World Health Organization
REGIONAL OFFICE FOR Europe

THE EUROPEAN HEALTH REPORT 2021

Taking stock of the health-related Sustainable Development Goals in the COVID-19 era with a focus on leaving no one behind

The World Health Organization was established in 1948 as the specialized agency of the United Nations serving as the directing and coordinating authority for international health matters and public health. One of WHO's constitutional functions is to provide objective and reliable information and advice in the field of human health. It fulfils this responsibility in part through its publication programmes, seeking to help countries make policies that benefit public health and address their most pressing public health concerns.

The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health problems of the countries it serves. The European Region embraces nearly 900 million people living in an area stretching from the Arctic Ocean in the north and the Mediterranean Sea in the south and from the Atlantic Ocean in the west to the Pacific Ocean in the east. The European programme of WHO supports all countries in the Region in developing and sustaining their own health policies, systems and programmes; preventing and overcoming threats to health; preparing for future health challenges; and advocating and implementing public health activities.

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Abstract

The European Health Report is produced every three years as a flagship publication by the WHO Regional Office for Europe. The aims of the 2021 edition are to provide insight into Regional progress towards the health-related Sustainable Development Goals and the effects of the COVID-19 pandemic on population health, thereby focusing on health inequalities and how the pandemic is affecting these. In addition, the report describes how the Regional Office, through implementation of the European Programme of Work 2020–2025, aims to support Member States in tackling the major challenges in the Region and building back better after the pandemic. As strong health information systems will be an important prerequisite for these endeavours, the report describes how WHO will support all Member States in tackling the main gaps in data and information that are currently hampering the evidence-informed implementation of the European Programme of Work, WHO's global Thirteenth General Programme of Work 2019–2023 and the Sustainable Development Goals.

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Keywords

SUSTAINABLE DEVELOPMENT GOALS, EUROPEAN PROGRAMME OF WORK 2020–2025, POPULATION HEALTH, PANDEMIC, HEALTH INEQUALITIES

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Foreword

Staying the course: redefining health in pandemic times

Since the start of the COVID-19 pandemic in early 2020, its profound impact on peoples' health and on our societies has been felt around the world. No single country was adequately prepared. The numbers of lives lost and the amount of ill health and suffering caused by SARS-CoV-2 infections are almost incomprehensible. Health systems have been stretched to their limits – and still are at the time of writing - resulting in disruption to essential health services.

Dr Hans Henri P. Kluge
WHO Regional Director for Europe

Coordinating the global response to COVID-19 is WHO's greatest task to date. Steering the 53 Member States of the WHO European Region through the ongoing pandemic has required, and will continue to require, the major share of resources, attention and energy within WHO.

Prior to the pandemic, we had set ambitious goals together for the health and well-being of the people in the Region. Our compass has been the 2030 Sustainable Development Agenda and its Sustainable Development Goals (SDGs) and our toolkit, the WHO European Programme of Work 2020–2025, underpinned by WHO's Thirteenth Programme of Work. Then COVID-19 hit.

The European Health Report 2021 aims to take stock of where we are and to provide a snapshot of the extent of this impact. It brings together data and evidence on where we have stayed the course, where we have been pushed off course and where we have stalled.

This Report examines progress towards the health-related SDGs using the latest available WHO and United Nations statistics. It provides insight into the effects of the pandemic on the health of the close to 1 billion people who live in this Region. Not only does the Report look at the direct impact of COVID-19 in terms of cases

and deaths, but it also looks at indirect health effects such as the repercussions of disrupted essential health services, mental health impacts and the influence of containment measures on health behaviours.

The picture that emerges is mixed: despite progress in some areas, we have fallen behind in others. Although the full health impact of the pandemic is not completely understood or fully visible yet, it is clear that it will be substantial, that it will reverse earlier achievements and that it will add to the challenges we face in reaching the health-related SDGs.

Yet again the European Health Report confirms a persistent problem: the existence of large health inequalities between Member States. This has been enhanced by COVID-19, which has particularly affected vulnerable groups and so has exacerbated these inequalities. The Report also lays bare, and not for the first time, considerable data gaps for key indicators, as well as operational problems in Member States' health information systems. As strong health information systems are a prerequisite for evidence-informed policy-making, overcoming these issues is critical.

Reaching our goals will not be easy, but the WHO Regional Office for Europe is determined to support Member States in this endeavour. The European Health Report 2021 explains how it intends to do this and presents our main workstreams for the next biennium. In some areas, the pandemic has even opened windows of opportunity, shining a light on overlooked issues or triggered unprecedented scientific leaps that we are already benefiting from.

We have a lot of work ahead of us, but at the same time, the lessons learned during the pandemic can help us to build back better. For example, the COVID-19 pandemic has enabled society to see the paramount importance of health and its interlinkages with other sectors such as economy and education.

Such intersectoral thinking is vital for building resilient, sustainable and healthy societies. The pandemic has also shown us the importance of strong public health systems and an effective, empowered and fit-for-purpose health workforce, plus the need to invest in these.

This Report is accompanied by a supplement, a joint production of WHO and the Institute for Health Metrics and Evaluation, with projections showing different

scenarios for a selection of SDG indicators and information on key interventions. Such projections are vital tools for developing robust health policies that can withstand future health crises.

This flagship publication comes out every three years. The 2021 edition is published at a unique point in time, when the very definitions of health and health services are under review.

The Report is a valuable, comprehensive direction-setting resource to inform our future work, demonstrating where action is most urgently needed to make sure that we get back on track to achieve the health-related SDGs. Today's actions and decisions will be felt for generations to come.

In the words of George Bernhard Shaw, playwright and political activist, "It is the mark of a truly intelligent person to be moved by statistics".

We owe it to the many we have lost to this virus to follow the right course in the future, using evidence, science and the wisdom we have gained over the past two years.

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Abbreviations

3GC	third-generation cephalosporin
AMR	antimicrobial resistance
BMI	body mass index
CAESAR	Central Asian and European Surveillance of Antimicrobial Resistance
CARINFONET	WHO Central Asian Republics Information Network
DTP	diphtheria–tetanus–pertussis combined vaccine
DTP3	third dose of the diphtheria–tetanus–pertussis vaccine
EARS-Net	European Antimicrobial Resistance Surveillance Network
EHII	WHO European Health Information Initiative
EPW	European Programme of Work 2020–2025 – "United Action for Better Health in Europe"
EU	European Union
GLASS	Global Antimicrobial Resistance and Surveillance System
GPW13	Thirteenth General Programme of Work, 2019–2023
HIS	health information system
ICU	intensive care unit
IHR	International Health Regulations (2005)
LGBTIQ	lesbian, gay, bisexual, transgender transsexual, intersex and queer/questioning
MCV	measles vaccine
MCV2	second dose of measles vaccine
MRSA	methicillin-resistant *Staphylococcus aureus*
NCD	noncommunicable disease
NGO	nongovernmental organization
OECD	Organisation for Economic Co-operation and Development

PICS	post-intensive care syndrome
PPE	personal protective equipment
RPI	Regional Plan for Implementation of the Programme Budget 2022–2023
SCI	(UHC) Service Coverage Index
SDG	Sustainable Development Goal
SPAR	State Party Self-Assessment Annual Reporting
TAG on Mental Health Impacts of COVID-19	Technical Advisory Group on the Mental Health Impacts of COVID-19 in the WHO European Region
TB	tuberculosis
UHC	universal health coverage
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
WASH	water, sanitation and hygiene

Executive summary

The European Health Report is a flagship report from the WHO Regional Office for Europe that is published every three years. This 2021 edition takes stock of the WHO European Region's progress towards the health-related Sustainable Development Goals (SDGs) and provides insight into the main challenges related to the three core priorities of the European Programme of Work 2020–2025 – "United Action for Better Health in Europe" (EPW): moving towards universal health coverage (UHC), protecting people better against health emergencies and ensuring healthy lives and well-being for all at all ages. This executive summary integrates the most important findings and conclusions across Chapters 2–4 of the Report, which examine in detail progress with regard to the SDGs, the impact of the COVID-19 pandemic, and approaches to build back better in 2022 onwards, respectively.

Chapter 2 uses the latest available official WHO or United Nations data. Official statistics often lag by a few years. As a consequence, the data presented in this chapter represent the period prior to the COVID-19 pandemic. Chapter 3 complements Chapter 2 by providing insight into the scope and magnitude of the impact of the COVID-19 pandemic based on emergent data and evidence from scientific literature and reports.

Although the WHO European Region is making good progress towards some of the SDG targets, challenges and delays exist for all three core priorities of the EPW. The impact of the COVID-19 pandemic has added extra stress to the efforts that Member States will have to make to reach the health-related SDGs by 2030.

Core priority 1 (moving towards UHC) can be assessed by the coverage of essential health services, as measured by the UHC Service Coverage Index, and the density of health workers. Both are high in the Region, yet there are gaps in more specialized service areas: noncommunicable diseases (NCDs), infectious diseases, and maternal and child health. Further efforts with regards to financial protection are also needed: the incidence of catastrophic health spending ranges from 1% to 19% across

Member States. The COVID-19 pandemic and its economic fallout have been straining health systems to their limits, leading to widespread disruption of regular service delivery and impacting on all three pillars of UHC: access to health-care services, quality of care and financial protection. This implies that additional effort is needed in the Region to tackle persistent barriers to UHC as a critical component of achieving the SDGs.

Core priority 2 (protecting against health emergencies) encompasses country preparedness and response capacity for such events. The International Health Regulations (2005) (IHR) core capacities are those required to detect, report and respond to public health risks and emergencies of national and international concern. The COVID-19 crisis has highlighted the need for clearly defined emergency response mechanisms. In the WHO European Region, capacities are strong in relation to coordination (81%), surveillance (81%) and laboratory functions (81%), but lower at points of entry (60%) and for risk communication (66%) and chemical events (66%).

Core priority 3 (promoting health and well-being) requires dedicated and specific public health efforts across all aspects of health and well-being: infectious diseases, NCDs and mental health among others. Immunization coverage for vaccine-preventable diseases is generally high in the WHO European Region for the diphtheria–tetanus–pertussis combined vaccine (DTP) and measles vaccine (MCV), but it is still below the 95% target for the Region in a substantial number of Member States. In addition, the national uptake of human papillomavirus vaccination is very uneven. The COVID-19 pandemic has had a negative impact on routine immunization services, resulting in lower coverage levels. The WHO European Region is one of two WHO regions where, overall, the number of new HIV infections is increasing.

Many of the deaths before age 70 years in the WHO European Region are caused by four major NCDs: cardiovascular diseases, cancers, chronic respiratory diseases and diabetes. Around 85% of the NCD burden is caused by preventable and amenable risk factors, and the Region is the worst performing WHO region for two risk factors, alcohol and tobacco use. The COVID-19 pandemic and

related containment measures have negatively influenced health behaviours. Patterns of alcohol, tobacco and drug use have changed significantly in some groups. Emerging evidence shows a notable increase in body mass index (BMI) resulting from unfavourable changes in physical activity and nutrition. These impacts of the pandemic add to the challenges the Region is facing in tackling risk factors and combating NCDs.

Mental health and well-being are also issues of concern. Suicide is an important contributor to premature mortality and, despite a declining trend, the WHO European Region still has one of the highest standardized suicide mortality rates globally. The COVID-19 pandemic has had a rapid and profound impact on mental health and well-being in the Region. Both the direct threat of the outbreak of SARS-CoV-2 infections and the linked containment measures have resulted in feelings of loneliness, fear and pessimistic perspectives for the future, as well an increase in symptoms of depression and anxiety among parts of the population. It should be noted that, although people with mental health problems are at higher risk of mental disorders and suicide, only a small fraction of people who suffer from mental health problems also attempt or commit suicide. There is no clear picture yet of what the mental health impacts of the pandemic will be on the occurrence of mental disorders.

There are large and persistent differences between Member States, and the COVID-19 pandemic has exacerbated existing health inequalities by impacting harder on vulnerable groups.

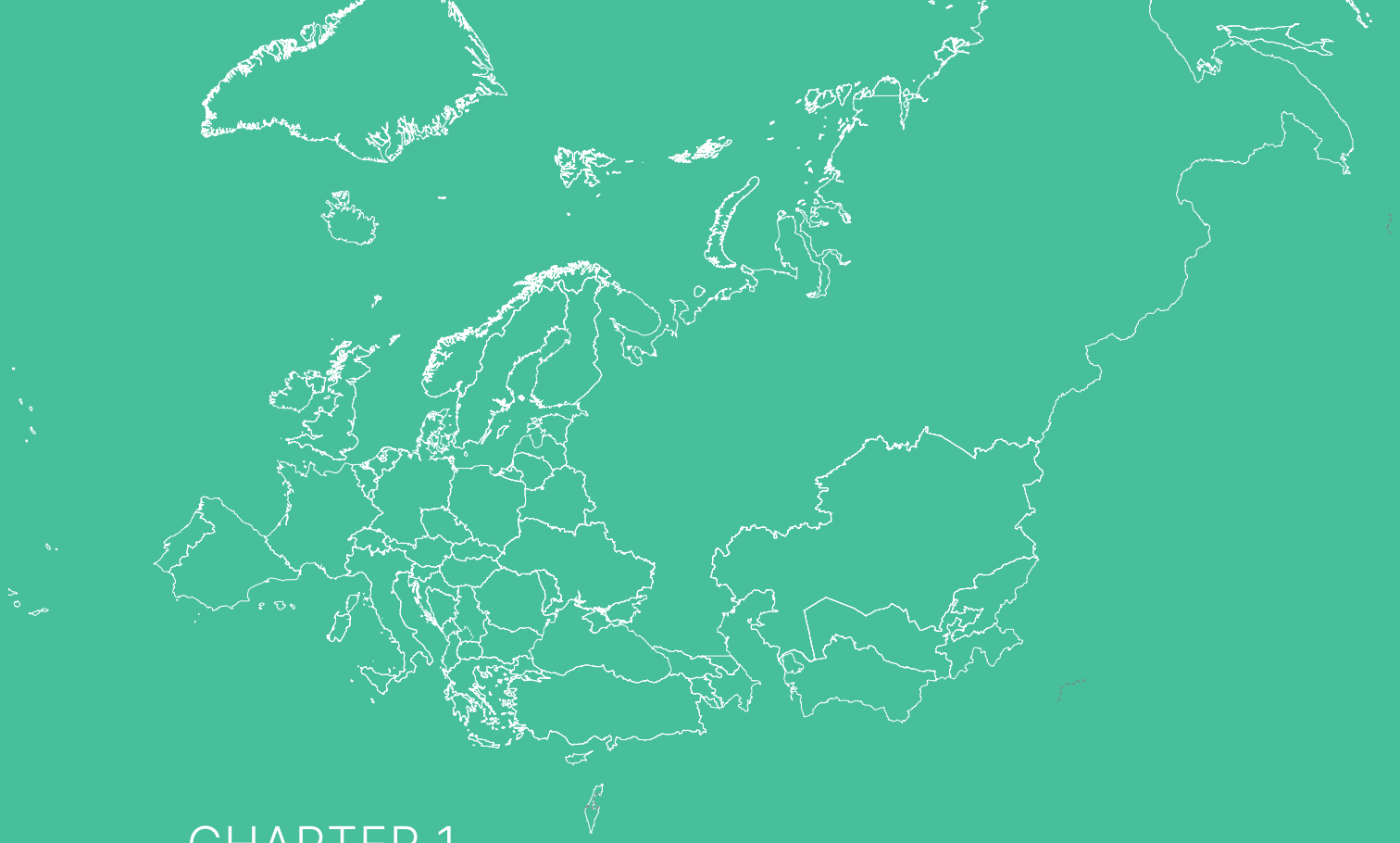
Even though all countries in the WHO European Region have met the SDG target for maternal mortality and almost all countries the target for child mortality, there are still large differences between countries for these indicators. Other areas with substantial and persistent inequalities between countries include HIV, tuberculosis (TB), hepatitis B and C infections, antimicrobial resistance (AMR), alcohol consumption and road traffic mortality. The COVID-19 pandemic has exacerbated pre-existing inequalities in society. Vulnerable groups and those on the lower end of the socioeconomic gradient have been hit hardest, including children, adolescents, women, older people, refugees and migrants, marginalized groups, people with long-term health conditions or disabilities, people working in vulnerable or insecure jobs, people who are unemployed, and people living in poverty.

The EPW will be the leading policy framework in the WHO European Region for the coming years to take on the challenges identified by steering and coordinating action towards building back better after the COVID-19 crisis.

For the next biennium (2022–2023), priority areas for action have been defined, particularly focusing upon major flagship initiatives planned to move the agenda forward. These include, but are not limited to, launching the Mental Health Coalition and a cancer movement; ensuring equitable access to immunization through a transformative immunization agenda; forging new alliances to address access to affordable medicines; improving health care for refugees and migrants; improving emergency prevention and preparedness; promoting and generating behavioural science/insights to maximize health outcomes; tackling childhood obesity and alcohol consumption; and operationalizing One Health.

The evidence base for supporting the policy efforts that Member States will have to make is suboptimal, with data gaps for key indicators and operational challenges in health information systems (HISs).

Supporting Member States in strengthening their national HIS has historically been a strong focus of WHO's activities, and this will continue to be an important area of work to improve health intelligence for evidence-informed implementation of the SDGs, the global WHO Thirteenth General Programme of Work, 2019–2023 (GPW 13) and the EPW. An important point of action will be working with Member States to overcome the data gaps that currently exist for several health-related SDG indicators and for other areas that are highly relevant for the WHO European Region, such as health inequalities, intersectoral action for health, ageing populations and mental health. The development list of the EPW's measurement framework will be an important tool to achieve sustainable improvements in data availability and quality for key indicators for the Region. In addition, there are operational challenges for the HISs of Member States, most notably related to limited resources and capacity, fragmentation and problems with interoperability, lack of central governance, and limited use of health information for decision-making. To support Member States in tackling these, WHO offers a comprehensive package of tools, guidance documents and evidence resources. Digitalization of HISs is a specific point of attention in these.



CHAPTER 1

Overview

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This overview sets out the aims, scope and target audiences of the 2021 European Health Report and outlines the content of Chapters 2–4 and how these interrelate. Annex 1 includes more information on the selection of indicators and Annex 2 on the data used in the graphs, tables and maps presented in the Report. In addition, a supplement with indicator projections is available (Supplement to the European Health Report 2021: Projections for a selection of indicators for health-related Sustainable Development Goals).

Main aims of the European Health Report 2021 and target audiences

The European Health Report is produced every three years as a flagship publication by the WHO Regional Office for Europe. The Reports provide an overview of population health – that is, the health status of the population of the WHO European Region – including health determinants, UHC and health inequalities. The Reports also analyse the Region's progress towards its health

policy goals and targets to identify priority areas for further improvement. As a result, the European Health Reports provide guidance for action at Regional level by pinpointing areas for intensified support from the WHO Regional Office for Europe for Member States. The Reports do not aim to provide recommendations for action to individual Member States.

The past three European Health Reports (2012, 2015 and 2018) provided the baseline measurement and follow-up of progress towards the targets of the Health 2020 policy *(1–3)*. The 2021 Report has been prepared in a transitional and exceptional year in which the Region started with implementing the EPW, and in which the COVID-19 pandemic caused by the SARS-CoV-2 infection continued to have a major impact on the health of our populations and health systems. At the time of writing, the measurement framework for the EPW was still under development. It was recently adopted at the 71st session of the WHO Regional Committee for Europe *(4)*. Like the measurement framework for the global GPW13 *(5)*, the EPW measurement framework strongly builds on the SDGs, which comprise the overarching policy framework to which all United Nations Member States have committed (Box 1.1).

Box 1.1. The SDGs and their relevance for health

The SDGs are linked to the 2030 Agenda for Sustainable Development *(6)*. The 2030 Agenda was adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet and ensure that by 2030 all people enjoy peace and prosperity. There are 17 SDGs and 231 unique indicators. The 17 SDGs are integrated: they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability. Countries have committed to prioritize progress for those who are furthest behind. The SDGs are designed to end poverty, hunger, HIV/AIDS, and discrimination against women and girls.

Box 1.1 contd

The creativity, knowledge, technology and financial resources from all of society are necessary to achieve the SDGs in every context *(7)*. One of the SDGs, SDG 3, is specifically focused on ensuring health and well-being for all at all ages. However, as all SDGs are interrelated, all the other SDGs are also relevant for health, as depicted in Fig. 1.1.

Fig. 1.1. SDG 3 in relation to the other 16 SDGs

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In this context, the main aims of the European Health Report 2021 are to:

- provide an overview of where the WHO European Region stands regarding progress towards the health-related SDGs, which should be achieved by 2030;
- provide insight into both the direct and indirect effects of the COVID-19 pandemic on population health in the Region;
- provide insight into current health inequalities in the Region and how the COVID-19 crisis is affecting these;
- describe how the WHO Regional Office for Europe through the implementation of the EPW aims to support Member States over the coming years in tackling the major challenges in the Region and building back better after the pandemic; and
- highlight the most important gaps in data and information that are currently hampering implementation of the EPW, GPW13 and SDGs, and describe how WHO will support Member States in strengthening their HISs to improve the evidence base for informed decision-making.

The Report aims to provide insight into progress towards a subset of the SDGs, which are the goals of the 2030 Agenda. Implementation of the 2030 Agenda is a whole-of-society effort, in which not only policy-makers and the public sector but also other parties such as civil society and the private sector must contribute. Therefore, the findings of the Report will be of interest to a broad audience, including policy-makers, civil society organizations (such as patient associations, health worker associations, health advocacy organizations and other nongovernmental organizations (NGOs)), public health experts, academic institutions and the media.

Content of the Report

The Report has three main chapters. In addition to the full Report, a short publication of highlights is also available for a quick overview of key messages.

Chapter 2. Taking stock of the health-related SDGs in the WHO European Region

Chapter 2 assesses whether the Region is on track towards reaching the health-related SDGs. For the purpose of this Report, health-related indicators have been defined as not just the indicators within SDG 3 but also several indicators within other SDGs that represent topics within WHO's direct scope of work (for example, childhood obesity, air pollution and violence against women) and that are used in the Impact Measurement Framework of the GPW13. This implies that not all SDG indicators that are relevant for health will be included in the Report. However, as the Report aims to provide guidance for action at Regional level, the choice was made to focus on those topics that are directly linked to WHO areas of work.

Chapter 2 outlines the latest available official WHO or United Nations data and, where data are available, time trends and main health inequalities.

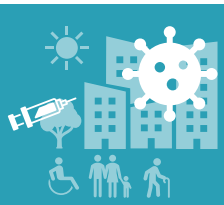
The chapter highlights important data gaps for monitoring progress towards the health-related SDGs. For some indicators, only data for a very limited number of Member States are available; for other indicators, no recent data are available. These data gaps are further addressed in Chapter 4.

To inform targeted activities under the EPW, the SDG indicators are structured according to the three EPW core priorities:

- moving towards UHC
- protecting against health emergencies
- promoting health and well-being.

Through the focus on health inequalities, insight is provided into the effort still needed to make sure that no one is left behind in the WHO European Region.

Chapter 3. The impact of the COVID-19 pandemic on population health



As official statistics often lag by a few years, the impact of the COVID-19 pandemic on population health is not adequately captured in the data presented in Chapter 2. Therefore, Chapter 3 aims to provide insight into the scope and magnitude of the impact of the COVID-19 pandemic. It gives a comprehensive overview of both the direct and the indirect impacts of the pandemic on population health, while paying specific attention to UHC, mental health and health inequalities. The discussion mainly builds on emergent data and evidence from scientific literature and reports. Chapter 3 is complementary to Chapter 2: together, these chapters provide an overview of where the WHO European Region currently stands in relation to achieving the SDGs and what the biggest challenges are for the core priorities of the EPW.

Chapter 4. Building back better under the EPW and the role of HIS strengthening

Chapter 4 aims to describe how the WHO Regional Office for Europe, together with the Member States, will work under the EPW to overcome the challenges described in Chapters 2 and 3 and build back better after the pandemic. It starts with a description of the overarching priorities of the EPW and the more specific priorities set for the Region in the implementation of the EPW in the next biennium (2022–2023). A well-performing health information system (HIS) is a prerequisite for evidence-informed policy implementation and evaluation. Therefore, Chapter 4 also looks in more detail at the work within the WHO Regional Office for Europe that targets improving the evidence base for policy-making. Chapter 2 shows that monitoring progress towards the health-related SDGs is seriously hampered by lack of (recent) data for several key areas. Even before the COVID-19 pandemic, HISs in the WHO European Region were facing challenges, hampering the optimal use of health intelligence for decision-making. The pandemic has strained every HIS and exposed existing weaknesses. Chapter 4 describes the main tools and activities that the Regional Office will deploy to support Member States in strengthening their HIS and overcoming data gaps for key indicators to enhance evidence-informed implementation of the SDGs, the GPW13 and the EPW. Specific attention is paid to challenges and opportunities related to the digitalization of HISs.

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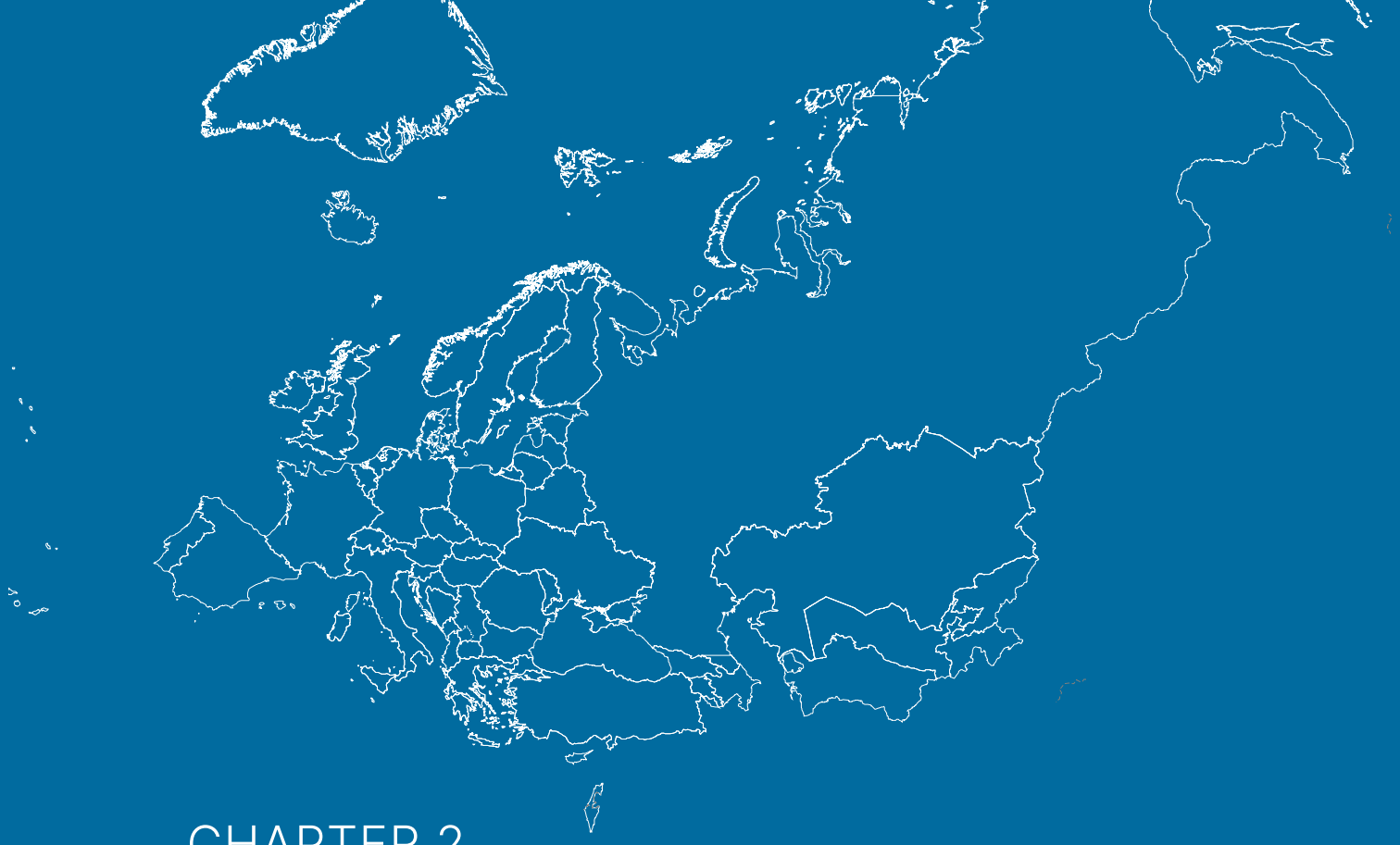

CHAPTER 2

Taking stock of the health-related SDGs in the WHO European Region

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Aim and approach

This chapter will report progress made towards the health-related SDGs in the WHO European Region. The chapter is structured based on the three core EPW priorities: moving towards UHC, protecting against health emergencies and promoting health and well-being. The indicators presented are those linked to SDG 3 on ensuring healthy lives and promoting well-being, as well as additional indicators from other SDGs that are related to key areas of work for WHO, such as water, sanitation and hygiene (WASH), air pollution and other indicators of particular relevance for the Region. Many of the indicators described in this chapter are also included in the measurement frameworks for the GPW13 and the EPW and are, thus, directly relevant for measuring progress for those two WHO policy frameworks. The latest available official WHO or United Nations data on population health status, risk factors and service use in the 53 Member States of the WHO European Region are presented, including time trends based on data availability. This chapter identifies the important data gaps for monitoring progress towards the health-related SDGs that still exist. These are addressed further in Chapter 4. More information on indicator selection and data sources are provided in Annex 1.

Key messages

EPW Core priority 1 (moving towards UHC). Reducing persistent barriers to accessing health services is a critical component of achieving UHC and the SDGs. Coverage of essential health services as measured by the UHC Service Coverage Index (SCI) and the density of doctors, nurses and midwives in the WHO European Region is relatively high, yet there are gaps in more specialized service areas: maternal and child health, infectious diseases and NCDs. Further efforts with regards to financial protection are also needed: the incidence of catastrophic health spending ranges from 1% to 19% across Member States.

EPW Core priority 2 (protecting against health emergencies). The IHR core capacities are those required to detect, report and respond to public health risks and emergencies of national and international concern. In the WHO European Region, capacities are strong in relation to coordination (81%), surveillance (81%) and laboratory functions (81%), but lower at points of entry (60%) and for risk communication (66%) and chemical events (66%). Nonetheless, the COVID-19 crisis has highlighted the need for strengthened emergency response mechanisms.

Key messages contd

EPW Core priority 3 (promoting health and well-being). The WHO European Region has reached or is on track towards reaching some of the targets but several important challenges remain.

- Based on the latest available data from WHO or United Nations data sources, maternal and child mortality rates comply with the 2030 Agenda objectives, but not all Member States meet the threshold for neonatal and under-5 mortality.
- Immunization coverage, which plays a critical role in preventing communicable diseases, is generally high for DTP and MCV vaccines but remains below the 95% WHO targets for the Region. The national uptake of human papillomavirus vaccination, which is critical for achieving cervical cancer elimination, is significantly uneven. The WHO European Region is also one of two WHO regions where the overall number of new HIV infections is increasing.
- Many of the deaths before age 70 years in the WHO European Region are caused by four major NCDs: cardiovascular diseases, cancers, chronic respiratory disease and diabetes. Most of the NCD burden is caused by preventable and amenable risk factors, and the Region performs worst among WHO regions for two risk factors, alcohol and tobacco use. Alcohol use has detrimental effects on many other health issues, thereby exacerbating health inequalities. The fact that nearly one in three school-aged children is living with overweight or obesity in the Region is an additional source of concern.
- Suicide is another important contributor to premature mortality, and the WHO European Region displays one of the highest standardized suicide mortality rates.

