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Public Health Foresight Study 2024

Choosing a healthy future

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Synopsis

Choosing a healthy future. Public Health Foresight Study 2024

Every four years, the National Institute for Public Health and the Environment (RIVM) looks ahead to developments in public health and health services. This time, the Public Health Foresight Study (PHF-2024) describes five major challenges on the way to 2050. The PHF-2024 also outlines a number of possible measures to address these challenges.

The PHF-2024 makes it clear that the Netherlands is not yet fully prepared for these challenges. The PHF also shows that the challenges are interrelated and thus need to be addressed together. Firm health policies are therefore needed in the coming years, with concrete goals.

Choosing a healthy future means sustaining policies for a long time. It is also important that policies that are already in place, such as smoke-free policies and policies that encourage physical activity, remain in place and that, for example, poverty and poor housing conditions are taken into account. Finally, it is important to evaluate policies to learn lessons for the future.

Population ageing is and remains the most important societal development when it comes to public health. More new forms of housing are needed where older people can live together, help each other and get the attention they need. Furthermore, it is important to have a social discussion about which treatments, types of care and end-of-life decisions are necessary and desirable. At the same time, many elderly people remain vital after they retire. It is therefore important for elderly people to continue to participate in society. These points make up the first challenge.

The second challenge is the large health inequalities in the Netherlands. On average, people with better social status live 14 years longer in good health than groups that are worse off. A lack of socioeconomic security is important here, often combined with poorer living situations or working conditions. It is therefore necessary to improve the conditions in which these people live.

Thirdly, young people have increasingly unhealthy lifestyles. For instance, more young people will be overweight, at an increasingly younger age. Young people are also increasingly likely to have mental health problems. As young people are the future, it is important to invest in their physical as well as mental health.

The fourth challenge is how good care can continue to be provided in the face of increased demand for care and ever-increasing staff shortages. There will also not be enough informal carers in proportion to the demand. This could overburden them.

The fifth challenge is about a healthy design of the living environment to be better prepared for the effects of climate change. Examples are heat stress and flooding. In many places, measures are already being taken to protect the Netherlands from this, such as more greenery and water in cities and villages. A green environment also has health benefits: it encourages people to meet, relax and exercise.

Keywords: PHF, health policies, prevention, care, population ageing, youth, climate, living environment, future, informal care.

Contents

Foreword

For most Dutch people, good health is the most important thing in their lives, whereas good public health is crucial for a vital and resilient society. Promoting public health and a healthy environment is not a quick fix, but a long-term effort. One that focuses on the health threats of today, but certainly also on those of tomorrow. A long-term approach that clarifies what is needed at this moment to improve our health and be well prepared for the future.

The Public Health Foresight Study (PHF) offers the necessary perspective on the future. Naturally based on the best available knowledge from scientific research, with the involvement of experts from within and outside the RIVM, using input and reflections from citizens. It is not without reason that periodically drawing up this scientifically based foresight study for the benefit of public health policy and practice in the Netherlands is a statutory core task of the RIVM. The RIVM has been doing this for 30 years.

This ninth PHF shows that our life expectancy continues to increase, that more and more people remain vital into old age, and that our healthcare is in order. But it is not self-evident that this will continue to be the case, as we look ahead to 2050. We are faced with a number of major and interrelated challenges. For example, the impact of the ageing population, the further increasing demand for care that can be provided by fewer people, the large and persistent health inequalities in a rich country such as the Netherlands, the developments in the health of young people, the pressure on our living environment and the health effects of climate change.

This PHF outlines such relevant developments, describes the possible consequences for public health and care, and provides guidance for policy and practice. I hope and expect that this PHF will help you to continue to protect and promote public health based on the necessary long-term vision.

Hans Brug
Director-General of the Dutch National Institute for Public Health and the Environment (RIVM)

1 Introduction

Looking ahead to our future public health is essential for current and near future policy.
A long-term view allows us to prepare well. The RIVM therefore produces the Public Health Foresight Study (PHF) every four years. We have been doing this for 30 years. In this edition, the PHF-2024, we look ahead to 2050. What is in store for us? And what does that mean for the health of Dutch people and the care needed in the Netherlands? Exploring the future of our health brings challenges into focus. In this report we present the challenges facing our country. Through options for action, we offer starting points for policy so that we, as a country, can better prepare for these challenges now and in the coming years.

Creating a PHF is a multi-year process in which many people participate. The PHF has a solid foundation in scientific research, supplemented with insights from policy, citizens and practice. Since 1993, the PHF has been an indispensable publication for policymakers at national, regional and local level, researchers, students, other professionals and interested citizens. This PHF publication again offers reference points for those working on the future of our public health and care.

Health in uncertain times

This foresight study has been prepared at a time when social developments are accelerating. We increasingly live in a rapidly changing, complex and obscure world, in which we are faced with great uncertainties (1). And this also applies to public health. The COVID-19 pandemic and the societal responses to it have made it clear that our vulnerability is greater than we may have thought or hoped (2). In addition, we are living in an era with many transitions[1], such as the energy transition (3). All these social developments have significance for our future health and care.

Health is a broad concept

Health is taken to mean the totality of physical, mental and social well-being (4). After all, feeling healthy is more than just not being ill. Often people can feel healthy and experience few limitations, and still have a condition. Sickness management and ever-improving treatments contribute to this.

There are many factors that influence health, for example:
- Individual characteristics, such as age and gender, but also heredity
- Lifestyle, for example the extent to which we exercise and engage in sports
- Social networks
- The environment in which we live, work, learn and play (5)

Health is not just something for individuals, but for society as a whole. It is one of the dimensions that determine the quality of society, together with socio-cultural aspects, a pleasant living environment and work and income. Today this is often brought together under the heading of 'broad prosperity' (6), because prosperity encompasses more than just economic aspects.

[1] A transition is a process of fundamental change in the culture, structure and practices of a society.

Building on previous PHFs

This PHF builds on previous PHFs. Many of the issues we formulated in previous PHFs are still relevant today. The challenges from PHF-2018 are still current: the high burden of disease due to cardiovascular diseases and cancer; the growing group of people living independently with dementia and other complex problems; and the increasing mental pressure on youth and young adults.

Due to the COVID-19 pandemic, challenges from previous PHFs not only turned out to be significant in the distant future, but they also became more urgent and relevant in the here and now. COVID-19 has, as it were, put a magnifying glass on vulnerabilities and problems. The corona-inclusive PHF (c-PHF), a special edition published in 2020, also showed indirect effects of the COVID-19 crisis, such as the scaling down of regular care, a changing lifestyle and deteriorating mental health. In addition, both age-related diseases and new outbreaks of infectious diseases will play a role in the future.

Health in relation to climate and the social and physical living environment is also a theme that we continue to build on based on previous PHFs. This theme shows that improving health can be achieved not only through public health policy, but also through other policy areas, such as the environment, energy, spatial planning, education and labour.

An integrated approach, as described in previous PHFs, remains necessary to tackle future challenges. In addition to attention to a healthy lifestyle, attention must also be paid to the social and physical living environment. This includes policies aimed at people living in poverty and at communities with many people in vulnerable positions. This is not only a task for the government; citizens, companies and other organisations also play a role in this. And in doing so, it is important to explicitly acknowledge the different norms and values that people have.

Not everything is possible and it is necessary to gain insight into the choices we face, including the considerations. This PHF therefore uses different perspectives on health. These were developed for the PHF-2014 and updated for the current report (see also Methods report VTV-2024).

In this PHF-2024, Dutch people themselves played a greater role than in previous PHFs. Important were the contributions of a Citizen Council and a Citizen Panel (see box). We also consulted young people in focus groups. In addition to the input from experts and insights from scientific research, this provided us with a clear picture of the ideas and opinions of inhabitants of the Netherlands. This in turn provides a broader insight into how people in society view issues concerning public health and care, now and in the future.

Citizens think along

"At the first meeting, I thought: oh dear, what am I doing here? But once we got underway (...) I actually found it more and more interesting. Things you don't normally see, things you don't normally hear, booklets that don't actually reach the citizens and that you do now read (...). "I just think it's a unique opportunity."

A Citizen Council and a Citizen Panel have been established and consulted for the PHF-2024. This enriches our view of future health and care. After all, what do Dutch people themselves think about all this? How do Dutch residents view the future and what do they consider important? During meetings with the Citizen Council, we held discussions and worked together on questions surrounding the various PHF themes. One such example is discussing different visions of the future of public health and developing options for action for the major challenges. Citizens' own questions could also be raised. The dialogue with the Citizen Council allowed us to continually test our approach and ideas whilst producing the PHF. In addition to the Citizen Council (30 people of different ages and backgrounds), we also consulted a larger group of over 560 people, the Citizen Panel, in writing. The Citizen Panel surveys provided an even broader view.

In addition to the Citizen Council, which was an important discussion partner, young people were consulted for the PHF-2024. In seven meetings, young people and young adults talked about their expectations for their health, care and the living environment in 2050. A total of 41 young people participated.

Structure of the PHF-2024

The basis of the PHF-2024 consists of three questions. First of all the question: 'what is in store for us'? Followed by the question: 'what future challenges does this present?' And finally the question: 'what can we do about this?'. Each chapter provides answers to these questions with an overview of trends, developments and consequences for health and care. The final chapter of this report summarises the main challenges and options for action. The figure below is a schematic presentation of how the various components of the PHF-2024 relate to each other. In the following paragraphs we will discuss how the PHF was created, which methods were used and which products the PHF-2024 consists of.

How this PHF came about

Creating a PHF is an intensive process that uses different sources of information, during which both quantitative and qualitative methods are applied.

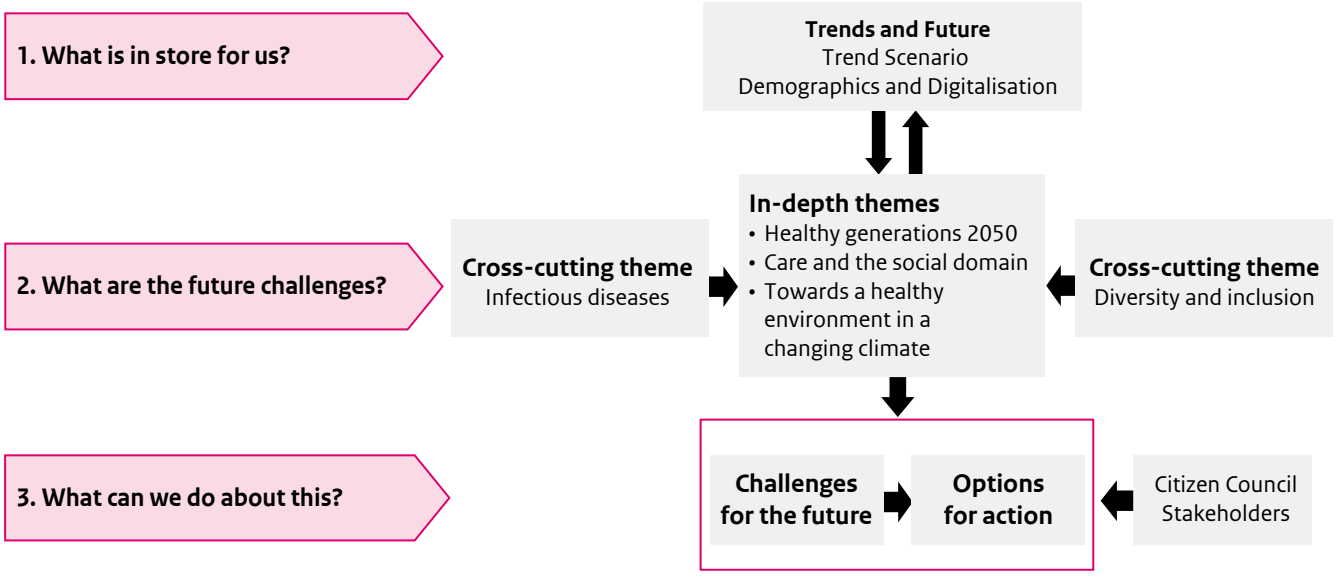
A mix of methods

In addition to epidemiological data analyses and literature review, this PHF made extensive use of qualitative, social science methods, such as interviewing experts, citizens and other stakeholders. An independent Scientific Advisory Board (SAB) assessed the methods used and the scientific quality. A reflection team of leading experts from the RIVM advised on the relevance of the topics. Combining knowledge from research with different points of view (from scientists, professionals from policy and practice and from citizens) produces a more defined and more recognisable picture of the future (7, 8). All methods, techniques and data sources used are described in a separate publication on Public Health Foresight study | Volksgezondheid Toekomst Verkenning 2024. Here an overview of all persons and groups involved can be found.

Future Projections in Trend Scenario

An important pillar of the PHF-2024 is the Trend Scenario. The key question explored therein is: what will the future look like if historical trends continue into the future without developing new or additional policies? This part of the PHF is underpinned by a quantitative basis. Many different data sources were used for the Trend Scenario. These include, for example, epidemiological data on the occurrence of diseases and health risks, data on causes of death and data on healthcare expenditure. Simulation models are used to create projections that provide a future picture of our public health and care. For example, how old we will get, which diseases will increase or decrease, how healthy we will live and how healthcare expenditure will develop. Demographic developments are included here as well. The Trend Scenario is not a forecast or prediction. The future is too uncertain for that. It is also very likely that new policies will in fact be developed, policies that will influence future developments. The aim of the Trend Scenario is to identify social challenges for the future.

Figure 1.1 Overview of the components of the PHF-2024



Three theme issues

The inventory of important themes for this PHF was carried out through consultation with experts and through stakeholder meetings with participants from healthcare, municipal health services and ministries, among others. This has led to three in-depth explorations: on healthy generations (young people and people aged 50 and over), care and social domain, and the living environment and climate. These theme issues describe the current state of affairs and a view of the future. The theme issues 'Healthy Generations 2050' examines today's young people and people over sixty from a lifecycle perspective. How they are doing now partly determines what their health will be like in the future. The theme issue 'Healthcare and social domain' highlights the future of care. The central issue is the increasing demand for care, which is also becoming increasingly complex. The interfaces with the social domain are also discussed. The theme issue 'Towards a healthy living environment in a changing climate' focuses on the influence of developments in the living environment on health and well-being, with an emphasis on climate change and the implementation of climate policy.

The insights from the Trend Scenario were used to create the thematic explorations, supplemented with literature review and qualitative research. Examples include interviews and workshops with relevant stakeholders or focus groups with young people. The most important insights from the thematic explorations have also been included in this main report.

Throughout the PHF-2024, attention has been paid to two topics that play a role across all themes, namely infectious diseases and diversity. After all, these topics are important for the health of various groups, for care, and they play an important role in questions surrounding the living environment. They are therefore discussed throughout the PHF-2024, the theme issues, and in this main report.

Identifying the options for action

The options for action in this PHF have been developed together with stakeholders and the Citizen Council (*see textbox at p.12*). In workshops they looked at approaches for the three main themes: health and lifestyle, care and support, and climate and living environment. Each theme was viewed from four different perspectives developed in the PHF-2014 (9) and updated for the PHF-2024.

These perspectives represent different views on health. Approximately 150 stakeholders from various organisations (policy, science and practice; from local to national level) participated in three stakeholder meetings. Each meeting focused on a theme. A meeting was also held with the Citizen Council of 30 people. Here too, a joint search was made for possible approaches from different perspectives. The PHF-2024 team has further investigated the results of these workshops. The results have been summarised in an options for action list that has been submitted to the Citizen Panel to assess social support.

Publications from the PHF-2024

The complete PHF-2024, like previous PHFs, consists of various parts. In addition to this main report, three thematic explorations have been published, titled: 'Healthy generations 2050', 'Care and social domain' and 'Towards a healthy environment in a changing climate'. A separate method description is available, which includes, for example, the calculation methods and the approach to the literature review. All these reports can be found on the website. The website further contains the Trend Scenario in the form of web pages with data, visualisations and accompanying texts. You will also find a list of everyone who contributed to this PHF on the website. View the complete PHF-2024 including all publications at Public Health Foresight study | Volksgezondheid Toekomst Verkenning 2024.

Reading guide

This main report of the PHF-2024 consists of six chapters. Chapter 2 provides insight into broader societal developments that are important for our future health. Chapter 3 discusses where the main health problems occur. This is where health, lifestyle and health inequalities are discussed. The focus in Chapter 4 is on how good care, which contributes to quality of life, remains possible. Chapter 5 focuses on climate change. This section describes the impact of climate change on health, as well as the opportunities that tackling climate change offers for a healthier environment. Chapter 6 contains the main conclusions of the PHF-2024 with the core messages and options for action: what are the challenges we face and what are the points of reference for policy?

2 What is in store for us?

The world we live in is constantly changing. This chapter focuses on what awaits us as we look to the future. Examples include the ageing population, climate change or the risk of outbreaks of new infectious diseases. And what are the consequences of these social developments for our public health and care? This impact can be direct, as in the case of climate change, which is also felt in the Netherlands. These effects can also be indirect, for example through rising energy and food prices. The increased dynamics and many uncertainties in our society and the world confront us with choices that are important for the future of our health.

High impact social developments

What is in store for us? And if we continue on the same path, what are the challenges? The PHF-2024 is based on an assessment of which social developments (or driving forces) will play an important role in the future. The RIVM has mapped out these social developments according to the DESTEP approach (*see textbox*) and presented them to stakeholders in various sessions.

This resulted in, among other things, the following selection of high-impact social developments for public health and care:

- the ageing of society,
- climate change,
- the increasing risk of infectious diseases and
- digitalisation.

"After all, COVID-19 has taught us that sudden changes can have major consequences. The world has already changed a lot and we need to acknowledge this."

(member of the Citizen Council PHF-2024)

The DESTEP approach

The DESTEP approach is a way to broadly map out the main developments for public health and care. The DESTEP approach looks at developments in the demographic, economic, socio-cultural, technological, ecological and political-institutional areas. The method provides a wide view of various factors that may affect the future of public health and care (10). It has therefore been used as a tool to make choices on which subjects to cover.

DESTEP developments are also called driving forces or autonomous developments. This includes developments such as ageing and smaller households (Demographic), economic growth and the labour market (Economic), increasing diversity (Socio-cultural), artificial intelligence and home automation (Technological), climate change (Ecological) and geopolitical relations and the role of international companies (Political and legal). These developments have been mapped out through literature review and meetings with experts and stakeholders from within and outside the RIVM.

The DESTEP developments are then linked to other factors such as determinants, morbidity and mortality. This leads to a vision of the future in which the consequences for public health and care become clear. The starting point for this vision of the future is that developments as we see them now will continue in the next 25 years, without implementation of new policy. This outlined image of the future represents the Trend Scenario (*see textbox*). Whenever possible, this image is supported with quantitative future projections. The Trend Scenario identifies the main social challenges for the future. These are the challenges that society and policy must focus on in order to achieve a more desirable future.

Trend Scenario PHF-2024

The Trend Scenario is intended to provide insight into how our public health and care will develop over the next 25 years. Future developments are uncertain. The Trend Scenario is therefore not a prediction, but an exploration of possible developments. It assumes that developments and trends will continue without introducing new policies. The Trend Scenario is a tool to map out the social challenges for the future.

The Trend Scenario contains future projections for the most important indicators for public health and care. The projections take into account future population growth and continued ageing. In this chapter we highlight a number of results from the Trend Scenario.

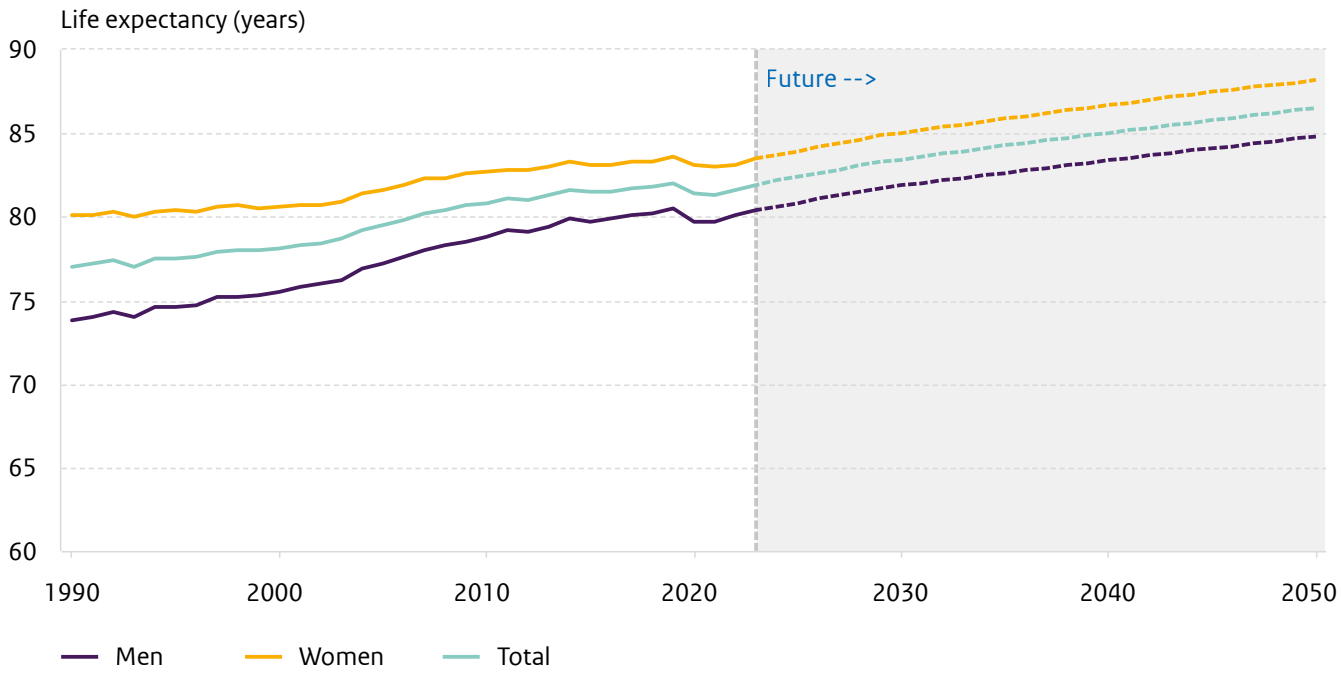
The complete Trend Scenario including all graphs, descriptive texts and background documentation can be found on Public Health Foresight study | Volksgezondheid Toekomst Verkenning 2024.

Our population is growing increasingly older

The fact that our society is ageing has been known for a long time. This is a development that has a major impact on public health and care. The number of people aged 65 and over and 80 or older will increase. In 2050, there will be approximately 4.8 million people aged 65 and over, of whom 1.94 million will be aged 80 or older. Right now, a total of 3.6 million people is over 65, 900,000 of whom are over 80.

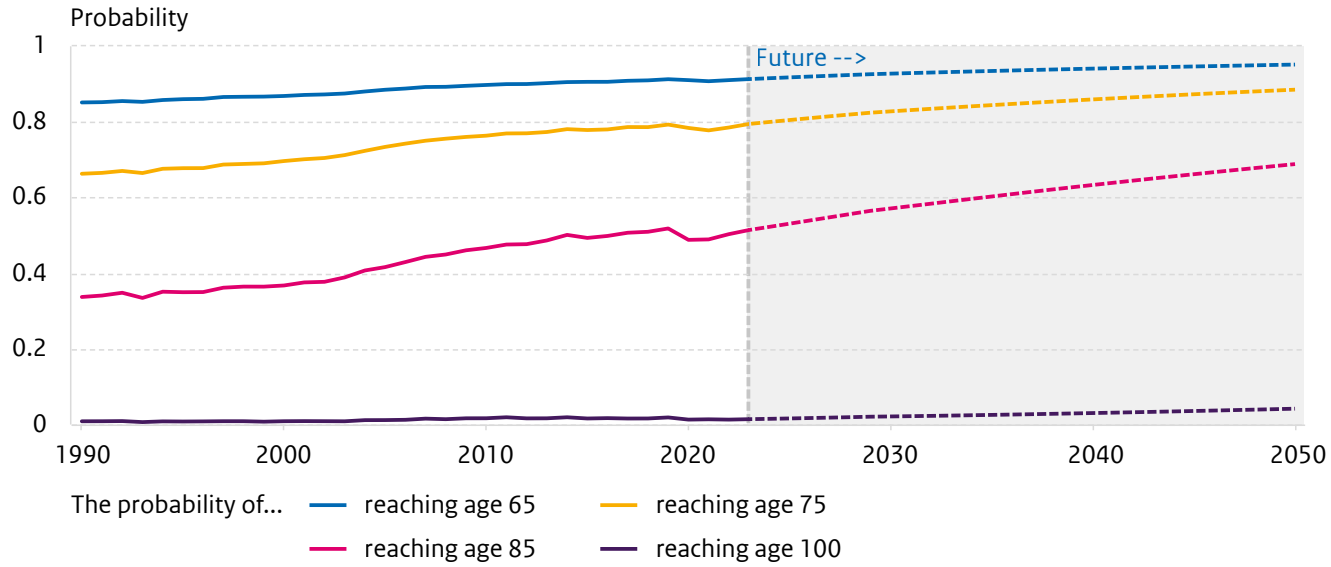
Life expectancy will also continue to increase in the future. During the COVID-19 pandemic, life expectancy temporarily fell. Life expectancy is expected to rise to 86.5 years by 2050. In 2022, life expectancy was 81.6 years (Figure 2.1). On average, women live longer than men, now and in the future. The difference in life expectancy between men and women is expected to remain just over 3 years.

