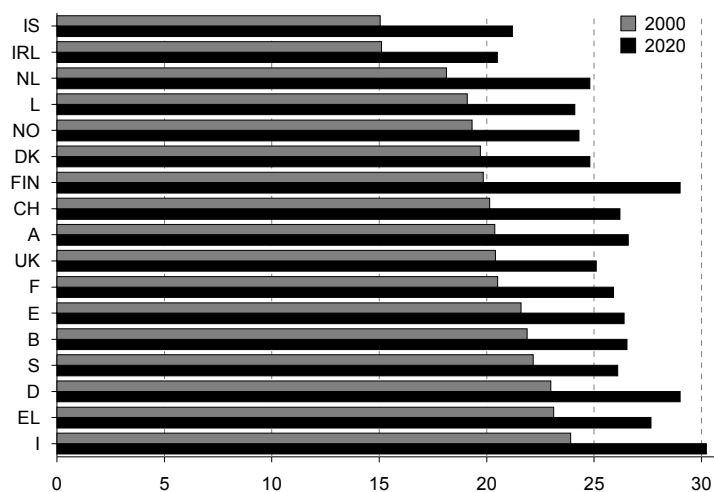
Source: Eurostat (2001).

## Prospects for the Elderly Population

The populations in the Nordic countries are amongst the youngest in Europe, as measured by the proportion of the population that is 60 years and older, except for the Swedish, see Figure 12. Iceland has the youngest population in Western Europe, due to the persistently high fertility level. The same ranking is expected to be the case in 2020, except for Finland, which by then will have become the second oldest, surpassed only by Italy. Although Finland has about the same fertility level as the other Nordic countries, its lower immigration and previous births contribute to a more rapid ageing of the population.

The proportion of elderly will undoubtedly be much higher in all EU member states in 2020. In 2000, the median proportion of 60 years and older was a little more than 20 per cent, and this is projected to grow to about 27 per cent in 2020. Rapid ageing will not only be the case for Europe, but even more so for developing countries. There is not a single country in the world with a lower proportion of 60+ year-olds in 2050 than in 2000, according to the medium series of the most recent United Nations population projections (UN 2003). In many cases, a tripling or more of the proportion of 60+ year-olds is expected. Even the countries that are the worst hit by the HIV/Aids epidemic will experience substantial ageing.

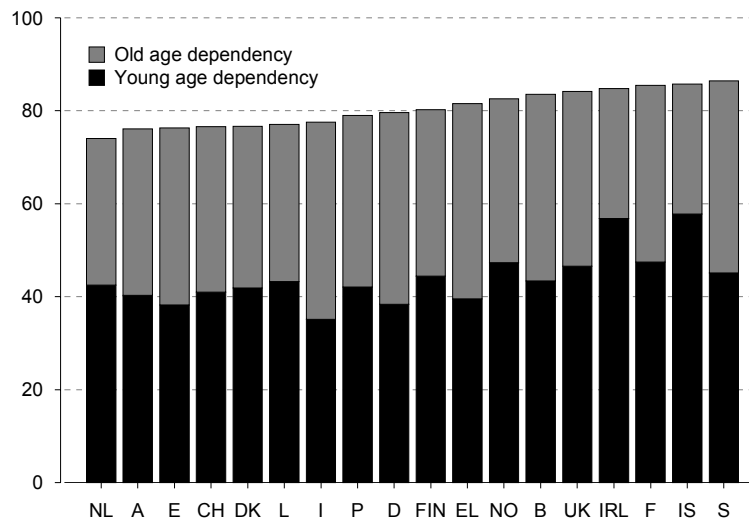
**Figure 12 Per cent of population 60+ in 2000 Western Europe, 2000 and 2020**



Source: Eurostat (2001).

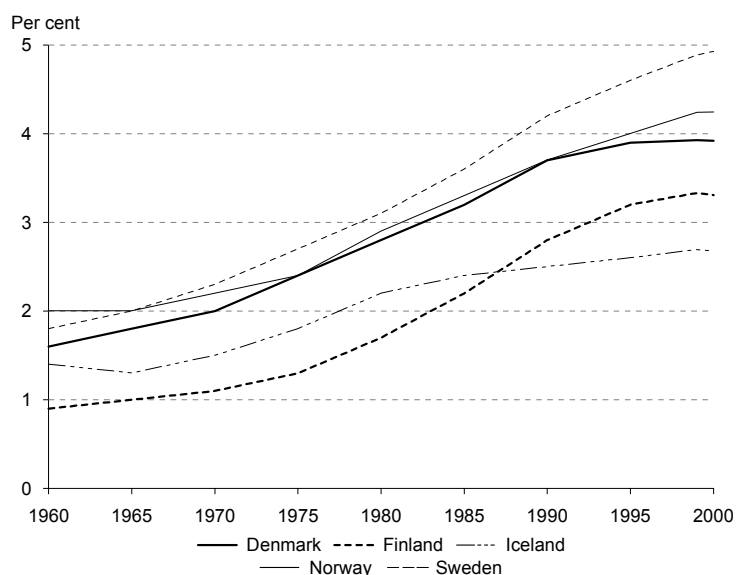
When we include both young and old people, the dependency ratio is very high in Sweden and Iceland, medium in Norway and Finland, and quite low in Denmark, see Figure 13. The relatively low proportion of old people in Iceland is compensated by a very high proportion of young people, in fact the highest in Western Europe.

**Figure 13 Age dependency ratio in Western Europe in 2000. Population aged 0-19 and 60 and over as a percentage of the population aged 20-59**



Source: Eurostat (2001).

The proportion of the elderly population of 80 years and over, where the need for care is much higher than for people between 60 and 80 years, has been growing particularly fast in recent decades, see Figure 14.

**Figure 14 Proportion of the population aged 80+ in the Nordic countries**

Source: Eurostat (2001).

There is considerable uncertainty about the future population development. The most important source of this is uncertainty about the future development of the demographic components fertility and mortality, and to some extent migration. There are several ways of illustrating this uncertainty.

One approach is to make alternative assumptions about the demographic components fertility, mortality and migration (scenario approach). At Statistics Norway we have, on request from the Ministry of Finance, made projections until 2100 (Brunborg and Texmon 2003), as an extension of the official national projections until 2050 (Statistics Norway 2002a, b, c). All of the series show a striking ageing of the population after 2020, as shown in Figures 15-17<sup>4</sup>. The ageing is particularly rapid during the period 2010-2030, regardless of whether we have assumed low (L), medium (M) or high (H) fertility, mortality, internal mobility<sup>5</sup> or net immigration, see the description of the assumptions in Table 3. As expected, the ageing is the most

<sup>4</sup> As the lower age limit for old people we have chosen 67 years, which is the age of retirement in Norway. In recent years the *actual* mean pension age has fallen dramatically, however, to about 59 years, due to the introduction of a generous early retirement scheme (*Avtalefestet pensjon*, AFP) and a rapid increase in the number of disability pensioners. If this is taken into account, the situation will look even more serious.

<sup>5</sup> The internal migration pattern in Norway is assumed to be the same in the alternative projections reported here, since internal migration has a minimal effect on national projection results.

rapid in the so-called "ageing" alternative, the LHML, where each component contributes to the ageing of the population (Low fertility, High mortality, Medium internal mobility, and Low net immigration). The ageing will be less pronounced after about 2030 if rather extreme assumptions in the opposite directions are made, the HLMH, the "youth" alternative (High fertility, Low mortality, Medium internal mobility, and High net immigration).

The old-age dependency ratio is currently declining but is expected to increase rapidly after 2010, from the current 0.22 elderly per person of working age to about the double in 2050 (between 0.33 and 0.47) and to between 0.36 and 0.81 in 2100, see Figure 16.

**Table 4 Assumptions for the long-term projections 2002-2100<sup>1</sup>**

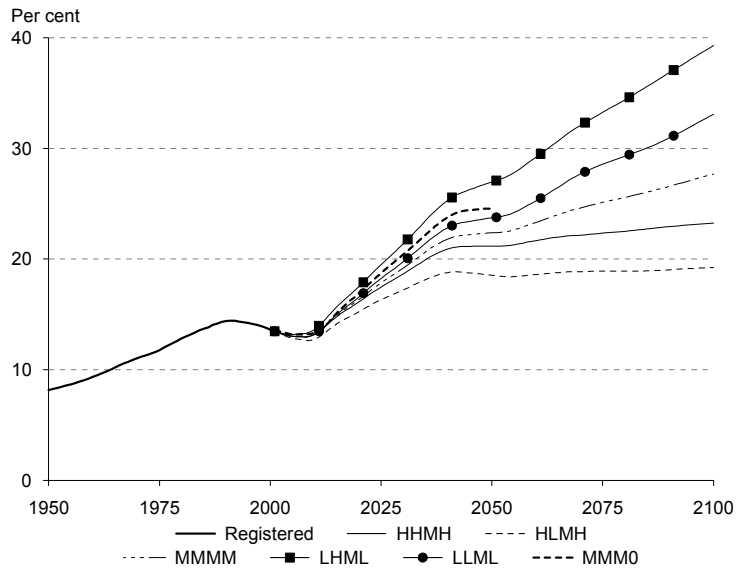
	Registered	Projected		
		L	M	H
Total fertility rate (children per woman)				
2001	1.78	-	-	-
2002	1.75 <sup>2</sup>	1.74	1.75	1.77
2050	-	1.60	1.80	2.00
2100	-	1.07	1.80	2.53
Life expectancy at birth				
<i>Males</i>				
1900	51.8	-	-	-
1950	69.9	-	-	-
2000	76.0	-	-	-
2001	76.2	-	-	-
2002	76.5 <sup>2</sup>	76.0	76.3	76.6
2050	-	81.6	84.2	86.7
2100	-	87.6	92.1	96.0
<i>Females</i>				
1900	55.1	-	-	-
1950	73.2	-	-	-
2000	81.4	-	-	-
2001	81.5	-	-	-
2002	81.5 <sup>2</sup>	81.4	81.6	81.9
2050	-	86.0	88.1	90.0
2100	-	90.9	94.8	97.4
Internal mobility (expected number of inter-regional moves over the life course)				
1990-2001	2.0	-	-	-
2002-2020	-	2.0	2.0	2.0
Net immigration per year				
2001	7 955	-	-	-
2002	17 174 <sup>2</sup>	16 000	18 000	19 000
2003	-	9 000	15 000	20 000
2004-2100	-	6 000	13 000	20 000

1 For further information about assumptions and definitions, see Brunborg and Texmon (2002) or Statistics Norway (2002b).

2 The observations for 2002 became available after the projections had been made.

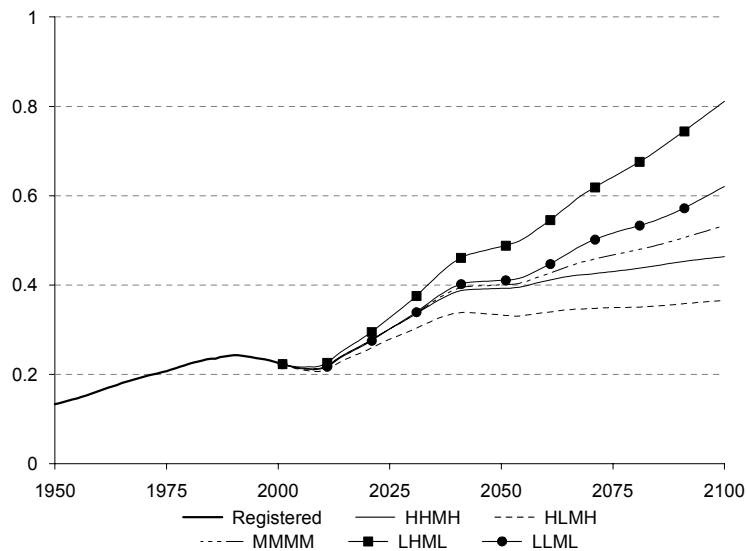
Source: Brunborg and Texmon (2003).

**Figure 15 Proportion of the population 67 years and older, 1950-2100**



Source: Brunborg and Texmon (2003).

**Figure 16 Old-age dependency ratio, 1950-2100. Population 67+ divided by population 20-66**

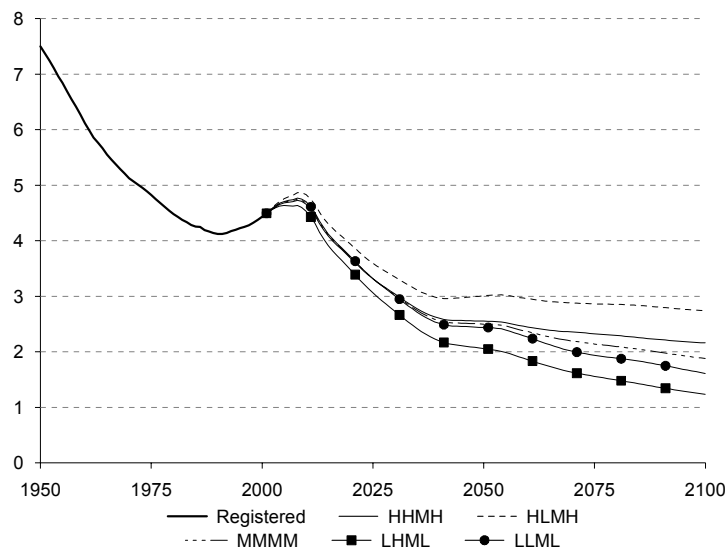


Source: Brunborg and Texmon (2003).



The trends are the same if we look at another measure of ageing, the so-called support ratio for elderly, which has a simple interpretation: The number of people of working age for each elderly person, or the number of people available to take care of each elderly - if we disregard all other tasks in society. This ratio declined from 7.5 persons in 1950 to 4.1 in 1990 and has later increased due to the small cohorts born in the 1930s, see Figure 17. The support ratio is expected to reach a maximum of about 4.7 in 2008 and then start declining again. In 2050, the range will be 2.1-3.0 and in 2100 only 1.2-2.7. Thus, in 2100, there may be only slightly more than one person of working age for each elderly person. This is a very dramatic scenario, given that old people are very labour intensive in terms of care and health needs.

**Figure 17 Support ratio for elderly. Population 20-66 divided by population 67+**



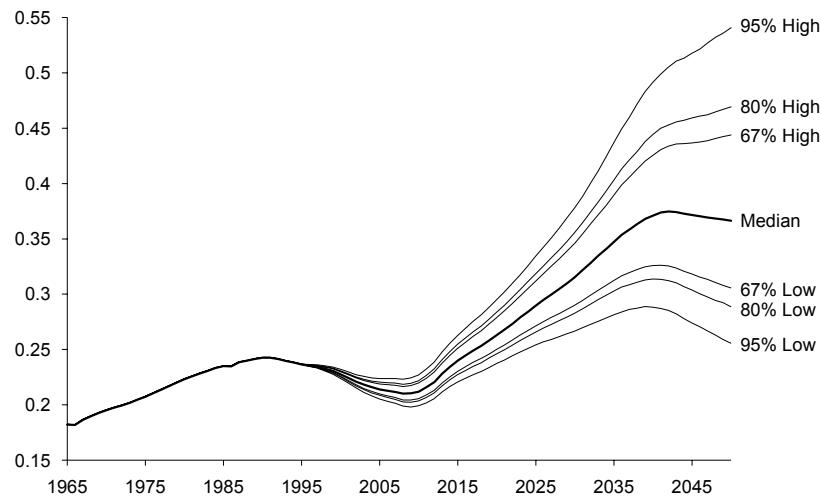
Source: Brunborg and Texmon (2003).

If we include young people and calculate the total support ratio, the picture becomes even more dramatic, with a ratio as low as 0.9-1.1 in 2100. Again, a natural question to ask is whether or not there will be enough people of working age to take care of the needs of both young and old people with regard to care, education, health services, etc.

The conclusion from these projections is that there is no doubt about it that the number and proportion of elderly people will be much higher than it is today, although there is uncertainty about the exact numbers.

Another approach to the uncertainty of ageing is stochastic projections, where Nico Keilman (2001, 2003) is a pioneer. He has quantified the expected uncertainty, by estimating probability distributions and confidence intervals for the future population. Figure 18 shows confidence intervals for the old-age dependency ratio, based on the 1999-2050 projections. The intervals are very wide, but all of them show a strong increase. The 67 per cent confidence interval is 0.26-0.54, which is somewhat larger than the interval shown in Figure 14, 0.33-0.41. However, the stochastic projections are also based on certain subjective modelling assumptions, implying that the estimates of the confidence intervals are not absolute. Moreover, Keilman's results are based on the 1999 and not the 2002 projections. Nevertheless, we can conclude that the uncertainty seems to be at least as large as what we have shown in Figures 15-17.

**Figure 18 Forecast intervals for the old-age dependency ratio. Population 67+ divided by population 20-66**



Source: Keilman (2003).

## Possible Solutions to the Ageing Problem and Conclusion

We have seen that the Nordic countries can expect a strong ageing of their populations and that this will have serious consequences for the pension system expenditure. Is there any way out of this? The options are, at least in principle, the following<sup>6</sup>:

### *1. Increase Fertility*

This is a tempting solution, since it is the fertility decline that is the primary cause of the population ageing. There are several problems with attempts to stimulate the fertility, however:

- It is difficult to design and implement pro-natalist policies. Although the so-called family-friendly policies of the Nordic countries have probably contributed to a higher fertility level than in most other parts of Europe, these policies have not managed to raise the fertility above the reproduction level.
- The resources required to raise the fertility level significantly are not known. They may be formidable.
- Norway and the other Nordic countries can expect a strong ageing of the population, almost regardless of the future fertility level. The ageing will occur even if the TFR increases significantly above the reproduction level, as in alternative H in the projections for Norway, to 2.2 children per woman in 2050 and 2.5 in 2100.

### *2. Reduce Efforts to Increase Life Expectancy*

This does not, of course, appear to be a realistic option, for ethical and political reasons. The fact is, however, that many political and other decisions are made that affect the mortality directly and indirectly, especially when resources are allocated. Medical technology is becoming more and more advanced and costly and the politicians may decide (as they have already done in several cases) that some treatments are too expensive to be made available for everybody. Thus, there are many decisions and actions that affect the life expectancy and in that way also the ageing of the population.

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<sup>6</sup> This list of options has been inspired by Østby (2002).

### *3. Increase Immigration*

We have shown above that immigration may slow down the ageing process, but not by very much. If the current level of immigration into Norway continues, the proportion of the population of 67 years and older in 2050 will be 22.4 per cent (medium series, MMMM), which is 2.2 percentage points lower than if there would be no migration from 2002 onwards (MMM0), see Figure 15. Thus, this level of immigration does not mean very much to the ageing of the population. The United Nations (2001) has shown that the level of immigration necessary to stabilize the age ratio of the population is unrealistically high, such as 15 times the current immigration for the EU.

### *4. Increase the Age of Retirement*

The actual age of retirement in Norway is very low, only 59 years if early retirement and disability pensions are included, whereas the formal pension age is between 67 and 70 years. Increasing the age of retirement may seem a viable option, but the political pressures against it are high. Sweden has introduced rules and incentives that make it more economically rewarding to work longer. A political problem is, however, that those who need to retire early because of hard work are often those who will suffer most economically for doing so.

### *5. Increase Labour Force Participation*

The labour force participation is low for several groups, and measures could be introduced to increase it, especially for women, immigrants and disabled people. In Norway, the rapid growth of disability pensions is also a heavy burden on the total pension expenditure. In many cases, people "choose" to become disabled and receive a disability pension as a way to retire early. There is a need for more flexible work and pension arrangements.

### *6. Increase Taxes*

This is very unpopular, of course, but may become necessary, although high taxes have many undesirable effects on productivity, the black market economy, etc.

### *7. Reduce Expenditure on the Elderly*

The major expenses for the elderly are pensions, health services and old-age care. Reducing the expenditure on any of these would also be a very unpopular measure but may become necessary. Reducing expected benefits is very hard. In Norway, for example, the trade unions are protecting the rights that they feel that their members have earned. A growing proportion of old voters may make this politically difficult.

### *8. Increase Productivity*

This is a general economic policy goal but not easy to achieve above a certain level, in Norway 2.0-2.5 per cent per year, which implies a doubling of the income per capita in about 30 years. It should be possible to spend a large share of this on the elderly population, since nobody may be worse off than before. However, people do not seem to be satisfied with keeping their absolute income level - they want to keep their relative position as well. If the Government is keeping all or most of the productivity gains, taxes will be increasing and the populace will start complaining. Emphasis on high productivity may also have negative side effects, such as increasing sick leave from work.

### *9. Change the Pension System*

This has already been done in Sweden. The Norwegian Pension Commission is publishing its recommendations in late 2003. Its proposals will probably include a change to a more fund-based system, introduction of a more flexible retirement age and incentives to work longer. Privatisation of pensions is also mentioned as a possibility, but this cannot solve the fundamental fact that the working population has to care for the non-working population.

## **Overall Conclusion**

None of the policies suggested above can solve the ageing problems alone. In particular, there is no realistic demographic solution alone. The overall conclusion is that we should try to do something about all of these options, while carefully weighing the costs, benefits, and realism, of each measure against the others.

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# Scenarios for the long-term financial sustainability of the Finnish social protection system

## 1. Introduction

The changing age structure of the population, the globalized economy and technological advances are causing fundamental changes in the operating environment of social protection. These developments challenge the validity and adequacy of existing social protection systems. In order to guarantee the financial sustainability in the long run, social protection and its financial base must be adapted to changing circumstances.

In 2000, the Ministry of Social Affairs and Health appointed a committee to evaluate the development of social protection expenditure in Finland in the long term. Another aim was to study whether the present social security system and its financing will be sustainable in the long run or whether they should be altered. The Committee's report was published in April 2002.<sup>7</sup>

This paper presents calculations drawn up during the course of work of the Committee. Firstly, we summarise challenges arising for social protection over the next few decades. In chapter 3, we study a baseline scenario of social protection expenditure until 2050, and chapter 4 provides sensitivity analyses examining the effects of certain individual factors on the calcula-

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<sup>7</sup> Report by the SOMERA Committee, Ministry of Social Affairs and Health (2002a). In addition, an extensive background report was prepared including a more detailed discussion of alternatives and calculations relating to the development of social protection expenditure and financing (Ministry of Social Affairs and Health 2002b).

tions. The parameters discussed relate to demographics, economic development, social welfare policy, and social welfare and health care.

Our estimations show that it is possible, also in future, to secure an adequate standard of comprehensive social protection. Three factors emerge from the calculations as keys to the financial sustainability of the public sector: employment, trends in people's health and functional capacity, and efficient production of public services.

## 2. Challenges for social protection and its financing

### *Internationalization*

Changes in the economic and political operating environment influence social protection in many ways. The globalization of the world economy and rapid technological change have made it more and more difficult to predict economic development. The operating environment has become more complex and the significance of national borders has diminished. The European Union, with a pressure of common guidelines, taxation and financing systems, is bringing the social protection systems of the different Member States closer together.

Increasingly, policy decisions need to take into account not only the national level, but also international factors and the actions of competitors. The tax rates and tax rate changes of competing countries must more than hitherto be taken into consideration. A toughening international competitive climate carries a growing risk of detrimental tax competition among different countries. Tax competition undermines the capacity to finance social insurance and welfare services.