Key messages contd

- In the WHO European Region, progress made can mask stalling in meeting the SDG targets and the objectives of the EPW. For example, while road traffic mortality has decreased since 2015, the initial SDG target of a 50% reduction by 2020 has not been reached and was extended to 2030.
- There are still large differences between Member States in the WHO European Region, notably related to communicable diseases (TB, HIV, hepatitis B and C), AMR, maternal and child health indicators, the prevalence of intimate partner violence, alcohol consumption, road traffic mortality, and mortality attributed to ambient and household air pollution. More work and sustained efforts are warranted in the Region to reduce these inequalities. National figures can mask more local differences within a country. For example, the great majority of the population in the Region use safely managed WASH services, but access to safely managed drinking-water services is more than 10% points higher in urban than in rural populations.
- Indicator patterns further differ by sex. For example, premature mortality rates for the four major NCDs are twice as high among men than among women. While tobacco use remains higher in men than in women, rates have been decreasing for men and less so for women; the WHO European Region has one of the highest rates of female tobacco use globally.

Core priority 1. Moving towards UHC

Main findings

- In the WHO European Region, there has been slight progress in moving towards UHC. The UHC SCI measures progress on SDG 3.8.1 on a scale of 0 to 100. The regional average has slightly increased from 75 in 2015 to 77 in 2017; with scores ranging between 59 and 87 across Member States of the Region. The proportion of the population with large household expenditures on health (a measure of progress on SDG 3.8.2) varies widely across the Region and, over time, the regional average for this has increased.
- Regional measures show that the incidence of impoverishing health spending ranges from 0.3% to 9.0% of households. The incidence of catastrophic health spending ranges from 1% to 19%. Catastrophic health spending is most likely to affect people in the poorest fifth of the population. It is largely driven by out-of-pocket payments for outpatient medicines.
- Across the WHO European Region, self-reported unmet need for care due to cost, distance or waiting time is typically higher for dental care than for health care. Gaps in the coverage of dental care, which are widespread, tend to lead to unmet need for poorer households and catastrophic spending for richer households.

The goals for UHC, as set out in SDG 3.8, are to ensure that everyone can use the quality health services they need without experiencing financial hardship. UHC is central to health and well-being, alleviates poverty, reduces socioeconomic inequalities and contributes to economic growth and health security *(1)*. Cross-country surveys show that people in the WHO European Region place a high value on affordable access to health care for themselves and for others, regarding it as a priority for government spending *(2,3)*.

Monitoring progress towards UHC commonly involves indicators of access to health services and financial protection. In the SDG monitoring framework, progress towards UHC is tracked using two indicators:

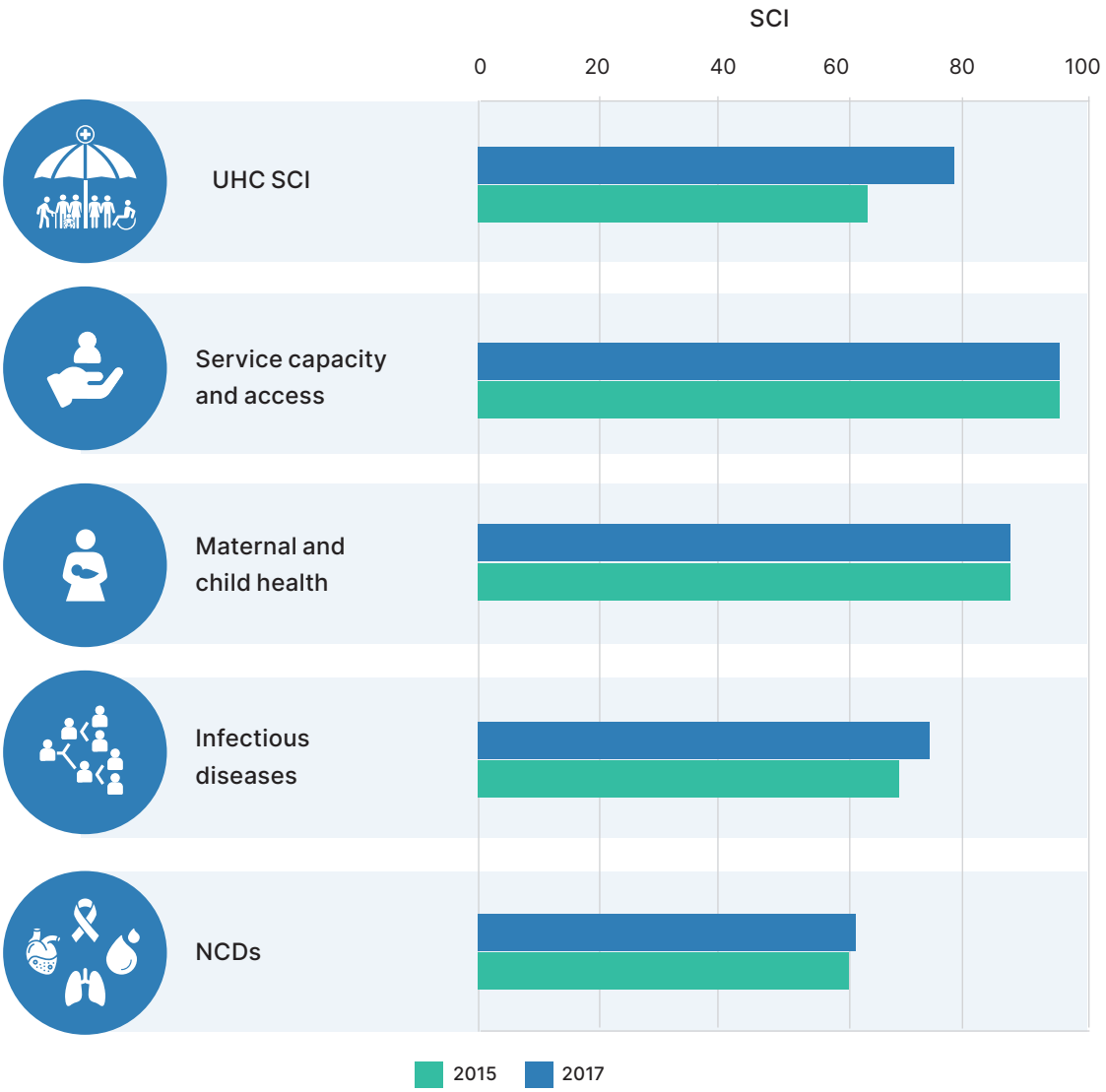
- SDG 3.8.1: the SCI, which measures coverage of selected essential health services *(4)*; and
- SDG 3.8.2: the proportion of the population with large out-of-pocket payments for health care *(5)*.

Due to limitations with the metrics used to monitor access and financial protection in the SDG framework, the EPW monitors progress towards UHC using other measures. The following sections review the SDG and EPW indicators.

Coverage of essential health services

Indicators of service coverage aim to track the extent to which people are able to use the health services they need. SDG 3.8.1 is measured using an index that combines 16 tracer interventions in a single summary measure (the SCI, with a scale of 0 to 100, where 100 is the optimal value). The tracer interventions are grouped into four components: maternal and child health, infectious diseases, NCDs, and service capacity and access. The SCI in the WHO European Region was 77 in 2017 (Fig. 2.1), with the service capacity and access component rated the highest and the NCDs component rated the lowest (Table 2.1) *(6)*. The two components of service capacity and access and maternal and child health did not improve from 2015 to 2017, but the infectious diseases component increased by 5 points.

Fig. 2.1. SCI and components in the WHO European Region, 2015 and 2017



Source: WHO, 2021 *(6)*.

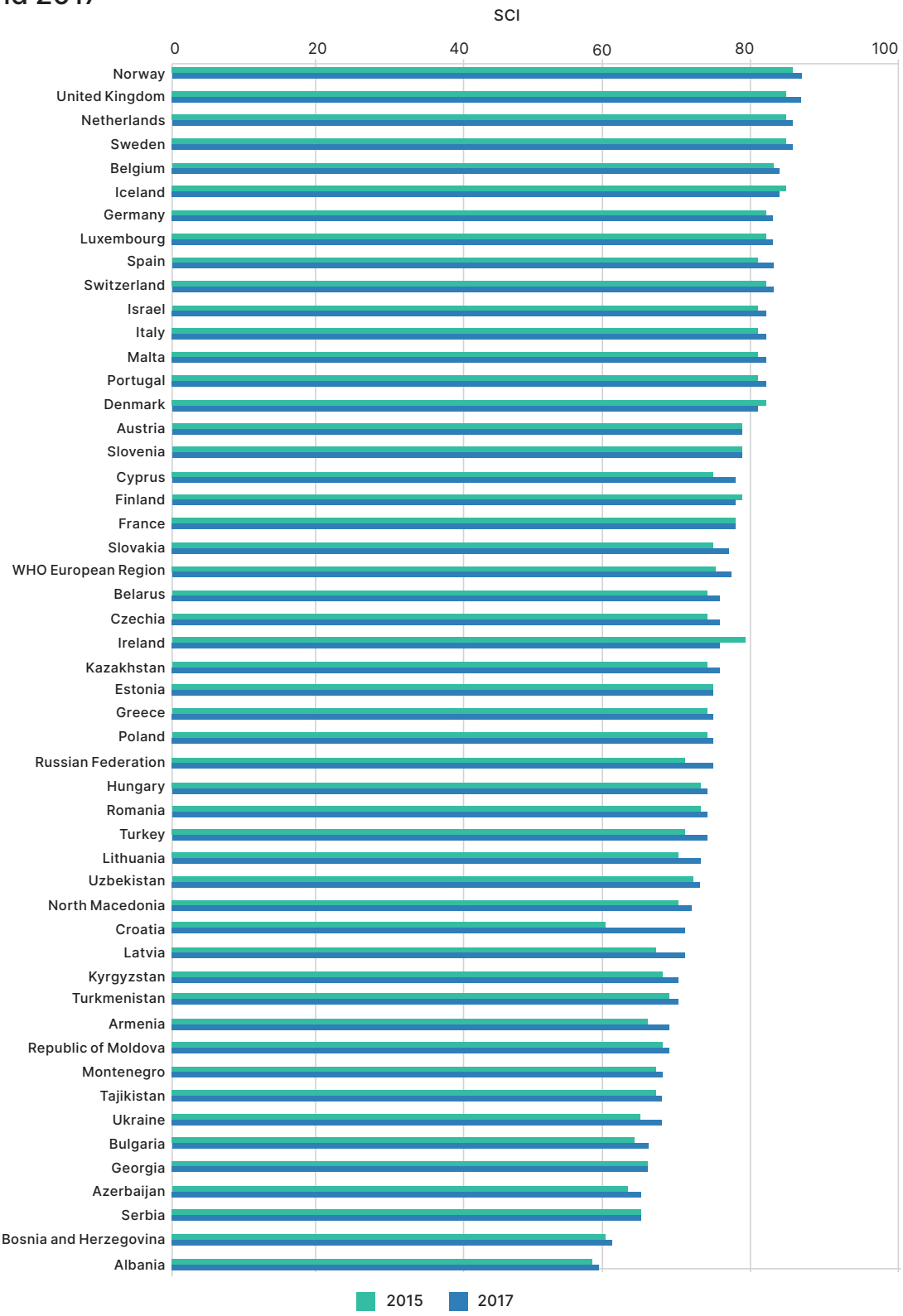
Table 2.1. SCI components in the WHO European Region

SCI component	Values in 2017	Change from 2015 to 2017
Service capacity and access: basic hospital access, health worker density, access to essential medicines, health security (compliance with the IHR)	Regional average: 94 Minimum: 69 Maximum: 100	Regional average: no change Increase: 13 countries Decrease: 21 countries
Maternal and child health: family planning, pregnancy and delivery care, child immunization, child treatment	Regional average: 86 Minimum: 45 Maximum: 96	Regional average: no change Increase: 17 countries Decrease: 13 countries
Infectious diseases: TB treatment, HIV antiretroviral therapy, use of insecticide-treated bed nets for malaria prevention, adequate sanitation	Regional average: 73 Minimum: 55 Maximum: 86	Regional average: +5 Increase: 44 countries Decrease: 5 countries
NCDs: prevention and treatment of raised blood pressure, prevention and treatment of raised blood glucose, tobacco (non-) smoking	Regional average: 61 Minimum: 42 Maximum: 74	Regional average: +1 Increase: 32 countries Decrease: 0 countries

Source: WHO, 2021 *(6)*.

The SCI values vary widely in the WHO European Region. In 2017 values ranged from 59 to 87 across 50 Member States (Fig. 2.2). The average SCI increased slightly from 75 in 2015 to 77 in 2017, with an SCI value increase in 40 Member States.

Fig. 2.2. SCI in 50 WHO European Region Member States, 2015 and 2017



Source: WHO, 2021 *(6)*.

Large household expenditures on health

Indicators of financial protection aim to assess financial hardship by monitoring the impact of out-of-pocket payments (household expenditures on health) in relation to ability to pay for health care (catastrophic health spending) or in relation to a pre-defined poverty line before and after spending out of pocket (impoverishing health spending).

SDG 3.8.2 monitors catastrophic health spending by measuring the proportion of the population with out-of-pocket payments that exceed 10% and 25% thresholds for household consumption (or income, where data on consumption are not available) *(5)*.

Values for this indicator vary widely in the WHO European Region, as summarized in Table 2.2. In 2015 values ranged from 1.4% to 29.2% (10% threshold) and from 0.1% to 9.0% (25% threshold). Over time, financial hardship has increased on average, rising from 6.3% in 2000 to 7.4% in 2015 (10% threshold) and from 1.0% to 1.2% (25% threshold).

Table 2.2. Large household health expenditures in the WHO European Region, 2015

Range	Household expenditure on health as percentage of total household expenditure or income, exceeding	
	10% threshold	25% threshold
Regional average	7.38	1.15
Minimum	1.42	0.05
Maximum	29.21	8.98

Source: WHO, 2021 *(6)*.

Challenges for equity analysis in the SDG monitoring framework for UHC

A vital aspect of the SDGs is the pledge to leave no one behind *(7)*. To meet this commitment requires data, indicators and metrics amenable to equity analysis. Both SDG 3.8.1 and SDG 3.8.2 are limited in this respect.

The SCI used to measure SDG 3.8.1 does not allow disaggregation by socioeconomic status, so it is not possible to see whether some groups of people have higher levels of service coverage than others.

An important weakness of the way in which SDG 3.8.2 measures financial protection is that it does not account for differences in household ability to pay for health care *(8,9)*. It applies the same effective threshold (10% or 25%) to rich and poor households alike. This means that poor households – even those living in extreme poverty – must spend at least 10% (or 25%) of their budget on health to be counted as experiencing financial hardship. Conversely, a richer household may spend 10% (or even 25%) of their budget on health and still have more than enough left to spend on meeting their other needs.

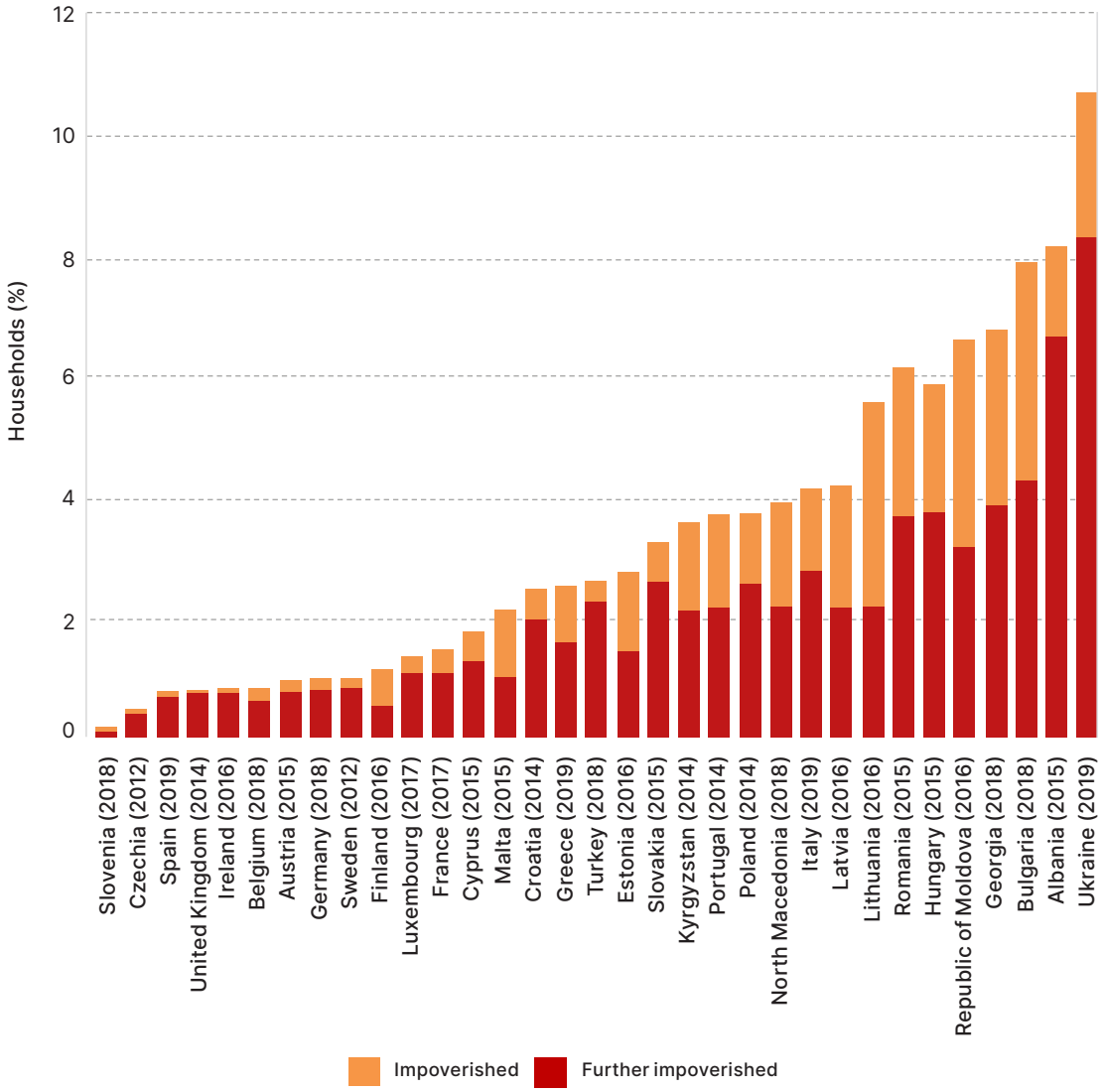
Richer households often spend more on health than poorer households, both in absolute terms and as a share of the household budget. When financial protection is measured using SDG 3.8.2, catastrophic health spending is found to be concentrated among richer households, posing a serious challenge for equity analysis *(10,11)*. This is why the EPW uses alternative measures of financial protection. The capacity-to-pay approach used in the WHO European Region assumes that households need to spend a minimum amount on basic needs such as food, housing and utilities before they can pay for health care. Using this approach, catastrophic health spending is consistently found to be concentrated among poorer households, providing a clear signal for policy action to leave no one behind *(12)*.

Equity-sensitive monitoring of UHC in the WHO European Region

The WHO Regional Office for Europe monitors UHC using regional indicators of financial hardship (impoverishing and catastrophic health spending) and foregone care (unmet need for health services), plus data on trends in spending on health and a context-specific analysis of coverage policy to identify gaps in health coverage *(12–15)*.

Out-of-pocket payments can push people into poverty or make them even poorer. The incidence of impoverishing health spending in the WHO European Region ranges from 0.2% to 10.8% of households in 33 participating Member States (Fig. 2.3).

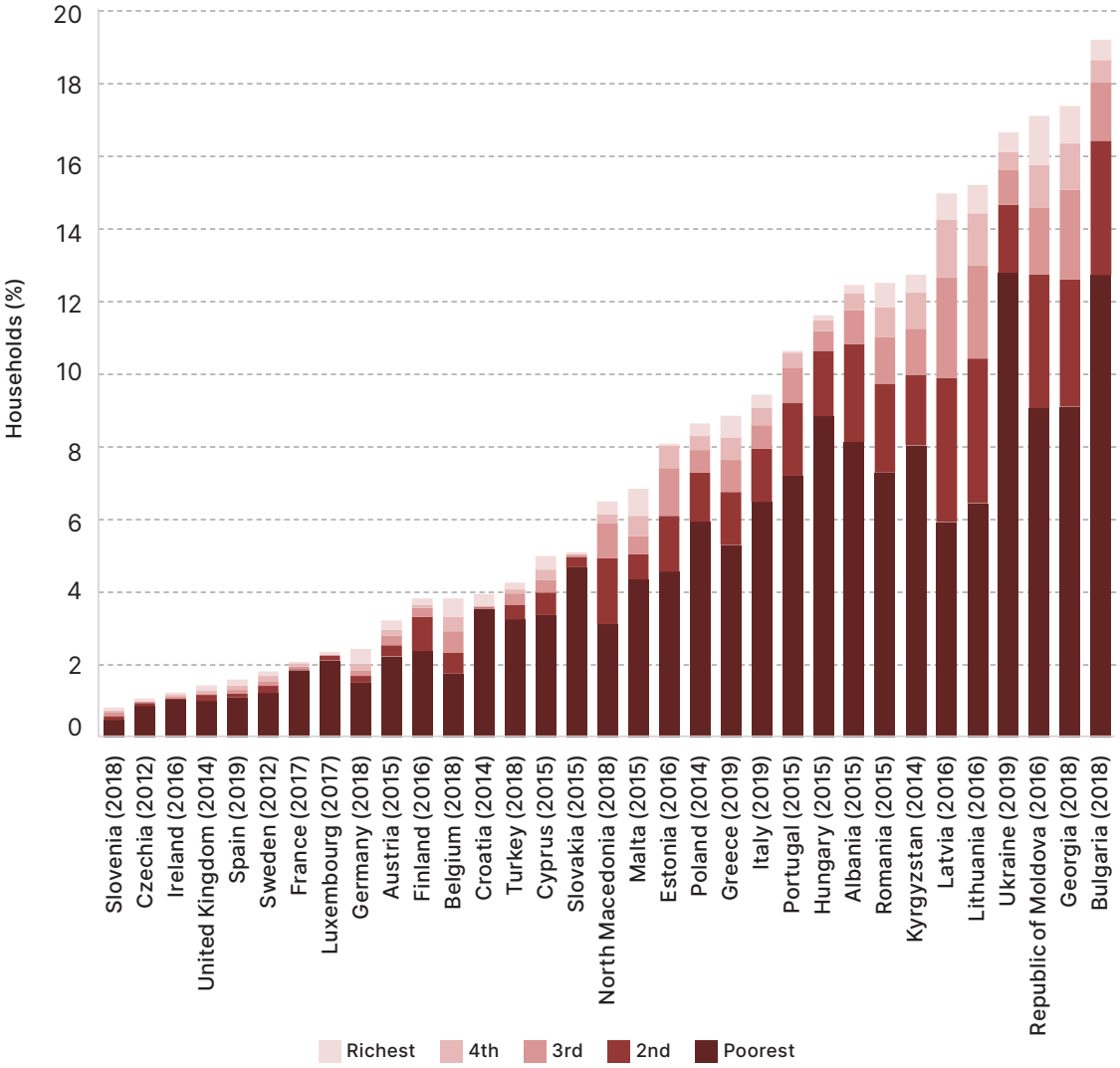
Fig. 2.3. Share of households with impoverishing health spending, latest year available



Notes: a household is impoverished if its total consumption is below the poverty line after out-of-pocket payments: that is, it is no longer able to afford to meet basic needs. A household is further impoverished if its total consumption is below the poverty line, it is already unable to meet basic needs, and it incurs out-of-pocket payments.
Source: WHO Regional Office for Europe, 2019 *(12)* and updated unpublished data from the WHO Barcelona Office for Health Systems Financing.

The share of households with catastrophic health spending in these 33 Member States ranges from 0.8% to 19.2% (Fig. 2.4). Across the WHO European Region, people in the poorest fifth of the population are most likely to experience catastrophic health spending (Fig. 2.4).

Fig. 2.4. Share of households with catastrophic health spending by consumption quintile, latest year available

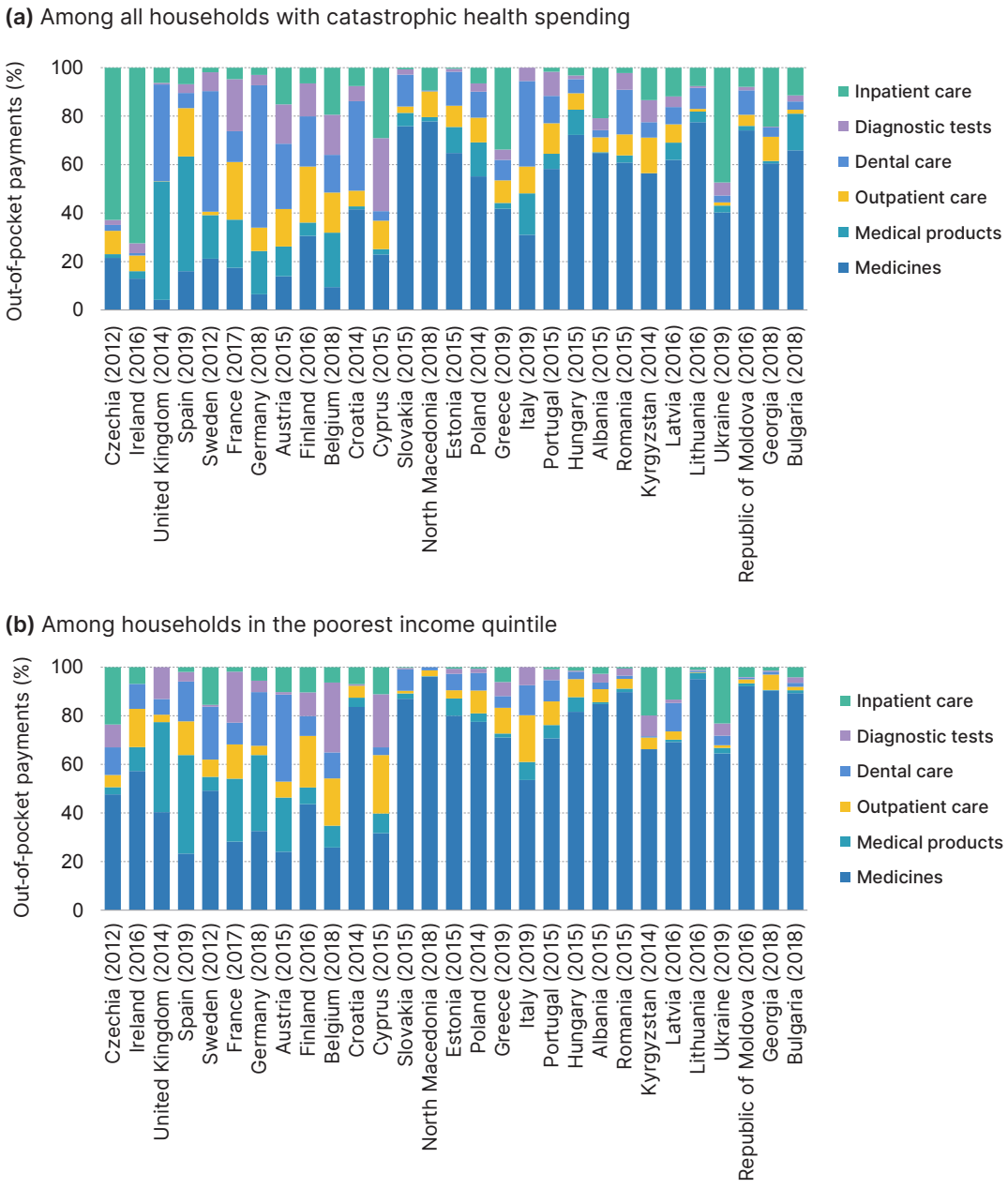


Notes: consumption quintiles are based on per-person consumption using Organisation for Economic Co-operation and Development equivalence scales. The first quintile is labelled poorest and the fifth quintile richest.

Source: WHO Regional Office for Europe, 2019 *(12)* and updated unpublished data from the WHO Barcelona Office for Health Systems Financing.

Out-of-pocket payments incurred by households with catastrophic health spending are mainly linked to spending on outpatient medicines, followed by dental care (Fig. 2.5). The share of catastrophic health spending due to outpatient medicines is consistently higher than average in the poorest quintile.

Fig. 2.5. Breakdown of out-of-pocket payments by health service



Notes: (a) Among all households with catastrophic health spending. (b) Among households in the poorest income quintile. The 29 Member States are ranked by incidence of catastrophic health spending from lowest to highest. Among categories, medicines are for outpatient use; medical products include items such as corrective lenses, hearing aids, crutches and wheelchairs; and diagnostic tests cover services supplied by paramedical practitioners). Spending on mental health services is not reported separately and spending on long-term care is excluded.

Source: WHO Regional Office for Europe, 2019 *(12)* and updated unpublished data from the WHO Barcelona Office for Health Systems Financing.

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Financial protection indicators capture financial hardship arising from the use of health services but do not indicate whether out-of-pocket payments create a barrier to access, resulting in unmet need.

Unmet need for health and dental care due to cost, distance or waiting time varies widely across countries in the Region, although comparative data on unmet need should be interpreted with caution *(16,17)*. Unmet need tends to be low in countries where the incidence of catastrophic spending is very low (Fig. 2.4) and income inequalities in unmet need (data not shown) are also relatively small. In these countries, we can be reasonably confident that low levels of financial hardship are not the result of people being unable to access services.

When the incidence of catastrophic spending is higher, however, there is no clear relationship with unmet need on average (Fig. 2.4), but income inequalities in unmet need tend to be substantial (data not shown). In countries where catastrophic spending and unmet need are both high, it is possible that if more people were able to access services then their exposure to out-of-pocket payments would increase and catastrophic spending would be even higher.

Unmet need is typically higher for dental care than for health care. Gaps in the coverage of dental care, which are widespread in the Region, tend to result in unmet need for poorer people and financial hardship for richer people *(12)*.

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Health worker density and distribution

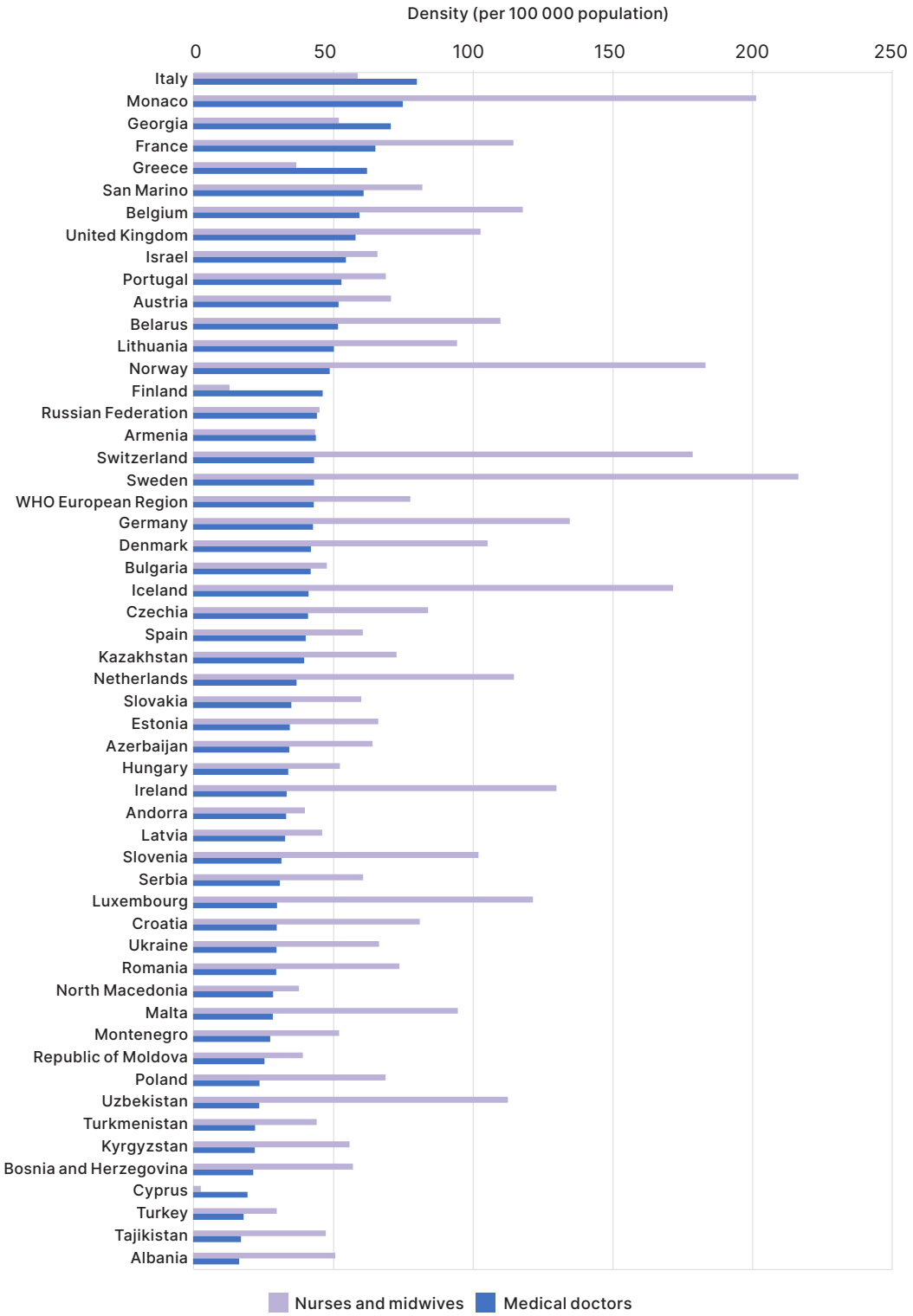
Main findings

- The WHO European Region has the largest density of medical doctors (47.2 per 10 000 population) globally and reports the second highest density of nursing and midwifery personnel (81.9 per 10 000 population).
- The density of health workers (doctors, midwives and nurses) within the WHO European Region increased slightly from 124 per 10 000 population in 2014 to 129 per 10 000 population in 2018; the density (per 10 000 population) of doctors increased from 44.4 to 47.2 and of nurses from 79.5 to 81.9.

