Norway: State of the Nation's Health

Findings from the Global Burden of Disease

Norwegian Institute of Public Health | IHME

Norway: State of the Nation's Health explores the health development Norway has experienced over the last two decades and the new challenges it faces as its population grows and ages. This report provides information about the diseases and injuries that prevent Norwegians from living long and healthy lives. It also sheds light on risk factors that cause poor health, ranging from poor diets to alcohol and drug use. Finally, the report compares Norway's health performance to that of peer countries.

Norway: State of the Nation's Health

Findings from the Global Burden of Disease

This report was prepared by the Institute for Health Metrics and Evaluation (IHME) through funding from the Norwegian Institute of Public Health.

CITATION:
Institute for Health Metrics and Evaluation (IHME). *Norway: State of the Nation's Health: Findings from the Global Burden of Disease*. Seattle, WA: IHME, 2016.

Institute for Health Metrics and Evaluation
2301 Fifth Avenue, Suite 600
Seattle, Washington 98121
USA
www.healthdata.org

To express interest in collaborating or request further information, please contact IHME:

Telephone: 1-206-897-2800
Fax: +1-206-897-2899
Email: engage@healthdata.org

Cover photo: Les Haines flickr photostream, Ålesund, Norway, June 2012

ISBN 978-0-9910735-4-2

Contents

About IHME

The Institute for Health Metrics and Evaluation (IHME) is an independent global health research center at the University of Washington that provides rigorous and comparable measurement of the world's most important health problems and evaluates the strategies used to address them. IHME makes this information available so that policymakers have the evidence they need to make informed decisions about how to allocate resources to best improve population health.

About the Norwegian Institute of Public Health

The Norwegian Institute of Public Health (NIPH) acts as a national competence institution for governmental authorities, the health service, the judiciary, prosecuting authorities, politicians, the media, and the general public on issues related to forensic science, physical and mental health, prevention of communicable diseases, and prevention of harmful environmental influences.

The NIPH is a driving force in improving the health, quality of life, and legal protection of the population. National and international research and health surveillance collaboration give valuable insight into factors that affect public health and how it can be improved.

The NIPH also collaborates with the World Health Organization (WHO), European Union (EU), European Economic Area (EEA), sister institutions, universities, organizations, and health authorities in low- and middle-income countries on global health issues.

The NIPH is placed directly under the Ministry of Health and Care Services, alongside the Norwegian Directorate of Health, the Norwegian Board of Health Supervision, and the Norwegian Medicines Agency.

The Institute has four scientific domains: Mental and Physical Health, Infection Control and Environmental Health, Health Data and Digitalization, and Forensic Sciences, plus Staff and Administration.

On January 1, 2016, the Knowledge Centre for the Health Services, the Norwegian Institute for Alcohol and Drug Research (SIRUS), and the Norwegian Scientific Committee for Food Safety (VKM) were incorporated into the Norwegian Institute for Public Health.

Our vision: Better health for all
The aim is to prevent disease.

The main goals are to:

- be prepared for acute health threats
- advise and provide services that improve public health
- have an overview of the health of the population and factors influencing public health
- gain knowledge of what causes common diseases and what gives people better health

The NIPH bases its advice and services on research and health surveillance. The work is based on these core values: *professionally sound, reliable, innovative, open, and respectful.*

Acronyms

COPD Chronic obstructive pulmonary disease

DALYs Disability-adjusted life years

GBD Global Burden of Disease

IHME Institute for Health Metrics and Evaluation

YLDs Years lived with disability

YLLs Years of life lost

Terms and definitions

Years of life lost (YLLs)

Years of life lost due to premature mortality.

Years lived with disability (YLDs)

Years lived in less than ideal health. This includes conditions that may last for only a few days, as well as conditions that can last a lifetime.

Disability-adjusted life years (DALYs)

Years of healthy life lost to premature death and suffering. DALYs are the sum of years of life lost and years lived with disability.

Risk factors

Potentially modifiable causes of disease and injury.

Healthy life expectancy

The number of years that a person at a given age can expect to live in good health, taking into account mortality and disability.

Foreword

Why are numbers and analyses from the Global Burden of Disease (GBD) study of interest for Norwegian health authorities and the Norwegian public at large?

The great advantage of the "GBD approach" to health statistics is that it combines what may be the largest global collection of health data with tailored methodology for data management and statistical analysis and presentation to produce, for 188 countries, a comprehensive overview of mortality and health loss for a detailed list of diseases, injuries, and risk factors. This report gives an overview of these results for Norway covering the period 1990-2013.

It may come as a surprise to many that an institution in another country can produce health statistics that compete with, and in several areas have clear advantages over, numbers that are estimated locally. The first and most important answer to this paradox is missing or sparse data. Most countries in the world have insufficient data to produce comprehensive health statistics. It may also come as a surprise that this is the case even for high-income countries like Norway, a country that spends significant resources on registries and health data collection. Most high-income countries have reasonably good data on mortality and causes of death. Data on diseases and conditions that cause suffering and loss of health, but do not lead directly to death, are much sparser, and are collected less systematically. For example, we do not have updated information on the occurrence of mental disorders in Norway. Also, we have a shortage of updated national data on important risk factors such as blood pressure, blood cholesterol, body mass index, diet, and other health behaviors. In these instances, having data available from all countries may improve estimation in any single country by "borrowing" numbers from neighboring countries when data are lacking or sparse.

In parallel with this publication produced by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington in Seattle, the Norwegian Institute of Public Health has produced a more detailed scientific report based on the GBD 2013 results for Norway. The Norwegian report includes contributions from more than 20 scientists from the Norwegian Institute of Public Health, not only summarizing, but also assessing the credibility of results, soundness of methods, and availability of local data sources not captured by the GBD 2013 staff and collaborators.

We look forward to continuing collaboration between our two institutions in the years to come.

We also look forward to feedback from users of the report on how we shall improve analyses of burden of disease further in the future.

Camilla Stoltenberg

Director, the Norwegian Institute of Public Health

Preface

Norway has a long history of tracking the health of its people, with clergy recording vital events as far back as the 1600s. As a compliment to this tradition, the Global Burden of Disease (GBD) study provides policymakers with key insights to reduce premature death and disability by providing annual updates about the health challenges that countries face. Just as economic data help Norway's Ministry of Finance assess the state of the economy and make adjustments to promote growth, GBD provides a road map to help policymakers align their health systems with patterns of disease burden in the country. It also helps them identify priority areas for intervention, such as tobacco smoking, poor diets, and drug and alcohol use.

As GBD has evolved since the 1990s, Norwegians have been crucial to its development. When I first began working as the Director of the Evidence and Information for Policy Cluster at the World Health Organization (WHO), the Director-General at the time, former Prime Minister Gro Harlem Brundtland, provided the leadership and resources to ensure that GBD served as an independent and rigorous accounting of the world's health problems, protected from the problematic political and monetary motivations that biased other studies produced by WHO.

With the study now coordinated by the Institute for Health Metrics and Evaluation (IHME), GBD researchers are collaborating with the Norwegian Institute of Public Health (NIPH) to strengthen it. Not only are NIPH researchers helping bolster the accuracy of GBD results for Norway, they are boosting the rigor of the broader study, especially the estimates of disease burden from dementia and neck pain. NIPH researchers have also helped revolutionize the way the world visualizes GBD results. These contributions have enhanced this report as well as the GBD data visualization tools online.

More than 1,000 collaborators in 114 countries contributed to the Global Burden of Disease 2013 study. These collaborators have enriched GBD research by vetting the methodology and results and identifying important datasets to fill gaps. GBD collaborators have also boosted GBD's status as a global public good, raising awareness of the study's findings in their home countries and making it an even better tool for local health policymaking.

In the future, the collaboration between IHME and NIPH will yield estimates of disease burden at the local level in Norway. In addition to its collaborations with the NIPH, IHME is also working with researchers in China, Australia, India, Indonesia, Mexico, Saudi Arabia, and the United Kingdom to produce local-level disease burden estimates to inform local health planning decisions.

It is my sincere hope that the findings presented in this report can be used to improve Norwegians' quality of life, leading to longer and healthier lives for all.

Christopher J.L. Murray
Co-founder of the Global Burden of Disease and IHME Director

Acknowledgments

Norway: The State of the Nation's Health is the result of collaboration between the Norwegian Institute of Public Health and IHME.

In particular, we thank Ann Kristin Knudsen, Christina Rolfheim-Bye and Stein Emil Vollset from the Norwegian Institute of Public Health for providing critical input and support.

Findings presented in this report came from the Global Burden of Disease (GBD) study coordinated by IHME, a multipartner research enterprise from which comprehensive and comparable annual estimates of disease burden by country, age, and sex are produced for more than 300 causes of disease and injury and 79 risk factors. IHME is the coordinating center for more than 1,500 GBD experts from 120 countries. Data are from papers published in *The Lancet* that are part of the 2013 GBD update.

The research presented in this report is based on the following studies published in *The Lancet:*

- Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. 2015 Jan; 385(9963):117–171.
- Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. Published online June 8, 2015. http://dx.doi.org/10.1016/S0140-6736(15)60692-4.
- Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990–2013: quantifying the epidemiological transition. Published online August 26, 2015. http://dx.doi.org/10.1016/S0140-6736(15)61340-X.
- Global, regional, and national comparative risk assessment of 79 behavioral, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. Published online September 11, 2015. http://dx.doi.org/10.1016/S0140-6736(15)00128-2.

At IHME, Christopher Murray, Theo Vos, and William Heisel provided leadership in overseeing the creation of this report. Caitlyn Steiner gave crucial program management support. Michael MacIntyre, Kelly Bienhoff, and Jamie Schoenborn provided strategic guidance and operational support for launching the project.

Analyses and data collation were conducted by Ryan Barber. Kevin O'Rourke provided overarching production support and content review, Adrienne Chew edited the report, and Michelle Subart fact-checked it. Dawn Shepard served as the report's graphic designer. This report was written by Katherine Leach-Kemon.

Funding for this report came from the Norwegian Institute of Public Health.

The Global Burden of Disease at a glance

About the Global Burden of Disease

The Global Burden of Disease (GBD) study is a powerful platform for understanding the main drivers of poor health at international, national, and local levels. Coordinated by the Institute for Health Metrics and Evaluation (IHME), GBD measures all of the years lost when people die prematurely or suffer from disability. It estimates healthy years lost from over 300 diseases, injuries, and risk factors from 1990 to 2013. The GBD findings are available for 188 countries.

GBD results can also be viewed through publicly accessible visualization tools on IHME's website at http://www.healthdata.org/results/data-visualizations.

Global Burden of Disease methods

GBD uses more than 50,000 data sources from around the world to estimate disease burden. For Norway, GBD researchers estimate child and adult mortality using data sources such as vital registration systems as a first step. Years lost due to premature death from different causes are calculated using data from vital registration with medical certification of causes of death. Years lived with disability are estimated using sources such as published studies on disease and injuries occurrence, cancer registries, data from outpatient and inpatient facilities, and direct measurements of hearing, vision, and lung function. Once they have estimated years lost to premature death and years lived with disability, GBD researchers sum the two estimates to obtain disability-adjusted life years. Finally, researchers quantify the amount of premature death and disability attributable to different risk factors using data on exposure to and effects of the different risk factors. GBD researchers use advanced statistical modeling to estimate disease burden.