Figure 2.1 Life expectancy 1990-2050



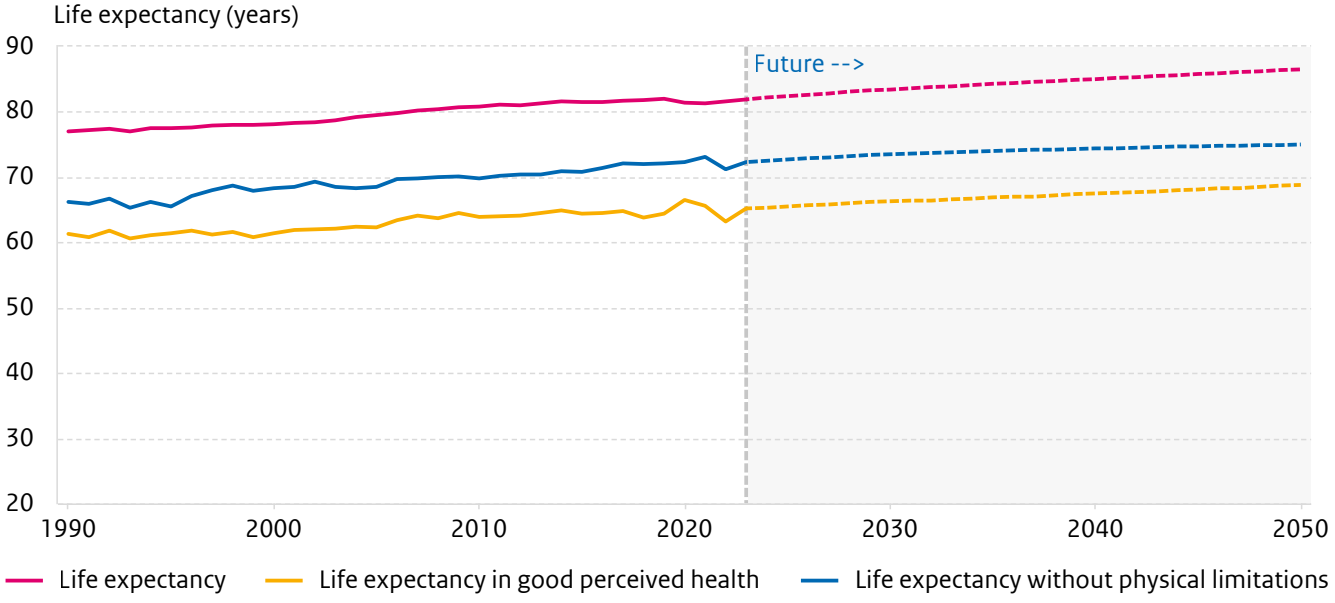
The Trend Scenario shows that the probability of reaching the age of 65 will increase from 91% to 95% between 2022 and 2050. The probability of reaching the age of 85 will even increase from 50% in 2022 to 69% in 2050. And the probability of reaching the age of one hundred will even increase three-fold during this period. In 2050, this probability will be 4% (Figure 2.2).

Figure 2.2 Survival rates 1990-2050, the probability of reaching 65, 75, 85 and 100



The increase in life expectancy is accompanied by an increase in healthy life expectancy. This means that the extra years we gain are also healthy years. However, healthy life expectancy is still 10 to 18 years lower than life expectancy (Figure 2.3). A higher healthy life expectancy enables us to continue contributing to society into old age. For example, four in ten 65 to 75 year-olds currently do volunteer work (11). And 16% of this group provides informal care. (Healthy) life expectancy is not equal for everyone and varies between groups. Chapter 3 discusses these health inequalities.

Figure 2.3 Healthy life expectancy 1990-2050



Paid work after retirement age is also a way to participate in society. Although the labour potential of older people is currently only being utilised to a very limited extent (12), more and more pensioners do in fact continue to do paid work (13). This active contribution to society is not only good for those in the third stage of life (*see textbox*). Due to the ageing population, it will also be necessary to keep our society running and to care for the oldest people (*see Chapter 4*). After all, more and more people will reach retirement age. Even though the number of people of working age will increase, this increase will not be at the same rate as that of older groups. Today, about a fifth of the population is over 65 and this will increase to about a quarter in the coming decades.

Different stages of life

People's lives can be divided into different stages The first stage is about growing up and learning. This is followed by the second stage during which one works and cares for others. In the past, this was followed by the third and final stage of life, with time to rest and being cared for. This last stage has now become outdated. In recent decades, the sharp increase in (healthy) life expectancy, good pension schemes and the active contribution of older people to society have led to the emergence of an additional stage of life. Retirement age marks the beginning of this new *third stage of life* in which many people are vital and remain active in society. The Council for Public Health and Society therefore refers to the third stage of life as 'the gift of the century' (14). The transition to the fourth stage of life is gradual, as vulnerability and the need for care increase. This transition can be different for everyone.

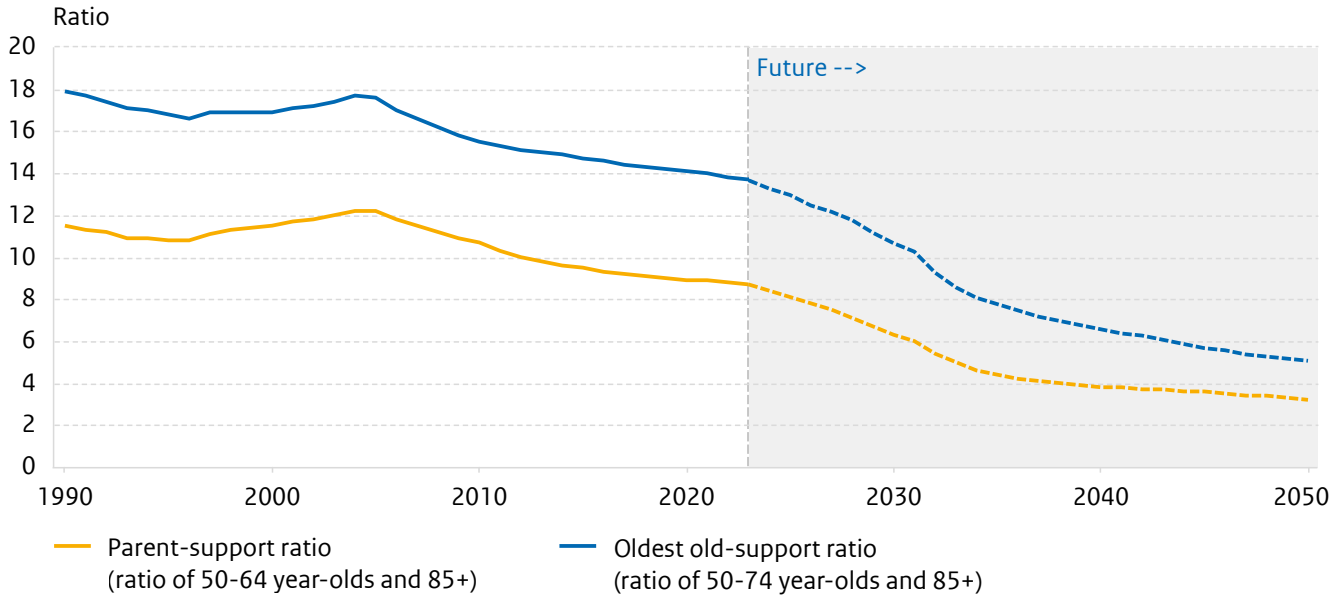
Ageing and the consequences for work and (informal) care

Even if more retirees continue to work, labour market shortages are likely to arise. Although this has been foreseen for some time, the consequences are becoming increasingly current, urgent and clear. In many areas, human resource shortages will therefore be even more noticeable than they are now, such as in business, in services such as public transport, but also in education and healthcare. In addition to labour shortages, healthcare too is facing a decline in voluntary contributions to care, such as informal care. The number of people in need of informal care will increase significantly compared to the number of people who can provide that care. The bottlenecks that arise as a result are exacerbated by the fact that people have to combine informal care with work more often (15).

Shortages in other sectors can impact public health as well. For example, the State Committee Demographic Developments 2050 mentions a shortage of road and hydraulic engineering technicians, IT specialists and production engineers (12). For example, shortages in the construction sector can lead to delays in the realisation of (adapted) homes. Shortages in transport infrastructure, such as the availability of public transport, make essential facilities, including healthcare, less accessible.

Chapter 4 discusses how our care will develop in the future and what this means for healthcare expenditure. The future coherence between care and the social domain is central to the PHF-2024 theme issue 'Healthcare and social domain'.

Figure 2.4 Development of potentially available informal carers up to 2050



Society is becoming more diverse

Society will be more diverse in the future. The proportion of people with a migration background in the population is increasing and the diversity of their countries of origin is also increasing (12). In addition to cultural differences, there are also socio-economic differences in society. More and less prosperous groups appear to be coming into contact with or interacting with each other less and less (16). The Netherlands Institute for Social Research (SCP) further indicates that there is often great diversity within groups as well (for example age groups or groups of a certain origin) (17).

The ageing population and increased diversity will lead to other, but also very different needs in society in the future, with effects on health. Examples of this are changing needs in the areas of housing, accessibility and recreation (12). There will be an increasing need for age-friendly housing. There will be a shortage of volunteers who are needed to keep sports clubs running. Volunteer work in sports is less common among older people and people with a migration background (18). There will also be an increasing demand for customised solutions in care and prevention, tailored to individual needs.

The climate is changing

The World Health Organization considers climate change to be the greatest global health challenge of this century (19). We are increasingly confronted with higher temperatures. And there will also be more and more climate extremes: heatwaves or periods of drought and extreme precipitation with an increasing risk of flooding. More heatwaves impact our health and well-being, which becomes even more relevant with an ageing population. Climate change also has consequences for the quality and availability of our drinking and swimming water and our food.

Climate change will also change people's immediate living environment. There will be a greater need for climate-proof homes and for greenery and for water in the living environment where people can find some respite.

Climate change therefore also means a lot of social change. Today, changes in climate and society have already been set in motion. Adaptations to a changing climate and measures to slow climate change are linked to other simultaneous developments, such as the housing challenge, the food transition, sustainable transport and nature development. Our landscape will change due to the transition to sustainable energy systems, such as wind turbines and solar parks. The combined effect of all these developments in the living environment have an impact on public health.

This theme is central to Chapter 5. The broader impact of the living environment on public health is described in the theme issue 'Towards a healthy living environment in a changing climate'.

Remaining alert to infectious diseases

If one thing has become clear from the COVID-19 pandemic, it is that we must take into account major or global outbreaks of (new) infectious diseases. This awareness does not only concern plans to prevent or limit infections, the so-called 'pandemic preparedness', but also the indirect social impact, such as unintended effects of necessary measures. For example, the impact on mental health. Or to lifestyle changes, such as less exercise during lockdown periods (20). However, the COVID-19 pandemic also saw many social or citizen initiatives emerging to compensate for the effects on society, such as the lack of exercise or increasing loneliness (21).

We have seen that the consequences of the COVID-19 pandemic and the associated control measures have had different effects on different groups, such as young people and the elderly. Such differences may also occur in the future. It is important to pay special attention to vulnerable target groups and to differences between groups, neighbourhoods and communities when monitoring and surveilling infectious diseases (22). New developments may occur, such as (scientific) breakthroughs in the prevention, detection or treatment of infectious diseases.

Infectious diseases can spread through direct or indirect contact between people. Pathogens also spread through, for example, mosquito or tick bites or by eating or drinking contaminated food or water. Mosquito bites or contaminated food are so-called 'transmission routes'. These different transmission routes make it difficult to predict which pathogens have pandemic potential. The next pandemic could therefore look very different from the COVID-19 pandemic.

In the future, we will have to deal with an older population and a different climate. Both are related to infectious diseases. Climate change makes it easier for mosquitoes that can transmit infectious diseases to establish themselves in the Netherlands. And an older population is more vulnerable to certain infectious diseases, partly due to reduced immunity. The risk of contracting infectious diseases is therefore expected to increase in the future, and this may lead to an increased demand for care. At the same time, in the case of new or recurring infectious diseases, the risk will be greater for young people who have not yet built up resistance to them.

The world around us is becoming increasingly digital

Our education, work and entertainment have been largely digitalised. In this context, digitalisation is also referred to as the fourth industrial revolution (23). A rapid further development of this digitalisation, and many new applications thereof that can profoundly change life, are imminent or have already begun. The PHF-2018 already discussed robotisation, virtual and augmented reality and data-driven technology in healthcare (24). Digitalisation received a lot of attention during the COVID-19 period, also due to an increase in working from home and video calling between doctors and patients.

Digitalisation brings both opportunities and risks. For example, digitalisation can contribute to a more sustainable society. This includes smart systems that can be applied in agriculture, transport and water management (25). Digitalisation also has the potential to contribute to solutions for the expected staff shortages in healthcare. At the same time, further digitalisation will increase the demand for energy.

Ethical dilemmas also come into view, for example around privacy and justice (26).

The exact impact of digitalisation is uncertain. For example, the development of AI can contribute to solutions in healthcare, but it will also require a new and different deployment of human resources (12). What does seem certain is that digitalisation will play a role in how our health, living environment and care will develop in the future. See also Chapters 3 and 4 of this report and the PHF-2024 theme issues.

The impact of future developments on public health

All the developments described above will affect our future health. The consequences for health behaviour, care and living environment are also important. This applies in particular to the future elderly, to young people and to groups with health disadvantages.

Based on the inventory of broad social developments, a selection has been made of the main topics that have an impact on public health. These topics are clustered into three themes, which are discussed in detail in the following chapters:

- Developments in health and lifestyle
- The future of healthcare
- Changing climate and changing living environment

3 Developments in health and lifestyle

This chapter is about the health of Dutch people, now and in the future. Topics discussed include how long we live, what diseases we have, what limitations we experience and how healthy we feel. In addition to the various facets of health, factors that are important for improving our health are also discussed, such as more exercise, healthier eating and quitting smoking. This chapter further presents the main trends in health inequalities. The chapter concludes with challenges for the future: which developments are urgent for the future of health in the Netherlands?

The future health of the Dutch is also central to the PHF-2024 theme issue Healthy Generations 2050.

How are we doing health-wise, now and in the future?

Our health is doing well. The life expectancy of 81.7 years in the Netherlands is high. This is 1.1 years above the EU average (27). Life expectancy will continue to increase in the future and many years will be spent in good health (see Chapter 2). We are ageing as a society, partly because we are living longer. An ageing population brings with it numerous health developments, with the increase in age-related diseases perhaps being the most prominent.

In addition to this development, there are also developments in our mental health and in lifestyle and behaviour that determine our future health.

Increase in chronic diseases

Between now and 2050, the number of people with a chronic condition will increase from 10.5 to 12 million. In particular, age-related diseases will take up a more prominent place in the top ten of conditions. Multi-morbidity will also become more common in the future. This means that people often have multiple diseases at the same time. Of the 12 million people with a condition in 2050, a proportion larger than is currently the case will have three or more conditions. This group with three or more conditions will increase by about 1 million people, to 4.3 million in total. This group is therefore growing significantly faster than the groups of people with only one or two conditions. The increase is mainly among older people.

The occurrence of a disease is not the only relevant aspect of the size of the public health problem. The severity of the condition is also important in this. For example, osteoarthritis will be common in the future, but this includes many relatively mild variants where the burden remains limited. In addition, better treatments and disease management also contribute to being able to live well with a condition. One such example is the application of remote monitoring in diabetes, which allows a doctor to better adjust medication so that people experience fewer symptoms.

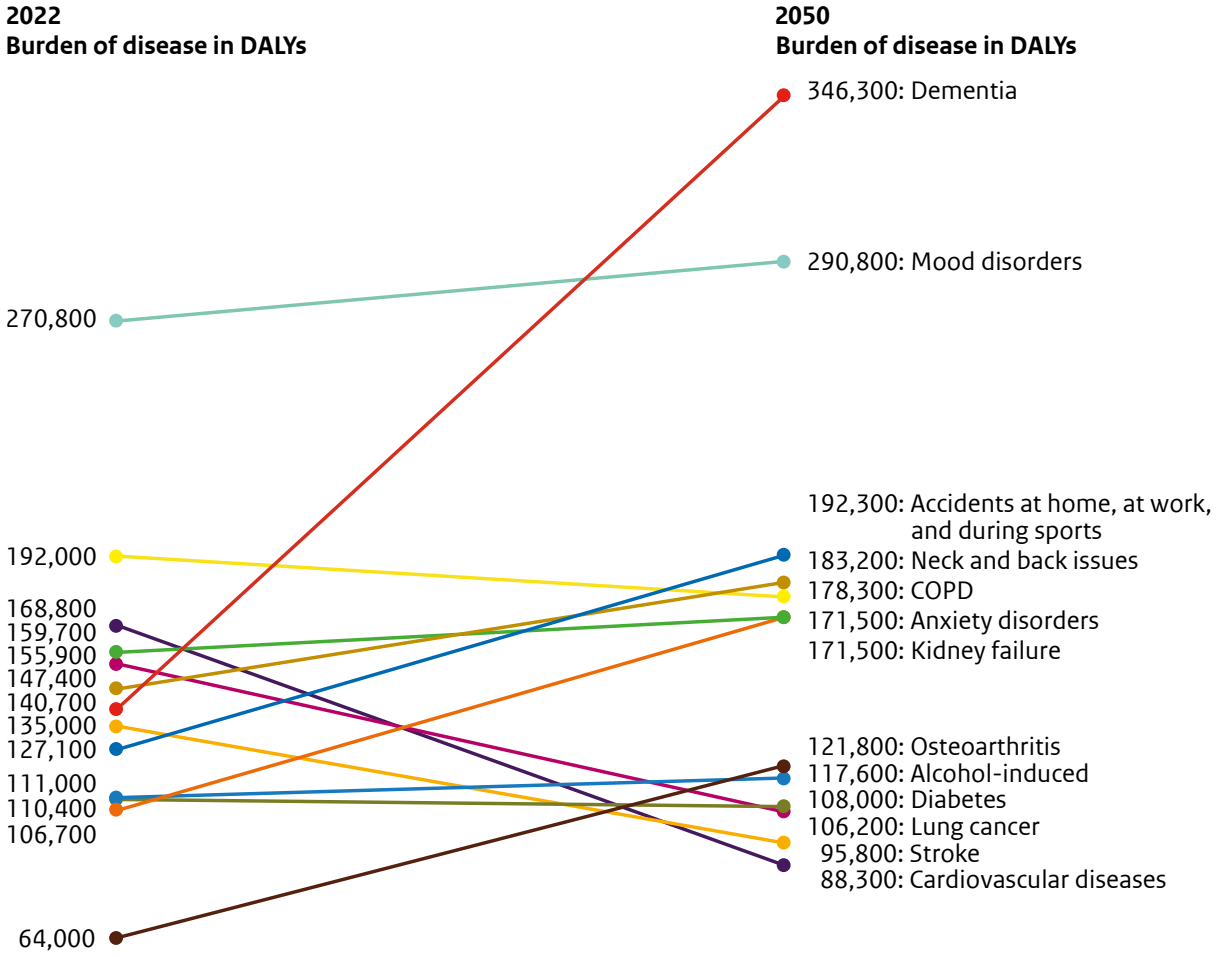
Burden of disease[2] is a measure of population health that takes into account the occurrence and severity of diseases, in combination with mortality from diseases (Figure 3.1). In 2050, the greatest burden of disease in the Netherlands will be caused by dementia. Dementia is set to increase by 150% between 2022 and 2050, overtaking the burden of mood disorders[3]. This is partly because dementia will be the main cause of death in the future. The other conditions that also show sharp increases are mainly conditions that occur in old age. For example, the burden of disease caused by osteoarthritis will double. The increase in the category of accidents at home, at work and during sports is the result of the increase in falls (with serious consequences) among elderly people living at home. The burden of disease

[2] The burden of disease (expressed in 'Disability Adjusted Life Years' or DALY) is a combination of the number of years lost due to premature death from a disease and years lost due to the burden of having the disease.

[3] Mood disorders include depression, dysthymic disorder or chronic depression, and bipolar disorder. For more information, see Mental health & prevention - Trimbos Institute

for strokes has decreased significantly in the past due to prevention and improved treatment. If we continue this trend, the burden of disease for strokes will continue to decrease. However, it is uncertain whether this decline will actually occur.

Figure 3.1 Burden of disease for chronic and long-term conditions 2022-2050 in DALYs (Disability Adjusted Life Years)



A future with chronic *and* infectious diseases

Infectious diseases generally cause a low burden of disease in the Netherlands. COVID-19 was the exception, with a burden of disease of almost 80,000 DALYs in 2022, excluding the post-COVID burden of disease. The level of uncertainty for future developments of COVID-19 or any other similar infectious disease means that no projections have been made. This does not alter the fact that the risk of a new pandemic is real. Other infectious diseases that have been known for some time, such as measles, are also under control in the Netherlands and therefore only cause a low burden of disease. However, there is no certainty that this will remain the case in the future.

Vaccinations are no longer as common as they used to be, antibiotic resistance is still increasing and we are dealing with an ageing population. People's immune systems become less effective as they grow older, making them more susceptible to infections. Vigilance therefore remains necessary, both in the case of possible new pandemics and in the case of the older, well-known infectious diseases. And it is precisely the increase in chronic diseases in combination with more unpredictable infectious diseases that requires a solid public health infrastructure that can respond well to future developments.

Many people feel healthy, despite growing older

The fact that we still feel healthy despite an increase in diseases has to do with the fact that health involves more than being free from diseases. In the future, the population will continue to feel largely healthy and experience relatively few limitations, despite having an illness. This applies to people from young to old, even into old age and after retirement. This is when people enter their third stage of life; the period after retirement age in which they are still vital and able to participate in society (see Chapter 2). On average, people experience more limitations from the age of 75, marking the fourth stage of life. This is when people start experiencing more and more problems with seeing, hearing or moving around and with activities of daily living. In this fourth stage of life, the need for help and support increases, as does the use of care (see also Chapter 4).

Our lifestyle: partially healthier, partially unhealthier

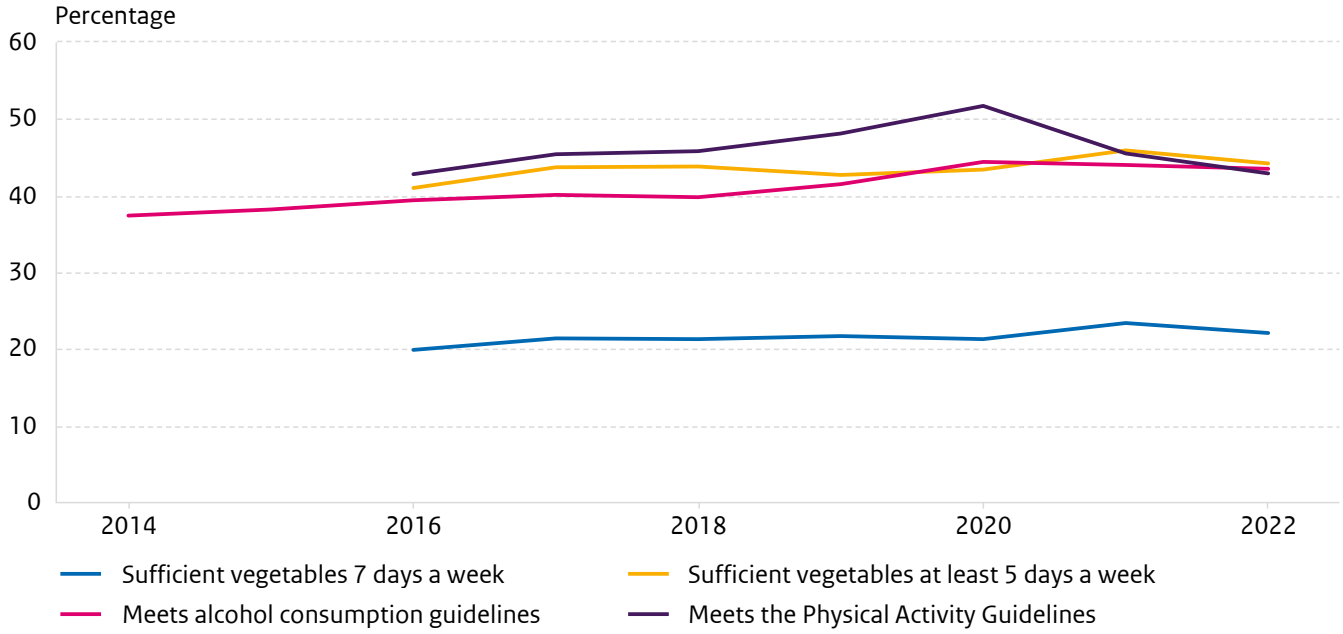
Healthy eating and a healthier weight, sufficient exercise, moderate consumption of alcohol and not smoking can contribute significantly to better overall health. This is important because both behaviour and health throughout someone's life course have a major impact on that person's health in later life (28-30). Figure 3.2 shows a varying picture of lifestyle trends.

Less than half of the Dutch population meets the Guidelines for a healthy diet (31). We eat too little fish, vegetables and fruit and we eat too much red meat, salt and sugar (32). A healthy diet is important for preventing overweight, cardiovascular disease, cancer and diabetes. We do see however that Dutch people have started eating and drinking slightly healthier in recent years, even during the COVID-19 period. It is uncertain whether this development will continue in the future.

In terms of alcohol consumption, there has been a slight increase in the percentage of the adult population that adheres to the guideline (1 glass or less per day). That percentage rose from 37% to 44% between 2014 and 2022. However, the number of people consuming too much alcohol in 2050 is uncertain.

Also, more than half of Dutch people currently do not exercise enough. Sufficient exercise reduces the risk of cardiovascular diseases, type 2 diabetes, dementia, stroke, depression and breast and colon cancer (33, 34). Especially in an ageing population, physical exercise is important to reduce the risk of functional and physical limitations, cognitive decline and dementia (33, 34). Sufficient exercise is the most important factor that helps prevent falls and broken bones. Exercising is important in maintaining a healthy weight, in combination with a healthy diet. There has been a slight increase in the general population engaging in exercise, but whether this development will continue is uncertain.

