Indicators for Active and Healthy Ageing in the Nordic Region

Possibilities and Challenges

Nordic Welfare Centre

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Preface

This report focuses on indicators for Active and Healthy Ageing (AHA) and on welfare technology for older adults in the Nordic Region. This study is set against the background that population ageing is a major demographic trend affecting the policy agenda in the Nordic Region, in Europe, and globally. The study addresses the Nordic Council of Ministers' Vision 2030 of a socially sustainable Nordic Region by promoting equal health and an inclusive participation in society for older adults in the Nordic countries.

The aim of this report is to study what types of relevant indicators for both AHA and welfare technology for older adults currently exist in the Nordic Region and how these indicators are used to support and monitor policy initiatives. The purpose of the study is to establish a comparative perspective not only on what indicators are available for policymakers, but also what indicators are not available.

This report presents existing international and European indicators and a list of common Nordic indicators. The study also highlights challenges and future needs for improvement regarding Nordic indicators by presenting a set of recommendations aimed at strengthening the availability of statistical indicators, improving their usage, tackling the shortcomings found, and filling the knowledge gaps.

The study has been conducted in parallel with another closely connected study Active and Healthy Ageing: Heterogenous perspectives and Nordic indicators.

The Nordic Welfare Centre hopes that this report will contribute to the development of Nordic policies and will strengthen Nordic co-operation between the various actors working within this field. We also hope that the findings of this study will contribute to knowledge development in the Nordic Region. We would like to thank the interviewees in the Nordic countries, and Nordregio, who carried out the study.

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Summary

This report aims to answer the following three key research questions:

- What types of relevant indicators for both Active and Healthy Ageing and welfare technology for seniors currently exist in the Nordic Region?
- How are these indicators used for supporting and following up on policy initiatives and what are their main advantages and challenges?
- What needs for improvement are there for these indicators to better support policymaking?

Methodology

Data collection was carried out through desk research (for example, webpages and policy documents), a roundtable discussion, and two individual interviews with persons who are working in Nordic municipalities. International databases of statistics and indicators, such as the WHO, UNECE, OECD, and IHME were explored. In addition, indicators for Age-friendly Environments in Europe as well as Eurostat and ESS databases were examined. Furthermore, Nordic Health and Welfare Statistics (NHWStat) and the Nordic Statistics Database (NSD) were also included as well as indicators for AHA from the national statistics institutes (NSIs) and national agencies at both the regional and municipal level.

Results

This report presents, in addition to international and European indicators, a list of common Nordic indicators in this field. The indicators originate from Eurostat, the OECD, the ESS, and the UNECE, and they are classified in Table 4 according to the thematic domains of healthy ageing and wellbeing, socio-economic status, and social activity, engagement, and participation.

One common aspect that emerged in the roundtable discussions with representatives from different Nordic municipalities was the view that users of health and welfare technology could, and should, become more independent from the municipal healthcare services. Another conclusion is that municipalities do not to extensively use existing indicators in support of their work because there are not many useful indicators at the local level. Municipalities often lack the resources (both financial and technical) and might not have the same opportunities to develop such indicators themselves. Monitoring is a

costly process as it often requires conducting surveys in order to grasp issues that go beyond medical or tax records. In addition, it is important to highlight that indicators for AHA need to focus on the individual level, meaning that disaggregation by socio-demographic markers such as age and gender is necessary. Municipalities find that having the right indicators could be useful for developing better strategies and policies in the field.

The wide range of indicators that exist from the municipal to the international level is an advantage for those who work with AHA in the Nordic region. For instance, indicators from transnational institutions allow comparisons between countries, and even between regions within these countries. This is important if the Nordic countries aspire to have a common strategy for AHA. Nonetheless, there are challenges that remain, such as the conceptualisations of AHA and how this influences the production of indicators. While the UNECE and WHO frameworks for AHA and age-friendly cities are highly relevant lighthouses for various stakeholders, they might fall short in addressing local needs, even at national levels. Hence, it is not easy to synthesise all these indicators into a working conceptualisation that spans all population needs. If local actors do not possess the tools to address AHA due to the already made conceptualisations, it might be difficult to make a thorough diagnosis of their situations. Therefore, it is a great advantage for the Nordic region to be relatively well covered by international indicators, but these indicators should be treated with caution so as not to draw false conclusions regarding the status of AHA.

There are also other challenges that need to be addressed. The indicators produced by the OECD, ESS, Eurostat, and UNECE show that country and time coverage is not always guaranteed. The clearest examples of this are the data from Eurostat and UNECE, which often do not cover Iceland and Norway because they are not part of the European Union. As also highlighted in this report, not all Nordic countries have participated in all editions of the ESS. The lack of country and time coverage for these data pose a great challenge for studying changes over time as well as for carrying out comparisons between countries. Another challenge identified in this report is the obsolescence of data.

Finally, a further challenge concerns the coverage of subnational territories (regions and/or municipalities). It is very seldom that supranational institutions produce indicators that are relevant for AHA at the subnational level, with Eurostat being an exception. This represents a barrier for comparability across regions in different countries because this means that national institutions have the responsibility to produce these indicators and, as such, these indicators tend to be different in each country. This report presents some recommendations aimed at improving the availability and quality of statistical indicators, for example, through future co-operation with relevant Nordic actors.

Introduction

This report addresses the concept of Active and Healthy Ageing in the Nordic Region. This study is set against the backdrop that population ageing is a major demographic trend. Research shows that the old-age dependency ratio will increase from 30 per cent in 2017 to 40 per cent by the year 2040 (Sánchez Gassen & Heleniak, 2019). This is due to people living longer and points towards the need to better assess the living conditions of the senior population. In response to this, population ageing has increasingly emerged on the policy agenda in the Nordic Region and more broadly in Europe and globally. As population ageing has gained awareness, promoting health and well-being has become a key objective of ageing policies.

For these reasons, many international bodies such as the World Health Organization (WHO), the United Nations Economic Commission for Europe (UNECE), and the Organization for Economic Cooperation and Development (OECD) have devoted resources to addressing population ageing. Two concepts that have become prominent on the policy agenda are active ageing and healthy ageing, which are central for framing this study.

Active ageing is defined by the WHO (2002) as the process of optimising the opportunities for health, participation, and security in order to enhance quality of life in older age. In the WHO framework for active ageing, "active" refers to continued participation in social, economic, cultural, spiritual, and civic affairs as people age. Furthermore, it is emphasised that ageing policies should embrace a life course perspective and acknowledge that earlier life circumstances influence how individuals age. Similarly, healthy ageing refers to the process of maintaining and developing the functional ability that enables well-being in older age (WHO, 2019). Health and well-being in older age is affected by numerous factors such as socio-economic status, lifestyle habits, exercise and diet, social inclusion, and housing (WHO, 2002). Central to both these concepts is the notion that the older population is a highly diverse group with different needs.

Another concept closely linked to the idea of active and healthy ageing and relevant for this study is age-friendliness. This concept is used particularly in the context of age-friendly cities and communities, which can be defined as places that foster active and

healthy ageing (WHO, 2015). Central to the idea of planning for an age-friendly community is adopting an integrated approach where different policy and planning domains are considered in unison (WHO, 2007). Additionally, the concept of welfare technology is relevant for these studies, especially the role of welfare technology in supporting active and healthy ageing. Welfare technology consists of all technology that contributes to improving the lives of those who need and use it, and it is used, for instance, for maintaining and increasing security and promoting activity, participation, and the independence of seniors and people with disabilities (Nordic Welfare Centre, no date).

This report is part of the Nordic Welfare Centre's project Age-friendly and sustainable societies in the Nordic region, aiming to promote activity and health among Nordic senior citizens. This study has been conducted in parallel with the closely connected study Active and Healthy Ageing: Heterogenous perspectives and Nordic indicators (Huynh et al., 2022), where the indicators and data compiled for this study are analysed.

This report aims to answer the following three key questions:

- What types of relevant indicators for both active and healthy ageing and welfare technology for seniors currently exist in the Nordic Region?
- How are these indicators used for supporting and following up on policy initiatives and what are the main advantages and challenges?
- What needs for improvement are there for these indicators to better support policymaking?

For this report, relevant indicators and data have been examined and compiled. The research material also consists of research literature and policy reports as well as interviews/round table discussions with practitioners working with indicators. The report is primarily intended for policymakers and practitioners working with the promotion of active and healthy ageing, age-friendliness, and welfare technology for seniors at different levels of society.

The report is therefore structured in three sections, each of them answering the questions outlined above. In the next section, An outlook on Nordic indicators, we present a description of all the available statistical indicators that we have found in our research. This section shows the statistical indicators produced by international and European bodies, Nordic institutions, and national statistical institutes looking at regional and municipal levels. Despite including international and European indicators, the section is named Nordic indicators because we will focus on indicators that allow for examining the Nordic region. In addition to describing what indicators

exist, we assess and discuss the strengths and weaknesses of these indicators.

In the section The role of indicators in supporting policy initiatives and actions we address the issue of how these indicators are used to produce evidence-based policy. To do so, we show what policies have been implemented in the Nordic countries and how these indicators have informed these policies. In addition, we complement the section with the results of a roundtable discussion held with public authorities working in the field of active and healthy ageing from each of the Nordic countries.

In the last section, Discussion: improvements and development needs, we analyse the results obtained from the two previous sections and address the current situation regarding the availability of indicators and their usage in policymaking and discuss key improvement and development needs. Finally, based on our findings, we present a set of policy recommendations aimed at strengthening the availability of statistical indicators, improving their usage, and tackling the shortcomings found.

An outlook on Nordic indicators

In this chapter we list a range of institutions at different territorial levels that produce useful indicators for the measurement and definition of active and healthy ageing. The findings show a range of institutions from the international level to the municipal that offer indicators spanning topics such as health, pensions, living conditions, and active ageing, among others.

Statistical indicators and variables focusing on seniors constitute a cornerstone for assessing the current situation, and the change over time, of three relevant domains for this segment of the population across the Nordic region, namely active and healthy ageing, age-friendly cities and communities, and welfare technology. Hence, we have examined and collected indicators from diverse institutions at the international, European, Nordic, national, regional, and municipal level. All the indicators listed in this report offer data disaggregated by age, which helps to identify pressing issues for different age groups of older adults. Age in these indicators is mostly delimited in 5-year intervals, but some of the indicators also offer the possibility to examine age on a 1-year interval.

The reason for listing statistical indicators to examine active and healthy ageing is twofold. First, active and healthy ageing has become a responsibility at all policy-making levels, and therefore, it is important to provide the most comprehensive overview for all actors involved in the topic, ranging from international to municipal policymakers. A second reason is that we aim to establish a comparative perspective not only on what indicators are available for policymakers, but also what indicators are not available. Often, as we

will show later, some international or European indicators are not available in all Nordic countries. This, therefore, is an important aspect to highlight if efforts in the Nordic region are to converge around active and healthy ageing.

What are indicators?