As with any modeled estimates, such as weather forecasts and gross domestic product data, the findings in this report have limitations, such as those stemming from poor-quality and/or missing data. In Norway, for example, data on diabetes, mental disorders, drug and alcohol use disorders, and risk factor exposures should be strengthened. The data on mental disorders are outdated, with the most recent data being from the 1990s. Data on drug and alcohol use disorders are incomplete, and Norway lacks a national system for regularly updating data on population levels of important risk factors such as body mass index, blood pressure, physical activity, blood cholesterol, and diet.

Efforts to improve data quality in Norway would boost the accuracy of GBD findings.

For more information about GBD methods, see the papers referenced in the acknowledgments section of this report. To learn more about the data sources and methodology used to generate estimates for Norway, see *Sykdombyrde i Norge 1990-2013 – Resultater fra Global Burden of Diseases, Injuries and Risk Factors Study 2013 (GBD 2013) [Disease burden in Norway 1990-2013 – Results from Global Burden of Diseases, Injuries, and Risk Factors Study 2013 (GBD 2013)]* (In Norwegian). NIPH report 2016:1. Oslo: Norwegian Institute of Public Health. That report provides ranges of possible values for different estimates of disease burden, also known as uncertainty intervals.

Utility of the Global Burden of Disease for policymaking

GBD results allow decision-makers to compare healthy years lost from fatal conditions, such as cancer, to those lost from nonfatal conditions, such as low back and neck pain. The study provides more policy-relevant information than cause of death data by shedding light on conditions that cut lives short, not just those that kill people primarily in old age. The GBD study also provides insight on potentially preventable causes of disease and injuries, known as risk factors. GBD tracks 79 risk factors, which range from poor diets and high blood sugar to unsafe water and micronutrient deficiencies. Examining the ranking of diseases, injuries, and risk factors in a country, province, or county can help policymakers decide where to invest scarce resources to maximize health gains.

The GBD approach is being applied at the local level, as seen in recent publications examining disease burden across China and the United Kingdom.

Learn more

To learn more about participating in GBD research, contact the GBD Secretariat at gbdsec@uw.edu. GBD Technical Training Workshops provide in-depth training in GBD methods, results, and data visualizations. For more information, visit http://www.healthdata.org/gbd/training.

Report highlights

Norwegians are living longer but not necessarily healthier lives

- Between 1990 and 2013, Norway's life expectancy increased by five years for males and by four years for females. However, not all of these additional years of life are spent living in good health.
- Compared to other countries, Norway had the 15th-highest life expectancy in the world. Norway's life expectancy was higher than that of countries such as the United Kingdom, Germany, and Denmark, but lower than in countries such as Andorra, Japan, Iceland, and Sweden.

Progress and challenges

- People in Norway are living longer today than two decades ago. The main reason for this is that fewer people die from causes such as cardiovascular diseases, suicide, road injuries, and lower respiratory infections.
- In contrast to other disease trends in Norway, early death from lung cancer, Alzheimer's disease, colorectal cancer, chronic obstructive pulmonary disease (COPD), and drug use disorders rose between 1990 and 2013. Early death occurs when someone dies before attaining the highest life expectancy seen in their age group in the world.
- As Norwegians live longer, more suffer from disabling conditions such as low back and neck pain, skin diseases, and vision and hearing loss.

A fuller understanding of Norway's health problems

- To gain a clearer picture Norway's most important health problems, it is essential to compare the impact of different diseases and injuries by taking into account any year that is lost from dying early or suffering from a disability. Using this approach reveals that a nonfatal disease, low back and neck pain, was the single most important health problem in the country in 2013, even surpassing major killers such as ischemic heart disease, Alzheimer's disease, stroke, and lung cancer.

Preventing death and suffering

- Risk factors are key drivers of the diseases and injuries that kill people prematurely. By addressing these risk factors, much of Norway's disease burden could be reduced. Up to 100,000 years of life could be saved if Norwegians ate healthier diets. By reducing tobacco use, Norway could save as many as 95,000 years of life.

Comparing Norway to its peers

- Compared to 21 of its peer countries, Norwegians ages 15 through 49 have the seventh-lowest probability of death behind Iceland, Switzerland, Sweden, Italy, the Netherlands, and Japan.
- Comparing rates of early death across 21 of Norway's peer countries reveals that it performed significantly better than average for ischemic heart disease, lung cancer, stroke, road injuries, congenital anomalies, and breast cancer, but significantly worse for colorectal cancer, drug use disorders, prostate cancer, and falls. For some diseases and injuries, countries such as Switzerland, Japan, Italy, and the United States performed better than Norway.

Norwegians are living longer but not necessarily healthier lives.

In Norway, life expectancy for men and women has risen since 1990 (Figure 1a). Life expectancy increased by five years for males (74 years in 1990 to 79 years in 2013) and four years for females (80 years in 1990 to 84 years in 2013) between 1990 and 2013. During this period, the gap between male and female life expectancy narrowed, decreasing from six years in 1990 to five years in 2013.

Although Norwegians born in 2013 can expect to live longer lives than those born in 1990, not all of those additional years gained will be healthy ones. The number of years spent living in full health is known as healthy life expectancy. On average, a Norwegian male born in 2013 will live 69 healthy years (Figure 1b). Females born in 2013 can expect 72 healthy years on average.

Healthy life expectancy in Norway did not increase as much as life expectancy, rising four years for males and three years for females between 1990 and 2013. These trends illustrate that the Norwegian health system, like all countries in the world, has had more success at prolonging life than reducing suffering.

The leading causes of disability in Norway are discussed elsewhere in this report.

Although Norwegians born in 2013 can expect to live longer lives than those born in 1990, not all of those additional years gained will be healthy ones.

Figure 1a

Life expectancy among males and females, Norway, 1990–2013

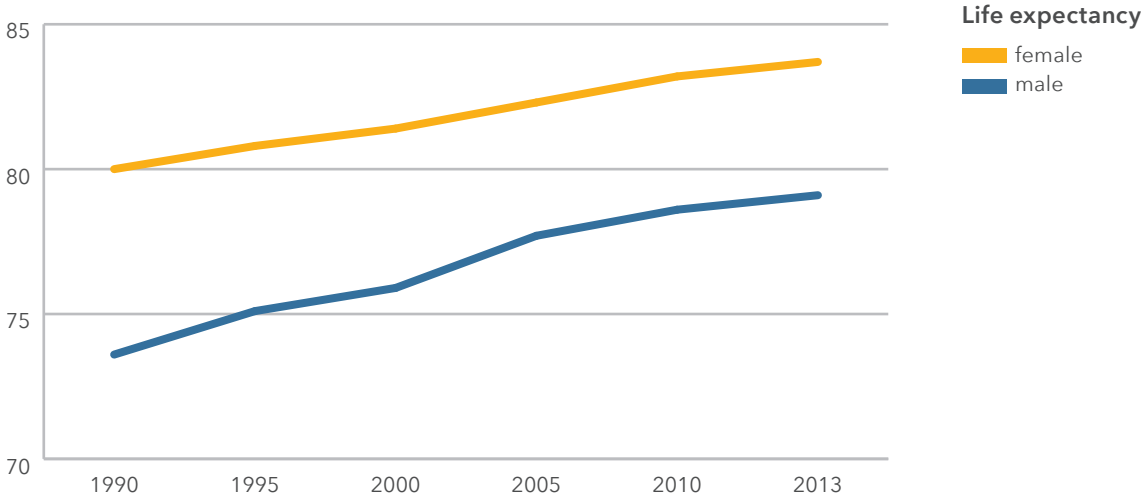
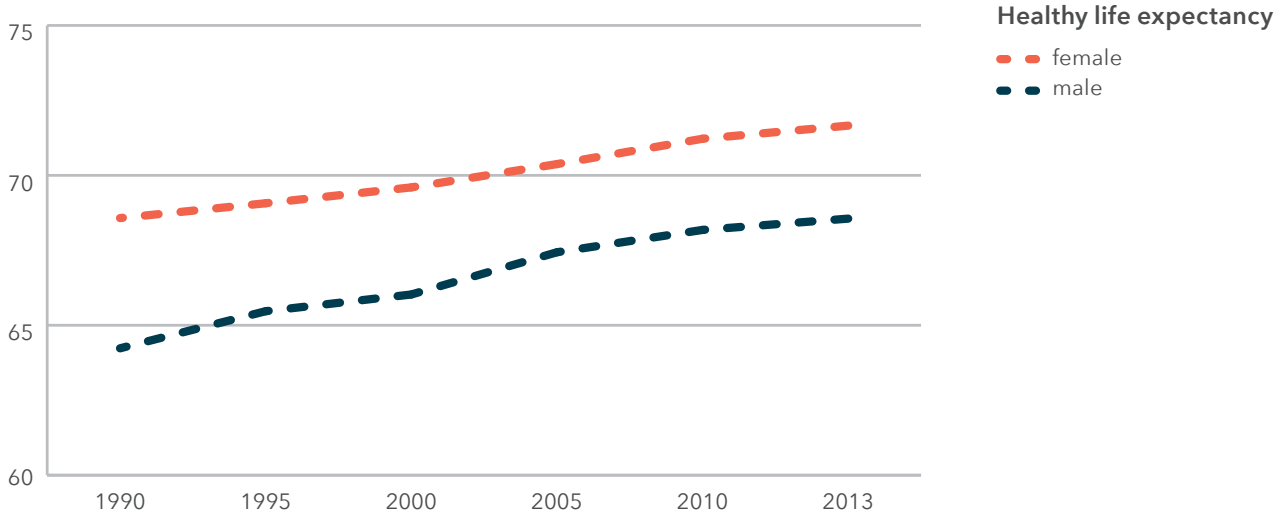


Figure 1b

Healthy life expectancy among males and females, Norway, 1990–2013



People in Norway are living longer today than two decades ago because fewer lives are cut short by causes such as cardiovascular diseases, suicide, road injuries, and lower respiratory infections.

Table 1 compares life expectancy and healthy life expectancy in Norway to that of other countries. As of 2013, Norwegians had the 15th-highest life expectancy in the world for males and the 16th-highest life expectancy for females. Countries such as Andorra, Japan, Iceland, and Sweden had higher life expectancies than Norway. On the other hand, Norway's life expectancy was higher in 2013 than in other countries, including the United Kingdom, Germany, and Denmark.