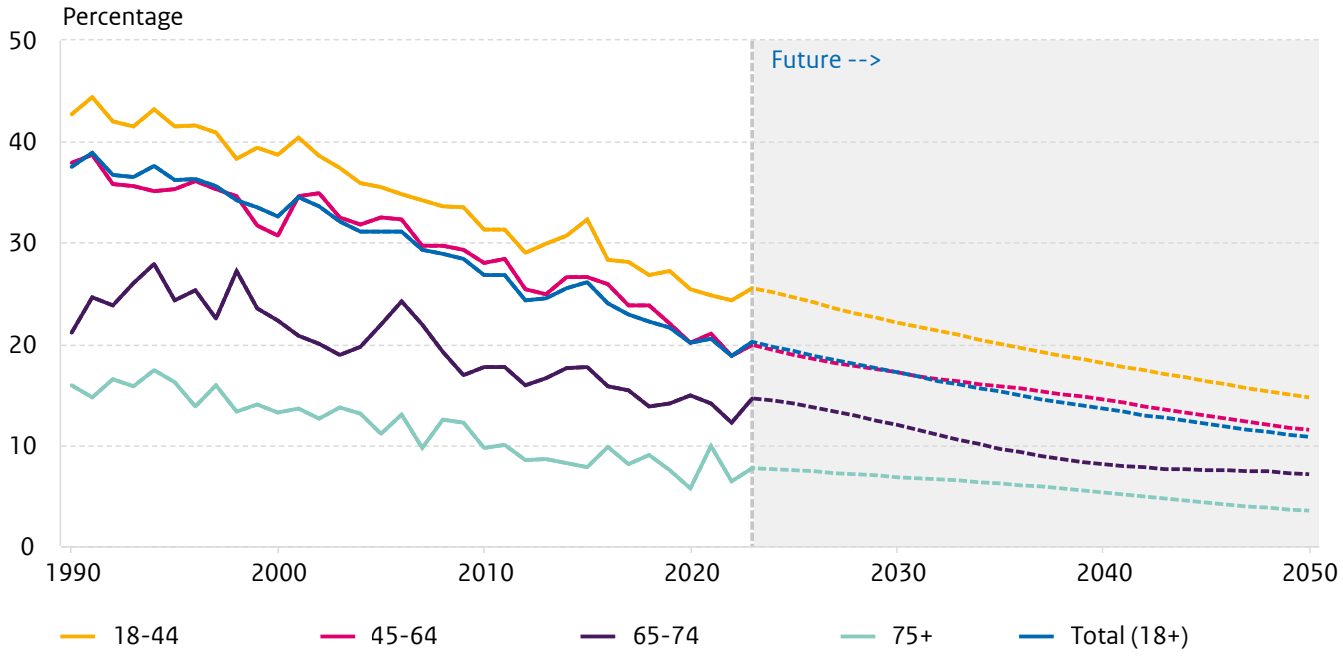
Figure 3.2 Diet, alcohol and exercise 2014-2022



In recent years, Dutch people have smoked less than previously (35). This trend is set to continue in the future, but in 2050 around 11% of adults will still smoke (Figure 3.3). Most smokers are in the younger age groups. It is possible that some of the young people who currently smoke electronic cigarettes, known as '*vaping*', will continue to do so in the longer term.

There is also a chance that they will eventually switch to real cigarettes (36). Recent research shows that various features of *vapes*, such as the '*cool*' appearance and the handy small size, are specifically designed to appeal to different (young) target groups (37). Vape liquids typically contain nicotine, a highly addictive substance (38).

Figure 3.3 Percentage of smokers by age 1990-2050



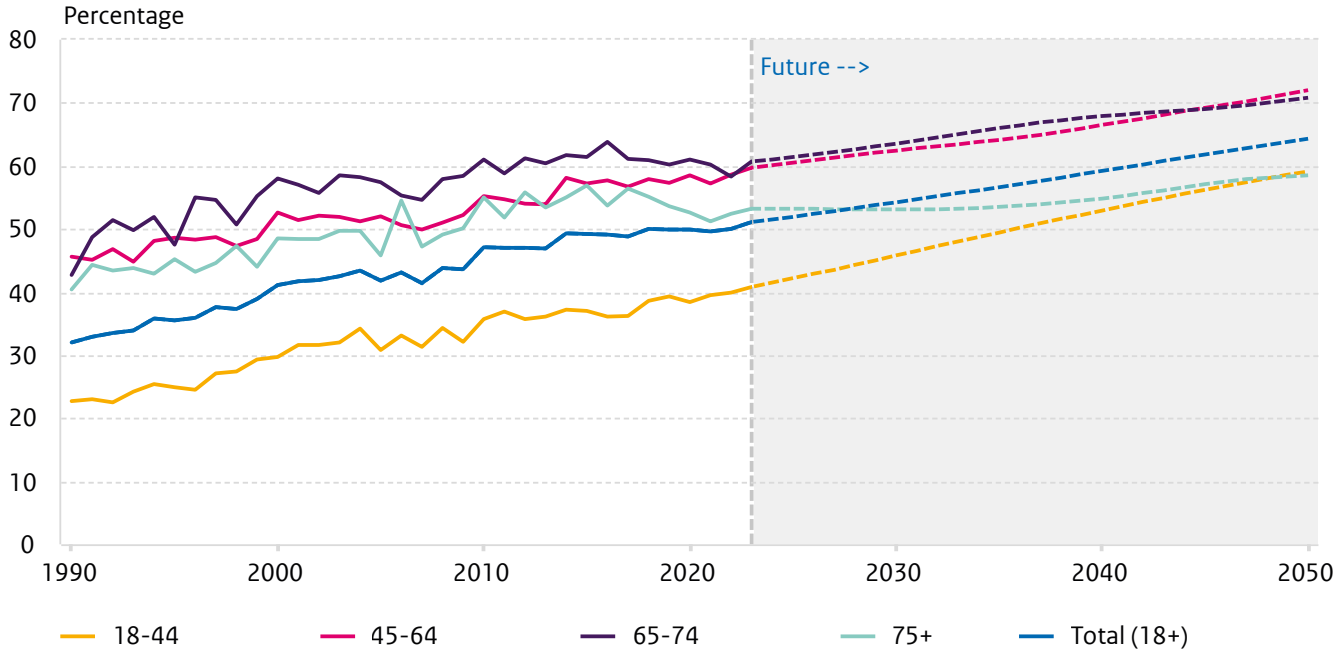
A significant increase in overweight people

The number of overweight people will increase significantly over the next 25 years. In 2050, a total of 64% of Dutch people will be overweight. In 2022, this number was still 50%. The expected increase in people being overweight is seen in all age groups. (Figure 3.4). The increase in overweight people also has consequences for the risk of diseases and disabilities. Being overweight increases the risk of type 2 diabetes mellitus, cardiovascular diseases, various types of cancer and also osteoarthritis. Furthermore, we know from the influenza pandemic (2009) and the recent COVID-19 pandemic (2020) that overweight and multi-morbidity slightly increase the risk of infection. The chance of becoming seriously ill from infections is also much greater for this group (39). Obesity, or severe overweight, where a person's BMI is over 30, poses and additional risk of infections and serious illness after an infection.

Healthy lifestyle still not a given among young people

Young people are an exception to some of these trends. For example, engaging in less physical activity. In 2022, only 33 percent of 12 to 18 year-olds met the Physical Activity Guidelines for Children (40). Of those aged 18 to 25, half met the Physical Activity Guidelines applicable to them (41). Young people are also engaging in sports less. In 2001, a total of 81% of 12 to 18 year-olds engaged in sports weekly; in 2022 this was 72% (42). At the same time, screen time among young people may be on the rise. This increase combined with the use of social media also influence their physical activity behaviour and diet. For example, they are frequently and over long periods of time exposed to advertising for unhealthy food products such as snacks and other ultra-processed foods and sugary drinks (43-46).

Figure 3.4 Overweight by age 1990-2050

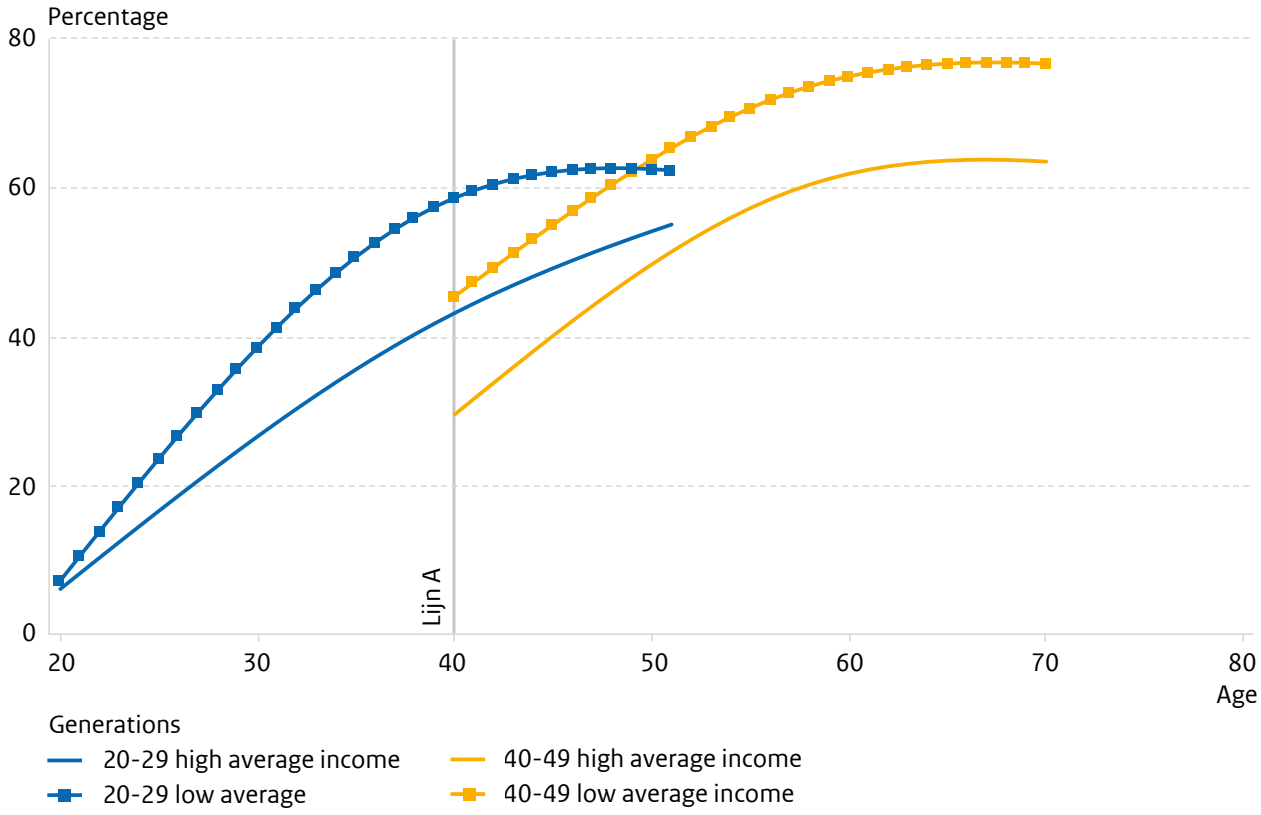


The younger the generation, the more overweight

Being overweight is increasing most among younger generations. And being overweight also starts at an increasingly younger age, according to figures from the Doetinchem Cohort Study. For example, line A in Figure 3.5 shows that being overweight at age 40 occurred in 30% of people currently in their forties and in 44% of people currently in their twenties.

The younger the generation, the more overweight at age 40. Being overweight is more common among people with an average low income (dotted lines) compared to people with an average high income (solid lines). Yet the differences between generations are present in both income groups.

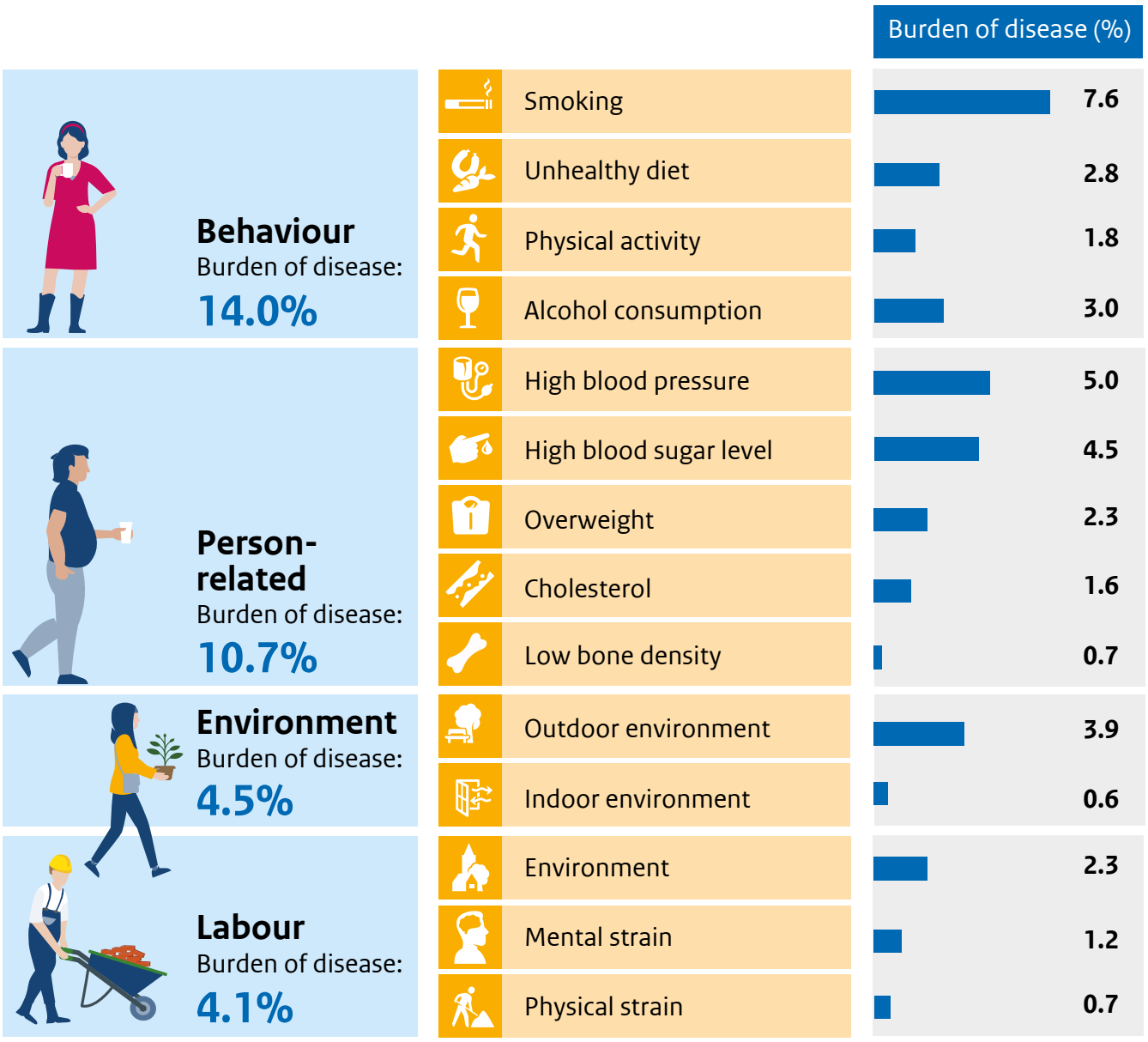
Figure 3.5 Overweight per generation over the life course



Behaviour and living environment contribute to the burden of disease

Health and disease are influenced by an interaction between person-related factors, behaviour and environmental factors. In 2022, unhealthy behaviour such as smoking, alcohol consumption, lack of physical activity and unhealthy diet was responsible for 14% of the total burden of disease in the Netherlands (Figure 3.6). Smoking is an important cause, accounting for 7.6% of the burden of disease, followed by alcohol consumption, unhealthy diet and lack of physical activity. In addition to behaviour, person-related determinants account for 11% of the burden of disease. High blood pressure is a major cause of this, followed by high blood sugar levels, being overweight, cholesterol and low bone density. Determinants in the physical environment are also important. An unhealthy indoor and outdoor environment accounts for 4.5% of the burden of disease. Within the outdoor environment category, air pollution is an important factor. UV radiation and noise pollution are also part of the outdoor environment. People who are exposed to high levels of noise are more likely to die from cardiovascular diseases. Unhealthy working conditions, such as exposure to hazardous substances and physical and mental stress, account for just over 4% of the burden of disease.

Figure 3.6 Contribution of determinants to the burden of disease (percentages cannot be summed up)



Our mental health: more loneliness and mental health issues

In the future, the mental health of Dutch residents will be under greater pressure than it is now. Mental health refers to how persons view themselves and others and how they deal with everyday challenges (47). Mental health therefore consists of different components. For example, well-being, loneliness, self-direction[4] and mental health issues or disorders (48, 49).

In the future, loneliness will be more common than it is now. In 2022, almost half of the adult population felt lonely (50). The number of people who feel lonely will increase by 800,000 in the period 2022-2050, from 6.8 million to 7.6 million. Although loneliness will increase across the population, the increase will be greatest among people aged 75 and over (Figure 3.7). This is mainly due to the ageing population and the increase in the number of single-person households. The number of people in this group who experience insufficient control over their own lives is also increasing (Figure 3.8). The feeling of being able to shape one's own life is an important prerequisite for ageing healthily (51).

Figure 3.7 Loneliness by age 2022-2050

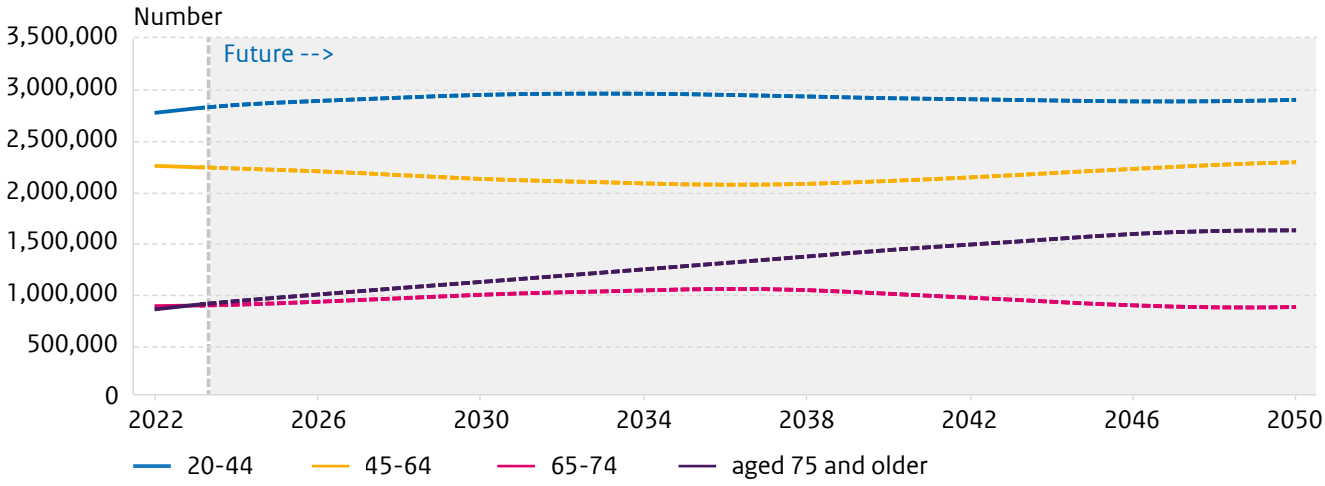
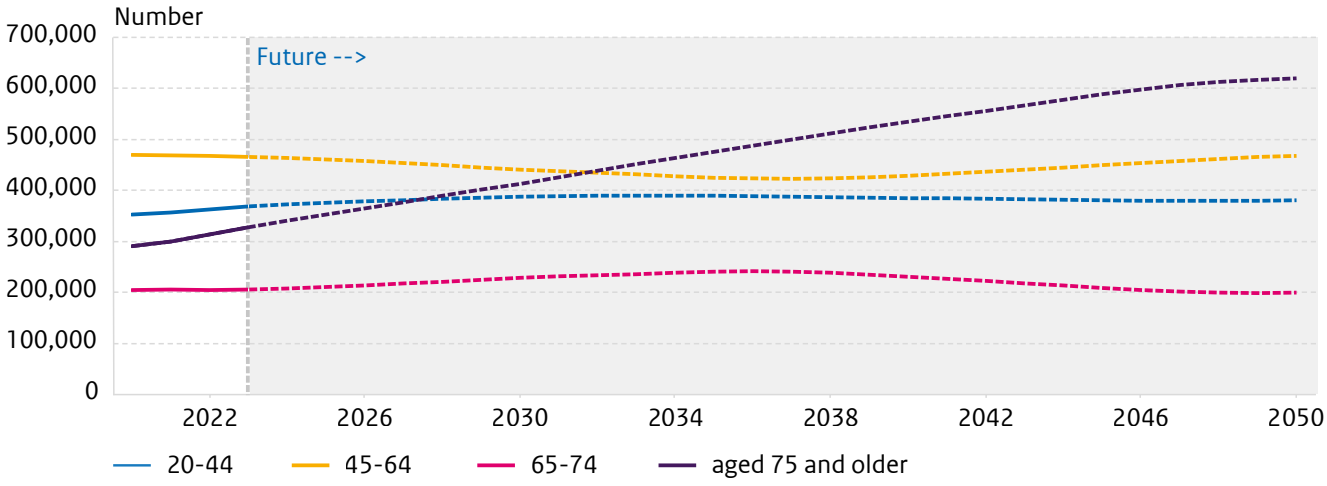


Figure 3.8 People experiencing insufficient self-direction by age 2021-2050



[4] Self-direction is defined as control over all domains of one's own life including everything that one deems necessary to lead a good life (VZinfo.nl).

Mental health issues, especially among young people

Over the past 12 years, the percentage of people with mental health issues[5] has increased from 11% to 14%. This increase mainly manifested itself during the COVID-19 period, although a slight increase could already be seen before that. In 2022, no clear signs of improvement are showing. An exception is the group of people aged 65 and over, who during the COVID-19 years did not report any more symptoms than they did before. It is mainly young people and young adults who increasingly suffer from mental health issues. In 2021, during the COVID-19 pandemic, approximately 1 in 3 schoolchildren experienced relatively many mental health problems[6]; 22% of boys and 40% of girls (52). There is still a limited group among young people who are struggling with the consequences of the COVID-19 period.

Mental health problems in young people have consequences for their later mental health. Depression and anxiety increase the risk of dropping out of school, unemployment among young adults, and poorer performance at work (53-55). The chances on the labour market are also deteriorating, because the number of young people without starting qualifications has been increasing for years (56). Still, the mental health of young people in the Netherlands is better than in most other European countries (57).

Focus groups: young people expect more stress

Between the end of 2022 and the beginning of 2023, a total of 41 young people and young adults participated in seven focus groups for the PHF-2024. In it, they talked about their expectations for their health, care and living environment in 2050, when they will be between 38 and 50 years old.

Young people expected that the pressure they experience would not (completely) disappear in the future, but would actually increase. This includes pressure from a demanding society, work and performance pressure, the pressure to solve global problems such as the climate, the pressure of a vast freedom of choice and the pressure to look good. They also expected more stress due to this increasing pressure. Sources of stress they mentioned are climate change, polarisation, strong urbanisation and recent major events such as the COVID-19 crisis, the nitrogen crisis and the war in Ukraine.

According to these young people, the effect of social media on stress is two-fold. The enormous amount of information that is constantly coming at them increases their stress. Positive aspect, however, is that social media can be a source for mental help, contact with fellow sufferers and helpful information.

According to them, the consequences of increased stress include poorer mental health, possible increase in drug use and increased individualisation. However, some expected that, in the future, people would experience less stress thanks to a better work-life balance and better ability to cope with pressure.

[5] Mental health issues were measured with the Mental Health Inventory 5 (MHI-5), an international measurement instrument for mental health, consisting of five questions about how people felt over the past four weeks.

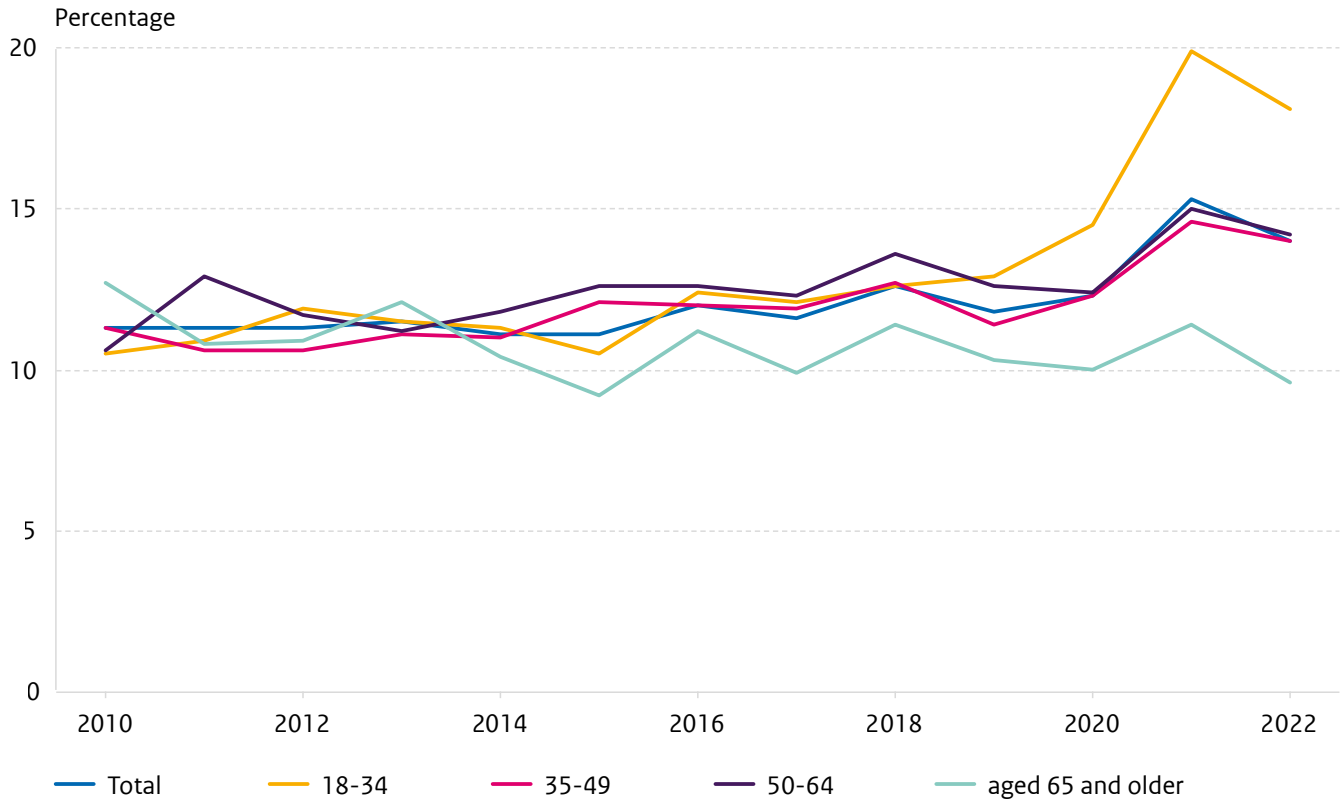
[6] Mental health problems are the total score of four types of problems, measured using the SDQ (Strengths and Difficulties Questionnaire): hyperactivity/attention problems, emotional problems, peer relationship problems and behavioural problems.