Technological advances favour highly educated workers. Because of the manual-labour-saving technological change, the employment development in high-technology, high-skill and high-wage industries is relatively good whereas the number of low-productivity, low-paid jobs has diminished. This skill-biased structural change on the labour market may result in increased imbalances between labour demand and supply.

Internationalization and the ICT revolution are both an opportunity and a threat to the welfare society. Successful exploitation of these new factors can boost productivity and accelerate growth, which may, in turn, improve opportunities for raising real income and improving welfare in general. On the other



hand, there is concern over increased social inequalities if major changes in the operating environment should cause income differences to grow and exclude the weaker workforce from the labour market altogether. In an increasingly globalized world, the need for social protection and safety nets is highlighted.

In a situation of escalating global competition we need a welfare society which is both dynamic, effective and provides incentives. The economy must be able to respond with greater sensitivity than hitherto to structural changes and temporary disruptions in the international operating environment. In order to attain this sensitivity to change, the welfare society and the financing of social protection will also have to be reformed to become more adaptable and sustainable.

### *Ageing society*

At the national level, the main structural factors of change in Finnish society are the changing demographic structure and employment trends. The ageing of the population will increase public spending and undermine the growth potential of the economy as a whole.

The proportion of old-age pensioners will grow rapidly after 2010 as the baby-boom generation born in 1945-1955 will reach retirement age. By 2030, one in four Finns will be over 65. The growth in earnings-related pension costs will accelerate with the growth in the number of people on retirement pensions, and also because 40 years have passed since the entry into force of the pension legislation for employees, and consequently an increasing number of people will be able to attain the 60 per cent pension level based on a full working life.

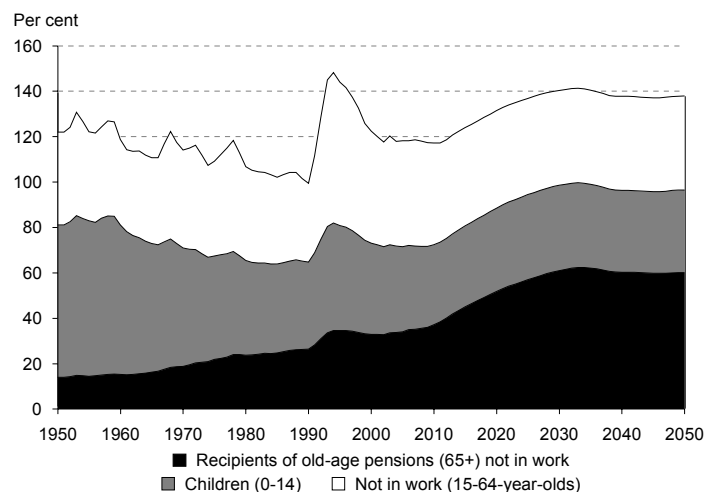
Furthermore, the demand for social welfare and health care services will grow as clients become wealthier, expectations for standards rise, individual needs grow more pronounced and more people live alone than in the past. Service needs will also increase because the number of old people will grow and people live longer. It is already known that the need for care and different types of services increases with age. In the final analysis, the growth of service needs will depend on whether longer life will ultimately allow people to live healthily for longer, or whether it will entail illness and dependency. Old people today are noticeably healthier and fitter than the previous generations. Improvements in health and functional capacity should hopefully postpone the need for care and services in older age groups. Finally, the trends in service needs will be further influenced by factors such as morbidity, mental health trends and abuse of drugs and alcohol, which are very difficult to predict.

New technologies will make it possible to organize and produce social welfare and health care services more efficiently. From the point of view of service expenditure, new technology could have two different effects. On the one hand, a technology-based treatment might be more expensive, but on the other hand, the productivity of services might improve. Taking advantage of developed technology may also help elderly people stay healthy, but on the other hand it might lead to longer periods of medical care for the elderly, as effective treatments become available for more medical conditions.<sup>8</sup>

The most important challenge for the financing of social protection over the next few decades will be how to slow down the worsening of the economic dependency ratio. The economic dependency ratio describes the number of people outside of working life in proportion to those in work. The higher the ratio, the higher the pressure on public finances.

As Figure 1 shows, falling employment and the high unemployment rate undermined the economic dependency ratio in Finland during the economic recession in the early 1990s. The situation has improved in recent years, but it will take a turn for the worse again in about 2010, after which it will remain at a higher level permanently.

**Figure 1** The economic dependency ratio 1950–2001 and a projection to 2050, per cent of those in work<sup>1</sup>



<sup>1</sup> Not in work (15–64-year-olds) include primarily students and people in training, parents taking care of their children, people on early retirement pension as well as unemployed, sick and disabled people.

<sup>8</sup> Cf. Jacobzone et al. (2000) and Jacobzone and Oxley (2001).

The development of the economic dependency ratio depends on many factors. Firstly, it is affected by the population age structure. Population ageing in Finland will occur sooner and more rapidly than in most other OECD countries. Moreover, life expectancy has risen fast in Finland. It is likely that the average life span will continue to lengthen and more and more people will reach the age of 80 or 90 years during this century.

The low birth rate cannot compensate for the ageing of the population. Finland's fertility rate is still quite high compared with many European countries; in 2000 it was 1.73, whereas the EU average was 1.53. There is a risk, however, that Finland's fertility rate will fall closer to the EU average.

Due to these demographic changes, the new workforce entering the labour market will already be smaller in number than that leaving the labour market within the next few years. The fall in labour supply will jeopardize economic growth and tax base, while increased numbers of pensioners will raise pension expenditures.

If the change in the population age structure were primarily due only to the ageing of the baby-boom generation, the rising economic dependency ratio would be only a temporary problem and would pass by 2050, by which time most of the baby-boom generation will have died. However, as the population age structure is also changing due to a low birth rate and longer life expectancy, it does, in fact, present a permanent challenge for the financing of social protection.

Secondly, the economic dependency ratio will continue to be undermined by a low employment rate, high unemployment and a high prevalence of early retirement. Paradoxically, the effective retirement age has been declining although life expectancy has been increasing. The employment rate among over-55s in Finland is relatively low in international comparison. Early retirement magnifies the unfavourable impact of demographic change in further reducing the number of people in work. Working career has also contracted from the other end, as people enter working life later than ever.

One of the key challenges is high-level unemployment, the bulk of which is structural in nature. The problem of structural unemployment is largely due to a fundamental imbalance between labour supply and demand, with simultaneous labour shortages and unemployment. Therefore, the unemployment problem will not automatically solve itself even if the labour supply diminishes. Quite the reverse: dealing with unemployment and labour mismatch problems when the age structure of the population is even less favourable than it is at present will be even more of a challenge.

The financing of social protection is above all based on a high employment rate. Along with population ageing, high unemployment and a low average retirement age put the financing of social protection to a hard test. As the working-age population contracts, existing resources must be better exploited.

### 3. The development of social protection expenditure until 2050: the baseline scenario

In the present and following chapter we will present simulation results of the long-term development of social protection expenditure in Finland. The calculations have been carried out with a model on social protection expenditure developed at the Ministry of Social Affairs and Health. This model is a partial model comprising the population and social protection projections. The data set of the model consists of social insurance as well as social welfare and health services.

The changes in public sector behaviour that changing circumstances will entail are extremely difficult to estimate. Merely estimating overall population trends decades ahead includes many uncertainty factors, not to mention other changes in the operating environment. Therefore, the estimations of the development of social expenditure until 2050 reported here cannot be regarded as forecasts. They are rather projections which describe the relative importance of different factors in the long run.

The baseline scenario for trends in social protection expenditure is based on the legislation currently in force. The main background assumptions are as follows:

#### *Demographic assumptions*

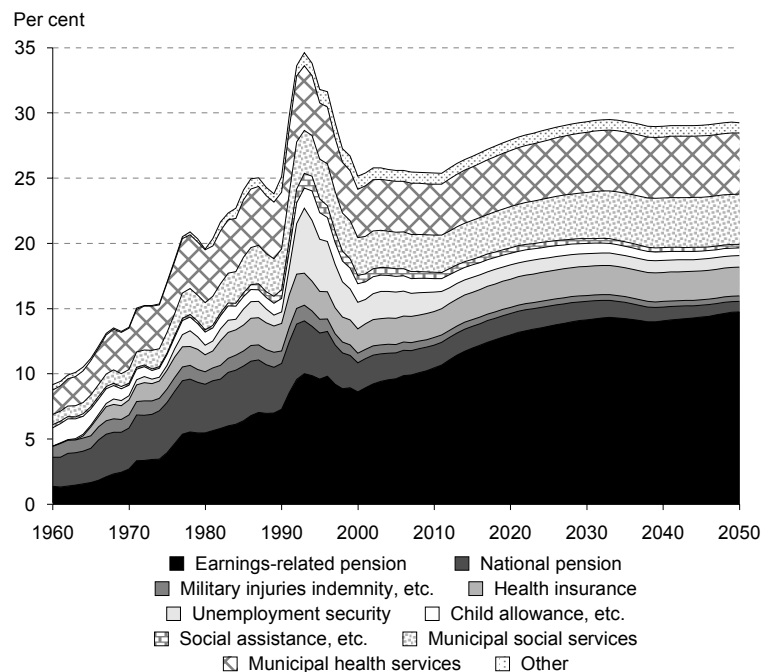
- The birth rate will remain at the average level for single-year cohorts of mothers in 1997-2000.
- Mortality will continue to fall, but at a slower rate. Mortality development will match the EU prognosis. Life expectancy will increase from 73 to 80 years for men, and from 81 to 85 years for women by 2050 (cross-section technique).
- Net immigration will be 5,000 people per year.

### *Economic assumptions*

- Unemployment will decrease from slightly above 9% to 6% by the beginning of the next decade.
- The employment rate of the working-age population (15-64 years) will increase gradually from about 68% to 71%. This will be influenced by increased uptake of part-time pension and a reduction in unemployment.
- Annual inflation will be 2%.
- Productivity will increase in real terms by 1.75% a year.
- Changes in real labour costs will follow the changes in productivity.
- The yield in real terms of fund investments in the earnings-related pension scheme will average 3.5%.

Trends in Finland's social protection expenditure in 1960-2000 and a projection to 2050 relative to the GDP is demonstrated in Figure 2. In the early 1990s, the economic recession resulted in a substantial increase in the social expenditure as a percentage of the GDP. From 1994, onwards-economic trends developed favourably in many ways and the social protection expenditure fell to about 25% of the GDP, which is below the EU average.

**Figure 2 Trends in the social protection expenditure 1960 - 2000 and a projection to 2050, per cent of the GDP**



In the long run, social expenditure will go up due to the deteriorating economic dependency ratio. According to the baseline scenario, the proportion of the social protection expenditure to the GDP will rise gradually to about 30% by 2030 and will then stabilise at this fairly high level.

First, in the decade following 2010, the growth in earnings-related pension costs will accelerate with the growth in the number of people on retirement pensions. Earnings-related pension expenditure as a percentage of the GDP will grow by about six percentage points, but the fall in national pension expenditure will mean that the total pension expenditure will only increase by about five percentage points.

Later, in the 2020s and 2030s, the social welfare and health care expenditure will start to grow with the rise in the number of very old people and their demand for services. The GDP ratio of municipal social welfare and health care services is predicted to rise by about two percentage points in 2000-2030.

The Finnish social protection is financed, with few exceptions, through taxes or through social insurance contributions. According to the baseline scenario, private-sector social security contributions will go up by about seven percentage points, reaching 36% of wages by 2030. The funding of the earnings-related pension scheme will help reduce the pressure for raising pension contributions. The expenditure on social welfare and health care services will also grow, but the baseline scenario does not predict much of an increase in the gross tax rate if the percentage of other public expenditure, such as childcare and education costs, falls as the population ages.

These calculations show that the deteriorating economic dependency ratio and growing social protection expenditure will burden the economy for decades. A positive course of economic development is essential for a solid and sustainable financial base for social protection. If the average economic growth and the employment trends are poor, the financing of social protection will encounter more extensive problems.

## 4. Alternative calculations

The baseline scenario is admittedly sensitive to divergences from the economic, employment and population structure assumptions used here. Some of the assumptions are also open to the criticism of excessive optimism. It is certainly possible that the social protection expenditure will rise faster in the future than anticipated.

In this chapter, we present a selection of alternative calculations and examine the effects of individual factors on the baseline scenario. In particular, we discuss assumptions related to demographics, economic development and social welfare and health services.

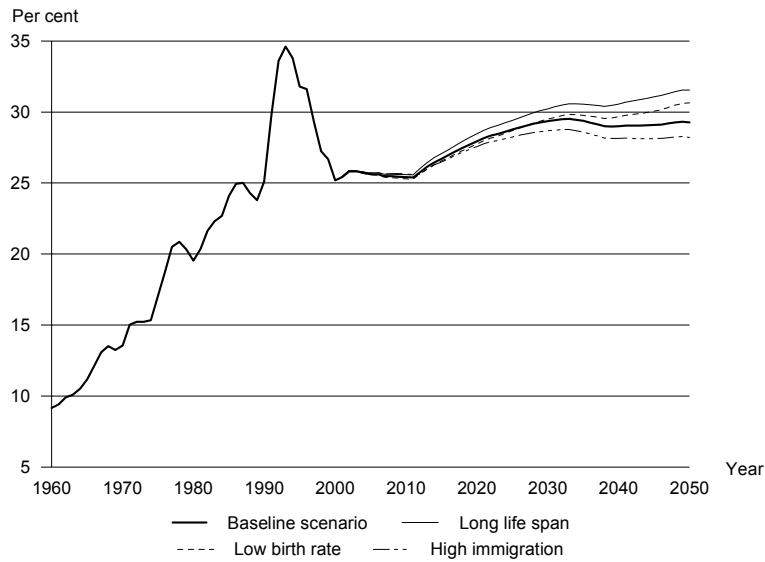
### *Demographic trends*

We start by examining changes in demographic trends. The baseline path is compared with three alternative scenarios:

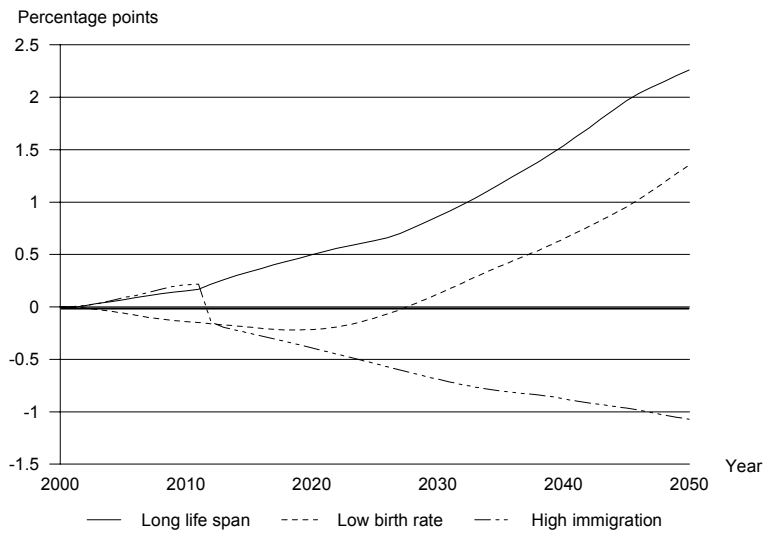
1. Birth rate is lower, averaging 1.5 children per woman instead of 1.7.
2. Mortality is lower and people live longer than assumed in the baseline scenario.
3. Net immigration is higher, amounting to 10,000 people per year instead of 5,000.

Figure 3 demonstrates the development of the social protection expenditure relative to the GDP for various demographic alternatives, and Figure 4 shows the deviation of these GDP ratios from the baseline scenario. The curves show that longer life expectancy has a notable effect on the GDP ratio of social expenditure. In the baseline scenario we assumed that life expectancy will continue to increase over the next few decades, but at a slower rate. In fact, during the past four decades the average life expectancy in Finland has increased by one year per decade. If it continues to increase at this favourable rate and people live even longer, as assumed in the alternative scenario, the social protection expenditure relative to the GDP will rise by more than two percentage points by 2050.

**Figure 3 Social protection expenditure for various demographic alternatives 2001 -2050, per cent of the GDP**



**Figure 4 Deviation of the GDP ratio of the social protection expenditure from the baseline scenario for various demographic alternatives 2001 - 2050, percentage points**





If the birth rate falls, the welfare expenditure will decline at the initial stage as the expenditure related to child-care and education decreases. After two decades, the decline in the birth rate starts to slow the growth of output. As the result of a decline in the birth rate from 1.7 to 1.5 children per woman, the GDP ratio of the social protection expenditure reaches a level nearly 1.5 percentage points higher than in the baseline.

The changing age structure and the contraction of the working-age population may cause labour supply shortages in many occupations and sectors. This labour shortage can be partly alleviated by recruiting workforces from abroad. Thus far, the number of immigrants in Finland is low compared with other European countries. Nevertheless, immigration cannot entirely solve the problem of demographic structure, as very extensive immigration would be required in order to maintain the current economic dependency ratio.

The baseline scenario was compared with one in which net immigration is two times higher, equalling 10,000 people per year. In the higher-immigration alternative, the working-age population and the labour supply increase after a period of adaptation, which boosts the growth of the GDP. The consequence is that by 2050 the ratio of the social expenditure to the GDP will be one percentage point lower than in the baseline.

### *Economic trends*

As to the assumptions related to economic development we study two alternatives:

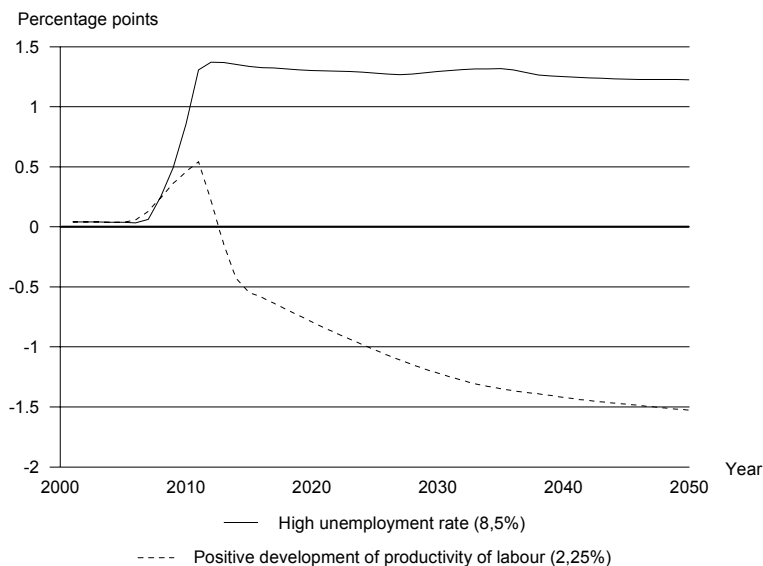
1. Unemployment rate remains high, 8.5% instead of 6%.
2. Productivity increases 2.25% per year instead of 1.75%.

Unemployment deteriorates the ratio of the social protection expenditure to the GDP in two ways, i.e. by increasing the unemployment expenditure and by decreasing the growth of output. The average unemployment rate in Finland in 2002 was slightly above 9 per cent, a large part of which, according to estimates, is of a structural nature. If unemployment is lodged at 8.5% of the labour force in the long run, the GDP will drop by about 4 per cent and the GDP ratio of social protection expenditure will go up by nearly 1.5 percentage points in the long run, compared to the baseline (see Figure 5).

In the baseline scenario, the great uncertainty connected with the estimations of the social protection expenditure many decades ahead was taken into account by assuming that the productivity increases moderately, in real terms by 1.75% a year. In the higher-productivity alternative, the difference of 0.5 per-

centage points in the labour productivity accumulates over the long run leading to an output, which is 25% higher than in the baseline scenario by 2050. As a result, the social protection expenditure in relation to the GDP falls by 1.5 percentage points in the long run. This calculation underlines the significance of productivity for economic growth and long-term prospects of public finances.

**Figure 5 Deviation of the GDP ratio of the social protection expenditure from the baseline scenario for various economic alternatives in 2001 - 2050, percentage points**



### *Social policy parameters*

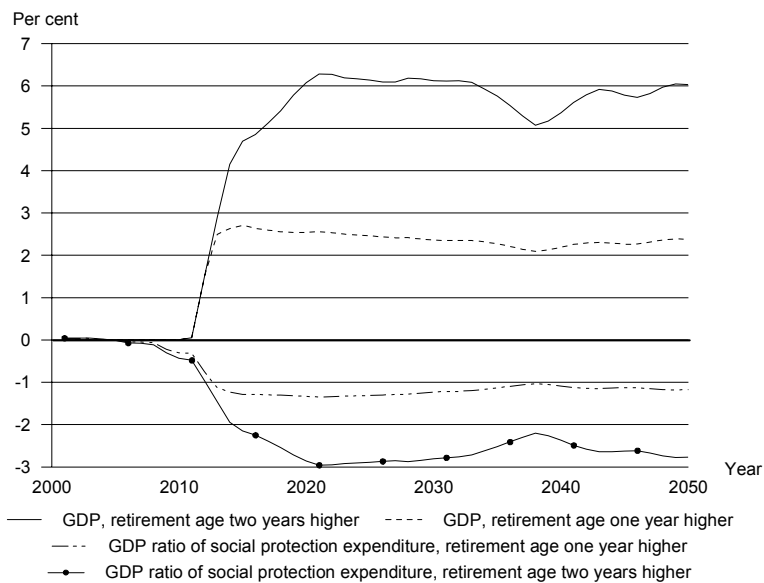
As the number of working-age people falls, not only the productivity but also the number of years in working life will become crucial to a favourable economic development. On average, people leave working life in Finland before the age of 60 although the statutory retirement age is 65. As the work ability and functional capacity of the population improve and people live longer, it is essential to extend people's working careers in order to reduce the fiscal impact of the demographic change.

Progress has already been made to help people stay on longer at work. Agreement has been reached on an extensive pension reform concerning the private sector, the aim of which is to raise the effective retirement age in the long run by 2-3 years. One key element of this reform is to make the general

retirement age flexible, allowing a person to retire on an old-age pension between the ages of 62 and 68, while the present early-retirement pensions will gradually be abolished. In order to increase the number of active years of work as well as the skills and productivity of the ageing workforce, training, maintenance of work ability and rehabilitation are of primary importance.<sup>9</sup>

To examine the effect of the postponement of old-age retirement on social expenditure we calculated alternative scenarios where people retire later than at present. Figure 6 shows the deviations of the GDP and the GDP ratio of the social protection expenditure from the baseline for alternative scenarios.