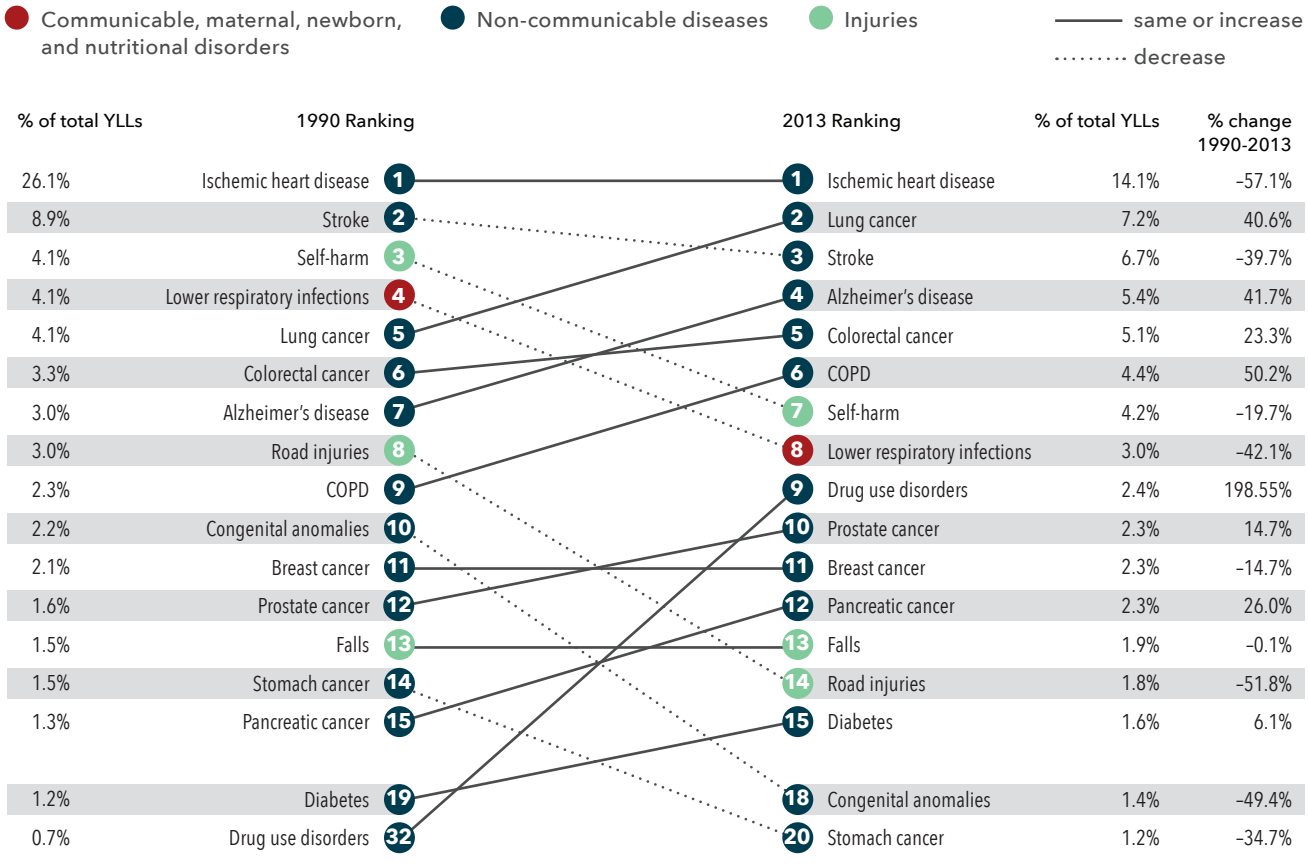
Globally, Norway's performance in healthy life expectancy was better than life expectancy. Healthy life expectancy in Norway ranked 10th for females and 13th for males. Norway's healthy life expectancy was higher than that of countries such as Sweden, Finland, and Denmark, but lower than in Japan, Singapore, and Iceland.

Progress and challenges

While Norway has moved closer to achieving the goal of a long and healthy life for all inhabitants, many challenges remain. Understanding the health progress the country has made as well as the problems it faces is essential for health planning and policymaking.

People in Norway are living longer today than two decades ago because fewer lives are cut short by causes such as cardiovascular diseases, suicide, road injuries, and lower respiratory infections. Figure 2 shows how the leading causes of early death have changed between 1990 and 2013. For example, suicide (self-harm) was the third-leading cause of early death in 1990 but dropped to seventh place in 2013. During this same period, road injuries fell from eighth place to 14th place, and lower respiratory infections shifted from fourth to eighth place. The introduction of numerous evidence-based interventions has reduced early death from road injuries. These interventions are described in Box 1.

Figure 2
Leading causes of early death (YLLs) and percent change, both sexes, Norway, 1990–2013



Note: COPD = chronic obstructive pulmonary disease

Table 1

Top 20 countries with the highest life expectancy and healthy life expectancy in the world, 2013

Females

	Life expectancy		Healthy life expectancy
1	Andorra – 86.7	1	Japan – 75.6
2	Japan – 86.4	2	Andorra – 73.4
3	France – 84.9	3	Singapore – 73.4
4	Switzerland – 84.8	4	France – 72.3
5	Iceland – 84.8	5	Cyprus – 72.2
6	Cyprus – 84.7	6	Iceland – 72
7	Italy – 84.6	7	South Korea – 72
8	Spain – 84.4	8	Spain – 71.8
9	Malta – 84.4	9	Israel – 71.7
10	Singapore – 84	**10**	**Norway – 71.7**
11	Israel – 84	11	Taiwan – 71.7
12	Australia – 84	12	Italy – 71.4
13	Sweden – 83.9	13	Slovenia – 71.4
14	Finland – 83.8	14	Switzerland – 71.2
15	South Korea – 83.7	15	Malta – 71.2
16	**Norway – 83.7**	16	Austria – 71.2
17	Canada – 83.4	17	Canada – 71
18	Qatar – 83.1	18	Maldives – 71
19	Luxembourg – 83.1	19	Brunei – 71
20	Germany – 83.1	20	Sweden – 70.9

Males

	Healthy life expectancy		Life expectancy
1	Japan – 71.1	1	Qatar – 81.2
2	Singapore – 70.7	2	Andorra – 80.9
3	Andorra – 69.9	3	Iceland – 80.8
4	Iceland – 69.7	4	Switzerland – 80.5
5	Israel – 69.5	5	Israel – 80.3
6	Qatar – 69.2	6	Japan – 80.1
7	Cyprus – 69.2	7	Malta – 79.8
8	Italy – 69.1	8	Singapore – 79.7
9	Canada – 69.1	9	Australia – 79.7
10	Malta – 68.8	10	Cyprus – 79.6
11	Brunei – 68.8	11	Sweden – 79.6
12	Switzerland – 68.6	12	Italy – 79.5
13	**Norway – 68.6**	13	Canada – 79.4
14	Maldives – 68.6	14	Kuwait – 79.4
15	Sweden – 68.5	**15**	**Norway – 79.1**
16	Kuwait – 68.5	16	United Kingdom – 79.1
17	United Kingdom – 68.5	17	Luxembourg – 79.1
18	Austria – 68.5	18	Spain – 79
19	Australia – 68.4	19	Netherlands – 78.7
20	Spain – 68.4	20	New Zealand – 78.6

Note: Data shown in this table reflect life expectancy and healthy life expectancy at birth.

As Norwegians live longer than before, they increasingly suffer from different disabling conditions. This trend has important implications for the health system, which must care for the growing number of patients.

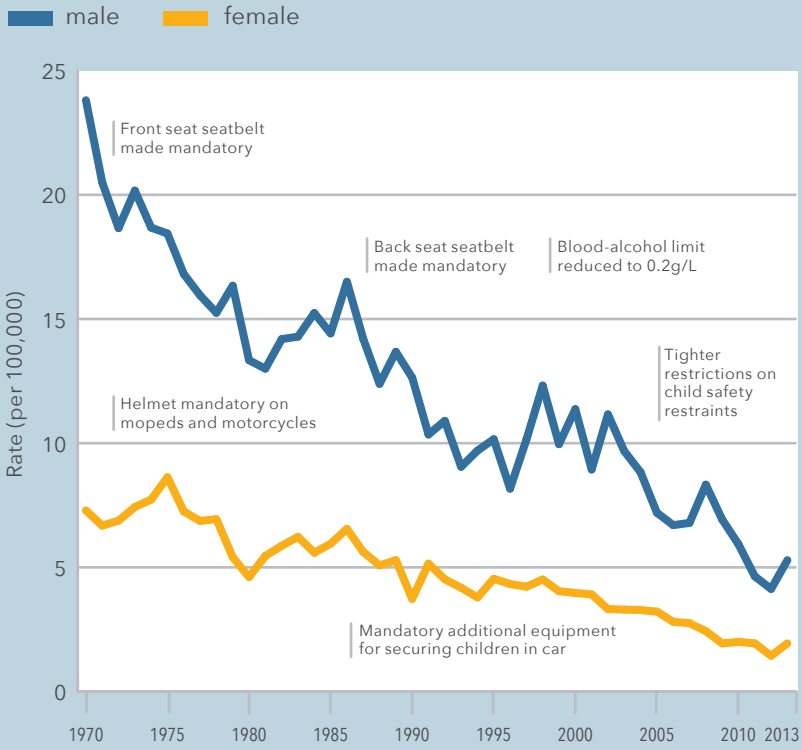
Figure 3 shows how causes of early death differ across age groups in Norway. Unintentional injuries are a leading cause of early death among 1- to 4-year-olds while self-harm and violence, transport injuries, and mental and substance use disorders are major causes among young adults. Cancer and cardiovascular diseases cut many lives short in middle-aged and older adults.

As Norwegians live longer than before, they increasingly suffer from different disabling conditions. This trend has important implications for the health system, which must care for the growing number of patients.

For example, low back and neck pain was the leading cause of disability in 2013 (Figure 4). In the Global Burden of Disease (GBD) study, disability includes any short- or long-term suffering and takes into account the severity of a given disease or injury. The number of years Norwegians spent living with disability from low back and neck pain rose 24% between 1990 and 2013. A recent study found that low back and neck pain were the most common diagnoses among patients and the top reason for seeking health care in the country (see Box 2, p.18).

BOX 1
Reducing deaths from road injuries

Death rate due to road injuries by sex and intervention, Norway, 1990–2013



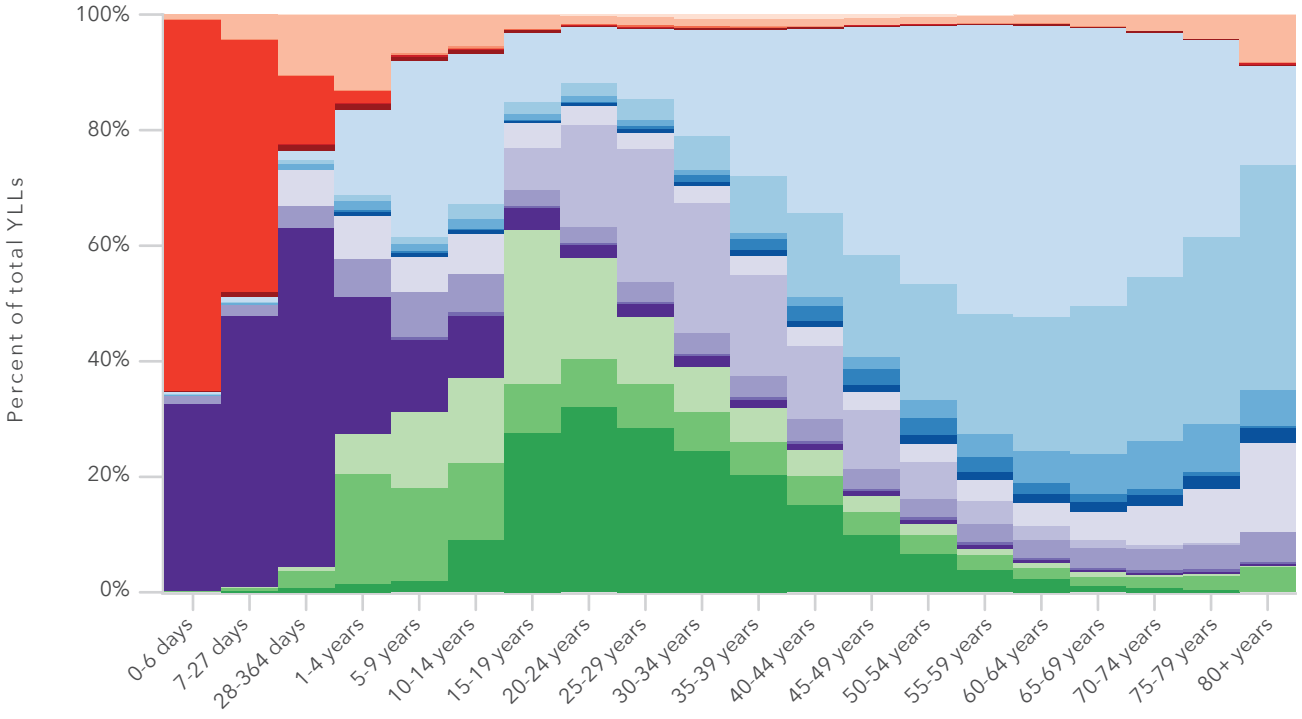
Since the 1970s, road injury death rates have declined steadily. This reduction has been driven by a wide range of interventions targeting road safety. Examples of these interventions include mandatory use of safety belts in car front seats (1975) and back seats (1985), mandatory use of helmets on mopeds and motorcycles (1979), extensive driver training, improved medical treatment of road injuries, and enhanced safety of motor vehicles and roads. In 1936, Norway was the first country to introduce a prescribed blood-alcohol limit when using motor vehicles. Over the years, the limit has been gradually reduced. Today, Norway has one of the strictest limits in Europe, with a blood alcohol concentration (BAC) limit of 0.02 g/L. In contrast, the BAC limit is 0.08 g/L in England, Northern Ireland, and Wales, and 0.05 g/L in France and Spain.