Preparing the health workforce to work towards the attainment of a country's health objectives represents one of the most important challenges for its health system. The 2030 Agenda recognises that UHC is key to achieving all other health targets. SDG 3c sets a target to "substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States". WHO and its partners developed the Global Strategy on Human Resources for Health: Workforce 2030 *(18)* to accelerate progress towards UHC and the SDGs by ensuring equitable access to health workers within strengthened health systems. The target is monitored based on SDG 3.c.1 (health worker density and distribution) *(19)*. The health priorities outlined in 2015 for SDG 3 will remain aspirational unless accompanied by strategies involving transformational efforts on health workforce capability. These health priorities include AIDS, TB and malaria; achieving drastic reductions in maternal mortality; expanding access to essential surgical services; ending preventable deaths of newborns and children aged under 5 years; reducing premature mortality from NCDs; promoting mental health; addressing chronic diseases; and guaranteeing UHC.

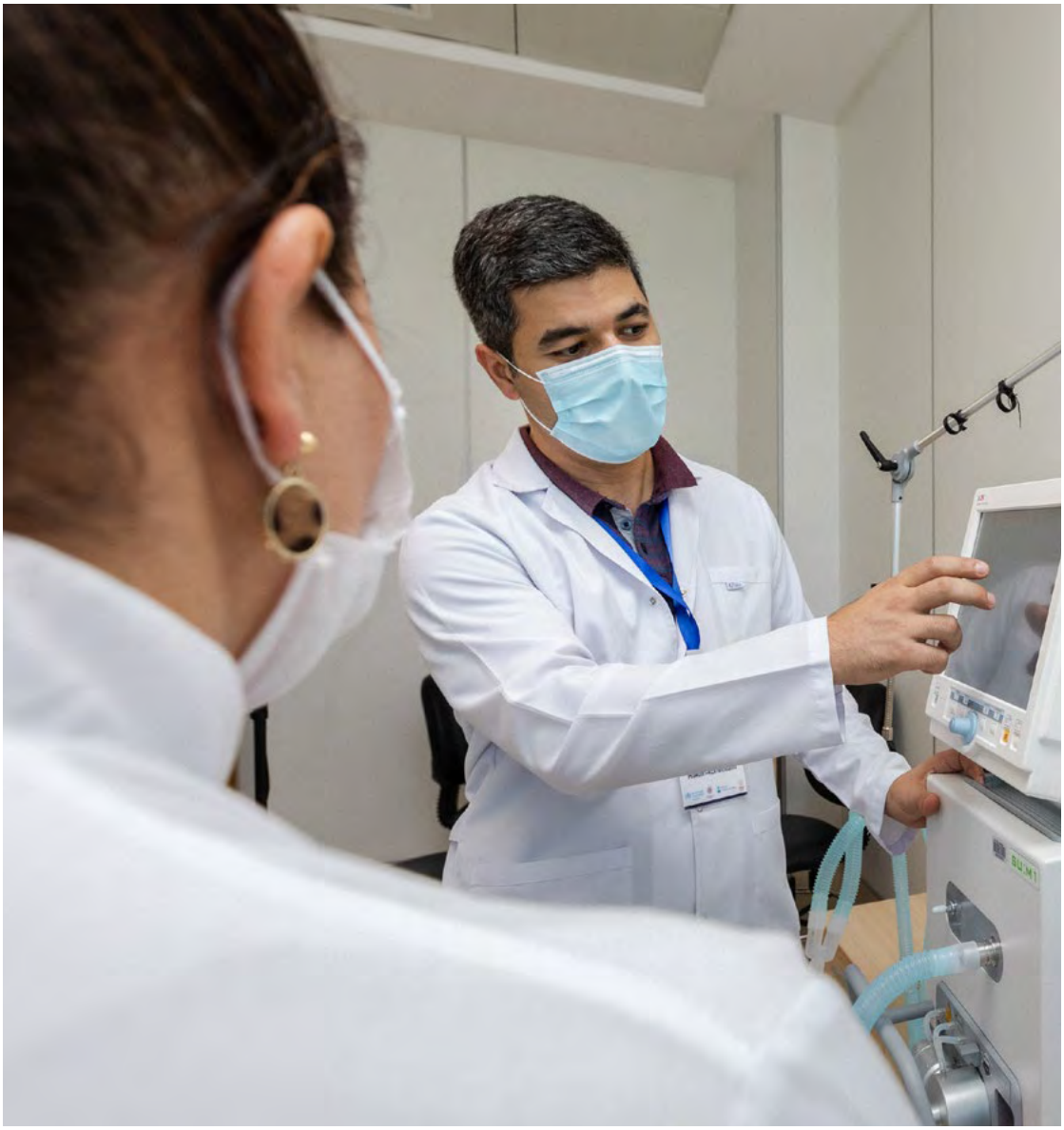
The WHO European Region reported in 2018 the highest density of doctors globally (47.2 per 10 000 population; weighted average across 28 countries) and the second highest density of nurses and midwives (81.9 per 10 000 population; weighted average across 30 countries). The density of doctors, nurses and midwives increased between 2014 and 2018: the density of doctors increased from 44.4 per 10 000 population in 2014 to 47.2 per 10 000 population in 2018, and the density of nurses and midwives increased from 79.5 per 10 000 population in 2014 to 81.9 per 10 000 population in 2018 *(20,21)*. The right skills-mix of health workers is indispensable for effective and efficient health-care delivery *(22)*. Although there is no standard for the optimal composition of a health workforce, the physician to nurse ratio varies considerably across the Region. The average ratio of nurses to medical doctors was 1.8, compared with 2.8 in the Organisation for Economic Co-operation and Development (OECD) countries. In all but five of the 53 Member States in the Region, the density of nursing and midwifery personnel is greater than that of medical doctors (Fig. 2.6). Strengthening primary health care in the Region will require a focus on increasing the capacity of the medical workforce to produce and employ greater numbers of general practitioners. However, the majority of physicians in the Region are specialists: the specialist to general practitioner ratio is 3.2:1, and has remained constant since the late 2000s *(22)*.

Fig. 2.6. Density of medical doctors and nursing and midwifery personnel in Member States of the WHO European Region, 2018



Source: WHO, 2021 *(6)*.

In 2006 WHO initially set the threshold for the density of health workers (physicians, nurses and midwives) at 22.8 per 10 000 population as the benchmark to ensure a coverage of skilled birth attendance of 80% or more *(23,24)*. In 2016 WHO revised the threshold to 44.5 per 10 000 population as the SDG index benchmark *(18,25)*. All Member States in the WHO European Region meet this recommendation. As for other health practitioners, the density of dentists ranges from 0.5 to 17.9 per 10 000 population across Member States *(20)*. Similar inequalities are displayed in pharmacist density, which ranges from 0.3 to 26.3 across Member States *(20)*.



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Core priority 2. Protecting against health emergencies

Main findings

- The IHR core capacities are those required to detect, assess, notify and report events and to respond to public health risks and emergencies of national and international concern. The average IHR core capacity index (the average percentage of attributes of 13 core capacities) for the WHO European Region increased from 73% in 2018 to 74% in 2020, which is the highest score across the WHO regions.
- IHR capacity across Member States is the highest for coordination and national IHR focal point functions (81%), surveillance (81%) and laboratory capacity (81%), and the lowest for capacity at points of entry (60%), for risk communication (66%) and chemical events (66%).
- In 2020 the IHR core capacity index ranged from 33% to 100% in 47 out of 55 IHR States Parties reporting data in the WHO European Region (States Parties also include the Holy See and San Marino).
- Three of the 10 Member States with IHR scores of 60% or less in 2019 improved their capacities in 2020.

IHR capacity and health emergency preparedness

Adequate investment in preparedness, early detection, risk assessment, information sharing and rapid response are essential to avoid illness, injury, death and economic losses on a large scale during health emergencies. However, not all countries have the same capacity to manage health emergency risks *(26)*. The IHR is an instrument of international law that is legally binding on 196 States Parties (of which, 194 are WHO Member States) *(27)*. The WHO European Region hosts two additional States Parties (the Holy See and San Marino) *(28)*. The IHR provides countries with rights and obligations, including the necessity to report public health events of international concern. It is an overarching framework for countries to work towards saving lives and livelihoods when exposed to the global spread of diseases and other health hazards.

IHR States Parties are required to have or to develop minimum public health capacities to implement the IHR effectively *(27)*, by preventing, protecting against, controlling and responding to the international spread of disease while avoiding unnecessary interference with international traffic and trade *(27,28)*. Countries designate a national IHR focal point function and establish and maintain core capacities for surveillance and response, including at designated points of entry, and introduce safeguards to protect the rights of travellers. The COVID-19 crisis has highlighted the need for preparedness and prompt response, cooperation and solidarity, as well as for clearly defined command-and-control emergency management mechanisms and structures *(14)*.

At the heart of WHO's vision for the future of public health and for the GPW13 are the triple billion targets, one of which is for 1 billion more people to be better protected from health emergencies *(29,30)*. This is in line with SDG 3.d (strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks). Progress is monitored using the IHR capacity and health emergency preparedness indicator. It assesses emergency preparedness across the 13 IHR core capacities at country level, as reported through the State Party Self-Assessment Annual Reporting (SPAR) mechanism *(31)*.

The IHR core capacity index is the mean value of levels of emergency preparedness across the 13 core capacities; these enable the timely detection,

assessment and reporting of responses to public health events *(27,28)*. Each IHR capacity reflects one to three indicators. Performance of the WHO European Region for the core capacity index is described in this section.

Member States of the Region are diverse in terms of geographical and population sizes, economic performance, epidemiological and risk profiles, health system maturity and other factors that might influence their health emergency preparedness and response capacity *(32)*. The average IHR core capacity index for the WHO European Region was 74% in 2020, which is the highest score across the six WHO regions (Fig. 2.7). This represents a 1 percentage point increase from 2018 to 2020, with 47 out of 55 IHR States Parties in the WHO European Region reporting data in 2020.

The highest IHR capacity scores (> 80%) were obtained in IHR coordination and national IHR focal point functions, surveillance, and laboratory capacity. Based on the latest available data, remaining IHR challenges (scores of <70%) relate to points of entry, risk communication and chemical events. In 2019 and 2020 effective public health response at points of entry was the only IHR indicator with a score of 60% or lower in the Region (Fig. 2.7).

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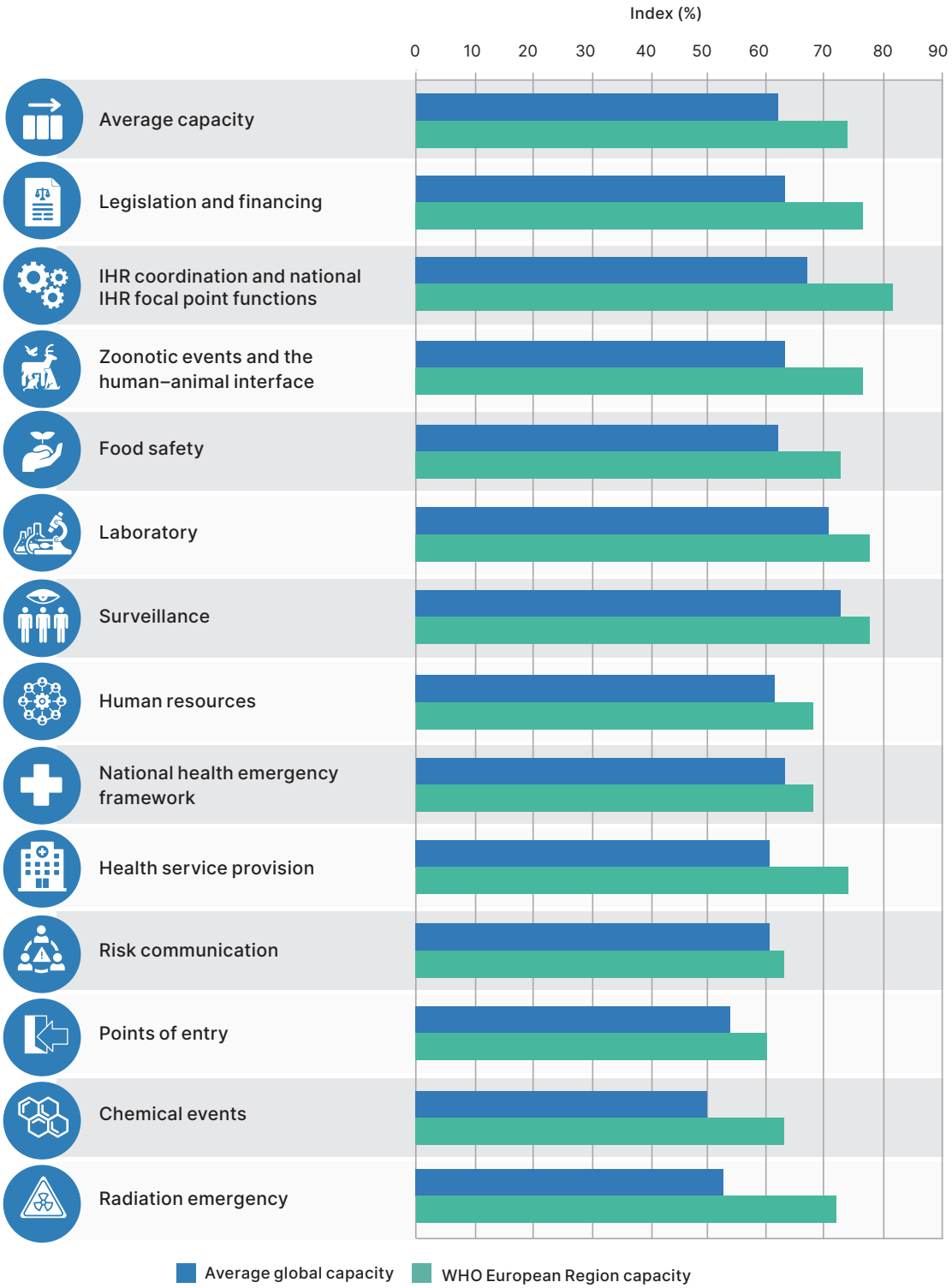
Fig. 2.7. IHR core capacity index in the WHO European Region and average global capacity, 2020



Note: data collection for the year 2020 started in July 2020 with an end date of February 2021; score by capacity and indicator 2020 was updated on 20 July 2021.

Source: WHO, 2019 *(31)*.

In 2020 the IHR core capacity index ranged from 33% to 100% in the 47 IHR States Parties that reported data, whereas in 2019 this score ranged between 35% and 99% (Fig. 2.8). In 2020 seven Member States scored between 40% and 60%, whereas in 2019 nine Member States scored within this range (out of 53 Member States reporting data). Across Member States, changes in IHR scores between 2019 and 2020 ranged from a 16 percentage point decrease to an 11 percentage point increase; of the 10 Member States that scored 60% or less in 2019, three improved their IHR score in 2020. Eighteen Member States reduced their scores from 2019 to 2020.

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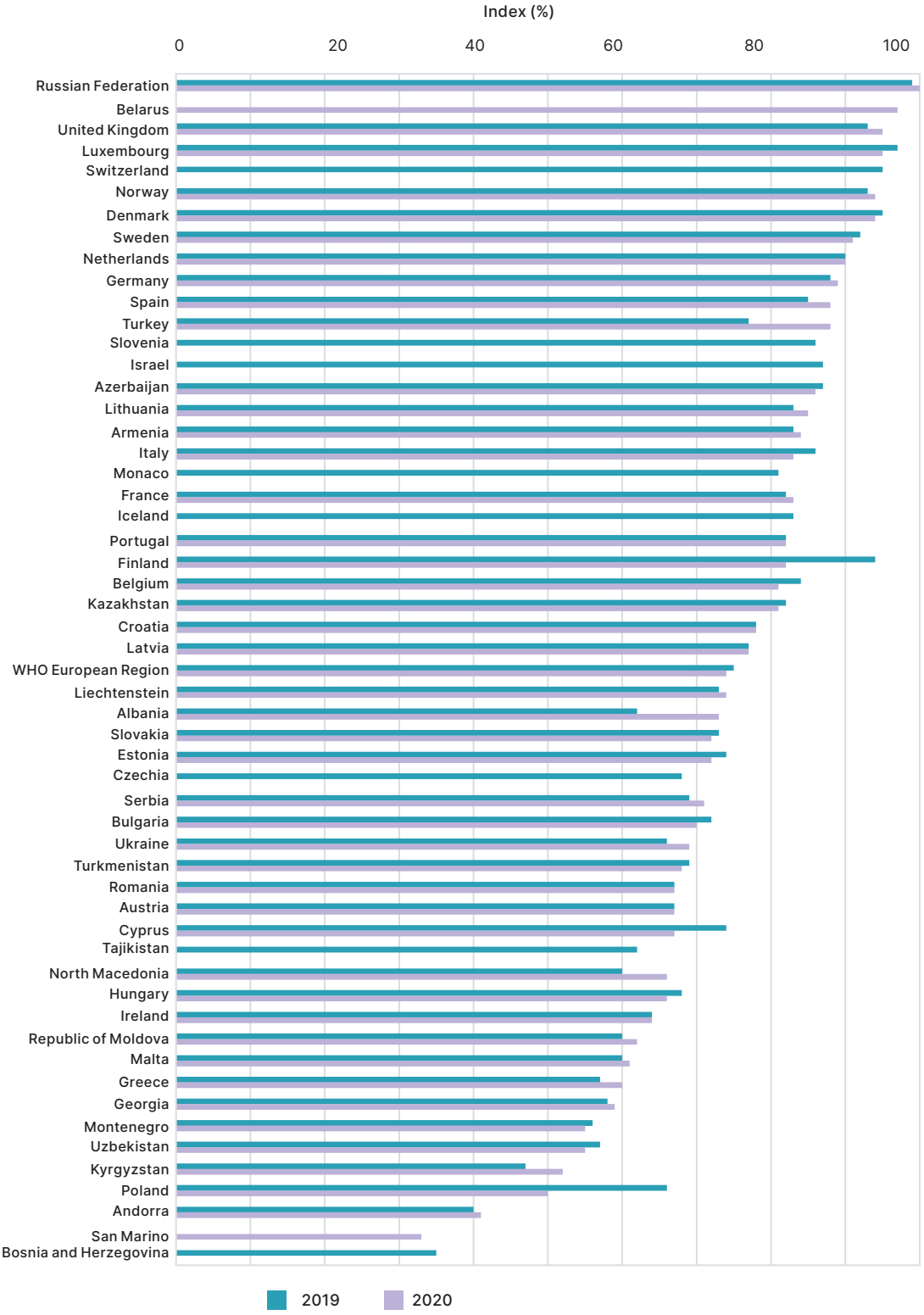
Fig. 2.8. IHR core capacity index in Member States of the WHO European Region, 2019 and 2020



Note: data were available in 47 States Parties in 2020 and in 52 in 2019.
Source: WHO, 2019 *(31)*.

Across the Member States of the WHO European Region, IHR capacities in 2020 were the lowest (<20%) at points of entry and for risk communication and human resources (Table 2.3). Eight Member States that submitted SPAR data reported 0% capacity at designated international points of entry such as airports, ports and ground crossings. IHR core capacities were highest (80% and higher) for surveillance attributes, IHR coordination and national IHR focal point functions, laboratory capacities, and zoonotic events and human–animal interface capacities.

Table 2.3. WHO European Region Member States by IHR capacity score in 2020

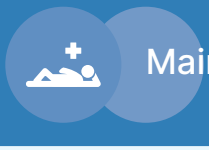
IHR core capacity	Number of countries with scores per capacity at		
	0–20%	21–60%	61–100%
Legislation and financing	2	8	36
IHR coordination and national IHR focal point functions	0	7	39
Zoonotic events and the human–animal interface	2	10	34
Food safety	2	9	35
Laboratory capacity	0	7	39
Surveillance	1	4	41
Human resources	4	15	27
National health emergency framework	2	14	30
Health service provision	0	13	33
Risk communication	4	21	21
Points of entry	9	13	24
Chemical events	4	18	24
Radiation emergencies	2	14	30

Source: WHO, 2019 *(31)*.

Core priority 3. Promoting health and well-being

Efforts to promote health and well-being can be considered under the major areas outlined in the health-related SDGs: NCDs and their risk factors; infectious diseases, immunization and AMR.

Premature mortality caused by NCDs



Main findings

- In the WHO European Region, NCDs are a major contributor to premature mortality. NCDs are linked to 90% of deaths and 85% of years lived with disability, and most of the NCD burden is caused by preventable and amenable risk factors.
- Two thirds of all deaths before age 70 years in the WHO European Region are caused by four major NCDs: cardiovascular diseases, cancers, chronic respiratory disease and diabetes.
- Every fifth male and every tenth female in the WHO European Region dies before their 70th birthday from one of the four major NCDs, mostly cardiovascular diseases and cancers.
- Inequalities in premature mortality are substantial between Member States, mainly driven by differences in mortality from cardiovascular diseases and in male mortality.

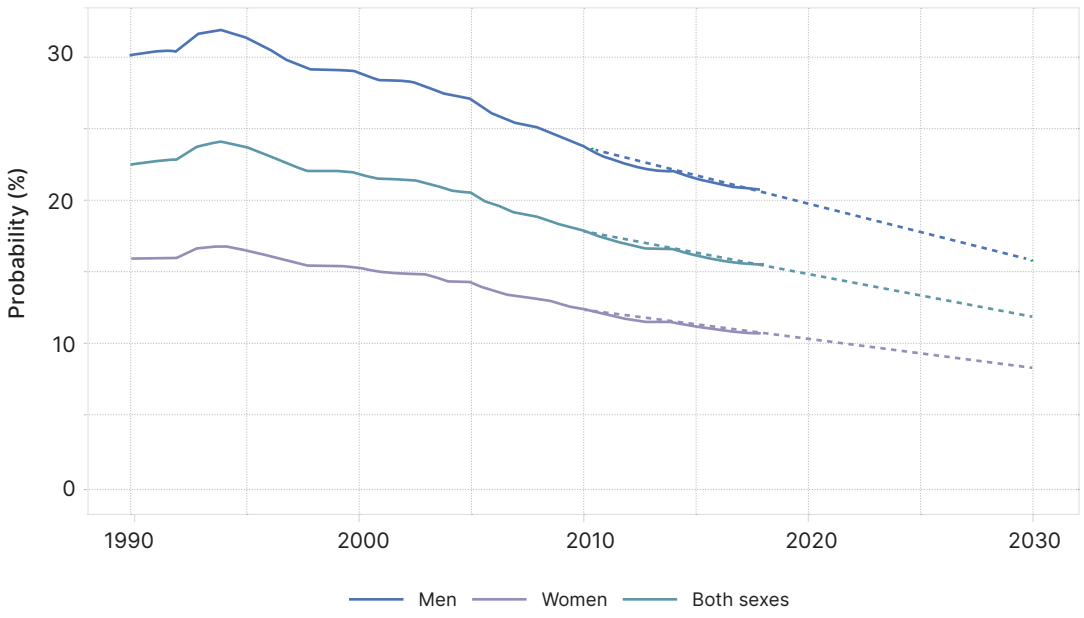
NCDs are the leading cause of ill health worldwide and their burden is increasing due to ageing and changing demographic patterns in the population (fertility, life expectancy, mortality and causes of death). The NCD burden is particularly large in the WHO European Region, where NCDs cause 90% of deaths and 85% of years lived with disability *(33)*. A large proportion of NCDs are avoidable, being both preventable and amenable to health care. Most NCDs are caused by four modifiable behavioural risk factors: tobacco use, unhealthy diet, lack of physical activity, and the harmful use of alcohol. These behavioural risk factors lead to biological risk factors, with overweight and obesity, high blood pressure, raised glucose and raised cholesterol being the most common. Taken together, preventable risk factors cause more than two thirds of NCD burden in the Region *(34)*. Recently, the links between air pollution, other environmental factors, psychological, social and economic risks and NCDs have been increasingly recognized. Therefore, premature mortality from NCDs (SDG 3.4) is a suitable marker for how the Region is performing with respect to preventing and tackling unhealthy behaviours and risk factors on the one side and the performance of health-care systems on the other. Premature mortality represents only a tip of the NCD burden in the Region, as more than two thirds of deaths occur after age 70 years. Progress on SDG 3.4 will have a central role in determining the success of at least nine SDGs. A strengthened effort is necessary across multiple sectors with effective economic tools, such as price policies and insurance. NCDs are heavily clustered in people with low socioeconomic status and are an important cause of medical impoverishment. The impact of NCDs goes well beyond ill health and poor well-being, as they cause also huge economic losses *(35)*.

As two thirds of all deaths before age 70 years in the Region are caused by four major NCD (cardiovascular diseases, cancer, chronic respiratory disease and diabetes), quantifying the risk of dying from these four causes is important to assess the extent of the premature mortality burden due to NCDs in a population *(36,37)*. Premature NCD mortality, which is defined as the probability that a person aged 30 years will die before their 70th birthday from one of these major NCDs under current mortality rates, was included in the SDGs as SDG 3.4.1, with the target to reduce it by one third by 2030 *(36)*. The indicator and its target are aligned with the Action Plan for the Prevention and Control of Noncommunicable Diseases in the WHO European Region *(38)* and the Global NCD Monitoring Framework *(39)*.

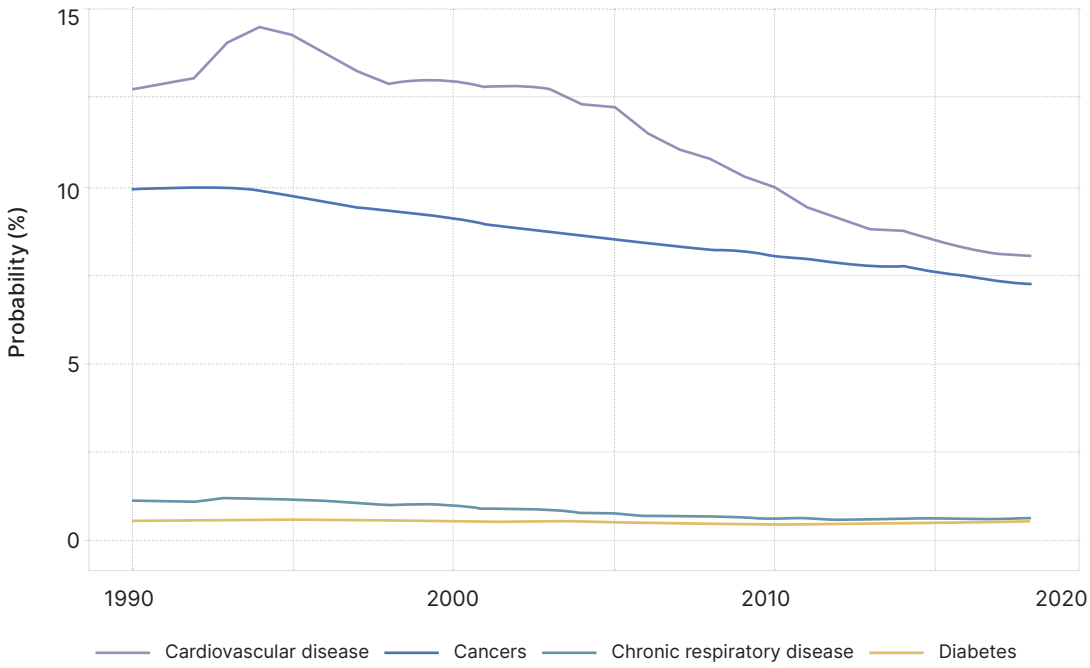
The reported probability of premature death from these four major NCDs in the WHO European Region was 15.6% in 2018 and was twice as high in men (20.8%) as in women (10.9%). In other words, every fifth man and every tenth woman in the Region is currently dying before their 70th birthday from one of the four major NCDs, and these deaths are largely avoidable (preventable and/or amenable to health care). In 2018 the WHO European Region was just on track to achieve a one third reduction between 2010 and 2030 (Fig. 2.9), and further efforts are needed to achieve the SDG target, particularly when taking into account the deceleration of mortality reductions seen in recent years and the potential effects of the COVID-19 pandemic, which remains to be quantified. In 2018 cardiovascular diseases contributed the most to premature mortality (48.9% of premature deaths), followed closely by cancer (44.1% of premature deaths), while diseases of the respiratory system (3.7%) and diabetes (3.3%) had much smaller impacts. The changes in premature mortality between 2010 and 2018 varied substantially by broad cause: declines of 19.8% for cardiovascular diseases, 9.9% for cancers and 2.0% for respiratory diseases were observed, whereas mortality from diabetes increased by 17.2%.

Fig. 2.9. Probability of premature death between ages 30 and 69 years in the WHO European Region linked to NCDs, 1990 to 2018

(a) Four major NCDs by sex and projection to 2030



(b) By broad cause of death (major NCD)



Sources: WHO Regional Office for Europe, 2017 *(37)*; WHO, 2020 *(33)*.

Inequalities in premature NCD mortality between Member States of the Region are substantial, with the probability of premature death from the four major NCDs varying nearly four-fold between Member States (Fig. 2.10). Between-country variations in premature mortality seem to be driven mainly by two factors: mortality from cardiovascular diseases (26-fold variation between countries) and mortality in men (nine-fold variation between countries), with excess mortality being more prominent in the Commonwealth of Independent States and in countries in eastern Europe. A detailed analysis of the situation and trends regarding the burden of NCDs, major risk factors and the implementation of policies in Member States of the Region was published in 2017 *(37)*.