What the future development of mental health issues will be is uncertain. This depends, among other things, on the life phase people are in or their living situation. The increase in recent years is mainly caused by the fact that more mental health issues occur among young adults (18-34 years) (Figure 3.9). This may have to do with the high social pressure they experience. Not only high expectations regarding one's own life (for example due to social media), but also perceived (performance) pressure can lead to stress and disappointment. Many young people are also concerned about social developments, such as climate change and the effects of the ageing population (58).

Working age people also experience mental pressure. Burnout has become increasingly common among workers in recent years, and at an increasingly younger age. For example, in 2022, almost 30 percent of female employees in the 25 to 35 age group had burnout-related symptoms. This may increase even further in the future (59). In the future, it is expected that the mental health of young adults will be worse than that of today's young adults due to mental health issues, perceived pressure and worries.

Finally, providing intensive informal care is a risk factor for mental health. It is expected that many more Dutch people will provide extensive and long-term informal care in the future. This also applies to the group of elderly people in the third stage of their lives. Overload due to these informal care tasks can lead to mental health problems such as depression (60-62).

Figure 3.9 Percentage of people with mental health issues by age, 2010-2022



Inequalities in health

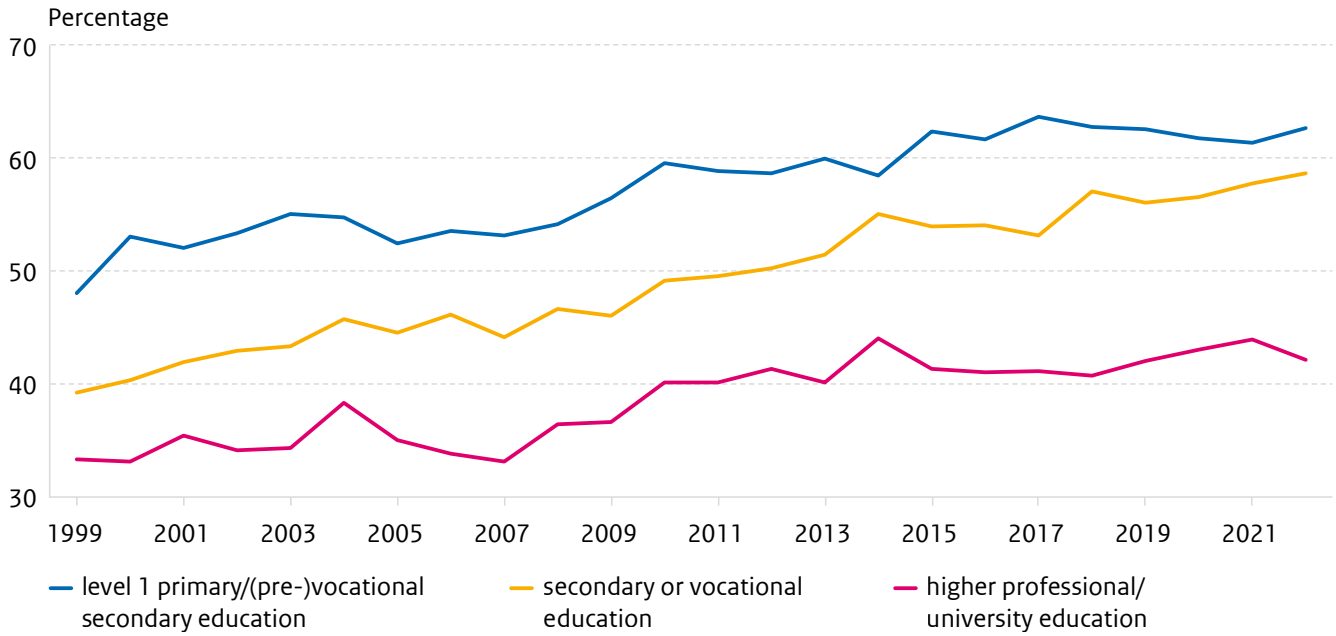
In the Netherlands there are still inequalities in health, which are partly related to people's social position. It is often assumed that these health inequalities are increasing (63). However, this cannot be said so unequivocally, but it is clear that health inequalities are not decreasing (64).

Although categorising people on a social ladder from 'low' to 'high' does not do justice to the diversity between people, the picture of health inequalities is clear. When looking at education, income or financial welfare, people in a less favourable social position are more likely to experience health problems. Each higher step on that ladder also means, on average, more people with a healthy lifestyle, and therefore less chance of illness later in life (65).

Differences in being overweight, smoking and perceived health

For example, we can see health inequalities in being overweight[7]. Between 1999 and 2022, the percentage of overweight adults increased from over 40% to 50%. Figure 3.10 shows that people having completed higher vocational education/university education are less likely to be overweight than people with primary, secondary (vocational) education. Between 1999 and 2022, the percentage of overweight people increased in all educational groups.

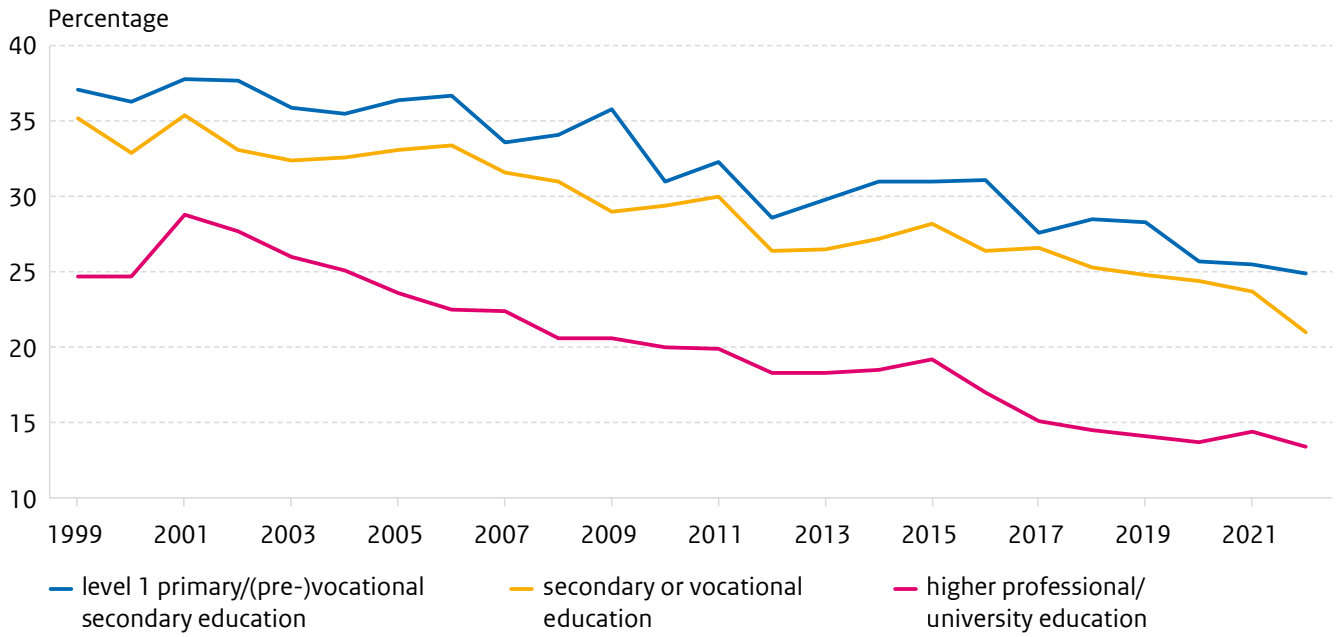
Figure 3.10 Percentage of overweight people, by education 1999-2022



The differences are also visible in smoking. In the period 1999-2022, the decrease in the percentage of people who smoked in the group having completed primary/(pre-) vocational secondary education was as large as that in the group who completed higher professional/university education. However, the chance of taking up smoking in the group who completed primary/(pre-)vocational secondary education and the group of pre-university education/ vocational secondary education is approximately twice as high as the group who completed higher professional education/university education.

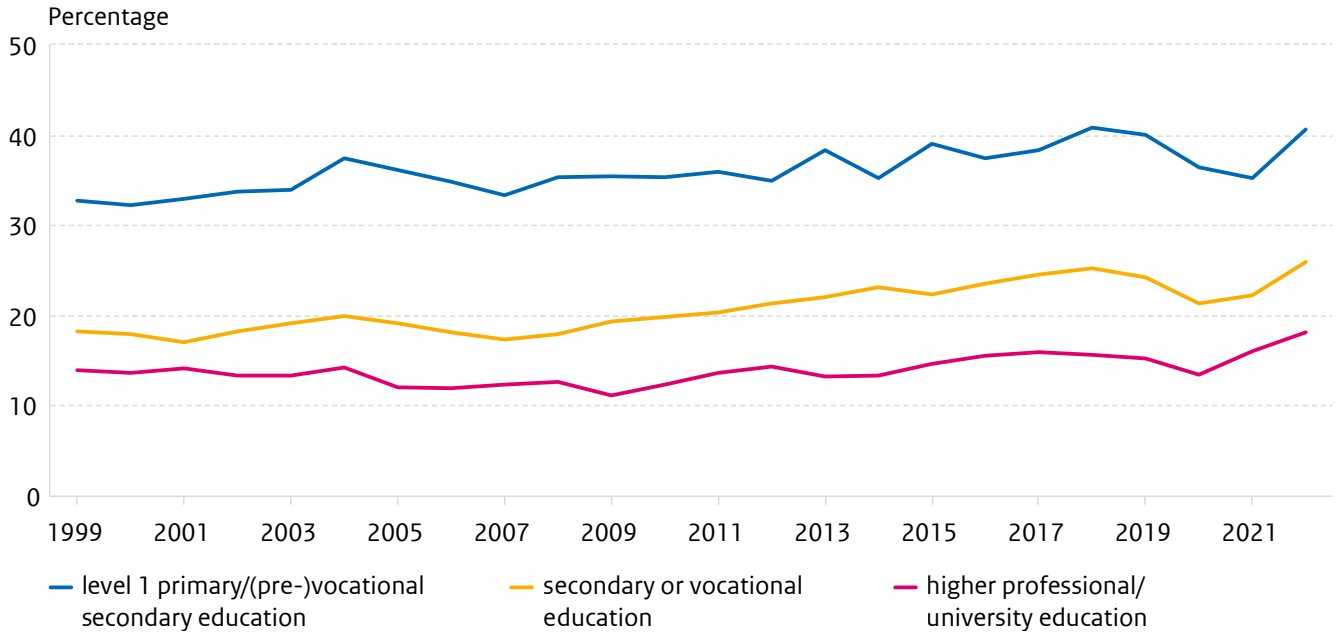
[7] A person is considered overweight if he or she has a body mass index (BMI) of 25 or higher. The BMI is an index that represents the relationship between a person's height and weight. BMI is the most commonly used measure to define (severe) overweight or underweight.

Figure 3.11 Percentage of people who smoke, by education 1999-2022



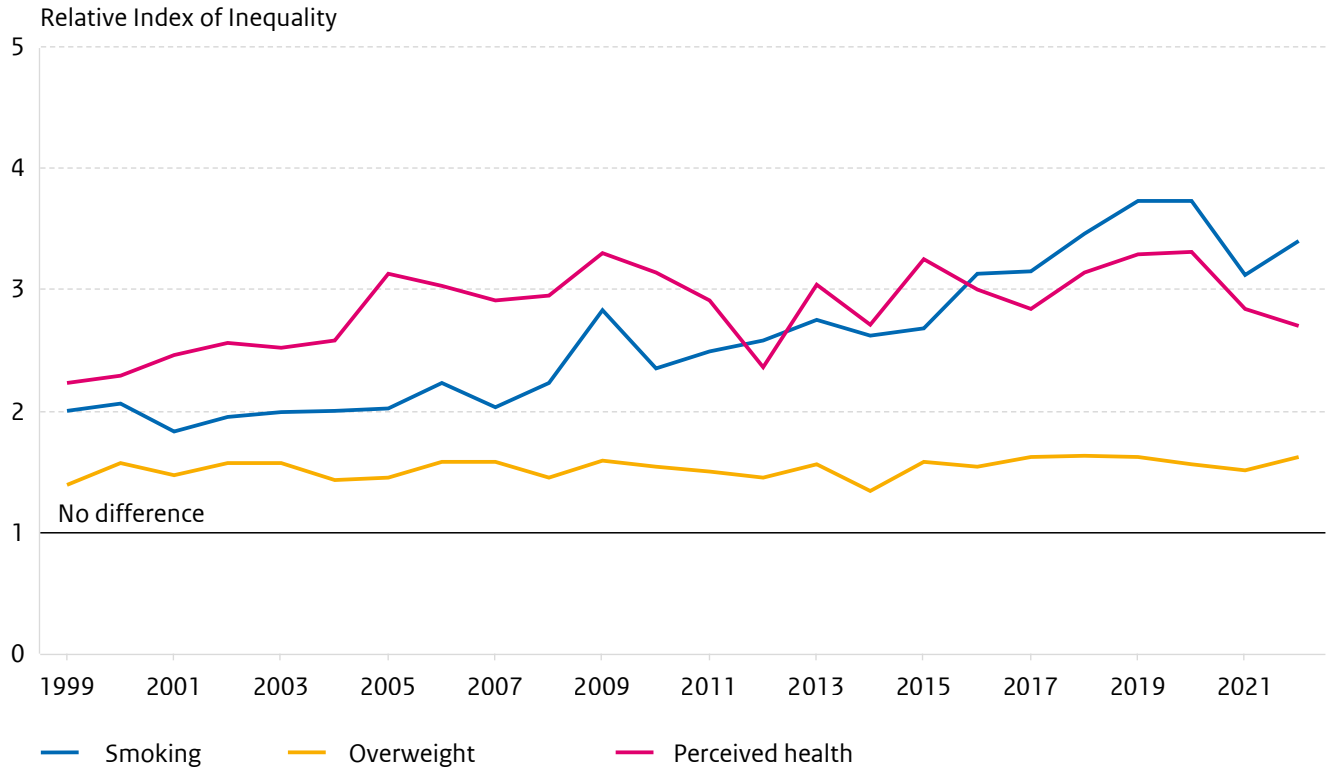
There are also major differences in terms of perceived health between the educational groups. More people who completed primary/(pre-)vocational secondary education perceive their health as moderate, poor or very poor compared to other groups. In the period 1999-2022, the percentage of people who rated their health as moderate, poor or very poor increased slightly more among people in the group of primary/(pre-)vocational secondary education than in the group of higher professional/university education (Figure 3.12).

Figure 3.12 Percentage of people who rate their health as moderate, poor or very poor by education 1999-2022



If we compare the three subjects of overweight, smoking and perceived health, we can see that health inequalities based on education as a whole are not decreasing (Figure 3.13). The relative index of inequality (RII) is a measure that reflects inequality between different (educational) groups, taking into account the changing size of the groups. This measure shows different effects depending on the subject. For example, the difference between people with primary/(pre-)vocational secondary education and those with higher professional/university education is the smallest in terms of being overweight. This difference slightly increased between 1999 and 2022. The difference is much greater for smoking and perceived health. In the period between 1999 and 2022, the disadvantage of the group of primary/(pre-) vocational secondary education compared to the other groups increased somewhat.

Figure 3.13 Differences by education for being overweight, smoking and perceived health



Health inequalities in a broader context

How inequalities in health will develop is uncertain. This is partly due to the fact that the role of education will change. More and more people are completing higher vocational or university education (66). Consequently, the group of people having only completed primary/(pre-)vocational secondary education is becoming smaller and older. At the same time, we can see that improving your social position when having completed primary/(pre-)vocational secondary education only is becoming more difficult (65).

It appears that the background to health inequalities is largely due to unfavourable living conditions. In particular, low financial security, combined with a lack of personal or social resources[8], poses a major risk for the development of health problems in the coming decades (67). For example, people in a disadvantaged position more often have smaller social networks, lower job security and income, an unfavourable living environment and low levels of trust in the government (67).

[8] Personal and social resources include financial strength, cultural achievements and social networks. Health itself is also a resource for a person's social position. The SCP refers to this as economic, cultural, social and personal capital (Vrooman et al. 2023).

Financial insecurity and health problems

The percentage of people living in poverty has been decreasing for years (68, 69). However, the number of people who are concerned about their financial future has increased (70).

People living in financial insecurity often face a multitude of problems in various areas of life, including their health (71-73). In the short term, financial insecurity and poverty often manifest themselves in mental ill health and, in the long term, in all kinds of physical health problems (74). This disadvantage is often passed on from generation to generation (75, 76). For example, children growing up in poverty have a greater chance of developing mental problems such as anxiety and depression later in life (77). Financial security is therefore an important factor in the development of health inequalities (78).

In addition, developments in technology and digital technology can exacerbate existing inequalities in health. Not everyone has sufficient digital skills or the necessary financial scope, which makes it more difficult for some groups to access information, services and facilities (79). In addition, digitalisation can have an impact on the labour market and lead to greater differences in financial security. For example, if companies automate jobs using AI (artificial intelligence) applications, this could lead to the loss of jobs that require less training. At the same time, it can also create a small group of "superstar" employees, i.e. employees who have acquired very specific skills (80). These differences in skills can deepen existing health inequalities or create new disparities.

Groups differ in health disadvantages

The clustering of the above circumstances causes the problems of these groups to be persistent and the tackling thereof a complex issue (71, 81). In recent years, it has become apparent that focusing solely on behavioural change within individuals is insufficient (65). Tackling inequalities in health can only be effective if we also take into account social context, living conditions and people's resources. This will become even more important in the face of increasing diversity within the population, especially between (sub)cultures (82, 83).

Health inequalities are changing and the groups that fall behind are not always the same. For example, financially there is more mobility between generations than before (84). This means that people will receive more or less income than their parents, more often than before. The labour market is also changing. For example, new flexible jobs or jobs of lower security and the increasing use of low-paid self-employed people, for example in the 'platform economy'. This could lead to the emergence of new groups with disadvantages in health in the future. Health inequalities can also show very different in everyday life: it depends on which group it involves (83). Groups that are already well-known include low-income single men or single-parent families in poverty.

Health inequalities are also visible between regions. In regions where there is more poverty, for example, residents are often less well-off in terms of health and a healthy lifestyle compared to more prosperous regions. However, there are also exceptions. Despite its limited material prosperity for example, Fryslân is one of the areas with the highest scores in terms of perceived health (85, 86).

Challenges for the future

Over the coming decades, we expect our health to improve in many respects. In 2050, Dutch people will live longer than they do now. We will spend most of our extra years of life in good health. We stay fit and vital, even as we grow older. However, there are also some less favourable prospects. These show that we face important challenges for our health and the distribution thereof among the population.

In addition to disease prevention and care, also health promotion

The ageing of society is not new in itself, but the challenges it brings are becoming increasingly visible and urgent. In the future, the burden of disease will increasingly consist of age-related diseases, i.e. (chronic) conditions that mainly occur in old age. This calls for new approaches in our health policy and in society. In addition to disease prevention and care, more attention is needed for health promotion. This also applies to people with chronic conditions and disabilities.

Chapter 4 discusses what an ageing population means in terms of our healthcare. Yet attention to promoting health is of course also appropriate for other groups in society, such as young people and people with a medical condition. Addressing the key issues is what is needed. They are:

1. food and living environment that promote healthy behaviour,
2. mental health,
3. health inequalities.

Food and living environment essential for healthy behaviour

Healthy behaviour now is important for health later in life. Eating healthy and sufficient physical activity are especially important. The fact that we are not doing well can be seen from the increase in the number of overweight people. Worse still, young people are overweight at an increasingly younger age. This contributes to an increase in future conditions such as diabetes, cancer and osteoarthritis.

A healthy weight, on the other hand, is beneficial for health and vitality, even in old age. Combating obesity is therefore part of the National Prevention Agreement. It is expected that even with this agreement, the number of overweight people will still increase (87). This also increases the sense of urgency. In addition to intensifying the existing approach, it needs to be expanded. In particular by making changes in our food and living environment (88).

There is still a lot of room for improvement. The relationship between the presence of many local outlets of unhealthy products and the number of obese people has been demonstrated (89). There is also an increase in the availability and access to (ultra-)processed foods, including through online delivery services. In addition, the price of healthy or unhealthy foods also plays a role in the choice of food. It is known that a surcharge on sugar, i.e. the sugar tax, can reduce the consumption of sugary soft drinks, as well as the sugar content in the drinks (90).

Living environment is an important factor in encouraging physical activity. An example of this is a space nearby or in the community for exercise, sports and games. Safe and appealing cycling and hiking routes and a dense public transport network help to promote physical activity. In addition to the living environment, the social and digital environment too play a role in lifestyle and overweight. Spending a lot of time on social media leads to more sedentary behaviour and less physical activity. See also Chapter 5.

Mental health among young people requires attention

The second issue concerns improving mental health, especially among young people. In recent years, this has deteriorated due to an increase in mental health issues and loneliness. Urgent attention is needed for this, partly because mental health issues continue to have an impact later in life. It is important to take into account the increasing pressure on students, workers and informal carers, as this can lead to mental health issues (61, 62).

The potential impact of social media on the mental health of young people may also be an important factor to address. Although, much is still unknown about this (91, 92). However, approximately half of secondary school-aged youth make intensive use of social media, and a smaller but growing group is showing signs of problematic social media use (93, 94).

In any case, new generations will increasingly be confronted with digital applications in everyday life. These can certainly offer opportunities for our health. For example, 'persuasive technologies' that can help us sleep better and relax, or to exercise more. Or developments such as *virtual reality*, *augmented reality* or the *Metaverse*, which offer new opportunities for remote social contact. Yet some applications and the influence of commerce can lead to behaviour that negatively affects or endangers health. For example, problems with gambling or the purchase of harmful products (95).

Reducing health inequalities

The third challenge is to reduce health inequalities. The inequalities between people with different social positions are large in terms of their perceived health, the occurrence of diseases and disabilities and their life expectancy. If nothing changes, these inequalities will still exist in 2050. We do see some improvements in groups that are currently in a disadvantaged position, but the gap is not closing. Financial insecurity also plays a role here. However, the relationship between living in financial uncertainty and having health problems is not straightforward. Whether disadvantages arise and how they manifest themselves varies from situation to situation, depending on the composition of households and living conditions. Disadvantages in health are therefore rightly characterized as 'complex differences' (71). This requires a tailor-made approach and, at the same time, better mapping of risk factors.

A customised approach does justice to the diversity of people living in difficult circumstances. They are not necessarily vulnerable, nor do they form a homogeneous group (96, 97). A one-sided view of the negative consequences of living in financial insecurity does not do justice to the resilience people show in difficult living circumstances. For example, chronic stress is often cited as the mechanism by which financial insecurity is linked to health problems (98). Chronic stress is indeed associated with less self-direction and more focus on the short term, which makes it more difficult for people to maintain a healthy lifestyle (99). However, people facing financial insecurity can also be very resourceful and display coping skills (97, 100).

Especially when it comes to reducing health inequalities, it is important to focus on people's strengths rather than focusing on inability or force majeure too much (101).

Improving the health of all residents of the Netherlands, including groups that are less fortunate, is a tough but not impossible task. This requires an integrated approach with an eye for the social context and the physical, social and digital living environment. However, this approach can only succeed if there is a clear understanding of the perception and possibilities of the target groups themselves.

4 The future of healthcare

Healthcare in the Netherlands offers a wide range of facilities. These range from treatment to nursing, from support to guidance and from accessible and basic to high-tech and complex. This concerns the so-called formal care. Much care is also provided by family members and volunteers, i.e. informal care or home care. Informal carers have become an indispensable part of Dutch healthcare. Many organisations and people are active in healthcare. The government represents the public interest in this and is responsible for the healthcare system. This means that the government ensures that healthcare remains accessible, of high quality and affordable for all.

This chapter focuses on the future of healthcare. First of all, we will discuss the current state of healthcare. Subsequently, data on healthcare expenditure will provide insight into how the use of care will increase, as well as what this means for the different age groups, the demand for care for specific diseases and conditions and also for the different sectors of care. Finally, this chapter will discuss the challenges this poses to Dutch healthcare.

The future coherence between care and the social domain is central to the PHF-2024 theme issue Healthcare and social domain.