Sources:
GBD 2013.

Norwegian Institute of Public Health. *Folkehelserapporten 2014 [The Public Health Report 2014].* Oslo/Bergen: Norwegian Institute of Public Health, 2014.

Figure 3

Percentage breakdown of total early death (YLLs) by age group, both sexes, Norway, 2013



Note:

LRI = lower respiratory infections

NTDs = neglected tropical diseases

urog = urogenital diseases

endo = endocrinological disorders

- HIV/AIDS & tuberculosis
- Diarrhea/LRI/other
- NTDs & malaria
- Maternal disorders
- Neonatal disorders
- Nutritional deficiencies
- Other communicable, maternal, newborn, and nutritional disorders
- Cancers
- Cardiovascular diseases
- Chronic respiratory diseases
- Cirrhosis
- Digestive diseases
- Neurological disorders
- Mental & substance use disorders
- Diabetes/urog/blood/endo
- Musculoskeletal disorders
- Other non-communicable
- Transport injuries
- Unintentional injuries
- Self-harm & violence
- War & disaster

Figure 4

Leading causes of disability (YLDs) and percent change, both sexes, Norway, 1990–2013

Communicable, maternal, newborn, and nutritional disorders · Non-communicable diseases · Injuries · same or increase · decrease

% of total YLDs	1990 Ranking	2013 Ranking	% of total YLDs	% change 1990-2013
19.0%	1 Low back & neck pain	1 Low back & neck pain	19.7%	24.0%
6.5%	2 Depressive disorders	2 Anxiety disorders	6.2%	20.3%
6.3%	3 Falls	3 Depressive disorders	6.2%	13.3%
6.2%	4 Anxiety disorders	4 Skin diseases	5.6%	22.3%
5.5%	5 Skin diseases	5 Sense organ diseases	4.9%	14.4%
5.2%	6 Sense organ diseases	6 Falls	4.6%	–12.7%
3.1%	7 Oral disorders	7 Diabetes	3.7%	72.5%
2.7%	8 Chronic kidney disease	8 Chronic kidney disease	3.0%	32.7%
2.6%	9 Migraine	9 Oral disorders	2.9%	13.5%
2.6%	10 Other musculoskeletal	10 Other musculoskeletal	2.9%	31.7%
2.6%	11 Diabetes	11 Migraine	2.7%	20.6%
2.4%	12 COPD	12 Alzheimer's disease	2.4%	35.1%
2.3%	13 Iron-deficiency anemia	13 Iron-deficiency anemia	2.4%	22.0%
2.1%	14 Alzheimer's disease	14 COPD	2.4%	16.4%
1.6%	15 Asthma	15 Asthma	1.7%	28.5%

Note: COPD = chronic obstructive pulmonary disease

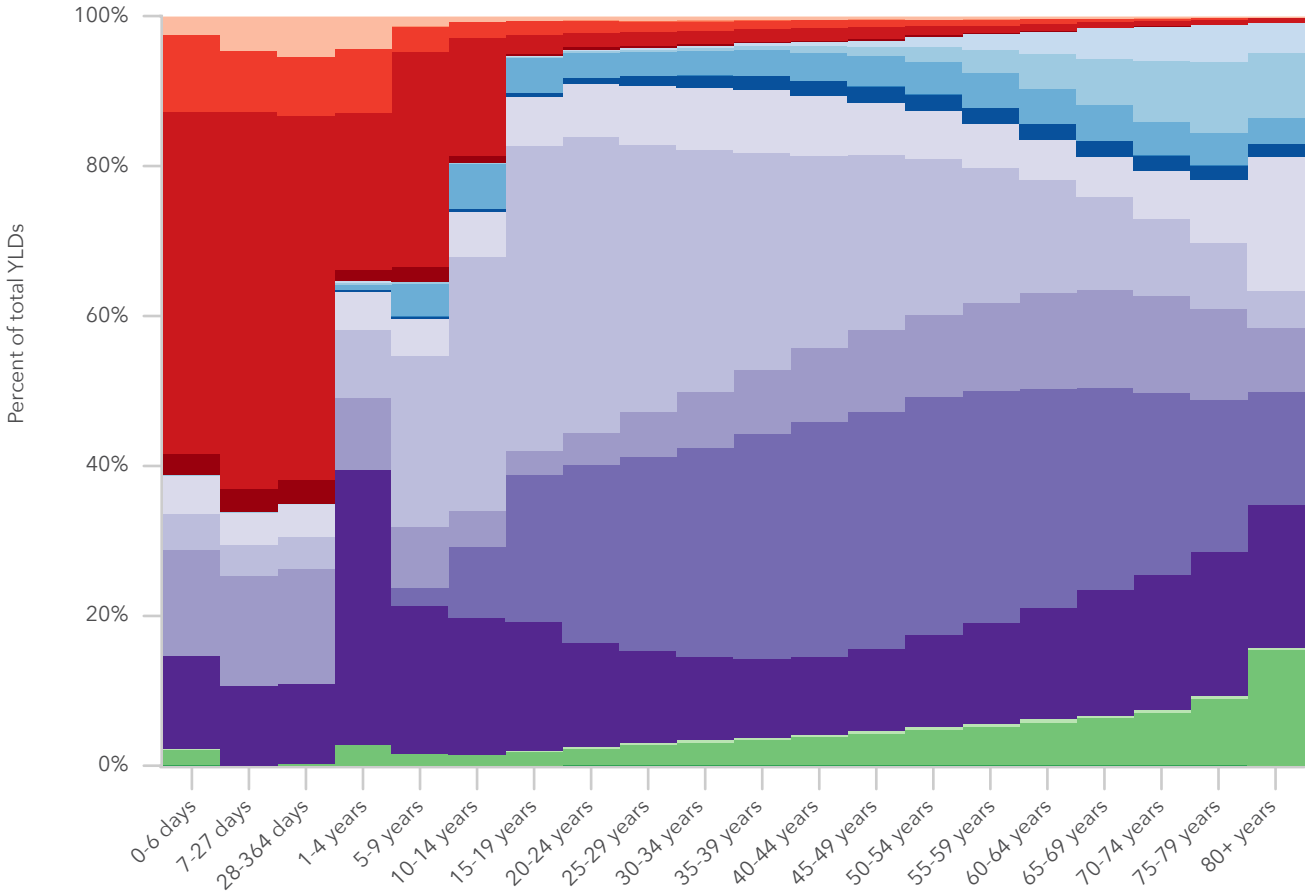
Disability from other causes also increased between 1990 and 2013, such as anxiety disorders, depression, skin diseases, and vision and hearing loss ("sense organ diseases"). Disability from diabetes rose by 73% during this period.

In contrast, disability from falls declined 13% from 1990 to 2013.

The main causes of disability differed slightly across the sexes. Notably, anxiety ranked higher in females (second) than in males (fifth), and oral disorders and COPD ranked higher in males (ninth and 10th, respectively) than in females (12th and 14th, respectively).

While disability is most common in older people, it can affect a person of any age and can interfere with children's education and adults' ability to work. Figure 5 shows how the causes of disability vary across the life span. Disability from mental illness is a major problem among children starting at age 5 and among adults (see category "mental and substance use disorders"). The largest cause of disability in Norway, low back and neck pain, tends to affect adults, especially those who are middle-aged (see category "musculoskeletal disorders").

Figure 5
Percentage breakdown of total disability (YLDs) by age group, both sexes, Norway, 2013



Note:
LRI = lower respiratory infection
NTDs = neglected tropical diseases
urog = urogenital diseases
endo = endocrinological disorders

- HIV/AIDS & tuberculosis
- Diarrhea/LRI/other
- NTDs & malaria
- Maternal disorders
- Neonatal disorders
- Nutritional deficiencies
- Other communicable, maternal, newborn, and nutritional disorders
- Cancers
- Cardiovascular diseases
- Chronic respiratory diseases
- Cirrhosis
- Digestive diseases
- Neurological disorders
- Mental & substance use disorders
- Diabetes/urog/blood/endo
- Musculoskeletal disorders
- Other non-communicable
- Transport injuries
- Unintentional injuries
- Self-harm & violence
- War & disaster

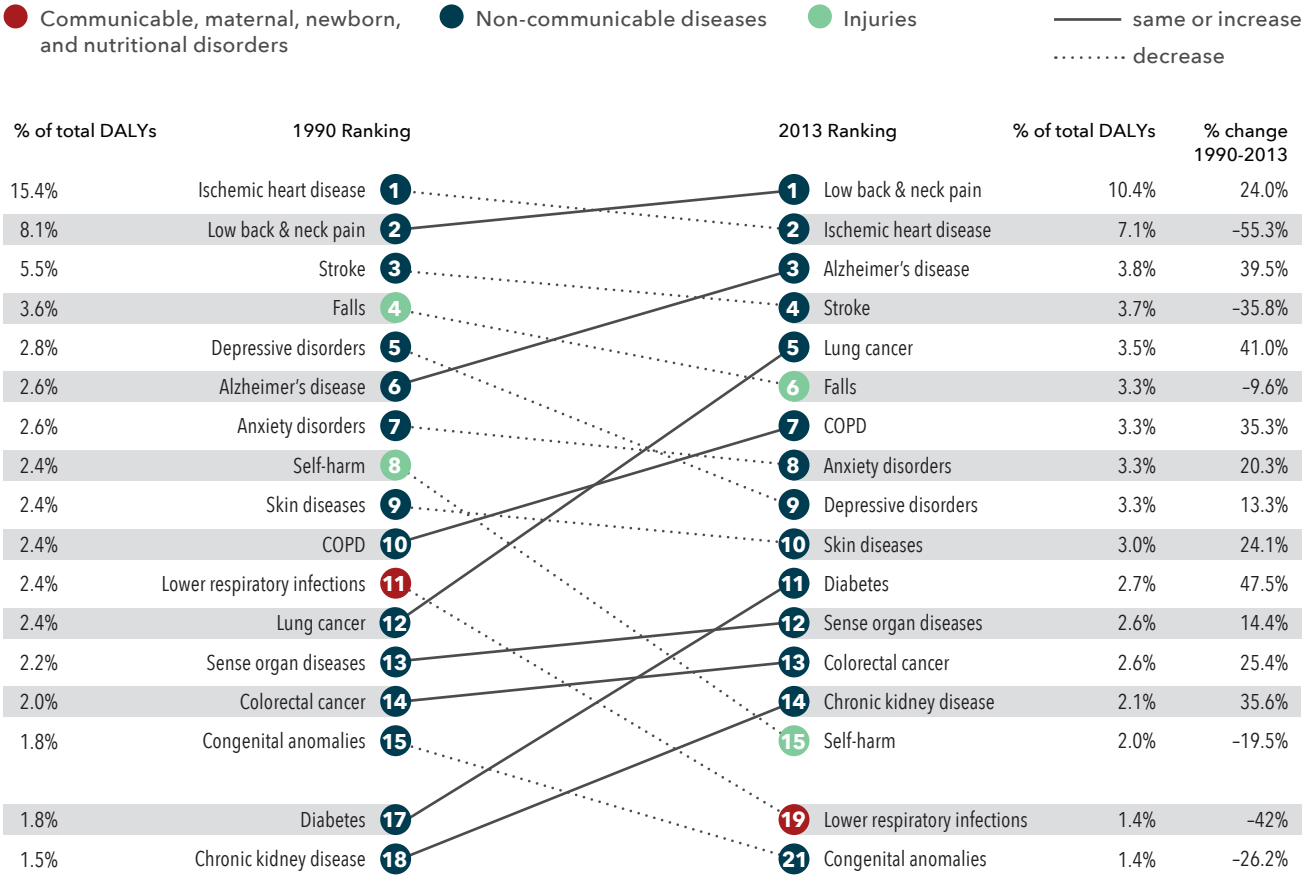
A fuller understanding of Norway's health problems