When working with conceptual objects, for example, active and healthy ageing, it is necessary to delimit, measure, and operationalise those objects. This is done by using indicators, which are direct or indirect measures of concepts (Bryman, 2012). Indicators can also be used to develop variables such as the old-age dependency ratio, mental wellbeing, or social connectedness, which reflect different characteristics of the concepts under investigation. Indicators not only allow measuring the baseline level of active and healthy ageing and changes over time but can also help stakeholders form a common understanding about what key dimensions should be emphasised in policies and to set objectives in relation to these goals.

International institutions

At the international level, we have found relevant indicators from the OECD, the WHO, and the Institute for Health Metrics and Evaluation (IHME).

Organization for Economic Cooperation and Development

The OECD publishes a biennial report on the pension systems across OECD and G20 countries (OECD, 2019a) and a biennial report on health systems and indicators of health status in the OECD region (OECD, 2019b). In addition, their datasets on health status and health expenditure and financing offer relevant indicators such as life expectancy, causes of mortality, premature and available mortality, perceived health status (broken down also by age and gender and by socio-economic status, communicable diseases, cancer, injuries, and absence from work due to illness) (OECD, 2021).

Table 6 in the Appendix shows these indicators, their demographic breakdowns (age and gender), most recent year of update, and what they exactly measure. There are three important aspects to highlight in relation to these indicators. First, as can be seen in the table, not all the indicators are up to date, and the OECD lacks data for some of the indicators in some countries. For example, Denmark and Finland are the only Nordic countries with at least four OECD indicators available for 2020 (the most recent year of data availability at the time of writing). Iceland has three, and Norway and Sweden only have two. Second, although most indicators are disaggregated by sex, some others, communicable diseases, injuries, and absence from work due to illness are not. Third, most of the indicators do not offer age grouping and therefore they do not properly address the target group of active and healthy ageing. Therefore, the only three indicators that provide age grouping are life expectancy (which is available for the age groups 40, 60, 65, and 80 years old), premature mortality (age group of 75 years old or younger), and perceived health status by age (which offers a range from 45 to 64 years old and an open-ended interval for 65 or older).

World Health Organization

The WHO has published flagship reports on active and healthy ageing such as Decade of Healthy Ageing (World Health Organization, 2020) and Age-friendly environments in Europe (World Health Organization, 2018). In addition, it manages the database Maternal, Newborn, Child and Adolescent Health and Ageing that provides data on morbidity, mortality, integrated care for older people, age-friendly cities and communities, risk factors, healthy life expectancy, healthy ageing, ageism, and long-term care for older people. Among these, the relevant indicators are the incidence rate of falls among older people and the mean body mass index. Falls are a major concern for seniors due to the severe consequences that they might have in their health. Body mass index is relevant to measure the health status of the older population because old people at the extremes of the spectrum have a higher risk of morbidity and mortality due to the consequences of risk factors for non-communicable diseases, malnutrition, and frailty (McKee & Morley, 2021). The WHO data thus offer data on both the incidence rate of falls among older adults and body mass index covering the period 2000–2017 for all five Nordic countries. In addition, the data are broken down by sex and by the following age groups: 60–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, and 95+ years old. Even though the data are comprehensive, they have two notable limitations, namely the obsolescence of the data and the lack of data at the sub-national level.

Institute for Health Metrics and Evaluation

Another relevant source of indicators and publications related to active and healthy ageing is the IHME. The institute is a health research organisation based at the University of Washington School of Medicine and works "to develop timely, relevant, and scientifically valid evidence that illuminates the state of health everywhere" (Institute for Health Metrics and Evaluation, 2021). They conduct the Global Burden of Disease study (GBD), which is "the most comprehensive worldwide observational epidemiological study to date" (The Lancet, 2021). The study examines trends in diseases and risk factors across 204 countries since 1990 and, as such, it "provides an important tool to inform clinicians, researchers, and policy makers, and to promote accountability, and improve lives worldwide" (The Lancet, 2021).

The GBD constitutes a good tool to address many relevant aspects related to health in the Nordics given the good coverage that it provides. For example, all Nordic countries have been part of the study since its inception in 1990 to the last edition in 2019. In addition, it offers data disaggregated by demographic variables such as sex and age groups (55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85–89, 90–94, and 95+) and it covers the following diseases by showing their prevalence and incidence:

- Cardiovascular diseases (strokes, hypertensive heart disease, myocarditis, etcetera.)
- Chronic respiratory diseases
- Diabetes and kidney diseases
- Digestive diseases
- Mental disorders (depressive, bipolar, anxiety, etcetera)
- Neoplasms
- Neurological disorders
- Sense organ diseases
- Skin and subcutaneous diseases
- Substance use disorders (alcohol use, drug use disorders, etcetera)

In addition, the GBD offers the dataset Dietary Risk Exposure Estimates 1990–2019 that provides estimates of 15 dietary risks and the burden attributable to these (Global Health Data Exchange, 2021). All five Nordic countries are represented in those estimates, and data are also disaggregated by sex and gender. The 15 dietary risks are measured as daily individual intake of the following nutrients: calcium, fibre, fruits, legumes, milk, nuts, seafood (omega-3 fatty acids), processed meat, polyunsaturated fatty acids, red meat, sodium, sugar-sweetened beverages, trans fatty acids, vegetables, and whole grains (Institute for Health Metrics and Evaluation, 2021).

Furthermore, in the promotion of active and healthy ageing at local levels, important action is being taken in the form of creating more age-friendly cities and communities. In relation to this, a relevant initiative is the Age-friendly Environments in Europe (AFEE) project. This project was initiated jointly by the European Commission and the WHO Regional Office for Europe to support cities and communities in taking action towards creating more age-friendly environments in Europe (WHO, 2019a). The purpose of the project is to develop tools that allow local and regional authorities to take strong commitments towards becoming more age-friendly and to measure their progress towards this objective. The report Age-Friendly Environments in Europe: Indicators, monitoring and assessments (WHO, 2018), published as part of the AFEE project, describes various tools that cities and communities can use for the tasks of self-assessment, target-setting and monitoring, and recommendations for selecting indicators for monitoring changes over time. The report provides a synthesis of emerging national, European, and international guidance in the field of age-friendly indicators and age-related statistics, from which local governments can draw inspiration to design their own toolbox of indicators, assessment instruments, and information systems.

For example, the list below shows some of the key indicators presented in the AFEE report (WHO, 2018) for measuring the eight domains of age-friendliness.

1. **Outdoor environments**
    a. Proportion of streets in the neighbourhood with pedestrian paths that meet locally accepted standards (administrative data + field survey)
    b. Proportion of public spaces and buildings that are fully accessible by wheelchair (administrative data + field surveys)
2. **Transport and mobility**
    a. Proportion of people aged 65 years and older who have access to and use public transportation (survey of older residents)
    b. Proportion of priority parking spaces at new and existing public facilities designated for older people or people with disabilities (administrative data)
3. **Housing**
    a. Availability of affordable multipurpose and ageing in place housing options (survey)
    b. Proportion of people aged 65 years and older who report feeling safe home alone at night (survey)

4. **Social participation**
    a. Proportion of older people who report participating in group physical activities in their leisure time (survey)
    b. Proportion of older people who enrolled in education or training, either formal or non-formal, in the past year (administrative data)
5. **Social inclusion and non-discrimination**
    a. Proportion of older people who report feeling respected and socially included in their communities (survey + participation assessment)
    b. Age structure of elected community assembly (administrative data)
6. **Civic engagement and participation**
    a. Proportion of older people who are currently employed (employment statistics)
    b. Proportion of older people providing care to children and grandchildren (at least once a week) (local adaptation of European Quality of Life survey)
7. **Communication and information**
    a. Proportion of older people who report that they know who to call if they need information about health concerns and relevant services in their communities (survey)
    b. Proportion of older people living in a household with Internet access at home (administrative data)
8. **Community and health services**
    a. Proportion of people aged 55 years and older who report no unmet need for medical and dental examination or treatment during the 12 months preceding the survey (Local adaptation of EU-SILC)
    b. Availability of low-cost food programmes (e.g., meals on wheels, wheels to meals, food bank) (administrative data + programme information)

These indicators are based on a variety of data sources such as general statistics at the local level, other administrative data, survey data, and participatory assessment methods. These indicators can be used for measuring how age-friendly a city or neighbourhood is, for instance, in relation to aspects such as neighbourhood walkability, accessibility of public transport, safety at home, influence in the local community, and availability of home and community-based services.

European institutions

At the European level, UNECE, Eurostat, and the European Social Survey (ESS) provide a large range of indicators relevant to active

and healthy ageing.

United Nations Economic Commission for Europe

UNECE, for example, has developed the Active Ageing Index (AAI), which:

"Is a multidimensional concept referring to a situation where people continue to participate in the formal labour market, engage in unpaid productive activities, and live healthy, independent and secure lives as they age" (UNECE, 2019a: 1)

UNECE's Active Ageing Index comprises twenty-two indicators grouped in the following four categories:

Capacity and enabling environment for active ageing

- Remaining life expectancy (RLE) achievement of 50 years at age 55: RLE at 55 divided by 50 to calculate the proportion of life expectancy achievement in the target of 105 years of life expectancy
- Share of healthy life years (HLY) in the remaining life expectancy at age 55: HLY measures the remaining number of years spent free of activity limitation
- Mental well-being for older population aged 55+
- Use of ICT: share of people aged 55–74 using the internet at least once a week
- Social connectedness: share of people aged 55 or more that meet socially with friends, relatives, or colleagues several times a week or every day
- Educational attainment: percentage of older persons aged 55-74 with upper secondary or tertiary educational attainment

Employment

- Employment rate for the age group 55–59
- Employment rate for the age group 60–64
- Employment rate for the age group 65–69
- Employment rate for the age group 70–74

Independent, healthy, and secure living

- Physical exercise: percentage of people aged 55 years and older undertaking physical exercise or sport at least 5 times a week
- Access to health and dental care: percentage of people aged 55 years and older who report no unmet need for medical and dental examination or treatment during the last 12 months preceding the survey

- Independent living arrangements: percentage of people aged 75 years and older who live in a single household alone or in a couple household
- Relative median income: the ratio of the median equivalised disposable income of people aged above 65 to the median equivalised disposable income of those aged below 65
- No poverty risk: percentage of people aged 65 years and older who are not at risk of poverty
- No severe material deprivation: percentage of people aged 65 years and older who are not severely materially deprived
- Physical safety: percentage of people aged 55 years and older who are not worried about becoming a victim of violent crime
- Lifelong learning: percentage of people aged 55 to 74 who stated that they received education or training in the four weeks preceding the survey

Participation in society

- Voluntary activities: percentage of older population aged 55+ providing unpaid voluntary work through different organisations
- Care to children, grandchildren: percentage of older population aged 55+ providing care to their children or grandchildren (at least once a week)
- Care to infirm and disabled: percentage of older population aged 55+ providing care to elderly or disabled relatives (at least once a week)
- Political participation: percentage of older population aged 55+ taking part in the activities of meeting of a trade union, a political party or a political action group

The rationale behind these groups is that "while the first three domains aim to capture experiences and achievements, the fourth tries to quantify the contextual conditions enabling or hindering active ageing" (UNECE, 2019a). Based on these indicators, UNECE builds its Active Ageing Index from four sources of indicators. These sources are:

- the European Union Survey on Income and Living Conditions (EU-SILC),
- the European Union Labour Force Survey (EU-LFS),
- Eurofound's European Quality of Life Survey (EQLS), and
- the Generations and Gender Programme's Generations and Gender Survey (GGS)

Although the micro-data of the three first sources is available for researchers, such data are not available for the public and therefore

it may be difficult to access the latest versions of the data. However, aggregated data are accessible through Eurostat and Eurofound, and this allowed us to fetch the metadata on these indicators. The AAI has been published biannually since 2010, and Denmark, Finland, and Sweden have participated in all editions. This represents an obvious shortcoming for the purpose of our study because Iceland and Norway are not included in the index and thus the comparability of the indicators is not the most accurate through the Nordics. Nonetheless, we have tried to replicate the AAI using both Eurostat and other sources of indicators at the national level in order to offer a Nordic perspective. The table below summarises the indicators available for each country in these five domains.