**Figure 6** Deviation of the GDP (per cent) and the GDP ratio of the social protection expenditure (percentage points) from the baseline scenario in alternatives where the retirement age is one or two years later than at present



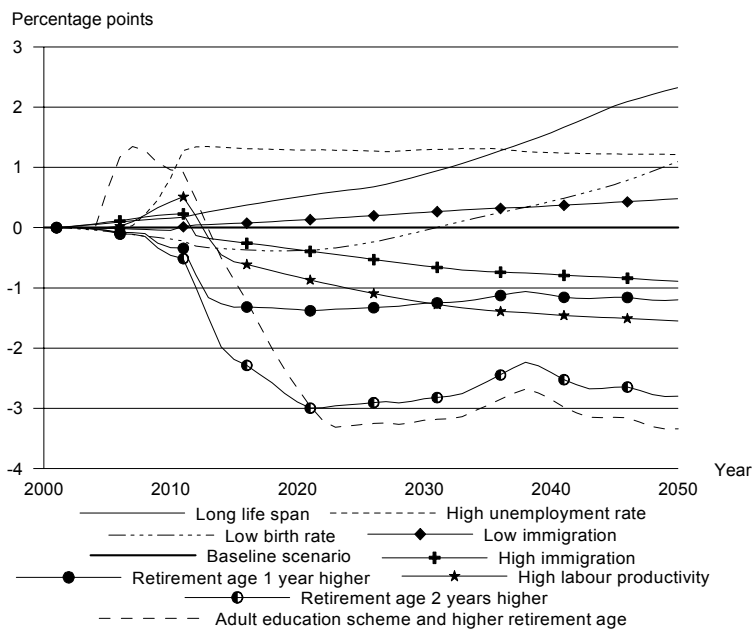
If people continued in working life two years longer on average, it would boost a growth of the GDP that would in the long run reach a level 6 per cent higher than the baseline. This would strengthen the financial base of social protection. Furthermore, as pension expenditure would also decline, the GDP ratio of social expenditure would be nearly three percentage points lower than in the baseline.

<sup>9</sup> On the pension reform see OECD (2003), Ch. II.

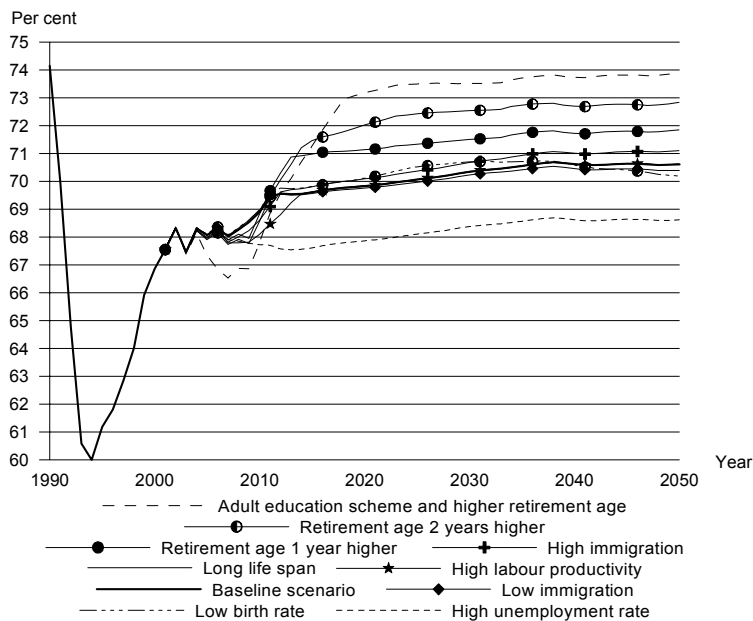
If the postponement of old-age retirement is promoted by training and educating the ageing workforce, the effect will be even more significant. The summary figure 7 brings together various scenarios examined in this paper and demonstrates the deviation of the GDP ratio of the social protection expenditure from the baseline scenario. It shows that raising the effective retirement age and adult education are the key factors in controlling the growth of the social protection expenditure.

This outcome is further supported by the calculations concerning the development of the employment rate. Figure 8 suggests that a two-year postponement in the retirement age supported by adult education would increase the employment rate to 74% in the long run. These calculations indicate that the increasing GDP ratio of the social expenditure due to longer life expectancy can be stabilized by extending working careers in the decades ahead.

**Figure 7 Deviation of the GDP ratio of the social protection expenditure from the baseline for various scenarios in 2001 - 2050, percentage points**



**Figure 8** Development of the employment rate of the working-age population (15-64) for various scenarios in 2001-2050, per cent



### *Social welfare and health care expenditure*

We will now turn to alternative calculations concerning the long-term development of social and health care services and expenditure. The starting point is the baseline calculation in which long-term care during the last years of life and other social and health care services are treated as separate items. The baseline scenario is based on an assumption that the functional capacity of the elderly will improve slightly and that the service structure will shift more towards non-institutional care as a result of reforms made during the past decade.

The alternatives examined are as follows:

1. Demand for services increases as public expectations and wealth increase.
2. Sector-specific use of social welfare and health care services is standardized by gender and age cohort at the 2000 level. That is, the demand for services is affected only by demographics.

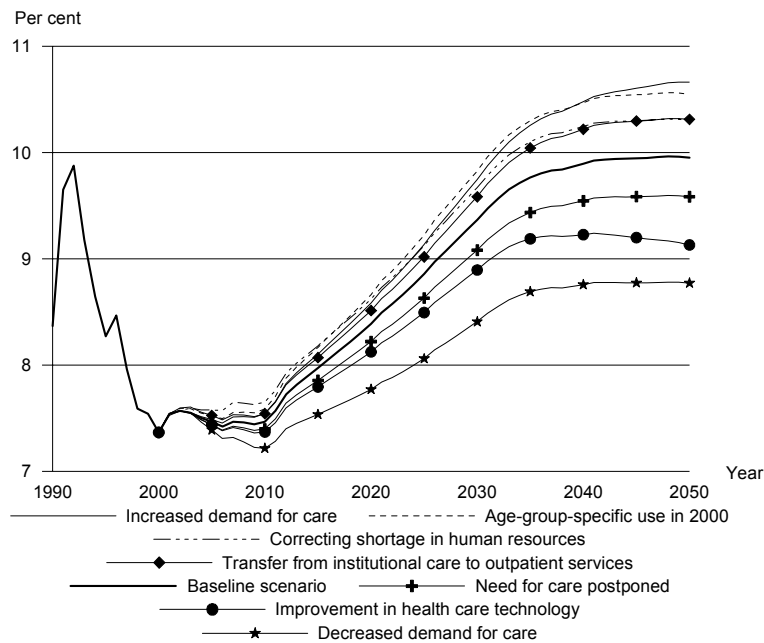
3. The shortage in human resources caused by the recession in the 1990s is corrected by increasing the number of employees in the social welfare and health care sectors beginning in 2003.
4. The transfer from institutional care to outpatient services will continue, albeit at a slower rate.
5. Baseline scenario.
6. The need for social welfare and health care services will be postponed in age groups over 50.
7. Health care technology will improve, and productivity in service production will increase.
8. The health of the whole population will improve, and the demand for services will decrease in all age groups.

The development of the GDP ratio of public sector social welfare and health care services is demonstrated in Figure 9 for various scenarios. Depending on the scenario, the social and health care expenditure will increase from the present level by 1.5 – 3.5 percentage points relative to the GDP in the long run. Accordingly, our calculations do not indicate that the development of the social and health care expenditure would be uncontrollable, contrary to what is sometimes argued.

The first scenario in which the demand for services increases throughout the population due to public expectations and wealth increase gives the highest value of the GDP ratio of the service expenditure. The social welfare and health care expenditure will also grow faster than in the baseline if the demand for services is affected only by the age structure of the population and the service consumption remains constant according to the age cohort.

Nevertheless, improved functional capacity is the crucial factor in controlling the decrease in the proportion of people in permanent care. Developments in elderly people's functional capacity prove that the need for care and services may indeed be put off until later in life. Therefore, it is probable that the age structure of the population is not directly reflected in the service need and service provision. If the need for care and services in the age groups over 50 is postponed, the proportion of the social and health care expenditure to the GDP will increase slower than in the baseline, as appears from Figure 9. An improvement in health in all age groups and a consequent decrease in the demand for services would curb public expenses even more, by above 1 percentage point compared to the baseline.

**Figure 9 The GDP ratio of the local authority social welfare and health care services 1990 - 2000 and projection to 2050, per cent**



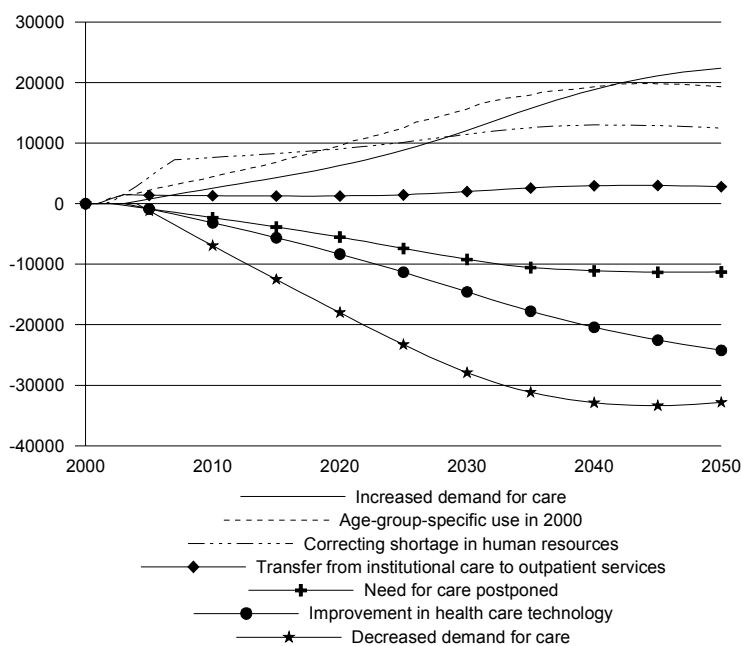
This result is in accordance with a comparison among OECD countries, which shows that there is no statistically significant correlation between the development of the health care expenditure and the growth of the proportion of elderly people in the population; the relation is more complex (OECD 1995). Lagergren and Batljan (2000) have also obtained similar results. They found out that particularly a prognosis for the future costs of elderly care is sensitive to different assumptions relating to service consumption by age cohort and to the average cost per capita in each group. According to their results, the expenditure on social welfare services will be 2-3 times higher in a mechanical extrapolation as compared to a scenario, which takes improvement in health trends for the elderly into account.

It further appears from Figure 9 that the growth of the expenditure on health care and social welfare will be substantially restrained if developments in medicine and treatment technology can be exploited in order to increase the productivity in service production. Trends in the social protection expenditure are significantly influenced by the service structure and how operations are organized and produced. In order to curb expenditure growth, measures

can be taken to improve the efficiency of both the service structure and service production. Above all, it is critical to focus on regional cooperation across municipal boundaries, on eliminating overlap both in operations and investments, and on alternative models for producing and financing services.

Efficient production of social and health care services would considerably reduce the pressure for public finances. This concerns particularly the professional staff in public services since the care sector will inevitably remain a labour-intensive field. Our calculations show that a successful exploitation of health care technology could reduce the amount of personnel in public social welfare and health care services by about 25,000 persons, which corresponds to more than 10% of the present staff in Finland (Figure 10).

**Figure 10 Deviation of the number of personnel in local authority social welfare and health care services from the baseline scenario in 2001–2050**



Future expenditure trends will also be affected by the development of public sector wages. As service needs grow, the need for professional staff in the social welfare and health care sector will also grow. How to secure the availability of skilled and motivated staff for the sector is a key issue. The baseline scenario does not allow for potential pressure for wages in the case of a



shortage of trained staff. At present, labour costs correspond to more than 50% of the total expenditure in the health sector. If the shrinking supply of labour over the next few decades results in rising labour costs in the social welfare and health care sector, the social protection expenditure will increase substantially more than anticipated.

## 5. Conclusions

The changes in the operating environment provide challenges for social protection and its financing. Among these challenges, the change in population structure is indisputably imminent in the sense that the baby-boom generation in Finland will retire during the next fifteen years and life expectancy will continue to rise. This will raise the pension expenditure and, somewhat later, the expenditure on medical care and services. At the same time, workforce numbers will decrease. The deteriorating economic dependency ratio and the growing social protection expenditure will present a permanent challenge for the economy.

In this paper, we have presented estimations of the long-term development of the social expenditure and its financial base in Finland. The calculations show that in the future it will also be possible to secure an adequate standard of comprehensive social protection. Favourable economic trends are a necessary but not sufficient condition for financial sustainability. Extensive measures are also needed in order to strengthen the long-term prospects of public finances. Three factors come out of the calculations as keys to the financial sustainability of the public sector: employment, trends in people's health and functional capacity, and efficient production of public services.

The employment trends and the development of productivity are crucial issues for the public economy. As the working-age population declines, a substantial increase in the employment rate is necessary, which calls for encouraging people to enter the labour market earlier and stay on longer, as well as reducing structural unemployment. The calculations presented in this paper show that an average increase in the working career substantially boosts the growth of the GDP, thus improving the financial sustainability of social protection. Furthermore, if people retire later, pension costs will fall. Consequently, raising the number of active years of work, supported by the systematic promotion of health, work ability and productivity of the ageing workforce will significantly restrain the increase in the social protection expenditure relative to the GDP.

The estimations concerning the social welfare and health care expenditure presented in this paper also suggest that the primary issue is not the rising number of old people. Trends in elderly people's health and functional capacity, on the one hand, and the efficiency of public services production on the other, affect future care costs more and are more important from the macroeconomic point of view. Firstly, if people's health, well being at work and functional capacity can be improved, elderly peoples' need for care and services can be postponed until later in life. Secondly, the trends in the social welfare and health care expenditure are significantly influenced by the service structure and service production. Our findings give support to the conclusion that the growth in social welfare and health care expenditure will be substantially restrained if developments in medicine and treatment technology can be exploited in order to improve the efficiency and cost-effectiveness of the public services production.

Measures aimed to improve the health care technology and the health and functional capacity of the population would initially involve increased social protection expenditure, but in the long run they would help reduce expenditure and contribute to better management of the public finances.

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*Ilija Batljan*

# Macroeconomic Scenarios of Future Needs and Costs of Health and Social Care for the Elderly in Sweden, 2000–2030<sup>10</sup>

The world is ageing. Decreasing mortality rates combined with relatively low fertility rates are causing rapid population ageing in developed countries. Nordic countries are not an exception. In fact, by the year 2000 Sweden was the country with the highest proportion of people 65 years and older in the world (Kinsella and Velkoff, 2001). Around 17 per cent of the Swedish population is 65 years or older and 5 per cent are 80 years or older. At the moment, there is no other country in the world with such a high proportion of people 80 years or older. Sweden is also a country with universal and extensive services for the care for the elderly. The cost of publicly financed care for the elderly was estimated to be 2.6 per cent of the GDP by the year 2000 in Sweden. Denmark (costs of care for the elderly = 3,0 per cent of the GDP) and Sweden are the European countries with the highest expenditure for long-term care for the elderly (Economic Policy Committee, 2001). An increasing number of elderly is often assumed to result in a huge increase in the consumption of health care and long-term care for the elderly services, and because of that there is a wide debate as to whether or not the Swedish health care and social care for the elderly are sustainable.

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<sup>10</sup> The presentation is based on the report “Will There Be a Helping Hand? - Macroeconomic scenarios of future needs and costs of health and social care for the elderly in Sweden, 2000–30” written by Mårten Lagergren and Ilija Batljan and published as annex 8 to the Swedish Long-Term Survey 1999/2000.

## 1. Demographic Ageing

The number of elderly people in Sweden is set to rise very sharply in the decades ahead. As the generation born in the 1940s passes retirement age there will, initially, be a rapid increase in the number of ‘young old’ people (aged 65–79). A decade and a half later — in the 2020s — the large increase in the number of ‘old old’ (aged 80 and over) will ensue. Only then, since elderly people’s care needs are concentrated in the upper age range, may the great impact of the ageing population on needs and resource demands on health and social care be expected to make itself felt.

The primary reason why the changed age composition of the population will affect needs and demand for health and social care is, of course, uneven distribution of care needs. The average length of stay in hospital rises sharply with age, as do the proportions of home-help recipients and of residents in special housing for the elderly. This fact has been noted regularly in the various attempts made over the years to plan health and social care or to predict future care needs. An approach that has often been used to predict future care costs is the so-called simple demographic extrapolation of care costs based on the expected size trends of various age groups and the cost per capita in each group. The relevance of these projections can be questioned from many aspects. Regardless of the fact that it seems that this assumption often dominates the thinking on the sustainability of publicly financed health care and social care for the elderly, both among the general public, the politicians and persons, who should be better informed. As a result, exaggerated views of the enormous, coming burden of care are widely circulated without any form of critical comment. As a consequence, more and more people are made to believe that there will be no possibility of receiving the care you will need when you get old in the future. Projections presented in this paper can be seen as a small step towards exposing and dismantling this myth by using the factual results concerning mortality and health development to calculate future per-capita costs of health and long-term care.

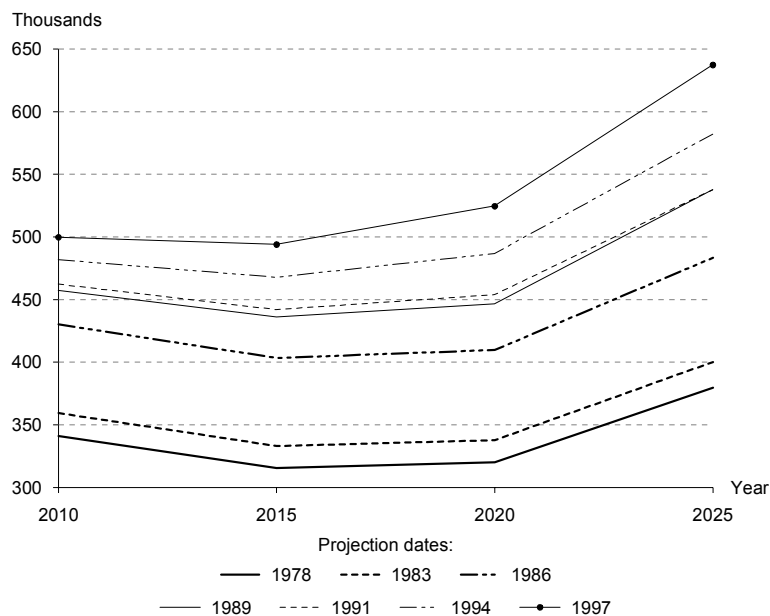
In this paper, the focus will be on the potential impact of the health and mortality development, which is entirely neglected when projections are made in the traditional way. In order to assess the potential impact of the health and mortality development on demand for care, two different methods are used. In the case of health care, the basic observation concerns the tendency of health care costs to accumulate in the final years of life (see below). Health care costs are not so much a function of the years a person has lived as the years he/she has left. Reductions in age-related mortality then have the effect to postpone the final years of life to a higher age. Taking this into account,

health care costs should decrease at a given age – not stay constant as in the simple projection. The analysis of future costs of long-term care is based upon another related observation, namely the growing evidence of substantial health gains among the elderly (see below). Using results from several different studies in Sweden, U.S.A. and other countries cost projections are made based upon the projected prevalence of severe disability.

## 2. Population Projections

However, when we are assessing sustainability of the health care and care for the elderly services the first assumption that needs to be discussed is population projections. It may seem simple to estimate the future number of elderly people, since nearly all of them are already living in Sweden today. Nonetheless, the past 20 years' forecasts of the elderly population have proved consistently incorrect — its size has been systematically underestimated (Figure 1).

**Figure 1 Impact of declining mortality. Changes in SCB's forecasts of the number of people aged 80 and over.**



Source: SCB and authors' own estimates.

This is because mortality among the elderly fell rapidly in the last few decades of the 20th century — especially for men and the ‘oldest old’ — in a manner that demographers had been unable, or had not ventured, to imagine.

In its population forecasts, Statistics Sweden (SCB) assumes that mortality among the elderly will continue to decline, for men and women alike, by 1–1.5 per cent a year over the next 30 years. According to the SCB’s forecast, the number of people aged 80 and over will be 750,000 in the year 2030, as against some 450,000 today — that is, a rise of around two-thirds. The downward trend of mortality in the past 25 years has, however, been even more pronounced than the SCB assumed. It is therefore not unlikely that the rise in the number of elderly people will be even larger than this. An alternative projection, based on the observed trend, indicates some 830,000 people aged 80 and over in 2030. A larger number of old people than present-day forecasts predict does not, however, necessarily mean many more in need of care, if the fall in mortality is connected with correspondingly better health and functional ability. That leads us to the next important assumption related to future demand for health care and social care for the elderly in Sweden.

### 3. Health and Functional Ability

As pointed out above, simple demographic extrapolation of the costs of health and social care does not take into account trends related to health and functional ability, and it means assuming that the average cost per capita, given age and gender, will be unchanged. This assumption is highly unrealistic in many respects. In fact, future average costs will be determined by a variety of factors, including the following:

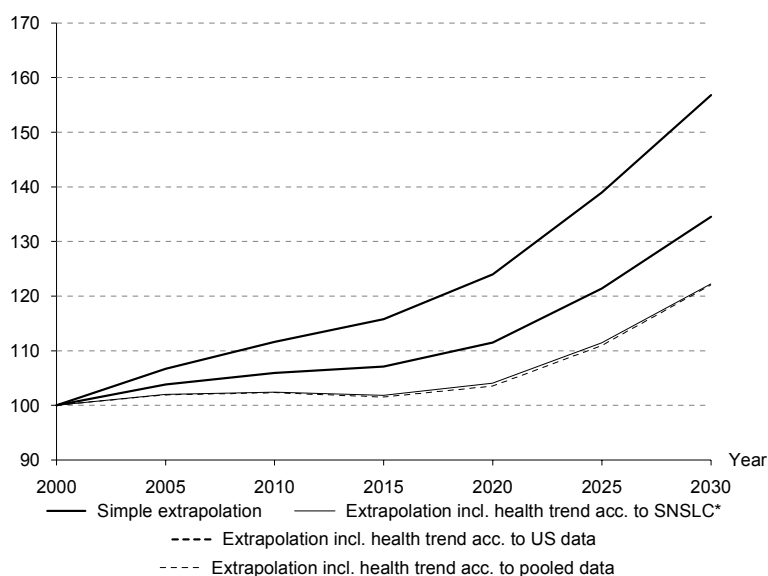
- trends of health and functional ability
- help, support and care needs, given morbidity and social conditions
- availability of help and support in the family and social network
- propensity to seek public health and social care: expectations, charges, private alternatives
- the structure of care: health and social care provided in recipients’ own homes or in institutions
- the impact of care on health and functional ability: preventive inputs, iatrogenic care needs, rehabilitation
- staff requirements for given care inputs
- staff costs and other expenses (salary rates, living standards, medicines, technical aids, etc).

One crucial factor is, of course, the trend of morbidity and functional disabilities among elderly people. Results are now beginning to emerge from several countries where this trend has been studied over a long period. Overall, these findings indicate that the proportion of old people with severe health problems has decreased considerably over the past few decades, in all the age groups studied, but particularly among the young old. For Sweden's part, data on health trends among the elderly may be derived from the SCB's Swedish National Surveys of Living Conditions, which have been carried out since the mid-1970s. These show highly positive health trends for the elderly, with an annual decrease of 1–2 per cent in the proportion of people aged 65–84 with severe or moderately severe ill health. A comparison with the cutbacks effected in elderly care over the past 15 years suggests that roughly half of these cutbacks may be deemed to correspond to a reduction in needs due to old people's improved health.