A strong starting position

The Netherlands has one of the most accessible healthcare systems in the world, according to 'Health at a Glance'. This is the annual overview in which the OECD – the Organisation for Economic Co-operation and Development – describes the state of public health and care in participating countries (102). The Netherlands also scores well on the quality of care. The quality of care is on average higher

than in other OECD countries, and patient involvement in care and treatment decisions is high. The percentage of unmet healthcare needs is virtually zero, and out-of-pocket payments are among the lowest in the world. Compared to other OECD countries, the Netherlands is in a strong starting position for the future.

The accessibility of healthcare in the Netherlands is particularly evident when we consider who receives the care. People on lower incomes use care more than people higher incomes. However, when taking into account their average poorer health status, the differences in use of care largely disappear. Care is therefore provided to the people who need it most medically, regardless of income (103).

Money is needed to ensure the quality and accessibility of care. In the Netherlands, we now spend almost 120 billion on healthcare each year. As a percentage of the total economy, this is comparable to what is spent on care in other OECD countries. It is striking to see that in the Netherlands relatively more money is spent on long-term care. Relatively less is spent on curative care, such as hospitals and medicines. These differences are partly related to the way in which the healthcare system is organised (financially).

Despite the fact that the Netherlands is doing well, the image of high-quality healthcare accessible to everyone has begun to show some cracks in recent years. This is mainly due to staff shortages. This means that waiting times are likely to become longer. Staff shortages were already a major bottleneck before the COVID-19 period and this has only grown more urgent ever since. This plays a major role in, for example, mental healthcare. For many healthcare workers, the COVID-19 period proved to be so stressful that they have started looking for other work. During the COVID-19 crisis, it also became apparent that people from lower income groups were relatively less eligible for deferred elective care (104). This therefore put pressure on the acclaimed accessibility of Dutch healthcare.

What will healthcare look like in the future?

Healthcare spending has increased steadily since the 1990s, with some variations in pace between periods. Around the turn of the millennium, the increase was greater than in the post 2010 period. In 2020 and 2021, we start seeing the impact of the COVID-19 crisis. In 2022, expenditure was slightly lower again.

In the future, healthcare expenditure is set to increase by EUR 30 billion, to a level of EUR 150 billion in 2050, due to demographic developments alone (ageing population and population growth). There are also other influences on the use of care, such as the advent of new medical technologies. Government policy also plays a role in this. A good example of this is the outline agreement for hospitals regulating the financing of specialist medical care (105). If the trend in healthcare expenditure continues, we will see a sharp increase to more than EUR 200 billion in 2050. Roughly speaking, 40% of future growth will be due to demographic developments and 60% to the other developments listed.

When we compare the future projection of healthcare expenditure against the expected growth of the Dutch economy, it appears that the share of the Gross Domestic Product (GDP) that we spend on healthcare will slowly increase from 11% in 2023 to 15% in 2050 (Figure 4.2). This does not take into account possible staff shortages in healthcare.

Figure 4.1 Healthcare expenditure 1990-2050

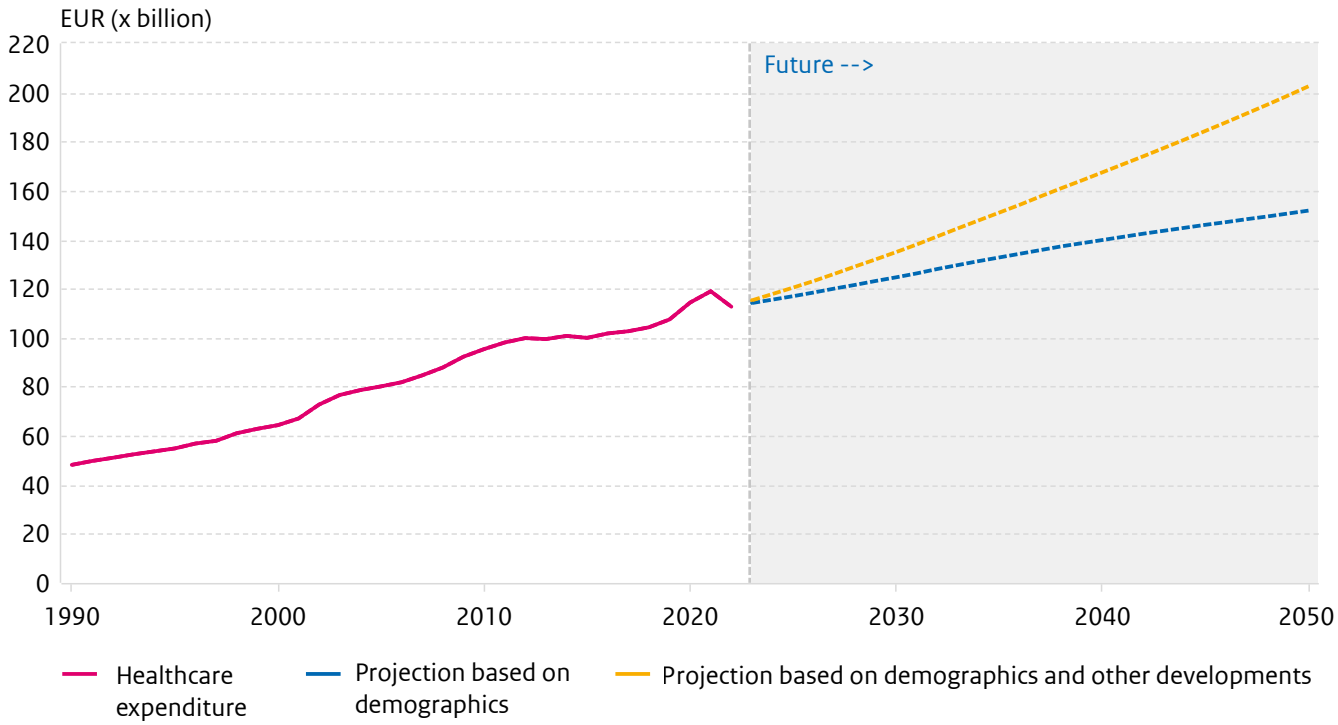
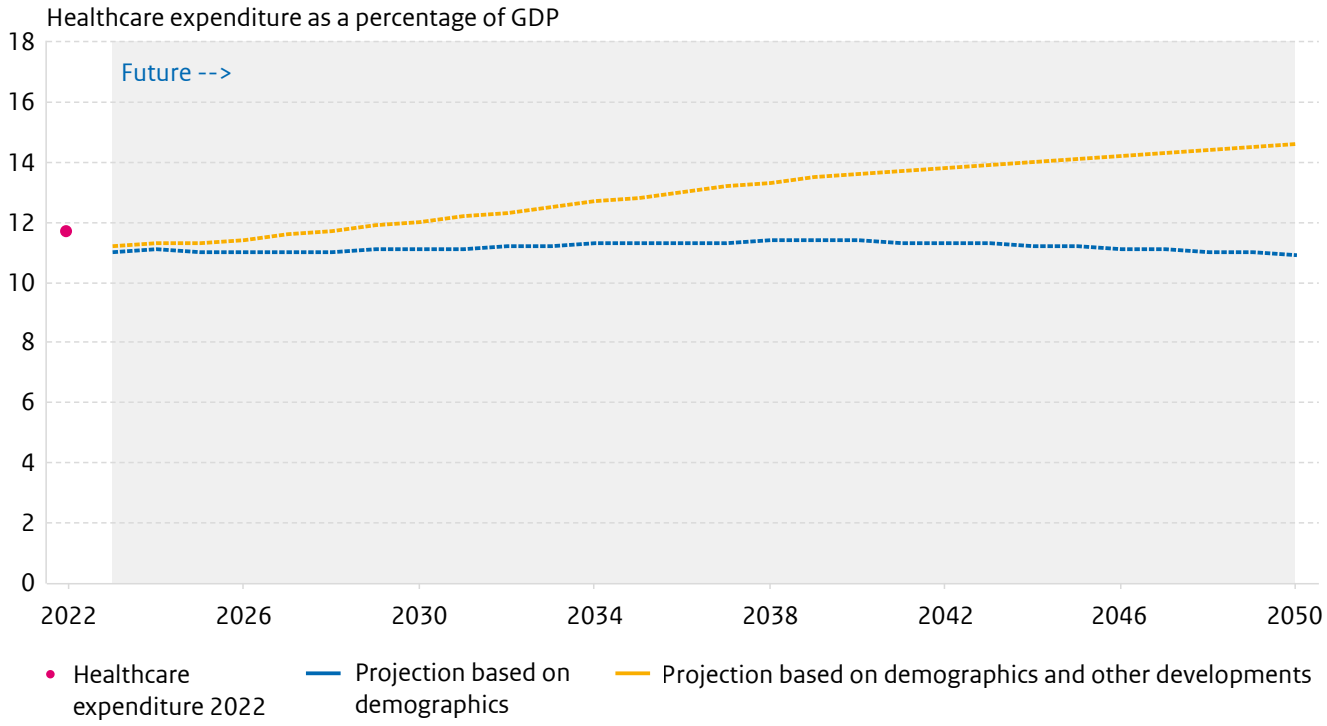


Figure 4.2 Share of healthcare expenditure as part of the Gross Domestic Product (GDP) in the period 2023-2050

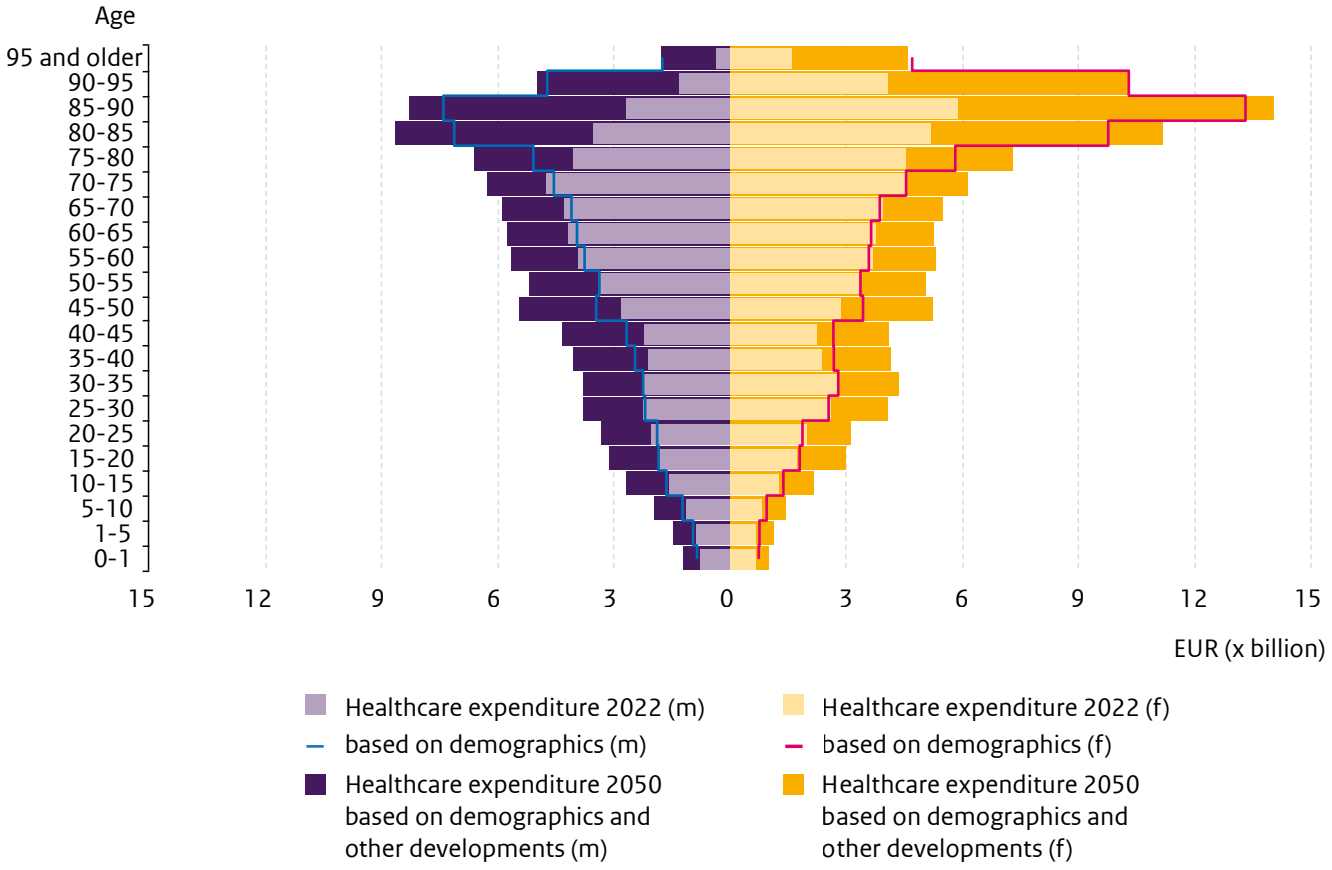


The use of healthcare is set to increase in all age groups towards 2050

The ageing population leads to an increase in the demand for care. As people grow older, more care is needed. And because people often become vulnerable[9] as they age, minor ailments or otherwise harmless incidents can easily develop into major health problems. The Trend Scenario shows that the number of vulnerable elderly people will increase sharply in the future, as will the demand for care.

Developments in medical technology and the range of care cause the use of care to increase among all ages (Figure 4.3). In the future, 25 to 65 year-olds and 65 to 75 year-olds in particular will use more care due to technological developments and new treatment methods, for example in the field of cancer care. In the older age groups (75 and older), the ageing effect dominates.

Figure 4.3 Healthcare expenditure by age and gender (m/f), 2050 compared to 2022

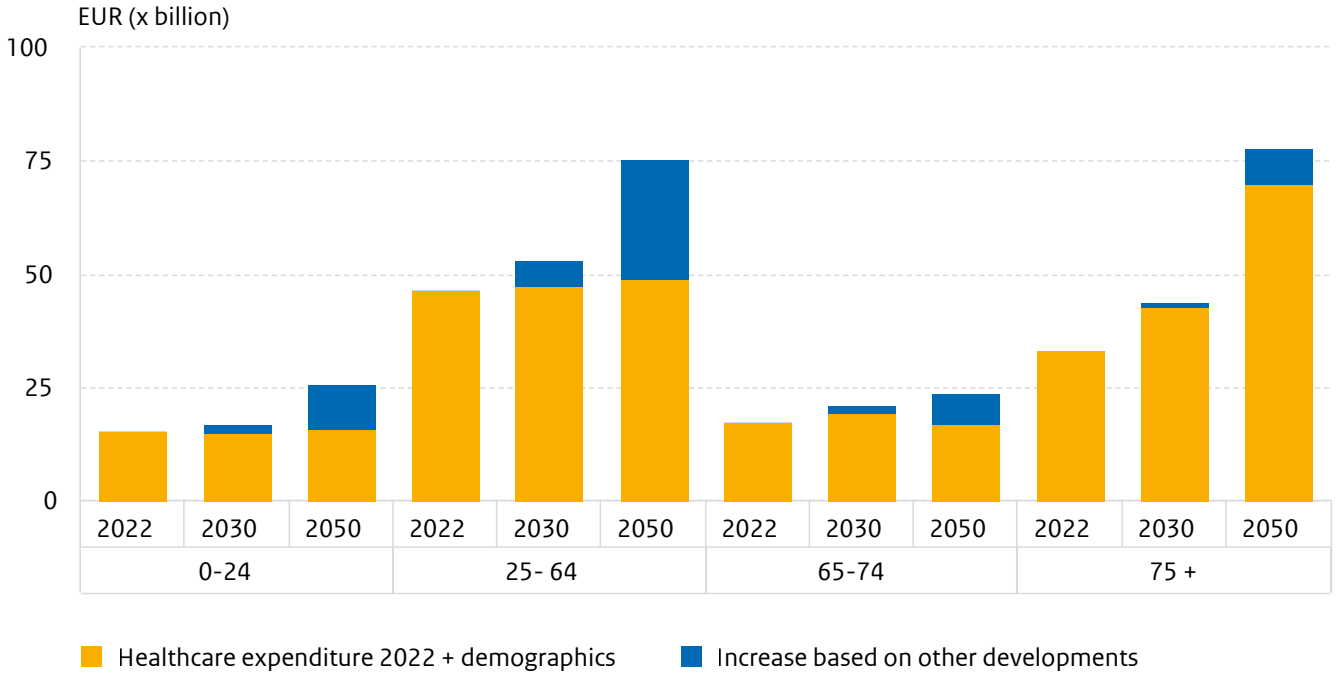


[9] Vulnerability includes social, physical, psychological and environmental factors and is often characterised by malnutrition, loss of muscle mass, osteoporosis, fatigue, risk of falling and poor physical health.

Figure 4.4 shows the increase in healthcare expenditure per age group up to 2050. The greatest impact of the ageing population will occur after 2030 and then only among those aged 75 and over.

The 65-75 age cohort directly below this is shrinking during this period. This will somewhat slow down the growth in the use of care in this age category.

Figure 4.4 Impact of the ageing population and other developments on healthcare expenditure in 2030 and 2050, by age

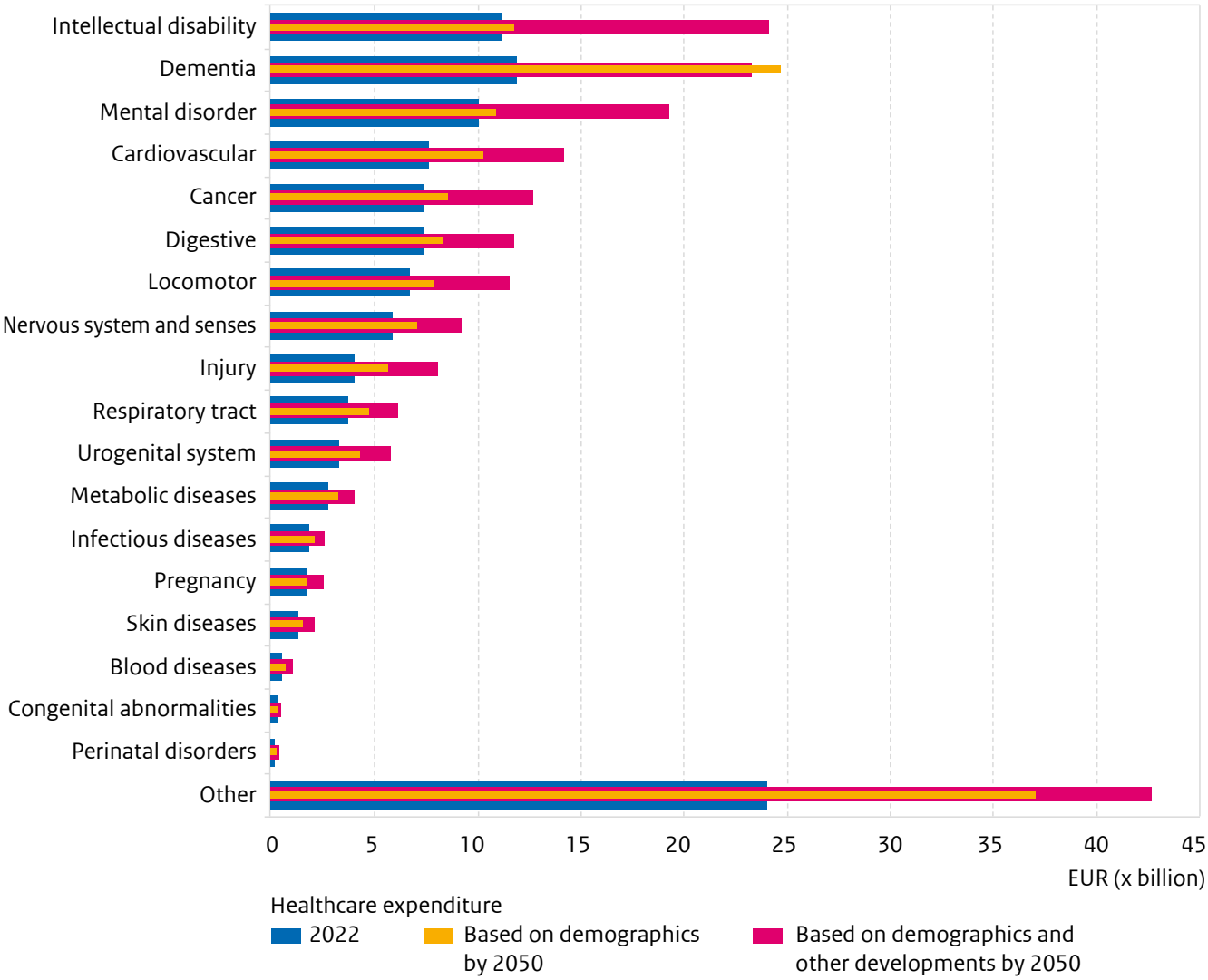


Increase in healthcare varies between conditions

In the Trend Scenario, intellectual disabilities and dementia are at the top of the list in terms of the volume and increase in care required in 2050 (Figure 4.5). The cause of this varies widely. In the case of intellectual disabilities, this increase is entirely due to other developments. In the past, disability care received additional funding per patient to improve care. There was also an increase in more complex problems requiring more intensive care. If additional money is spent per patient on a continuing basis in the future, volume will increase to the extent shown in the graph. This of course depends on the policy that will be implemented.

In the case of dementia, the increase in the required care is entirely due to demographic developments, namely the ageing population. Due to cuts in elderly care in the past decade, extrapolating historical trends leads to a slightly smaller increase than would be expected on the basis of the ageing population alone. So, in order to achieve this levelling off in relation to demographic growth, further (substantial) cuts will have to be made in the future. And even then, expenditure will still increase significantly due to the ageing population. The care for people with dementia will therefore certainly increase enormously in volume.

Figure 4.5 Impact of the ageing population and other developments on healthcare expenditure in 2050, by diseases and conditions



In the case of mental disorders, future growth will be mainly determined by the increasing demand for mental healthcare. The number of mental health issues is increasing and people are seeking more help. For all other diseases and conditions, including cancer and cardiovascular diseases, the expected increase in the required care is related to combinations of demographic and other developments. The increased occurrence of diseases and increasing medical options play an important role. The Trend Scenario contains a large group of other diseases and conditions. This concerns healthcare expenditure for unclear or unknown diagnoses, care due to age-related ailments without any directly identifiable medical reasons, and this category also includes all welfare care, including youth care and social assistance.

Future vision differs per healthcare sector

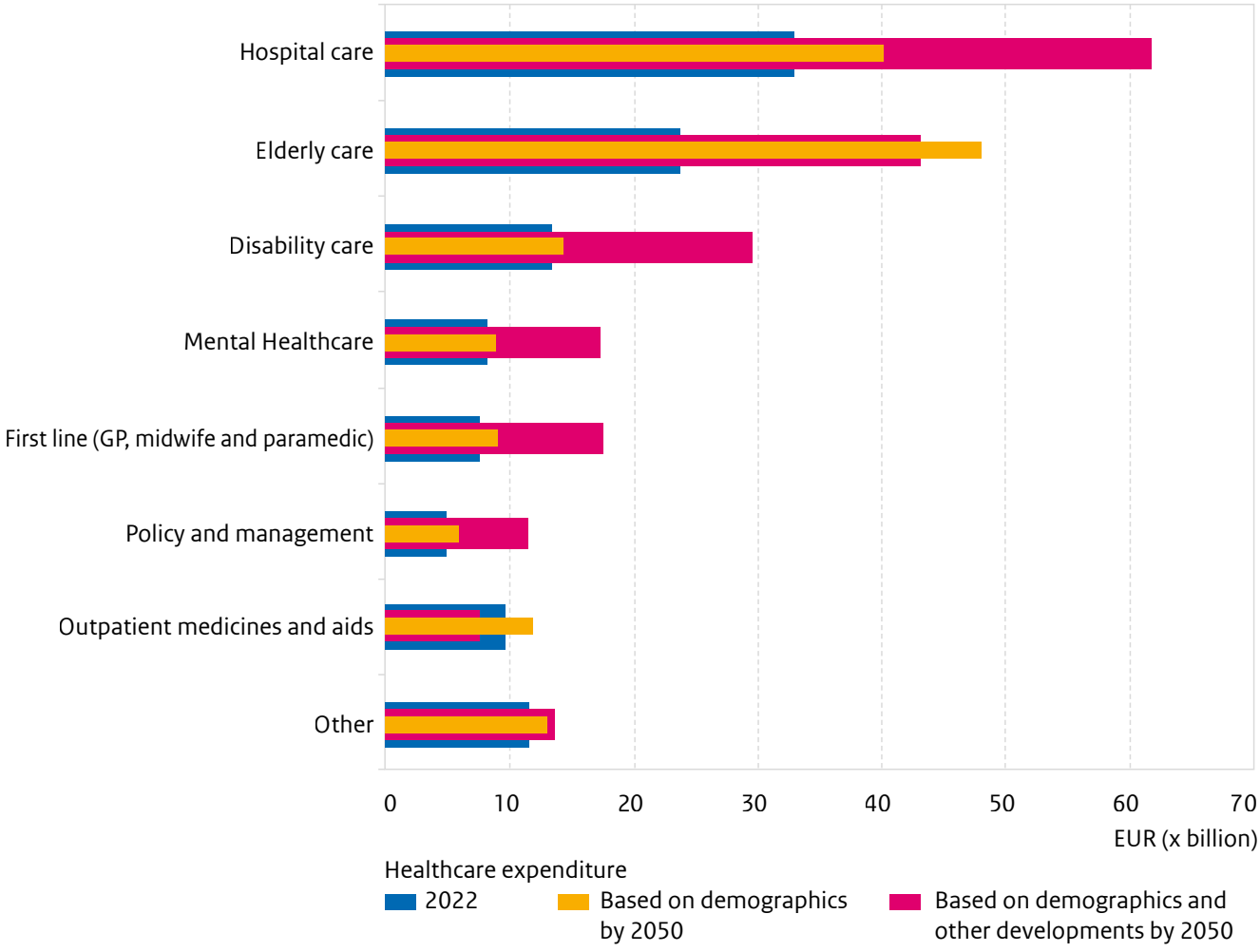
Zooming in on different parts of healthcare, we can see important differences (Figure 4.6). In elderly care, for example, strong growth in healthcare expenditure is expected, which will be entirely due to the ageing population. If past developments in which cutbacks were implemented are taken into account, future growth will be slightly lower, but not by much. If similar cuts are imposed in the future, elderly care will continue to increase significantly.