Table 1. Indicators in the Nordics by UNECE's domains of Active and Healthy Ageing

Country	Capacity	Employ-ment	Indepen-dence	Partici-pation	Total
Denmark	29	4	28	5	66
Finland	25	4	48	10	87
Iceland	17	2	33	4	56
Norway	19	2	30	5	56
Sweden	21	1	46	9	77

We have categorised the indicators based on UNECE's methodology, and because we are also interested in indicators related to welfare technology, we also address those (note that welfare technology is not included in UNECE's framework). However, not all countries provide indicators on welfare technology. Therefore, we list below the welfare technology indicators for Sweden and Norway.

In Sweden, Socialstyrelsen (National Board of Health and Welfare) is the source of the indicators, and these are organised around the following five topics:

- Welfare technology in municipal health care
- Welfare technology in ordinary housing, disabled
- Welfare technology in ordinary housing, seniors
- Welfare technology in support and service housing
- Welfare technology in special housing for the elderly

These indicators are available for municipalities and counties and have been produced for 2021 so far. Socialstyrelsen, commissioned by the government, has been tasked to conduct an annual follow-up of the development of e-health, welfare technology, and digitalisation in social services (Socialstyrelsen, 2021, p. 11). The data stem from a questionnaire distributed by Socialstyrelsen (Sweden) to all 290 Swedish municipalities, and one significant result is that "a relatively large percentage of the welfare technology available to municipalities is in pilot projects (...), aproximately 28 per cent of municipalities report that they have welfare technology in pilot projects for those still living at home" (Socialstyrelsen, 2021: 14). Despite the apparent slow adoption of welfare technology, the questionnarie and the subsequent indicators produced are, to a large extent, comprehensive. Indicators measure the extent to which municipal healthcare has adopted different types of welfare technology. For example, the survey asks if municipalities have adopted digital medical signatures, epilepsy alarms, keyless locks for

patients, digital support for physical exercise, or digital medicine cabinets among others.

Helsedirektoratet in Norway also provides indicators for welfare technology through the national patient register (Kommunalt pasient- og brukerregister – Helse- og omsorgstjenester). These indicators comprise the following four topics:

- Safety alarms
- Mobile safety alarms
- Medicine dispensers
- Digital visits

These indicators have been available since 2017, and they are available at the municipal, regional, and national level. They measure the number and demographics for each of these four services. For example, data are available for the total number of users, percentage of users by the level of assistance required, by gender, and by age groups comprising 0–17, 18–49, 50–66, 67–79, 80–89, and 90+ years old. In addition, Helsedirektoratet's national quality indicators (NKI, nasjonale kvalitetsindikatorer) include location technology for people with dementia who live at home. This indicator is available also at the municipal, regional, and national level, but it is not disaggregated by gender or age.

Eurostat

Eurostat's indicators can be seen in Table 7 in the appendix. They cover, to a large extent, the four domains used by UNECE and provide relatively up to date data. In addition, most of these indicators cover the five Nordic countries and allow for comparisons across the territories. Furthermore, several of these indicators are broken down by sex and age, and this gives the opportunity to examine them in greater detail.

European Social Survey

Another relevant source of indicators at the European level is the European Social Survey (ESS). Started in 2002 the ESS is presented every two years, and the ninth round was published in 2018 (European Social Survey, 2021). Due to the covid-19 pandemic, the fieldwork for the tenth round was postponed and, hopefully, some results will be released in May 2022. Finland, Norway, and Sweden have been the only Nordic countries to participate in each round since the beginning of the survey. Denmark participated in all but one round (2016), and Iceland has participated in only four rounds (2004, 2012, 2016, and 2018).

This survey is a cross-national survey that aims to measure the attitudes, beliefs, and behaviour patterns of European populations, and it includes a set of variables of interest for active and healthy ageing. Among its modules we can find indicators on subjective well-being, social exclusion, and subjective health. In addition, the survey aims to provide a representative picture of the participating countries and thus offers the possibility to filter the results according to several socio-demographic attributes such as age, sex, educational attainment, income, or ethnic background.

Some relevant indicators for the study of active and healthy ageing are the following:

- Subjective happiness
- Discrimination by age
- Living with a partner
- Feelings about household's income
- Subjective general health
- Hampered in daily activities by illness, disability, infirmity, mental problems
- Highest level of education
- Main source of household income
- Household's total income
- Social meetings with relatives, friends, or colleagues

Nordic databases

At the Nordic level, the two most relevant sources for indicators are Nordic Health and Welfare Statistics (NHWStat) and the Nordic Statistics Database (NSD). NHWStat is the shared website for the Nordic Medico-Statistical Committee (NOMESCO) and the Nordic Social Statistic Committee (NOSOSCO) under the Nordic Council of Ministers (NCM) (Nordic Health and Welfare Statistics, 2021). The purpose of NHWStat is to gather statistics within these fields, to ensure that health and social statistics in the Nordics are comparable, and to present these statistics and make them available (Nordic Health and Welfare Statistics, 2021). As such, Table 2 shows the relevant indicators in NHWStat for active and healthy ageing.

Table 2. Nordic Health and Welfare Statistics (NHWStats)

Indicator	Ages	Gender	Countries available
Social expenditure on old age (in millions of the national currency) by Function, Year, Country, and Expenditure and financing	No	No	Denmark (2007–2017) Finland (2010–2018) Iceland and Norway (2000–2019) Sweden (2010–2019)
New cases of cancer per 1,000,000 inhabitants by Cancer type, Country, Sex, Age group, and Year	55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90+	Yes	Denmark, Finland, Norway, and Sweden (2000–2019)
People aged 65+ vaccinated against influenza, per cent by Year, Country, and Type of immunisation	+65	No	Denmark (2010–2019) Faroe Islands (2009–2019) Iceland (2003–2019) Norway (2000–2019) Sweden (2006–2009 and 2011–2019)
Discharges from hospitals after treatment for injuries, per 100,000 of the age group by Year, Country, Sex, and Age	65-79, 80+	Yes	Denmark (2005–2019) Finland, Åland, Iceland, and Sweden (2000–2019) Norway (2008–2019)

Treated patients in psychiatric wards by Year, Country, Sex, and Age	65-79, 80+	Yes	Denmark (2005–2019) Faroe Islands (2011–2018) Finland, Iceland, and Sweden (2000–2019) Åland (2001–2019) Norway (2008–2019)
Compensation rate when receiving old-age pension, retiring at age 65 by Family type, Year, Country, and Income in per cent of average wage in the private sector	65+	No	Denmark, Finland, and Sweden (2007–2019) Iceland (2017–2019) Norway (2011–2019)
Compensation rate when receiving old-age pension, retiring at age 67 by Family type, Year, Country, and Income in per cent of average wage in the private sector	65+	No	Denmark, Faroe Islands, Finland, Norway, and Sweden (2007–2019) Iceland (2017–2019)

The low number of relevant indicators provided by NHWStat is largely due to the fact that they are not from a primary source, meaning that the indicators are obtained from secondary sources such as national statistics institutes (NSIs), patient registries, and public health authorities. As such, each of these sources might use different methodologies to measure different indicators, and therefore the number of comparable indicators is limited. Another constraint found in these indicators is the time availability. Although covering long periods of time, the fact that they stop at 2019 make them obsolete at the time of writing this report. Nonetheless, an advantage of this database is that self-governed territories such as Åland, the Faroe Islands, and Greenland are to some degree included in them.

The other relevant database mentioned above, the NSD, "is a collection of comparative Nordic statistics which has existed and been funded by the Nordic Council of Ministers since the mid-1960s" (Nordic Co-operation, 2021). Similarly, as with NHWStat, the data for the NSD are gathered from national statistics institutes, Eurostat, OECD, and the UN, and the aim of the NSD "is to support the work of the Nordic governments and the Nordic region parliamentarians in creating joint solutions that benefit citizens in the Nordic countries" (Nordic Co-operation, 2021). Therefore, the number of indicators is also limited, but these are nonetheless

relevant for active and healthy ageing (Table 3).

Table 3. Nordic Statistics Database

Indicator	Ages	Gender	Countries available
Relative median income ratio 65+ by sex, reporting country, and time	+65	Yes	Denmark, Finland, and Sweden (2004–2020) Greenland (2004–2019) Iceland (2004–2018) Norway (2004–2019)
Risk of poverty by sex, reporting country, age, and time	+65	Yes	Denmark, Finland, and Sweden (2004–2020) Iceland (2004–2018) Norway (2004–2019)
Total number of pensioners by reporting country, age, unit, and time	55-59, 60-62, 63-64, 65-66	No	Denmark, Finland, Iceland, Norway, and Sweden (2013–2017) Faroe Islands (2015–2017)
People aged 65+ living in institutions or service housing by time, unit, reporting country, and age	65-74, 75-79, 80+	No	Denmark (2000–2005, 2008–2014, and 2016) Faroe Islands (2003–2008, 2010, 2012–2013) Finland (2000–2016) Iceland (2000–2014) Norway (2000–2008, 2010–2014, 2016) Sweden (2000–2007, 2008, 2011–2016)

Life expectancy by time, reporting country, age, and sex	65	Yes	Denmark (1974–2020) Faroe Islands (1985–2019) Greenland (1977–2018) Finland (1980–2020) Åland (1990-2010, 2011–2019) Iceland (1961–2020) Norway (1960–2020) Sweden (1968–2020)

Similarly, the time coverage of NSD indicators is limited in most cases. Moreover, some of them present time gaps that would cause some loss of quality for longitudinal comparisons.

National statistics institutes

To establish what indicators and data are available at the national level from the Nordic countries, we have explored the national statistics institutes (NSIs) in each of the countries as well as some national agencies addressing some of the issues related to active and healthy ageing.