To gain a clearer picture Norway's most important health problems, it is essential to compare the impact of different diseases and injuries by taking into account not just early death, but also disability. The metric that allows us to compare years lost from early death and disability is known as "disease burden," or disability-adjusted life years (DALYs). Figure 6 provides this comparison of disease burden from different causes, revealing that low back and neck pain was the single most important health problem in the country in 2013, surpassing ischemic heart disease, Alzheimer's, stroke, and lung cancer.

Figure 6 highlights the importance of going beyond death statistics to understand a country's health problems. In addition to low back and neck pain, diseases that tend to cause disability instead of death were among the top 10 causes of disease burden: anxiety, depression, and skin diseases.

Low back and neck pain was the single most important health problem in the country in 2013, surpassing ischemic heart disease, Alzheimer's, stroke, and lung cancer.

Figure 6
Leading causes of disease burden (DALYs) and percent change, both sexes, Norway, 1990–2013

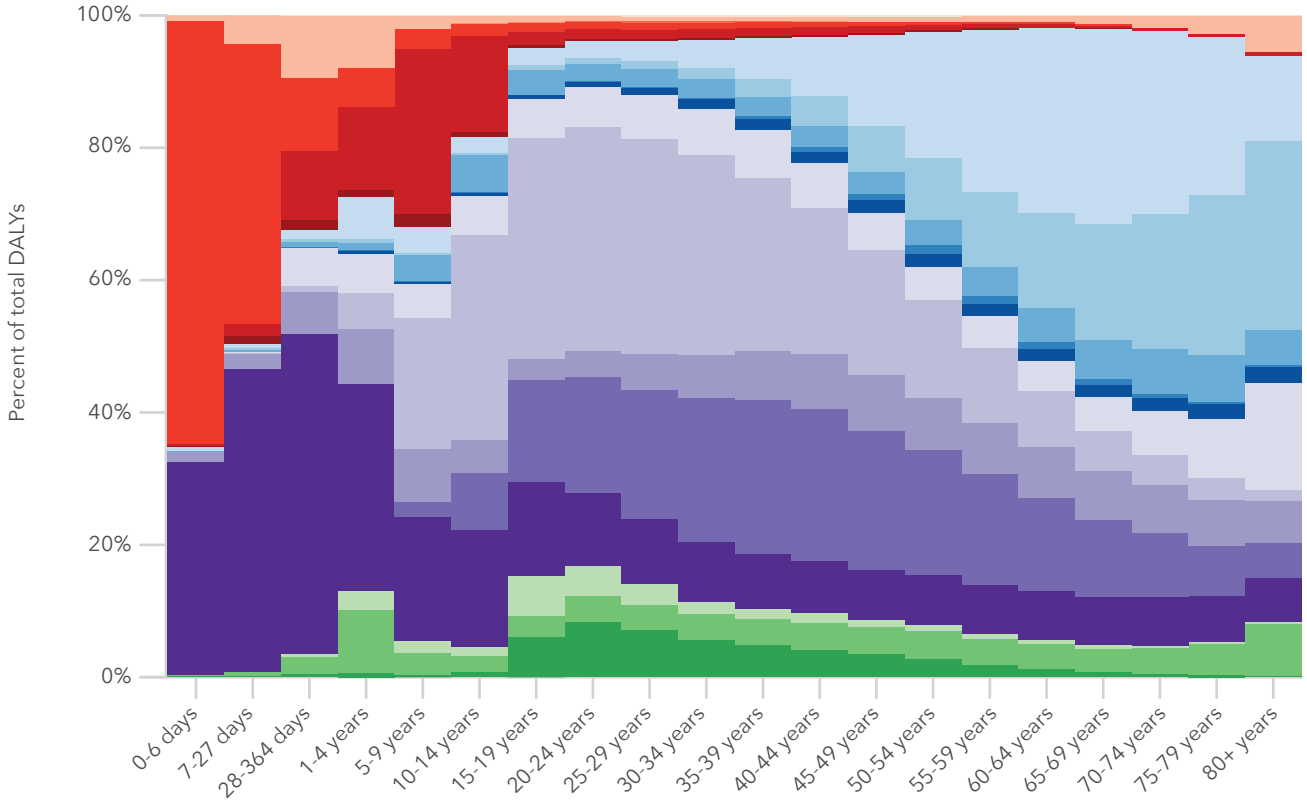


Note: COPD = chronic obstructive pulmonary disease

In 2013, lists of the leading causes of disease burden in males and females exhibited some important differences (see annex). Lung cancer ranked higher in males (third) than in females (10th). The diseases that ranked higher in females included Alzheimer's disease, anxiety, and depression, ranking third, fourth, and fifth, respectively. In males, these causes ranked seventh, 15th, and 12th, respectively.

Figure 7 shows patterns of disease burden from different causes across age groups. This information can be useful for tailoring health services and interventions to specific age groups. These trends are similar to those discussed elsewhere in this report.

Figure 7
Percentage breakdown of total disease burden (DALYs) by age group, both sexes, Norway, 2013



Note:
LRI = lower respiratory infections
NTDs = neglected tropical diseases
urog = urogenital diseases
endo = endocrinological disorders

- HIV/AIDS & tuberculosis
- Diarrhea/LRI/other
- NTDs & malaria
- Maternal disorders
- Neonatal disorders
- Nutritional deficiencies
- Other communicable, maternal, newborn, and nutritional disorders
- Cancers
- Cardiovascular diseases
- Chronic respiratory diseases
- Cirrhosis
- Digestive diseases
- Neurological disorders
- Mental & substance use disorders
- Diabetes/urog/blood/endo
- Musculoskeletal disorders
- Other non-communicable
- Transport injuries
- Unintentional injuries
- Self-harm & violence
- War & disaster

BOX 2
Musculoskeletal disorders: implications for Norway's health care system

An analysis of nationally representative survey data found that 18% of men and 27% of women in Norway reported suffering from musculoskeletal disorders that lasted more than six months in 2012. Using health care reimbursement data, the study's researchers also found that 30% of men and 37% of women used primary health care services for musculoskeletal disorders. Low back and neck pain were the most common diagnoses among patients and the top reason for seeking health care.

Even though Norwegians frequently seek care for musculoskeletal disorders, the effectiveness of existing treatments is limited. More research and development is needed to find more useful therapies to reduce pain and suffering from this condition.

Source: Kinge JM, Knudsen AK, Skirbekk V, Vollset SE. Musculoskeletal disorders in Norway: prevalence of chronicity and use of primary and specialist health care services. *BMC Musculoskeletal Disorders*. 2015; 16:75. DOI: 10.1186/s12891-015-0536-z.

Preventing death and suffering

Risk factors are key drivers of the diseases and injuries that kill people prematurely. By addressing these risk factors, much of Norway's disease burden could be reduced.

Risk factors fall into three different categories: behavioral, metabolic, and environmental. Approximately 45% of all the years lost to early death in Norway could potentially be averted by addressing all behavioral risk factors alone. In 2013, a behavioral risk, poor diets ("dietary risks") caused the most early death in the country (Figure 8). Dietary risks include eating too little fruit, vegetables, whole grains, and nuts and seeds, and eating too much salt, red meat, and processed meat, as well as consuming trans fats. Trans fats are created by adding hydrogen to vegetable oil, which renders the oil solid at room temperature. The main diseases associated with poor diets include ischemic heart disease and stroke. Up to 100,000 years of life could be saved if Norwegians ate healthier diets.

The second-leading risk factor in 2013, tobacco smoke, was also behavioral. It is a major contributor to lung cancer and COPD. Tobacco smoke also contributes to other diseases such as ischemic heart disease, stroke, and colorectal cancers. By reducing tobacco smoke, Norway could save as many as 95,000 years of life.

The third- and fourth-leading risk factors for early death were both metabolic: high systolic blood pressure and high body mass index, which is a measure of obesity and overweight. High systolic blood pressure causes ischemic heart disease and stroke, while high body mass index is a major cause of diabetes and is also linked to ischemic heart disease and low back pain.