In hospital care, something completely different applies. The ageing population certainly plays a role in this, but it is mainly the increase in the supply of care and the progress of medical technology that will cause healthcare expenditure to rise. The medicines used in hospitals play an important role in this increase.

As mentioned earlier, the ageing population has a more limited impact in disability care and mental healthcare. More than in other sectors, future policy here has a decisive influence on expenditure developments.

Medicines and aids show a varying pattern (Figure 4.6). If we continue the trend of recent years, in which significant cuts have been made in expenditure on medicines, expenditure on these appears to be falling. Whether this will actually happen is quite uncertain. The use of medicines will increase due to the ageing population. The price of medicines will not fall any further. Also, measures to combat shortages in medicines, such as maintaining larger stocks, may lead to higher expenditure.

Figure 4.6 Impact of the ageing population and other developments on healthcare expenditure in 2050, by healthcare sector



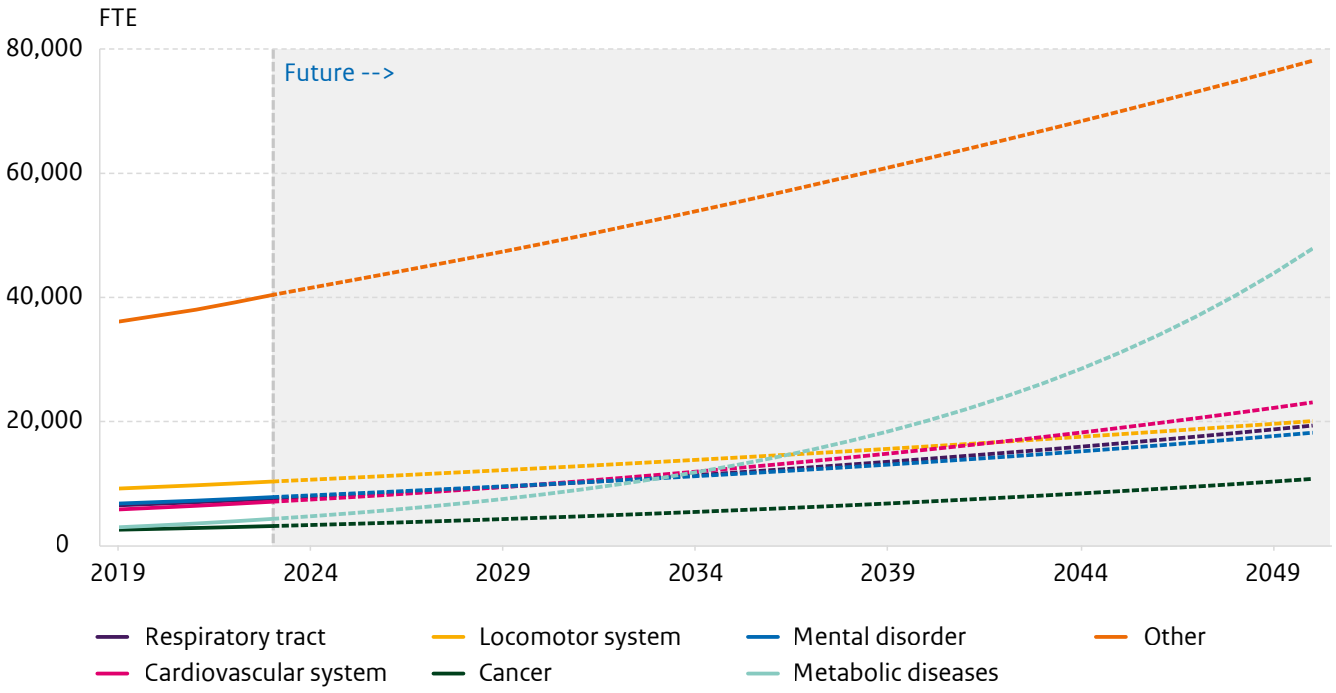
Increase in GP care expected

A significant increase is also expected in GP care. This increase will be even greater as residential elderly care grows less and more people continue to live at home into old age. Based on an analysis of the time spent by general practitioners on the various diagnostic groups and conditions, the future demand for GP care can be calculated. The starting point is that care is provided in the same way as in 2019.

The demand for GP care is increasing for all disease groups. For cardiovascular diseases, the proportional increase in the demand for GP care is slightly higher. Yet this is precisely a consequence of improved health and therefore lower mortality rates among heart patients.

Metabolic diseases are the major exception (Figure 4.7). This mainly concerns diabetes. Its prevalence may increase due to the increase in overweight people. The burden on GP practices will increase as a result of these developments. This future projection is based on data from the current situation. The healthcare of the future will look different due to healthcare innovation and the reallocation of tasks. Such changes have already been initiated in, for example, the care for diabetes.

Figure 4.7 Developments in GP care 2019-2050



Supply and demand of informal care will continue to diverge

The Trend Scenario shows that the number of elderly people requiring informal care will more than double between now and 2050 (Figure 4.8). The increase in demand will mainly occur among people aged 75 and over. The number of informal carers will lag behind (Figure 4.9). This has to do with demographic developments. Both the demand for informal care and informal carers is based on data of the current situation and, for example, no account has been taken of possible changes in the willingness to provide or receive informal care.

Elderly care already relies heavily on care provided by partners, family members and volunteers. This will be even more the case in the future. Two groups in particular are expected to provide a lot of informal care. First of all, the working carer. It is important that they are supported by paid or unpaid leave arrangements. In addition, people in the third stage of life who are in good health will be able to help people in the fourth stage of life. This can be in the form of care for your own partner, but also as a volunteer in care or through participation in care cooperatives or group living.

Figure 4.8 The number of elderly people requiring informal care 2016-2050

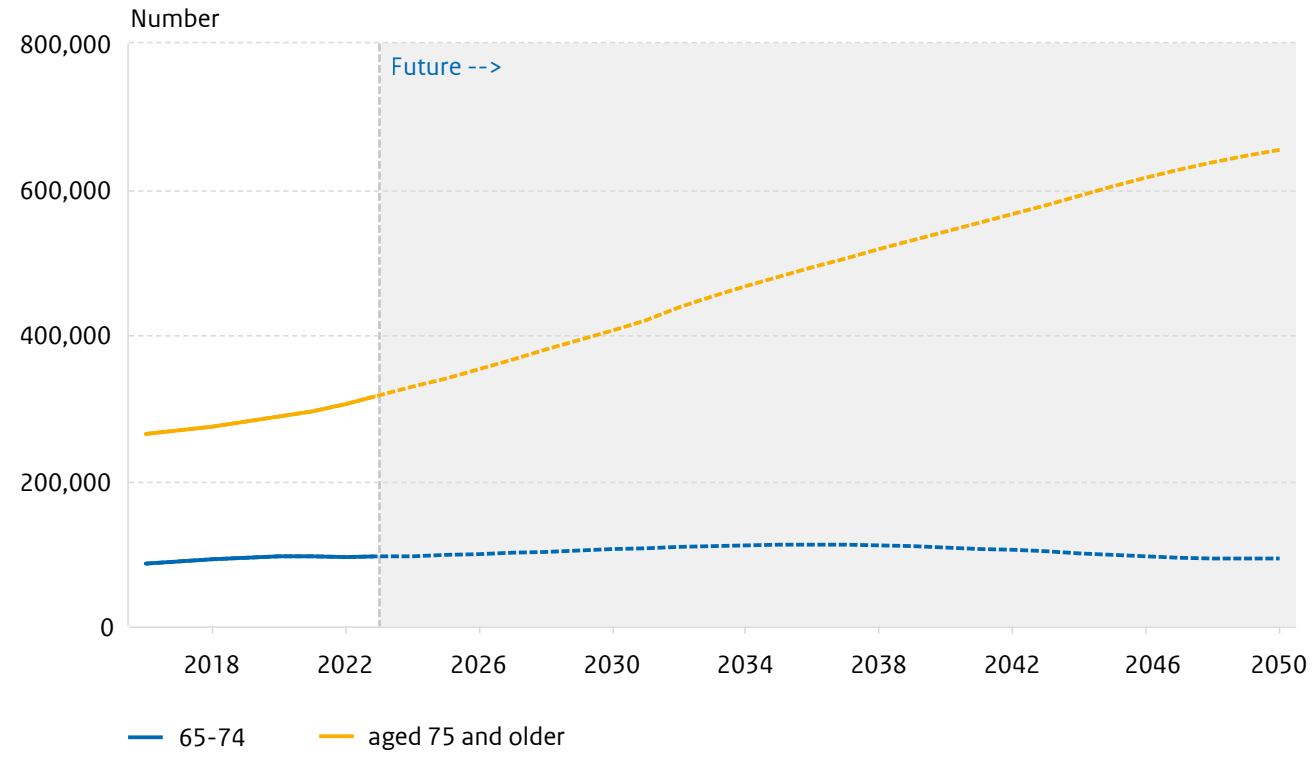
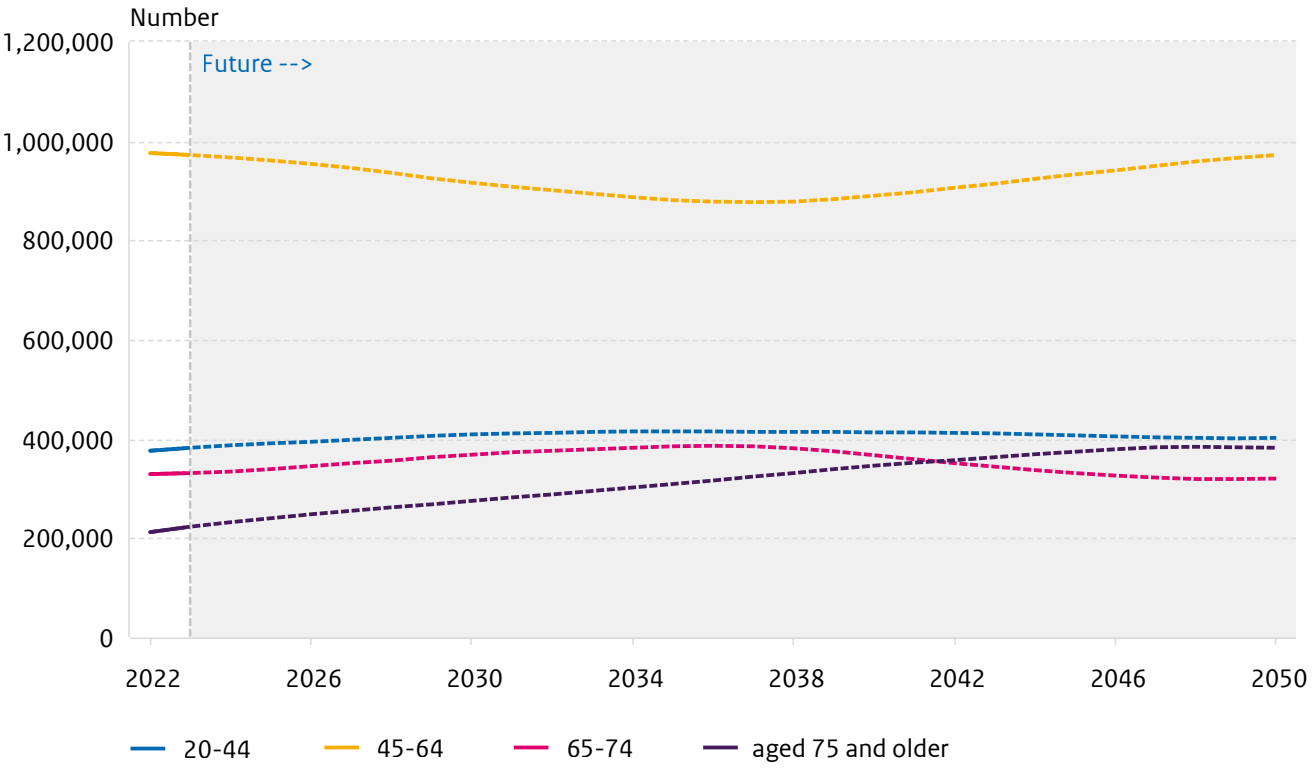


Figure 4.9 Number of informal carers by age 2022-2050



Providing intensive informal care requires that informal carers have the right competencies to provide the care. Furthermore, providing long-term and intensive informal care, especially for people with dementia, is a risk factor for the mental health of the informal carer. The presence of a network of healthcare professionals to provide informal carers with knowledge and support and to organise respite care if necessary will therefore become more important in the future.

Young people's view on informal care

Between the end of 2022 and the beginning of 2023, a total of 41 young people and young adults participated in seven focus groups for the PHF-2024. In this they talked about their expectations for their health, care and living environment in 2050.

Almost all young people who participated in the focus groups expected that the need for informal care would increase. Reasons given for this include that older people continue to live independently for longer while life expectancy increases. Staff shortages in healthcare was also mentioned as a reason. Some also expected that, in the future, informal care will be facilitated more by employers.

"...I think that if you'd asked in a large financial services provider ten years ago what informal care is, half of the employees wouldn't have known. And now people actually do know, like when you are caring for your sick mother, for example, or for your sick child with Down's syndrome or a chronic illness. And that colleagues are no longer surprised if you work from home more often because you are an informal carer and that you have special leave arrangements for that ... that's only becoming more and more common."

Care for the elderly in the community

In addition to older people who require intensive care due to dementia and other seriously limiting health problems, there will also be a growing group of older people who will continue to live independently. This group is confronted with all kinds of chronic conditions, as well as with loneliness and limitations in hearing, vision and mobility. For this group it is important to organise and provide strong basic care, close to where people live. This concerns primary care, including GP care, paramedical care and nursing care, as well as the presence of a broad social base that is crucial for people's well-being. This includes opportunities for meeting people and mutual assistance between local residents.

"As you grow older and/or have disabilities, you can no longer live comfortably at home right now. The facilities are limited and there is a lot of loneliness."

Member of the Citizen Council PHF-2024

In order to provide care close-by to people, it is important to pay more attention to the physical and social aspects in a community or neighbourhood. In strong communities and neighbourhoods, where people look out for each other, an escalation of care problems can possibly be prevented. It can also help with the problem of people unnecessarily ending up in Emergency care units. Here too, people in the third stage of life can be of significance to their immediate living environment (see Chapter 5).

Challenges for the future

In the future, healthcare in the Netherlands will look radically different. The demand for care will increase and change. This is mainly due to the ageing population. New medical knowledge and technological developments too will change the supply of care, especially in curative care. At the same time, staff shortages are increasing further, while the gap between supply and demand in informal care is diverging more and more. The Netherlands is currently in a good position to face the challenges of the future. The care provided is of high quality and accessible and affordable for everyone. However, maintaining this position will be a major challenge.
The challenges concern three important components of care:

- curative care,
- formal and informal care for the elderly,
- basic care close to home and in the community.

Curative care under pressure, making choices is essential

Curative care is coming under increasing pressure. The increase in hospital care may lead to other parts of healthcare coming into difficulty in the future, such as primary care or elderly care. Since the Dunning Committee in 1991 (106), there has been a call for making choices in healthcare. These are difficult and complicated choices in the healthcare system and in practice. This includes choices about the benefits package of the collectively financed health insurance. New treatments could also be approved on the basis of pre-established criteria, just as is the case with medicines. This may lead to restrictions in the existing package of insured care. All in all, strict choices will have to be made, for example regarding available treatments and the availability and deployment of workforce. An important point of attention in this respect is that healthcare remains accessible to everyone.

More and better coordination needed between formal and informal elderly care

Long-term care for the elderly with early and advanced dementia and other age-related ailments is a major challenge. These elderly people experience major consequences in their daily functioning. These can become so severe that round-the-clock care in a nursing home or other residential environment is required. In the future, there will be a major increase in the demand for care, with consequences for elderly care. More collectively financed residential care by professionals will be needed. There is also a need for greater use of informal or privately funded care. A major bottleneck here is the availability of healthcare workers. According to reports from the State Committee Demographic Developments 2050 and the Council for Public Health and Society, focusing on labour migration will not solve much (12, 107).

Providing basic care nearby: at home and/or in the community

Due to the increasing number of people with multiple chronic diseases, disabilities and loneliness, strong basic care is needed close to where people live. This requires a proactive approach by general practitioners, paramedics and (district) nurses. It would be a benefit for the quality of life of all those living at home if they had a single point of contact for all basic care.

In addition, a connection between healthcare and the local community is necessary. A strong community or neighbourhood, where people look out for each other, can help reduce loneliness, mental pressure and psychosocial problems among the elderly and young people. Attention from people in the immediate living environment can also prevent escalation of health problems. This theme is discussed in more detail in the PHF-2024 theme issue healthcare and social domain.

5 Changing climate and changing living environment

In the future, our living environment will change dramatically due to climate change, climate policy, population growth and ageing, among other things. Several major transitions (including energy, transport and agriculture) have already been partly initiated and these require a different spatial and living environment. The housing construction target will also affect our living environment, for example through the construction of additional homes within existing urban areas and the development of new areas on the outskirts of the city. These developments affect the quality of our living environment and health.

The living environment can influence health both negatively and positively. Environmental factors that can harm health include: heat, flooding, air pollution, noise, unsafe traffic situations and pollen. On the other hand, the living environment can positively influence health if it offers space for exercise, relaxation or interaction. Encounters in public spaces promote the social quality of the living environment.

The first part of this chapter discusses the health consequences of climate change, now and in the future. Attention is also paid to the impact of measures to slow down or adapt to climate change. The second part of this chapter discusses how changes in the living environment affect health. This also includes health inequalities in spatial terms. The chapter concludes with challenges for the future, based on the outlined developments.

The PHF-2024 theme issue Towards a healthy living environment in a changing climate describes the health risks of climate change in more detail and also addresses the health consequences of other developments in the living environment, such as noise and particulate matter.

Climate change and the impact on health

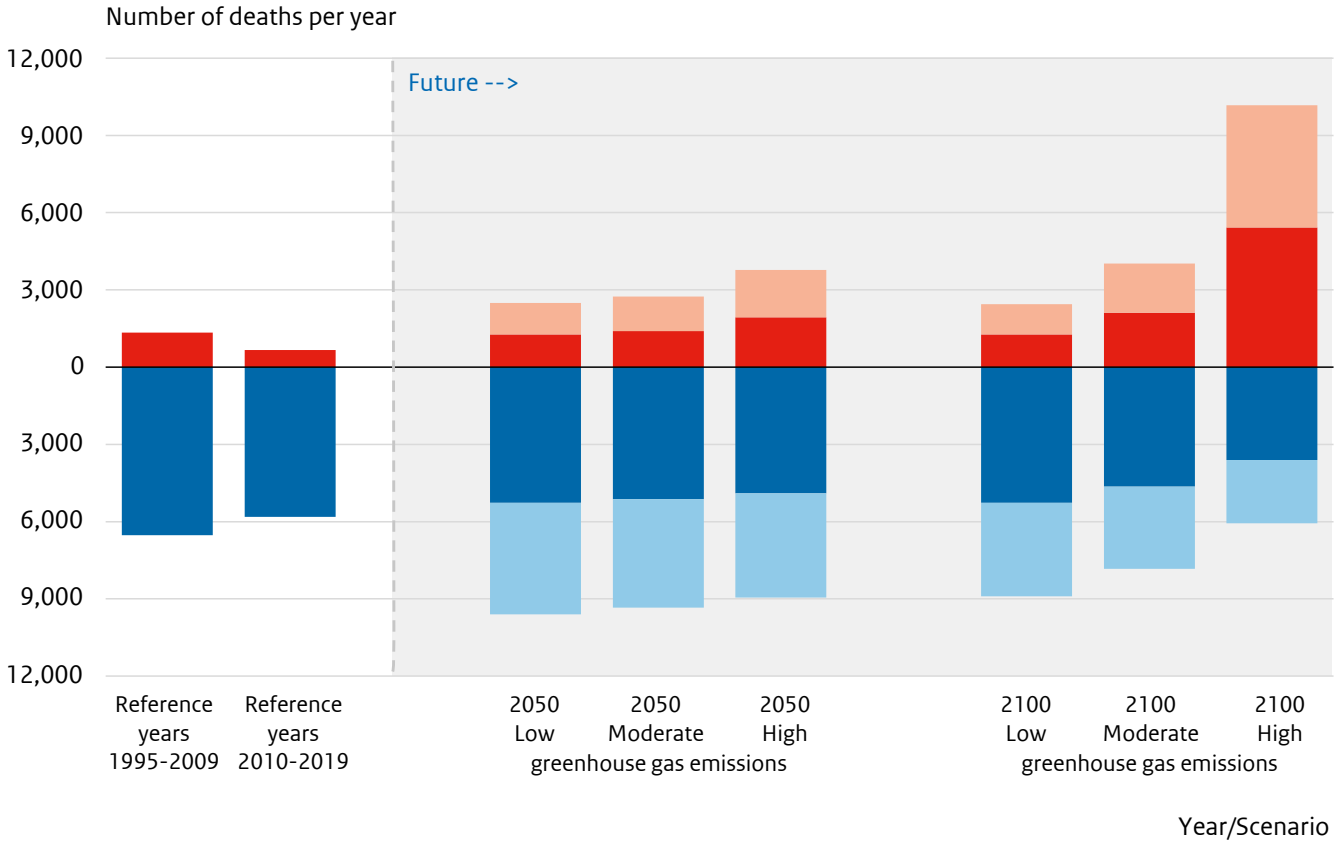
Climate change will have an increasing impact on public health in the coming decades. We are already experiencing more (extreme) precipitation, flooding, longer periods of drought and very hot days. This trend will only increase in the future.

Increased heat stress and heat mortality due to rises in temperature

In the future, heat stress will have a bigger impact on our lives than it does now and it will also occur more frequently. Heat stress means that people experience discomfort from the heat, for example during a heatwave. This will particularly affect the elderly, people with chronic heart disease, (very) young children and pregnant women. Heat stress can cause fatigue or headaches, but more serious symptoms can also occur. People may develop a rash, feel unwell, or even suffer a heat-induced stroke (108). Heatwaves and high temperatures lead to more premature deaths, especially among the over 75s and the chronically ill. Yet mortality rates also rise in extreme cold. Heat-related mortality will continue to increase as climate change progresses, and cold-related mortality will decrease (Figure 5.1).

The development of heat-related and cold-related mortality will depend on the extent to which greenhouse gas emissions are limited. Population growth and ageing also play a role. Based on scenarios by the Royal Netherlands Meteorological Institute (KNMI) involving low, moderate and high greenhouse gas emissions, an estimate has been made of the number of expected deaths related to heat and cold in the future (109) (Figure 5.1). These were compared with reference years before the activation of the National Heatwave Plan (1995-2009) and after its introduction (2010-2019). In the 'High greenhouse gas emissions' scenario, the increase in mortality due to heat is the greatest; in 2050, approximately 3,800 people will die prematurely, rising to 10,000 by 2100.

Figure 5.1 Number of deaths related to cold (blue) and heat (red)



Explanation: the light colours (light red and light blue) represent the mortality share that can be partly attributed to population growth and the expected ageing of the population. Note. This figure differs from the figure in the KNMI '23 Climate Scenarios (109), because the most recent population forecasts by Statistics Netherlands (CBS) were used.

Preventive measures can lead to a reduction in heat mortality rates. The National Heatwave Plan, which was first activated in 2010, is having an effect. After activation of the plan, the number of heat-related deaths was lower than in the previous period (Figure 5.1). The National Heatwave Plan provides warnings and advice such as drinking plenty of fluids, keeping your home cool and taking care of vulnerable people. It seems that the National Heatwave Plan makes people more aware of adapting to the heat and taking preventive measures.

The effects of heatwaves will be greater in cities and areas with more urbanisation. The extent to which high temperatures lead to health risks depends on various factors. These factors include not only the changing climate, but also the design of public space, the degree of vulnerability and the adaptability of residents in the city (110).

There are already differences in heat between neighbourhoods, with the least prosperous neighbourhoods being warmer. In Gelderland, Overijssel and South Holland, it appears that almost half the residents of these provinces find moderate or poor cooling in their homes (44%) or in their gardens or neighbourhoods (49%) during persistent heat. The groups that cannot find adequate cooling are mainly people who have difficulty making ends meet, people of vulnerable health and young adults (18-34 years) (111).

Extreme weather threatens food production and drinking water availability

In addition to the direct impact of heat, other and partly new risks of climate change are also coming our way. Climate change affects the availability and quality of our food and our drinking and bathing water. As early as 2030, water levels will be insufficient to meet the required drinking water production. Additional measures, such as increased use and purification of surface water and promoting the conservation of drinking water, can counteract this. Climate change also poses a threat to our food supplies. Crop yields can be jeopardised by extreme weather, such as prolonged drought or flooding. Extreme weather also affects air quality. During a heatwave with little wind, the air quality is often poor. Dry days increase the risk of wildfires and air pollution, with consequences for health.

New infectious diseases due to climate change

Climate change also plays a role in the introduction and spreading of known and unknown infectious diseases. It is estimated that the burden disease of more than half of all infectious diseases worldwide will increase (67). Many pathogens are climate sensitive.

This applies to pathogens transmitted via water, air, soil or food (Campylobacter and Vibrio), as well as via vectors (such as mosquitoes and ticks). Climatic factors, such as temperature and humidity, influence the transmission and exposure to these pathogens. Due to the effects of climate change, we in the Netherlands may be more exposed to pathogens that cause infectious diseases.