#### **4. Future Demand for Social Care for the Elderly in Sweden – Alternative Projections**

Utilising the results from the various surveys of elderly people's health trends in an attempt to estimate the future costs of elderly care, one obtains a result that deviates sharply from that indicated by a simple demographic extrapolation. Instead of an estimated rise in costs (in fixed prices) of 60–70 per cent during the period 2000–2030, the expected increase is no more than 20–30 per cent.

**Figure 2** Volume-index trend for elderly care with simple and revised extrapolation according to data from various surveys, 2000–30.



\* Swedish National Survey of Living Conditions, carried out by Statistics Sweden (SCB).

The cost increases will fall mainly in the years when the number of oldest old (85+) will rise sharply. For this group, with its heavy care needs, Swedish data on health trends are lacking and the estimates are therefore based on highly conservative estimates of these trends.

Regarding future costs of health-care services, we have opted to use a different method. This is based on the observation that consumption of these services tends to be concentrated in the final phase of life. With a fall in mortality, these inputs are shifted upwards to a higher age range. For people of a given age, *ceteris paribus*, costs should therefore fall instead of remaining unchanged as was assumed in the simple extrapolation.

## 5. Future Demand for Health Care in Sweden – Alternative Projections

There is considerable empirical evidence from different international studies that the last years of life, irrespective of how long people live, are associated with high care costs. The proportion of people close to death rises with age,



which means the number of years left until death is a more relevant definition of age for use in demographic projections than the number of years since birth. Using individually based cost data collected in the Skåne region (formerly Malmöhus County Council) and dating back several years, it has been possible to estimate the average costs of health care per capita, given age, gender and remaining years of life. The extrapolation has then been based on a demographic projection in which people's distribution in their respective age/gender group in terms of remaining years of life was calculated on the basis of assumptions about mortality.

The implications of this method of calculation for health care are somewhat less dramatic than the implications for elderly care. On the other hand, a simple extrapolation does not yield such major effects on health-care services since, following the Ädel reform, these no longer show the same clear concentration on the highest age range. The demographically determined rise in costs in the period 2000–2030 arrived at by means of extrapolation using the method described above is some 10–12 per cent, as against 15–20 per cent arrived at with a simple extrapolation. Here, the rise in costs will start earlier than for elderly care, with a peak rate of increase in the 2010s.

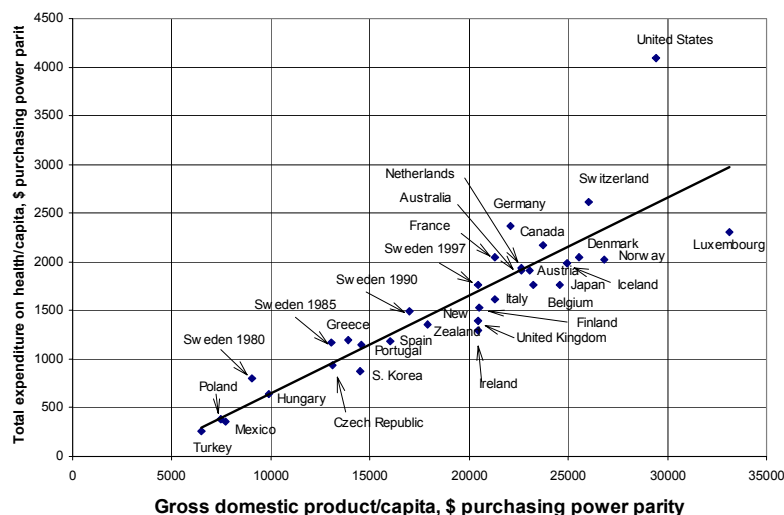
It is important to emphasise that both for health care, on the one hand, and for elderly care on the other, substantial resource increments are required to meet the increased needs entailed by the rise in the number of elderly people. But these resource increments are by no means as large as previous estimates have indicated.

## 6. Money Matters

As stated above, apart from the number of old people and their health and functional ability many other factors will affect future care costs. Various social conditions, such as social structure and residential situation, communications, technical aids, etc. play a major part, as do elderly people's own attitudes and expectations when it comes to seeking help. One important factor is, of course, the trend of costs for specific care inputs. Skilled health and social care presuppose highly qualified staff with salaries high enough to justify their choice of employment.

However, it seems that the factor with the most decisive impact on costs is resource availability (Figure 3). The scope for satisfying the needs of the elderly population in terms of health and social care depends ultimately on which resources society will be able to make available for this purpose.

**Figure 3 Association between health-care costs per capita and GDP per capita, OECD, 1997.**



Source: OECD, Health Data, 1999.

In somewhat oversimplified terms, we may be said to have the care needs we can afford.

Resource scarcity alters our notions of what needs can possibly be met; conversely, increased resources afford a scope for identifying new needs. The importance of ‘mechanical’, demographically based estimates of needs lies in the fact that they create a reference with which the actual cost trend can be compared. Our results show that this reference can be set lower than is indicated by a simple extrapolation, which leaves out of account the trends of morbidity and mortality among the elderly.

## 7. Macroeconomic Perspective

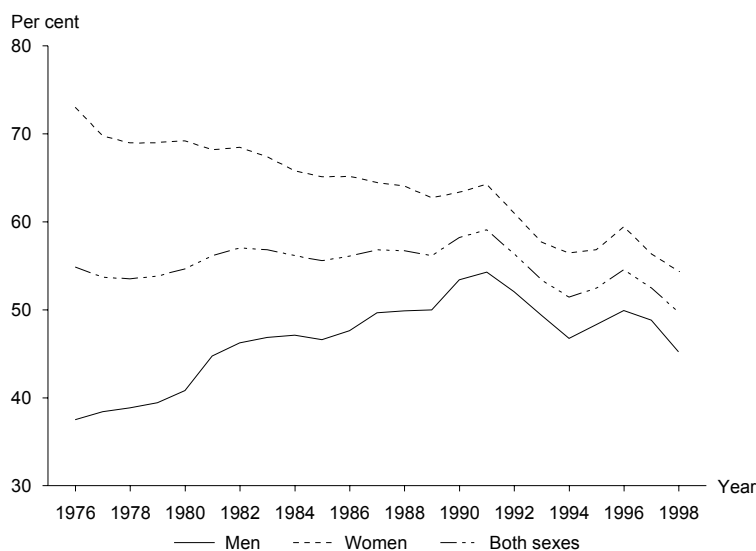
Economic trends will thus have a crucial bearing on the future cost trends of health and social care. That means that the future costs for care must be regarded in the context of the economic development. To put estimated future costs in a macroeconomic perspective, we have estimated future care costs in relation to alternative scenarios of economic development up to the end of the 2020s. These estimates are aimed at showing what claims on total resources public-sector commitments will make, given certain assump-

tions about economic growth and public-sector ambitions. One way of expressing the result is the tax ratio, i.e. the total of direct and indirect taxes in relation to the GDP, given balanced public finances. We have analysed trends for four alternative scenarios. These were constructed by combining unchanged and improved health trends with unchanged and improved labour-force participation (employment trends) according to the following pattern:

- Unchanged health + Unchanged labour force participation
- Improved health + Unchanged labour force participation
- Unchanged health + Improved labour force participation
- Improved health + Improved labour force participation

Combining those different assumptions on trends on health and labour force participation we are giving emphasis to the crucial question when discussing sustainability of health care and social care for the elderly systems: whether it is possible to live longer and simultaneously retire earlier (see Figure 4), or whether a longer working life must be a natural consequence of an overall extension of healthy life.

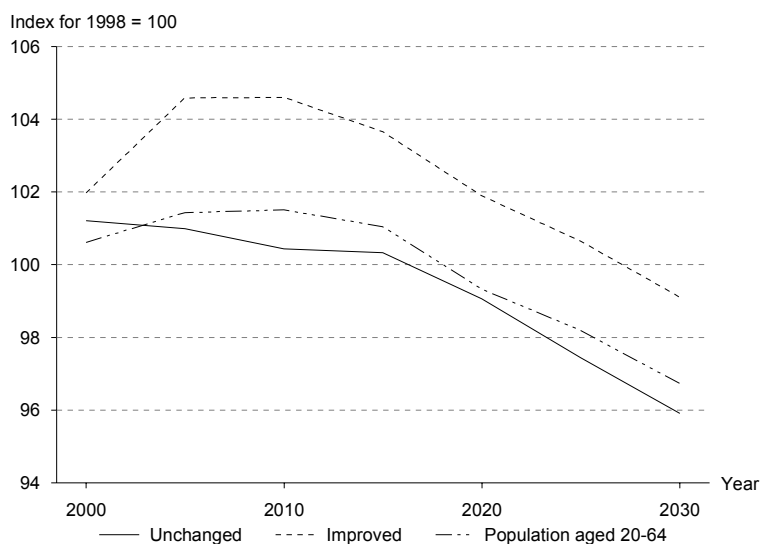
**Figure 4 The significance of age: labour-force participation in the 60–64 age group.**



Source: SCB.

Our estimates were carried out with the same macroeconomic calculation model as was used previously in our analyses of the welfare state and the economy (Lagergren et al., 1997). Our economic assumptions are largely those of the 1999 Medium-Term Survey of the Swedish Economy. Our assumptions on trends in unchanged and improved labour-force participation (employment trends) are shown in Figure 5.

**Figure 5 The labour force (two alternatives, ‘Unchanged’ and ‘Improved’) and the population aged from 20 to 64 years in 2000-30.**

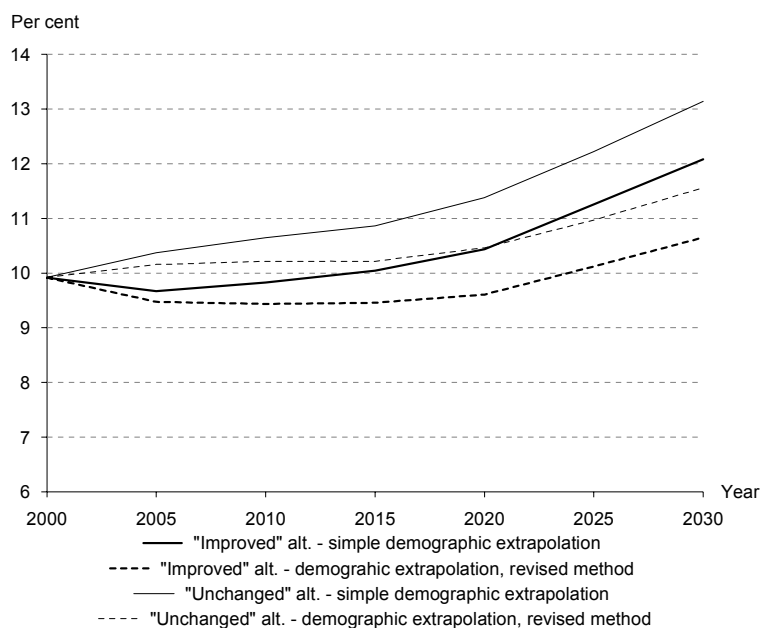


Sources: authors’ own estimates and SCB.

It is clear from Figure 5 that we are not assuming a dramatically different development in our alternative with improved labour force participation. The difference between unchanged (i.e. 1997 level) and improved labour-force participation may be expressed as the difference between two different levels in terms of the proportion of gainfully employed people in the older segment of the labour force (aged 55–64). This combines the notion of longer life and improved health with people’s wish for more time for themselves in their old age.

The results presented in Figure 6 show projected development of public consumption of health and social care for the elderly as a proportion of the GDP for the period 2000-2030.

**Figure 6 Public consumption of health and social care for the elderly as a proportion of the GDP, current prices**



As Figure 6 shows, none of the alternatives involve any dramatic increase — at least over the next 20 years. The care sector will make up a maximum of 13.1, and a minimum of 10.7 per cent, of the GDP against 9.9 per cent in 2000. Extrapolation according to the revised method gives a negligible rise in the share of the GDP — or even a fall — up to the early 2020s. Thereafter, there will be a fairly sharp upturn owing to the massive increase in the number of the oldest old people when the generation born in the 1940s reaches a very advanced age. As pointed out above, the effect of health improvements and reduced mortality will apply primarily to the ‘young old’, and will thus be less marked in the later period than in the earlier one.

The final results measured as a change in tax ratio (the tax ratio expressed as the total of direct and indirect taxes in relation to the GDP, given balanced public finances) show, as one might have expected, that health trends play a major part in determining the scale of demands on the economy that future health and social care will pose. But it is even more important to state that these demands are in no case insurmountable, provided that economic trends are favourable. The trend of the tax ratio shows that a high employment rate permits a tax level that is lower than in 2000 throughout the period, regardless of whether the pressure of demand in the

care sector is affected by health trends (tax ratio: -3,5 per cent of the GDP) or not (-2,0 percent of the GDP). In the opposite case, the improvement in health will help just marginally + 1 per cent of the GDP compared with no improvement in health (tax ratio: + 3,0 per cent of the GDP).

In the light of overall public-sector claims on the economy, the increases that may be expected to arise owing to the large anticipated rise in the number of elderly people appear virtually marginal. More significant from the macro-economic point of view is the heavy impact of employment trends. If it proves impossible to arrest the trend of increasingly early retirement from working life, there are small prospects of success in preserving elderly people's present-day welfare — they may be more or less in need of care.

## 8. Conclusion

In order to ensure sustainability of health and social care, also in the future, the following is crucial:

- Early withdrawal from the labour market must decrease.
- Labour-force participation among immigrants must rise.
- Sweden must establish conditions that allow women and men to have the number of children they want to have. Women and men normally decide for themselves whether and when to have children. The decision is an active one, and is predicated on the availability of adequate resources. As most young women and men do state that they envisage children and a family of their own as a part of their future life, it is important to identify existing obstacles to the realisation of these plans.

The final conclusion is that the primary challenge is not the rising number of old people but the question of how we can create a world of work in which elderly employees can, and want to, make productive contributions. It may be hoped that the shrinking supply of labour over the next few decades will force a different attitude towards the elderly on the labour market.

We must pose the vital question of what prompts so many people to start longing to get away from the world of work when they are as young as about 55. We are evidently getting healthier all the time, and this should enable us to lead longer active lives. What, then, needs changing to make gainful employment — full-time or part-time — meaningful and attractive after the age of 60 as well?

It is equally important, however, for the groups of younger people, especially immigrants, who are at present excluded to a steadily increasing ex-

tent from being given a chance to contribute to society's resources. In the long term, the question of elderly care will inevitably depend on whether or not there are helping hands available — regardless of whether these are to come from more children or increased immigration. It must also be made clear to everyone that unequivocal undertakings on the part of the state, e.g. in the form of a contract for elderly care, are the only means of ensuring genuine security for the elderly of tomorrow. And only a strong and vital economy will enable these undertakings to be kept.

Will the present trends on health improvement continue in the coming decades? The answer to that question has a lot to do with how you look upon the factors that have been driving the present trend. Essentially, the fall in mortality can be explained either by improved living conditions and more healthy habits or by improved medical treatment. Most probably, a combination of these two factors has been at work. Concerning the medical development, there seems to be all reasons to believe that the progress will continue. When it comes to living conditions and healthy habits the signs seem to be pointing sometimes in different directions for men and women. However, the major trend seems to be continuing decrease in mortality and accordingly continuing improvement in the health status of the elderly population. Finally, there is great hope that also in the 21st century we will live longer and in good health.

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# Mortality, severe morbidity, injury and educational attainment among children in single parent families

Family situation is an important determinant of problems concerning welfare, health state and security. Lone parents often face many welfare problems simultaneously. During the past few decades the proportion of single parents has increased markedly in Sweden. Single-parent households today represent about 20% of all households with children. The disadvantageous situation of lone parents has been pointed to in much research [1-5]. They, alongside young people, showed the worst income trend between 1975 and 1995 [6]. One in two single parents had upkeep problems during the 1990s, i.e. difficulties in managing current expenses for food, rent and bills. In the adult population as a whole the corresponding proportion was under 5% [7]. An increasingly proportion of lone parents have been exposed to crime. In 1999 15% of the lone parents (mostly mothers) had been the victim of violence and threat, a fourfold risk increase in comparison with the general population. Lone parents with financial problems reported the highest rates (1998-1999). 26% among social assistance recipients had been victims of violence and threat in comparison with 7% among non-recipients within the lone parent group [8].

Lone mothers have reached the top of the political agenda in many Western countries during the last ten years. A distinctive feature of Swedish social policy has been the inclusion of lone mothers within a framework for all working parents. In accordance with this model, families are provided with



government-subsidised day-care services, which permits women to become more equal participants on the labour market alongside men. The system can be described as universal, in that it addresses income earners in general, and do not support categorical benefits targeted specifically at lone mothers. Figures on poverty rates among lone mothers in different countries show that welfare is greatest where labour-participation rates for lone mothers are high, transfers are generous, and benefits are universal. The Scandinavian countries were at the bottom of the list with regard to poverty rates among lone mothers during the nineties, while the list was headed by the USA, Australia, and Canada. In recent years, however apprehension has arisen that the additional social and economic pressures Swedish lone mothers face as sole breadwinners and family carers may become hidden or rendered invisible in a system that, in the first instance, views women not as mothers but as paid workers [9-13].

## Children of lone parents

In step with the rising frequency of divorce and changing family patterns, increasing numbers of children are growing up with just one parent. As far back as in 1891, data from a parish in Stockholm showed that being born out of wedlock was an important risk factor for childhood and infant death [14]. Although mortality rates are no longer anywhere as high as during the 19th century, social factors are important indicators of infant and child mortality even in Sweden today. The children of manual workers and children living with one parent still show higher mortality than the offspring of non-manual workers and those living with both parents [15].

Numerous studies have examined the implications of parental divorce and lone parenthood for children's educational achievement, conduct, psychological adjustment, social competence and health [16, 17]. Findings generally indicate that divorce has short-term adverse consequences. Presumptions about the importance of long-term effects have been supported by analyses from Sweden and Finland where the breaking-up of a family and having a lone-parent background have been found to have negative effects on mental and general health and mortality among young adults [18-21]. Research also fairly consistently report that children from separated families are at an educational disadvantage [22-24]. However the differences are often modest, and are greatly attenuated when socioeconomic circumstances are controlled for [25-28].

A number of explanations and intervening processes have been proposed to account for why divorce, separation and lone parenting may have negative effects on children's health and educational prospects. Two main types of explanations are often distinguished; the crisis model which implies that it is largely upheaval and disturbed social relations in a family during the process of divorce that negatively impact on children. Another theory emphasises the loss of a parent and what this implies in terms of reduction of household resources in at least three areas:

- The amount of time devoted to a child may be reduced since one parent is missing.
- Loss of the parent with the higher educational or social position may influence a child's educational aspirations.
- Economic deprivation may follow from separation, especially among lone mothers. Income-related selection, i.e. economic difficulties predating later separation, seem to be less influential.

### *Aim*

We investigated mortality, severe morbidity and educational attainment as young adults among children in one-parent households in comparison with children living with two adults during the nineties. Our hypothesis was that the generally poorer socioeconomic status of lone parents contributes to a differential in children's health and educational prospects. The analyses were based on routine statistics from health-data registers and other surveys covering the entire Swedish population [29-31].

## **Analyses of mortality, severe morbidity and injury**

Children in Sweden living with the same lone adult (parent or guardian) according to the censuses of both 1985 and 1990 and children who were living with the same two adults of different sex at both times were identified. The children were 6-18 years old at the start of follow-up (in 1991); by the end of 1999 the youngest were 14 and the oldest 26. 65 000 children living with a lone parent and 920 000 children living with two parents were encompassed by the study. Various parental characteristics (such as country of birth, socioeconomic group affiliation, housing situation, number of children in the household and recidency) were obtained from the census of

1990. Data on social assistance was obtained via record linkage to the Total Enumeration Income survey of 1990. Information about alcohol- or drug abuse and psychiatric disease on the part of any adult in the household was obtained from the Hospital discharge register for the years 1987-99.

We assessed mortality in children from 1991-98 and severe morbidity (indicating psychosocial disturbance or injury) over the period 1991-99 using data from the National Cause of Death Register and the National Hospital Discharge Register, respectively. Besides all-cause mortality, the following diagnoses were considered: psychiatric disease, suicide/suicide attempt, traffic injuries, violence, alcohol- and narcotics-related disease.

## *Results*

Lone-parents were over-represented among unskilled manual and non-manual workers and among those who lacked an occupation, whereas it was more common for partnered parents to be medium or upper non-manual workers (table 1). Somewhat more single parents were born outside Sweden. Parents with partners had a greater tendency to own their home than parents without partners (86% compared with 33%). The number of parents with social assistance in 1990 was seven times greater in the single-parent group than in the two-parent group (21% compared with 3%). Admission for psychiatric disease was recorded in twice as many single parent-households than in households with two parents (6% compared with 3%) (table 1).

Mortality rates (number of deaths per 100 000 person-years at risk) suggested that children with single parents had higher risks of death than those with two parents, irrespective of stratification (table 1).

**Table 1 Sociodemographic indicators and crude mortality data by type of parenting**

	Children with single parent		Children with two parents	
	Per cent	Death rate <sup>1</sup>	Per cent	Death rate <sup>1</sup>
<i>Socioeconomic group in 1990</i>				
Manual workers	39	32.5	28	27.9
Non-manual workers	42	34.9	59	21.0
Without occupation	16	48.0	2	32.1
<i>Country of birth</i>				
Sweden	85	35.0	90	22.8
Outside Sweden	15	41.5	10	29.0
<i>Housing</i>				
Owens	33	37.2	86	22.8
Rents	65	35.2	13	27.4
<i>Social assistance in 1990</i>				
Yes	21	42.1	3	36.3
No	79	34.3	97	23.0
<i>Parental psychiatric diagnosis 1987-99</i>				
Yes	6	69.2	3	44.3
No	94	34.0	97	22.7

1 Deaths per 100 000 person-years.

1912 children died during the 8-year study-period. Following adjustment for age, the risk of dying was 50% greater in boys in single-parent families than in those boys living with both parents (table 2). For girls no increased overall mortality risk was detected. However, the risk of death from suicide among girls was found to be more than double, and girls in lone-parent families were more than three times as likely to die from addiction to drugs or alcohol than were girls with two parents (table 2). For the male offspring of lone parents there were substantial risk increases for mortality from addiction to drugs or alcohol (more than five times), they were more than three times as likely to die from a fall or poisoning, and four times more likely to die from external violence (but this measure was based on few deaths). No difference was found with regard to fatal traffic injuries, neither for boys or girls (table 2).

**Table 2** Age-adjusted relative risks for various mortality outcomes 1991-98 for children living with single parents compared with children with two parents (95% CI in brackets). Reference group = children in two-parent families

	Sex	Deaths		RR (95% CI)
		Single parent	Two parents	
Total mortality	Girls	56	608	1.2 (0.9-1.6)
	Boys	131	1 117	1.5 (1.3-1.9)
Suicide	Girls	19	96	2.4 (1.5-4.0)
	Boys	32	217	1.8 (1.3-2.7)
Traffic injuries	Girls	8	155	0.7 (0.3-1.4)
	Boys	29	336	1.1 (0.8-1.6)
Violence	Girls	2	10	2.5 (0.6-11.6)
	Boys	6	19	4.0 (1.6-10.1)
Other injuries	Girls	1	4	1.4 (0.2-11.0)
	Boys	9	16	3.7 (1.8-7.7)
Addiction	Girls	4	13	3.7 (1.2-11.4)
	Boys	16	37	5.3 (3.0-9.6)

Children of lone parents showed elevated risks over the nine-year period (1991-99) for all studied outcomes when morbidity was measured using hospital data and adjustments were made for age (table 3, model I). The most pronounced risks for both boys and girls were for diagnoses indicating drug abuse (five- to sixfold increased risks), and there were also markedly elevated risks of suicide, violence and psychiatric disease. Only very small risk increases were found for traffic injuries, falls and cases of poisoning observed at hospital.