Poor diet

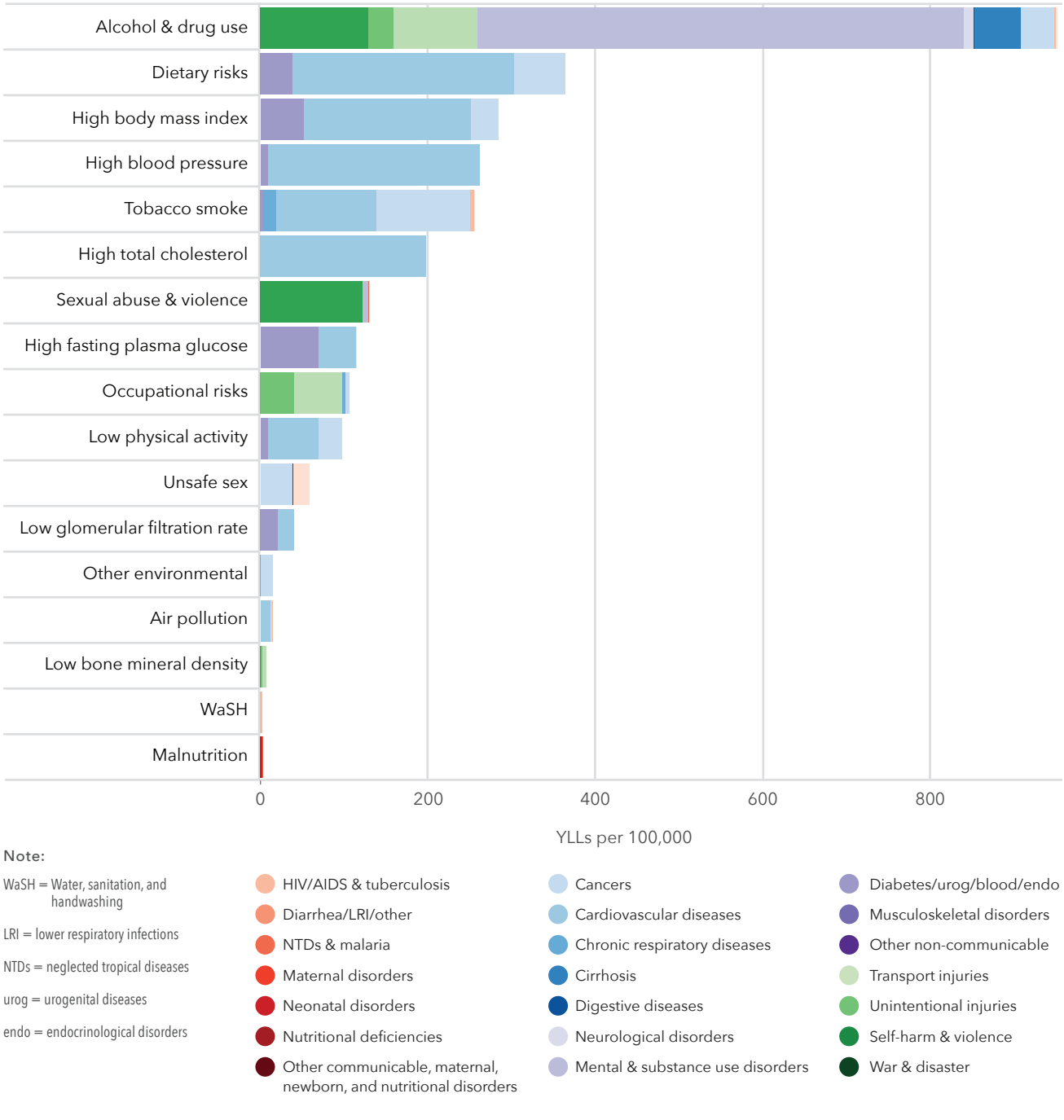
In 2013, poor diets caused the most early death in the country.

Figure 8
Leading risk factors attributable to early death and percent change, both sexes, Norway, 1990–2013

Over the last two decades, efforts to reduce the population's exposure to tobacco smoke combined with increased awareness of the health risks of smoking appear to be having an impact. For example, early death from tobacco smoke fell 28% between 1990 and 2013. Box 3 (p. 22) highlights Norway's increasingly aggressive legislation against smoking. Like tobacco smoke, most of the risk factors shown in Figure 8 caused more early death in 1990 than they did in 2013, including poor diet, high blood pressure, high body mass index, high cholesterol, and high blood sugar ("high fasting plasma glucose").

Unlike trends for the other risk factors shown in Figure 8, early death from alcohol and drug use rose by 47% between 1990 and 2013. Also, occupational risks increased by 18.4% during the same period. Alcohol and drug use was the country's fifth-leading risk factor for early death while occupational risks

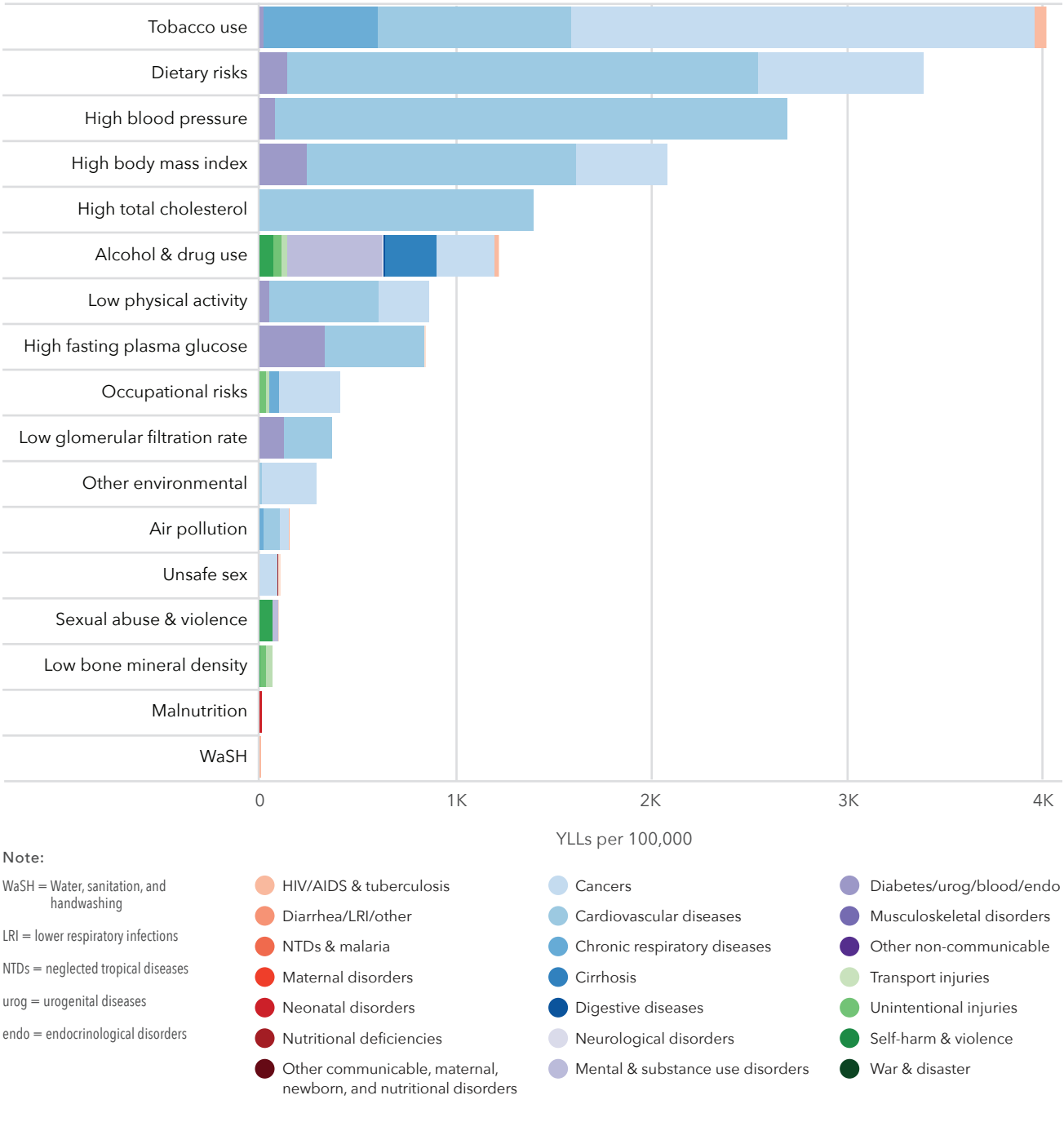
Figure 9
Top risk factors for early death (YLLs) among ages 15 to 49, Norway, 2013



ranked 10th. The majority of early deaths caused by occupational risks in Norway came from job-related road traffic injuries and breathing polluted air.

To identify the areas where the biggest health improvements can be made in every age group, it is necessary to understand the risk factors that are most problematic in different age groups. From ages 15 to 49, alcohol and drug use was the top risk factor for early death in 2013, as seen in Figure 9, followed by poor diet, high body mass index, and high blood pressure. For ages 50 through 69 (Figure 10), the top risk factors in 2013 were tobacco smoke followed by poor diet, high blood pressure, and high body mass index. Even though people are dying from poor diets, tobacco smoke, and obesity/overweight later in life, it is their cumulative exposure to these risks over the course of a lifetime that causes these deaths.

Figure 10
Top risk factors for early death (YLLs) among ages 50 to 69, Norway, 2013



BOX 3

Addressing tobacco use in Norway through policy change

Strict regulations of tobacco in Norway have helped drive down smoking prevalence from 35% of the population in 1990 to 17% in 2013. Also, the number of deaths attributable to tobacco smoking has dropped from about 7,000 in 1990 to around 6,000 in 2013.

Numerous measures are in place in Norway to discourage tobacco use. The age limit for buying or selling tobacco products is 18. All forms of tobacco advertising are prohibited, including visible placement of tobacco products in stores. On smoked tobacco products, warnings must take up at least 30% of the front of the package, and a combined picture and text warning must cover a minimum of 40% of the back of the package. Norway's tobacco taxes are among the highest in Europe.

Additionally, legislation protecting individuals from secondhand smoke was first introduced in 1988 and has become stricter over time. In 2004, smoking was banned in all service establishments. As of 2014, smoking is prohibited in workplaces, publicly accessible buildings and places, and in public transportation. Smoking is also prohibited near the entrances of health care facilities and public institutions as well as in schools and kindergartens.

Sources:

Ng M et al. Smoking prevalence and cigarette consumption in 187 countries, 1980-2012. *Journal of the American Medical Association*. 2014; 311(2):183-192. Doi:10.1001/jama.2013.284692.

Norwegian Institute of Public Health. *Rapport 2014:4 Folkehelserapporten [Report 2014:4 The public health report]*. Oslo/Bergen: Norwegian Institute of Public Health, 2014.

Store Norske Leksikon. røykeloven [smoking legislation]. 2014. https://snl.no/røykeloven. Accessed 24.06.2015.

Comparing Norway to its peers

Norwegians' risk of dying between the ages of 15 and 49 is lower than many of their peers in other high-income countries. Figure 11 shows the probability of death among Norwegian men and women ages 15 to 49 compared to 21 other high-income countries. Among these countries, Norway has the seventh-lowest probability of death between the ages of 15 and 49 overall, behind Iceland, Switzerland, Sweden, Italy, the Netherlands, and Japan.

Another way to evaluate Norway's health progress is to compare how well it is doing on leading diseases relative to peer countries. Figure 12 compares Norway's performance in 2013 to that of 21 other countries for Norway's top 15 causes of early death. Rates are adjusted for differences in ages and population size across countries. For ischemic heart disease, lung cancer, stroke, road injuries, congenital anomalies, and breast cancer, Norway's rates of early death were significantly better than the average of all 22 countries. For colorectal cancer, drug use disorders, prostate cancer, and falls, Norway performed significantly worse than average. For colorectal cancer, countries such as Switzerland, Iceland, Finland, Greece, and the United States were among those with the lowest rates, outperforming Norway. For the other causes where Norway fell behind its peers, Japan and Italy were consistently among the best performers.

Box 4 explores possible reasons why early death from drug abuse is so high in Norway relative to other countries

For ischemic heart disease, lung cancer, stroke, road injuries, congenital anomalies, and breast cancer, Norway's rates of early death were significantly better than the average of all 22 high-income countries.