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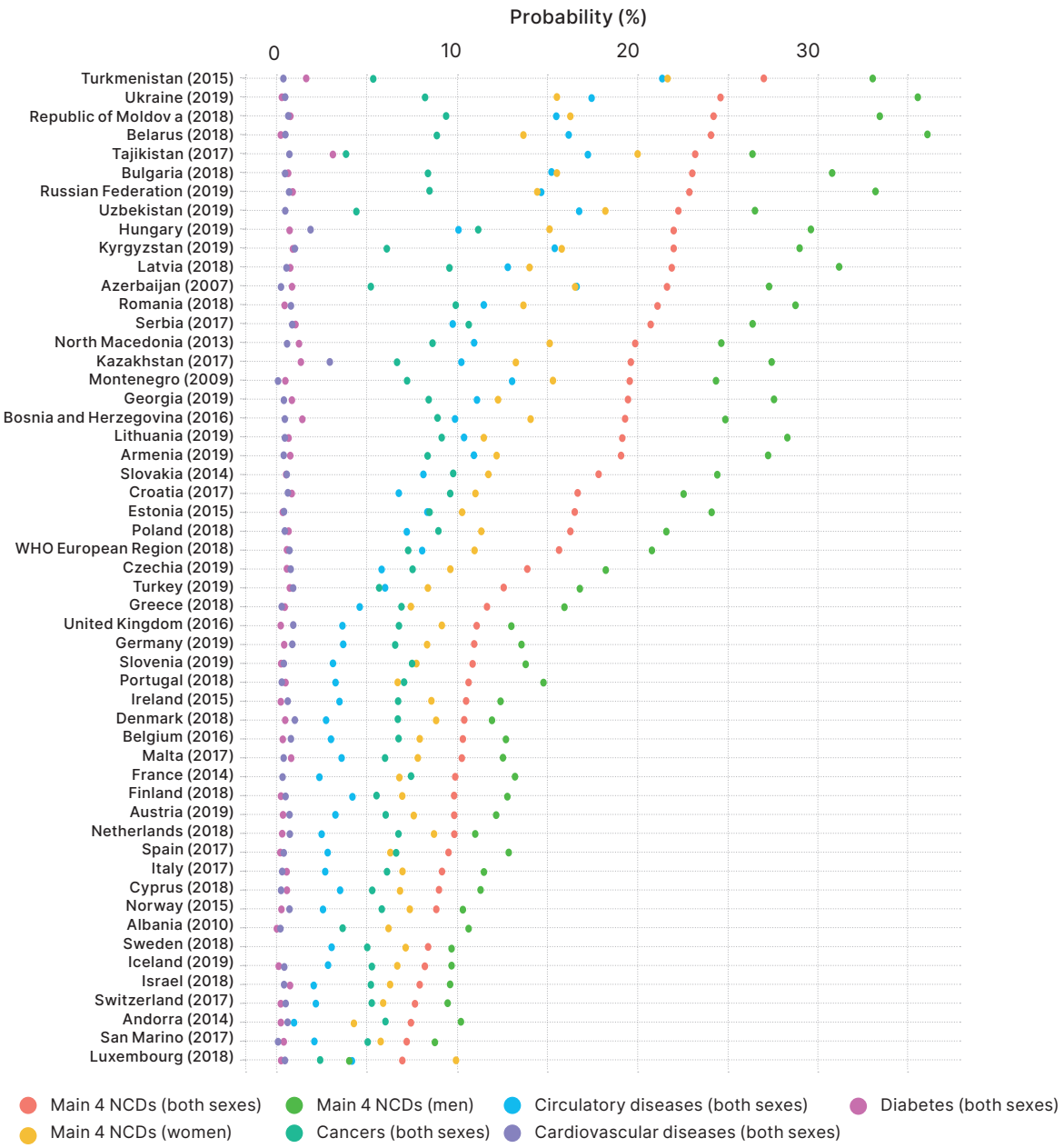
Fig. 2.10. Probability of premature death from the four main NCDs (cardiovascular diseases, cancer, chronic respiratory disease or diabetes) in Member States of the WHO European Region, latest available data



Source: WHO, 2020 *(33)*.

Suicide mortality

Main findings

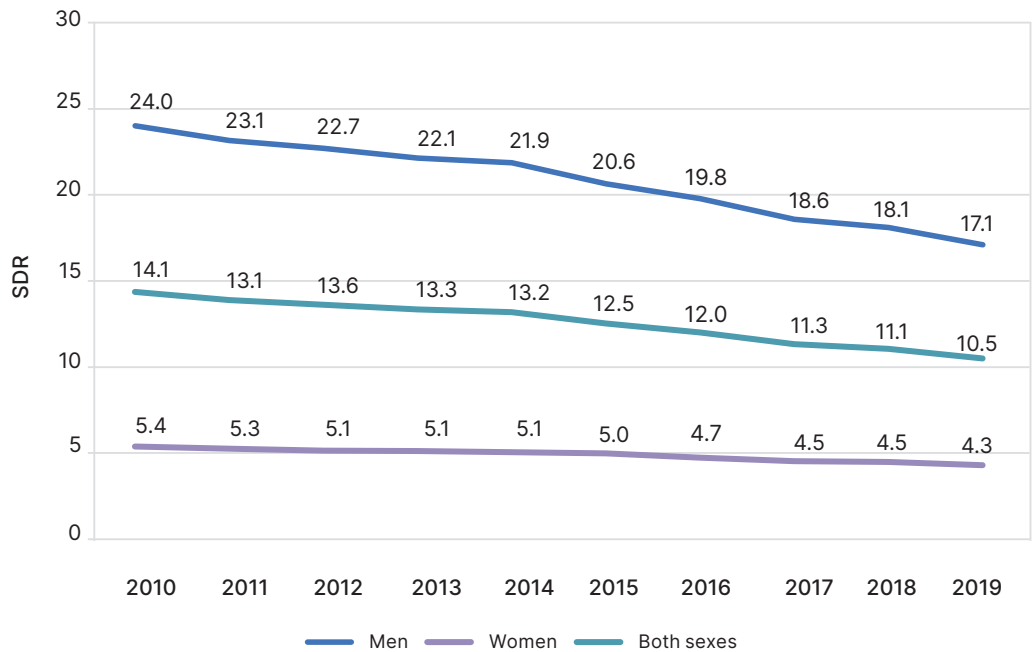
- In 2019 the WHO European Region continued to have one of the highest standardized suicide mortality rate globally (10.5 per 100 000 population), despite a 20% decrease over the 2010–2017 period.
- Across the Member States of the WHO European Region, there are large differences in suicide mortality rates, ranging from 2.3 to 21.6 deaths per 100 000 population.
- The age-standardized suicide rate is four times higher in males than in females.

Suicide is another significant cause of premature mortality, and globally every year 700 000 people take their own life, with many more suicide attempts. Every suicide is a tragedy that affects families, communities and entire countries and has long-lasting effects on the people left behind *(40–43)*. WHO has prioritized the reduction of suicide mortality in the GPW13 and WHO Mental Health Action Plan 2013–2020 (which has been extended to 2030) *(44)*. Reducing the suicide rate by a third by 2030 is also included in SDG 3.4 *(41,42)*.

Although four out of five suicides occur in low- and middle-income countries *(43)*, the WHO European Region continues to have one of the highest overall suicide mortality rates globally *(43)*. The standardized death rate from suicide and self-inflicted injuries in 2019 was 10.5 per 100 000 population, representing a total of 119 000 deaths in the Region *(41)*. Despite a steady decrease of 47% since 2000 and 27% since 2010, further efforts are needed to reach the global target of a one third reduction by 2030 that Member States committed to in the 2030 Agenda *(41,42)*.

By subgroup, the age-standardized suicide rate in the Region is four times higher in males than in females (Fig. 2.11), and suicide is the fourth leading cause of death in those aged 15–19 years *(41,42,44)*. In 2015 there were over 4000 deaths from suicide among those aged 10–19 years in the Region, principally among boys *(45)*.

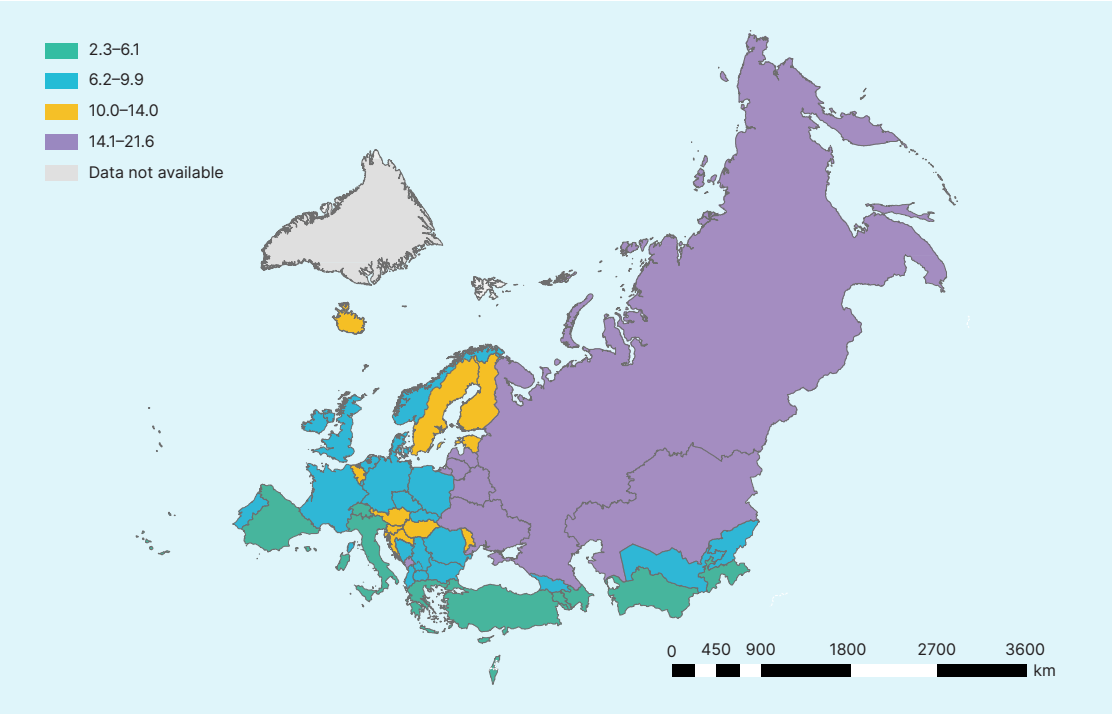
Fig. 2.11. Standardized death rate from suicide and self-inflicted injury, all ages, per 100 000 population in the WHO European Region, 2010–2017



SDR: standardized death rate.
Source: WHO, 2021 *(41)*.

There are large inequalities in suicide mortality, with a range from 2.3 to 21.6 per 100 000 population across Member States of the WHO European Region (based on the latest available data in 2013–2019; Fig. 2.12). By sex, rates ranged from 1 to 8.4 per 100 000 females and from 3.6 to 38.2 per 100 000 males.

Fig. 2.12. Standardized death rate from suicide and self-inflicted injury, all ages, per 100 000 population in Member States of the WHO European Region, latest available data



Source: WHO, 2021 *(41)*.

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Alcohol consumption

Main findings

- Total alcohol consumption per capita decreased by 1.3 litres (21%) between 2000 and 2019 in the WHO European Region; nevertheless, levels of alcohol consumption in the Region remain the highest globally. Annually, every adult (15 years and older) in the Region drinks, on average, 9.5 litres of pure alcohol.
- There are large differences in estimated alcohol consumption across Member States, ranging from 0.9 to 14.3 litres of pure alcohol per capita per year in 2019. Of the 10 countries that drink the most in the world, nine are located in the WHO European Region, where alcohol also makes the largest contribution to all-cause mortality.
- Since the SDGs were adopted in 2015, alcohol consumption levels have stagnated in the WHO European Region, with only a small decrease of 0.3 litres (3.1%) per capita reported between 2015 and 2019. The most substantial decline at country level was 3.7 litres per capita, and the most substantial increase was 2.1 litres per capita, while overall changes have been modest and for some Member States statistically non-significant. Out of 51 Member States with available data, only six have reduced their alcohol consumption by more than 1 litre per capita.

Alcohol use is one of the leading risk factors for population health worldwide. Total alcohol per capita consumption is defined as the total amount (sum of recorded and unrecorded alcohol) of alcohol consumed per person (15 years of age or older) over a calendar year, in litres of pure alcohol, adjusted for tourist consumption. It has a cross-cutting impact on the 2030 Agenda: it affects 14 out of the 17 SDGs *(46)*. Alcohol is recognized as a cause for more than 200 diseases and injuries in the International Classification of Diseases *(46)*, with at least 40 diseases and injuries being 100% attributable to alcohol. It has a direct impact on 52 health-related targets of the SDGs, including those for maternal and child health, infectious diseases (TB, HIV, viral hepatitis), NCDs and mental health, injuries, and poisonings *(47)*.

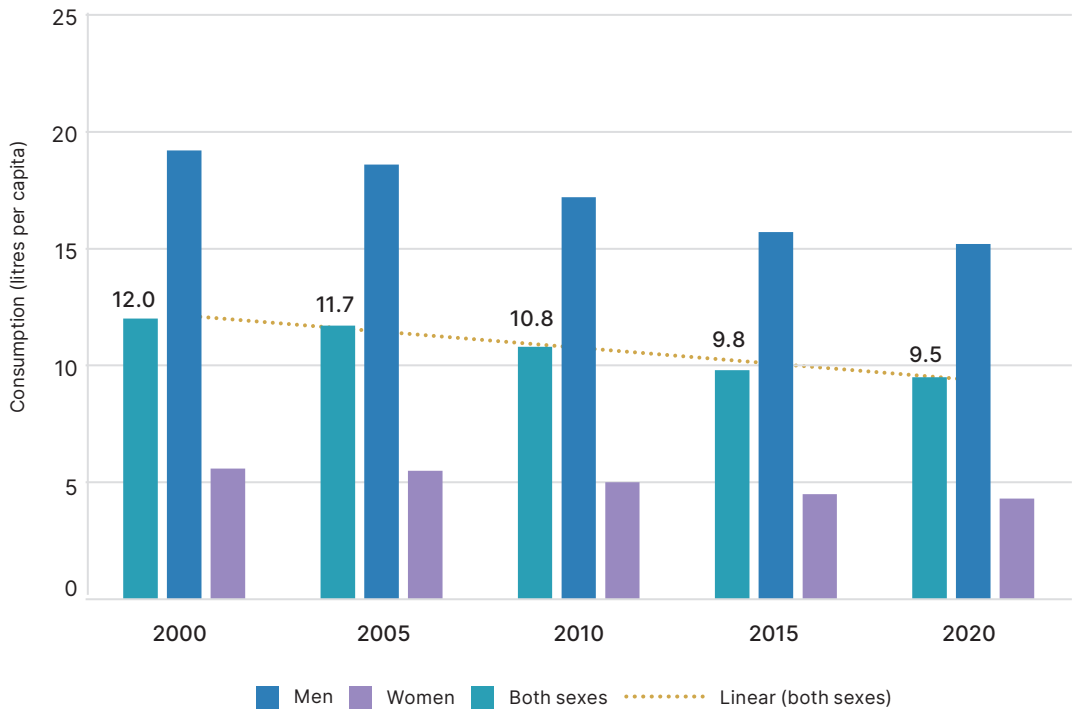
There are two alcohol-specific indicators to monitor progress towards SDG 3.5: SDG 3.5.1 (coverage of treatment interventions (pharmacological, psychosocial and rehabilitation and after-care services) for substance use disorders) *(48)* and SDG 3.5.2 (harmful use of alcohol, defined according to the national context as alcohol per capita consumption (aged 15 years and older) within a calendar year, in litres of pure alcohol) *(49)*. The inclusion of these specific indicators highlights the recognition of the harm inflicted on individuals and societies by alcohol consumption, as well as the need to regulate it effectively.

Alcohol consumption per capita decreased from 12 litres in 2000 to 9.5 litres in 2019 corresponding to a 10% decrease by 2010 and a 21% decrease by 2019. Nevertheless, the WHO European Region still displays the highest level of alcohol consumption per capita in the world *(50,51)*. Annually, every adult (15 years and older) in the Region drinks on average 9.5 litres of pure alcohol (Fig. 2.13), equivalent to 190 litres of beer, 80 litres of wine or 24 litres of spirits.

In the WHO European Region, men drink approximately 3.5 times more alcohol than women, and there are large gender differences in the prevalence of alcohol use disorders: 14.8% among men and 3.5% among women *(52)*. Alcohol consumption is causally linked to 31% of deaths from digestive diseases, 11% of deaths from cardiovascular diseases, 6% of deaths from cancers, 30% of deaths from unintentional injuries (falls, drowning, road traffic accidents) and 39% of deaths from intentional injuries (suicide, homicide) *(51)*. Furthermore, a growing body of evidence demonstrates that socioeconomic status modifies the effect of alcohol consumption on health. Alcohol-related harm is greater for low-income drinkers and

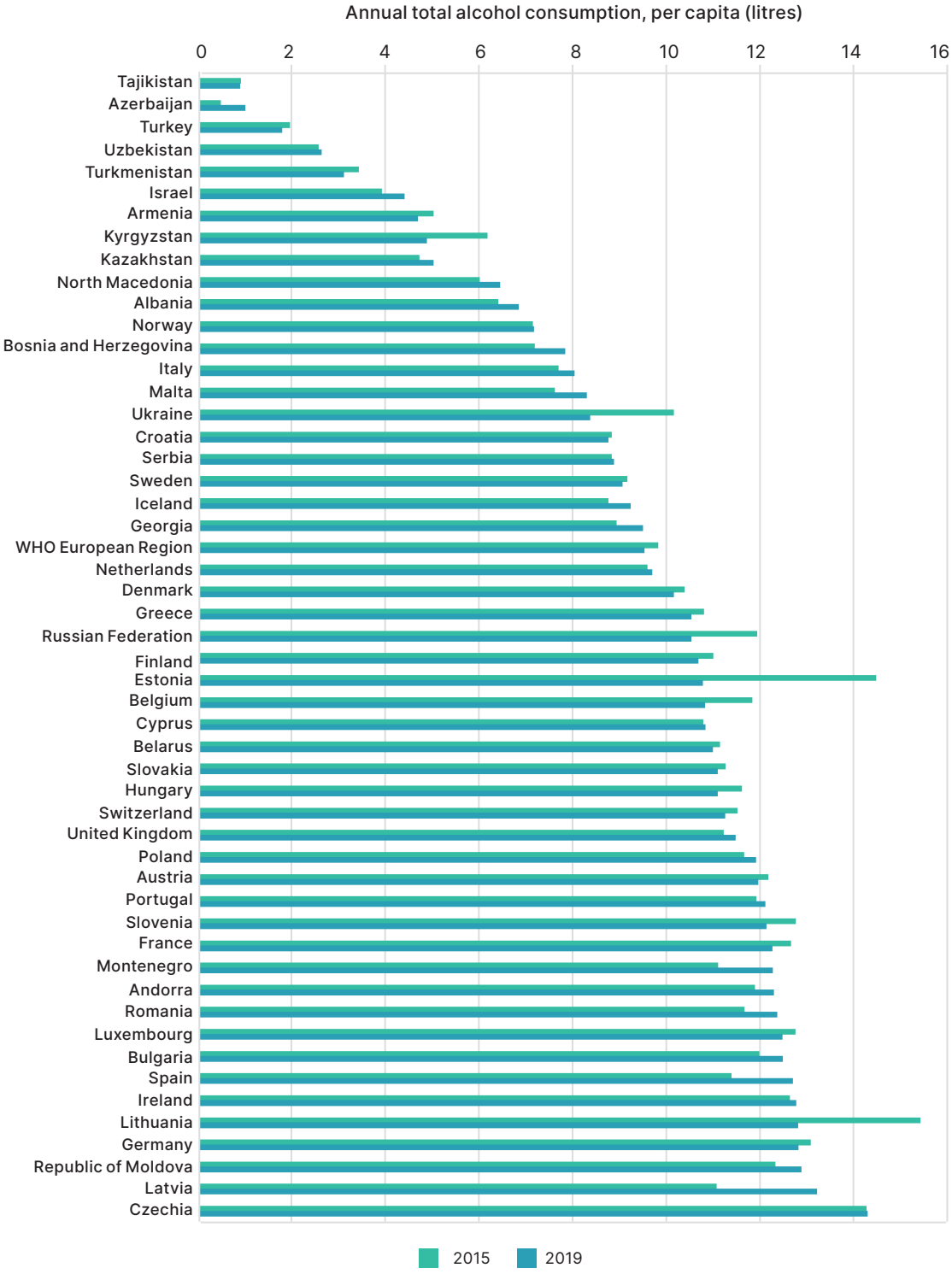
their families than for those with higher incomes for various reasons, such as housing conditions, access to health-care and alcohol treatment services, comorbidities and multiplicity of other risk factors, and weakened immune system because of stress. The association between low socioeconomic status, alcohol consumption and adverse health outcomes is incremental *(47)*. In the Region, there are also large differences in estimated alcohol consumption between countries, ranging between 0.9 and 14.3 litres per capita per year in 2019 (Fig. 2.14).

Fig. 2.13. Alcohol consumption per capita (in adults aged 15 years and over) in the WHO European Region, 2010–2019 estimates



Source: WHO, 2018 *(51)*.

Fig. 2.14. Total consumption of alcohol per capita among adults (15 years and older) within a calendar year (litres of pure alcohol), 2015 and 2019 estimates



Source: WHO, 2018 *(51)*.

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Since the SDGs were adopted, alcohol consumption decreased by a maximum of 3.7 litres per capita and increased by a maximum of 2.1 litres per capita in Member States of the Region between 2015 and 2019. Data are available from 51 Member States: an increase was observed in 25, a decrease in 23 and no change recorded in three (Table 2.4). Nine Member States displayed a change (increase or decrease) of more than 1 litre per capita, among which six Member States have reduced alcohol consumption.

Table 2.4. Alcohol consumption trends in WHO European Region Member States, 2015–2019

Country	Alcohol, total per capita (15+) consumption in year		Alcohol consumption change 2015 to 2019	
	2015	2019	Litres per capita	%
Albania	6.4	6.8	0.4	6.9
Andorra	11.9	12.3	0.4	3.4
Armenia	5.0	4.7	−0.3	−6.6
Austria	12.1	11.9	−0.2	−1.7
Azerbaijan	0.5	1.0	0.5	114.3
Belarus	11.1	11.0	−0.1	−1.3
Belgium	11.8	10.8	−1.0	−8.5
Bosnia and Herzegovina	7.2	7.8	0.7	9.2
Bulgaria	12.0	12.5	0.5	4.2
Croatia	8.8	8.7	−0.1	−0.9
Cyprus	10.8	10.8	0.1	0.5
Czechia	14.2	14.3	0.0	0.1
Denmark	10.4	10.1	−0.2	−2.2
Estonia	14.4	10.8	−3.7	−25.6
Finland	11.0	10.7	−0.3	−2.9
France	12.6	12.2	−0.4	−3.2
Georgia	8.9	9.5	0.6	6.3
Germany	13.0	12.8	−0.3	−2.0
Greece	10.8	10.5	−0.3	−2.5
Hungary	11.6	11.1	−0.5	−4.4
Iceland	8.7	9.2	0.5	5.4
Ireland	12.6	12.7	0.1	1.1
Israel	3.9	4.4	0.5	12.5
Italy	7.7	8.0	0.3	4.4
Kazakhstan	4.7	5.0	0.3	6.5

Table 2.4 contd

Country	Alcohol, total per capita (15+) consumption in year		Alcohol consumption change 2015 to 2019	
	2015	2019	Litres per capita	%
Latvia	11.0	13.2	2.1	19.4
Lithuania	15.4	12.8	–2.6	–17.0
Luxembourg	12.7	12.4	–0.3	–2.2
Malta	7.6	8.3	0.7	9.0
Montenegro	11.1	12.2	1.2	10.5
Netherlands	9.6	9.7	0.1	1.1
North Macedonia	6.0	6.4	0.4	7.4
Norway	7.1	7.1	0.0	0.3
Poland	11.6	11.9	0.3	2.2
Portugal	11.9	12.1	0.2	1.6
Republic of Moldova	12.3	12.9	0.6	4.5
Romania	11.6	12.3	0.7	6.0
Russian Federation	11.9	10.5	–1.4	–11.8
Serbia	8.8	8.9	0.1	0.6
Slovakia	11.2	11.1	–0.2	–1.5
Slovenia	12.7	12.1	–0.6	–4.9
Spain	11.4	12.7	1.3	11.5
Sweden	9.1	9.0	–0.1	–1.1
Switzerland	11.5	11.2	–0.3	–2.3
Tajikistan	0.9	0.9	0.0	1.1
Turkey	1.9	1.8	–0.2	–8.6
Turkmenistan	3.4	3.1	–0.3	–9.3
Ukraine	10.1	8.3	–1.8	–17.6
United Kingdom	11.2	11.4	0.2	2.2
Uzbekistan	2.5	2.6	0.1	2.5

Source: WHO, 2018 *(51)*.

Tobacco use

Main findings

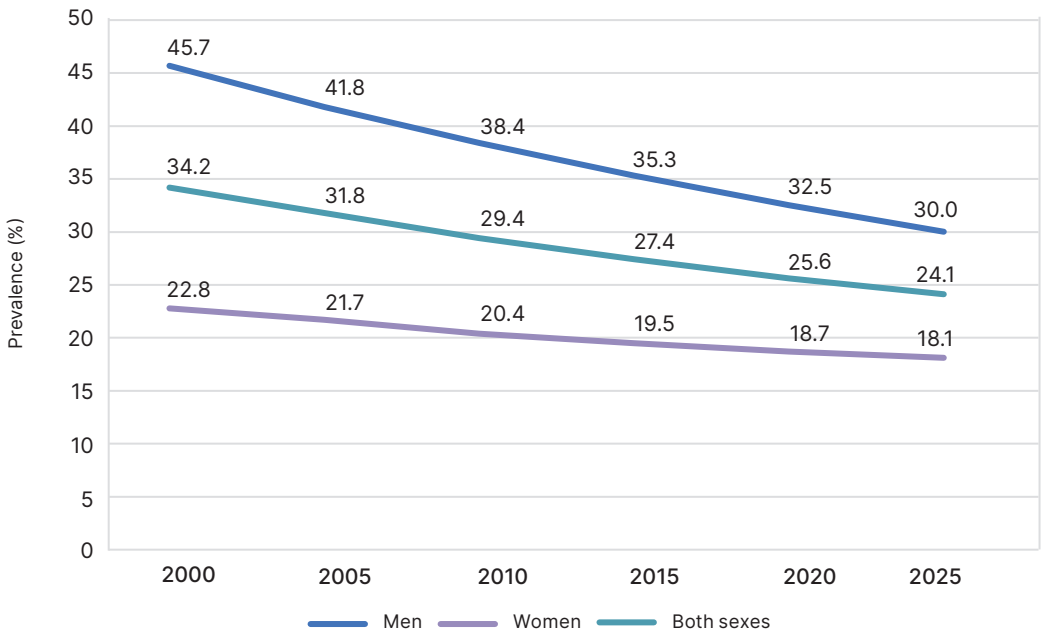
- Age-standardized prevalence of current tobacco use among persons aged 15 years and older in the WHO European Region was 26.3% in 2018.
- Only six Member States are likely to achieve at least a 30% relative reduction in tobacco use by 2025, assuming they continue implementing tobacco control measures at the current pace.
- The WHO European Region is the only WHO region not expected to reach the 30% relative reduction target for women by 2025.
- Inequalities between Member States in the WHO European Region are large: the age-standardized prevalence of current tobacco smoking among those aged 15 years and older varied between 12.3% and 40.6% across Member States in 2018.
- Smoking prevalence decreased in almost all Member States between 2010 and 2018, and in five decreased by more than 20%.

Tobacco use is a major contributor to illness and death from NCDs. All daily and occasional users of tobacco are at risk of a variety of poor health outcomes across the life course, including NCDs. Reducing the prevalence of current tobacco use will make a large contribution to reducing premature mortality from NCDs (SDG 3.4). SDG 3.a.1 (age-standardized prevalence of current tobacco use among persons aged 15 years and older) *(53)* aims to strengthen the implementation of the WHO Framework Convention on Tobacco Control in all countries, as

appropriate *(54)*. The objective of this Convention and its protocol is to protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke by providing a framework for tobacco control measures to be implemented at the national, regional and international levels in order to reduce continually and substantially the prevalence of tobacco use and exposure to second-hand smoke *(54)*.

The WHO European Region is one of the WHO regions with the highest prevalence of tobacco use: 26.3% of individuals aged 15 years and older used tobacco in 2018 *(55)*. Based on modelling, the Region is tracking towards a relative reduction in rates from 2010 to 2025 of only 18% instead of 30%, as set out in the WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020 *(56)*. The decrease is larger in men, but it should be noted that the smoking prevalence in men is almost double that in women (Fig. 2.15).

Fig. 2.15. Trends in prevalence of tobacco use in the WHO European Region, estimates for 2000–2015 and projections for 2020 and 2025



Source: WHO, 2019 *(56)*.

Inequalities between Member States are large: the age-standardized prevalence of current tobacco smoking among those aged 15 years and older varied between 12.3% and 40.6% across Member States in 2018 (Fig. 2.16). In all but six Member States age-standardized prevalence of current tobacco smoking decreased from 2010 to 2018: in 24 Member States smoking rates decreased by more than 10% and in five by more than 20%. Four of the five Member States that achieved the largest decreases in tobacco smoking prevalence also had high scores (8–10 out of 10) in compliance with bans on direct tobacco advertising (no data were available for the fifth Member State). Three Member States also had high scores in overall compliance with bans and sponsorship, but one had a lower score of 5 out of 10 *(57)*.

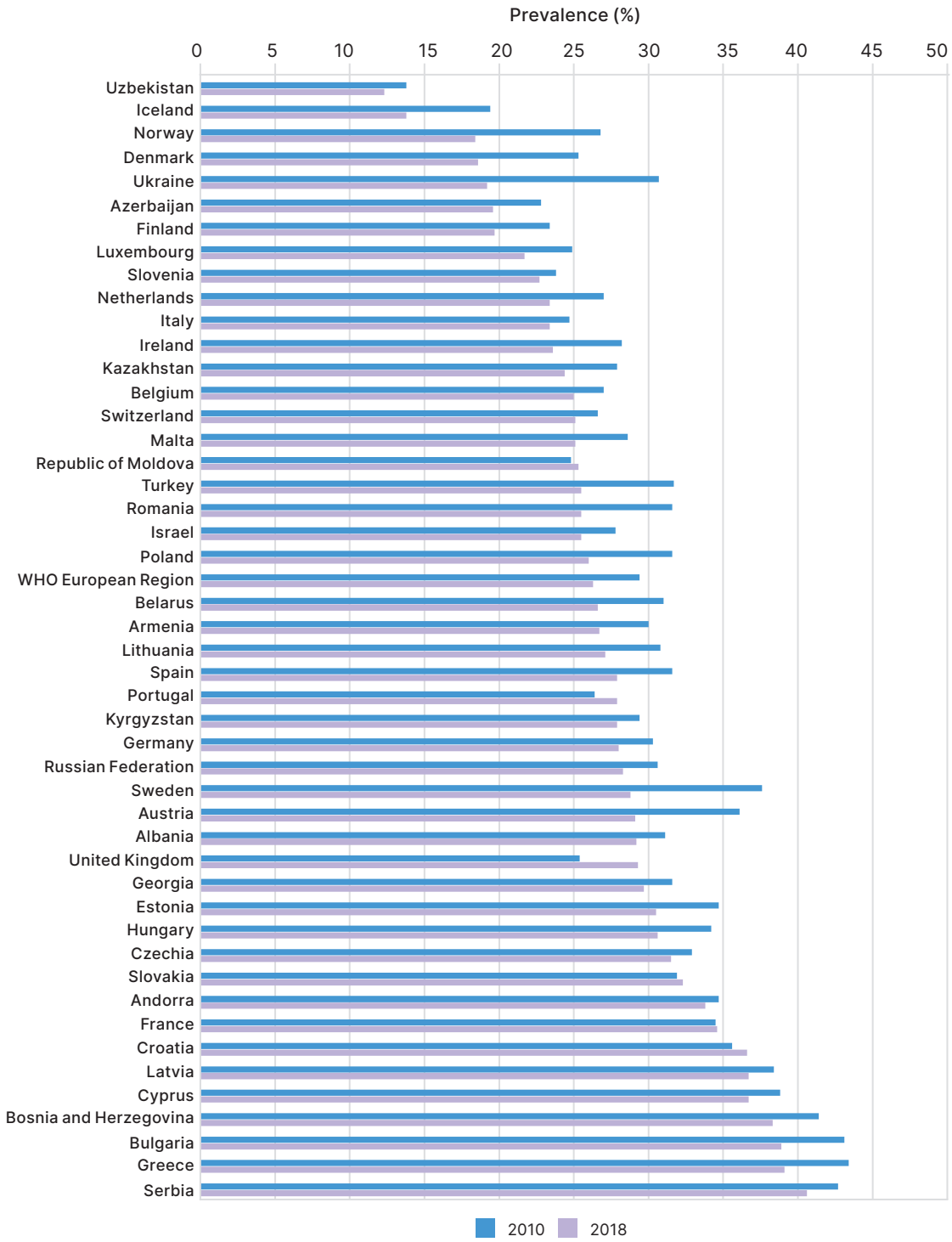
In 2018 tobacco-use prevalence for women in the WHO European Region was the highest in the world, at 19% (or 67 million). While this number declined from around 77 million (23%) in 2000, it is expected to remain at around 63 million in 2025. Compared with the global rate of tobacco use among women in 2018 (9%), the rate in the Region is very high, with rates above 20% in 24 Member States.