When grouping the relevant background variables for the multivariate analyses, one of the basic ideas was to distinguish between variables referring to conditions predating the family situation and those that were regarded as operating contemporaneously between family position and the outcome. For example, adjusting for different measures of income might control for circumstances resulting from lone parenthood that explain some of the ways in which lone parenthood influences health. On this approach a mediator provides a way of understanding a relationship; by contrast, controlling for confounders is necessary to dismiss a spurious association [32]. We assessed variables such as age of child and parent, parental characteristics such as socioeconomic group affiliation, country of birth, residence, psychiatric disease, alcohol- or drug-related disease, as confounders. For in-

stance, women with low educational status, which is highly correlated with socioeconomic status, have a higher risk of being a single mother through separation than do mothers with high education [1].

By contrast, variables such as housing, receipt of social assistance were seen as measures of household resources, and treated as mediators. Many findings have suggested that the poor financial situation in which single parents often find themselves is a consequence of being sole providers for their family [4].

**Table 3 Multivariate models for severe psychiatric diseases and injuries 1991-99 for children living with single parents compared with children with two parents (95% CI in brackets). Reference group = children in two-parent families**

1991-1999	Sex	Model I	Model II	Model III	Model IV
		RR (95% CI)	RR (95% CI)	RR (95% CI)	RR (95% CI)
Psychiatric disease	Girls	2.5 (2.3-2.7)	2.1 (1.9-2.3)	1.9 (1.7-2.0)	1.8 (1.6-1.9)
	Boys	3.0 (2.7-3.3)	2.5 (2.3-2.8)	2.2 (2.0-2.5)	2.2 (1.9-2.4)
Suicide	Girls	2.4 (2.3-2.6)	2.0 (1.9-2.2)	1.8 (1.7-2.0)	1.8 (1.6-2.0)
	Boys	2.8 (2.5-3.1)	2.3 (2.1-2.6)	2.1 (1.9-2.4)	2.1 (1.8-2.3)
Traffic injuries	Girls	1.2 (1.1-1.3)	1.1 (1.0-1.2)	1.2 (1.1-1.3)	1.2 (1.1-1.3)
	Boys	1.1 (1.1-1.2)	1.1 (1.0-1.2)	1.2 (1.1-1.3)	1.2 (1.1-1.2)
Violence	Girls	2.6 (2.1-3.3)	2.0 (1.6-2.6)	1.9 (1.5-2.4)	1.7 (1.3-2.2)
	Boys	2.1 (1.9-2.3)	1.6 (1.5-1.8)	1.5 (1.3-1.7)	1.4 (1.2-1.5)
Fall and poisoning	Girls	1.2 (1.1-1.3)	1.2 (1.1-1.3)	1.2 (1.1-1.3)	1.2 (1.1-1.3)
	Boys	1.1 (1.1-1.2)	1.1 (1.0-1.2)	1.1 (1.1-1.2)	1.1 (1.0-1.2)
Alcohol-related disease	Girls	3.0 (2.6-3.3)	2.4 (2.2-2.7)	2.2 (2.0-2.5)	2.1 (1.8-2.4)
	Boys	2.7 (2.4-3.0)	2.2 (2.0-2.4)	2.0 (1.8-2.3)	1.9 (1.7-2.1)
Narcotics-related disease	Girls	4.5 (3.9-5.3)	3.2 (2.7-3.7)	2.5 (2.1-3.0)	2.4 (2.0-2.8)
	Boys	5.6 (5.0-6.4)	4.0 (3.5-4.5)	3.2 (2.8-3.7)	3.0 (2.6-3.5)

Model I = Adjusted for age of the child.

Model II = Adjusted for age of child and parental confounders (age, socioeconomic group, living in a big city and country of birth, psychiatric disease, alcohol and drug addiction).

Model III = Adjusted for age of child and parental mediators (social benefit, number of children, and housing situation).

Model IV = Adjusted for age of child, and parental confounders, and mediators.

The raised risks for most outcomes in children with single parents lessened when the variables treated as confounders were introduced into the initial model (model II), and even more so when the mediators were added (model III). The adjustments substantially decreased the risks for all outcomes except traffic injuries and falls and cases of poisoning. The mediators (receipt of social benefit, renting or owning a house, number of children in

the household) accounted for around 40% of the difference in risk of attempting suicide between both boys and girls in single-parent families compared with those in two-parent families (explained fraction – calculated by  $[\text{relative risk in model I-1}] - [\text{relative risk in model III-1}] / [\text{relative risk in model I-1}]$ ). The confounders accounted for a smaller part of the risk increase, about 30% for both boys and girls. The largest explained fractions, after encompassing all background variables available (model IV), were for violence and addiction to narcotics (at around 60% for both boys and girls). However, for all outcomes, significant risk increases remained unaccounted for even in the fully adjusted model (model IV). Boys in lone-parent families showed significantly higher risk increase than girls of psychiatric disease and narcotics-related disease.

## Analyses of educational attainment

We investigated childrens' educational attainment in relation to family situation at age 24-25 years. For this purpose a subgroup of children born 1973-74 was identified (see descriptions of the data above). By means of further linkage to the Multi-Generation Register we excluded children without information on both biological mother and father, with more than 148 000 children remaining following exclusion. Distinctions were made between different forms of parenting. The children were divided into the following categories: children of widows/widowers; children of lone parents with a living non-custodial biological parent; children with a deceased non-custodial parent (after possible separation); and, children living with the same cohabiting parents in two censuses. The final category was employed as comparison group for the analyses.

### *Results*

It was more common for children of lone parents to have acquired only nine-year Swedish compulsory education (or less) at ages 24-25 than for children living in a two-parent household (table 4). The largest proportions with this short education were found among children in lone-parent-households with a non-custodial parent who had died; 22% among the girls and 26% among the boys had completion of compulsory school as their maximum educational attainment. For children with a living non-custodial parent, the corresponding proportions were 17 and 19%, and for children of widows/widowers 12 and 14%. A 9-year education or less was found among

only 7% among girls with partnered parents and 9% among boys in this group. The same pattern of disadvantage for children in one-parent households appeared regarding post-high-school education (table 4).

**Table 4** Number of youths with full compulsory education at most and numbers with post-high-school education in 1998 in relation to parenting

Family situation		All youth	At most compulsory school (9 years or less)	Post-high-school education (13 years at least)
			Proportion <sup>1</sup>	Proportion <sup>1</sup>
<i>Youths with:</i>				
Partnered parents	Girls	65 567	6.8	40.7
	Boys	70 634	9.2	32.5
Widows/widowers	Girls	276	12.0	37.0
	Boys	303	13.9	26.4
Lone parents – other parent alive	Girls	4609	17.0	27.1
	Boys	4884	18.8	21.7
Lone parents – other parent deceased	Girls	496	22.0	22.8
	Boys	546	26.4	17.4

1 Percentage with outcome in each sub-group of children

In multivariate analyses the odds of finishing school after most nine years diminished when variables treated as confounders and mediators (see discussion about this division above) were inserted into the initial model (table 5). For children of widows/widowers, the odds fell in a greater proportion in response to introduction of the confounders (parental age, socioeconomic group and education, residence, country of birth, parental alcohol and drug addiction and psychiatric disease). By contrast, for children in other lone parent households, the mediators (social assistance, housing situation, number of children) proved to be of greater importance. For children of lone parents with a living non-custodial parent, the OR fell from 2.5 to 1.3 giving an explained fraction of 80% after introducing the mediators into the model (table 5, model III).

When analysing children with a living non-custodial parent, adjustments were also made for a combined measure of the custodial and the non-custodial parent's circumstances (with regard to socioeconomic group affiliation, education, psychiatric disease, addiction and social assistance). The findings strongly indicate that adjusting solely for the custodial parents'



circumstances may lead to under-estimation of the relation between lone parenthood and educational attainment. This would result from the often more favourable social position among, mainly male, non-custodial parents, provided – of course- that children have access to their resources (table 5, model II).

When both confounders and mediators were included in the model, only small increases in odds remained unaccounted for (table 5, final model).

**Table 5 Multivariate models for educational attainment 1998 (full compulsory education at most) and different forms of parenting with adjustment for confounders and mediators. Reference group = children in two-parent families.**

Family situation	Model I	Model II	Model III	Model IV
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Partnered parents	1.0	1.0	1.0	1.0
Widows/widowers	1.7 (1.3-2.2)	1.2 (0.9-1.5)	1.3 (1.0-1.7)	1.1 (0.8-1.4)
Single parent – absent parent alive				
Custodial parents circumstances	2.5 (2.4-2.6)	1.7 (1.6-1.8)	1.3 (1.3-1.4)	1.2 (1.1-1.3)
Also non-custodial parents circum- stances	-	2.1 (2.0-2.2)	1.2 (1.1-1.3)	1.3 (1.3-1.4)
Single parent – absent parent dead	3.7 (3.2-4.2)	2.2 (1.9-2.6)	1.9 (1.6-2.2)	1.6 (1.4-1.9)

Model I = Crude.

Model II = Adjusted for parental confounders. Both custodial and non-custodial parents' circumstances regarding socio-economic group, education and psychiatric disease and addiction.

Model III = Adjusted for parental mediators. Both custodial and non-custodial parents' circumstances regarding social benefit.

Model IV = Adjusted for parental confounders and mediators.

In the case of post-high-school education mostly the same pattern appeared, however when all the variables were included in the model a significant increase in OR was found only for the group of children in lone-parent households with a non-custodial parent who had died. Children in other lone-parent households also showed increased odds, but only when both custodial and non-custodial parents' circumstances were taken into account (data not shown in table)

An important finding was that family situation was significantly more strongly associated with child's' educational attainment within groups of highly educated parents than among parents of relatively low education. For

children of lone parents with low education (with a living non-custodial parent, and only taking the custodial parent's circumstances into account) in comparison with children with partnered parents, the OR for compulsory school at most was 1.6 [1.4-1.7]; for the group of parents with medium-level education, OR=1.7 [1.5-1.8]; and, for the highly educated OR=2.3 [2.0-2.6]. Corresponding figures for having less than post-high-school education were OR<sub>low</sub> =1.1 [1.0-1.3], OR<sub>medium</sub>=1.3 [1.2-1.4], and OR<sub>high</sub>=1.4 [1.3-1.6]. Lone parenting also seemed to have a more detrimental effect on girls' education. The OR for girls in lone parent households (with a living non-custodial parent) in comparison with girls in two-parent families of only 9 years of education was 1.9 [1.7-2.1], whereas that for boys was 1.6 [1.5-1.7] (data not shown in the table).

## Conclusions

Our findings suggest that growing up in a single-parent family may have disadvantages to health of the child as well as educational attainment. Poorer educational performance as well as health disadvantages are explicable to a large extent by socioeconomic disadvantage, especially lack of household resources, but the risks are partly independent of socioeconomic circumstances.

However the interpretation needs to take into consideration that mortality and severe morbidity are rare outcomes for people in the studied age groups, and most of the children are not affected by these severe and negative outcomes. For example, 1.6% of children in lone-parent families had been discharged from hospital for suicide/suicide attempt during a 9-year period (0.6% of the children in two-parent families). It could be the case that most of the lone parent population differ little from the general population, and the main differences appear only in the extremes of the population. Hence, interpretations on group-level from "lone-parent background" may be somewhat biased for the entire group, as for different subgroups, since living conditions vary within the group of lone parents. Nevertheless, lone parents have in common the joint concerns of having children to raise and support alone, which put them in a more vulnerable situation than other parents. Even after controlling for various socioeconomic circumstances, increased risks remain for most outcomes, which argues against the marginalisation interpretation as the only explanation.

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## Indicators on Low Income

In a rapidly changing world, the interest in monitoring trends in income distribution and inequality is ongoing. It is among the basic principles of the welfare state to secure that the level of income inequality is at a level, which is perceived as acceptable and fair - especially that the groups at the bottom of the income hierarchy are not left in an unacceptable situation or in poverty.

Included in the proposal for a set of indicators on a sustainable social and health development in the Nordic countries is an indicator on low-income rates or poverty rates. This paper outlines some of the practical possibilities for inclusion of a low-income rate indicator, by utilising work that is already being carried out.

As a measure of low-income, it has become common to calculate the proportion of the population having an income of less than e.g. 50% or 60% of the median income of the population. This is a relative measure. It is not based on an absolute level of possibilities for consumption, which are difficult to compare between countries. This is possibly part of an explanation why the relative measure has become common for comparative purposes. Another reason is that the relative measure is rather easy to calculate, once you have the detailed data on income and data on the composition of the household.

There is no tradition for reporting comparative figures on poverty or low income in the Nordic countries, although a number of studies have been carried out in each of the countries. However, in 1996 the Nordic Council of Ministers did publish a report on poverty trends in the Nordic Countries (Puide (ed.), 1996). The report is cautious not to compare the level of poverty between countries because the data available were differing. Instead the trends reported from each country are compared. Main results from this study were:

- The current economic climate affects the extent of poverty in most Nordic Countries.
- For many, poverty is short term. At the same time there is a connection between poverty in one period and in the following.
- In the larger Nordic countries, poverty among the elderly has fallen drastically since the mid 1970's. The tendency is instead that the young live in poverty.

Transfer payments from the public sector are largely responsible for the fact that, from an international point of view, relatively few people suffer from poverty in the Nordic countries.

In a wider context, however, both the European Commission/EUROSTAT and the OECD have calculated and published poverty rates for their respective member countries.

## EUROSTAT

Since the European Household Panel Survey (EHP) was established (first round in 1994), the Survey has provided data for calculations of low-income rates for the EU countries - or at risk of poverty rates as they are called by EUROSTAT. And in 2001, a set of 18 common statistical indicators for social inclusion have been endorsed in order to monitor in a comparable way the progress of the Member states towards the agreed objectives concerning the fight against poverty and social exclusion. Calculations of this set of indicators - called the Laeken indicators - are published by EUROSTAT in its series Statistics in focus (EUROSTAT, 2003). The monetary indicators have all been calculated on the basis of the EHP. Some of the social inclusion indicators are also included in the list of Structural Indicators in the field of Social Cohesion that are to be included in the annual Commission Report to the Spring European Council<sup>11</sup>.

The last round of the EHP was carried out in 1999. In future, they will be based on the EU-SILC - the successor to the EHP. The EU-SILC will start up in 2004 and 2005, depending on the country.

In the list of Laeken indicators, the definition of the Risk-of-poverty rate is: The share of persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income (after social transfers). This share is calculated before social transfers (original income including pensions but excluding all other social transfers) and after social transfers (total income).

For each person, the 'equivalised total net income' is calculated as its household total net income divided by the equivalised household size according to the modified OECD scale. This scale gives a weight of 1.0 to the first adult, 0.5 to other persons aged 14 or over who are living in the house-

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<sup>11</sup> Calculations of the Structural Indicators are available at the EUROSTAT website: <http://europa.eu.int/comm/eurostat/>

hold and 0.3 to each child aged less than 14. Consequently, each person in the same household receives the same 'equivalised total net income'.

The figures presented in the NOMESCO & NOSOSCO booklet "Statistics on Indicators" are the figures included in the EU Structural indicators (see Table 1).

**Table 1 Social Indicator 6 Risk-of-poverty rate**

	Denmark	Finland	Iceland	Norway	Sweden
1995	10	..	..	12	..
1996	9	8	..	12	..
1997	9	8	..	12	9
1998	12	9	..	11	10
1999	11	11	..	11	9
2000	..	..	..	11	..

Definition: At-risk-of-poverty rate – after social transfers. The share of persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60 per cent of the national median equivalised disposable income.

Source: EUROSTAT: Structural Indicators.

With a risk-of-poverty threshold set at 60 per cent of the national median equivalised disposable income, 11 per cent of the population did fall below the line in Denmark, Finland and Norway in 1999. In Sweden, the proportion was a little smaller with 9%. Iceland is not included in the calculations. In Finland, the proportion has increased a little during the last half of the 1990s.

The risk-of-poverty rate is certainly highly dependent on where the threshold is set. In Table 2, figures are included for thresholds set at 40, 50, 60 and 70 per cent of the national median equivalised disposable income.

**Table 2 At risk of poverty rate - after social transfers, 1999**

	Denmark	Finland	Iceland	Norway	Sweden	EU 15
40% threshold	2	2	..	..	3	5
50% threshold	6	5	..	..	5	9
60% threshold	11	11	..	..	9	15
70% threshold	18	19	..	..	17	23

Definition: At-risk-of-poverty rate – after social transfers. The share of persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 40-70 per cent of the national median equivalised disposable income.

Source: EUROSTAT: Statistics in Focus, Population and Social Conditions, 8/2003.

As it appears from this table, the at-risk of-poverty rate in the Nordic countries varies from 2-3 per cent with a 40 per cent threshold to between



17 and 19 per cent with a 70 per cent threshold. Sweden is a little below the rates in Denmark and Finland, when the threshold is set at 60 per cent or 70 per cent. This is not the case when the threshold is set at 40 per cent or 50 per cent. Also it appears that the at-risk-of-poverty rates are relatively small in comparison with the average EU rates. Data are not available for Iceland and Norway.

The share of the population in more long-term at-risk-of-poverty is of particular interest. EUROSTAT has calculated the percentage of the population persistently at-risk-of-poverty in 1999, i.e. had an equalised income below the 60 per cent threshold in that year but also in at least two of the preceding three years (1996-1998). However, data are only available for Denmark and Finland. The persistent-risk-of-poverty-rate varies from 5 per cent in Denmark, Finland and the Netherlands to 14 per cent in Portugal.

These calculations are based on survey data and they have been criticised for not being able to provide exact information and enough details to calculate gross income and disposable income of the household. However, the design of the EU-SILC is more ambitious, and it is to be expected that the quality of data will be greatly improved<sup>12</sup>.

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<sup>12</sup> EU-SILC defines disposable income as "gross income less income tax, regular taxes on wealth, employees', self-employed and unemployed (if applicable) persons' compulsory social insurance contributions, employers' social insurance contributions and inter-household transfers paid." For this purpose, gross income is defined as "the total monetary and non-monetary income received by the household over a specified "income reference period", before deduction of income tax, regular taxes on wealth, employees', self-employed and unemployed (if applicable) persons' compulsory social insurance contributions and employers' social insurance contributions, but after including inter-household transfers received.

Gross income components shall cover gross employee and self-employment income (monetary and non-monetary), gross employer's social insurance contributions, imputed rent, property income, gross current transfers received, other gross income and interest payments. Non-monetary components of employee (with the exception of company cars that is to be calculated as from the first year of the survey) and self-employed income, imputed rent and interest payments shall be optional from the first year of the survey and compulsory from 2007. Gross employer's social insurance contributions shall only be included from 2007 if results of feasibility studies are positive. Variables required for calculating imputed rent will be collected as from the first year of data collection for each Member State (2004 or 2005)".

## OECD

In two waves – last time in 1998-99 – the OECD has collected data on income distribution and poverty, based on a harmonised questionnaire on detailed distribution and poverty indicators derived from national micro-economic data provided by national experts. The questionnaire was filled in by 21 member countries. For the Nordic countries, except Iceland, data are available from the mid-80s and the mid 90s. (See Table 3). It is the plan to update this work with a new wave covering e.g. 2001.

**Table 3 National data sources and available years**

	Data source	Available years
Denmark	Law model data base	1983, 1994
Finland	Income distribution survey	1976, 1986, 1995
Norway	Income distribution survey	1986, 1995
Sweden	Income distribution survey based on tax records	1975, 1983, 1990, 1995

Source: Förster et al. (2000).

In the OECD calculations, individuals are ranked according to the value of the “adjusted” real disposable income per equivalent household member of the household to which they belong. For instance, if  $Y_i$  denotes the total disposable income of household  $i$ , the “adjusted” income of each member  $j$  of household  $i$  ( $W_{ij}$ ) is calculated as:

$$W_{ij} = \frac{Y_i}{S_i^e}$$

where  $S_i$  is the number of members in household  $i$  and  $e$  is the equivalence elasticity.

According to the terms of reference, all incomes, taxes and benefits are reported on an annual basis. The total household income ( $Y_i$ ) is defined as the total disposable income; it includes self-employment incomes, realised property incomes, cash transfers from the general government less taxes and social security contributions. Imputed rent is not taken into consideration. Current income is deflated by using the CPI deflator relative to the initial year (all incomes are expressed in national currencies of the initial year).

Among the conclusions in a report on results from the last wave (Förster 2000) is that the relative poverty rates had remained relative stable over the last 10 years. Some countries had experienced declines (in particular Bel-

gium and Denmark) and some others increases (Italy and United Kingdom). Poverty rates based on constant thresholds fell in most countries in which real income increased.

Table 4 presents the calculated poverty rates with thresholds set at 40, 50 and 60 per cent.

**Table 4 At risk of poverty rate - after social transfers. OECD. Mid 1990s**

	Denmark 1994	Finland 1995	Iceland	Norway 1995	Sweden 1995	Average 20
40% threshold	2.0	2.1	..	3.4	4.4	5.3
50% threshold	5.0	4.9	..	8.0	6.4	10.1
60% threshold	12.0	10.8	..	14.6	10.3	17.0

Definition: At-risk-of-poverty rate – after social transfers. The share of persons with an equalised disposable income below the risk-of-poverty threshold, which is set at 40-60 per cent of the national median equalised disposable income.

Equivalence scale elasticity = 0,5.

Source: Förster et al. (2000).

According to this table, Norway had the highest poverty rates with thresholds set at 50 per cent or 60 per cent, while Denmark and Finland had the lowest rates with a 50 per cent threshold and Sweden with a 60 per cent threshold in the mid 1990s.

**Table 5 At risk of poverty rate - after social transfers. OECD. Mid 1980s**

	Denmark 1983	Finland 1986	Iceland	Norway 1986	Sweden 1983	Average 20
40% threshold	3,0	2,4	..	2,0	3,5	5,3
50% threshold	7,0	5,1	..	6,9	5,9	9,8
60% threshold	15,0	10,8	..	12,9	9,8	16,3

Definition: At-risk-of-poverty rate – after social transfers. The share of persons with an equalised disposable income below the risk-of-poverty threshold, which is set at 40-60 per cent of the national median equalised disposable income.

Equivalence scale elasticity = 0,5.

Source: Förster et al. (2000).

**Table 6 Change in at risk of poverty rates - after social transfers from mid 80s to mid 90s. The OECD.**

	Denmark 1983	Finland 1986	Iceland	Norway 1986	Sweden 1983	Average 20
40% threshold	-1,0	-0,3	..	1,4	0,9	0,0
50% threshold	-2,0	-0,2	..	1,1	0,5	0,3
60% threshold	-3,0	0,0	..	1,7	0,5	0,7

Definition: At-risk-of-poverty rate – after social transfers. The share of persons with an equalised disposable income below the risk-of-poverty threshold, which is set at 40-60 per cent of the national median equalised disposable income.