To show the availability of indicators at different levels of policymaking, Table 5 in the Appendix shows the number of indicators available at each territorial level. Some methodological considerations should be addressed here because the definitions of regional statistics vary depending on the body providing the indicators. While international, European, and national institutions provide data at the national level, they often also provide data at the regional level. This is the case, for example, with Eurostat and the NSIs. Eurostat has its own hierarchical system for dividing up the European territory (nomenclature) into territorial units for statistics (NUTS), and it is divided into three levels: NUTS1, NUTS2, and NUTS3. The first group of units (NUTS1) covers major socioeconomic regions, NUTS2 covers basic regions and, NUTS3 covers small regions (Eurostat, 2021). The coverage of basic regions in the Nordics shows why it can be problematic to use these data as they do not correspond to the usual political division of countries. For example, Denmark is the only country where basic regions and political regions are the same (Hovedstaden, Sjælland, Syddanmark, Midtjylland, and Nordjylland). In Finland, Iceland, Norway, and Sweden, Eurostat's basic regions are an amalgamation of political regions in these

countries, and thus we find here a challenge for statistical comparison. This could be solved by including NUTS3 data, which, at least in Finland, Norway, and Sweden, correspond to political regions. However, data at NUTS3 level are very scarce and we have not been able to find any relevant indicators at this level.

Another consideration is that different institutions within a country may provide data using different territorial categorisations. For example, in Norway, Statistics Norway (NSI) offers data on lifestyle habits in six regions that do not correspond to Norwegian political regions, but the Health Directorate (Helsedirektoratet, Norway) offers data on welfare technology in all Norwegian political regions. Therefore, although data are regionalised, they should be treated with care when comparing the availability of indicators because they may not refer to the same territorial division.

A final consideration refers to the degree of urbanisation data, which are provided by Eurostat. These data cover three different territorial typologies: cities (densely populated areas), towns and suburbs (intermediate density areas), and rural areas (thinly populated areas). This classification is based on the share of local population living in urban clusters and in urban centres and provides an analytical and descriptive lens on urban and rural areas.

Regional and municipal indicators

The availability of statistical indicators, and their comparability when these indicators are compiled, at subnational levels is significantly reduced when compared to national and supranational levels. One of the advantages of supranational institutions such as the WHO, OECD, and Eurostat is that their data are comparable across countries. Nonetheless, as we have discussed, the disadvantage is that these data do not comprise regions or municipalities. Data at the subnational level are often provided by ministries or public authorities such as the Finnish Institute for Health and Welfare (THL), the Norwegian Directorate of Health (Helsedirektoratet), or the Swedish National Board of Health and Welfare (Socialstyrelsen), but also by NSIs.

Denmark

For example, Statistics Denmark offers regional and municipal data on the following indicators:

- Clients in nursing dwellings
- Disposable income
- Educational attainment
- Free choice of dwelling and average waiting time for nursing homes
- Gender equality indicator of activity and employment rates
- Gender equality indicator of persons referred to home care
- Home care, free choice (provided hours per week) by type of benefits
- Home care, free choice (referral hours per week) by type of benefits
- Income for people (14 years+) by type of income
- Places in social measures (nursing homes, protected dwellings, private nursing homes, etc.) by number of places
- Public health insurance expenses
- Recipients of home care
- Recipients of home nursing
- Recipients of national old age pension
- Recipients of preventative home visits
- Recipients referred to home care, nursing homes/nursing dwellings

These indicators are disaggregated by sex and age group intervals and are up to date. They include both regions, provinces, and municipalities. The following two indicators are only available at the municipal level:

- Quality of life

- Recipients of rehabilitation and maintenance rehabilitation

Finland

In Finland, Sotkanet is the statistical information service that offers key population welfare and health data from 1990 onwards in all Finnish municipalities (Finnish Institute for Health and Welfare, 2021). As such, it provides the following list of indicators at the regional level that are relevant to active and healthy ageing:

- Alcohol mortality among population aged 65 and over per 100 000 persons of same age
- Average trust in decision-making in the municipality on a scale of 1–5, age 65 and over (years 2013-2016)
- Daily smokers (per cent), age 65 and over
- Daily smokers (per cent), age 75 and over
- Great difficulties in walking 500 meters (per cent), age 65 and over
- Great difficulties in walking 500 meters (per cent), age 75 and over
- Great difficulties in running 100 m (per cent), age 65-74
- Leisure-time physical inactivity (per cent), age 65 and over
- Leisure-time physical inactivity (per cent), age 75 and over
- Mortality from accidental falls among population aged 65 and over per 100 000 inhabitants
- Obesity (Body Mass Index BMI ≥ 30 kg/m^2) (per cent), age 65 and over
- Participating in activities organised by associations, etc. (per cent), age 65 and over
- Participating in activities organised by associations, etc. (per cent), age 75 and over
- People who have great or greater difficulties in taking care of themselves, over 75 years old (per cent)
- Persons who are satisfied with the safety of their neighbourhood (per cent), age 65 and over (years 2013-2016)
- Persons who are satisfied with the safety of their neighbourhood (percent), age 75 and over (years 2013-2016)
- Persons who do not receive adequate assistance (percent), aged 65 and over
- Persons who do not receive adequate assistance (per cent), aged 75 and over
- Persons who feel themselves lonely (percent), age 65 and over
- Persons who feel themselves lonely (per cent), age 75 and over
- Persons who rate their quality of life (EuroHIS-8) as good (per cent), age 65 and over
- Persons who rate their quality of life (EuroHIS-8) as good (per cent), age 75 and over

- Self-rated deterioration of work ability (per cent), age 65 and over
- Self-rated health moderate or poor (per cent), age 65 and over
- Self-rated health moderate or poor (per cent), age 75 and over
- Severe mental strain (per cent), age 65 and over
- Severe mental strain (per cent), age 75 and over
- Suicide mortality among population aged 65 and over per 100 000 persons of same age
- Persons experiencing poor memory, over 75 years old (per cent)

At both the regional and municipal level, the following indicators are available:

- Assistive technology, number of devices handed out during the year (from 2006 to 2014)
- Average retirement age
- E-service appointments, per cent of outpatient appointments in primary health care
- Hospital inpatient care for substance abuse, care periods for clients aged 65 and over per 1000 persons of same age
- Mortality among population aged 65 and over per 100 000 persons of same age
- Periods of care arising from accidental falls for those aged 65 and over per 10 000 inhabitants of the same age

At only the municipal level, we find the following indicator:

- Living alone, population aged 75 and over, as per cent of total dwelling population of same age

Iceland

In Iceland, Statistics Iceland provides the following two indicators at the regional level:

- Educational attainment of the population according to ISCED 2011 from 2003 to 2019, percentage distribution (Hagstofa)
- Elderly households receiving municipal home-help service by type, sex, and age from 2004 to 2019 (Hagstofa)

Additionally, the Directorate of Health publishes statistics at both the regional and municipal levels through the Regional Public Health Indicators 2021 factsheets (Icelandic Directorate of Health, 2021a) and Public Health Dashboard (Icelandic Directorate of Health, 2021b) (Mælaborð lýðheilsu, in Icelandic).

The factsheets list up to 44 public health indicators by each of the 7 Icelandic health districts: the Metropolitan area (Höfuðborgarsvæðið), the Southern Peninsula (Suðurnes), the Western Region (Vesturland), the Western Fjords (Vestfirðir), the Northern Region (Norðurland), the Eastern Region (Austurland), and the Southern Region (Suðurland). Nonetheless, only two of these indicators are disaggregated by age and none of them offer gender differences:

- Waiting list for a nursing spot for people aged 67+
- Multidrug use for people aged 75+

On the other hand, the dashboard is a visualisation tool that allows to consult public health indicators related to lifestyle, health, and others, both at the regional and municipal levels. However, the indicators in the dashboard are disaggregated by gender but not by age.

Norway

In Norway, besides Statistics Norway (SSB), another institution producing regional and municipal statistical indicators is the Norwegian Directorate for Health (Norwegian Directorate of Health, 2021). The Directorate of Health manages both the Norwegian Health Statistics Bank (Norwegian Institute of Public Health, 2021) and the Municipal Health Statistics Bank (Folkehelseinstituttet, 2021).

Indicators focusing on the regional level include:

- Educational attainment (NHC) – percent, age standardised (Norwegian Health Statistics Bank)
- Level of functioning (per cent) by type of disability, age, region, contents, and year (SSB)
- Lifestyle habits (per cent) by living habit, age, region, contents, and year (SSB)
- Symptoms of health problems and use of medication (per cent) (SSB)
- Need for care and unmet need for health services (per cent) (SSB)

Indicators covering both regions and municipalities include:

- Primary health service per 1000, standardised (Municipal Health Statistics Bank)
- Mortality, early death per 100,000, standardised (Municipal Health Statistics Bank)
- Educational attainment (per cent), age standardised (Norwegian Health Statistics Bank)

- Level of functioning (per cent), by type of disability, age, region, contents, and year (SSB)
- Lifestyle habits (per cent) by living habit, age, region, contents, and year (SSB)
- Symptoms of health problems and use of medication (per cent) by symptom, age, region, contents, and year (SSB)
- Need for care and unmet need for health services (per cent) by type of care, age, region, contents, and year (SSB)
- Location technology for people living at home with dementia (Norwegian Directorate of Health)
- Location technology (GPS) (Norwegian Directorate of Health)
- Electronic medication support (Norwegian Directorate of Health)
- Digital surveillance (Norwegian Directorate of Health)
- Security alarms (Norwegian Directorate of Health)

Sweden

In Sweden, up to five institutions provide statistical indicators at the regional and municipal levels. Besides the already mentioned Eurostat, Socialstyrelsen, and Statistics Sweden (SCB), these include Kolada (Kolada, 2021) and the Public Health Agency of Sweden (Public Health Agency of Sweden, 2021). Kolada is an open and free database for Swedish municipalities and regions. It allows comparisons and analysis in the municipal sector through the 5,000 statistical indicators they publish. Eurostat, Socialstyrelsen, and SCB offer some indicators that only cover regions. These are:

- Life table by age, sex, and NUTS 2 region (Eurostat)
- Life expectancy by age, sex, and NUTS2 region (Eurostat)
- Causes of death - crude death rate by NUTS 2 region of residence (Eurostat)
- Cause of Death Statistics, Age: 60-95+ (Socialstyrelsen)
- Number of new cancer cases per 100 000 persons (crude rate), Age: 60-85+ (Socialstyrelsen)
- Number of participants in folk high school courses by rate of study for the course, region, where the course is held, type of course, year, sex, and age group (SCB)

Indicators covering both regions and municipalities are provided by SCB, Kolada, and the Swedish Public Health Agency and include the following:

- Sickness and activity compensation by age, sex, region, and year (Public Health Agency of Sweden)
- Level of education by age, sex, region, and year (Public Health Agency of Sweden)
- Fall accidents among those 65+ years, by sex, region, and year per 100 000 individuals (Public Health Agency of Sweden)