Tobacco use among men in the WHO European Region is decreasing (from 46% in 2000 to 34% in 2018), but for women the rates trace a less clear downwards trajectory and, in some parts of the Region, the prevalence of tobacco use is on the rise in Member States that traditionally had a low prevalence of tobacco use among females. The picture is similarly challenging among girls under 15 years, with prevalence high on a global scale. WHO estimates that 12% of girls aged 13–15 years in the Region are current tobacco users, which is 1.5 times the global average of 8% *(56)*.

Tobacco use among young people in general in the Region remains a public health concern. Despite the overall downward trend of tobacco use prevalence among those aged 13–15 years over time, several Member States have noticed recent increases in rates *(58)*.

The advancement of novel and emerging tobacco and nicotine products, such as e-cigarettes and heated tobacco products, further impact those trends. The use of e-cigarettes, for example, has been gaining popularity among those aged 13–15 years. In some Member States, the rates of e-cigarette use among young people are higher than that for conventional cigarettes.

Fig. 2.16. Age-standardized prevalence of current tobacco smoking among people aged 15 years and older in Member States of the WHO European Region, 2010–2018



Source: WHO, 2021 *(55)*.

Overweight and obesity in school-aged children

Main findings

- Nearly one in three children aged 7–9 years is living with overweight or obesity in the WHO European Region.
- In most Member States, the prevalence of overweight and obesity is higher in boys aged 7–9 years (29%) than in girls (27%). There are also very large differences across the WHO European Region, with rates ranging from 9% to 43% in boys and from 5% to 43% in girls.

Obesity is one of the greatest public health challenges of the 21st century, and a complex and multifactorial disease. The cause of obesity and overweight is a persistent imbalance resulting from energy intake (consumption of energy-dense foods high in fat and sugars) and expenditure (lack of physical activity). BMI takes into account weight and height, and for children also age and gender, and provides the most useful population measure of overweight and obesity *(59,60)*. Children with excess weight can experience breathing difficulties, risks of fractures, hypertension, cardiovascular diseases, insulin resistance and psychological effects, with induced hardship for their families *(60,61)*. Furthermore, these risks extend throughout the life-course, with increased risks of premature mortality and disability from NCDs, including lifelong obesity, diabetes, cardiovascular diseases, some cancers, respiratory disease, as well as mental, musculoskeletal and reproductive disorders *(61)*.

Preventing excess weight gain during childhood, which is a critical period for developing healthy lifestyle behaviours, plays an important role in guaranteeing fundamental rights to health and well-being. Prevention of overweight in children and adolescents is integrated in the Nutrition Strategy 2020–2030 from the United

Nations Children's Fund (UNICEF) *(62)* and is prioritized in the SDGs under SDG 2.2 (end all forms of malnutrition in children by 2030) *(63)*. The reduction of childhood obesity further supports Member States' efforts to reduce mortality from NCDs (SDG 3.4) by one third by 2030.

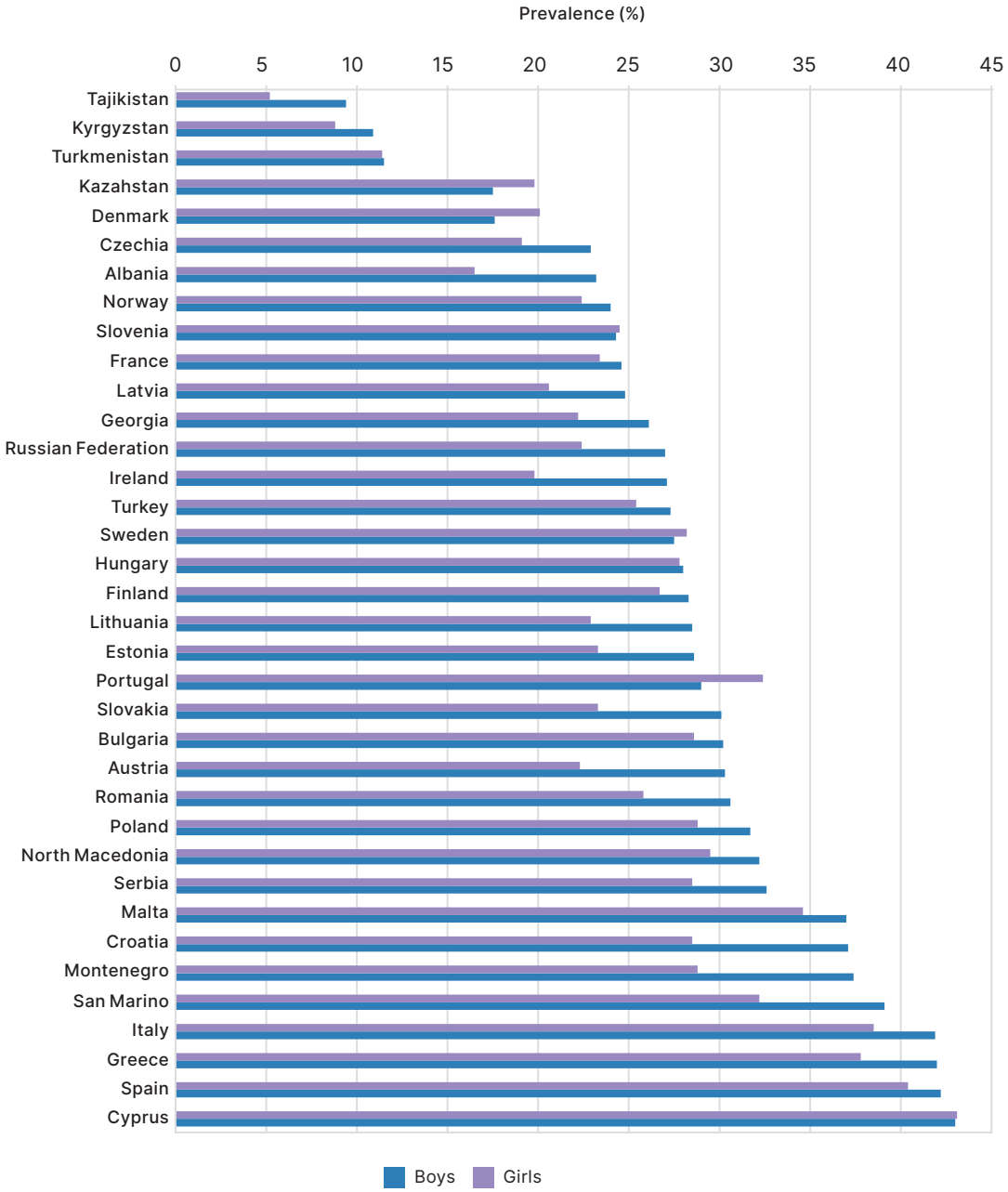
As shown in Figs 2.17 and 2.18, the reported prevalence of overweight and obesity (based on the WHO growth reference *(64)*) among children aged 7–9 years varies between the sexes, Member States and age groups. Data are available from 36 Member States, and overweight prevalence values in each country refer to only one age group within the range of 7–9 years) *(65,66)*. On average, overweight or obesity is more prevalent in boys (29%) than in girls (27%). Moreover, there are large differences across Member States, with rates ranging from 9% to 43% in boys and from 5% to 43% in girls.

The prevalence of obesity also varies between boys and girls and across Member States: 13% in boys and 9% in girls in the WHO European Region, with rates ranging from 2% to 22% in boys and 1% to 19% in girls in different Member States. Higher rates are observed in Mediterranean countries, whereas central Asian countries have the lowest prevalence *(65)*.

With regards to time trends, 11 Member States in the Region participated in several rounds of the Childhood Obesity Surveillance Initiative and can report on obesity and overweight in school-aged children for 2007 through to 2017. In general, the prevalence of overweight and obesity among boys and girls decreased in Member States with a high prevalence (southern Europe) and remained stable or slightly increased in northern Europe and eastern Europe *(67)*.

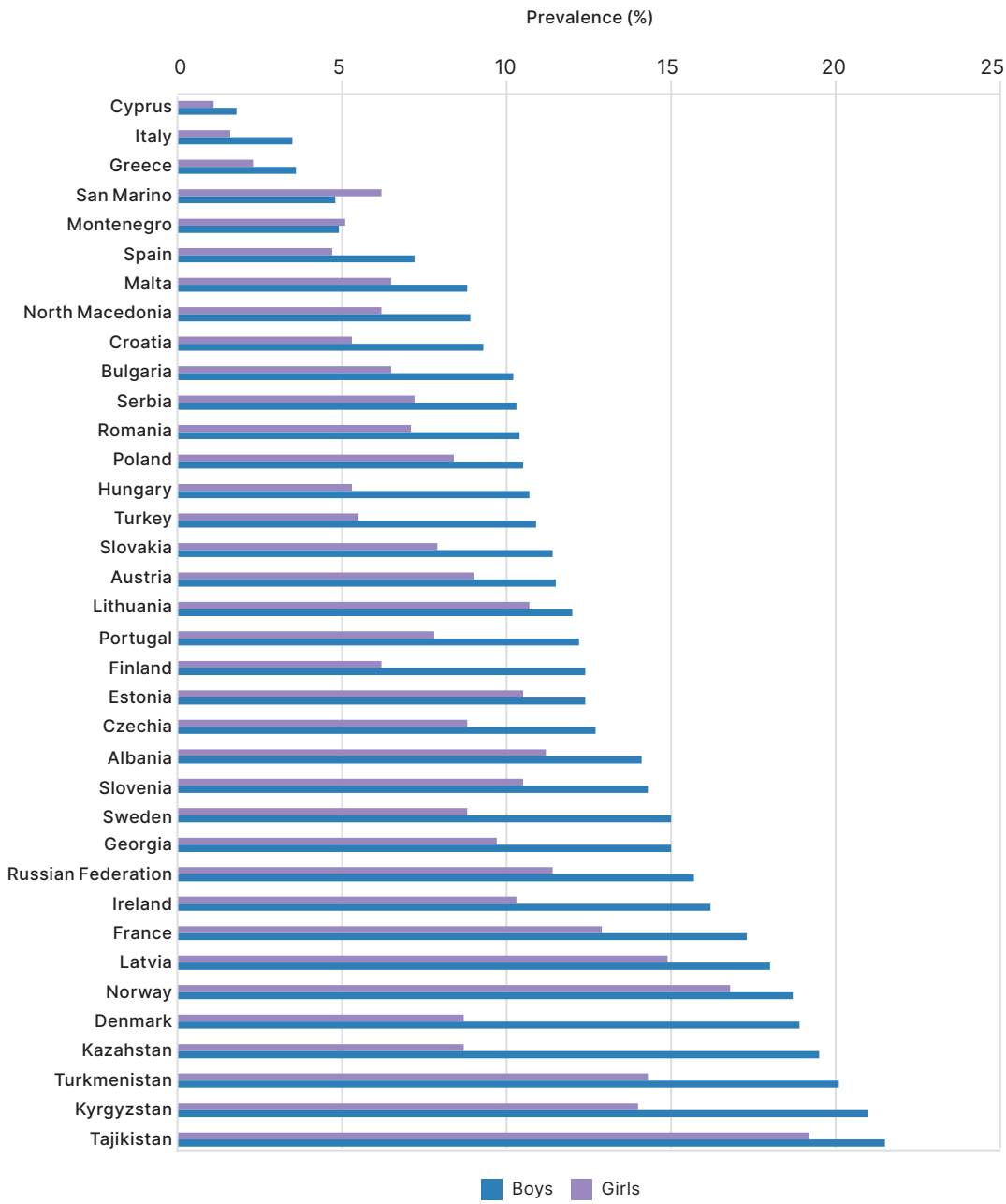
Commercial strategies promoting products and choices detrimental to health are important risk factors for childhood overweight and obesity *(68)*. Supportive environments are fundamental in shaping policies that make healthier choices easily accessible, particularly for the most vulnerable. This includes addressing the impact of transport, urban planning, environment, and food processing, distribution, marketing and education on dietary habits and physical activity. The Global Action Plan On Physical Activity 2018–2030 provides effective and feasible policy actions to increase physical activity globally *(69)*. The WHO best buys, which set out the most cost-effective interventions and other interventions for the prevention and control of NCDs, also presents relevant guidance to address unhealthy diets *(70)*.

Fig. 2.17. Prevalence of overweight and obesity in children aged 7–9 years in Member States of the WHO European Region, 2015–2017



Notes: overweight and obesity, according to WHO growth reference figures *(64)*; Member States vary in the year of data collection and in the age group used for the data: 7-year-old children in Bulgaria, Czechia, Denmark, Estonia, Finland, Georgia, Greece, Hungary, Ireland, Kyrgyzstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Portugal, Russian Federation (for Moscow only), Serbia, Slovakia, Slovenia, Spain, Tajikistan, Turkey and Turkmenistan; 8-year-old children in Albania, Austria, Croatia, France, Italy, Norway, Poland, Romania, San Marino and Sweden; and 9-year-old children in Cyprus and Kazakhstan.
Source: WHO Regional Office for Europe, 2021 *(65)*.

Fig. 2.18. Prevalence of obesity in children aged 7–9 years in Member States of the WHO European Region, 2015–2017



Note: data collection was as outlined for Fig. 2.17.
Source: WHO Regional Office for Europe. 2021 *(65)*.

Mortality from road traffic injuries

Main findings

- Road traffic mortality is lowest in the WHO European Region compared with other WHO regions, with 7.4 deaths per 100 000 population reported in 2019. Yet, it remains a leading cause of death in all Member States of the Region and, overall, kills more people aged 5–29 years than any other cause.
- Road traffic mortality in the WHO European Region has decreased by 19.5% since 2015, which is below the initial target for SDG 3.6 of a 50% reduction by 2020; the deadline has been extended to 2030.
- There is significant variation in road traffic death rates across the WHO European Region, with growing inequity amounting to a 10-fold difference between Member States with the highest (20.0 per 100 000 population) and lowest (2.0 per 100 000 population) rates in 2019.

Worldwide, someone is killed on the roads every 23 seconds and millions more are injured *(71)*. With 1.28 million people killed each year, road traffic injuries are now the eighth leading cause of death overall and the leading cause of death for those aged 5–29 years *(72)*. In the 2030 Agenda, the global community in 2015 adopted the visionary but ambitious SDG 3.6, to halve the number of road traffic deaths and injuries by 2020 *(73)*. In August 2020 the United Nations General Assembly adopted a new resolution that extended the deadline for this objective to 2030.

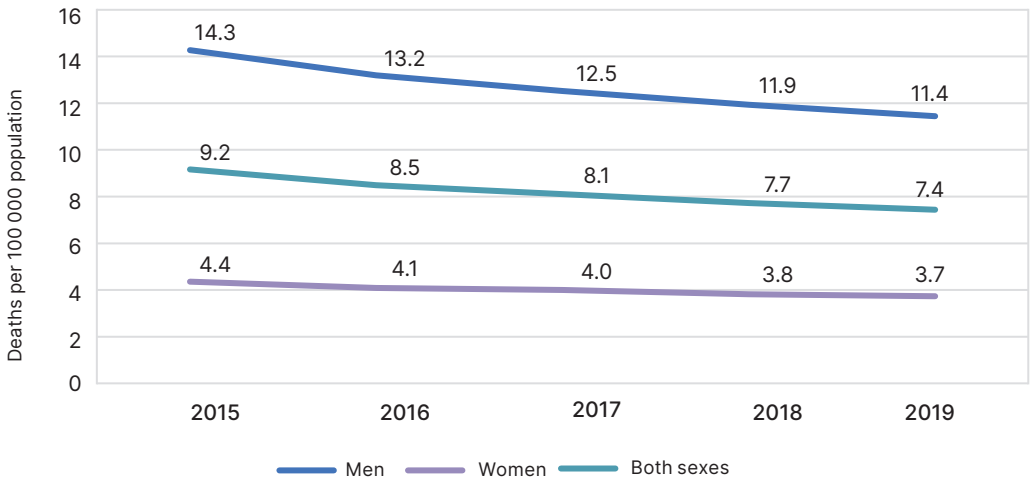
The WHO European Region reports the lowest road traffic mortality rate among WHO regions, with 7.4 deaths per 100 000 population reported in 2019 *(74)*. Males are three times more likely than females to be killed by road traffic injuries in the Region.

In terms of progress made, road traffic mortality in the Region has decreased by 19.5% overall (20.0% among males and 15.9% among females) since 2015 (Fig. 2.19) *(74)*. Although the initial 50% reduction target for SDG 3.6 was not reached by 2020, reductions in mortality have been achieved despite a 14% growth in the number of registered vehicles *(71)*. Young adults and children are at particularly risk, and road traffic injuries are the leading cause of death for children and young adults aged 5–29 years *(71,75)*. Four out of every 10 people who are killed are active road users, including pedestrians, cyclists and motorcyclists *(76)*.

Despite the progress in road safety in the WHO European Region and the situation compared with other WHO regions, this achievement must be understood relative to overall regional specific mortality patterns. Road trauma remains a leading cause of death in all Member States in the Region and has significant impact on economic development.

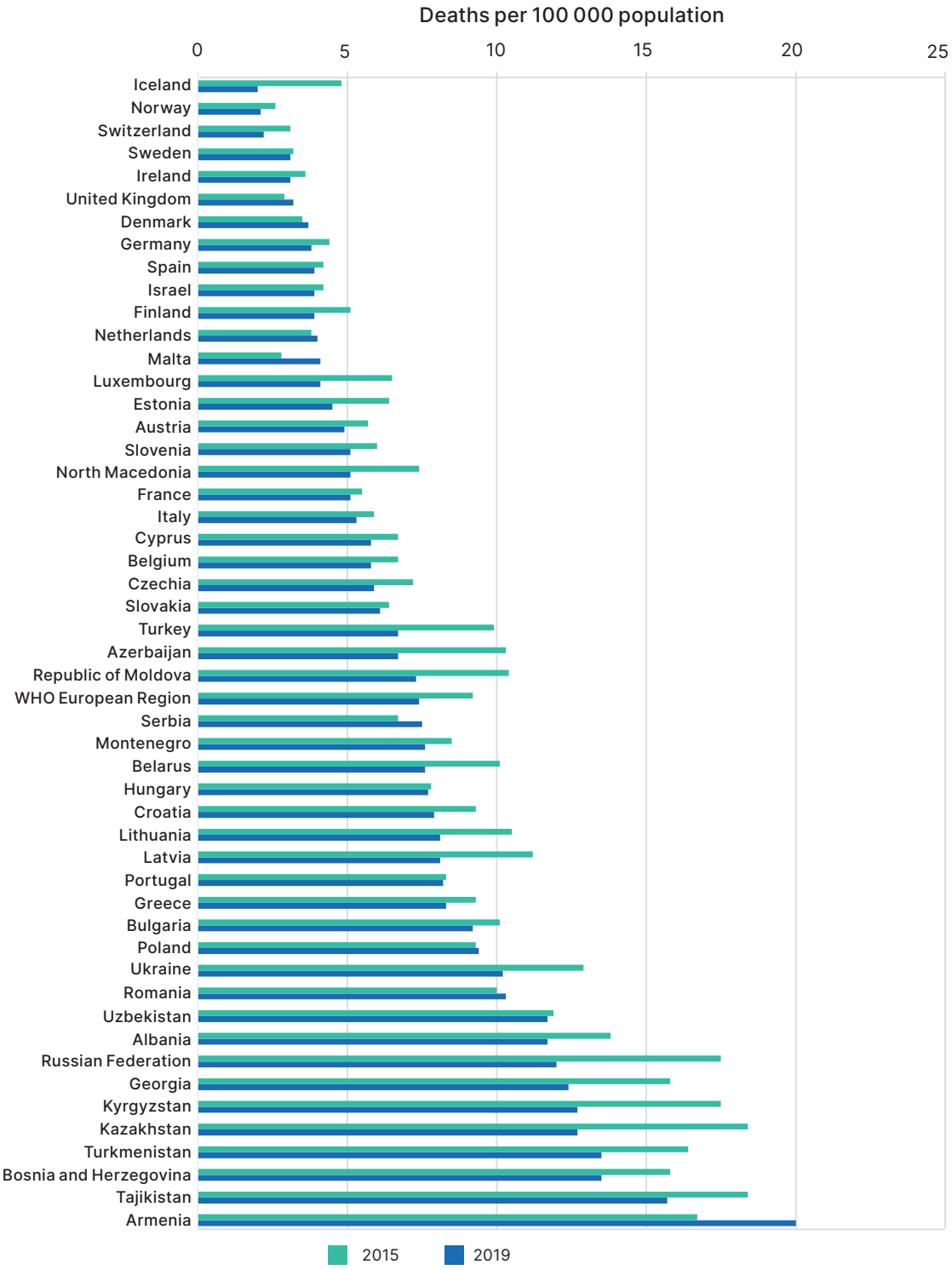
There is significant and growing inequality in road traffic death rate across Member States in the Region, with a 10-fold reported difference in 2019 and a three-fold difference in 2015 between Member States with the highest (20.0 per 100 000 population in 2019) and lowest (2.0 per 100 000 population in 2019) rates (Fig. 2.20) *(74)*. Only one Member State has reported a reduction in road traffic mortality of more than 50%, but because of the small numbers this may be simply caused by annual variation.

Fig. 2.19. Estimated road traffic death rate in the WHO European Region, 2015–2019



Source: WHO, 2021 *(74)*.

Fig. 2.20. Estimated road traffic death rate in Member States of the WHO European Region, 2015 and 2019



Source: WHO, 2021 *(74)*.

Coverage of safe water and sanitation services

Main findings

- The great majority of the population in the WHO European Region uses safely managed services, with higher numbers for drinking-water (92%) than for sanitation services (70%). The global averages for these indicators are 74% and 54%, respectively.
- Access to safely managed drinking-water services is more than 10% higher in urban than in rural populations, highlighting prevailing geographical inequalities.
- In 33 Member States in the WHO European Region, there was universal access (>99%) to basic drinking-water services for their populations at national level in 2020; of these, 17 Member States reached universal access (>99%) to safely managed services.
- Only 24 Member States achieved universal access (>99%) to at least basic sanitation services in 2020, including four Member States that achieved universal access to safely managed services.
- Projecting from current development rates, the WHO European Region is not on track for meeting SDG 6.1 and SDG 6.2 (ensuring safely managed sanitation and drinking-water services for all). Greater attention and accelerated efforts are needed to achieve universal coverage to safely managed sanitation and drinking-water services by 2030.

In the context of the 2030 Agenda, SDG 6 calls for ensuring the availability and sustainable management of water and sanitation for all. Established indicators for WASH services under SDG 6.1 and SDG 6.2 are highly ambitious *(77)* but consistent with the overarching goal of the 2030 Agenda to leave no one behind. Targets under SDG 6 are closely interdependent and progress towards them is also critical for the achievement of other SDG goals and targets, including ending preventable child deaths, combating neglected tropical diseases and waterborne diseases and achieving UHC (SDGs 3.2, 3.3, 3.8 and 3.9); providing safe learning environments (SDG 4.a); and ending violence against women and girls and reducing gender inequality (SDGs 5.2 and 5.4) *(78)*. The WHO European Region is the only WHO region that has a powerful legal instrument to support its Member States in the implementation of national WASH priority actions to achieve the objectives of the Ostrava Declaration and, thereby, also contribute to achieving the targets of SDG 6 (the Protocol on Water and Health).

Coverage of safely managed drinking-water services

In 2020 91.8% of the population in the WHO European Region used safely managed drinking-water services services (from an improved water source, which is located on premises, available when needed and free of faecal and priority chemical contamination) *(79)*. Geographical inequalities prevail, with higher access rates in urban settings (95%) than in rural areas (83%) in 2020. Total access rates to safely managed drinking-water services in the Region increased only slightly between 2015 and 2020; this was mainly driven by the progress in rural areas (Fig. 2.21), whereas numbers for urban populations with access to such services remained stable *(80)*.

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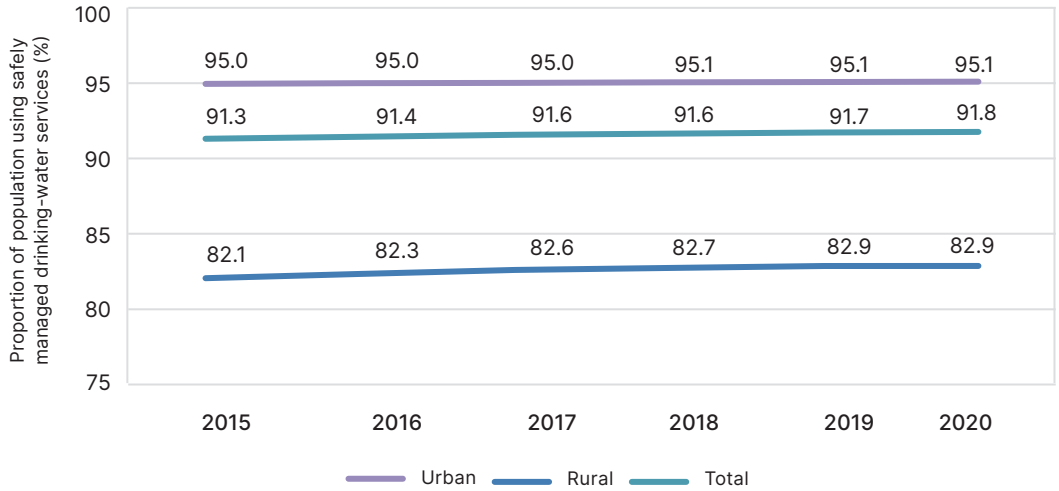
Fig. 2.21. Proportion of population using safely managed drinking-water services in the WHO European Region, 2015–2020



Source: WHO and UNICEF, 2021 *(80)*.

Projecting from the current development trends, the WHO European Region is not on track for meeting the SDG 6.1 and acceleration of further efforts will be required.

In 2020 33 Member States in the Region achieved universal access (> 99%) to basic drinking-water services (from an improved source, provided collection time is not more than 30 minutes for a round trip including queuing) *(79)*, including 17 that achieved universal access (> 99%) to safely managed services. In Member States without universal coverage, the percentage of the population with access to safely managed drinking-water services at national level varied significantly, ranging between 55% and 99% (average: 91%). Whereas national estimates on safely managed drinking-water services are available for the great majority of Member States (51/53), estimates disaggregated for both rural and urban areas were only available for 14 Member States.

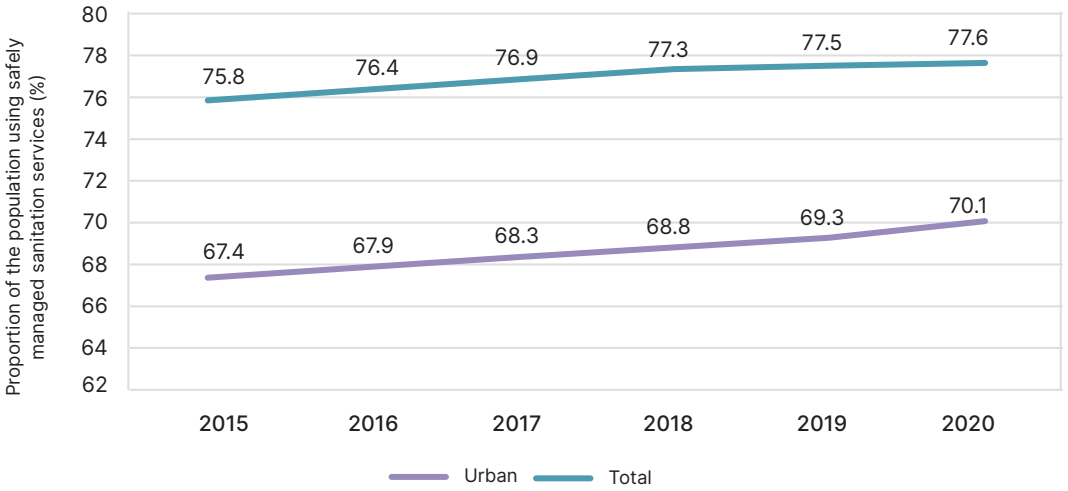
Coverage of safely managed sanitation services

In 2020 70% of the population in the WHO European Region used safely managed sanitation services (not shared with other households and where excreta are safely disposed of in situ or removed and treated offsite) *(79)*. The proportion of the population in the Region using safely managed

sanitation services increased from 67% to 70% between 2015 and 2020, including a 1.8 percentage point increase for urban populations (Fig. 2.22) *(81)*.

In 2020, 27 Member States in the Region achieved universal access (> 99%) to basic sanitation services (improved sanitation facilities that are not shared with other households) *(79)*, while only four achieved SDG 6.2 to provide universal access (> 99%) to safely managed sanitation services (Fig. 2.23). Proportions of populations using safely managed sanitation services in the remaining Member States ranged between 12% and 98%, with an average of 80%. In 2020 more than 340 000 people still practised open defecation in the Region. Estimates of the proportion of population using basic hygiene services (handwashing facility with soap and water at home) were available only for 11 Member States, which prevents any regional analysis *(82)*. The years of the latest estimates for these 11 Member States varied between 2015 and 2020, with 10 reporting coverage higher than 85%. Major data gaps on the proportion of the population with access to basic hygiene (handwashing facilities with soap and water) indicate a need to improve monitoring and tracking progress towards achieving the hygiene-related target of SDG 6.2 in the Region.