Partly due to climate change, certain vectors can establish themselves in new geographical areas. At European level, there is currently a lot of attention for invasive mosquito species such as the Asian tiger mosquito. The Dutch climate is already suitable for the Asian tiger mosquito to establish itself. And if this mosquito were to establish itself in the Netherlands, there is a real risk of local outbreaks of diseases that this mosquito can transmit, such as dengue fever, during warm summers. However, the Dutch climate does not become warm enough for large-scale transmission of these diseases (112-114). In the case of dengue fever, for example, this risk could only arise in case of very strong global warming (and in the presence of the pathogen) at the end of the 21st century (113).

The effect of climate change on concentrations of pathogens such as Campylobacter and the Norovirus in surface water may be limited (115). No clear effects of climate change have yet been identified to support the future spread of the airborne pathogen Q fever (116). The same applies to the presence of mould toxins in grain and corn (117).

Climate change may also affect the emergence of new infectious diseases. Many new infectious diseases, including COVID-19, have an animal origin (zoonosis). Animal habitats are shrinking due to climate change and land use changes. Examples include the increase in agricultural land and growth of urban areas. This causes animals to look for new habitats. These migrations will bring different animal species together for the first time. This may lead to more frequent exchanges of pathogens (118), thereby increasing the risk of a new zoonosis emerging. The climate is probably warmed up enough already to initiate this process. Central Africa and Southeast Asia are important risk areas for this development. These are densely populated regions and the population is growing rapidly. This increases the risk of interactions between people and animals. Infectious diseases can also spread more easily because people travel more and more.

More hay fever, skin cancer and mental health problems

In the future we will suffer more from allergies than we do now. Climate change is making the pollen season longer and likely more intense. Consequently, hay fever and asthma patients are expected to experience more and more severe symptoms for a longer period of time. More than 20% of Dutch people sometimes experience mild to serious symptoms as a result of hay fever (119). Compared to 25 years ago, hay fever symptoms appear to start a month earlier and last 24 days longer (120). Hay fever is an important risk factor for asthma and approximately 40% of patients suffering from hay fever also have asthma.

The risk of skin cancer will also increase. Due to the warmer climate, people may go outside more often wearing less clothing to cover their skin. Insufficient protection against solar radiation can lead to an increase in skin cancer.

Floods, extreme weather and wildfires will become more common in the future as a result of climate change. There may be casualties and these events may lead to physical and mental symptoms. In addition, damage to infrastructure and facilities may occur.

The threat of further climate change alone has an impact on our mental health. Many Dutch people are concerned about the climate (121). The Dutch Youth Institute concludes that 70% of children and young people surveyed are concerned about climate change. Fear, sadness and lying awake at night are common feelings. Yet young people are also willing to take action and do something about climate change themselves (122). This in turn can increase their mental resilience.

Focus groups: young people on climate change

Between the end of 2022 and the beginning of 2023, a total of 41 young people and young adults participated in seven focus groups for the PHF-2024. In it they talked about their expectations for their health, care and living environment in 2050, when they will be 38-50 years old.

Most young people expect climate change to become worse in the future, despite efforts being made in this area. They fear more natural disasters, climate refugees, food shortages and extreme weather:

"... that food systems, for example, will collapse, because of the way we treat the planet, you will see that if many harvests fail, shortages will occur. So on many levels, our health will suffer. Because if the world doesn't work, we can't either" (young person from focus group PHF-2024).

Yet others are cautiously optimistic, because measures are being taken.

Attention to health needed in climate change measures

Measures against climate change can also promote health. This concerns both measures necessary to slow down (mitigate) a changing climate and to adjust (adapt) to it. European and Dutch climate policy is aimed at net zero percent greenhouse gas emissions by 2050. To achieve the goals of the Paris Climate Agreement, it was agreed to reduce emissions by 55 percent in 2030 (compared to 1990 levels). According to the Climate and Energy Outlook 2024, the chances of achieving the 2030 climate target are slim. Additional policies are needed aimed at quickly reducing CO2 emissions. The 2019 Climate Agreement (123) contains agreements with five sectors on the measures that these sectors will take up to 2030 and 2050 to achieve the climate goals. These sectors are: built environment, agriculture and land use, electricity, industry and mobility. An additional package of climate measures in addition to the Climate Agreement must ensure that the 2030 and 2050 targets are achieved (124). Examples of measures include making electric driving cheaper and promoting the insulation of houses. Additional efforts are also needed to achieve energy saving targets (125).

If climate policy leads to less use of fossil fuels, air quality will improve and there will be less damage to health. One of the measures in the Climate Agreement is to encourage the consumption of vegetable proteins instead of animal proteins. If people eat less meat, it will contribute to a reduction in the burden of disease caused by unhealthy diets (126, 127). At the same time, climate measures can lead to new health challenges. A first challenge is to build cool, energy-efficient homes while maintaining good indoor air quality. This can deteriorate due to insufficient maintenance or incorrect use of new energy systems. A second challenge concerns solving the annoyance caused by heat pumps and wind turbines. It is therefore important to prevent and limit the negative effects as much as possible by opting for clean technologies that do not cause air pollution or (noise) annoyance.

Climate adaptation policy, through the creation of more greenery or water in neighbourhoods, promotes both physical and mental health. A green living environment provides cooling and at the same time offers opportunities for exercise and interaction. However, we must be alert to ensure that these measures do not introduce more allergens and pathogens, such as blue-green algae, Lyme or rat plagues.

Challenges for healthcare

Rising temperatures also pose new challenges for healthcare. People will increasingly seek care for health problems caused by climate change. For example, for the worsening of asthma or allergies. In addition, climate change can also cause problems in the provision of care, for example in the event of heatwaves, flooding or power outages due to extreme weather (128).

Healthcare itself can also contribute to combating climate change. In the Netherlands, healthcare is currently responsible for 7% of greenhouse gas emissions that cause global warming. This concerns medical treatments, but also the production of medicines (129). There is a need to find a balance between providing good care and reducing the environmental impact of treatments. For example, less use of disposable items contributes to less emissions and pollution. Ultimately, this will also benefit the health of future generations (129). The 'Green Deal Working together on sustainable healthcare' (130) contains agreements to reduce the environmental impact of healthcare, such as reducing CO2 emissions. In addition, the Green Deal partners are working on reducing the use of raw materials and pharmaceutical residues in wastewater. A health-promoting care environment is another point of attention. This is a care environment where patients, residents, employees and visitors feel comfortable and are invited to adopt healthy behaviour. For example, a panoramic view of nature can promote recovery after surgery (129-131).

Living environment and health

Large-scale housing construction and health implications

The demand for housing is high and will continue to increase. Yet there is also a need for other forms of housing. The Netherlands has an increasing number of single and two-person households, partly due to the ageing population. In 2050, single people will make up an even larger part of the population than they do today. This development places different demands on the housing stock, the range of facilities and the design and use of the living environment. Existing and planned housing does not sufficiently match the current and expected population composition and people's housing needs. For example, many single-family homes are currently occupied by one or two people.

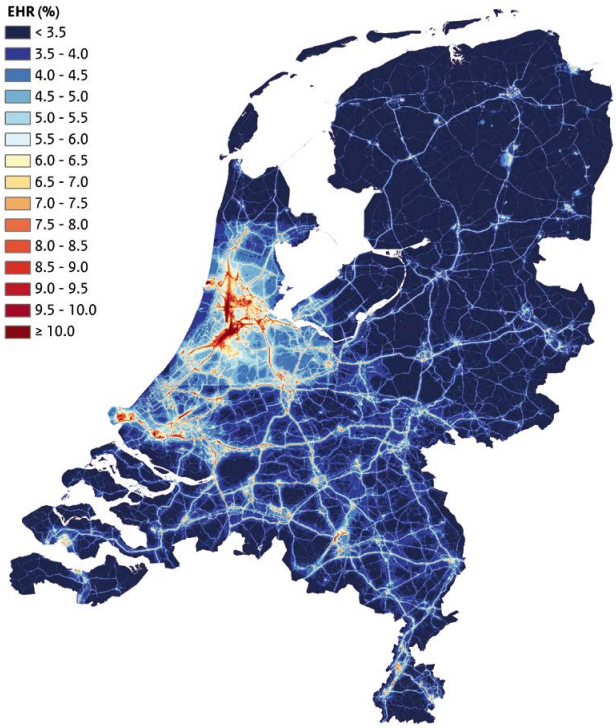
A large part of the planned housing construction is located in large-scale housing construction sites. This mainly concerns new homes in inner-city locations (densification) and new areas on the outskirts of the city. Densification can have consequences for the health of residents, especially when housing is built in old industrial and port areas. These areas are often located along busy waterways or next to existing industrial activities. Urban densification can also be at the expense of green areas and public spaces (132, 133). This means fewer opportunities for cooling and exercise.

However, densification also has its advantages, as it leaves more space available outside the city for nature and recreation. Building in the city offers the opportunity to simultaneously make neighbourhoods climate-proof and work towards a living environment that is accessible, healthy and attractive for everyone.

Influence of the living environment on people's health

The living environment can influence people's health positively and negatively. An unhealthy indoor and outdoor environment[10] accounts for 4.5 percent of the burden of disease (Figure 3.6). Air pollution and noise are important risk factors for people's health. The burden of disease related to air pollution and noise is higher in the Randstad conurbation than in provinces such as Groningen or Drenthe (Figure 5.2). Air pollution and ambient noise is even higher in urban areas with heavy traffic or around large industrial areas and airports. Depending on the choices made for new housing locations, road construction, public transport and the degree to which industry and traffic is made sustainable, the burden of disease related to these factors will increase or decrease locally.

Figure 5.2 Cumulative Environmental Health Risk (EHR) in the Netherlands (expressed as a percentage of the total burden of disease (134))



[10] Environmental quality concerns the state of the environment, such as air quality, water quality and noise levels. We distinguish between chemical, physical (sound, radiation) or biological contamination. The quality of the living environment is broader and also includes matters such as facilities (green, healthcare, education, sports), safety, social interaction, infrastructure and accessibility.

A living environment that encourages physical activity, playing, cycling and walking helps young and old to stay healthy for longer. This concerns both sports and social facilities, as well as safe and pleasant public spaces. Places for relaxation and opportunities for children to play safely outside are also part of this. Greenery, water, safe and attractive walking and cycling routes and (relatively) quiet places close to home are important. The proximity of shops, safety in the streets and good quality housing are also important for people's well-being (135).

Ageing in a changing living environment

People in their third stage of life, that is, in the vital period after retirement, can contribute a lot to society. Like many other residents (11), many are committed to their neighbourhood, community or sports club for example. Older people who are more limited in their daily activities have specific needs regarding the quality of their physical and social living environment. They will be more dependent on facilities (shops, green areas, meeting places) in the vicinity of their homes. Accessibility of amenities can become a bottleneck in congested road networks and a lack of sufficient public transport options (12). This is particularly problematic for people with reduced mobility, but it can also impede informal carer or other healthcare providers from providing care and support.

A safe and accessible public space is important for everyone, but for people in the fourth stage of life (see Chapter 2), additional adjustments are needed, such as sufficient benches on the way to the shops or clear signage. As the Trend Scenario shows, falls pose an increasing health risk for this group. Although most falls occur in and around the home, some also happen in the street (136). Public spaces can take this into account, for example by preventing obstacles such as loose paving stones.

Future-proof homes and forms of housing needed

Because people will continue to live independently for longer, this will place demands on the homes themselves. This development requires more life-long homes and other forms of housing in which multiple generations live together (kangaroo homes) or groups of the same age (knarrenhof community). The ageing population will also increase the need for (primary) care and support in the neighbourhood.

Climate resilience is an additional point of attention in all of this. As people get older, they suffer more from the heat. Cooling currently available in and around homes suitable for the elderly is moderate or poor (111). Climate measures such as greening of urbanised residential areas and adjustments to homes can provide solutions that are beneficial for this group in particular.

> *"There are quite a few people who would enjoy some kind of special residential community. For one person this could be in the form of a farm and for others it could be something else, but in that respect too the offer is minimal, nor have there been any initiatives for purpose-built projects like that. So what you see where we live is that over 50s unite and go to the municipality to build a house, flat or apartment themselves."*
>
> (member of the Citizen Council PHF-2024)

Less prosperous neighbourhoods are often less liveable

Health inequalities (see Chapter 3) are also visible in the living environment. Inequalities in health are visible between areas (communities or neighbourhoods). In neighbourhoods with the lowest incomes, there appears to be an accumulation of factors that are unfavourable to health. This concerns more air pollution and noise, a high concentration of fast food establishments and little greenery. In these neighbourhoods, residents tend to live unfavourable lifestyles, such as little exercise (137). People living in less prosperous neighbourhoods or areas often

have fewer financial resources to choose where to live or to influence changes in the neighbourhood (138).

In addition, health inequalities are seen in health aspects related to climate change. The groups that cannot find adequate cooling in their homes or neighbourhoods are mainly people who have difficulty making ends meet, people with vulnerable health and young adults (111). At the same time, it is difficult for groups in a vulnerable position to benefit from the climate transition, due to insufficient financial resources or insufficient access to information and facilities, which means that they miss out on subsidies, for example (139, 140).

Regional inequalities

We can also see inequalities in health at a regional level, often related to prosperity. In regions where there is more poverty, for example, residents are often less well-off in terms of health and a healthy lifestyle compared to more prosperous regions. However, there are also exceptions. For example, residents of the province of Friesland rate their health as better on average than in the rest of the Netherlands, despite lower financial prosperity. Factors such as peace and quiet, neighbourly assistance and safety seem to be possible explanatory factors for this so-called 'Frisian paradox' (85, 86).

Both in the city and beyond, there are fewer and fewer public facilities and fewer opportunities for people to meet and interact (141). This leads to lower social cohesion in neighbourhoods and communities. In some region this effect is even stronger due to population decline, an even greater reduction in facilities and an above-average ageing population. The Living Environment Council warns that accessibility and affordability of facilities is not adequate for everyone, thus increasing inequalities in health (142). For example, it is becoming increasingly difficult for young people in rural areas to travel to school by public transport (143).

Spatial inequalities in health

Insight into spatial inequalities in health can provide starting points for a more targeted approach to health problems. Figure 5.3 shows the results of a so-called hotspot analysis for a number of health characteristics and factors influencing health. The visible, spatial patterns vary per health characteristic. Sometimes health problems converge in urban areas, but not everywhere. Some regions stand out more often when it comes to health problems. In other regions, the percentage of people with health problems is lower than average.

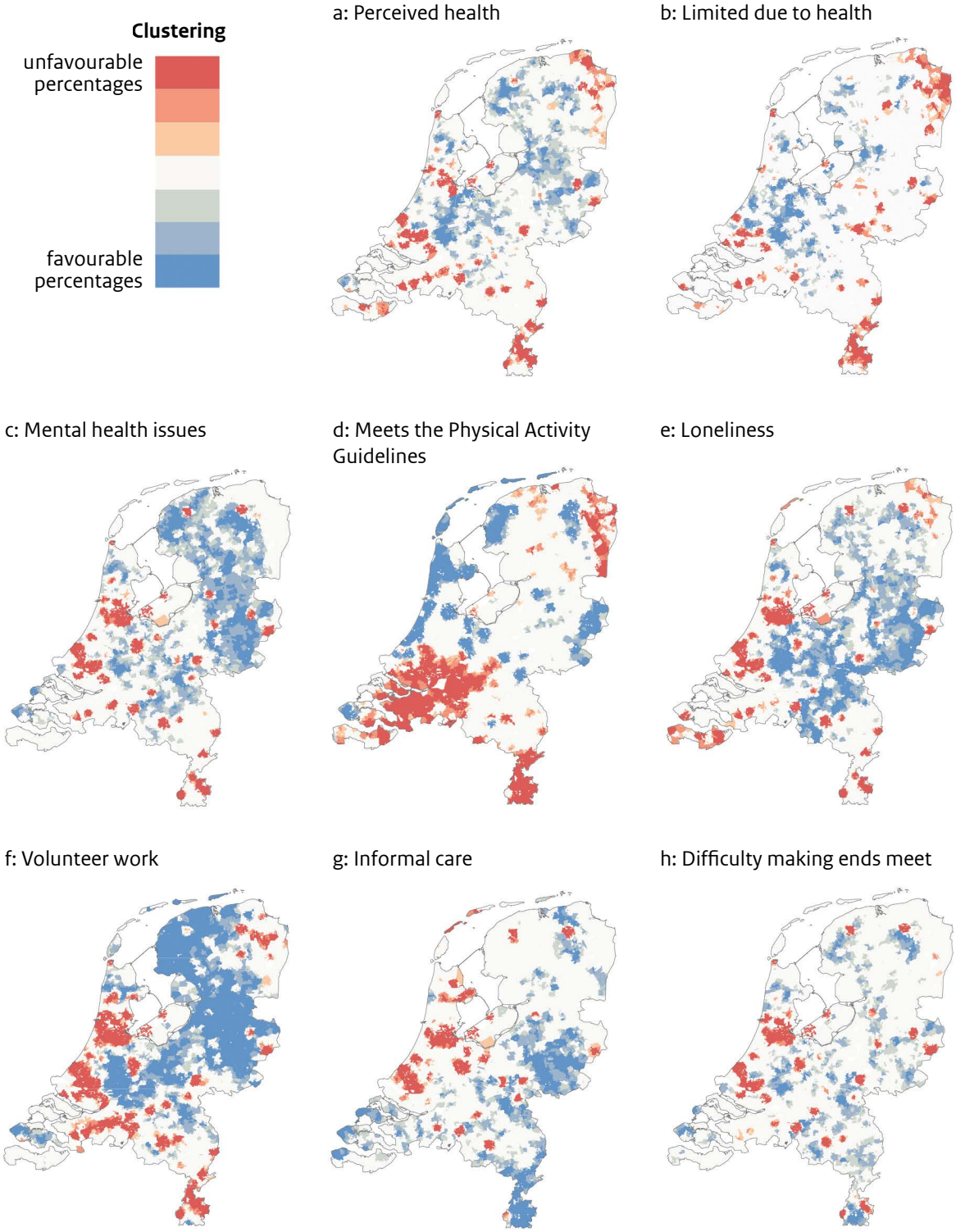
Spatial inequalities in perceived health and feeling limited due to (lack of) health
In Figure 5.3, clusters are shown in red where people feel less healthy than average. This concerns areas in north-east part of the province of Groningen, large parts of the province of Limburg, the area around Rotterdam, parts in the province of North Holland and in the south of Zeeland. In the blue areas people feel healthier than average. These are areas in the Randstad conurbation and the provinces of Friesland and Drenthe.

Spatial inequalities in physical activity
In the regions of eastern Groningen, Drenthe, Limburg and Zeeland, but also large parts of western and central Brabant province, the percentage of people who comply with the Physical Activity Guidelines is significantly lower than the average for the Netherlands. In the coastal areas, Friesland and the Twente region, but also in parts of the province of Utrecht, the percentages are significantly higher.

Spatial inequalities in loneliness and mental health issues
Clusters with increased percentages of people who feel lonely can be seen particularly in and around the large cities (for example Amsterdam, Rotterdam, Maastricht, Enschede), but also in the province of Zeeland. Places where this percentage is lower than the national average include the provinces of Friesland, Groningen, Overijssel and the rivers area. The picture for mental health issues is similar. It is striking to see that in Zeeland the percentage of people with mental health issues has decreased compared to the national average.

Spatial inequalities in volunteer work, informal care and difficulty making ends meet
The percentage of people doing volunteer work is much higher than the national average, especially in the provinces of Friesland, Drenthe and Overijssel and in the Utrecht region. With regard to the provision of informal care, the patterns are partly different: the provinces of Twente and Limburg stand out as areas where the percentage of informal care is higher than the national average. The percentage of people having difficulty making ends meet has increased in many cities compared to the national average.

Figure 5.3 Results of a hotspot analysis for a number of health characteristics and health determinants (factors influencing health)



Note: blue shows where the indicator is relatively favourable and red where it is relatively unfavourable. This figure is descriptive in nature. Additional research and knowledge of the local context are required to identify the underlying causes.

Challenges for the future

Climate change, climate policy and population growth will cause our living environment to change dramatically in the coming decades. Space is needed for housing construction, for a fossil-free energy supply and for adapting urban and rural areas to climate change. The challenge is to direct these changes in a way that contributes to the health and well-being of current and future generations. To combat further climate change, there are clear national and international agreements that the Netherlands must adhere to. It is therefore important to continue to implement these agreements and achieve the set goals. In addition, we still have to deal with the consequences of climate change for which we must be better prepared. The three challenges are:

- addressing the health consequences of climate change,
- health promotion through the living environment,
- adapting the living environment for vulnerable groups.

Tackling the health impacts of climate change

The climate is changing worldwide, including in the Netherlands. The health consequences are already noticeable. Climate change is affecting the availability and quality of our food and drinking water, posing new risks to our health. Extreme events such as a prolonged heatwave or flooding will occur more often. This means an increase in heat-related mortality and health issues and additional care needs, but also damage to infrastructure and facilities. Groups living in financial precariousness (for example, people without job security or low incomes) suffer the most from climate change. They tend live in housing that consumes a lot of energy in winter and provide little cooling in summer.

The climate measures that are necessary to slow down climate change on the one hand and to adapt our lives to the changing climate on the other, have the potential of making the living environment healthier. For example, greening of neighbourhoods is necessary to prevent heat stress and to collect rainwater. There is also a need for homes that can be cooled and heated sustainably. This too will create a more liveable living environment, with space for physical activity, relaxation and interaction (144). Reducing the use of fossil fuels will improve air quality and provide health benefits. Still, when implementing climate measures, attention must be paid to possible negative health effects of new energy sources.

Climate change and how to tackle it require a change in behaviour, in addition to all other efforts. For example, a warmer climate means that protection against bright sunlight becomes more important. Eating less meat and dairy products contributes to a reduction in greenhouse gas emissions and an improvement in health. However, adapting our lives to a changing climate is not a given. The majority of Dutch residents do want to change their behaviour, but actually doing so and maintaining it often fails, or takes multiple attempts (145). A combined approach with a focus on behaviour and, in particular, the design of the living environment is probably the most effective (146-148). Using health arguments can help persuade people to adopt more sustainable behaviour.

Protecting and promoting health through the living environment

Tackling health problems such as being overweight and lack of exercise requires more than individual lifestyle interventions. Investing in a green and healthy living environment with less space for cars contributes to better health (149). Attention must be paid to this in spatial developments.

The impact of the living environment on health has been known for some time. However, this is not always taken into account when building homes and developing the living environment. Yet this is becoming urgent, especially in a period of spatial transitions with long-term effects. When planning spatial developments, such as large-scale housing construction and urban densification, it is essential to take into account the consequences for the health of local residents. The same applies to the energy transition. Attention must also be paid to all factors, both the 'hard' environmental factors, such as noise pollution, and the social factors, such as social cohesion, accessibility of facilities and quality of life.

Identifying health benefits can facilitate the various transitions (150). The transition to clean energy will be easier if, in addition to positive environmental and economic effects, the health effects are positive as well. However, spatial interventions can also have a negative impact on health. For example, the annoyance and safety risks of building near busy roads, industry or new energy generation installations. Or insufficient accessibility of (healthcare) facilities due to limited public transport. A consideration in which all health aspects are taken into account is therefore important for all adjustments to the living environment. Involving residents in changes in the living environment is necessary.

Larger group of vulnerable people requires adjustments to living environment

The fact that people with disabilities or very old age continue to live independently for longer places new demands on the physical and social quality of the living

environment in communities and neighbourhoods. People with vulnerable health or in a vulnerable social position are also more dependent on their immediate living environment than others. The places they live are often characterised by an accumulation of unfavourable aspects such as air pollution and noise, or (particularly in rural areas) a lack of facilities. This should also be a point of attention when building new or redeveloping existing areas.

Without the involvement and support of society, changes have little chance of success. This also means investigating how residents experience their living environment and living situation. In addition to the physical aspects, this includes issues such as social cohesion, loneliness and a sense of self-direction. This broad approach is central to the solutions in Chapter 6.

6 Challenges and options for action for the future of public health and care

The previous chapters provide insight into what we as a society stand for when it comes to public health, care, the living environment and climate. These challenges cannot be seen separate from each other. They overlap, are interrelated and influence each other. In this concluding chapter, they are brought together into five urgent challenges that require action now:

- Being better prepared for a further ageing society
- Tackling health inequalities
- Investing in a healthy youth
- Dealing with pressure on formal and informal care
- Tackling the health impacts of climate change

Some challenges we will face in the future are not new and were also identified in previous PHFs (see chapter 1). The ageing population, which has major consequences for public health and care, is a development that has been known for some time. Making our lifestyle and living environment healthier are recurring themes as well. The increasing pressure on mental health has been mentioned in the most recent PHF editions. The fact that these topics were also raised in previous PHFs indicates that we are dealing with challenges that are persistent in nature. But also that the urgency to tackle them may not always be sufficiently seen or felt yet.

> *"Why look so far ahead when there are urgent problems now?"*
>
> (member of the Citizen Council PHF-2024)

From challenges to options for action

As mentioned, the five challenges are complicated. How can these challenges be tackled? The options for action described in this final chapter provide building blocks for public health policy and practice. The options for action are based on the theme issues and broad consultation with experts, stakeholders and the Citizen Council. The consultation with the Citizen Panel further showed that the options for action enjoy broad support. However, the options for action mentioned in this PHF are not the only options available and will certainly not be able to 'solve' all the challenges at once.

The national government has an important role in tackling the challenges, but it is clear it cannot do this on its own. Many partners are needed to contribute, such as municipalities, municipal health services, employers, healthcare providers, educational institutions, companies and also the citizens themselves. The options for actions for each challenge is described below.