- Satisfied Citizen Index - Elderly care (Kolada)
- Fall injuries among people 80+, number/1000 (Kolada)
- Cost of home care elderly care, SEK/individual 65+ (Kolada)
- Residents 65+ who have been recipients of health and medical care for which the municipality is responsible (home health care), share (Kolada)
- Life expectancy by region, period, and sex (SCB)
- Population 16-95+ years of age by region, level of education, year, age, and sex (SCB)
- Number of persons by household status, region, year, age, and sex (SCB)
- Disposable income for households by region, type of household, age, observations, and year (SCB)
- Number and percentage of persons by region, sex, age, observations, year, and type of housing (SCB)
- Long-term income by region, region of birth, type of household, and age, equalised disposable income (SCB)
- Low at-risk-of-poverty rate and high economic standard by region and age (SCB)
- Total earned income, mean income for persons registered in the national population register during the whole year by region, age, year, and sex (SCB)
- Self-employed 16+ (by type of work) by region, age, sex, and year (SCB)
- Population 16-74 years of age by region, highest level of education, age, and sex. Year 1985–2020 (SCB)

In addition to these indicators, the Swedish Board of Health and Welfare has produced in 2021 the first survey for municipalities and regions specifically targeting welfare technology (National Board of Health and Welfare, 2021). The survey covers five areas:

- Welfare technology in municipal health care
- Welfare technology in ordinary functional housing
- Welfare technology in ordinary housing for the elderly
- Welfare technology in support and service housing
- Welfare technology in special housing for the elderly

The survey asks both municipalities and regions if they have the following range of items for each of these areas:

- A chat function for communication between individuals and social workers in elderly care
- Digital medicine signature
- Drug dispensary

- Electronic planning tool for staff
- Epilepsy alarm
- Keyless locks for home care patients
- Incontinence detectors
- Other medical equipment
- Digital support for physical exercise or activation
- Digital supervision during the day
- Coordinated individual plan with video when patient is discharged
- Coordinated individual plan with video on other occasions
- Other technology
- Digital medicine cabinets
- GPS alarms
- Support for digital purchases in ordinary functional housing
- Digital communication between individuals or relatives
- Night supervision with digital technology
- Internet access for the individual

Common Nordic indicators

In this chapter, we provide the existing indicators at different territorial levels, ranging from international to municipal indicators. However, we have found that there is currently no existing list of indicators that are common to all Nordic countries. While NHWStat and the NSD (see sub-section "Nordic databases") are an attempt to provide Nordic indicators, they do not cover all aspects of active and healthy ageing, and most of the indicators are not up to date. Hence, we have here listed the indicators that based on our scanning of the data were up to date and covered all Nordic countries at the time of writing.

Table 4 classifies the indicators produced by Eurostat, the OECD, the ESS, and the UNECE based on the thematic domains of healthy ageing and wellbeing, socio-economic status, and social activity, engagement, and participation. These domains are inspired by UNECE's and the WHO's conceptualisations of active and healthy ageing (UNECE, 2019a; WHO, 2020).

Table 4. Nordic common indicators for Active and Healthy Ageing

Thematic areas/domains	Indicator	Source
Healthy ageing & well-being	Health status by degree of urbanisation	Eurostat
	Life expectancy	Eurostat
	Healthy life years at 65	Eurostat

	Life expectancy at 65	Eurostat
	Life table by age, sex, and NUTS 2 region	Eurostat
	Life expectancy by age, sex, and NUTS2 region	Eurostat
	Causes of death – crude death rate by NUTS 2 region of residence	Eurostat
	Average rating of satisfaction by domain, sex, age, and educational attainment level	Eurostat
	People having a long-standing illness or health problem by sex, age, and degree of urbanisation	Eurostat
	Self-perceived health by sex, age, and degree of urbanisation	Eurostat
	Self-perceived long-standing limitations in usual activities due to health problem by sex, age, and degree of urbanisation	Eurostat
	Self-reported unmet needs for medical examination by sex, age, main reason declared, and degree of urbanisation	Eurostat
	Self-reported unmet needs for dental examination by sex, age, main reason declared, and degree of urbanisation	Eurostat
	Self-perceived health by educational attainment	Eurostat
	Self-perceived health by income quintile	Eurostat
	Persons performing physical activity outside working time by duration in a typical week, educational attainment level, sex, and age	Eurostat
	Time spent on health-enhancing (non-work-related) aerobic physical activity by sex, age, and educational attainment level	Eurostat

	Self-reported long-standing illness or health problems, by age class	Eurostat
	Obese people aged >65 years, by sex	Eurostat
	Self-reported depressive symptoms, by sex and age class	Eurostat
	People aged ≥65 years who ate fresh fruit daily, by sex	Eurostat
	People aged ≥65 years who ate vegetables daily, by sex	Eurostat
	People aged ≥65 years who consumed alcohol at least once a week, by sex	Eurostat
	People aged ≥65 years who smoked tobacco products on a daily basis, by sex	Eurostat
	People aged 65-74 years spending at least three hours per week on physical activity outside of work, by sex	Eurostat
	Adults aged 65 and over rating their own health as fair, bad, or very bad, by income, European countries	OECD
	Limitations in daily activities in adults aged 65 and over, European countries, 2017 (or nearest year)	OECD
	Mental well-being	AAI 2018
	Remaining life expectancy at 55	AAI 2018
	Share of healthy life expectancy at 55	AAI 2018
	Subjective happiness	ESS
	Discrimination by age	ESS
	Lives with husband/wife/partner at household grid	ESS
	Feeling about household's income nowadays	ESS
	Subjective general health	ESS

Socio-economic status	Hampered in daily activities by illness/disability/infirmity/mental problem	ESS
	Population by educational attainment	Eurostat
	Population by educational attainment level, sex, age, and degree of urbanisation (%)	Eurostat
	Educational attainment	AAI 2018
	Material and social deprivation	Eurostat
	Severe material deprivation	Eurostat
	Inability to make ends meet	Eurostat
	At-risk-of-poverty rate	Eurostat
	Self-reported unmet needs for specific health care-related services due to financial reasons by sex, age, and degree of urbanisation	Eurostat
	Persons at two-fold risk of poverty by age and sex - experimental statistics	Eurostat
	Performing (non-work-related) physical activities by sex, age, and income quintile	Eurostat
	Disposable incomes of older people (incomes of people aged over 65, % of total population incomes)	OECD
	Income inequality by age: older vs. total population	OECD
	Income poverty rates by age and gender	OECD
	Highest level of education	ESS
	Main source of household income	ESS
	Household's total net income, all sources	ESS
	Distribution by type of household of people aged ≥65 years, by sex, 2018	Eurostat
	People living in under-occupied dwellings, by age class, 2018	Eurostat

Social activity, engagement, and participation	People aged ≥65 years living alone, by tenure status, 2018	Eurostat
	Housing cost overburden rate ≥65 years and by sex	Eurostat
	People never having used a computer, by age class, 2008 and 2017, and by sex	Eurostat
	Digital skills of people, by age class	Eurostat
	Internet communication activities of people, by age class	Eurostat
	Did not use the internet in the previous three months, by age class	Eurostat
	Individuals – internet activities	Eurostat
	Use of ICT	AAI 2018
	Social connectedness	AAI 2018
	Frequency of getting together with family or relatives, by age class	Eurostat
	Frequency of getting together with friends, by age class	Eurostat
	People without anyone to discuss personal matters with, by sex and age class	Eurostat
	People without anyone to ask for help, by age class	Eurostat
	Participation rate in education and training (last 4 weeks), by sex and age	Eurostat
	Participation in formal or informal voluntary activities	Eurostat
	Individuals using the internet for voting	Eurostat
	Participation rate in education and training (last 4 weeks), by sex, age, and degree of urbanisation	Eurostat
	Volunteer activities	AAI 2018

	Caring for children and grandchildren	AAI 2018
	Political participation	AAI 2018
	People aged 65-74 years participating in cultural and/or sporting events, by sex (% participating at least once in the previous 12 months)	Eurostat
	People aged 65-74 years performing artistic activities, by sex	Eurostat
	Participation in tourism for personal purposes, by age class	Eurostat
	Employment rates by sex, age, and citizenship (%)	Eurostat
	Employment rate 55-59	AAI 2018
	Employment rate 60-64	AAI 2018
	Employment rate 65-69	AAI 2018
	Employment rate 70-74	AAI 2018
	Current normal retirement age by gender	OECD
	Social meetings with relatives, friends, or colleagues	ESS

This list features indicators from different sources, and it covers all aspects of active and healthy ageing. The boundaries between the thematic domains are not always clear as some of the indicators may fall in one or another domain depending on how they are interpreted. This is the case for employment, for instance, which we have included in social participation. We have done so because, despite being a central aspect of socioeconomic status, employment per se says more about how active a group of the population is than it says about their socioeconomic status. Even clearer examples, perhaps, are education attainment and social participation. While the first is a clear indicator of socioeconomic status, the second is a clear indicator of social participation. This is more evident for a group of the population (older adults) whose participation in education has not been expected and promoted until recently.

The table lists supranational institutions as each Nordic NSI defines their indicators independently, and thus these are not always comparable. This presents a challenge for the use of indicators in the Nordic context and, more importantly, for the pursuit of a common

active and healthy ageing strategy in the region. In the following chapter we examine how indicators, or the lack thereof, are used in policymaking in the Nordic region.

The role of indicators in supporting policy initiatives and actions

This chapter addresses, broadly, how the indicators on active and healthy ageing are used by policymakers. This question is addressed by an overview of policies adopted in five Nordic municipalities and by a roundtable discussion with key informants from these municipalities. Results show that municipalities lack tools to measure and compare the status of active and healthy ageing in their areas of work.

Indicators by themselves can have great utility for creating knowledge on the topic of active and healthy ageing, but they are also needed to inform policymaking. In addition, it is necessary to uncover the advantages and challenges of the existing indicators in order to improve their usage by all policymakers. Therefore, in this section we address our second research question, namely:

- How are these indicators used for supporting and following up on policy initiatives and what are the main advantages and challenges?

First, we briefly review some of the current strategies for active and healthy ageing, welfare technology, and age-friendly cities and communities in some Nordic municipalities. Second, we provide an account of how these municipalities work with available statistical indicators.

Methodology

To collect the necessary data to answer our second research question on how the indicators previously described, or other relevant indicators, are being used in policymaking across the Nordic region, we conducted desk research, a roundtable discussion, and two individual interviews. The desk research consisted of reviewing policy and strategic documents in the selected municipalities that participated in the roundtable. To carry out the desk research, we examined material that the municipalities have made publicly available such as their webpages and policy documents. To supplement and provide context to this material, regional and/or national resources were also examined when necessary.

In addition, we conducted a roundtable discussion with representatives of five Nordic countries working on the issue of active and healthy ageing and welfare technology. Invitations were sent to three or four municipalities in each of the Nordic countries based on a list of relevant contacts related to active and healthy ageing provided by the Nordic Welfare Centre. Overall, the five Nordic countries were represented, and this allowed us to get a glimpse of different strategies and current situations. The roundtable lasted around an hour, and it was structured around three aspects and guided by twelve questions. The first of these aspects was the current state of municipal strategies across the two topics of interest for us in this study: active and healthy ageing and welfare technology. Second, we were interested in knowing if municipalities use statistical indicators in relation to their strategies and, if so, which indicators these are and how they are used. Third, we will focus on an assessment from the municipal representatives on the indicators as to explore their advantages and challenges.