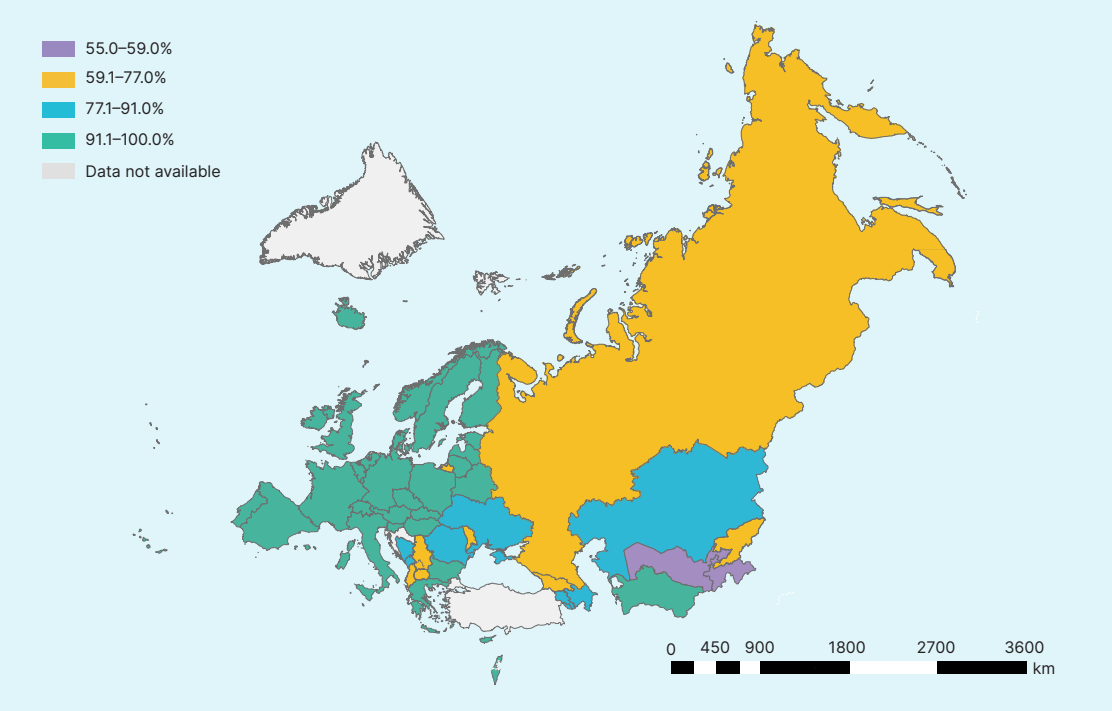
Fig. 2.22. Proportion of the population using safely managed sanitation services in the WHO European Region, 2015–2020



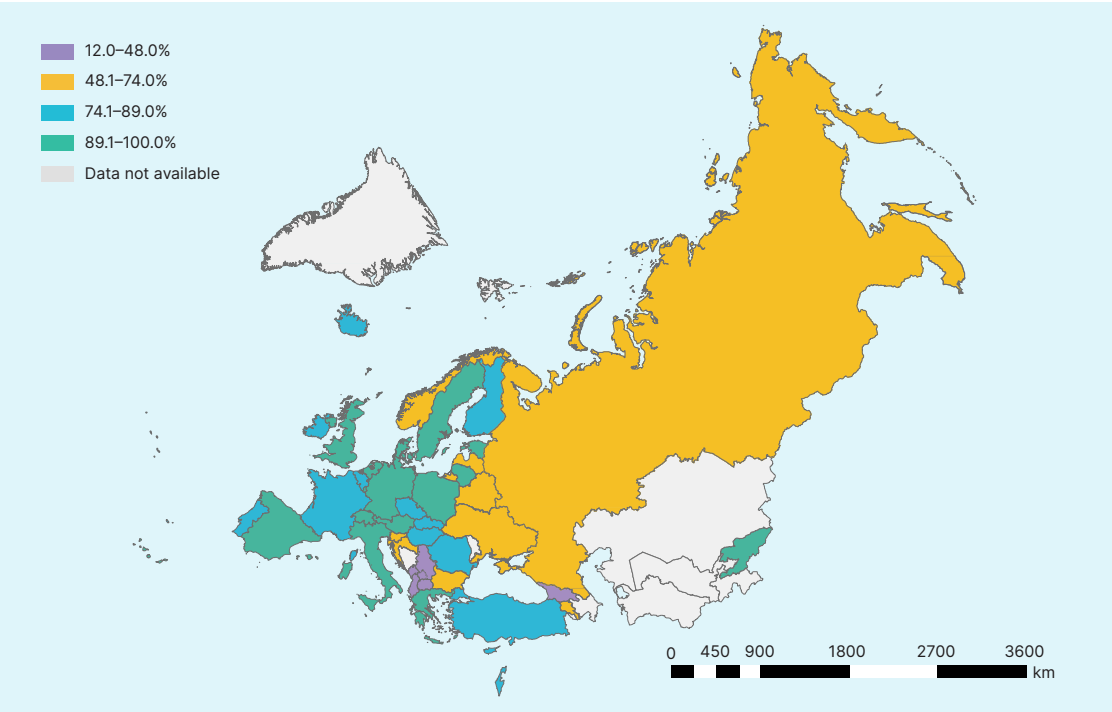
Note: data on rural coverage is not sufficient to show the trend.
Source: WHO & UNICEF, 2021 *(81)*.

Fig. 2.23. Proportion of population in the WHO European Region using safely managed drinking-water and sanitation services in 2020

(a) Safely managed drinking-water services



(b) Safely managed sanitation services



Source: WHO and UNICEF, 2021 *(79)*.

Mortality attributed to hazardous chemicals and air, water and soil pollution and contamination

Main findings

- The mortality rate attributed to ambient and household air pollution was estimated to be 36.3 deaths per 100 000 population in the WHO European Region in 2016. While this is well below the global average of 114.1 deaths, there are also wide differences in rate across the Region.
- Mortality rates attributed to ambient and household air pollution range between 7.2 and 110.7 deaths per 100 000 population across the WHO European Region. Ischaemic heart disease is the leading cause of death attributed to ambient and household air pollution in all Member States.
- The mortality rate attributed to exposure to unsafe WASH services in the WHO European Region is the lowest globally, accounting for 0.3 deaths per 100 000 population in 2016.
- The average mortality rate attributed to unintentional poisoning in the WHO European Region is 1.1 deaths per 100 000 population, which represents an 11% decrease since 2015. This regional estimate is comparable to the global average.

The SDGs are closely interlinked with the environmental and social determinants of health. The environment directly influences health in many ways, including through harmful exposures, inadequate or poorly managed infrastructure, degraded ecosystems, and poor working conditions. Environmental risks, such as

climate change and air pollution, often disproportionally affect the poor and other disadvantaged population groups. Limited access to environmental services and infrastructure, such as safe water and sanitation, mostly impacts women and girls and may compromise dignity, as well as education and learning outcomes *(83)*.

Environmental risks account for a large fraction of the global disease burden: across the total population, 23% of all deaths worldwide and 22% of all disability-adjusted life-years are attributable to environmental factors. Reducing harmful environmental exposures would greatly reduce the global burden of disease *(83)* and is a prerequisite for achieving SDG 3.9 (substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination by 2030).

Mortality attributed to household and ambient air pollution

Air pollution, both ambient (outdoor) and household (indoor), is the biggest environmental risk to health, being responsible for about one in every nine deaths annually. WHO estimates that ambient air pollution alone kills around 3 million people worldwide each year, mainly from NCDs (cardiovascular and respiratory diseases) *(84)*, and this represents a burden of over 500 000 deaths in the WHO European Region. Although air quality has gradually improved in parts of the Region, air pollutant concentrations still exceed the 2005 WHO air quality guideline levels in many areas. Exceeding the air quality guideline levels is associated with important risks to public health *(85)*.

Globally, one person in every 10 lives in a city that is compliant with these guidelines *(86)*. In most low- and middle-income countries in the world, air quality has generally deteriorated over the years, and low- and middle-income countries are experiencing increasing levels of air pollution. Concerns about air pollution are reflected in several of the SDGs: SDG 11 (sustainable cities and communities), which is monitored based on urban air pollution levels; SDG 7 (affordable and clean energy), which is particularly concerned with access to clean household fuels and technologies; and SDG 3 (good health and well-being), which considers the surveillance of mortality due to air pollution (ambient and household) *(87)*. Specifically, WHO is a custodian agency for reporting on SDG 3.9.1, on the mortality rate attributed to ambient air pollution *(88,89)*, and SDG 11.6.2, on the annual mean levels of fine particulate matter *(90)*.

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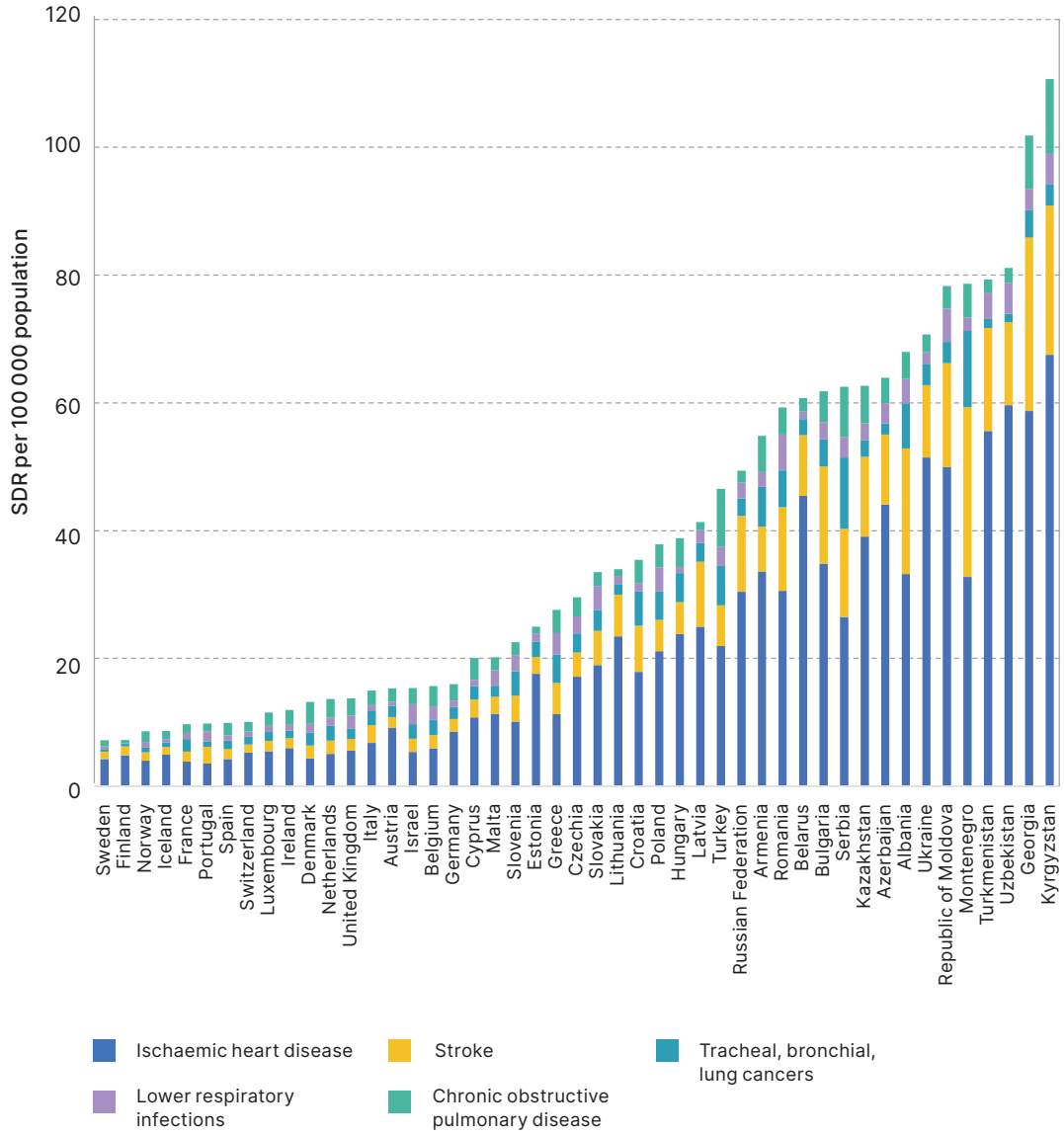
The evidence on the health effects of air pollution is most robust for cardiovascular and respiratory diseases but is also growing for other health effects. The following diseases are taken into account in producing the mortality estimates attributable to household and ambient air pollution *(84,87,88)*:

- cerebrovascular diseases (stroke) in adults (over 25 years of age)
- ischaemic heart disease in adults (over 25 years of age)
- chronic obstructive pulmonary disease in adults (over 25 years of age)
- acute respiratory infections in children under 5 years of age.

In the WHO European Region, the mortality rate attributed to ambient and household air pollution was 36.3 deaths per 100 000 population in 2016. Whereas, on average, this estimate is well below the global estimate of 114.1 deaths, inequalities between WHO European Region Member States are large: age-standardized death rates attributable to ambient and household air pollution range from 7.2 to 110.7 deaths per 100 000 population (Fig. 2.24). The rate among males is higher than in females, although mortality from cardiovascular and other diseases is not necessarily caused by air pollution. Whereas causes of death vary across Member States, ischaemic heart disease is the leading cause attributed to ambient air and household pollution in all Member States.

Fig. 2.24. Age-standardized death rate per 100 000 population attributed to ambient air and household pollution in Member States of the WHO European Region, in 2016



SDR: standardized death rate.
Source: WHO, 2021 *(89)*.

Age-standardized death rates attributable to household and ambient air pollution for specific causes of death vary up to 20-fold between Member States (Table 2.5).

Table 2.5. Lowest and highest age-standardized death rates attributed to household and ambient air pollution in Member States of the WHO European Region, 2016

Age-SDR per 100 000 population	Ischaemic heart disease	Stroke	Trachea, bronchus, lung cancers	Lower respiratory infections	Chronic obstructive pulmonary disease	Total
Lowest	3.57	1.16	0.41	0.087	0.52	7.17
Highest	67.54	27.15	11.89	5.65	11.73	110.69

SDR: standardized death rate per 100 000 population.
Source: WHO, 2021 *(89)*.

Mortality attributed to unsafe water, unsafe sanitation and lack of hygiene

SDG 3.9.2 reflects the number of deaths from inadequate WASH services that could be prevented by improving those services and practices *(91)*. It is based on both the level of WASH service provision in a country (see the previous subsection) and the related health outcomes; therefore, it provides important information on the actual disease burden from the risks addressed by SDG 6.1 (achieve universal and equitable access to safe and affordable drinking-water for all by 2030), SDG 6.2 (achieve access to adequate and equitable sanitation and hygiene for all and end open defecation by 2030, paying special attention to the needs of women and girls and those in vulnerable situations) and SDG 6.3 (improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials by 2030, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally). The included diseases are the WASH-attributable fractions of diarrhoea, intestinal nematode infections and protein–energy malnutrition *(91)*.

The mortality rate attributed to exposure to unsafe WASH services in the WHO European Region is the lowest globally and in 2016 accounted for 0.3 deaths per 100 000 population *(92)*. This is equivalent to around 2700 deaths per year,

or more than seven people dying every day. The attributable fraction for unsafe WASH varies across the Region, ranging from 8% in high-income Member States to 45% in those of lower and middle income in eastern and central Europe, the Caucasus and central Asia. The country with the largest value in the Region accounted for 4 deaths per 100 000 population, and only three Member States exceeded 1 death per 100 000 population.

In the majority of Member States, the mortality rate attributed to exposure to unsafe WASH services is small, which is compatible with the progress made with SDG 6 in the Region, where the largest proportion of the population uses basic drinking-water (98%) and sanitation (97%) services among WHO regions. Nonetheless, the Region as a whole also experiences recurrent outbreaks of waterborne diseases and associated morbidity. Progress is being made in the provision of safely managed services; however, more efforts are needed in a considerable number of Member States to reach universal access to safely managed services.

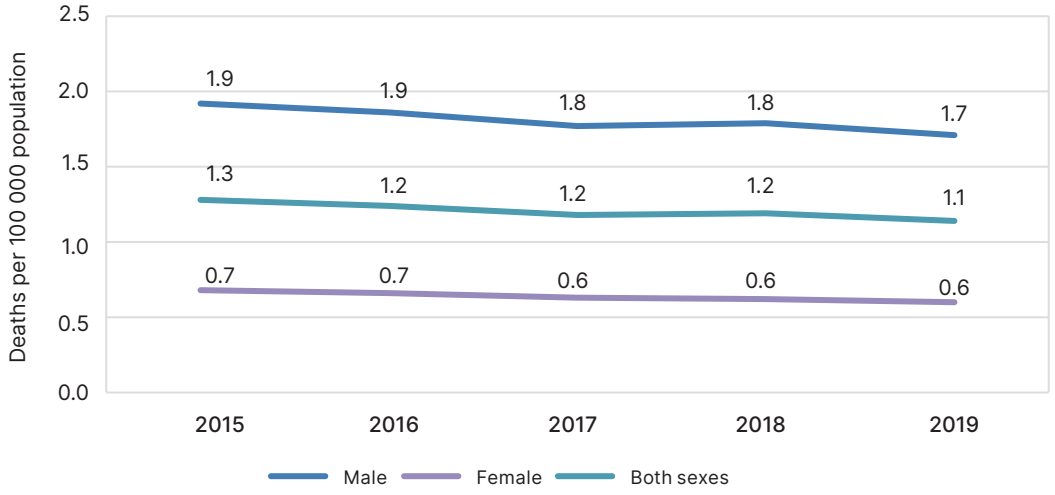
Mortality attributed to unintentional poisoning

Globally, unintentional poisonings are estimated to cause 193 000 deaths annually. Poisonings considered in this section include poisonings by chemicals or other noxious substances, including drugs, toxic vapours and gases *(87)*. Pesticides, kerosene, household chemicals, carbon monoxide and drugs are common causes of poisoning in low- and middle-income countries. In high-income countries, substances involved include drugs, carbon monoxide, and personal care and cleaning products in the home. Poisoning can also arise from environmental contamination. Occupational exposures to heavy metals, pesticides, solvents, paints, cleaning substances, various vapours and gases, and other chemicals used in industrial production may occur, and 14% of unintentional poisonings result from occupational exposure to toxic chemicals *(87)*.

Nevertheless, even when chemical safety measures are implemented and adequate information/education provided, poisoning from accidental drug overuse or negligence remains a risk. In all, an estimated 68% of poisonings in adults were attributable to occupation or the environment, and 85% of poisonings in children were attributable to the environment. Overall, environmental risk factors account for an average of 73% of all unintentional poisonings *(87)*.

The mortality rate attributed to unintentional poisoning in the WHO European Region was 1.1 deaths per 100 000 population in 2019, the same as the global average. The rate is nearly three times higher in males (1.7 per 100 000 population) than in females (0.6 per 100 000 population; Fig. 2.25) *(93)*. Mortality from unintentional poisoning decreased by 10.9% between 2015 and 2019. This estimate is comparable to the global average, and ranges from 0 to 5.5 deaths per 100 000 population across Member States.

Fig. 2.25. Mortality rate per 100 000 population attributed to unintentional poisoning in the WHO European Region by sex, 2015–2019



Source: WHO, 2021 *(93)*.

In the WHO European Region, the mortality rate attributed to unintentional poisoning is equal to 1.1 per 100 000 (in 2019), which represents an 11% decrease since 2015. This estimate is comparable to the global average, and ranges from 0 to 5.5 across Member States.

AMR: bloodstream infections from selected antimicrobial-resistant organisms

Main findings

- In the WHO European Region, rates of bloodstream infections from selected antimicrobial-resistant organisms are fairly high. Infections caused by antimicrobial-resistant *Escherichia coli* proportionally contribute most to the burden of AMR.
- Across Member States, the percentage of bloodstream infections caused by *E. coli* resistant to third-generation cephalosporins (3GC) ranged from 6.2% to 61.0% and those caused by methicillin-resistant *Staphylococcus aureus* (MRSA) ranged from 1.1% to 46.7%. Higher resistance percentages are reported from southern and eastern Member States than from northern ones. However, because of data limitations, cross-country comparisons should be interpreted with care.

AMR is one of the top public health threats facing humanity. AMR threatens not only health but also food security and the achievement of many of the SDGs. AMR occurs when bacteria, viruses, fungi and parasites change over time and no longer respond to medicines; it reduces treatment options for infections by resistant pathogens; impacts agricultural productivity and food animal production; and is linked to declines in economic growth *(94,95)*.

Drug resistance can occur naturally, but it is also accelerated by the misuse and overuse of antimicrobial drugs, lack of access to clean WASH services, and inadequate infection and disease control in health-care facilities or farms. The development of drug-resistant pathogens increases the risk of severe illness, prolonged hospital stays and death. Infections such as pneumonia or TB are

becoming increasingly harder to treat, while people with MRSA infections, for example, are 64% more likely to die than people with drug-sensitive infections *(94)*.

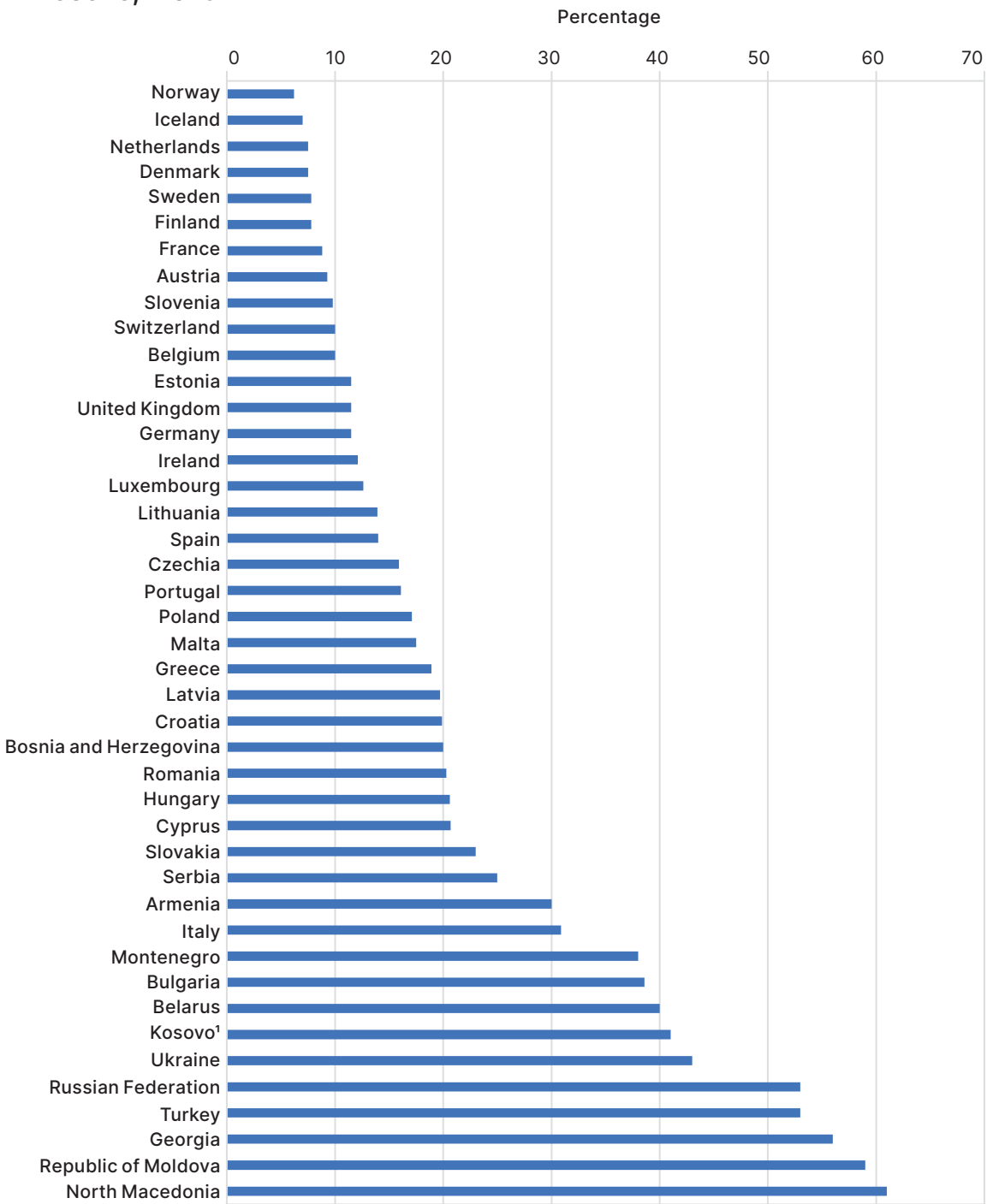
AMR surveillance is crucial to achieving SDG 3. More specifically, SDG 3.d aims to strengthen the capacity of all countries for early warning, risk reduction, and the management of national and global health risks. In 2019 a new AMR indicator was included in the SDG monitoring framework for SDG 3.d.2 (percentage of bloodstream infections due to selected antimicrobial-resistant organisms): MRSA and 3GC-resistant *E. coli (94,95)*. In the GPW13, the aim is also to reduce bloodstream infections with organisms having AMR by 10% in countries by 2023 *(96)*.

AMR data for the WHO European Region are primarily collected, collated and analysed by the two regional surveillance networks: the European Antimicrobial Resistance Surveillance Network (EARS-Net) for EU and European Economic Area countries, and the Central Asian and European Surveillance of Antimicrobial Resistance (CAESAR) for the other Member States. They are also reported to the Global Antimicrobial Resistance and Surveillance System (GLASS); 43 Member States in the Region report to EARS-Net and CAESAR combined.

Median values for the reported rates are used to compute global and regional estimates for EARS-Net and CAESAR. Possible minor discrepancies between the rates reported by EARS-Net and CAESAR compared with those reported by GLASS are linked to differences in data format (line listed versus aggregated) computational approaches.

In the WHO European Region, the percentage of bloodstream infections due to 3GC-resistant *E. coli* varies from 6.2% to 61.0% (Fig. 2.26) *(97,98)*. The latest GLASS report indicates a global resistance rate of 36.6% for 3GC-resistant *E. coli* and 24.9% for MRSA in bloodstream infections *(99)*. In 2019 more than half of the *E. coli* isolates reported to EARS-Net were resistant to at least one antimicrobial group under surveillance, and combined resistance to several antimicrobial groups was frequent; this can lead to increases in the use of last-resort drugs (for example, carbapenems for 3GC-resistant *E. coli*) *(98)*.

Fig. 2.26. Percentage of bloodstream infections with 3GC-resistant *E. coli* among patients seeking care and who had a blood sample taken and tested in Member States of the WHO European Region and Kosovo,[1] 2019



[1] All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).

Sources: European Centre for Disease Prevention and Control, 2020 *(97,98);* WHO Regional Office for Europe, 2020 *(100)*.

For MRSA, the percentage of bloodstream infections ranged from 1.1% to 46.7% (Fig. 2.27). MRSA percentages are stabilizing or decreasing in the majority of Member States *(98–100)*.

There are large subregional variations in AMR, with higher resistance percentages reported from southern and eastern Europe than from northern Europe *(98–100)*. Some of this variation is due to the selection of laboratories or eligible patients participating in surveillance and to the unequal adoption of standards for testing, which may negatively affect AMR data comparability across Member States *(99)*; notwithstanding that, seven out of 49 Member States in the Region report having limited capacity for AMR surveillance at national level *(101)*.

Member States have developed and implemented national recommendations and guidance documents to strengthen their surveillance system, to improve their infection prevention and control measures, and for prudent antimicrobial use. To control the spread of AMR, it is also essential to pursue a better understanding of underlying resistance mechanisms, linking with efforts to decrease rates of antimicrobial drug use consumption in the Region (total consumption of antibacterials for systemic use) *(102)*. Lastly, high resistance levels have also been reported in *E. coli* isolates from food-producing animals and in community settings, which warrants a cross-sectoral approach spanning human health, veterinary health and food production.

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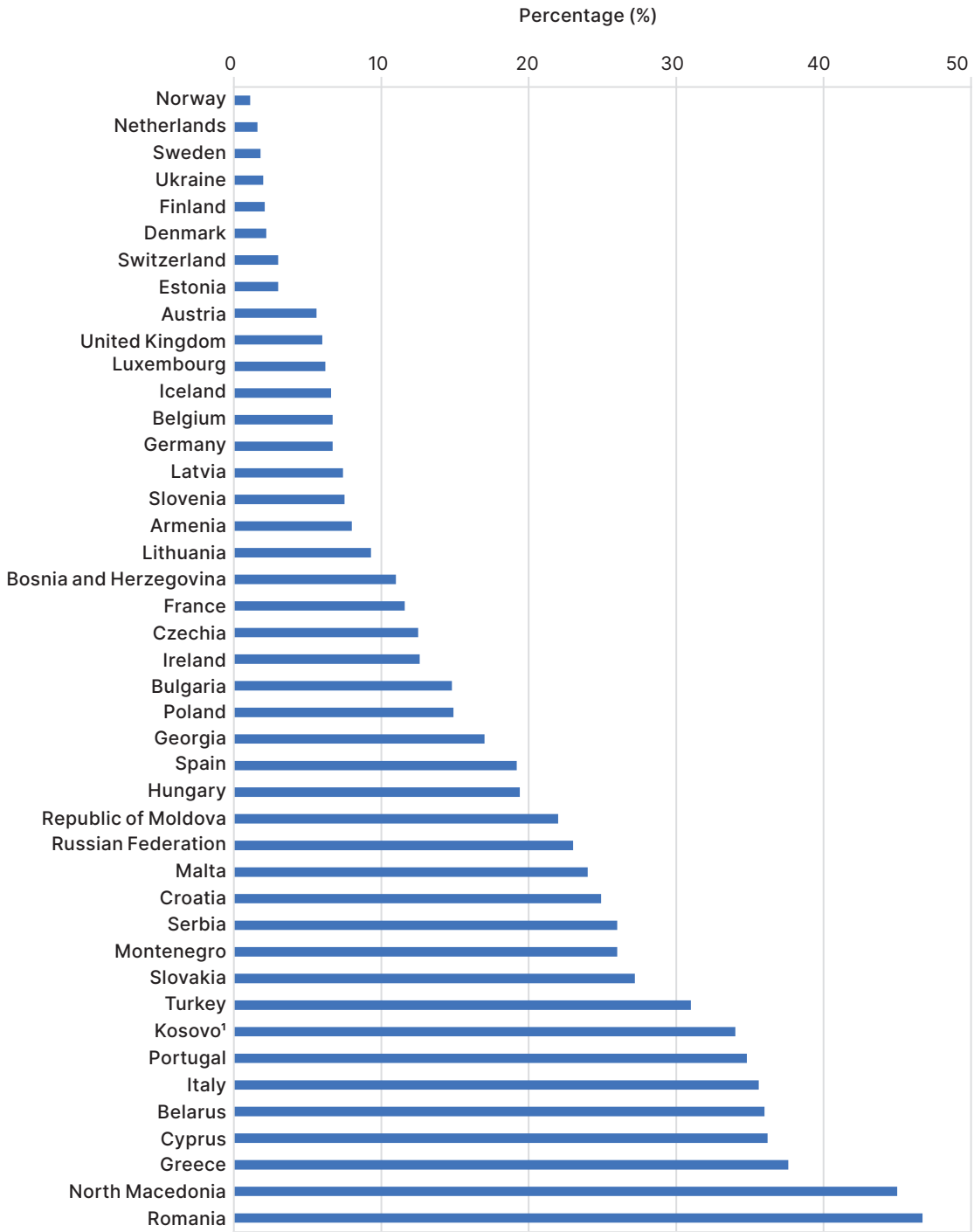
Fig. 2.27. Percentage of bloodstream infections with MRSA among patients seeking care and who had a blood sample taken and tested in Member States of the WHO European Region and Kosovo,[1] 2019



[1] All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).

Sources: European Centre for Disease Prevention and Control, 2020 *(97,98)*; WHO Regional Office for Europe, 2020 *(100)*.

Incidence of communicable diseases

Main findings

- The WHO European Region is one of two WHO regions where overall the number of new HIV infections per 1000 uninfected population is increasing: from 2015 to 2019, the indicator increased by 6%. The rate of new HIV diagnoses in males is twice as high as the rate in females.
- In the WHO European Region, the TB incidence rate decreased by 19% between 2015 and 2019; 27 Member States were estimated to have a low TB incidence rate (<10 cases per 100 000 population) in 2019.
- There are large differences in infectious disease burden (TB, HIV, hepatitis B and C) between Member States.

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Socioeconomic, environmental and behavioural factors, as well as international travel and migration, foster and increase the spread of communicable diseases. Vaccine-preventable, foodborne, zoonotic, health-care-related and communicable diseases pose significant threats to human health and may sometimes threaten international health security *(103)*. Recognizing the public health and sustainable development concerns posed by TB, HIV and viral hepatitis, and acknowledging the multidimensional nature of the relationship between communicable diseases, NCDs and sustainable development, actions within and across sectors are urgently needed to end these epidemics by 2030. Since the adoption of the 2030 Agenda and the WHO European Roadmap to Implement the 2030 Agenda, the United Nations has aimed to facilitate joint actions that leave no one behind, address country-specific challenges, ensure equality and end health inequities where they take place *(104)*. While the connection between social determinants and poorer health outcomes holds true for many diseases, both infectious and chronic, it applies particularly to TB, HIV and viral hepatitis *(105)*.