BOX 4

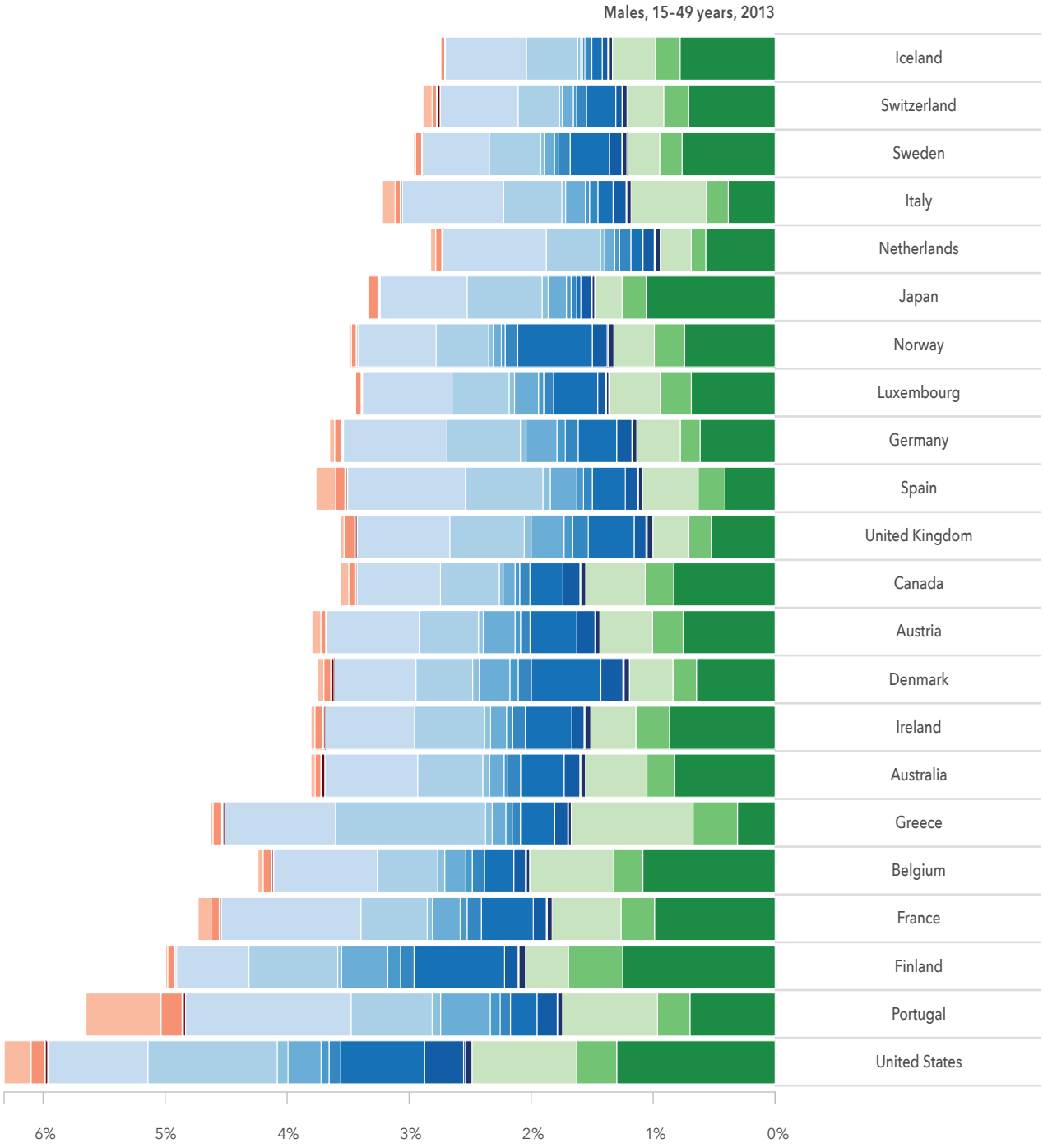
Deaths from illicit drug use in Norway

Too many drug users die from opioid overdoses in Norway. One reason for this is that opioid maintenance treatment programs were implemented relatively late in Norway. However, several other reasons could also help explain the high overdose death rates Norway compared to other European countries. First, Norwegian drug users are at a higher risk of death than users in other countries in Europe since they tend to use deadlier drugs, such as heroin and other opiates. Also, drugs like heroin are usually injected instead of being inhaled or smoked, which further increases the risk of overdose and death. Second, the prevalence of diseases that increase the risk of death among illicit drug users, such as HIV/AIDS or viral hepatitis, is lower in Norway than in southern or eastern European countries. Thus drug overdose may be selected as cause of death because there are fewer causes of death to consider when the death certificate is issued. Third, it is possible that Norway does a better job of recording deaths caused by illicit drug use than other European countries due to more frequent use of autopsies and careful assessment of drug levels in the blood.

Sources: Waal H. Norge på overdosetoppen? [Norway-overdose leader?, in Norwegian] *Tidsskr Nor Legeforen [Journal of the Norwegian Medical Association]* 2015; 18:1624; Waal H, Gossop M. Making sense of differing overdose mortality: contributions to improved understanding of European patterns. *European Addiction Research*. 2014; 20:8-15.

Figure 11

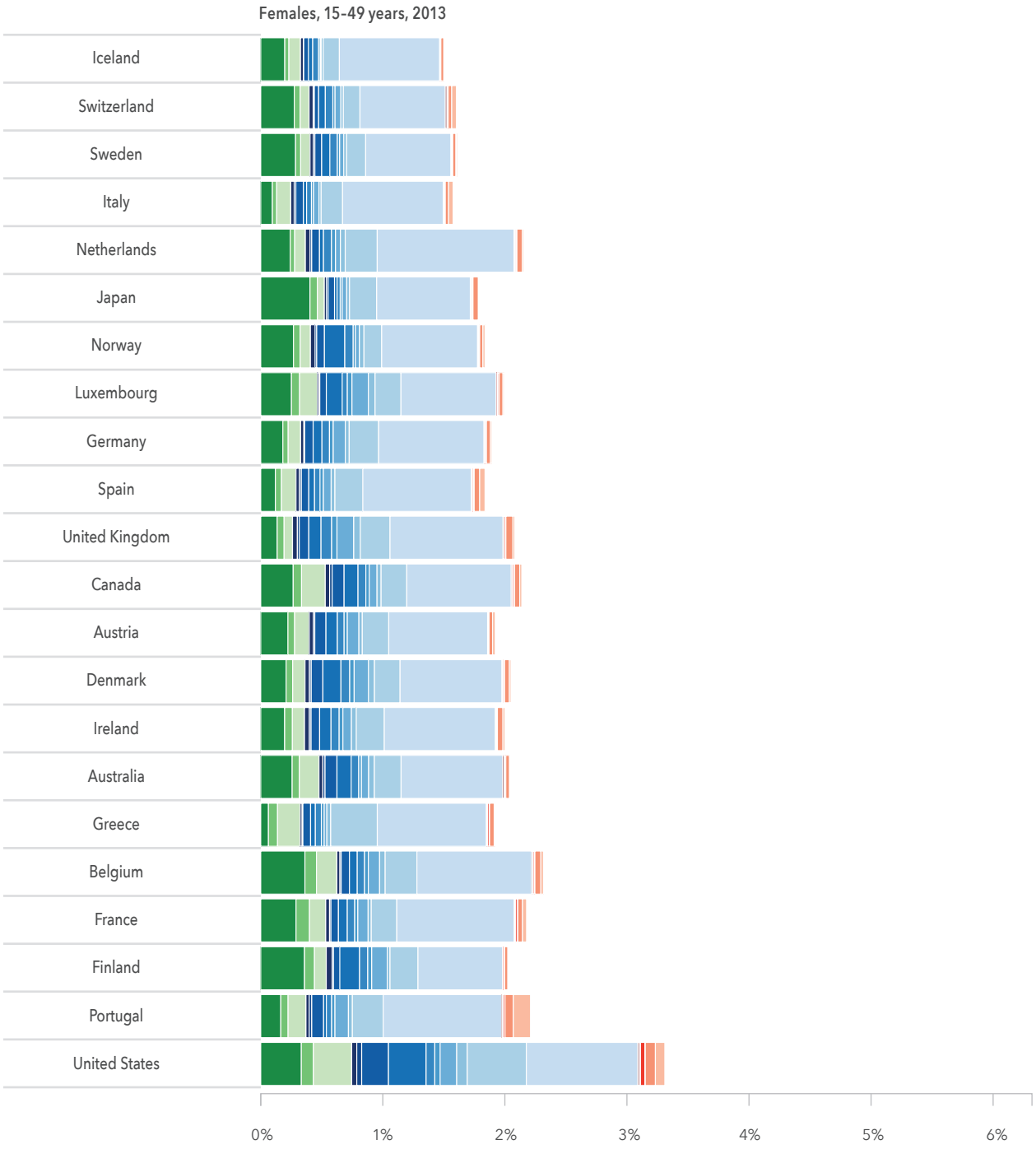
Probability of death in Norway and comparison countries, males and females, 2013



Note:
LRI = lower respiratory infections
NTDs = neglected tropical diseases
urog = urogenital diseases
endo = endocrinological disorders

- HIV/AIDS & tuberculosis
- Diarrhea/LRI/other
- NTDs & malaria
- Maternal disorders
- Neonatal disorders
- Nutritional deficiencies
- Other communicable, maternal, newborn, and nutritional disorders
- Cancers
- Cardiovascular diseases
- Chronic respiratory diseases
- Cirrhosis
- Digestive diseases
- Neurological disorders
- Mental & substance use disorders
- Diabetes/urog/blood/endo
- Musculoskeletal disorders
- Other non-communicable
- Transport injuries
- Unintentional injuries
- Self-harm & violence
- War & disaster

Note: This figure shows how Norway compares to other countries in terms of the probability of death for males and females ages 15 to 49. The colors represent the contribution of a particular category of disease or injury to the total probability of death for males and females.



Note:

LRI = lower respiratory infections

NTDs = neglected tropical diseases

urog = urogenital diseases

endo = endocrinological disorders

- HIV/AIDS & tuberculosis
- Diarrhea/LRI/other
- NTDs & malaria
- Maternal disorders
- Neonatal disorders
- Nutritional deficiencies
- Other communicable, maternal, newborn, and nutritional disorders
- Cancers
- Cardiovascular diseases
- Chronic respiratory diseases
- Cirrhosis
- Digestive diseases
- Neurological disorders
- Mental & substance use disorders
- Diabetes/urog/blood/endo
- Musculoskeletal disorders
- Other non-communicable
- Transport injuries
- Unintentional injuries
- Self-harm & violence
- War & disaster

Figure 12

Leading causes of premature death in Norway and comparison countries, 2013

significantly better than the comparison group mean

not statistically different from the comparison group mean

significantly worse than the comparison group mean

	Norway's **1st cause**	Norway's **2nd cause**	Norway's **3rd cause**	Norway's **4th cause**	Norway's **5th cause**	Norway's **6th cause**	Norway's **7th cause**
Country rank	**Ischemic heart disease**	**Lung cancer**	**Stroke**	**Self-harm**	**Colorectal cancer**	**Alzheimer's disease**	**COPD**
1	Japan	Japan	Canada	Greece	Switzerland	Japan	Japan
2	France	Sweden	Switzerland	Italy	Iceland	France	France
3	Portugal	Finland	Iceland	Spain	Finland	Sweden	Finland
4	Switzerland	Australia	France	United Kingdom	Greece	Luxembourg	Switzerland
5	Italy	Switzerland	Australia	Netherlands	United States	Australia	Italy
6	Spain	Portugal	United States	Germany	Austria	Netherlands	Sweden
7	Australia	Iceland	Netherlands	Portugal	Italy	Austria	Iceland
8	Netherlands	Italy	Italy	Denmark	Japan	Germany	Austria
9	NORWAY	NORWAY	Spain	Luxembourg	France	United Kingdom	Canada
10	Luxembourg	Austria	Austria	Australia	Australia	Portugal	Australia
11	Belgium	Spain	NORWAY	Iceland	Belgium	Ireland	Germany
12	Denmark	Germany	Germany	Ireland	United Kingdom	Greece	Portugal
13	Iceland	Ireland	Sweden	Canada	Canada	Spain	Spain
14	United Kingdom	United Kingdom	Ireland	NORWAY	Luxembourg	Switzerland	Luxembourg
15	Canada	Denmark	United Kingdom	Austria	Germany	Belgium	NORWAY
16	Austria	Luxembourg	Belgium	Sweden	Sweden	Iceland	Greece
17	Germany	Canada	Luxembourg	Switzerland	Ireland	Italy	Ireland
18	Sweden	United States	Denmark	United States	Spain	Denmark	Netherlands
19	Ireland	France	Finland	France	Denmark	Canada	United Kingdom
20	Finland	Greece	Japan	Belgium	NORWAY	NORWAY	Belgium
21	United States	Belgium	Greece	Finland	Portugal	United States	United States
22	Greece	Netherlands	Portugal	Japan	Netherlands	Finland	Denmark