In addition, and to supplement the material on active and healthy ageing and welfare technology, we also approached two representatives from Gothenburg and Uppsala who are responsible for coordinating the work on enhancing age-friendliness in their respective cities. This topic is closely linked to active and healthy ageing and welfare technology and, as such, it is highly relevant to provide material in this regard. Therefore, we conducted a short interview with the representative from Uppsala and we obtained input from the representative of Gothenburg through email. Our topic was mainly focused on which indicators municipalities use to follow-up the work they are carrying out on age-friendly cities.

Current examples of municipal strategies

The roundtable discussion around this topic showed the different strategies adopted in Nordic municipalities to address active and healthy ageing and welfare technology. One common aspect that emerged in the roundtable was the view that users of health and welfare technology could, and should, become more independent from the municipal healthcare services.

Aarhus municipality (Denmark), for example, has adopted a short 5 clues (ledetråde in Danish) strategy with the goal to make citizens more independent in health-related matters (Aarhus kommune, 2021). These five clues focus on:

- Using welfare technology to keep citizens self-sufficient
- Adapting health services to citizens' needs to empower them
- Collaborating with local communities to help them enjoy life
- Giving freedom to health workers to improve their job satisfaction
- Improving leadership to bring these clues to life

In addition, the municipality is developing a 10-year plan to improve welfare technology. However, as their representatives mentioned, their approach is that welfare technology is not a goal in itself but instead something that must be used to increase citizens' independency by supplementing other human-based efforts.

This perspective was shared by Eskilstuna municipality (Sweden). Their strategy The future healthcare 2035 (Framtidens vård och omsorg 2035, in Swedish) aims to support the prolonged empowerment and independency for users of healthcare (Eskisltuna kommun, 2021). In addition, from a multidimensional understanding of health and ageing, they state that rather than a reactive provision of care, their focus is to become more proactive in order to focus on engagement, participation, digital inclusion, safety, and security.

Reykjavík (Iceland) also shares the perspective of providing more independence to their citizens when they have to deal with health matters. Their current strategy for senior citizens (Stefna Reykjavíkurborgar í málefnum eldri borgara 2018–2022, in Icelandic) is structured around three mottos that aim at making Reykjavík an age-friendly and health-promoting city (Velferðarsvið Reykjavíkurborgar, 2018):

- Respect: for knowledge, experience, opinions, the right to self-determination, and the different access needs of Reykjavík residents.
- Activity: everyone can be active in society regardless of age or social status, origin, sexual orientation, gender, and economic status.

- Friendships: senior citizens have the opportunity to cultivate family and friendship relationships, to enjoy the company of others, and to participate in social activities.

Besides this, Reykjavík also has a welfare technology strategy in place (Stefna Reykjavíkurborgar á sviði velferðartækni 2018-2022, in Icelandic) that focuses on using welfare technology to make it easier for people to live in their own homes with a better quality of life despite aging, disability, or illness and at the same time enable them to be more active participants in society (Velferðarsvið Reykjavíkurborgar, 2021). Nonetheless, there might be some issues in the implementation of welfare technology. For instance, they point to the fact that senior citizens are not accustomed to using many of the digital devices that the municipality is testing on them because it is a novel technology that they are not that familiar with. In addition, it is also challenging to develop and build up a system for people who will not be their core users in the long run.

Similarly, Kristiansand municipality (Norway) established a regional coordination group for e-health and welfare technology (regional koordineringsgruppe e-helse og velferdsteknologi, in Norwegian) that focuses on (Kristiansand kommune, 2020):

- Giving users greater confidence, quality of life, and control over their own lives
- Giving relatives greater security and mastery over their life situations
- Giving employees more opportunity to use their professional expertise
- Better utilising resources in the municipal health services

In addition, regarding welfare technology, the municipality has created a network of healthcare personnel with the aim to supervise the implementation of welfare technology as well as to upskill healthcare personnel in the use of welfare technology.

Kristiansand is also taking part in the project Common Telemedicine solution Agder or TELMA (Felles Telemedisinsk løsning Agder) that aims to a) test and evaluate a common telemedicine solution for distance monitoring of patients with chronic disorders and comorbidity, b) establish a common telemedicine solution for all 30 municipalities in the Agder region, and c) provide good health services with less use of health staff resources (TELMA, 2021).

At the regional level, Agder collaborates with the Norwegian municipalities' association (KS, Kommunenes Sentralforbund), the Norwegian Directorate of e-Health (Direktoratet for e-helse) and the Norwegian Directorate of Health (Helsedirektoratet) in the national

Welfare Technology Programme (NVP, Nasjonalt Velferdsteknologiprogram).

In Finland, the Association of Finnish Municipalities (Kuntaliitto) is part of a cross-administrative group for the programme on ageing (Ministry of Social Affairs and Health, 2020a). The programme establishes the following six key policies to be addressed by 2030:

1. To improve the functional capacity of older working-aged people and longer duration careers
2. To enable older people to retain their functional capacity for a longer time
3. To establish voluntary work in society
4. To increase wellbeing through digitalisation and new technologies
5. To implement services in a socially and economically sustainable manner
6. To make housing and living environments age-friendly

Although Finnish "municipalities will continue to be responsible for promoting health and wellbeing, the self-governing regions extending beyond municipalities will be responsible for organising social welfare and health care services" (Ministry of Social Affairs and Health, 2020a, p. 25). Nonetheless, municipalities will still play a relevant role in some of the aforementioned policies. For example, regarding the first of the six priorities, they "shall be obliged to draft a plan on their measures to support the well-being, good health and functional capacity of the elderly population and their ability to cope independently, and for organising and developing services and informal care required by elderly people" (Ministry of Social Affairs and Health, 2020b, p. 23). For the last of the policies, municipalities are expected to include the housing needs for elderly people in the municipal plan for supporting the elderly population with the aim of anticipating those needs (Ministry of Social Affairs and Health, 2020b).

The examples showed here point towards an increased use of technology-based tools to be implemented in healthcare with the goal of giving more autonomy and independence to the final user. However, digital exclusion is still an important matter to acknowledge. For instance, a Swedish study from 2021, by Internetstiftelsen (The Internet Foundation), shows that internet use is 83 per cent among those born in the 1940s and 57 per cent among those born in the 1930s (Andersson, Blomdahl, & Bäck, 2021) id est two groups that represent the target group of welfare technology. Furthermore, e-health services are used by 81per cent of those born in the 1960s, 76 per cent of those born in the 1950s, 61 per cent of those born in the 1940s, and only 34 per cent of those born in the 1920s and 1930s (Andersson, Blomdahl, & Bäck, 2021). These data suggest, therefore, that welfare technology needs to take into consideration the users' perspective insofar as they might not be

comfortable with technology tools that they are not familiar with.

Use of statistical indicators

Active and healthy ageing and welfare technology

One conclusion from both the desk research and the roundtable is that the municipalities examined here do not to a large extent use existing indicators in support of their work. This is due to several factors. First, as highlighted in the review of indicators in the second chapter, there are not many useful indicators at the local level. Most of them are produced by national or supranational institutions and thus they rarely cover subnational country divisions. In addition, beyond territorial coverage it is also important to highlight that indicator for active and healthy ageing need to focus on the individual level, id est, disaggregation by socio-demographic markers such as age and gender is necessary.

This, of course, is a costly process because it often requires conducting surveys in order to grasp issues that go beyond medical or tax records. In Sweden, for instance, the Swedish Association for Local Authorities and Municipalities (SKR, Sveriges Kommuner och Regioner) provides data to municipalities on the number of users of health and social services, but this falls short of informing about the situation of the senior populations. Also, rather than using existing indicators municipalities themselves produce indicators based on their needs. This is the case in Aarhus and Reykjavík, for example. In Aarhus, they have developed their own statistical records (faktacenter) where they compile various data from the health care services, for instance. In Reykjavík, they also collect their own statistics, and, in addition, they run a survey about seniors' wellbeing every three years.

These approaches, however, have some limitations. For instance, because collecting and processing statistical data is an expensive endeavour, those municipalities that lack the resources, both financial and technical, might not have the same opportunities to develop such indicators. Furthermore, municipalities might be able to collect data for themselves, but if there is no structured and systematised way to publish them, these data might not become public and, thus may be of no use for other stakeholders. Another limitation could be that municipalities focus too much on financial aspects of active and healthy ageing and welfare technology. A third reason for municipalities not using indicators to draft their strategies might be due to miscoordination within municipalities themselves.

As it was pointed out during the roundtable, municipalities might not have the incentives to work proactively towards monitoring purely active and healthy ageing issues. It can be the case that healthcare

services within municipalities are organised as differentiated silos, e.g., local services and hospitals working on their own instead of working together. This comes down to how resources are distributed and who takes the responsibility of producing knowledge.

Municipalities, though, find that having the right indicators could be of use for developing better strategies and policies. One concern raised by municipalities was that more subjective indicators focusing on self-assessment are necessary in order to have a better grasp of active and healthy ageing among their populations. In this regard, some good examples could be those indicators produced by the ESS or Eurostat. For instance, in the ESS there are indicators related to subjective happiness, feelings about household income, and feelings of subjective general health. Eurostat also provides a range of self-perceived indicators on various health issues including mental health.

Municipalities argue in this aspect that quality of life is a central concept for active and healthy ageing, but this is difficult to grasp from objective statistical indicators such as time spent on physical activity or educational level. Therefore, including the individual's perceptions, ideas, or feelings in the indicators can be useful for acquiring a better understanding of the individual's quality of life in the municipality. In addition, as Nordic populations become more diverse, having subjective indicators could be useful to accommodate other cultural habits that might not be grasped from objective indicators. Nonetheless, subjective indicators have the limitation of not being a useful tool for comparing individuals. While comparing objective indicators such as tobacco use gives a concrete measure, comparing subjective general health is more complex because individuals might not perceive, and measure, their health in the same way.

Concerns about developing useful indicators comprised different aspects such as the quality of indicators, the definitions and concepts measured, and the political will to provide municipalities with tools to keep track of active and healthy ageing. As previously mentioned, the development of statistical indicators requires many resources that not all municipalities have available. For this reason, some of the municipalities mentioned that political will needs to be directed towards providing these resources to municipalities themselves. As municipalities see it, the allocation of resources is too focused on the monitoring and evaluation of municipal models for addressing active and healthy ageing instead of focusing on the actual needs and demands of local communities.

These needs and demands, furthermore, are subject to change along with the needs of a more diverse older population. For example, one participant in the roundtable noted the need to consider cultural diversity when drafting strategies because not all population groups share the same values. Regarding healthcare provision, for instance, independence might be valued more strongly by Nordic cultural

standards, but this may not be the case by other cultural standards where the family takes a more important role in the delivery of healthcare. Therefore, when implementing policies and strategies on welfare technology, for instance, municipalities need to take these issues into consideration, and this calls for good tools to know the target groups to which policies are directed.