Equivalence scale elasticity = 0,5.

Source: Förster et al. (2000).

The rates for the mid 1980's are included in Table 5. Apparently, it is almost the same picture as in the mid 1990s, but some trends appear as demonstrated in Table 6. While the rates decreased in the ten-year-period in Denmark and also a little in Finland, the rates increased in Norway and Sweden. Also the OECD average increased in the period from the mid 80s to the mid 90s. The trends underline the interest in establishing time series on the low-income rates.

## Comparison of the EUROSTAT and OECD Indicators.

While the data basis is different and details in the methods of calculation differ between the EUROSTAT at-risk-of-poverty rates and the OECD poverty rates, it is amazing to see how the calculated indicators are at the same level given the poverty threshold (see Table 7). There is a difference of only a single percentage point between the rates from EUROSTAT and the rates from the OECD in Denmark, Finland and Sweden. Only for Norway, there is a considerable difference between the EUROSTAT rate and the OECD rate of persons falling below the 60 per cent line. The OECD figures are from 1995 while the EUROSTAT figure is from 1999, and the difference may be an expression of real changes in Norway. But the difference might also represent differences in the data basis for the calculations.

The similarity between the two sets of poverty indicators points at the data basis for the two sets of indicators not being that different in quality. However, differences in sample size might influence the results when sub-

groups of the population are considered. Neither are the differences in the details in the equivalence methods decisive for the outcome.

What is decisive for the level of the rate of persons-at-risk-of-poverty is of course the chosen threshold for the poverty line. The obvious solution is to operate with a number of lines e.g. the 40, 50 and 60 per cent lines, as is the case both for the EUROSTAT and the OECD calculations.

## A Danish Example

In the summer of 2002, the Ministry of Finance published a report on income distribution and work incentives. Some of the chapters are translated into English (Ministry of Finance, 2003). Included is the rate of low-income defined as individuals with a disposable income lower than 50 per cent of the median income of the total population. The details in method are listed in Box 1.

### Box 1 Central methodological choices in Danish calculation

The analyses are based on the Danish Law Model System, which contains a 3.3 per cent representative sample of the Danish population. The sample covers the period from 1983 to 2000 and contains highly detailed historical register data. The extent and quality of these data imply that uncertainty is not a key factor.

All incomes earned by persons in a family are summarized to a family income. This family income is then split equally among the members of the family so that each member of the family has the same income. The actual family income is adjusted for differences in family size and composition by means of an equivalence-measure given by:  $(\text{number of adults})^{0.8} + \frac{1}{2} * (\text{number of children})^{0.8}$ . Thus the equivalence measure implies an assumption of positive returns to scale, and the presence of children implies a reduction in consumption possibilities per family member.

The income measure used is disposable income in 2000-prices. The consumer-price index is used to inflate incomes. Disposable income includes positive as well as negative net capital income. Including negative capital income has the effect that changes in the rate of interest and in the savings behaviour during the period of time concerned are included when the distribution of disposable income is analysed.

For owners of real estate, the capital income includes an imputed return on real estate amounting to 4 per cent of the tax-assessed property value. This imputed value replaces the taxable surplus on real estate. However, the tax payments by owners of real estate are not adjusted.

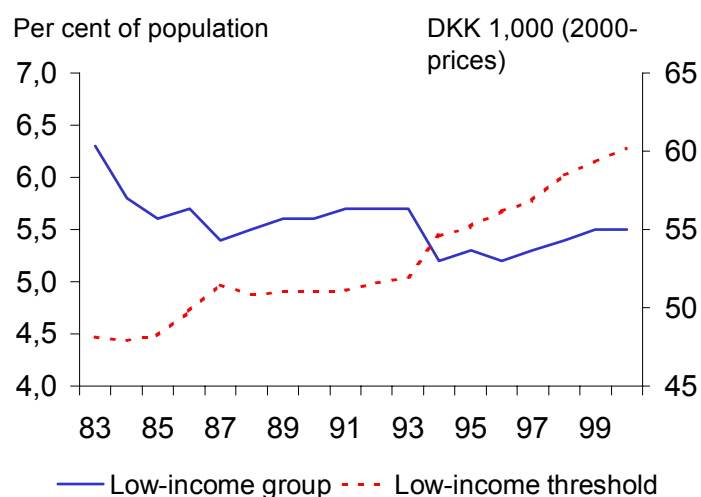
Source: Finansministeriet (2003).

Using this definition, the low-income group includes almost 300,000 persons in 2000 or 5.5 per cent of the population (See Figure 1). This is a smaller share than in 1983 and about the same as in the late 1980s. In 2000 prices, the low-income threshold has increased from about DKK 48,000 in 1983 to just over DKK 60,000 in 2000.

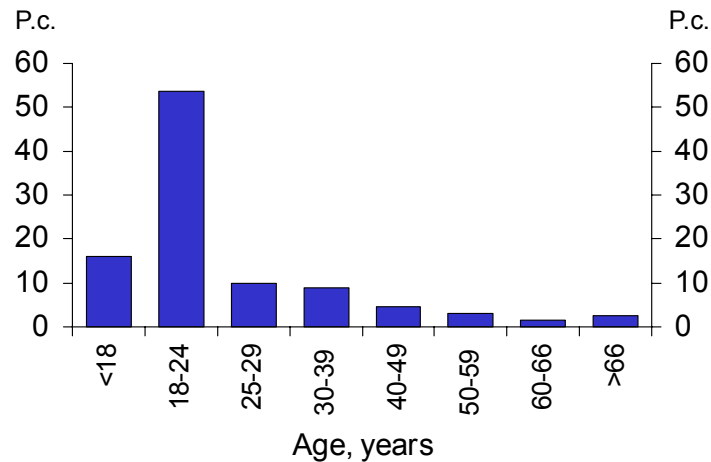
For most persons, an income under the low-income threshold reflects a temporary situation. Only 3 per cent of those in the low-income group in 1993 have been in the low-income group for the entire period from 1993 to 2000.

More than half of the low-income group in 2000 is from 18 to 24 years of age (See Figure 2). And more than half of them are still living with their parents. In the paper, the conclusion is that the majority of persons within the defined low-income group can hardly be defined as poor using the usual concept of poverty. Thus – it is stated - the applied definition of the low-income group is not very relevant for analysing living conditions or income distributions in Denmark. However, the purpose of this indicator is exactly to monitor how many and which groups of the population tend to fall far behind the majority of the population.

**Figure 1 The share of the population in the low-income group and the threshold in DKK, 1983-2000.**



Source: Finansministeriet (2003).

**Figure 2 The age profile of the low-income group, 2000**

Source: Finansministeriet (2003).

## Proposal for At-Risk-of-Poverty Indicators

The Danish example points at the necessity of distinguishing between different sub-groups of the population besides monitoring the rate for the total population. However, to limit the number of tables included, only tables distinguishing between household types were included: The following tables were proposed:

### Social indicator 6 – Table 1

**The share of persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 50 - 60% of the national median equivalised disposable income (after social transfers)**

Risk of poverty rates	40% of median disposable income	50% of median disposable income	60% of median disposable income
Denmark			
Finland			
Norway			
Sweden			

**Social indicator 6 – Table 2-6**

**The share of persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 50% of the national median equivalised disposable income (after social transfers)**

Household type	Single < 30	Single 30-64	Single >64	2 adults < 30	2 adults 30 –64	2 adults > 64
No dependent children						
One dependent child						
Two or more dependent children						

**Social indicator 6 - Table 7. Time series as in Table 1 above**

During the work with the proposal for a set of indicators on Sustainable Social and Health Indicators in the Nordic Countries, it was stressed that because of the workload it is preferred to rely on the work already done within other contexts. Both the EUROSTAT and the OECD option present themselves as possibilities in this connection. Among the pro's and con's for the alternatives are:

**The EUROSTAT at-risk-of-poverty indicator**

Pros

- Calculated every year since 1994
- EUROSTAT does the work (although not for wanted subgroups)
- Almost all data are available for everybody.

Cons

- The ECHP has been criticised for its quality of information on the income components. However, results are reasonable, and quality is likely to be improved in the EU-SILC.
- Iceland is not included.

**The OECD poverty indicators**

Pros

- Calculated in a number of waves since mid 70's
- Based on national micro-data, which are supposed to be the best sources

Cons

- Only carried out with irregular intervals. However, the national experts might be persuaded to update the harmonised OECD tables annually.
- Iceland is not included.



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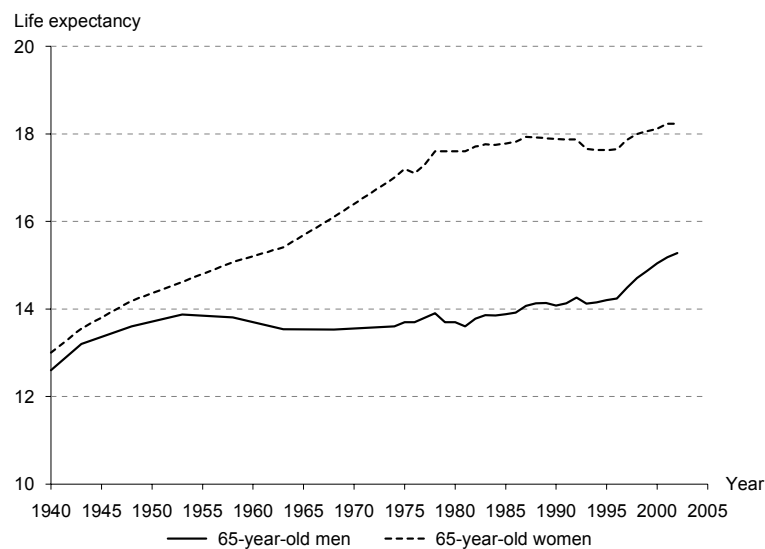
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# Health Expectancy and the Hypotheses of Compression, Expansion and Dynamic Equilibrium

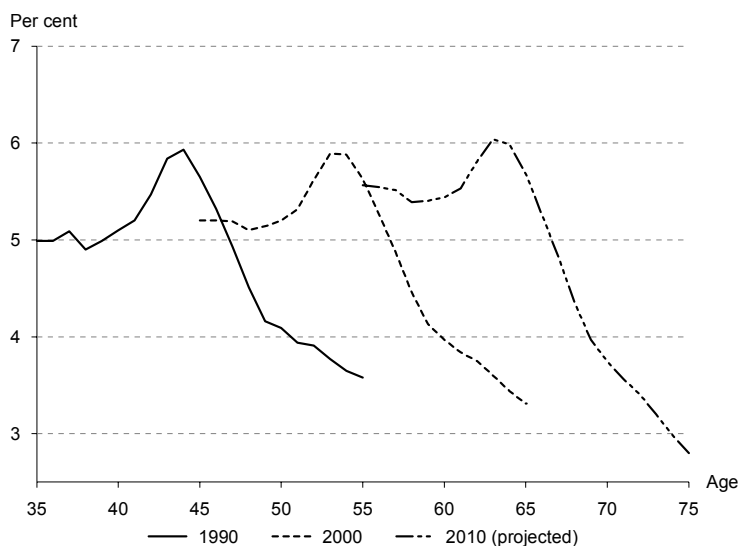
## An Outline of the Demographic Development in Denmark

In Denmark, as in other developed countries, life expectancy has increased considerably since systematic registration of mortality began. Around 1900, the life expectancy of newborn babies was almost 53 years for boys and well over 56 years for girls. Today, a hundred years later, life expectancy has increased to almost 75 and well over 79 years for newborn boys and girls, respectively. The reduced infant mortality has contributed the most to this development, but generally mortality has gone down in all age groups. The story of life expectancy development in Denmark, however, is also one of stagnated life expectancy since the 1950's for men and the 1970's for women, which now seems to be going up again since the mid 1990's. As the mortality of children and adolescents is reduced to a minimum, future increases in life expectancy will have to be achieved by reducing the mortality among adults and elderly. Figure 1 shows that the expected remaining lifetime of 65-year-olds has increased since 1995 after many years of stagnation.

**Figure 1** Life expectancy at age 65 in Denmark, 1940-2002

When describing the demographic development, the age distribution of the population should be included. A population prognosis from Statistics Denmark shows a modest increase from 5.4 million in 2002 to approx. 5.5 million in 20 years and with a drop to 5.4 million towards the middle of this century. Twenty years ago, in 1983, there were 755,000 Danes over 65 years. Today, there are almost 795,000 over 65 years, which is 15 per cent of the Danish population. In 10 years, in 2013, it is estimated that there will be 967,000 and in 2023 approx. 1,121,000 Danes over 65 years, which corresponds to well over 20 per cent of the total population. During the next 10-15 years the post-war baby boomers will be 65 and retired (Figure 2). A sustainable development regarding social and health care matters must take these demographic changes into account. One important question is: How much care will the new generations of elderly require?

**Figure 2 The baby boom wave. Age distribution within an interval of 20 years of Danes born 1935-1955**



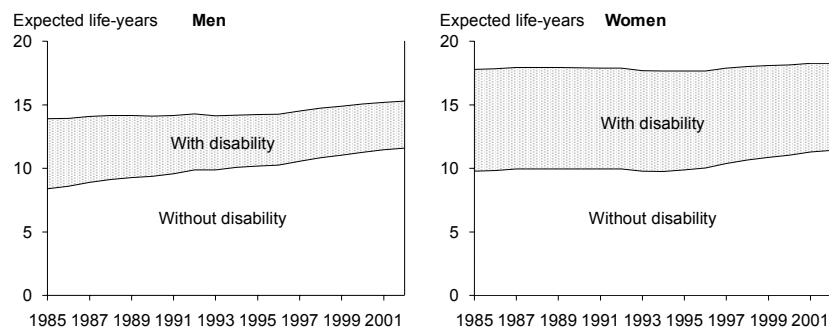
## Theories about the Relationship Between Increasing Life Expectancy and Lifetime in Good Health

As life expectancy increases, the question arises as to what extent a longer life means more years in good or bad health. In 1980, J.F. Fries published a paper introducing the hypothesis of compression of morbidity. It claims that human lifetime has an upper limit, but that increased improvement of the health conditions will postpone the development of chronic disease. A counter-hypothesis is called ‘pandemic of mental disorders, chronic diseases and disabilities’ or ‘expansion of morbidity’ and claims that the life span will increase but that the years added will primarily be years with chronic disease and disability (Kramer, 1980; Olshansky, 1991). A third theory says that although the declining mortality will increase the prevalence of chronic disease, diseases will generally become less serious – ‘dynamic equilibrium’ (Manton, 1982). These hypotheses have been studied by calculating trends in health expectancy in some countries. Health expectancy, i.e. average lifetime in various states of health, combines morbidity and mortality into a

single indicator. Health expectancy is an important supplement to the traditional health indicators such as life expectancy, mortality and use of the health care system. This indicator will of course depend on the measures of health status applied, and the results of the trend calculations offer different conclusions regarding the relation between increased lifetime and expected lifetime in good health. Examples of this are shown below.

Figure 3 shows the development of expected lifetime with and without disability of 65-year-old Danes. Disability is defined as functional limitations in terms of walking, walking on stairs, carrying 5 kg, reading, hearing and speaking. In 2002, life expectancy of 65-year-old men and women was 15.3 years and 18.2 years, respectively, and expected lifetime without disability was 11.5 years for both sexes. The figure seems to indicate compression of morbidity.

**Figure 3 Life expectancy and expected lifetime with and without disability of 65-year-old Danes**



If we take a look at musculoskeletal diseases, which are among the most frequent non-fatal diseases, the trend seems to be going in the direction of compression of morbidity for men and dynamic equilibrium for women (Figure 4).

**Figure 4 Life expectancy and expected lifetime with and without musculoskeletal diseases of 65-year-old Danes**



Since the mid 1970's, mortality due to ischaemic heart disease has dropped dramatically in Denmark as in the Nordic and in many other countries. Incidence has also been somewhat reduced. This development can be explained partly by a healthier lifestyle, but first and foremost by better treatment of patients with cardiovascular diseases. As a consequence of this development, the prevalence of cardiovascular diseases has increased. Figure 5 shows the number of patients over 65 with ischaemic heart disease. Part of the increase is due to the growing number of elderly in the population.

**Figure 5 Prevalence of ischaemic heart diseases among Danes above 65 years**

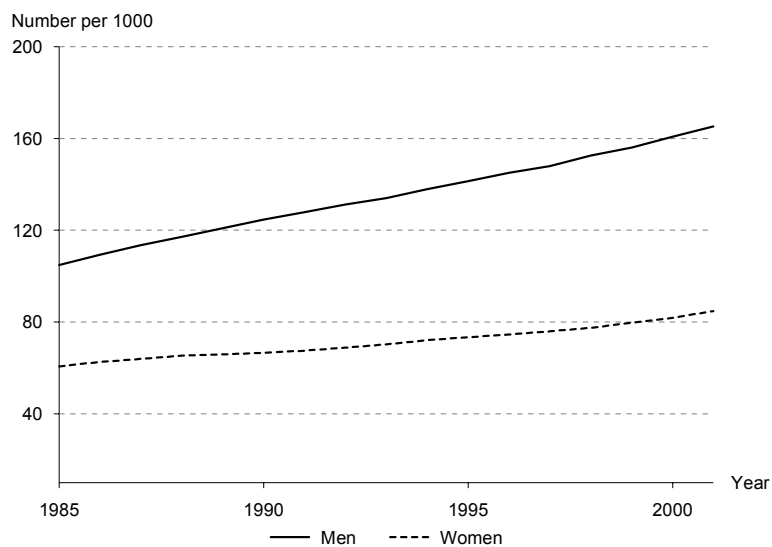
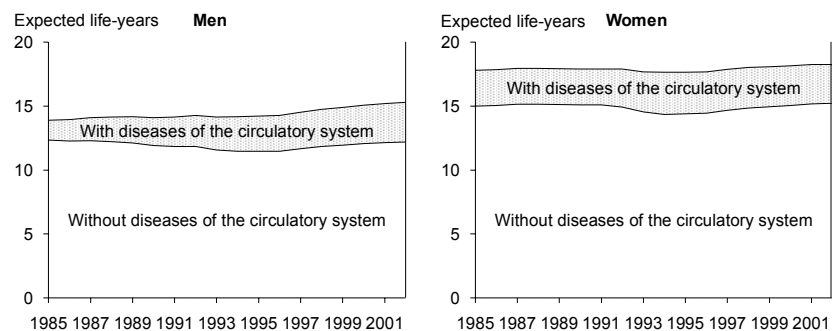


Figure 6 shows that the trend in expected lifetime with diseases of the circulatory system of 65-year-old Danes does not support the hypothesis of compression of morbidity, but rather expansion of morbidity for men and dynamic equilibrium for women. This observation is not surprising because several studies have reported improved survival after myocardial infarction among male patients but no or only modest improvement among female patients. Furthermore, the result reflects the development shown in Figure 5.

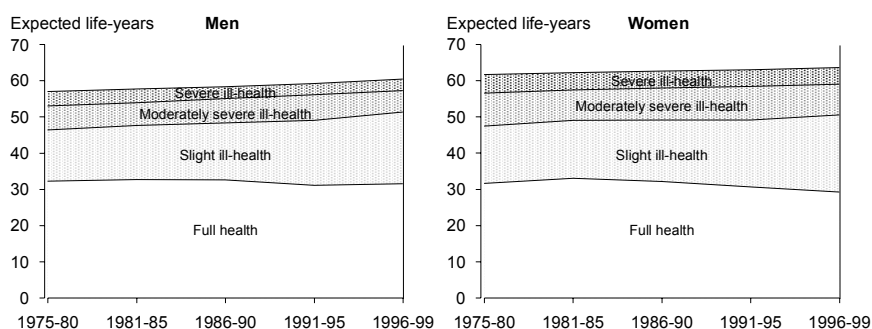
**Figure 6** Life expectancy and expected lifetime with and without diseases of the circulatory system of 65-year-old Danes



The Figures 3, 4 and 6 are based on life tables from Statistics Denmark and the Danish Health Interview Surveys of 1987, 1991, 1994 and 2000. Figure 5 is based on data from the Danish National Hospital Register and the Register of Causes of Death.

Health expectancy in Sweden has been determined by a health index based on mortality data, census data and self-reported health status data from Surveys of Living Conditions. Health is grouped in four levels: "full health", "slight ill health", "moderately severe ill health", "severe ill health" (Boström and Persson, 2001). Figure 7 shows that partial life expectancy (restricted to the age interval 16-84 years) has increased since the 1970s. Whereas no increase in years with full health was seen, years with slight ill health increased. Thus, the development in Sweden seems to support the hypothesis of dynamic equilibrium.

**Figure 7** Life expectancy and expected lifetime in various states of health of 16-84-year-old Swedes



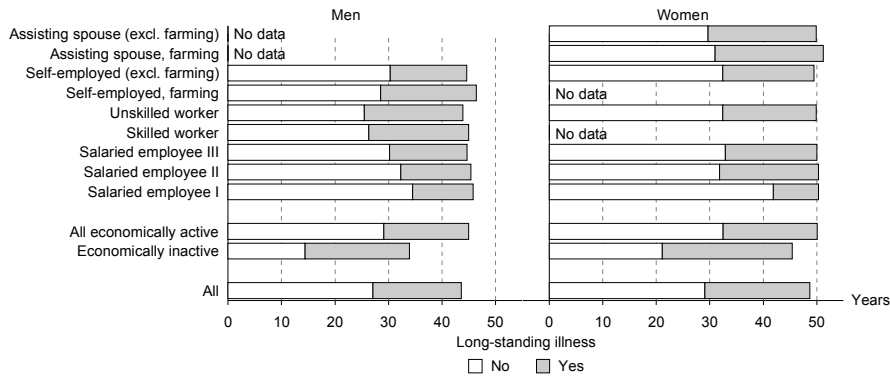
Trends in health expectancy have been estimated in many countries, but international comparisons are difficult to make as health indicators vary according to the health survey questions asked, the answer categories and the formulation of answers. However, the direction of trends in life expectancy and expected lifetime without disability has been compared among some countries (Robine et al., 1999).

## Social Differences in Health Expectancy

There are great social differences in health expectancy. Figure 8 shows expected lifetime without and with long-standing illness in various occupational groups in Denmark towards the end of the 1980's (Brønnum-Hansen, 2000). It is no surprise that there is a marked difference between economically active and inactive Danes, which is primarily due to the fact that many ill people are forced to leave the labour market. Among the economically active, the social gradient in health is most pronounced among men. Among women there are most expected years without long-standing illness among salaried employees I, whereas the differences among the other groups of actively employed people are modest. Social differences in health expectancy have also been found in Sweden (Boström and Persson, 2001), Finland and Norway (Kaprio et al., 1996; Sihvonen et al., 1998) and in other countries. The distinct association between health and social conditions is well known and is seen whether or not the social grouping is based on occupation, education or income.