Note: Data presented are age-standardized YLL rates per 100,000 people.
COPD = chronic obstructive pulmonary disease

Norway's 8th cause	Norway's 9th cause	Norway's 10th cause	Norway's 11th cause	Norway's 12th cause	Norway's 13th cause	Norway's 14th cause	Norway's 15th cause
Drug use disorders	Road injuries	Lower respiratory infections	Congenital anomalies	Breast cancer	Prostate cancer	Pancreatic cancer	Falls
Japan	Japan	Italy	Luxembourg	Japan	Japan	Iceland	Japan
Iceland	Sweden	Finland	Iceland	NORWAY	Italy	Portugal	Greece
Netherlands	United Kingdom	Austria	Sweden	Sweden	Spain	Australia	Spain
Italy	Netherlands	Australia	France	Finland	Greece	United Kingdom	Australia
Portugal	Iceland	Switzerland	Japan	Spain	Luxembourg	Spain	Iceland
Belgium	NORWAY	Iceland	NORWAY	Iceland	United States	Sweden	United Kingdom
Germany	Switzerland	Sweden	Italy	Australia	Canada	Ireland	Italy
France	Finland	France	Portugal	United States	Austria	Canada	Portugal
Switzerland	Germany	Canada	Spain	Italy	Belgium	Denmark	Ireland
Spain	Ireland	Germany	Germany	Austria	Germany	NORWAY	Canada
Sweden	Denmark	Luxembourg	Belgium	Portugal	United Kingdom	Switzerland	Germany
Canada	Austria	Greece	Australia	Canada	France	Italy	United States
Greece	Spain	Spain	Denmark	Switzerland	Finland	Luxembourg	Sweden
Austria	Luxembourg	NORWAY	Finland	Denmark	Portugal	Belgium	Netherlands
United Kingdom	Australia	Denmark	Netherlands	Germany	Switzerland	Greece	Denmark
Ireland	Canada	United States	United Kingdom	Luxembourg	Australia	Japan	Luxembourg
Luxembourg	France	Netherlands	Austria	Greece	Denmark	France	NORWAY
Australia	Italy	Belgium	Canada	France	Ireland	United States	Switzerland
Denmark	Belgium	Ireland	Switzerland	United Kingdom	Netherlands	Finland	France
Finland	Portugal	United Kingdom	United States	Ireland	Iceland	Germany	Austria
NORWAY	United States	Japan	Greece	Belgium	NORWAY	Netherlands	Belgium
United States	Greece	Portugal	Ireland	Netherlands	Sweden	Austria	Finland

Conclusion

Compared to two decades ago, Norway is healthier in many ways. Today, fewer healthy years are lost to road injuries, ischemic heart disease, and stroke. Relative to its peers, Norway has lower death rates from diseases such as lung cancer and breast cancer after adjusting for differences in the size and ages of populations across countries. Disease burden from tobacco use and high blood pressure is dropping. Reductions in tobacco use resulting from implementation of antismoking policies highlight the power of evidence-based decision-making to save lives.

Even though Norwegians' health has improved in total, it still faces many challenges. Norway could further improve health by expanding efforts to promote healthy diets and reduce smoking. Even though it saved about 37,000 years of life by cutting tobacco smoking between 1990 and 2013, Norway could save up to 95,000 additional years of life if it lowered tobacco smoking even further.

Also, for the diseases and injuries in which its performance lags behind, specifically in colorectal cancer, drug use disorders, prostate cancer, and falls, Norway could model its response to these conditions on approaches that have worked well in other countries.

Because the growth and aging of the population means that more Norwegians spend more time suffering from disabling conditions, interventions to address the causes that ail them are essential for improving health. The documented effectiveness of treatments for mental disorders and low back and neck pain, which are some of the leading causes of disability, is much lower than the documented effectiveness of treatments for other conditions such as cardiovascular diseases and leukemia.

Going forward, the Norwegian Institute of Public Health and the Institute for Health Metrics and Evaluation will study disease burden at the local level. This analysis will illuminate health disparities across communities as well as the top diseases, injuries, and risk factors that are driving these disparities.

95,000

Norway could save up to 95,000 additional years of life if it lowered tobacco smoking even further.

Annexes

Annex 1a

Life expectancy and healthy life expectancy (HALE), males and females, Norway, 1990–2013

Year	Sex	HALE	Life expectancy
1990	Females	68.6	80.0
1990	Males	64.2	73.6
1995	Females	69.1	80.8
1995	Males	65.5	75.1
2000	Females	69.6	81.4
2000	Males	66.0	75.9
2005	Females	70.4	82.3
2005	Males	67.4	77.7
2010	Females	71.2	83.2
2010	Males	68.2	78.6
2013	Females	71.7	83.7
2013	Males	68.6	79.1

Annex 1b

Top 15 causes of death, females and males, Norway, 2013

Females

	Cause name	Deaths
1	Ischemic heart disease	3,797.8
2	Alzheimer's disease and other dementias	2,363.1
3	Stroke	2,286.2
4	Lower respiratory infections	1,160.8
5	Chronic obstructive pulmonary disease	982.9
6	Colon and rectum cancer	982.6
7	Tracheal, bronchus, and lung cancer	858.8
8	Falls	693.1
9	Breast cancer	680.8
10	Atrial fibrillation and flutter	515.9
11	Other cardiovascular and circulatory diseases	496.9
12	Pancreatic cancer	366.3
13	Diabetes mellitus	357.5
14	Ovarian cancer	330.9
15	Chronic kidney disease	274.7

Males

	Cause name	Deaths
1	Ischemic heart disease	3,492.5
2	Alzheimer's disease and other dementias	1,762.7
3	Stroke	1,733.6
4	Tracheal, bronchus, and lung cancer	1,424.0
5	Chronic obstructive pulmonary disease	1,193.2
6	Prostate cancer	1,137.9
7	Colon and rectum cancer	1,016.2
8	Lower respiratory infections	921.8
9	Falls	500.1
10	Self-harm	447.2
11	Pancreatic cancer	372.1
12	Diabetes mellitus	339.9
13	Atrial fibrillation and flutter	319.1
14	Chronic kidney disease	317.6
15	Other cardiovascular and circulatory diseases	309.5

Annex 1c

Top 15 causes of years of life lost, females and males, Norway, 2013

Females

	Cause name	YLLs
1	Ischemic heart disease	31,460.5
2	Stroke	18,842.8
3	Alzheimer's disease and other dementias	16,295.1
4	Tracheal, bronchus, and lung cancer	15,699.1
5	Breast cancer	13,152.6
6	Colon and rectum cancer	12,983.5
7	Chronic obstructive pulmonary disease	10,811.6
8	Lower respiratory infections	8,392.5
9	Ovarian cancer	6,338.6
10	Self-harm	6,175.4
11	Pancreatic cancer	5,461.1
12	Falls	5,094.6
13	Other cardiovascular and circulatory diseases	4,184.7
14	Other neoplasms	3,823.9
15	Congenital anomalies	3,712.6

Males

	Cause name	YLLs
1	Ischemic heart disease	50,228.7
2	Tracheal, bronchus, and lung cancer	25,932.6
3	Stroke	20,262.1
4	Self-harm	18,139.5
5	Colon and rectum cancer	16,551.6
6	Alzheimer's disease and other dementias	15,089.0
7	Chronic obstructive pulmonary disease	14,565.8
8	Prostate cancer	13,477.5
9	Drug use disorders	10,945.0
10	Lower respiratory infections	8,970.4
11	Road injuries	8,017.4
12	Pancreatic cancer	6,736.7
13	Falls	6,163.4
14	Diabetes mellitus	5,557.3
15	Alcohol use disorders	5,339.4

Annex 1d

Top 15 causes of years lived with disability, females and males, Norway, 2013

Females

	Cause name	YLDs
1	Low back and neck pain	67,028.4
2	Anxiety disorders	24,466.0
3	Depressive disorders	22,861.3
4	Skin and subcutaneous diseases	17,955.2
5	Sense organ diseases	15,553.5
6	Falls	15,497.7
7	Other musculoskeletal disorders	14,113.9
8	Migraine	11,695.8
9	Diabetes mellitus	11,428.6
10	Alzheimer's disease and other dementias	10,847.8
11	Chronic kidney disease	10,380.7
12	Oral disorders	10,150.7
13	Iron-deficiency anemia	8,138.2
14	Chronic obstructive pulmonary disease	6,673.5
15	Gynecological diseases	6,186.0

Males

	Cause name	YLDs
1	Low back and neck pain	62,291.4
2	Skin and subcutaneous diseases	18,578.4
3	Depressive disorders	17,446.8
4	Sense organ diseases	16,833.5
5	Anxiety disorders	16,348.3
6	Falls	14,470.2
7	Diabetes mellitus	13,059.3
8	Chronic kidney disease	9,111.2
9	Oral disorders	8,860.4
10	Chronic obstructive pulmonary disease	8,792.3
11	Iron-deficiency anemia	7,525.9
12	Alcohol use disorders	6,810.5
13	Drug use disorders	6,116.2
14	Migraine	5,693.9
15	Urinary diseases and male infertility	5,675.4

Annex 1e

Top 15 causes of disability-adjusted life years, females and males, Norway, 2013

Females

	Cause name	DALYs
1	Low back and neck pain	67,028.4
2	Ischemic heart disease	33,807.3
3	Alzheimer's disease and other dementias	27,142.9
4	Anxiety disorders	24,466.0
5	Depressive disorders	22,861.3
6	Stroke	21,540.9
7	Falls	20,592.2
8	Skin and subcutaneous diseases	18,598.5
9	Chronic obstructive pulmonary disease	17,485.1
10	Tracheal, bronchus, and lung cancer	16,021.3
11	Sense organ diseases	15,553.5
12	Breast cancer	15,136.1
13	Other musculoskeletal disorders	15,058.8
14	Diabetes mellitus	15,013.1
15	Colon and rectum cancer	13,977.9

Males

	Cause name	DALYs
1	Low back and neck pain	62,291.4
2	Ischemic heart disease	53,659.1
3	Tracheal, bronchus, and lung cancer	26,373.7
4	Stroke	23,430.9
5	Chronic obstructive pulmonary disease	23,358.1
6	Falls	20,633.6
7	Alzheimer's disease and other dementias	19,925.0
8	Skin diseases	19,100.6
9	Diabetes mellitus	18,616.6
10	Self-harm	18,379.4
11	Colon and rectum cancer	17,640.8
12	Depressive disorders	17,446.8
13	Drug use disorders	17,061.1
14	Sense organ diseases	16,833.5
15	Prostate cancer	16,416.1

INSTITUTE FOR HEALTH METRICS AND EVALUATION
2301 Fifth Avenue, Suite 600
Seattle, WA 98121
USA

Telephone: +1-206-897-2800
Fax: +1-206-897-2899
Email: engage@healthdata.org
www.healthdata.org