Age-friendly cities and communities

Regarding the topic of age-friendly cities and communities, the experiences of Gothenburg and Uppsala paint a different picture. In terms of evaluating the work of the age-friendly cities and communities' programme, Gothenburg has appointed an older people ombudsman (äldreombudsman) to follow up on the work across the city. In addition, the parties with shared responsibility (administration and companies) shall cooperate with the city management office in the follow-up and evaluation. These activities will be followed-up in 2022, and the indicators measuring the impact on the target groups at the societal level will be followed-up in 2024. These indicators are taken from Statistics Sweden's citizen survey and from the Swedish Public Health Agency's health survey, but there are no indicators specifically focusing on age-friendly cities. From January 2022, a baseline for 2021 will be completed and it will touch upon the topics of mobility, housing, social inclusion, urban development, community support and services, and information and communication.

In Uppsala, it was decided to focus on the already existing local indicators. However, those indicators do not grasp the entirety of the municipality's work and thus they require revision. In relation to this, from January 2022 the municipality will strengthen the cooperation between the statistics and age-friendly departments to develop more suitable indicators. These indicators will focus on the older population and will also be developed with the aim of facilitating comparisons across the Nordic countries. So far, the social compass (sociala kompassen) has been used to map social characteristics and social issues and has been helpful for measuring living conditions of the older population and relating to the age-friendly cities programme. The biggest opportunity that Uppsala has is the chance to create a dynamic and flexible set of indicators that can help the municipality to better evaluate their own work within the age-friendly cities programme.

Advantages and challenges of indicators for addressing active and healthy ageing

Up to this point we have shown what indicators are available in the Nordic region and discussed how they are used by policymakers at different levels. This is an advantage for those who work with active

and healthy ageing in the Nordic region as it shows the existing wide range of indicators from the municipal to the international level. Nonetheless, this can also raise some challenges, which have already partially been discussed in this report. In this subsection we address the advantages and challenges of using these indicators.

It is worth addressing the conceptualisations of active and healthy ageing and how these conceptualisations influence the production of indicators. We have shown how UNECE and WHO work with active and healthy ageing as well as with the concept of age-friendly cities. These frameworks, while highly relevant as lighthouses for other stakeholders, might fall short in addressing local needs, even at national levels. Some participants in the roundtable, for instance, mentioned the need to deal with more culturally diverse populations in their municipalities. This requires a local perspective to grasp all social nuances, not only at municipal or regional levels, but also at the national level. Therefore, it is clearly not easy to synthesise all these indicators into a working conceptualisation spanning all of the target population's needs.

For example, health-related indicators play a big role in measuring the health aspects of active and healthy ageing. However, as we have seen, there exist many domains of health that go beyond the health status of individuals, and entire populations, and that contribute to a healthy ageing society. Aspects such as public resources, welfare technology, or age-friendly cities are some of these relevant domains in measuring and contributing to active and healthy ageing. Nonetheless, these stem from frameworks that do not always consider the necessities of local policymaking. Therefore, if local actors (municipalities, regions, or countries) do not possess the tools to address active and healthy ageing due to the already made conceptualisations it might be hard for them to make a good diagnosis of their situations.

Therefore, it is a great advantage for the Nordic region to be relatively well covered by international indicators, but as it has been shown these indicators need to be treated carefully so as not to draw wrong conclusions on the status of active and healthy ageing. This is even more important if we consider that international indicators do not reach the more local levels of governance in the Nordics. This is a challenge because municipalities in the Nordics have, to a large extent, the responsibility of providing healthcare and wellbeing to their populations.

Discussion: Improvements and development needs

In this last chapter we review the two previous chapters, and, considering the findings, we discuss what could be done to improve the use of indicators with a focus at the municipal level. Some challenges identified include lack of territorial and time coverage, time obsolescence, and lack of local detail. To address these challenges, we support the creation of a working group at the local level to develop a timely and comparable system of indicators.

As mentioned in the introduction to this report and echoing Socialstyrelsen's (Sweden) justification for following up on the development of welfare technology, statistical indicators are cornerstones for understanding the current state of particular issue and for informing action plans, strategies, and initiatives.

This report has answered, to this point, two of the three research question that have guided our study. The first of these research questions was:

What types of relevant indicators for both active and healthy ageing and welfare technology for seniors currently exist in the Nordic Region?

In answering this question, this report has explored the availability of current statistical indicators in the areas of active and healthy ageing, welfare technology, and age-friendly cities and communities. We have shown institutions, databases, and indicators that must help policymakers to make informed decisions. The institutions we have identified comprise organisations of different nature such as statistical institutes, public authorities, or research-oriented organisations. Because of this, the knowledge they produce is aimed at solving different, but still related, issues and this translates into a broad spectrum of indicators (see, for instance, Table 5 in the Appendix). As such, this poses advantages and challenges for policymakers who rely on the knowledge produced by these organisations. An advantage, for example, is that having a diverse and broad set of indicators provides a larger picture of the current situation. As we have seen, thanks to having multiple sources it is possible to cover all the domains of active and healthy ageing (regardless of how these concepts are defined) to some degree. Another advantage is that having transnational indicators allows comparisons between countries, and even between regions within these countries. This is a matter of utmost importance if the Nordic countries are to have a common strategy for active and healthy ageing.

Nonetheless, there are at least three challenges that need to be addressed to obtain a clearer picture and also to have sharper tools for conducting analyses. First, the examples of the indicators produced by the OECD, the ESS, Eurostat, and the UNECE show that country and time coverage is not always guaranteed. The clearest examples of this are the data from Eurostat and the UNECE, which often do not cover Iceland and Norway because they are not part of the European Union. However, it is not only these institutions that present this challenge. As it has been pointed out in this report, not all Nordic countries have participated in all editions of the ESS, for instance. This might be due to country choice to not participate in the survey. The lack of country and time coverage for these data pose a great challenge to studying the progression of countries over time and for making comparisons between countries.

A second challenge identified in this report is the obsolescence of data, especially the data provided by Nordic databases such as NHWStat and the NSD. As shown before, the few relevant indicators offered by these databases reach, at most, the year 2019 at the time of writing. In addition, there are also time gaps that hinder a temporal analysis of these indicators. However, this is not a challenge

posed only by Nordic databases and many other indicators produced by other institutions are also outdated, as is the case for many datasets from the OECD and Eurostat.

Finally, the third challenge identified in this study refers to the coverage of subnational territories (regions and/or municipalities). It is very seldom that supranational institutions produce indicators that are relevant for active and healthy ageing at the subnational level, with Eurostat being an exception. This represents a barrier for comparability across regions in different countries because this means that national institutions have the responsibility to produce these indicators and, as such, these indicators turn out to be different in each country.

A second aim of this study was to investigate how these indicators are used in policymaking in some Nordic municipalities. The second research question of this study was:

How are these indicators used in supporting and following up on policy initiatives and what are the main advantages and challenges?

The findings from the roundtable and the interviews with representatives of municipalities resonate very much with the findings from the collection of indicators. The municipalities interviewed for this study expressed the lack of usability of most indicators (at supranational, national, and even municipal levels) for the mandates they have in promoting active and healthy ageing, welfare technology, and age-friendly cities. This is also reflected in the policies and strategies that these municipalities have implemented in those areas. The reason why municipalities do not use statistical indicators, based on our analysis, is the lack of territorial coverage but also the lack of indicators that can reflect the needs encountered at the local level. As some representatives mentioned, it is often the municipalities themselves that produce their own statistical indicators for internal use. However, this effort is costly, and it becomes a barrier for those municipalities without the necessary resources to carry it out. In addition, it entails the creation of different indicators in each municipality, which makes the comparability of such indicators more difficult across municipalities.

On the other hand, one advantage of the existing indicators is that they can serve as a benchmark or reference for policymakers at all levels. For example, the work done by the Global Network for Age-friendly Cities and Communities or the UNECE sets the framework and goals upon which countries, regions, and municipalities can base their work.

Beyond comparing Nordic countries, regions, and municipalities, our interest is to assess what can be done from the current point of departure. Therefore, our third research question was:

What needs for improvement are there for these indicators to better support policymaking?

We have shown the results of our desk research and the roundtable discussions, and we have attempted to establish a dialogue between the outcomes of these two exercises with the aim to acquire different perspectives on the issue. As we have seen, the existing indicators can shed some light on the matter at stake, but they fall short of being a reliable tool for policymaking, particularly at the local and regional levels. Territorial and time coverage, time obsolescence, and local detail have emerged as the main challenges for the use of indicators by policymakers. Therefore, it becomes clear that improvements are needed for these guidelines to be more supportive of policymaking. However, some of these improvements are out of reach for Nordic policymakers as these challenges refer, at least partially, to supranational institutions. Despite this, there is still room for improvement at the Nordic level by harmonising efforts and producing common indicators. To better outline the needs for improvement, the following section offers some recommendations based on the findings of this study.

Recommendations

We present here some recommendations aimed at improving the availability and quality of statistical indicators in the areas of active and healthy ageing, welfare technology, and age-friendly cities and communities:

- To establish a working group formed by municipalities and regions to steer a Nordic effort to develop a coordinated system of indicators.
- To develop a new system of indicators, for instance using the indicators listed in Table 5 of this report, and to use the existing knowledge produced as a guiding principle.
- To include other demographic characteristics such as socioeconomic status or ethnic origin in the indicators in order to obtain a better picture of these subgroups of older populations.
- To include subjective indicators in the area of active and healthy ageing.