SDG 3.3 aims to end the epidemics of AIDS, TB, malaria and neglected tropical diseases and to combat hepatitis, waterborne diseases and other communicable diseases by 2030. It is monitored based on five indicators *(73)*, three of which are particularly relevant to the WHO European Region: the incidence of TB, HIV infection and hepatitis B.

HIV incidence

The WHO European Region is one of two WHO regions where the number of new HIV infections is increasing: from 2015 to 2019, the indicator slightly increased from 0.17 per 1000 uninfected population in 2015 to 0.18 per 1000 uninfected population in 2020 *(106)*. In 2015 160 000 new HIV infections were estimated, and in 2020 the number increased to 170 000 adults and children newly infected with HIV.

There were 136 449 newly diagnosed HIV infections reported in 2019 within 47 of the 53 Member States of the Region through joint surveillance by WHO and the European Centre for Disease Prevention and Control *(107)*. This corresponds to a crude rate of 0.16 newly diagnosed infections per 1000 uninfected population. Both overall numbers and rates of people diagnosed with HIV are highest in countries in the east of the Region (41.7 per 100 000 population), lower in those in the west (5.7 per 100 000 population) and lowest in those in the centre

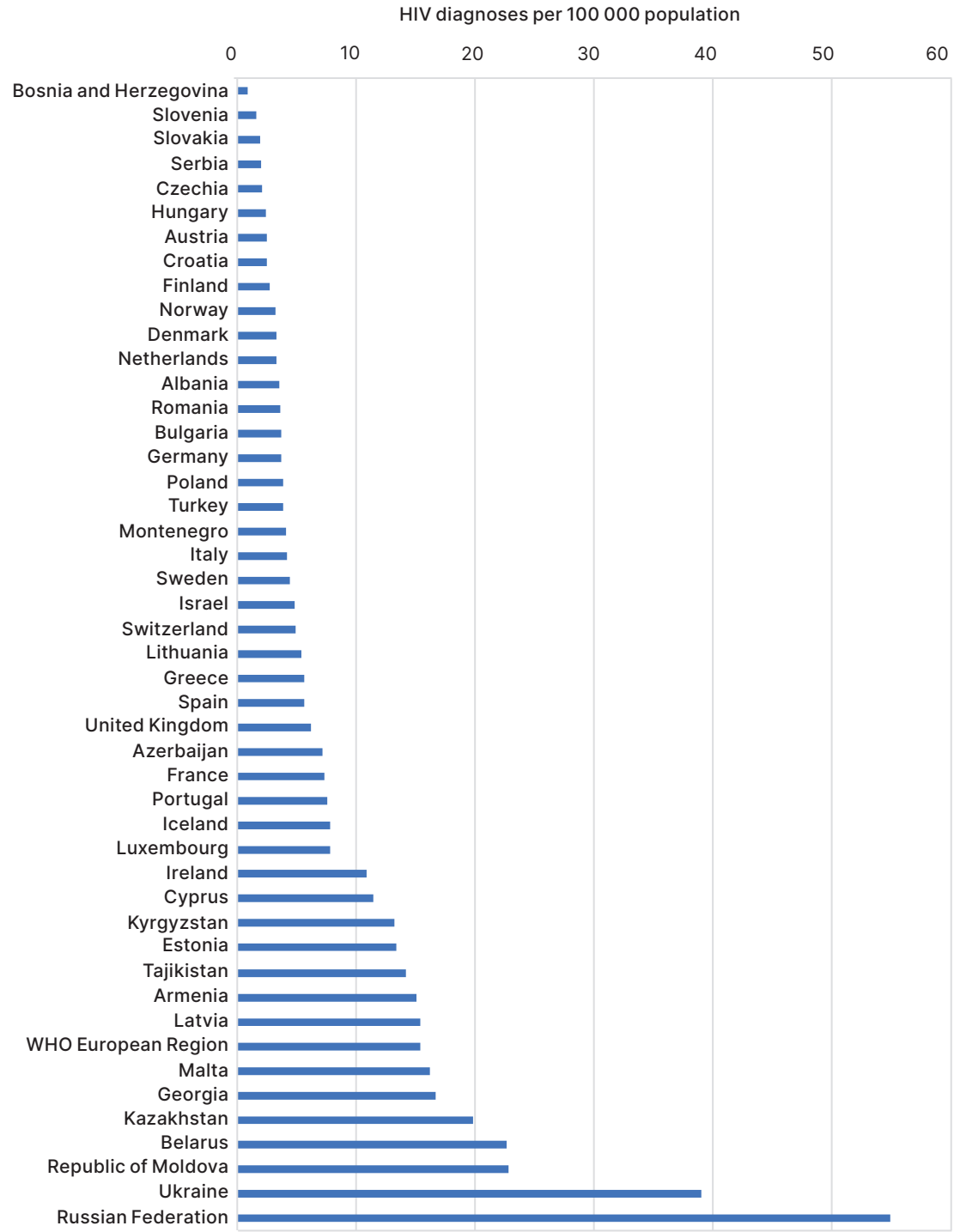
(3.4 per 100 000 population) *(102)*. In the Region overall, the rate of new HIV diagnoses has increased faster in males than in females. In 2019 the overall rate for males was 20.8 per 100 000 population, twice the rate in females (10.6 per 100 000 population). The most common form of reported HIV transmission is through heterosexual sex (50%), while 21% of transmissions occur by men having sex with men, 13% through injecting drug use and 0.7% through mother-to-child transmission. Information about transmission mode was unknown or missing for 15% of the new diagnoses *(107)*.

Inequalities in new HIV diagnoses between Member States are large, ranging from 0 to 54.9 per 100 000 population (Fig. 2.28). Across the WHO European Region, rates of new cases decreased by 14.1 cases per 100 000 population and increased by up to 8.6 cases per 100 000 population between 2015 and 2019 in different Member States *(107)*.

Antiretroviral therapy reduces mortality among those infected with HIV and contributes to curbing the incidence of HIV *(108)*. In December 2013 the Joint United Nations Programme on HIV/AIDS (UNAIDS) Programme Coordinating Board called on UNAIDS to support country- and region-led efforts to establish new targets for scaling up HIV treatment beyond 2015. In response, stakeholder consultations on new targets were held in all WHO regions. One new target was that by 2020, 90% of all people with diagnosed HIV infection should receive sustained antiretroviral therapy *(109)*. Furthermore, UNAIDS strategy 2021–2025 will establish a new target for 2025: that 95% of all people diagnosed with HIV would be taking antiretroviral therapy. Efforts are also being made to make recommended antiretroviral therapy more affordable within low- and middle-income countries to ensure universal access.

Twenty-seven Member States in the WHO European Region reported data on estimated antiretroviral therapy coverage among people living with HIV in 2020, with estimates ranging between 47% and 91% *(108)*. In the Region, the average coverage was 64% in 2020, which represents a 33% increase compared with 2015. Nine Member States reached the target coverage for 2020 (81% of all people living with HIV taking antiretroviral therapy).

Fig. 2.28. Number of new HIV diagnoses per 100 000 population in Member States of the WHO European Region, 2019



Source: European Centre for Disease Prevention and Control and WHO Regional Office for Europe, 2020 *(107)*.

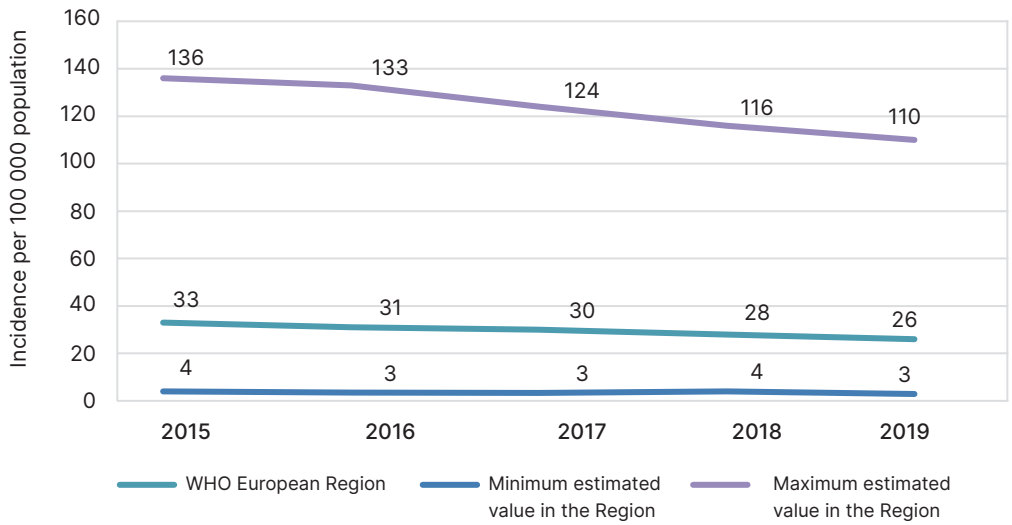
TB incidence

Ending TB is an explicit SDG 3 target, which is monitored based on TB incidence per 100 000 population per year. Many new cases of TB are attributable to five risk factors: undernutrition, HIV infection, alcohol use disorders, smoking (especially among men) and diabetes *(110)*.

In the WHO European Region, TB incidence (WHO-estimated TB incidence) decreased by 21% in total between 2015 and 2019, which includes a decrease of 7% between 2018 and 2019 (Fig. 2.29). In absolute numbers, about 250 000 people fell ill with TB in 2019 in the Region, among whom were 12 000 children under 15 years of age. Among people with TB, 12% are also living with HIV *(111)*.

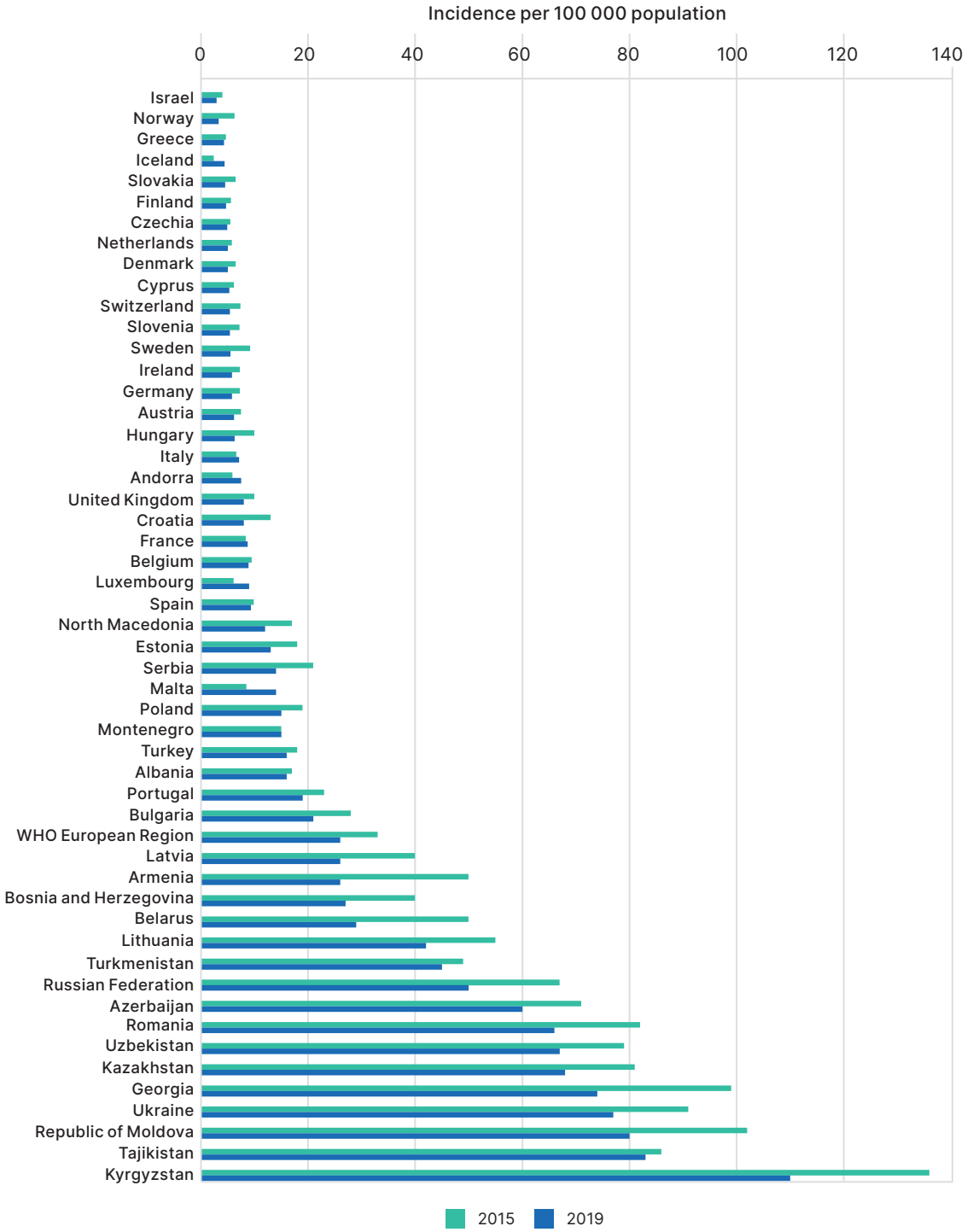
In 2019 TB incidence ranged between 0 cases and 110 cases per 100 000 population (Fig. 2.30), with a low annual incidence (<10 cases per 100 000 population) in 27 Member States. These Member States are well placed in reaching the target of TB elimination *(110)*. Changes in TB incidence in other Member States are also favourable, as 44 Member States reported a reduction in new and relapsed TB rates between 2015 and 2019; however, in six Member States the rate increased and no changes were recorded in three other Member States.

Fig. 2.29. Annual incidence of TB in the WHO European Region, 2015–2019



Note: small countries were excluded from minimum and maximum values visualization.
Source: European Centre for Disease Prevention and Control and WHO Regional Office for Europe, 2021 *(112)*.

Fig. 2.30. Incidence of TB in Member States of the WHO European Region, 2015 and 2019



Source: European Centre for Disease Prevention and Control and WHO Regional Office for Europe, 2021 *(112)*.

To end the global TB epidemics, a target 20% reduction in the TB incidence rate (new and relapsed cases per 100 000 population per year) by 2020 (using 2015 as baseline) was set *(112)*. As of 2019, 21 (out of 51) Member States in the Region have succeeded in reaching this target. Despite having the fastest rate of decline in TB incidence and mortality among all of the WHO regions, the WHO European Region is home to one third of the patients with multidrug-resistant TB globally. AMR is a growing concern not only for TB but also for HIV and viral hepatitis, thereby threatening the effective prevention and treatment of these conditions and increasing health-care costs *(104)*. In 2019 multidrug-resistant TB remained a public health crisis and a health security threat *(113)*, with only 59% of these patients being successfully treated. The final outcome is the most important direct measurement of the effectiveness of the control programme for multidrug-resistant TB in terms of patient care. The percentage of incident cases of multidrug-resistant TB that are detected and successfully treated *(114)* is slowly increasing in the Region, from 57% in 2015 and 2016 to 59% in 2017. Treatment success rate for patients treated for multidrug-resistant TB in the Region varies among Member States: from 36% to 89% in 2017, with only six Member States reporting treatment success rates of 80% or more.

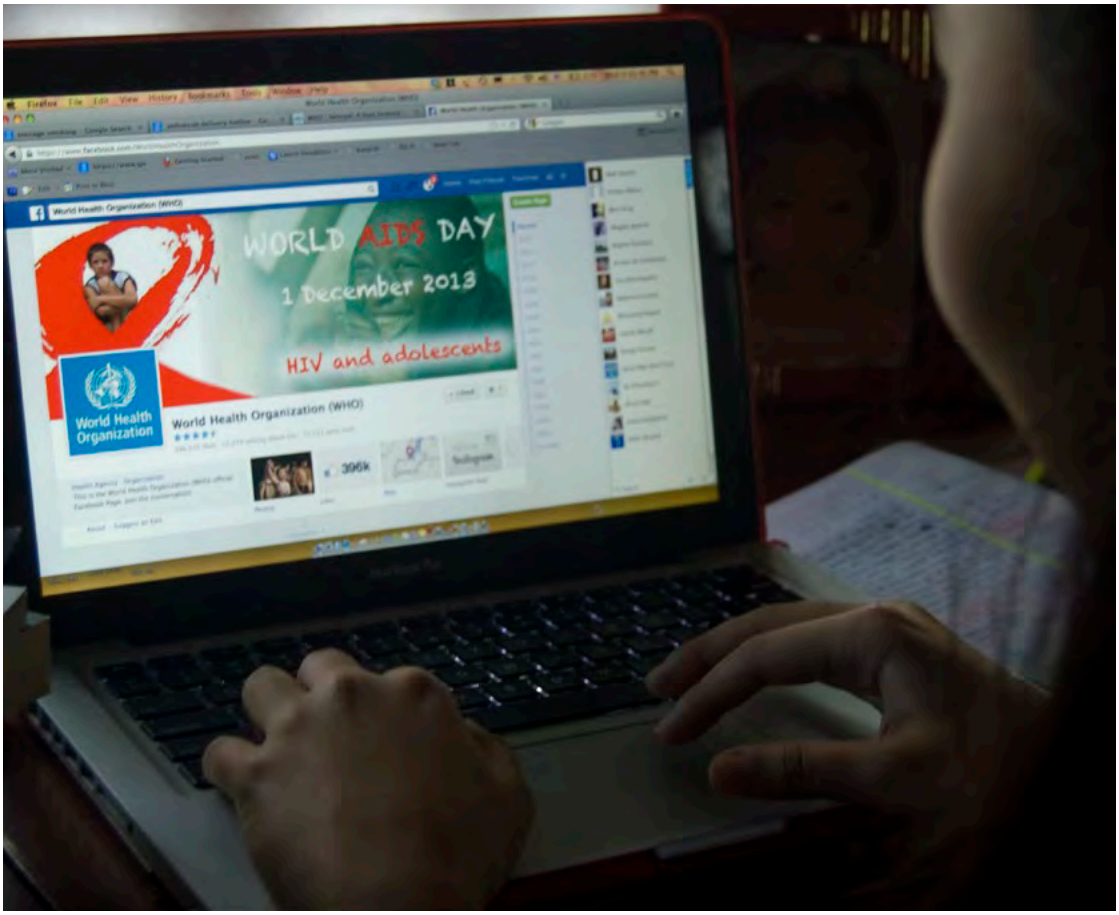
Hepatitis prevalence

Viral hepatitis, although not a main focus of infectious diseases strategies until recently, was responsible for an estimated 107 000 deaths in 2019, mostly the consequence of chronic hepatitis B and C infections *(115)*. Chronic hepatitis B and C infections are estimated to occur in more than 14 million and 12 million people, respectively, in the WHO European Region alone *(116)*, most of whom are unaware of their status *(104)*. Globally, most of the burden of disease from hepatitis B infection comes from infections acquired before the age of 5 years. Therefore, the key intervention for control is infant vaccination, with the first dose provided within 24 hours of birth according to WHO recommendations.

In line with the SDGs, countries have committed to eliminating hepatitis as a public health threat by 2030, achieving universal access to prevention and testing, and ensuring that people living with hepatitis have access to care and affordable, effective treatment. The United Nations selected the cumulative incidence of chronic hepatitis B infection at 5 years of age as an indicator of the SDG target for combating hepatitis. This indicator is measured indirectly through the proportion of children at 5 years of age who have developed chronic infection (measured as

the proportion testing positive for a marker of infection called hepatitis B surface antigen) *(117,118)*.

The WHO Regional Office for Europe is working to support Member States in validating the achievement of hepatitis B infection control targets through conducting representative serosurveys in the general population. In addition, partly reflecting the SDG implementation, 50 out of 53 Member States in the Region are conducting universal childhood vaccination for hepatitis B; regional immunization coverage with the third dose increased from 82% in 2016 to 92% in 2019 *(119)*. In recent years, an increasing number of Member States in the Region have substantially improved access to treatment for hepatitis C through their national programmes. Some have also set national goals for eliminating hepatitis C infection in line with the WHO Global Health Sector Strategy on Viral Hepatitis 2016–2021. In January 2020 the first two Member States in the Region were validated to have achieved that control goal.



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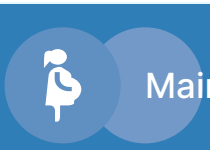
Reproductive, child and maternal health



Main findings

- In the WHO European Region, data are lacking on the proportion of women of reproductive age (15–49 years) who have their need for family planning satisfied with modern methods (SDG 3.7.1); this indicator was unavailable for 35 Member States in 2011–2020.
- The adolescent birth rate in the WHO European Region is one of the lowest globally: (17.1 births per 1000 women aged 15–19 years in 2015–2020), but there are marked inequalities across Member States, with a range from 1.4 to 54.3 births per 1000 women in that age group.
- The maternal mortality rate was 13 deaths per 100 000 live births in 2017, with values ranging between 2 and 60 across Member States in the WHO European Region. All Member States have already reached SDG 3.1 (reduce the global maternal mortality ratio to less than 70 per 100 000 live births by 2030).
- In 2014–2020, 99% of births were attended by skilled health personnel in the WHO European Region.
- The child mortality rates (8 deaths under 5 years of age, and 4 neonatal deaths per 1000 live births) in the WHO European Region are among the lowest globally. Most Member States (94%) have already reached SDG 3.2 (end preventable deaths of newborns and children under 5 years of age, to reach rates at least as low as 12 and 25 deaths per 1000 live births, respectively, by 2030).

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SDGs are universal in scope, and their call to leave no one behind puts the world's most vulnerable people, including children, at the top of the agenda *(120)*. Investing in the health of women and children is a vital part of the right to health, encompassing reproductive and maternal health (pre- and postnatal) and child health care *(121)*. The targets of SDG 3 specifically address:

- achieving UHC (SDG 3.8) in the reproductive, maternal, newborn and child domains;
- achieving universal access to sexual and reproductive health-care services (SDG 3.7);
- reducing maternal mortality (SDG 3.1); and
- ending all preventable deaths under 5 years of age (SDG 3.2).

Women who have their need for family planning satisfied with modern methods

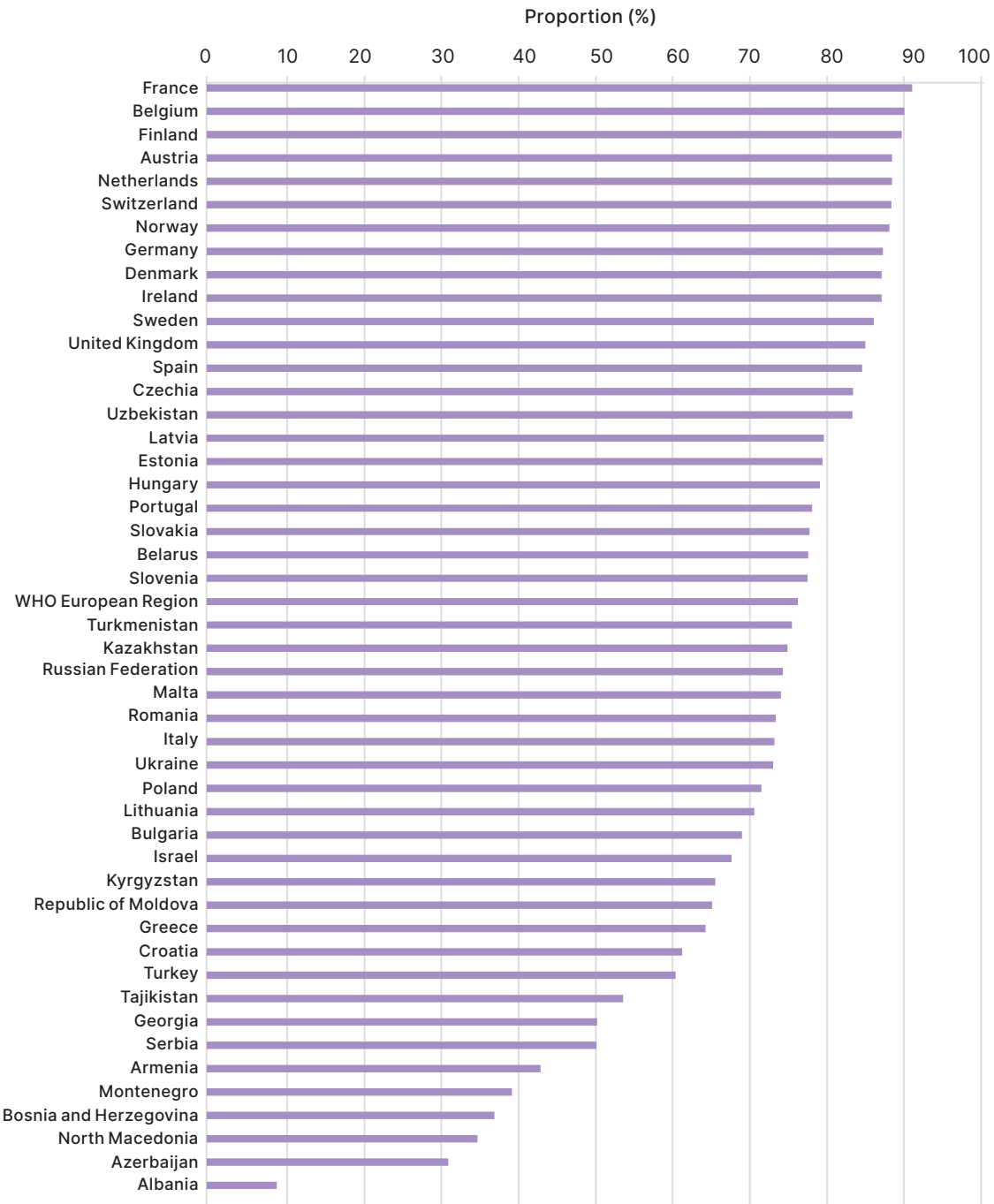
Access to and use of effective means to prevent pregnancy enables women and their partners to exercise their rights to decide freely and responsibly the number and spacing of their children and to have the information, education and means to do so. Meeting the demand for family planning with modern methods also contributes to maternal and child health by preventing unintended pregnancies and closely spaced pregnancies, which are at higher risk for poor obstetrical outcomes *(122)*. The proportion of demand for family planning satisfied with modern methods is useful in assessing overall levels of coverage for family planning programmes and services. Progress towards SDG 3.7 (ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes by 2030) is measured based on two indicators: the proportion of women of reproductive age (15–49 years) who have their need for family planning satisfied with modern methods, and the adolescent birth rate (in age range 10–14 years and 15–19 years) per 1000 women in that age group.

In the WHO European Region, data on the proportion of women of reproductive age (15–49 years) who have their need for family planning satisfied with modern methods were available for 18 out of 53 Member States in 2011–2020 *(121)*. Because of the high number of Member States with missing data, a proxy indicator is used to compute the regional average: the proportion of women of reproductive age (15–49 years) who are married or in union and who have their need for family planning satisfied with modern methods.

According to estimates from the United Nations Population Division, this indicator ranges between 31.3% and 91.5% in Member States of the Region, except in one country where less than 10% of women have their family planning needs met (Fig. 2.31). Information is collected through household surveys conducted every three to five years. Differences in particular surveys over time or across Member States may affect these estimates.

Globally, the majority of countries with lower rates of met need for family planning are low- and lower-middle-income countries *(123)*. In the WHO European Region, six upper-middle-income countries have rates of met need for family planning with modern methods of below 50%.

Fig. 2.31. Women of reproductive age (15–49 years) and are married or in union and have their need for family planning satisfied with modern methods, 2020



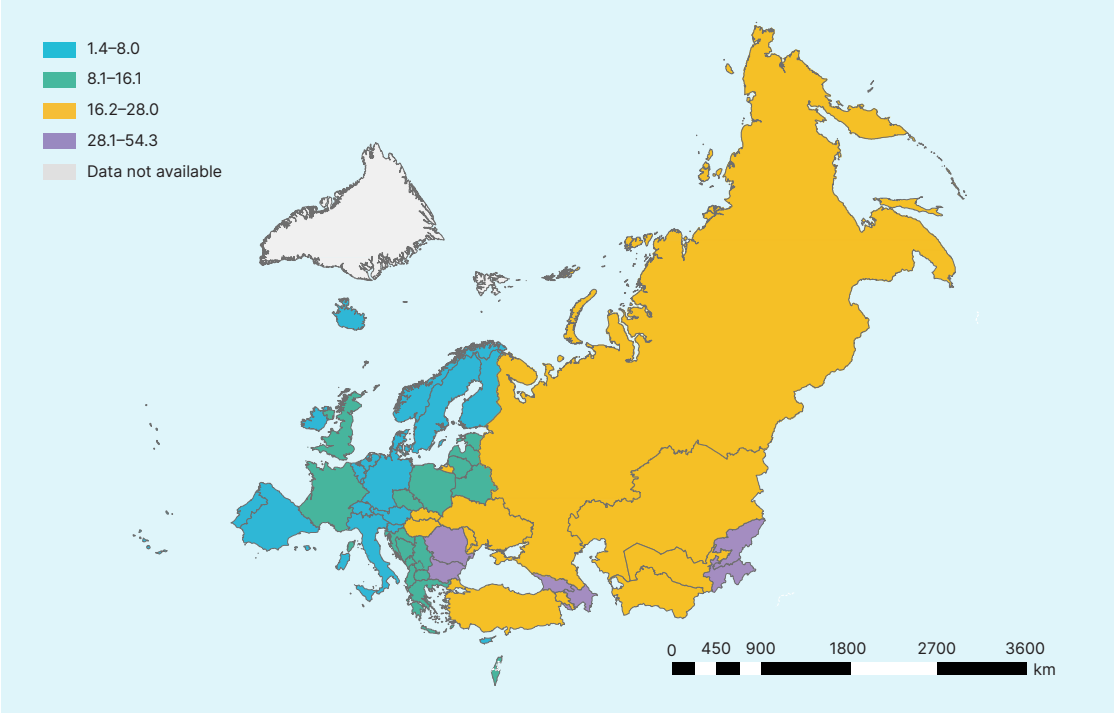
Source: WHO, 2021 *(122)*.

Adolescent birth rate

Reducing adolescent fertility and addressing the determinants of teenage pregnancy are essential for improving sexual and reproductive health, and the social and economic well-being of adolescents. Women who become pregnant and give birth very early in their reproductive lives are subject to higher risks of complications or even death during pregnancy and birth, and their children are also more vulnerable. Therefore, preventing early childbirth is an important measure to improve maternal health and reduce infant mortality *(124)*.

The adolescent birth rate in the WHO European Region is one of the lowest globally and decreased from 19.9 births per 1000 women aged 15–19 years in 2010–2015 to 17.1 in 2015–2020 *(124)*. Nevertheless, there are marked inequalities in the Region and the indicator ranges between 1.4 and 54.3 births per 1000 women across countries (Fig. 2.32).

Fig. 2.32. Adolescent birth rate (15–19 years) per 1000 women



Source: WHO, 2021 *(124)*.

Data on early teenage childbearing (girls aged 10–14 years) are not regularly collected in the WHO European Region and are not given here. According to the United Nations Department of Economic and Social Affairs, two Member States in the Region have moderate rates (1–5 births per 1000 girls in the age group), whereas other Member States report lower rates *(125)*.

Maternal mortality

Progress towards SDG 3.1. is measured using two indicators: SDG 3.1.1 (the maternal mortality ratio) and SDG 3.1.2 (the proportion of births attended by skilled health personnel) *(126,127)*. All women should have access to skilled care during pregnancy and childbirth to ensure the prevention, detection and management of complications. Assistance by competent health personnel working within an enabling environment is key to lowering maternal and newborn deaths *(128)*. As it is difficult to accurately measure maternal mortality, and model-based estimates of the maternal mortality ratio cannot be used for monitoring short-term trends, the proportion of births attended by skilled health personnel is used as a proxy indicator. Reflecting its importance in reducing maternal morbidity and mortality, the proportion of births attended by skilled health personnel was included as SDG 3.1.2 in the SDGs.