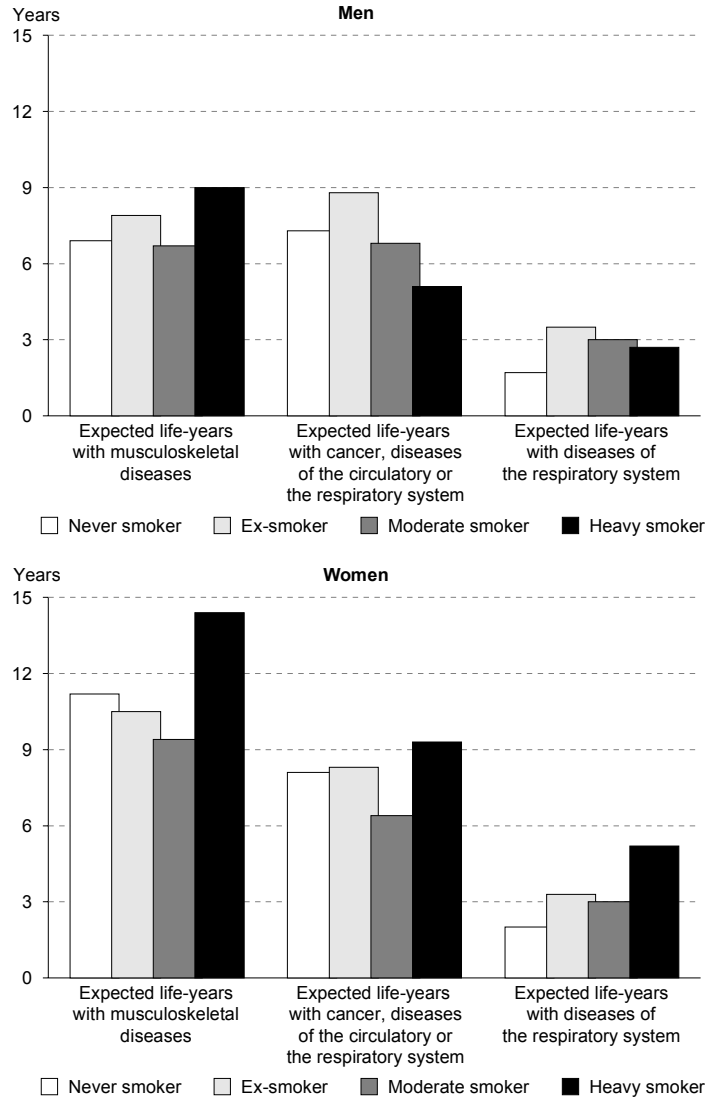
**Figure 8** Expected lifetime at age 30 without and with long-standing illness by socio-economic groups in Denmark in the late 1980s



## The Impact of Smoking on Health Expectancy

Smoking is one of the most important preventable risk factors. On average, heavy smokers, i.e. people smoking at least 15 cigarettes a day, live well over seven years less than never-smokers, but they must expect to live just as many or more years with long-standing diseases than never-smokers (Brønnum-Hansen and Juel, 2001). It is a well-known fact that smoking increases the risk of lung cancer and other types of cancer, respiratory diseases, cardiovascular diseases and many other diseases. Figure 9 shows that smokers must expect more years with musculoskeletal diseases than never-smokers in spite of a shorter total lifetime (Brønnum-Hansen and Juel, 2003). This result is remarkable, as this disease group is not considered to be distinctly associated with smoking.

**Figure 9** Expected lifetime with selected diseases of 20-year-old Danes



## The Effect of Prevention – an Example

The overall targets of the Danish Government programme for public health and health promotion, 1999-2008, were to increase life expectancy and quality of life and to reduce social inequality in health (The Danish Government Programme for Public Health and Health Promotion, 1999-2008, 2000). As to intervention against smoking, some of the goals in the programme were to reduce the proportion of cigarette smokers by one-third over 10 years and to reduce the proportion of heavy cigarette smokers (• 15 cigarettes per day) by 25 per cent over 10 years. Another goal was for adults to carry out one half hour of physical activity every day. The health benefits of successful implementation of these goals as to reduced mortality from ischaemic heart disease have been predicted by use of the simulation model Prevent (Brønnum-Hansen, 2002). Fifteen years after the start of a gradual reduction of the smoking prevalence by one-third, deaths from ischaemic heart disease before age 65 was estimated to be reduced by 10 per cent for men and 15 per cent for women. If all physically inactive people younger than 65 years were to start easy exercise, ischaemic heart disease mortality was predicted to be reduced by 3 per cent for men and 6 per cent for women. The Prevent-simulation results are summarized in Table 1. Because some epidemiological data are less valid for the older part of the population compared with younger people, no results are presented for the entire population including people dying after the age of 65. For instance data for the older part of the population on cause of death, particularly with respect to cardiovascular diseases are often uncertain, the non-response rate in health surveys are high among older people and relative risk estimates are uncertain for older age groups.

**Table 1 Prevent-simulation of the effect on death from ischaemic heart disease (IHD) of reductions in risk factor prevalence set forth as goals in the Danish Government programme for public health and health promotion, 1999-2008. Mortality reduction before age 65**

Intervention	Reduction of IHD deaths after 15 years, percent	
	Men	Women
The proportion of the population who smokes cigarettes should be reduced by one-third over 10 years	10	15
The proportion of heavy cigarette smokers (15+ cigarettes) should be reduced by 25 per cent over 10 years	5	7
All adults who spend their leisure time in a sedentary position should be physically active for half an hour every day	3	6

## Concluding Remarks

The Nordic countries face major burdens of health care - first of all as a result of a growing elderly population. But health among the elderly seems to improve, although this conclusion depends on the choice of health indicator.

For many years, focus has been on life threatening diseases such as cancer and cardiovascular diseases, whereas non-fatal chronic diseases such as musculoskeletal diseases for instance have not been given the same attention. Progress in the treatment of fatal diseases does not always mean that the patient is cured, but that his/her lifetime is increased by years of chronic disease. Health promotion reducing the risk of illness, however, is expected to increase lifetime in good health. In the long run the burden of disease on society depends on the priorities given to treatment and health promotion. The examples mentioned in this chapter shows for instance that success when treating patients with myocardial infarction increases lifetime with ischaemic heart disease, that health promotion by means of interventions against smoking not only increases lifetime but also lifetime in good health, and that intervention against musculoskeletal diseases, being one of the most widespread diseases in the population, may increase lifetime in good health. What will happen in the future with the distribution of years in good and bad health, and will the development tend to be compression or expansion of morbidity or dynamic equilibrium? This depends on the priorities of the decision-makers in the health sector.

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# The Finnish Health 2015 Programme: Monitoring the Attainment of the Targets

## Health Targets in Finnish Policy

The Finnish health system was under a strong centralized control until the mid 1980s. Social and health care in the municipalities was strictly directed by national norms and economic instruments. Since the late 1980s, a strong decentralisation has taken place in the planning and management of health promotion and health care in Finland. The possibility of setting national norms was gradually weakened, the system of national annual planning was ceased and the state subsidies were paid on the basis of economic, demographic and geographic features of the municipality. Moreover, due to the simultaneous economic depression, the level of state subsidies decreased sharply. This change brought about a need to reconsider the previously quite negative attitude towards quantitative health outcome targets.

In the present decentralised system, where the number of more or less autonomous actors is high both in the health sector and outside it, outcome

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<sup>13</sup> Seppo Koskinen, KTL, and the working group1 from KTL, STAKES and TTL: KTL (National Public Health Institute): Jussi Huttunen (chair), Arpo Aromaa, Anna Kattainen, Seppo Koskinen, Erkki Vartiainen  
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TTL (Finnish Institute of Occupational Health): Kaj Husman, Timo Kauppinen, Jorma Rantanen, Jouni Toikkanen

targets have been regarded as an important new possibility of guiding the multitude of actors in the health field when Central Government can no longer use financial incentives in directing the operational health policy. Foreign and national experiences have suggested that measurable health outcome targets may sometimes be useful, raise publicity, create commitment and provide criteria for evaluation (Koskinen and Melkas, 2002). On the other hand, other experiences point in the opposite direction: targets inappropriate in their quantity or content may even have negative effects for example by directing emphasis to measurable instead of important phenomena or creating distrust against health policy due to its totally unrealistic targets (Leppo, 1995).

Targets in the Finnish Health 2015 programme:

During the preparation of the national public health programme, Health 2015 (Government Resolution, 2001), the Finnish national public health committee set criteria for well-designed health targets. According to these criteria, useful health targets

- are not too numerous for the importance of each target to be emphasized,
- are wide enough to cover major public health problems and facilitate action in a wide area, instead of pointing measures to specific narrow problems where progress can easily be measured,
- are realistic, easily understandable and appreciated by the public and the politicians in order to remain credible and retain large commitment,
- lend themselves to evaluation and measurement using a generally accepted method,
- are formulated together with key implementers, and
- can be broken down to process targets, which show the way to how the health outcome targets can be achieved.

Based on the comprehensive preparatory work done by the national public health committee, the Finnish Government, in 2001, gave a resolution on the Health 2015 public health programme. The programme includes five targets for different age groups and 3 targets for everyone (Table 1). Some of the eight main targets include sub-targets; altogether the programme sets 19 separate targets.

*The main targets for the year 2015 in the Finnish national public health programme, Health 2015*

*Targets for different age groups*

- 1 Child health and well-being will increase, and symptoms and diseases caused by insecurity will decrease appreciably.
- 2 Smoking by young people will decrease to less than 15% of those aged 16-18; health problems associated with alcohol and drug abuse among the young will be dealt with appropriately and will not exceed the level of the early '90s.
- 3 Accidental and violent deaths among young adult men will be cut by a third of the level during the late '90s.
- 4 Working and functional capacity among people of working age and workplace conditions will improve, helping people to cope longer in working life; retirement will be about three years later than in 2000.
- 5 Average functional capacity among people over 75 will continue to improve as it has during the last 20 years.

*Targets for all*

- 6 Finns can expect to remain healthy for an average of two years longer than in 2000.
- 7 Finnish satisfaction with health service availability and functioning, and subjective healthiness and experiences of environment impacts on personal health will remain at least at the present level.
- 8 In implementing these targets, another aim will be to reduce inequality and increase the welfare and relative status of the population groups in the weakest positions. The objective will then be to reduce mortality differences between the genders, groups with different educational backgrounds and different vocational groupings by a fifth.

## **Follow-up of the Attainment of the 8 Targets**

In September 2003, three research institutes operating under the administration of the Ministry of Social Affairs and Health submitted to the Advisory Board for Public Health a proposal of how to follow up the attainment of the main targets in the Health 2015 programme. The institutes are KTL



(National Public Health Institute), Stakes (National Research and Development Centre for Welfare and Health) and TTL (Finnish Institute of Occupational Health). In the preparation of the proposal, criteria for optimal indicators were defined. According to the criteria, the indicators should be

- valid,
- sensitive to change,
- available at the regional level where the activities take place,
- available for the whole follow-up period (2001 - 2015),
- updated frequently,
- assembled into an easily accessible data base,
- reasonably few in number but cover the main areas of the target and
- stimulate local and regional discussion on the present situation and on means needed for improving the situation.

It is obvious that not all of these challenging criteria could be satisfactorily met for each indicator due to various reasons, such as limitations in the available data.

In the proposal, follow-up indicators are classified as key indicators and complementary indicators. The key indicators provide a good description of time trends in the health outcomes defined in the targets of the programme. The supplementary indicators shed light on other important health outcomes and the factors affecting the health outcomes. Altogether there are 43 key indicators (see Appendix) and more than 300 supplementary indicators. For each target, the supplementary indicators are further divided into indicators of global health, other important health problems, and causes and mechanisms behind the health outcome indicators. According to the present plan, all indicators will be presented separately for women and men.

Information concerning the attainment of the targets should be available at each regional level where the implementation of the programme takes place. As municipalities have a central responsibility to promote the health of their residents, also the indicators describing the development of the population's health should be available at the municipality level. However, more than half of the 446 Finnish municipalities have less than 5 000 residents, and in only 50 municipalities the number of residents exceeds 20 000. Municipality level information can therefore not be presented on the basis of survey data, with the exception of the School Health Survey, which covers all pupils in the 8th and 9th grade. On the municipality level, even registers with full coverage often yield sporadic information on random variables, such as mortality and the incidence of various other health related events. Consequently, many of the indicators can only be reliably presented

by region or on the national level. In the appendix, the concept of region varies between indicators, referring usually to province, administrative region or hospital district. The choice between alternative regional classifications is made on the basis of relevance of the classification with regard to the regional organisation of the principal actors.

As requested by the Ministry of Social Affairs and Health, the indicators focus on health outcomes and their environmental, behavioural and biological determinants. Monitoring and evaluation of the implementation of the programme and activities on various sectors and levels of government will take place in connection with the Social and Health Report made every four years.

## Data Sources and Distribution

The research institutes (KTL, Stakes, TTL) play a central role in collecting and analysing the necessary data. In addition, they are responsible for carrying out the follow-up, and devising new monitoring instruments, if needed. Other institutes with a significant role in data collection and analysis include Statistics Finland, the SII (Social Insurance Institution) and the FCP (Finnish Centre for Pensions). The institutes responsible for data provision, together with the Ministry of Social Affairs and Health, are also expected to bring the indicators together into an easily accessible information system open to national, regional and local actors. The building of the information system will start from the key indicators and the most important supplementary indicators, followed by other supplementary indicators.

The main sources of data include national registers on mortality, morbidity, use of services, health related benefits, etc., maintained mainly by Statistics Finland, Stakes and the SII. In addition to the register-based indicators, there is also a large number of indicators derived from regular, representative health interview (HIS) and health examination (HES) surveys carried out mainly by the KTL and the TTL. The indicators of healthy life expectancy combine register-based information with data from surveys.

## Main Shortcomings and Challenges

For some of the targets, the proposed indicators provide a reliable and comprehensive basis for follow-up and evaluation. For others, the situation is not as good, and serious shortcomings can be noticed in the indicator system. Perhaps the most serious problem is that despite the systematic collec-

tion of information on children's health in child-health clinics and school health care covering practically all children, these data are not available for the purpose of national and regional health monitoring. This shortcoming is expected to be alleviated by a new project in Stakes aiming at collecting the most important data from the primary health care into a national information system.

Secondly, the continuity of many surveys of key importance to the monitoring system is insecure. For many important surveys, which have so far been repeated several times, the funding has to be raised separately each time by convincing the decision makers of the necessity of the survey. An example of this is the series of population surveys on health and health service use, started in 1964, which has, among other things, provided the only national source of follow-up information on children's health.

Thirdly, there is a lack of health examination survey data (HES) on children, adolescents and young adults, and a comprehensive HES on middle-aged and elderly adults has only been carried out twice, with an interval of more than twenty years. Reliable assessment of the development of functional capacity as well as mental, musculoskeletal and oral health, for example, requires health examination data, and two decades is much too long an interval for monitoring purposes. Furthermore, some important health interview data (HIS) have been collected only in HES with long intervals. Perceived need for care as well as questions measuring cognitive functioning can well be included in HIS, which can be repeated with shorter intervals.

The fourth major shortcoming is that information on health inequalities has not been routinely reported in many central HIS and HES. The unfavourable development of inequities in health emphasises the need for systematic follow-up of inequities in health and their determinants.

Finally, a close collaboration of research institutions and other organisations maintaining health-relevant registers in planning, collecting, analysing, reporting and distributing health information is very important in order to avoid overlapping, cover all the main areas of data collection, guarantee easy access to information and bring together expertise in different fields. There are good signs of improvement in this aspect.

## Conclusions

Lessons learnt from the earlier positive and negative experiences have been tried taken into account in the formulation of the new Finnish health targets. There are only eight targets and they are quite wide in scope, under-

standable, and except for the first one, also readily measurable. It remains to be seen whether the targets turn out to be realistic and whether they succeed in what is their main purpose: to create commitment and effective activity among the various actors in the health sector and outside it. Much of the success will depend on the functioning of the monitoring system. The challenges in planning, collecting, analysing, reporting and distributing adequate health surveillance information must therefore be met.

In addition to the proposed system of health-outcome indicators, the follow-up and evaluation of the Health 2015 programme requires

- 1 complementing the existing data sources in order to fill the gaps in the data basis for surveillance,
- 2 improvement of the data collection, analysis and distribution to better fulfil the regional and local needs,
- 3 evaluation of the implementation of the 36 lines of action in the Health 2015 programme,
- 4 broad-minded interpretation of the indicators taking into account qualitative information on factors associated with reaching the targets and on the validity of the indicators,
- 5 interpretation of the indicators from the point of view of the life course, paying attention to the earlier phases of the life course in the development of health problems,
- 6 supplementing the present list of indicators with those relating to the processes of implementation of the Health 2015 programme.

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## Appendix. Key Indicators for Monitoring the Attainment of the Targets Set in the Health 2015 Public Health Programme

### Target 1 Children

Indicator	Data source	Regional level	Updating frequency
a) Well-being			
1. % of children aged 0-17 living in poor families	Statistics Finland	Municipality	1 year
2. % of children aged 0-17 taken into custody by authorities during the past year	Stakes	Region	1 year
b) Health			
3. Infant mortality	Statistics Finland	Whole country Region	1 year 5 years
4. % of children aged 12 with healthy teeth	Statistics on dental services	Municipality	1 year
c) Insecurity			
5. % of children aged 0-17 subjected to family violence	Police statistics on home visits	Whole country	1 year
6. % of children aged 14-15 subjected to bullying at school	School health survey	Municipality	2 years

**Target 2 Adolescents**

Indicator	Data source	Regional level	Updating frequency
a) Smoking			
1. Prevalence of daily smoking at age 14-15	School health survey	Municipality	2 years
b) Alcohol abuse			
2. Prevalence of getting drunk at least monthly at age 14-15	School health survey	Municipality	2 years
c) Drug abuse			
3. Proportion of children aged 14-15 who have used/experimented with narcotics	School health survey	Municipality	2 years
d) Health problems associated with alcohol and drug abuse			
4. Mortality due to alcohol and drugs at age 15-34	Statistics Finland	Whole country	1-3 years
5. Incidence of hospital care due to alcohol and drugs at age 15-24	Stakes	Region	1 year
6. Incidence of infections associated with i.v. drugs (hepatitis, HIV) at age 15-24	KTL	Whole country	1 year

**Target 3 Young adults**

Indicator	Data source	Regional level	Updating frequency
1. Mortality from suicides at age 20-34	Statistics Finland	Whole country Region	1 year 3-5 years
2. Mortality from accidents at age 20-34	Statistics Finland	Whole country Region	1 year 3-5 years

**Target 4 People of working age**

Indicator (by 10-year age group when feasible)	Data source	Regional level	Updating frequency
a) Working capacity and functional capacity			
1. Prevalence of excellent self reported physical working capacity at age 25-64	TTL	Region	3 years
2. Prevalence of excellent self reported mental working capacity at age 25-64	TTL	Region	3 years
3. Incidence of work-disability pensions at age 25-54	Social Insurance Institution (SII) & Finnish Centre for Pensions (FCP)	Municipality	1-3 years
4. Prevalence of inability to run 100 metres without rest at age 15-64	KTL	Whole country Region	2 years 6 years
5. Prevalence of difficulties in everyday activities, work duties or other requirements of daily life at age 15-64	KTL	Whole country Region	2 years 6 years
b) Working conditions			
6. % satisfied with their current job, in the work force aged 25-64	TTL	Region	3 years
7. % reporting frequent haste at work, in the work force aged 25-64	TTL	Region	3 years
c) Coping longer in working life			
8. % of gainfully employed at age 25-64 who expect that their health will allow them to continue working in the current occupation till retirement age	TTL	Region	3 years
9. 'Working-life expectancy' at age 50	SII & FCP	Region	1-3 years

**Target 5 Elderly**

Indicator (by 10-year age group when feasible)	Data source	Regional level	Updating frequency
1. Prevalence of daily need for help <sup>1</sup>	KTL	Whole country Region	2 years 6 years
2. Prevalence of difficulties in reading a newspaper	KTL	Whole country Region	2 years 6 years
3. Prevalence of difficulties in moving about outdoors	KTL	Whole country Region	2 years 6 years
4. Prevalence of reduced cognitive capacity (MMSE) <sup>1</sup>	KTL	Whole country Region	2 years 6 years
5. % living at home (i.e. not in institutions or sheltered housing with intensive care)	Stakes	Municipality	1 year

<sup>1</sup> Data for indicators 1 and 4 are available for 2000-01 (Health 2000 project) and they should be collected on a regular basis in the future to allow follow-up.

**Target 6 Healthy life expectancy**

Indicator	Data source	Regional level	Updating frequency
1. Life expectancy at birth	Statistics Finland	Region Municipality	1 year 3-5 years
2. Healthy life expectancy at age 15 (self rated health average or better) <sup>1</sup>	KTL in collaboration with Statistics Finland and Stakes	Region	2 years
3. Independent (need for help less often than daily) life expectancy at age 65 <sup>1</sup>	KTL in collaboration with Statistics Finland and Stakes	Region	2 years

<sup>1</sup> Indicators 2-3 have not so far been routinely produced.



**Target 7 Satisfaction with health services, subjective health and impact of environment on health**

Indicator (by 10-year age group when feasible)	Data source	Regional level	Updating frequency
a) Satisfaction with health service availability and functioning			
1. Proportion satisfied with health services	European Social Survey	Region	2 years
2. Proportion of work force aged 25-64 who are satisfied with their occupational health care	TTL	Region	3 years
b) Self rated health			
3. Prevalence of average or worse self rated health	KTL and Stakes	Region	2 years
c) Experiences of environment impacts on personal health			
4. % feeling insecure in one's residential area	KTL and Statistics Finland	Region	2 years
5. % of work force aged 25-64 reporting a symptom/trouble caused or exacerbated by work	TTL	Region	3 years

**Target 8 Inequalities in health (by gender and socio-economic position)**

Indicator	Data source	Regional level	Updating frequency
1. Life expectancy at birth	Statistics Finland	Region	5 years
2. Healthy life expectancy at age 35 (self rated health average or better) <sup>1</sup>	KTL in collaboration with Statistics Finland and Stakes	Region	5 years
3. Independent (need for help less often than daily) life expectancy at age 65 <sup>1</sup>	KTL in collaboration with Statistics Finland and Stakes	Region	5 years

<sup>1</sup> Indicators 2-3 have not so far been routinely produced.