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Appendix

Table 5. Overview of active and healthy ageing indicators in the Nordic region

Territorial coverage	Denmark	Finland	Iceland	Norway	Sweden
International	**Organization for Economic and Cooperation Development (OECD)** • Health expenditure and financing • Health status • Pensions at a Glance 2019 • Health at a Glance 2019 **World Health Organization (WHO)** • Maternal, Newborn, Child and Adolescent Health and Ageing				
European	**Eurostat** • European Union – Statistics on Income and Living Conditions (EU-SILC) • Labour force survey • Internet use • Life expectancy • Social protection and inclusion • Mortality • Causes of death • Adult learning • Cities and greater cities **United Nations Economic Commission for Europe** • Active Ageing Index				

	Denmark	Finland	Iceland	Norway	Sweden
National	**Statistics Denmark** • Consultations of physicians • Digital behaviour and cultural habits • Educational status of the population • Employees • Gender equality • Home nursing • Labour market status of the population • Life expectancy • Participation in sports • Personal and family income • Persons on old-age pension or disability pension • Quality of life • Social benefits for senior citizens • Statistics on income and living conditions	**Statistics Finland** • Educational structure of the population • Internet use for cultural purposes • Labour force survey • Life expectancy • Participation in adult education • Participation in leisure activities • Persons at risk of poverty • Self-perceived health and well-being	**Statistics Iceland** • Births and deaths • Educational attainment • Health Interview Survey • ICT usage by individuals • Labour force survey • Lifelong learning • Material deprivation • Municipal social services • Quality of life • Wages and income	**Statistics Norway** • Culture and recreation • Education • Health conditions and living habits • ICT usage in households • Births and deaths • Labour market and earnings • Sports and outdoor recreation • Poverty-related problems, survey on living conditions • Social conditions, welfare, and crime	**Statistics Sweden** • Educa-tional attainment of the population • Household finances • Labour statistics • Living conditions survey • Population statistics

Regional	**Statistics Denmark** • Consultations of physicians • Educational status of the population • Gender equality • Personal and family income • Persons on old-age pension or disability pension • Social benefits for senior citizens	**Statistics Finland** • Causes of death • Deaths • Educational structure of the population • Local government finances **Sotkanet (Finland)** • National FinSote Survey • Pensions • Primary health care • Regional Health and Well-being Study • Specialised health care	**Statistics Iceland** • Educational attainment • Municipal social services **Public Health Watch (*Lýðheilsu-vakt*)** • Mental health • Physical health • Quality of sleep • Wealth • Happiness • Stress • Loneliness • Fruit consumption • Vegetable consumption • Consumption of sugary soft drinks • Consumption of sugar-free soft drinks • Consumption of energy drinks • Active mode of transport • Small brisk movement • Drinking alcohol • Intoxication • Smoke daily	**Statistics Norway** • Health, care and social relations, survey on living conditions **Helsedirektoratet (Norway)** • Localization technology for people living at home with dementia • Municipal patient and user register **Kommunehelsa StatBank (Norway)** • Causes of death • Medicines and health services	**Statistics Sweden** • Educational attainment of the population • Household finances • Labour statistics • Life expectancy • Population statistics **Kolada (Sweden)** • Citizen Satisfaction Index – Elderly care • Cost of elderly home care • Fall injuries • Recipients of health and medical care **Socialstyrelsen (Sweden)** • Cancer • Cause of death • Welfare technology **Folkhälsomyndigheten (Sweden)** • Income and livelihood • Knowledge, skills, and education • Living and local environment

Table 6. OECD Indicators on Health Status

Countries (other years available are in parenthesis)	Indicator	By sex	By age/s	Last year available
Denmark, Finland, Iceland, Norway, Sweden	Life expectancy	Yes	At birth, 65	2020
Denmark, Finland, Iceland, Norway, Sweden	Life expectancy	Yes	40, 60, 80	2019
Denmark, Finland, Iceland (2019), Norway (2016), Sweden	Causes of mortality	Yes	No	2018
Denmark, Finland, Iceland (2019), Norway (2016), Sweden	Premature mortality	Yes	75+	2018
Denmark, Finland, Iceland (2019), Norway (2016), Sweden	Avoidable mortality	Yes	No	2018
Denmark, Finland, Iceland (2018), Norway (2019), Sweden (2019)	Perceived health status	No	No	2020
Denmark, Finland, Iceland (2018), Norway (2019), Sweden (2019)	Perceived health status by age and gender	Yes	15-24, 25-44, 45-64, 65+	2020
Denmark, Finland, Iceland (2018), Norway (2019), Sweden (2019)	Perceived health status by socio-economic status	Yes	15+	2020
	Infant health: low birthweight	No	No	2018
Denmark, Finland, Iceland, Norway, Sweden	Communicable diseases	No	No	2019
Denmark, Finland, Iceland, Norway, Sweden	Cancer	Yes	No	2012
Denmark (2018), Finland (2018), Iceland, Norway (2018), Sweden (2018)	Injuries	No	No	2020
Finland, Denmark, Sweden	Absence from work due to illness	No	No	2018

Table7. Eurostat indicators for active and healthy ageing

Countries	Indicator	Ages	Last year available	Sex
Sweden, Norway, Iceland, Finland, Denmark	At-risk-of-poverty rate	+65	2020	Males and females
Finland, Denmark	Average rating of satisfaction by domain, sex, age and educational attainment level	50-64, 65-74, +65, +75	2018	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Causes of death - crude death rate by NUTS 2 region of residence	5-years interval, 65+, 85+, 95+	2018	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Employment rates by sex, age and citizenship (%)	55-59, 60-64, 65-69,70-74	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Health status by degree of urbanisation	65	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Healthy life years at 65		2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Inability to make ends meet	One adult aged 65+, two adults (at least one aged 65+)	2020	No
Sweden, Norway, Iceland, Finland, Denmark	Individuals - internet activities	55-64, 65-74, 75+, 55-74 low education, 55-74 medium education, 55-74 high education, fe/males 55-74, retired individuals	2020	Partially

Sweden, Norway, Iceland, Finland, Denmark	Individuals - internet use	55-64, 65-74, 75+, 55-74 low education, 55-74 medium education, 55-74 high education, fe/males 55-74, retired individuals	2020	Partially
Sweden, Norway, Iceland, Finland, Denmark	Individuals using the internet for voting	55-74	2019	
Sweden, Norway, Finland	Life expectancy at birth	0	2019	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Life expectancy at 65	65	2019	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Life expectancy by age, sex, and NUTS2 region	1-year interval	2019	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Life table by age, sex, and NUTS 2 region	1-year interval	2019	Males and females
Sweden, Norway, Finland, Denmark	Lone pensioner (above retirement age) households	Retired	2012	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Material and social deprivation	55+, 60+,65+,70+,75+,85+, 55-64, 65-74	2019	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Participation in formal or informal voluntary activities	50-64, 65-74, +65, +75	2015	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Participation rate in education and training (last 4 weeks) by sex and age	50-74, 55-64	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Participation rate in education and training (last 4 weeks) by sex, age, and degree of urbanisation	55-74	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	People having a long-standing illness or health problem, by sex, age, and degree of urbanisation	55-64, 65-74, 65+, 75-84, 75+, 85+	2020	Males and females

Sweden, Norway, Iceland, Finland, Denmark	Performing (non-work-related) physical activities by sex, age, and income quintile	55-64, 65-74, +65, +75	2014	Males and females
Sweden, Finland, Denmark	Persons at two-fold risk of poverty by age and sex - experimental statistics	55-64, 65-74, 75+	2015	Males and females
Sweden, Norway, Finland, Denmark	Persons performing physical activity outside working time by duration in a typical week, educational attainment level, sex, and age	50-64, 65-74, 75+	2017	Males and females
Sweden, Norway, Iceland, Finland,	Population by educational attainment	55-74	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Population by educational attainment level, sex, age, and degree of urbanisation (%)	55-64, 65-74, 65+, 75-84, 75+, 85+	2020	Males and females
Sweden, Norway, Iceland, Finland,	Self-perceived health	55-64, 65-74, 65+, 75-84, 75+, 85+	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Self-perceived health by income quintile	55-64, 65-74, 65+, 75-84, 75+, 85+	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Self-perceived health by sex, age, and degree of urbanisation	55-64, 65-74, 65+, 75-84, 75+, 85+	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Self-perceived long-standing limitations in usual activities due to health problem by sex, age and degree of urbanisation	55-64, 65-74, 65+, 75-84, 75+, 85+	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Self-reported unmet needs for dental examination by sex, age, main reason declared, and degree of urbanisation	55-64, 65-74, 65+, 75-84, 75+, 85+	2020	Males and females

Sweden, Norway, Iceland, Finland, Denmark	Self-reported unmet needs for medical examination by sex, age, main reason declared, and degree of urbanisation	55-64, 65-74, 65+, 75+	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Self-reported unmet needs for specific health care-related services due to financial reasons by sex, age, and degree of urbanisation	55-64, 65-74, 65+, 75+	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Severe material deprivation	55+, 60+, 65+, 75+, 50-64, 55-64, 65-74	2020	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Time spent on health-enhancing (non-work-related) aerobic physical activity by sex, age, and educational attainment level	55-64, 65-74, 65+, 75+	2014	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Body mass index by sex, age, and income quintile. BMI measures: Underweight: less than 18.5 Normal weight: between 18.5 and less than 25 Pre-obese: between 25 and less than 30 Obese: equal or greater than 30	65-74, 65+, 75+	2019	Males and females
Sweden, Norway, Iceland, Finland, Denmark	Persons reporting a chronic disease, by disease, sex, age, and educational attainment level. Diseases included: Heart attack High blood pressure Stroke	65-74, 65+, 75+	2019	Males and females

Roundtable participants

Ms. Sonja Hansen, European Project Officer at the Health and Assisted Living Technology Department in Aarhus municipality (Denmark)

Ms. Anna-Karin Holst Johannsen, Project Leader for CareWare Nordic in Aarhus municipality (Denmark)

Ms. Christine Gustafsson, Manager of Quality and Development at the Social Care Department in Eskilstuna municipality (Sweden), Associate Professor at Mälardalen University (Sweden)

Mr. Joakim Svärd, Statistician at the Social Care Department in Eskilstuna municipality (Sweden)

Mr. Morten Lukas, Project Manager of Telehealth Project in the National Welfare Technology Programme in Agder region (Norway)

Ms. Sigþrúður Guðnadóttir, Project Manager in Reykjavík municipality (Iceland)

Ms. Minna-Liisa Luoma, Chief Specialist in Ageing at the Finnish Institute for Health and Welfare (THL) (Finland)

Interview guide for the focus group on active and healthy ageing

Active and Healthy Ageing + Welfare technology in the municipality/region

1. What is the active and healthy ageing strategy in the municipality? To what extent is welfare technology included in the strategy?
2. What is the focus of your main projects/initiatives related to active and healthy ageing in the municipality? Do they cover welfare technology?
3. What challenges related to active and healthy ageing does the municipality face nowadays?

Available indicators

1. What indicators do you use to develop your projects related to active and healthy ageing/welfare technology?
2. What are the most relevant groups of indicators of active and healthy ageing/welfare technology, and why?
3. Who is the provider of these indicators (national statistical offices, the region, the municipality, private actors...)?

Usefulness of indicators

1. How do you use these indicators to build your active and healthy ageing/welfare technology strategies and projects?
2. What is the main goal for using the indicators (diagnosis, benchmarking, assessment…)?
3. How does the availability of indicators influence the policymaking on active and healthy ageing/welfare technology in your municipality?
4. Do you think these indicators are enough to compile evidence on active and healthy ageing/welfare technology in your municipality?
5. Do you think they cover the diversity of the elderly in your municipality?

Age-friendly cities and communities representatives

Mr. Kenny Jansson, Uppsala municipality

Ms. Sofia Tillman, Gothenburg municipality

Questions to age-friendly cities and communities

1. How does your municipality evaluate your work within your age-friendly city programme?
2. Are there any measuring mechanisms specific to each initiative? If so, how frequently are they monitored and who is responsible for gathering and disseminating the data?
3. Have indicators been developed? If so, how? Are these in line with local/regional/national baselines?
4. What are some of your challenges and opportunities in following up the work?

About the publication

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Possibilities and Challenges

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