Table 6.1 Overview of the challenges and the options for action

	Challenges				
	Being better prepared for a further ageing society	**Tackling health inequalities**	**Investing in a healthy youth**	**Dealing with pressure on formal and informal care**	**Tackling the health impacts of climate change**
Options for action	Ensuring that older people can actively participate in society	(Stronger) focus on integrated prevention	Aiming for health literacy and resilience among youth	Investing in informal carers (social, financial and work)	Strengthening newly initiated climate policies
	Involving the elderly in policies regarding independent living for longer	Providing accessible advice and assistance with healthy living	Addressing the living environment, including food supply and advertising	Broadening the expertise of healthcare providers	Making healthcare more sustainable
	Creating new life-long forms of housing	Strengthening and consolidating the community-oriented approach	Reducing perceived performance pressure in and outside education	Making choices in healthcare	Making the living environment climate-proof and healthy
	Paying attention to the fourth stage of life			Deploying digital resources in healthcare	Promoting behavioural change

Challenge: Being better prepared for a further ageing society

Dutch people are living longer and the proportion of older people in the population is increasing. This leads to increased pressure on our healthcare, for example due to the sharp rise in age-related diseases such as dementia. An ageing population is not only characterised by a high medical demand. Social problems such as loneliness will also increase significantly in an ageing population. The physical and especially the social layout of communities and neighbourhoods will have to be adapted to this. The ageing population has consequences for the demands on the housing market, mobility and accessibility. At the same time, we also see positive developments. There may be more elderly people in the future, but they are also increasingly fitter with fewer physical limitations. In the third stage of life (after retirement age), they play important roles in, among other things, providing informal care and doing volunteer work. In the fourth stage of life, when vitality decreases and vulnerability and the need for care increase (see Chapter 2), attention is particularly needed for good healthcare, including attention to a dignified end of life. The challenge is to deal with the difficulties of an ageing population as effectively as possible and to also recognise the opportunities in using the potential of the elderly. The ageing population is and remains one of the most important, overarching challenges that we face as a society. Many of the other challenges are therefore strongly related to an ageing population.

Options for action

Ensuring that older people can actively participate in society
The potential of vital older people in the third stage of life can be utilised better. The informal care that many of them provide will remain indispensable due to the increasing demand for care. Volunteer and paid work by older people in the third stage of life contributes to their own health as well. It reduces loneliness and strengthens meaning, self-direction and vitality. Therefore, make volunteer work and paid work more attractive and easily accessible for the elderly. For example, by ensuring proper working conditions in paid work and also offering training for older people. Also offer health promotion for people in the third stage of life. Prevention and healthy living, such as quitting smoking or exercising more, still pay off at an older age (151).

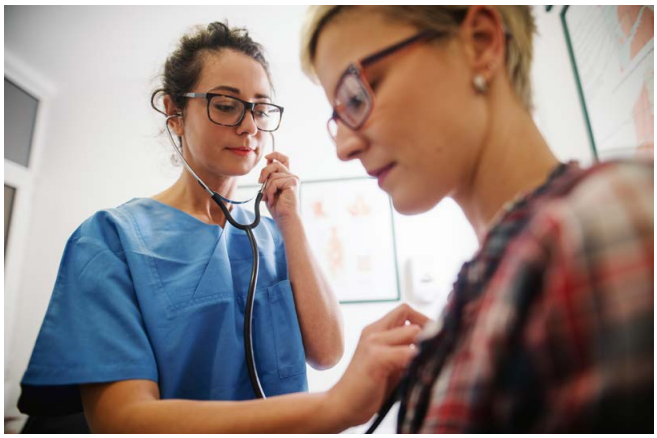
Involving the elderly in policies regarding independent living for longer
Living independently at home for a long period of time requires adjustments to homes, the living environment and available facilities. The citizens in the Citizen Council emphasised that the elderly themselves are often best positioned to tell what they need for this. It is therefore important to map out their needs and priorities so that they can take more control themselves. It goes without saying that in a diverse society these needs are not the same for everyone. Therefore, a balance is needed between personal wishes and customisation on the one hand and what can be implemented as a general solution on the other.

Digital care such as e-health and AI solutions for self-management in case of illness, access to one's own health data and digital contact with healthcare providers offer many opportunities (152). However, not everyone will be able to work with this. So that is a point of attention. Assistance aimed at rehabilitation after a period of illness and help in strengthening self-reliance in the event of limitations, for example through occupational therapy, are important. This also keeps people in control for longer.

Creating new life-long forms of housing
We experience a growing need for forms of housing for the elderly, such as life-long homes, multi-generational homes (kangaroo homes) or clustered living (for example in a dedicated courtyard where elderly people live together and support each other if necessary). This requires adjustments in the regulations, for example by making it easier to split up homes, building extensions on private property or facilitating citizen initiatives for clustered living. Home automation such as fall sensors and other smart home adaptations are necessary so that people can live independently for longer (153). In addition, more care and support are needed in the neighbourhood. In the housing policy, attention must be paid to groups with vulnerable health or who are in a vulnerable social position.

Paying attention to the fourth stage of life
Self-direction is also important in the fourth stage of life. It is necessary to pay attention to the last period of life before that fourth stage of life commences, which is when people become more vulnerable and often face multiple problems. Here too, attention must be paid to matters outside of healthcare, such as social networks, housing and relaxation. Quality of life should be paramount towards a dignified end to life. This requires that people have given due consideration about proper care and support in the final stage of their lives. General practitioners are already paying attention to this by discussing with elderly patients and their loved ones their wishes regarding the end of life.

Challenge: Tackling health inequalities



Health inequalities in the Netherlands are significant. We face a 14-year disparity in healthy life expectancy (or 'life expectancy in perceived health') between different educational groups. Health inequalities do not appear to be increasing, but they are not decreasing either. However, there is more going on than just inequalities between educational groups. Financial insecurity in particular plays a role, often in combination with poorer living or working conditions. Improving financial security for groups that are struggling is therefore important. In addition to a national policy, this also requires local policies aimed at improving social and economic conditions. Individual measures to address an unhealthy lifestyle will not work well if no attention is paid to someone's housing, working and living conditions. Customisation is required. Reducing health inequalities is complex and requires different solutions for e.g. older single men on low incomes than for young families in poverty.

Options for action

(Stronger) focus on integrated prevention
We know that an unhealthy lifestyle is more than an individual choice. Especially for people in a vulnerable position, healthy living is not a given. In order to promote a healthy lifestyle, we need to make work of integrated prevention, in addition to programmes that focus on individual lifestyle factors such as quitting smoking. This means that underlying social problems, such as debt, an unfavourable housing situation and stress, are tackled in a coherent manner. Only this will create the necessary room to work on a healthy lifestyle. Integrated prevention also means: starting with people's concerns and needs. These may include concerns and needs related to people's well-being or social cohesion. Municipalities, community workers, local aid workers and healthcare providers are already making a significant contribution to this through local initiatives and pilots, but this also requires maintaining the momentum. At a national level, collaboration between different ministries is necessary to improve public health through integrated prevention in the long term.

Twenty-five years of investing in liveability and safety in Heerlen-Noord
Heerlen-Noord is an area with many social, spatial and economic challenges. Over the next 25 years, investments will be made in liveability and safety through the National Programme Heerlen-Noord. Health will be one of the five central themes. The focus is primarily on youth to facilitate a healthy start from birth. Collaboration exists with all parties in the area and with local residents. The five themes of health, safety, learning, working and living cannot be seen separate from each other. It is precisely that coherence that makes the programme strong. Statistics Netherlands (CBS) keeps track of the results on a dashboard with indicators. The National Programme Heerlen-Noord is part of the National Programme for Liveability and Safety (154, 155).

Providing accessible advice and assistance with healthy living
Places can be set up in communities where accessible advice is provided, for example to answer health questions from residents. This also offers opportunities to identify problems and thus improve people's physical and mental health. Attention being paid to social aspects is important as well, such as loneliness or financial worries. This also works the other way around. For example, by paying attention to people's health and health literacy when providing debt assistance and other income support. This at the same time improves people's financial security. Better health increases the possibility of acquiring a better income position. The idea that members of the Citizen Council put forward is that people can go to these kinds of places themselves. But of course they can also be referred there by an aid worker or healthcare provider. Accessibility and recognisability are particularly necessary to reach groups with major health inequalities. The municipal health services can play an important role in this. The social domain can contribute to this as well.

Strengthening and consolidating the community-oriented approach
In this approach, health is linked to quality of life, social cohesion and a healthy physical living environment. A healthy, safe, exercise-friendly and easily accessible living environment with a suitable housing supply increases the opportunities for healthy behaviour and social cohesion in the neighbourhood. Investing in customised social activities, such as a community centre or community garden, in consultation with residents will help achieve that. Experiencing a sense of connection with neighbours leads to better perceived health. The proximity of healthcare facilities such as a general practitioner or community clinic also contributes. To enable local customisation, space must be created in budgets and regulations at national level.

Challenge: investing in a healthy youth

Youth in general are resilient. Yet there are concerns about the physical and mental health of young people. Their current lifestyle and health can have an impact in the future. More and more young people are overweight at an increasingly younger age. This has long-term health consequences, such as diabetes, cardiovascular disease and cancer. Being overweight is not an isolated problem, but is influenced by many factors such as family circumstances, the food environment, lack of exercise and a sedentary lifestyle. In addition, many young people still take up smoking or vaping.

The mental health of young people has been declining for a number of years now. During the corona pandemic, this trend temporarily accelerated. Most young people recovered after the pandemic, although the downward trajectory remains visible. For some young people, mental health has not yet recovered to pre-pandemic levels.

Mental health problems in childhood increase the risk of mental health problems later in life. Yet mental problems in young people also affect their school performance and subsequent success in the labour market. The health of young people today is therefore important for their well-being and their social position in later life. Moreover, young people shape the future of our society, as residents, but also as parents, employees and as informal carers.

Options for action

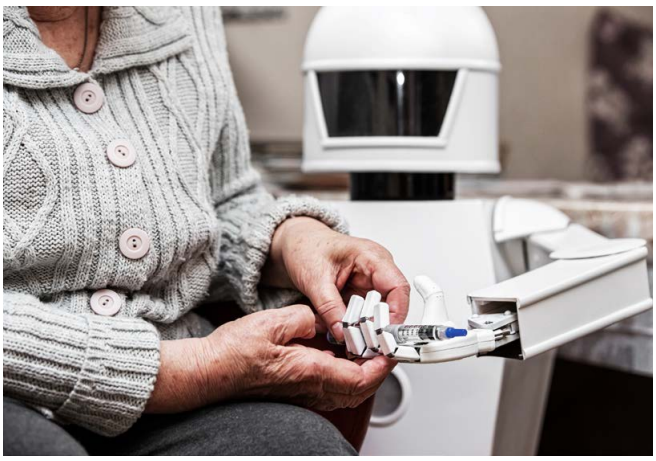
Aiming for health literacy and resilience among youth
By ensuring a conscious approach to health from the very first years of life and providing tools for healthy behaviour, young people are given a foundation for making healthier choices. Resilience is important in dealing with difficulties in life. Although not everyone can easily develop and utilise such skills. It matters what situation someone grows up in. The Solid Start programme is an approach that focuses on young children in vulnerable families. Citizens and stakeholders stated in the consultation that attention to health literacy should be included in education, but also in sports clubs and youth work for example, where a lot is possible and is happening already.

Addressing the living environment, including food supply and advertising
Commercial interests are involved in our unhealthy behaviour, the so-called commercial determinants of health. Companies make a profit from products that are unhealthy for us. Making a healthy choice is difficult in an environment with all kinds of temptations. An (advertising) ban on unhealthy products on the one hand and making healthy choices (financially) attractive on the other would help. At the same time we need to encourage healthy behaviour such as sports, exercise and healthy food. This can be achieved by making sports and healthy eating cheaper, but also by making adjustments to the environment so that it encourages healthy behaviour more than unhealthy behaviour. This therefore also means fewer points of sale of unhealthy foods. The role of social media, for example through influencers, is still a relatively unknown channel of promoting a healthy lifestyle.

Reducing perceived performance pressure in and outside education
Many young people indicate that they suffer from the pressure they experience in everyday life. It is important that performance pressure in education is reduced. In addition, education must also pay attention to maintaining a mental balance. The pressure that young people experience through social media use needs to be examined as well and, if possible, addressed. This relates to concerns and pressure due to unrealistic examples presented to young people, cyberbullying, online intimidation and addictions such as gambling. Yet social media are also important for teenagers, for example to make friends, maintain their social network and develop their identity.

Challenge: Dealing with pressure on formal and informal care

The pressure on formal and informal care continues to increase. The demand for care is increasing rapidly and is becoming more complex in nature. It is also increasingly common for people to suffer from multiple conditions simultaneously. At the same time, we can see that the supply of care is lagging behind more and more due to increasing staff shortages in formal care and an increasingly tight informal care potential. This will put great pressure on the quality and accessibility of care. This in turn could have consequences for the current high level of our healthcare. For example, around the basic healthcare package. Strict choices are necessary, but they must be choices that can count on support among the population. Opportunities will arise if policies are implemented aimed at retaining and increasing the availability and deployment of workforce. And aimed at the application of technologies that can support and, where possible, replace the supply of care. We will discuss this in more detail below.



Options for action

Investing in informal carers (social, financial and work)
Informal care has become indispensable as we can no longer do without it. In the future, even more informal care will be needed. Better (financial) support for informal carers will ensure that more people are able and willing to provide informal care. This support partly also depends on other policy sectors. For example, promoting flexible working hours, the possibility to work from home, temporary adjustments to job responsibilities or expanding paid care leave. Investing in informal carers' skills to provide care will benefit their increasing collaboration with formal healthcare providers. The digital skills of informal carers must be critically reviewed as well in this. An important point of attention in the future will remain the resilience of informal carers. Their own health is important, so that they have sufficient time and energy to provide informal care to family members, neighbours or peers. The temporarily replacement of informal carers to relieve the burden (respite care), can help in this.

Broadening the expertise of healthcare providers
There is a need to broaden the expertise of healthcare providers and invest in this. First of all, the use of healthcare technology requires digital skills. For example, how smart dispensers designed to help take medicine on time should be used. Or how sensors around the bed and in the room can be used to help monitor patients. In addition to medical, paramedical and nursing care professionals, we will also be needing for example more data specialists for this.

Secondly, knowledge and skills are required to provide intensive care for patients suffering from, for example, dementia, for patients with multiple conditions or severe disabilities and to provide palliative care. New initiatives and specialisms are important to expand and strengthen knowledge. Examples include an ambulance for the elderly or emergency care specialists for the elderly.

Finally, the collaboration between healthcare providers, informal carers and volunteers and increased self-care by patients require a great deal of expertise. The healthcare provider of the future therefore needs to be a versatile professional who can deal with new technologies, but who can also connect well with patients and informal carers.

Making choices in healthcare
The increasing divergence between the demand for care and the supply thereof requires stricter choices to be made in policy and practice. For example, limitations in the existing package of insured care, availability of treatments and deployment of scarcity of staff. Consideration will also have to be given to what belongs in collective elderly care and what people's own responsibility is therein. Such choices are not easy and also require a social debate.
A debate which we should be having starting now. In the Care Evaluation and Appropriate Use (ZEGG) programme and the movement towards Appropriate Care, patients, carers, healthcare providers, health insurers and the government work together to promote appropriate and evidence-based care. Financial incentives can help promote appropriate care, as can professional self-discipline and assessments by insurers. In the consultation room, however, it is more about making personal choices. Here the patient and doctor decide together, i.e. shared decision making. The professionalism of the doctor plays a major role in this. This is not based on policy considerations, but on the interests, needs and priorities of the patient. For example, people sometimes opt for palliative care instead of further treatment.

Deploying digital resources in healthcare
Healthcare providers will always be needed. However, in the future, more and more digital resources will have to be used, where possible, in order to provide for the demand for care. There are many possibilities for this. Appointments with a general practitioner or medical specialist can already be made digitally and many people use sites validated by doctors, such as thuisarts.nl, but much more will be possible in the future. In addition to e-health applications, the use of AI by healthcare providers and patients themselves will play an increasingly important role as well. For example, in the detection of suspicious skin lesions. Attention remains needed for easy and secure exchange of medical data. When developing new digital possibilities, it is necessary to properly involve the target groups. Providing easy access to care for people with fewer digital skills means care must be provided in keeping with their needs and capabilities. Furthermore, digital applications leading to additional healthcare use due to, for example, unjustified concern among patients, must also be prevented.

Challenge: Tackling the health impacts of climate change

The direct consequences of climate change (higher temperatures, heavy rainfall and flooding) are already visible and have an impact on health, e.g. through heat stress. The effects of climate change on health are also more indirect. For example, in terms of the availability and quality of our drinking water and food. These consequences are not new, but they are becoming increasingly urgent. Climate extremes have become the rule rather than the exception. However, the climate measures that are necessary to slow down and adapt to a changing climate also offer opportunities for the quality of the living environment and for health.

Options for action

Strengthening newly initiated climate policies: climate policies provide health benefits
Greenhouse gas emissions must be reduced to prevent further climate change. In the Climate Agreement, the Dutch government has made agreements with various parties to achieve the climate goals. Additional climate measures in addition to the Climate Agreement are needed to ensure that we achieve the climate goals for 2030 and 2050. The implementation of climate measures can also contribute to improving health. For example, cleaner air results in fewer respiratory issues and fewer cardiovascular diseases. When implementing the measures, any negative health effects of new energy sources (e.g. fire safety electric cars and noise pollution from wind turbines) must be taken into account as well.

Making healthcare more sustainable
The healthcare sector is a major contributor to greenhouse gas emissions. In the Netherlands, healthcare accounts for 7 percent of greenhouse gas emissions. Many healthcare providers are therefore working together in the Green Deal for sustainable healthcare to reduce the environmental pressure caused by healthcare. At the same time, attention is paid to improving care. For example, this involves reusing materials, thereby producing less waste, but possibilities to reduce medicine residues in wastewater are also being investigated. Healthcare institutions and their local partners such as municipalities and municipal health services can also do a lot to improve the living environment in the immediate vicinity of healthcare institutions. This includes improving the accessibility of healthcare facilities via public transport and bicycle.

Making the living environment climate-proof and healthy
If we design our living environment differently and start living differently, we will be better prepared for the consequences of climate change. Measures are already being taken in many places in the Netherlands to provide protection against the consequences of climate change. Examples of this include widening our rivers and providing more greenery and water in cities and villages. The construction of greenery and water provides more cooling and therefore less heat stress. More space for greenery and water also offers opportunities for physical activity, relaxation and interaction. When building homes and (re)designing the living environment, additional attention must be paid to the specific needs of the elderly, young people and residents of less prosperous areas or old homes. In addition, when developing green areas, unintended side effects must be taken into account as well, such as an increase in allergenic pollen or the risk of infectious diseases. This requires close collaboration between designers and health experts from the outset of the planning process, as well as involving local residents, as intended in the Environmental Act.

Promoting behavioural change to better deal with climate change

We need to get used to protecting ourselves from the heat and other extreme weather. The National Heatwave Plan makes people more aware of the need to adapt to the heat and to care for the vulnerable. This seems to be bearing fruit: heat-related mortality has decreased since the introduction of the Heatwave Plan in 2010. Adjustments to the living environment to better deal with climate change include, for example, more greenery and shady areas and less urbanisation. Installing facilities dispensing sunscreen at swimming areas or events is also important to support behavioural change.

Adapting our behaviour is necessary to prevent further climate change. Examples include saving energy, eating less meat, flying less and travelling by public transport or bicycle instead of by car. However, this change in behaviour needs to be encouraged. The majority of Dutch residents want to change their behaviour, but actually doing so and maintaining it is not easy. A package of measures that make the desired change in behaviour affordable and attractive is most effective. This involves a combination of financial measures, regulations and adjustments to the design of the living environment. Effective behavioural policy also requires taking into account different target groups, especially people in vulnerable positions. Linking up with their priorities, capacities and practical possibilities is important (156, 157).

Firm public health policy needed

The above challenges are urgent and related. The challenge of 'being better prepared for a further ageing society' also means that there must be greenery and water in communities and cooling in homes. The options for action as mentioned under the challenges can therefore contribute to multiple challenges. Much of the options for action require financing from public funds. This calls for a broader approach to public health policy considerations.

Policies in other areas, such as the climate policy, housing policy and education policy can also contribute to tackling public health challenges. And this also works the other way around: a healthy population is important for the labour market, for example.

Important legal frameworks are already in place. Examples include the Public Health Act, the Environmental Act and the Social Support Act. In addition, a wide variety of initiatives are currently in place aimed at improving public health. Municipalities, municipal health services and regional healthcare providers are taking important steps in the context of these initiatives. Many partners from health institutes, knowledge institutes, healthcare and the business community have joined these initiatives (Table 6.2). Many initiatives also pay attention to citizen participation. However, interconnecting these ongoing initiatives and securing their sustainable embedding is necessary (158).

We need a firm health policy with a number of clear characteristics:

- **A long-term approach.** Improving health requires long-term investments, because investing in health today will yield significant benefits later. This applies to policies aimed at young people, but also to policies aimed at adults with a focus on the third and fourth stages of their lives. Continuity and predictability are more effective than temporary initiatives that succeed one after another.

- **Clarity in policy and setting concrete goals** and making these goals measurable. This allows for new policies to be tested against these goals by mapping out the health effects in advance. Instruments such as the Health Impact Assessment and social cost-benefit analyses already exist for this. These instruments can help to select measures and to map out the effects and unintended side effects of these choices. In the implementation at local level, room for customisation and flexibility in regulations is required.

- **A H*ealth in All Policies* approach.** Improving health can only be achieved by involving various policy areas. This allows to capitalise on win-win options, such as a more social, green and climate-proof living environment that actively encourages more physical activity or a shift in the demand for healthcare to the social domain. This in turn requires collaboration with all kinds of social parties at national, regional and local level, such as the business community, schools, the healthcare sector and citizens.

- **A strong public health infrastructure** for both implementation and evaluation. Health can flourish where people live, work, learn, play and care for each other. That is why local parties are essential. The municipal health services have a great deal of knowledge and expertise in the field of health and prevention. The municipalities play a pivotal role in shaping local health policy with stakeholders and residents. In order for the municipal health services and municipalities to properly carry out their tasks, they require sufficient staff and financial resources on a structural basis.

Table 6.2 Examples of current initiatives with a focus on public health, living environment and health

Initiative	Focus
Everything Is Health	Transition to a more vital Netherlands, focused on healthy behaviour in a healthy living environment.
Healthy and Active Life Agreement (GALA)	Promoting a healthy lifestyle and reducing health inequalities; creating a healthy physical living environment that invites people to exercise and interact with others; strengthening mental resilience and mental health; ageing in good health.
Green Deal Sustainable Healthcare	The Green Deal stands for care with minimal CO2 emissions and impact on the living environment, with an eye for the reuse of raw materials and materials. This way, the sector contributes to limiting the increasing demand for care and to moving towards appropriate care. The participating healthcare providers focus on improving the health and care environment of patients and employees, in addition to reducing CO2 emissions and medicine residues in wastewater and the (re)use of raw materials.
Integrated Healthcare Agreement (IZA)	Keeping healthcare accessible, of high quality and affordable for everyone, by shifting the focus from illness to health, and by seeking solutions to increasing labour market shortages and healthcare costs.
The Right Care in the Right Place (Task Force)	Promoting that all chain partners involved in providing care and support take their responsibility in improving the perceived quality of appropriate care; improving health and quality of life; keeping costs manageable.
Solid Start	The Solid Start programme aims to help (expectant) parents in vulnerable positions so that their children can start their lives as healthily as possible. Solid Start focuses on care and support for vulnerable families in the first thousand days of a child's life.
National Prevention Agreement	Reducing obesity, problematic alcohol use and smoking, with the aim of improving the health of all Dutch people.
National Programme for Liveability and Safety	Improving the quality of life and safety in the most vulnerable areas of the Netherlands within 15 to 20 years and improving the prospects of residents. By bundling the resources from the ministries involved, a coherent approach is stimulated in order to tackle problems related to education, poverty and debt, reintegration, health, early childhood development and the resilience and resistance of residents in the 20 most vulnerable urban areas.
Healthy Living Environment Programme	Promoting a healthy living environment for everyone through, among other things, further developing and unlocking knowledge, promoting collaboration between the physical and social domains and facilitating joint learning. This way, municipalities, provincial authorities and municipal health services can take health into account when developing and managing the physical environment.
Programme Green in and around the city	Making the urban environment greener, healthier and more climate-adaptive by providing guidance on how to properly safeguard greenery in and around the city, among other things. The guideline offers a set of qualitative and quantitative requirements that together ensure a healthy, green environment.
Care Evaluation and Appropriate Use Programme	Patients, carers, healthcare providers, health insurers and government work together to promote appropriate care and ensure that patients receive the best evidence-based care.
Housing, Support and Care for the Elderly (WOZO)	Shifting to support and care that adapts to the changing preferences of the elderly in order to maintain control over their own lives for as long as possible (independent, at home and with digital assistance) and to postpone serious, complex care needs for as long as possible, to ultimately promote financial and personal sustainability.

Finally

Health is one of our most priced assets. Health is not only important from an individual perspective, but also essential for our society. Good health enables people to participate in society, to work, to volunteer, to provide informal care or to prepare for a prosperous future through study. The fact that life expectancy in good health is increasing certainly contributes to this, but more is needed.

The challenges we face are large, complex and persistent. They cannot be tackled all at once, nor can they be tackled all here and now.

Insight into the future is necessary to be well prepared, but also to set priorities and make choices. Effective public health policy is based on a long-term vision, concrete goals and close coherence with other policy areas. The government's role is to take action, but it will require the commitment of citizens, social organisations and companies. Right now, we are not properly prepared for the major and urgent challenges ahead. If we want a healthy population and living environment by 2050, we need to implement and maintain a firm health policy now.

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