## *Appendix 1*

### **Seminar concerning sustainable social and Health Development May 27, 2003 in Stockholm Södra Paviljongen; Vasagatan 1**

#### PROGRAMME

<b>Moderator</b>	<b>Johannes Nielsen, NOMESCO/NOSOSCO</b>
10:00 10:10	Opening of the Seminar by Ilija Batljan, Ministry of Health and Social Affairs
10:10 10:35	Nordic indicators seen in relation to the international collaboration in this field <ul style="list-style-type: none"><li>• Agenda 21</li><li>• OECD</li><li>• EU</li></ul> <p><i>Christer Eriksson, Ministry of Health and Social Affairs, Sweden</i></p>
10:35 11:15	The proposed indicators and additional indicators for the health services with figures <ul style="list-style-type: none"><li>• General Indicators</li><li>• Social Indicators</li><li>• Health Indicators</li><li>• Health services indicators</li></ul> <p><i>Torben Fridberg, SFI, Denmark, Niels Kr. Rasmussen, SIF, Denmark, and Johannes Nielsen (NOMESCO &amp; NOSOSCO)</i></p>

11:15	11:30	Coffee break
11:30	12:00	The proposed indicators continued
12:00	12:30	The ageing population; trends and problems in the Nordic countries, with a special focus on: <ul style="list-style-type: none"> <li>• Fertility</li> <li>• Labour force</li> <li>• Retirement</li> <li>• Growth and expenditures for pensioners</li> </ul> <i>Helge Brunborg, Ssb, Norway</i>
12:30	14:00	Lunch
14:00	14:45	Nordic studies on growth and financing of the social and health expenditures 2000-2025 <ul style="list-style-type: none"> <li>• The Finnish</li> <li>• The Swedish</li> <li>• Other</li> </ul> <i>Marja-Liisa Parjanne, Ministry of Social Affairs and Health, Finland;</i> <i>Ilja Batljan, Ministry of Health and Social Affairs, Sweden</i>
14:45	15:15	The basis for sustainability for families/Mortality and morbidity among children in single parent families <ul style="list-style-type: none"> <li>• Socioeconomic differences</li> <li>• Education</li> <li>• Housing</li> <li>• Poverty/Social exclusion</li> </ul> <i>Gunilla Ringbäck Weitoft, National Board of Health and Welfare, Sweden</i>
15:15	15:30	Coffee break

## APPENDIX 1: PROGRAMME

15:30	16:00	Poverty/Social exclusion. Analysis based upon Nordic micro data ? <i>Torben Fridberg; Denmark</i>
16:00	16:30	Health projections <ul style="list-style-type: none"><li>• The expansions versus the compression hypothesis</li><li>• Examples of risk factor modelling</li></ul> <i>Henrik Brønnum-Hansen, SIF, Denmark</i>
16:30	17:00	Well-being in relation to health <i>Seppo Koskinen, National Public Health Institute, Finland</i>
17:00	17:15	Conclusion <i>Svein Magnusson, Ministry of Health and Social Security, Chairman of NOMESCO, Ilija Batljan, Ministry of Health and Social Affairs, Head of the Swedish NOSOSCO delegation and Johannes Nielsen; Head of Secretariat NOMESCO and NOSOSCO</i>
17.15		Closing of the seminar <i>Lars Berg, National Board of Health and Welfare, Sweden, Head of Swedish NOMESCO delegation</i>

## *Appendix 2*

### Participants at Seminar on Sustainable Development

**Denmark:**

Niels. K. Rasmussen  
National Institute of Public Health

Henrik Brønnum-Hansen  
National Institute of Public Health

Per Kampmann  
National Labour Market Authority

Jens Christian Sibbersen  
National Labour Market Authority

Christian Nielsen  
Ministry of Social Affairs

Torben Fridberg  
SFI

Georg Bidstrup  
Ministry of Social Affairs

**Finland:**

Rolf Myhrman  
Ministry of Social Affairs and Health

Seppo Koskinen  
Ministry of Social Affairs and Health

Marja-Liisa Parjanne  
Ministry of Social Affairs and Health

## APPENDIX 2: PARTICIPANTS

Pirjo Ylöstalo  
The Social Insurance institute

Mika Vuori  
STAKES

Mika Gissler  
STAKES

Filio Degni  
Dept. of Public Health  
Turku University

Eva-Marita Rinne  
University of Jyväskylä

Risto Honkanen  
Univeristy of Kuupio

Heli Kosvumaa-Honkanen  
Kuupio University Hospital

### **Iceland:**

Sveinn Magnusson  
Ministry of Health and Social Security

### **Norway:**

Marit Getz Wold  
Directorate for Health and Social Affairs

Asbjørn Haugsbø  
Directorate for Health and Social Affairs

Kjell Terje Gundersen  
Directorate for Health and Social Affairs

Irene Henriksen Aune  
Directorate for Health and Social Affairs

Nina Ruth Kristoffersen  
Directorate for Health and Social Affairs

Ann Lisbet Brathaug  
Statistics Norway

Helge Brunborg  
Statistics Norway

Øyvind Hesselberg  
Norwegian Institute of Public Health

Dag Ellingsen  
Statistics Norway

Bente Hagerupsen  
Norwegian Ministry of Social Affairs

**Sweden:**  
Ilja Batljan  
Ministry of Social Affairs and Health

Christer Eriksson  
Ministry of Social Affairs and Health

Carl Älfvåg  
Ministry of Social Affairs and Health

Lars Berg  
National Board of Health and Welfare; EpC

Ingalill Paulsson Lütz  
National Board of Health and Welfare; EpC

Gunilla Ringbäck Weitoft  
National Board of Health and Welfare; EpC

Lars Johansson  
The Swedish Federation of County Councils

Bjørn Smedby  
Dept. Of Public Health and Caring Science

Bengt Eklind  
Ministry of Social Affairs and Health

## APPENDIX 2: PARTICIPANTS

### **Other:**

Martti Virtanen  
Nordic Centre for Classification in Health Care  
Uppsala Science Park

Johannes Nielsen  
NOMESCO&NOSOSCO Secretariat

Jesper Marcussen  
NOMESCO&NOSOSCO Secretariat



## *Appendix 3*

# Key figures

## Indicators

### *General indicators*

<b>Aim - relevance</b>	<b>Indicator</b>	<b>Definition</b>	<b>Source</b>
Has a strong influence on the size of the various generations	1. Fertility	The net reproduction rate	NOMESCO: Health Statistics in the Nordic countries
Included as either an explicit or implicit measure in all health programmes	2. Child mortality	Infant mortality	NOMESCO: Health Statistics in the Nordic countries
Is the most global and viable measure of a society's health status	3. Life expectancy at birth	Life expectancy at birth for men and women	NOMESCO: Health Statistics in the Nordic countries
Internationally comparable and accepted indicator for the economy	4. GDP per capita (EUR) and real GDP growth rate	National account	NOSOSCO: Social protection in the Nordic countries
European comparable indicator for the social expenditure	5. Social expenditure per capita (EUR) and as percent of the GDP	The ESSPROS definition. (EUROSTAT)	NOSOSCO: Social protection in the Nordic countries

### APPENDIX 3: KEY FIGURES

<b>Aim - relevance</b>	<b>Indicator</b>	<b>Definition</b>	<b>Source</b>
Comparable indicator for the expenditure on health in the OECD countries	6. Health expenditure per capita (EUR) and as per cent of GDP	A System of Health Accounts (OECD)	NOMESCO: Health Statistics in the Nordic countries
Growth in productivity is necessary because of future lack of man-power	7. Labour productivity (per person employed and per hour worked)	GDP in PPS per person employed/GDP in PPS per hour worked relative to EU-15	EUROSTAT: Structural Indicators

### *Social indicators*

<b>Aim - relevance</b>	<b>Indicator</b>	<b>Definition</b>	<b>Source</b>
Preconditions for a sustainable welfare state: A large economically active proportion of the population	1. Effective dependency ratio (non-active population in relation to employed population)	Non-active population in relation to employed	NOSOSCO: LFS (Labour force surveys)
In the Nordic countries, most of the non-active population 18-64 is receiving some kind of social security.	2. Non-active population 16-64 in relation to employed population	Non-active population 16-64 in relation to employed population	Social Protection in the Nordic countries (2000, table 5.2)
Main labour market reserve may be found among the older age groups	3. Per cent active population 50-64	Men and women 60 years+ still in the labour force	Social Protection in the Nordic Countries (2000, figure 7.1)
Sustainability in social expenditure	4. Social protection expenditure as a percentage of the GDP, total and broken down by main areas (children, labour market, old age).	Social protection expenditure as a percentage of the GDP, total and broken down by main areas	Social Protection in the Nordic Countries (2000, chapter 10)

<b>Aim - relevance</b>	<b>Indicator</b>	<b>Definition</b>	<b>Source</b>
The composition indicates how robust the pension system is	5. Composition (1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> tier) of old age pensions	Composition (1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> tier) of old age pensions	Social Protection in the Nordic Countries
Indicators of out-come in relation to prevention of poverty	6. Low income rate (total, families with children, people 65+)	Per cent households below 50 per cent (60 per cent) of average equivalent disposal income	EUROSTAT
Provision of social services	7. Per cent of people 65+, 80+ receiving home help/care	Per cent of people 65+, 80+ receiving home help/care	Social Protection in the Nordic Countries (2000, table 7.11)
Provision of social services	8. Rate of children in day care places	Age groups <1; 1-2; 3-6; and 6)	Social Protection in the Nordic Countries (2000, table 4.12)
Legitimacy	9. Per cent of population willing to spend the same or more on welfare state provisions	Per cent of population willing to spend the same or more on welfare state provisions	To be gathered from surveys in the Nordic countries

## Health Indicators

<b>Aim -relevance</b>	<b>Indicator</b>	<b>Definitions</b>	<b>Source</b>
<b>Health-related functions</b>			
Is an important supplement to life expectancy, included in, for example, the Danish Health Programme. Can be based on different indicators of poor health and disability	1. Healthy life expectancy	Proportion of life expectancy lived in a state of good health (defined as either good perceived health, without longstanding illness, or without disability)	SILC data (EUROSTAT Survey of Income and Living Conditions) /MEHM (Minimum European Health Module)
Long-term illness indicates potential costs for the health-care and social-	2. Chronic/ long-term illness	18+ years with long-term illness	SILC

**APPENDIX 3: KEY FIGURES**

<b>Aim –relevance</b>	<b>Indicator</b>	<b>Definitions</b>	<b>Source</b>
welfare systems			
Long-term disability and activity restrictions indicates potential costs for the health-care and social-welfare systems as well as consequences for the quality of life of the individual	3 Long-term disability and activity restrictions	18+ years with long-term disability	SILC
<b>Determinants of health and illness/disease</b>			
Very important health risk factor	4. Lifestyle, smoking	Daily smokers, men and women	NOMESCO: Health Statistics in the Nordic Countries
Very important health and social risk factor	5. Lifestyle, alcohol consumption	Sale of alcohol	NOMESCO: Health Statistics in the Nordic Countries
Is becoming an increasingly big health problem in the future, indicating poor dietary habits and physical activity	6. Lifestyle, obesity	18 years+ with a body mass 30+	EUROSTAT's 18 items
<b>Treatment and correcting factors</b>			
Access to health-care services is an integrated part of a modern society	7. Unmet need for treatment	Unmet need for treatment	SILC
<b>System indicators</b>			
It is important not only to have experts to evaluate a population's health and welfare from their expert perspective. It is just as important from a democratic point of view to	8. The population's self-assessment of health	Proportion having a good or really good perceived health	SILC

<b>Aim –relevance</b>	<b>Indicator</b>	<b>Definitions</b>	<b>Source</b>
accept the citizens' own assessment of their health (and of other valuable goods). Also it appears that the self-assessment often is a better predictor of the assessor's future health			
A sustainable health system and society should distribute the health goods evenly among different social groups – according to basic principles of equality, which is shared by most people	9.Social differences in long-term illness	The difference between rates in socio-economic groups with longstanding illness	SILC
A sustainable health system and society should distribute the health goods evenly among different social groups – according to basic principles of equality, which is shared by most people	10.Social differences in self-assessed health	The difference between rates in socio-economic groups with good or really good perceived health	SILC

## Further Health Sector Indicators

<b>Indicator</b>	<b>Aim – relevance</b>	<b>Definition</b>	<b>Source</b>
1.Population per active physicians	A key indicator giving a picture for the level of services	Number of people per active physician	NOMESCO
2. Population per active dentist	A key indicator giving a picture for the level of services	Number of people per active dentist	NOMESCO
3. Number of authorized hospital beds (medicine) per 100,000 inhabitants	A key indicator giving a picture of the volume for treatment for inpatients	Number of authorized hospital beds (medicine) per 100,000 inhabitants	NOMESCO

### APPENDIX 3: KEY FIGURES

<b>Indicator</b>	<b>Aim – relevance</b>	<b>Definition</b>	<b>Source</b>
4. Number of authorized hospital beds (surgery) per 100,000 inhabitants	A key indicator giving a picture of the volume for treatment for surgical in-patients	Number of authorized hospital beds (surgery) per 100,000 inhabitants	NOMESCO
5. Number of discharges from somatic hospital wards per 1 000 inhabitants	A key indicator giving a picture of the productivity for treatment for in-patients	Number of discharges from somatic hospital wards per 1 000 inhabitants	NOMESCO
6. Number of bed days in somatic hospital wards per 1000 inhabitants	A key indicator giving a picture of the effectiveness in treatment of in-patients	Number of bed days in somatic hospital wards per 1000 inhabitants	NOMESCO
7. Average length of stay in somatic hospital wards	A key indicator giving a picture of the development of treatment of in-patients	Average length of stay in somatic hospital wards	NOMESCO
8. Total use of medicine DDD/1000 inhabitants/day	A key indicator giving a picture of the development in using medicine	Total use of medicine DDD/1000 inhabitants/day	NOMESCO
9. Per cent of cataract surgery procedures and arthroscopic procedures on meniscus of knee carried out as day surgery operation	A key indicator giving a picture of the development in surgical procedures	Per cent of cataract surgery procedures and arthroscopic procedures on meniscus of knee carried out as day surgery operation	NOMESCO

## Statistics

### General Indicator 1 Net reproduction rate

	Denmark	Finland	Iceland	Norway	Sweden
2000	0.85	0.83	1.01	0.89	0.75

### Supplementary indicator to General Indicator 1: Total fertility rate

	Denmark	Finland	Iceland	Norway	Sweden
2000	1771	1729	2076	1851	1547

### General Indicator 2 Deaths per 1000 live births, total under 1 year. Computed by year of death

	Denmark	Finland	Iceland	Norway	Sweden
2000	..	..	..	..	..

### General Indicator 2 Deaths per 1000 live births, total under 1 year. Computed by year of birth

	Denmark	Finland	Iceland	Norway	Sweden
2000	..	..	..	..	..

### General Indicator 3 Life expectancy at birth, men

	Denmark	Finland	Iceland	Norway	Sweden
2000	74.3	74.1	77.6	76.0	77.4

### General Indicator 3 Life expectancy at birth, women

	Denmark	Finland	Iceland	Norway	Sweden
2000	79.0	81.0	81.4	81.4	82.0

### General Indicator 4 GDP/capita, Euro, 2000 price level

	Denmark	Finland	Iceland	Norway	Sweden
2000	32580	25352	32698	39094	28002

### General Indicator 4 Per cent increase in the GDP from previous year, 2000 price level

	Denmark	Finland	Iceland	Norway	Sweden
2000	3.7	5.4	3.4	15.3	3.7

### APPENDIX 3: KEY FIGURES

#### General Indicator 5 Social expenditure per capita, Euro, 2000 price level

	Denmark	Finland	Iceland	Norway	Sweden
2000	9353	6388	6436	9894	9039

#### General Indicator 5 Social expenditure as a percentage of the GDP

	Denmark	Finland	Iceland	Norway	Sweden
2000	28.7	25.2	19.6	25.3	32.3

#### General Indicator 6 Health expenditure per capita, Euro, 2000 price level

	Denmark	Finland	Iceland	Norway	Sweden
2000	2714	1683	2935	3058	..

#### General Indicator 6 Health expenditure as a percentage of the GDP

	Denmark	Finland	Iceland	Norway	Sweden
2000	8.3	6.6	8.9	7.8	..

#### General Indicator 7 Labour productivity – GDP in PPS per person employed relative to EU-15 (EU-15=100)

	Denmark	Finland	Iceland	Norway	Sweden
2000	99.3	102.6	105.2	127.0	97.9

#### General Indicator 7 Labour productivity – the GDP in PPS per hour worked relative to EU-15 (EU-15=100)

	Denmark	Finland	Iceland	Norway	Sweden
2000	104.2	94.6	90.3	127.7	95.6

#### Social Indicator 1 Active population as a percentage of the population

	Denmark	Finland	Iceland	Norway	Sweden
2000	50.5	44.1	53.5	49.8	46.7

#### Social Indicator 2 Non-active population aged 16-64 years, percentage of the age group

	Denmark	Finland	Iceland	Norway	Sweden
2000	24.0	34.0	13.0	22.0	26.0



**Social Indicator 3 Percentage of people aged 50–66 years in employment**

	Men					Women				
	Denmark	Finland	Iceland	Norway	Sweden	Denmark	Finland	Iceland	Norway	Sweden
	2000									
Age										
50	85.3	81.9	94.3	87.3	87.8	81.7	83.4	91.0	86.3	82.9
55	82.0	71.9	96.9	84.0	84.9	71.3	71.1	78.5	77.0	79.8
60	59.2	36.3	91.9	73.5	67.3	37.8	32.6	85.3	60.9	64.3
65	21.7	9.1	87.4	39.4	..	9.2	4.8	67.3	25.0	..
66	20.1	8.2	77.7	24.6	..	8.3	2.9	48.2	20.3	..

**Social Indicator 4 Social expenditure on families and children, percentage of the GDP**

	Denmark	Finland	Iceland	Norway	Sweden
2000	3.7	3.1	2.3	3.2	3.6

**Social Indicator 4 Social expenditure on unemployment, percentage of the GDP**

	Denmark	Finland	Iceland	Norway	Sweden
2000	3.0	2.5	0.3	0.7	2.1

**Social Indicator 4 Social expenditure on illness, percentage of the GDP**

	Denmark	Finland	Iceland	Norway	Sweden
2000	5.5	5.8	7.6	8.5	8.4

**Social Indicator 4 Social expenditure on the elderly, the disabled and survivors, percentage of the GDP**

	Denmark	Finland	Iceland	Norway	Sweden
2000	14.1	12.2	8.7	11.7	16.1

**Social Indicator 4 Social expenditure on housing, percentage of the GDP**

	Denmark	Finland	Iceland	Norway	Sweden
2000	0.7	0.4	0.1	0.1	0.7

**Social Indicator 4 Social expenditure on social exclusion, percentage of the GDP**

	Denmark	Finland	Iceland	Norway	Sweden
2000	1.0	0.5	0.4	0.6	0.8

### APPENDIX 3: KEY FIGURES

#### **Social Indicator 5 Social expenditure on old-age pensions broken down by basic, employment and supplementary pension, per cent**

	Denmark	Finland	Iceland	Norway	Sweden
2000					
- Basic	66.1	21.5	52.6	43.8	28.3
- Employment	4.1	75.1	47.4	44.5	51.3
- Supplementary	29.8	3.4	-	11.7	20.4

#### **Social Indicator 6 Risk-of-poverty rate**

	Denmark	Finland	Iceland	Norway	Sweden
2000	..	..	..	11	..

#### **Social Indicator 7 Percentage of people aged 65+ years receiving home help**

	Denmark	Finland	Iceland	Norway	Sweden
2000	24.6	10.7	18.9	15.7	8.2

#### **Social Indicator 7 Percentage of people aged 80+ years receiving home help**

	Denmark	Finland	Iceland	Norway	Sweden
2000	49.9	34.8	..	31.6	19.0

#### **Social Indicator 8 Children enrolled in day-care institutions and family day-care aged 0-6 years as a percentage of the age group**

	Denmark	Finland	Iceland	Norway	Sweden
2000	77	49	58	..	68

#### **Social Indicator 9 Per cent of population willing to spend the same or more on welfare state provisions. (Data not available)**

#### **Health Indicator 1 Proportion of life expectancy lived in a state of good health in Denmark at the age of 20, per cent, 2000**

	Life expectancy, 20-years male	Good state of perceived health	Without long- standing illness
Men	74.8	78.1	57.9
Women	79.4	74.1	56.0

**Health Indicator 2 Chronic/long-term illness, 2000**

	Denmark	Finland	Iceland	Norway	Sweden
Men 18+ years with long-term illness	40.5	51.5 <sup>1)</sup>	..	34.8 <sup>2)</sup>	46.0
Women 18+ years with long-term illness	41.7	53.2 <sup>1)</sup>	..	39.1 <sup>2)</sup>	51.5

**Health Indicator 3 Long-term disability and activity restrictions at the age of 16 years, 2000**

	Denmark	Finland	Iceland	Norway	Sweden
Men	5.3	10.5	..	..	..
Women	8.0	11.4	..	..	..

**Health Indicator 4 Daily smokers, percentage of men 15 years and over**

	Denmark	Finland	Iceland	Norway	Sweden
2000	32	27	23	31	17

**Health Indicator 4 Daily smokers, percentage of women 15 years and over**

	Denmark	Finland	Iceland	Norway	Sweden
2000	29	20	23	32	21

**Health Indicator 5 Litres of 100 per cent pure alcohol sold per capita aged 15 years and over**

	Denmark	Finland	Iceland	Norway	Sweden
2000	11.5	8.6	6.1	5.6	6.2

**Health Indicator 6 Lifestyle, obesity 18+ years with a body mass 30+, 2000**

	Denmark	Finland	Iceland	Norway	Sweden
Men	9.8	20.5/11.4 <sup>1)</sup>	10.6 <sup>2)</sup>	6.8 <sup>2)</sup>	9.7
Women	9.1	23.3/11.0 <sup>1)</sup>	9.3 <sup>2)</sup>	5.9 <sup>2)</sup>	9.6

**Health Indicator 7 Unmet need for treatment. (Data not available)**

## APPENDIX 3: KEY FIGURES

### Health Indicator 8 The population's self-assessment of health, 2000

	Denmark	Finland	Iceland	Norway	Sweden
Proportion of men having a good or really good perceived health	79.5	65.8 <sup>1)</sup>	81.3 <sup>2)</sup>	81.1 <sup>2)</sup>	77.3
Proportion of women having a good or really good perceived health	76.3	68.2 <sup>1)</sup>	82.6 <sup>2)</sup>	78.2 <sup>2)</sup>	72.2

### Health Indicator 9 Social differences in long-term illness. (Data not available)

### Health Indicator 10 Social differences in self-assessed health (Data not available)

## Further Health Sector Indicators

### 1: Population per active physician

	Denmark	Finland	Iceland	Norway	Sweden
2000	..	347	..	281	323

### 2: Population per active dentist

	Denmark	Finland	Iceland	Norway	Sweden
2000	..	1080	..	1245	1248

### 3: Number of authorized hospital beds (medicine) per 100,000 inhabitants

	Denmark	Finland	Iceland	Norway	Sweden
2000	200	138	..	144	186

### 4: Number of hospital beds (surgery) per 100,000 inhabitants

	Denmark	Finland	Iceland	Norway	Sweden
2000	154	103	..	148	105

### 5: Number of discharges from somatic hospital wards per 1000 inhabitants

	Denmark	Finland	Iceland	Norway	Sweden
2000	196	202	..	150	..

### 6: Number of bed days in somatic hospital wards per 1000 inhabitants

	Denmark	Finland	Iceland	Norway	Sweden
2000	1067	882	..	856	..

**7: Average length of stays in somatic hospital wards**

	Denmark	Finland	Iceland	Norway	Sweden
2000	5.4	4.3	..	6.0	5.4

**8: Total use of medicine DDD/1000 inhabitants/day**

	Denmark	Finland	Iceland	Norway	Sweden
2000	942	1110	967	1036	1210

**9: Per cent of cataract surgery procedures carried out as day surgery**

	Denmark	Finland	Norway
2000	87.8	81.6	87.3

**9: Per cent of arthroscopic operations on meniscus of the knee carried out as day surgery**

	Denmark	Finland	Norway
2000	62.3	74.9	79.5

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