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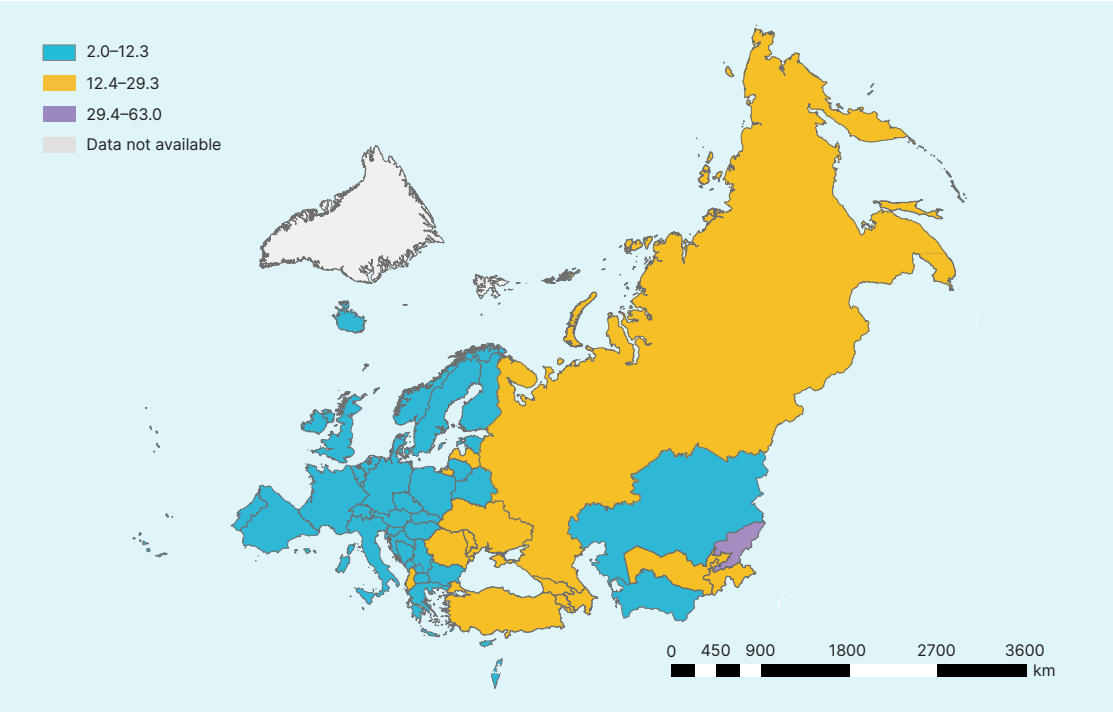
The average maternal mortality rate was 13 deaths per 100 000 live births in the WHO European in 2017, with rates ranging between 2 and 60 deaths across Member States; all Member States have the target set in SDG 3.1.1 but, nonetheless, rates in 2017 varied substantially across Member States (Fig. 2.33).

Achieving the 2030 target for maternal mortality ratio depends on baseline levels *(128,129)* but in addition countries need to increase equity in maternal mortality. An additional target is for every country to reduce its maternal mortality ratio by at least two thirds from the 2010 baseline by 2030 *(128,130)*. Furthermore, countries with a baseline maternal mortality ratio below 10 deaths per 100 000 live births in 2010 should aim to achieve equity in the maternal mortality ratio for vulnerable populations at subnational level *(128)*. In the WHO European Region, there were 35 Member States with a maternal mortality ratio of 10 or below in 2017, and 20 have reduced their maternal mortality ratio by 25% in the 2010–2017 period.

Fig. 2.33. Maternal deaths per 100 000 live births, 2015–2017



Source: WHO, 2019 *(129)*.

Births attended by skilled health personnel

Skilled health professionals assisted 83% of births globally in 2020, but coverage continues to be uneven around the world, with significant discrepancies between WHO regions *(131)*. The lowest coverage levels tend to be in the poorest countries, where maternal mortality levels are also the highest *(132)*. According to UNICEF/WHO joint data, 99% of births in the WHO European Region were attended by skilled health personnel in 2014–2020, and in more than half of the Member States of the Region all births were attended by skilled health personnel.

Neonatal mortality

Child mortality is a key health system indicator that reflects both health status and access to basic health interventions such as vaccination, medical treatment of infectious diseases and adequate nutrition *(133)*. More broadly, child mortality is a reflection of countries' social and economic development.

SDG 3.2 (end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-5 mortality to at least as low as 25 per 1000 live births by 2030) is monitored using two indicators: SDG 3.2.1, the under-5 mortality rate (probability of dying by 5 years of age per 1000 live births) *(134)* and SDG 3.2.2, the neonatal mortality rate (probability of dying during the first 28 days of life per 1000 live births) *(135)*.

The average neonatal mortality rate in the WHO European Region was 4 deaths per 1000 live births (latest available data from 2019), the lowest globally among WHO regions. Fourteen Member States have rates above this regional rate, 11 of which exceed the average by 20% or more. Three Member States in the Region have not yet reached the SDG 3.2.2 target for 2030 (<12 neonatal deaths per 1000 live births), among which two are slowly making progress. According to UNICEF estimates, two eastern European and central Asia countries are at risk of missing the neonatal mortality reduction called for in SDG 3.2.2 *(133)*.

Under-five mortality

In the WHO European Region, the average under-5 mortality rate was 8 deaths per 1000 live births in 2019, which is the lowest rate globally and marks a decrease of 1 death per 1000 since 2010. The average under-5 mortality rate varies from 1.7 to 42.0 across Member States, and rates are higher in boys than girls.

In the Region, only two Member States have not yet reached the target set in SDG 3.2.1: one in eastern Europe and one in central Asia; nonetheless, UNICEF projects that they are on track to reach the target by 2030, with only one at risk of missing the target *(133,136,137)*.

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Children who are developmentally on track in health, learning and psychosocial well-being

Main findings

- Few data are available in the WHO European Region on the proportion of children aged under 5 years who are developmentally on track in health, learning and psychosocial well-being.
- In the 12 out of 53 Member States of the Region with data, 72–97% of children under 5 years are developmentally on track, with gender differences across Member States.

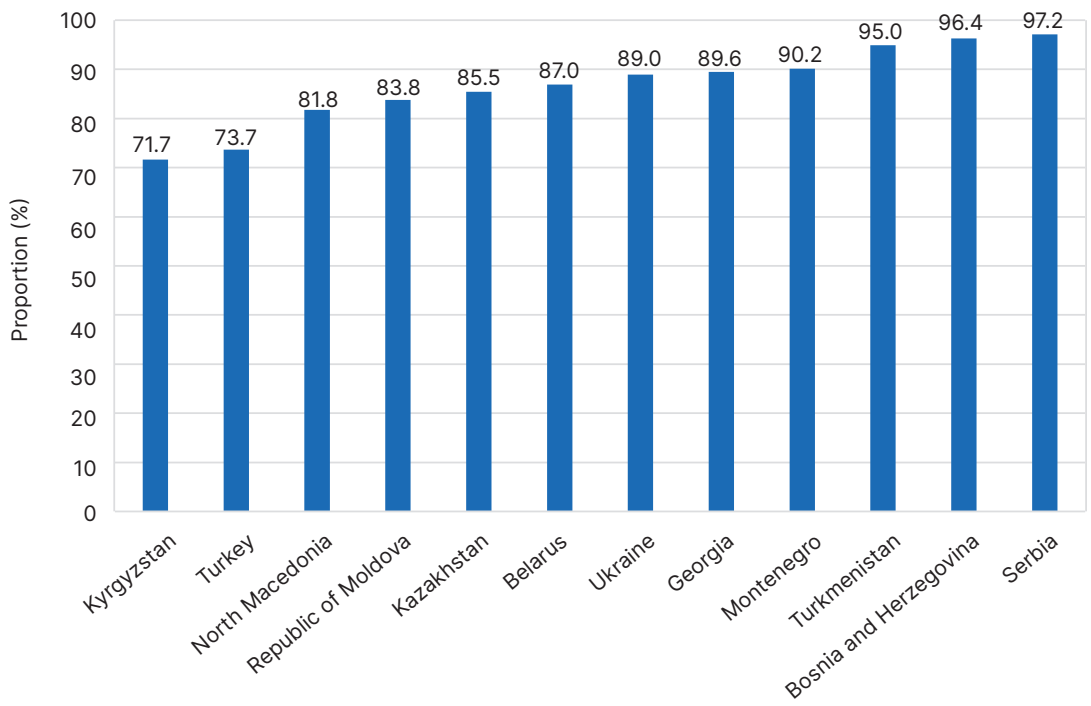
Early childhood development sets the stage for lifelong thriving, and research shows that a child's brain development is faster in the first years of life than at any other time. This entails a critical period of adaptability and responsiveness to interventions that support the reduction of disparities and inequities in health, learning and psychosocial well-being. Investing in early childhood development is a worthwhile investment that countries can make, in particular for the most vulnerable, including poor children, children living in rural areas, children with disabilities and refugee children *(138)*. The health and education sectors' capacity to reach women and children from conception through the perinatal period and early childhood is an opportunity to provide interventions that can help improve the health and well-being of young children while also tending to caregiver(s).

The importance of building human capital for healthy and resilient communities is recognized in SDG 4.2 (to ensure by 2030 that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education) *(139,140)*. Progress towards this target will be monitored based on the Early Childhood Development Index 2030, which

is a 20-item instrument to measure developmental outcomes among children aged 24–59 months in population-based surveys. However, as this Index was only officially released in March 2020, and to allow sufficient uptake for data to become available, a proxy indicator is also used: children aged 36–59 months who are developmentally on track in at least three of the following four domains: literacy–numeracy, physical domain, socioemotional domain and learning *(141)*.

As shown in Fig. 2.34, very few Member States have reported on the proportion of children under 5 years developmentally on track in health, learning and psychosocial well-being. Data were available from 12 out of 53 Member States in the WHO European Region. In these Member States, the proportion of children aged under 5 years who were developmentally on track ranged from 72% to 97% using the latest available data in each country (2012–2019).

Fig. 2.34. Proportion of children under 5 years of age developmentally on track in health, learning and psychosocial well-being in Member States of the WHO European Region

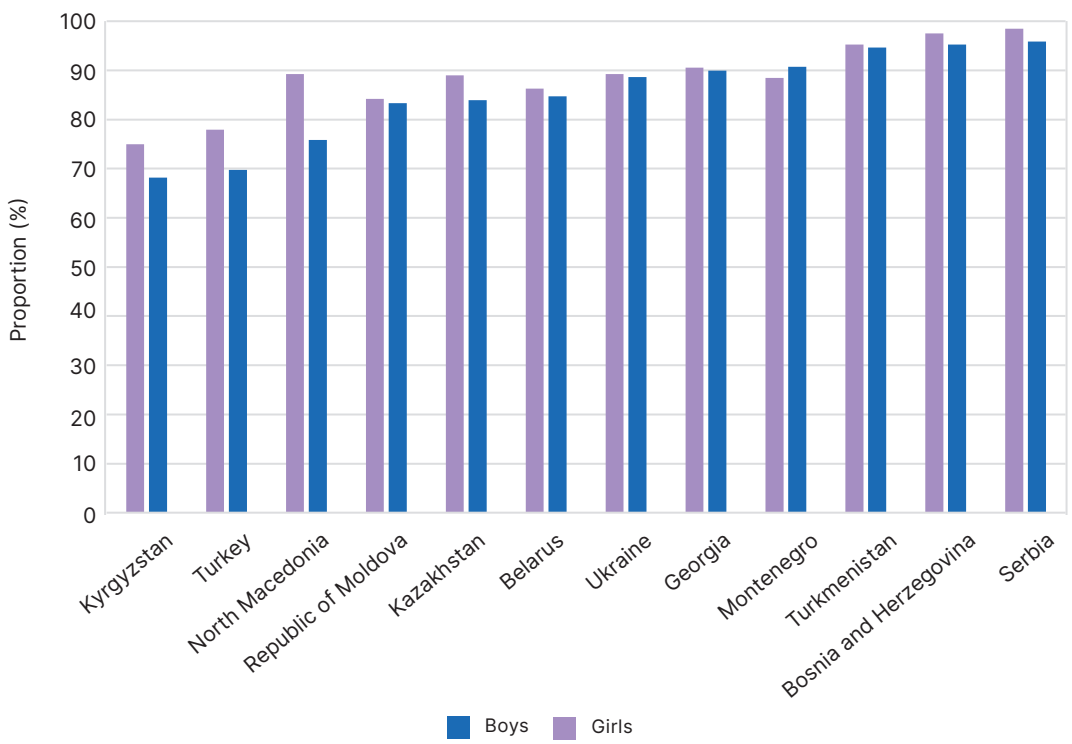


Source: UNICEF, 2021 *(142)*.

Girls fared better than boys in six of the 12 Member States providing data in 2012–2019; on average, girls aged under 5 years are better on track by 3.3 percentage points compared with boys. Gender differences for this indicator ranged between 0.8 and 13.4 percentage points (Fig. 2.35).

While all Member States in the Region committed to the SDGs, many do not collect SDG indicators related to child and adolescent health, including the ones related to early childhood development. Child and adolescent health progress reports based on WHO surveys among all 53 Member States have an objective to improve country accountability and reporting on SDG indicators and targets, thus enhancing the visibility of children's health for policy-makers, decision-makers and carers *(143)*.

Fig. 2.35. Proportion of girls and boys under 5 years of age developmentally on track in Member States of the WHO European Region



Source: UNICEF, 2021 *(142)*.

Children who experienced physical punishment and/or psychological aggression by caregivers

Main findings

- Data on children experiencing violent discipline in the last month are available in 15 out of 53 Member States; overall, the proportion of children aged 1–14 years experiencing violent discipline ranges between 44% and 80%.
- Across Member States, more boys than girls experience violent discipline, with rate differences ranging between 2% and 13%.

Violence against children is a public health problem with overwhelming consequences for the victims and their families. Each year, at least 55 million children experience some form of violence in the WHO European Region, including physical, sexual, emotional and psychological violence; this represents one in every three children experiencing violence in their lifetime *(144,145)*. Whereas corporal punishment is the most widespread type of violence against children, physical aggression and psychological aggression tend to co-occur, thereby aggravating the harm *(146)*. Corporal punishment is a violation of the United Nations Convention of the Rights of the Child and, while all 53 Member States of the Region have ratified the Convention, only 35 have legislation banning corporal punishment in all settings.

Childhood is a period characterized by extensive cognitive, physical and emotional development. Children who experience violence by caregivers suffer short- and long-term adverse outcomes ranging from poorer physical and intellectual development, aggressive behaviour, drug use, poorer psychosocial relations and greater risks of juvenile delinquency.

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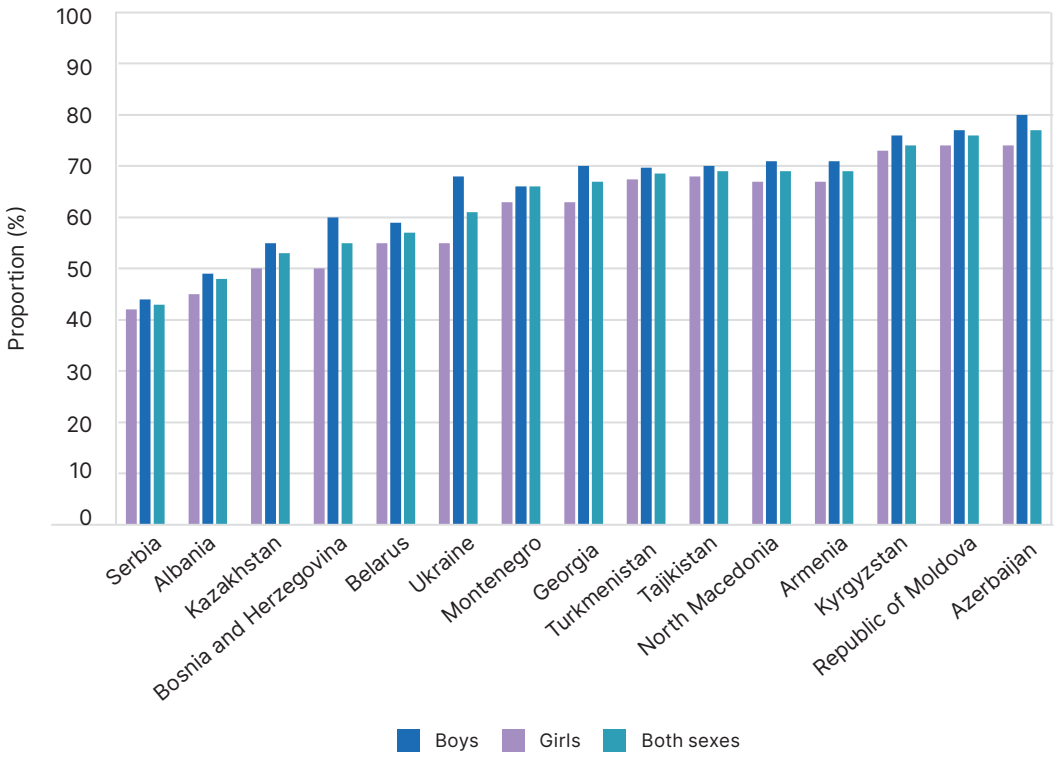
The total annual cost to the health systems of the Region for failing to prevent adverse childhood experiences, including violence, amounts to US$ 581 billion *(144)*.

The importance of building human capital for healthy and resilient communities is recognized under SDG 16 (promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels). SDG 16.2 addresses the end of abuse, exploitation, trafficking and all forms of violence against, and torture of, children. This target is monitored based on the proportion of children aged 1–14 years who experienced physical punishment and or psychological aggression by caregivers in the last month; this is a tier II indicator, meaning it is conceptually clear, has an internationally established methodology and standards are available. However, data are not regularly produced by countries, but are generated only by infrequent population-based household surveys *(147)*. Reducing violence against children is also a priority in GPW13, with the target to reduce by 20% the number of children who experienced violence in the previous 12 months, including physical and psychological violence by caregivers *(29)*.

All forms of physical discipline are considered to be violence and contrary to the United Nations Convention *(148,149)*. Fig. 2.36 reports data for the most recent years available during 2012–2019 for Member States in the Region. The proportion of children aged 1–14 years experiencing violent discipline ranged between 44% and 80% in the 15 Member States with data available. Across Member States, boys experience violent discipline more than girls, with rate differences ranging between 2% and 13%.

Fig. 2.36. Proportion of children aged 1–14 years experiencing violent discipline (psychological aggression and/or physical punishment) in the previous month, most recent year available during 2012–2019



Source: UNICEF, 2021 *(150)*.

Women and girls subjected to violence by an intimate partner

Main findings

- Violence against women is a grave human rights violation and a global public health issue. In the WHO European Region, nearly one in every five women experiences violence in her lifetime.
- Prevalence of intimate partner violence varies markedly across the WHO European Region: 2–14% of women aged 15–49 years experienced violence in the previous 12 months.

Violence against women is a global public health issue. The United Nations defines violence against women as "any act of gender-based violence that results in, or is likely to result in, physical, sexual, or mental harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life". Worldwide, nearly one in three women (31%) is subjected to physical and/or sexual intimate partner violence or non-partner sexual violence at least once in their lifetime *(151)*. The latest WHO global report on the topic indicates a lifetime prevalence of physical and/or sexual intimate partner and/or non-partner sexual violence of 26% in the WHO European Region *(152)*, representing over 45 million affected women *(152,153)*.

Violence against women is associated with many health problems, including injuries, mental health disorders, sexual and reproductive health problems (such as sexually transmitted infections or unintended and adolescent pregnancies), and chronic conditions and pain syndromes. It is also associated with child health and development problems and, when it occurs during pregnancy, adverse outcomes for mother and baby, including low birth weight. It can also result in death.

The social and economic costs of violence are high and include the cost of services, reduced productivity/loss of days of work and inability to participate in community activities.

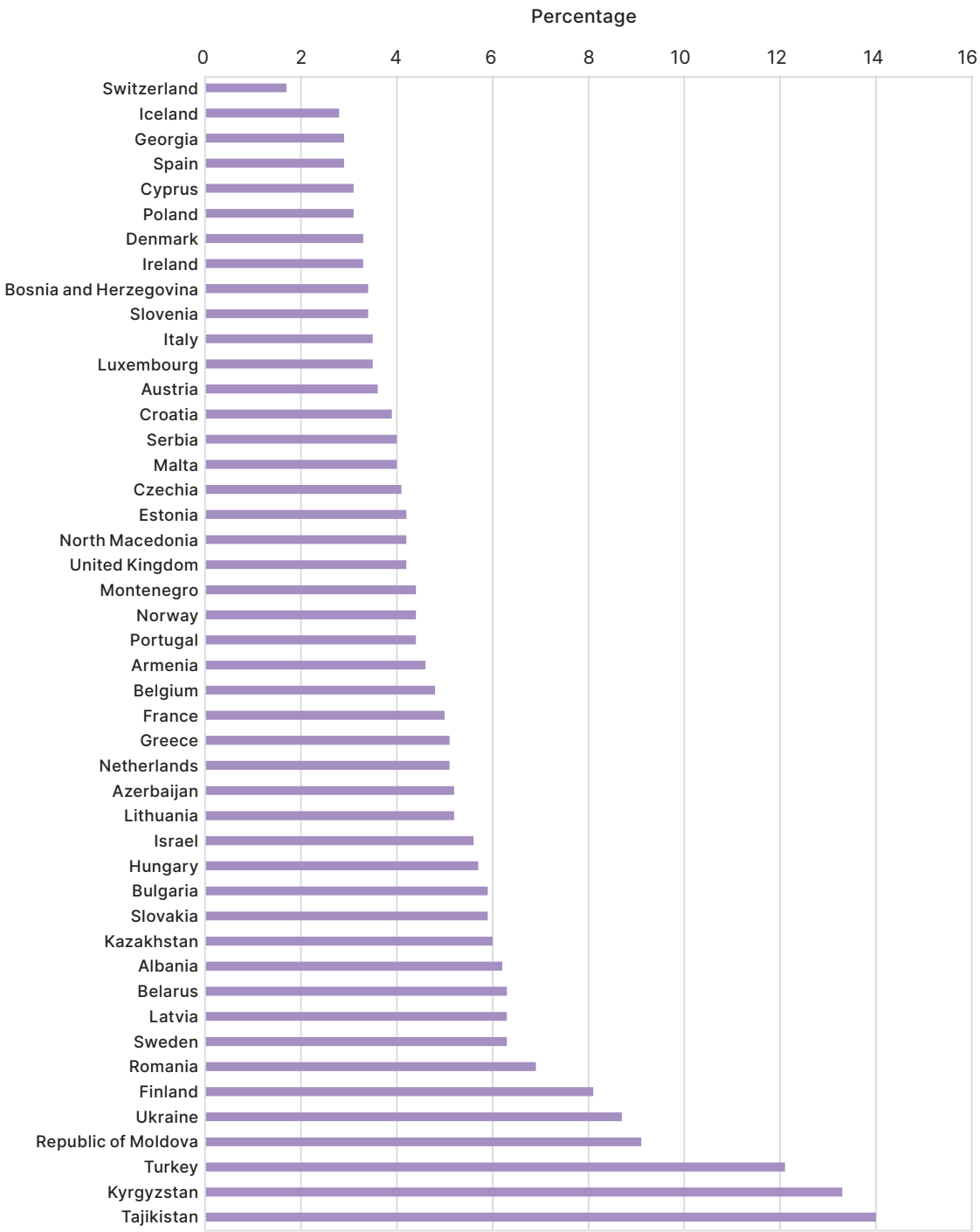
Such violence is a grave human rights violation that is driven by and sustained by gender inequality and discrimination; there are also multiple other determinants, including a lower level of education, poverty, a history of child maltreatment and substance use. However, such violence is present across all social classes and countries.

Ensuring women and girls are safe is an important lever for sustainable development and is prioritized in SDG 5 and, more specifically, SDG 5.2 (eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation). This target is monitored based on two indicators, one of which is SDG 5.2.1 (proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months) *(154)*.

In 2016 WHO launched a global plan of action to strengthen the role of the health system in addressing interpersonal violence *(155)*, and in 2019 WHO and UN Women published RESPECT Women: Preventing Violence against Women *(156)*. In 2020 several countries reported increases in levels of violence against women and children during the COVID-19 pandemic (covered in more detail in Chapter 3), which brought renewed attention to the issue, as well as the need to address it and ensure key mitigation measures *(157)*.

Globally, 6–20% of women aged 15–49 years experienced physical and/or sexual violence in the previous 12 months *(152)*. The WHO European Region reports the lowest average (6%) among WHO regions, although estimates vary widely across Member States (from 2% to 14%; Fig. 2.37) *(158)*. Low- and middle-income countries tend to report higher estimates *(152)*. Trend data for this indicator were not available *(154)*.

Fig. 2.37. Percentage of ever-partnered women and girls (15–49 years) subjected to physical and/or sexual violence in the last 12 months, 2018



Source: United Nations Economic Commission for Europe, 2021 *(158)*.

Vaccination coverage

Main findings

- In the WHO European Region, childhood immunization coverage is highest (> 90%) for the DTP vaccine and the measles-containing vaccine (MCV; first and second doses), whereas full immunization coverage against pneumococcal disease is lower (80%) but is still the highest globally. Human papillomavirus vaccination second vaccine coverage is significantly lower (27%).
- Vaccination coverage varies widely across Member States in the WHO European Region.

Vaccines are critical to the prevention and control of many communicable diseases and for addressing emerging infectious diseases and combating the spread of AMR. Periodic infectious disease outbreaks (for example, of measles or poliomyelitis), the COVID-19 pandemic and the threat of future pandemics (such as with a novel influenza strain) have and will continue to strain even the most resilient health systems *(159)*. Therefore, immunization programmes also underpin regional and global health security.

The European Vaccine Action Plan 2015–2020 set a vision of a WHO European Region free of vaccine-preventable diseases, where all countries provide equitable access to high-quality, safe, affordable vaccines and immunization services throughout the life-course *(160)*. Building upon the implementation of the European Vaccine Action Plan and aligned with the global Immunization Agenda 2030 *(159)*, the vision of the upcoming European Immunization Agenda 2030 is "a world where everyone, everywhere, at every age, fully benefits from vaccines for good health and well-being". This highlights the importance of leveraging the

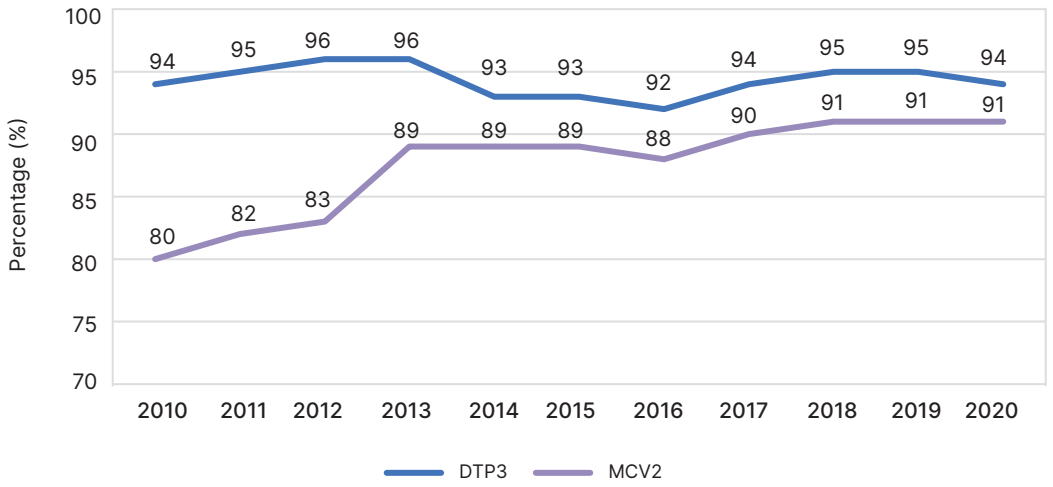
benefits of vaccination through the life-course for the population in the Region, with a specific issue of immunization equity at the subnational levels.

Immunization plays a critical role in countries towards achieving the SDGs *(159)*. SDG 3.b relates to supporting research and development of vaccines and medicines for communicable diseases and NCDs that primarily affect developing countries. Another aim of this target is to ensure access to affordable essential medicines and vaccines, including newly available or underutilized vaccines, at national level *(19)*. This target contributes directly or indirectly to 13 other SDGs *(159)* and progress is monitored based on SDG 3.b.1 (proportion of the target population covered by all vaccines included in their national programme) *(161)*. Measurement includes, for example, the percentage of children receiving the third dose of the DTP vaccine (DTP3), which is an indicator of routine immunization services provided to children in the first year of life, and the percentage of children who have received second dose of MCV (MCV2) in a given year, according to the nationally recommended schedule. The latter is an important indicator used to measure the utilization of immunization services, including access to vaccines beyond infancy.

The WHO European Region has the highest coverage of DTP3 and MCV2 globally *(21)*. However, coverage for DTP3 and MCV2 (94% and 91%, respectively) is below the 95% regional target for both of these vaccines. As shown in Fig. 2.38, DTP3 coverage has remained high in the 2010–2020 period (ranging between 92% and 96%), while MCV2 vaccination coverage increased by more than 10% over the period (from 80% in 2010 to 91% in 2020).
Coverage of the last dose of pneumococcal conjugate vaccine is used as a proxy to measure the effectiveness of the introduction of new and underutilized vaccines into childhood routine immunization schedules *(161)*. The WHO European Region reached 79% immunization coverage among 1-year-old children in 2020, which is the highest coverage rate globally.

Vaccinating adolescent girls against human papillomavirus is critical for the achievement of cervical cancer elimination *(163,164)*. In countries that have introduced the vaccine, cancer linked to papillomavirus infection fell by 83% among girls aged 13–19 years after five to eight years, and the prevalence of precancerous lesions decreased by 51% among girls aged 15–19 years *(165)*. Vaccination against human papillomavirus has been implemented in 37 Member

Fig. 2.38. Percentage of children vaccinated with MCV2 and DTP3 in the WHO European Region, 2010–2020



Source: WHO, 2021 *(162)*.

States in the Region *(164)*, with 31 reporting data in 2019 and 23 in 2020 *(162)*. Progress of human papillomavirus vaccination is still uneven across regions – the WHO European Region reached 29% coverage in 2020 (27% in 2019), which is higher than the global average (13%) but lower than the coverage reported in the WHO Region of the Americas (44%).

The benefits of immunization are unevenly extended to the population in the WHO European Region: coverage varies widely between and within Member States *(162)*. The Global Vaccine Action Plan 2011–2020 aimed that "by 2020, coverage of target populations should reach at least 90% national vaccination coverage and at least 80% vaccination coverage in every district or equivalent administrative unit for all vaccines in national immunization programmes" *(166)*. Almost all Member States in the Region have reached 90% or more for DTP3 coverage, while 13 Member States have not reached the MCV2 vaccination target (Table 2.6). The European Vaccine Action Plan 2015–2020 also sets out specific targets for the Region aiming for "48 out of 53 Member States with national average coverage of at least 95% with three doses of DTP-containing vaccine" *(160)*, but 21 Member States missed the 95% DTP3 immunization target in 2019.

The situation with recommended new/underutilized vaccines in children (pneumococcal conjugate vaccine) is challenging as, by 2019, 43 of 53 Member States had introduced pneumococcal conjugate vaccine into their national immunization schedule but of these 40% reported less than 90% coverage. Only 38 of the 53 Member States introduced human papillomavirus vaccination; three of the 31 Member States reporting on human papillomavirus vaccination coverage reached coverage of at least 90% in 2019.

Table 2.6. Immunization coverage in Member States of the WHO European Region, 2019

Vaccine	Minimum coverage (%)	Maximum coverage (%)	No. of Member States with <90% vaccination coverage
DTP3	73	99	6 (of 53)
MCV2	76	99	13 (of 52)
Pneumococcal conjugate vaccine	60	99	16 (of 40)
Human papillomavirus	4	99	28 (of 31)

Source: WHO, 2021 *(162)*.

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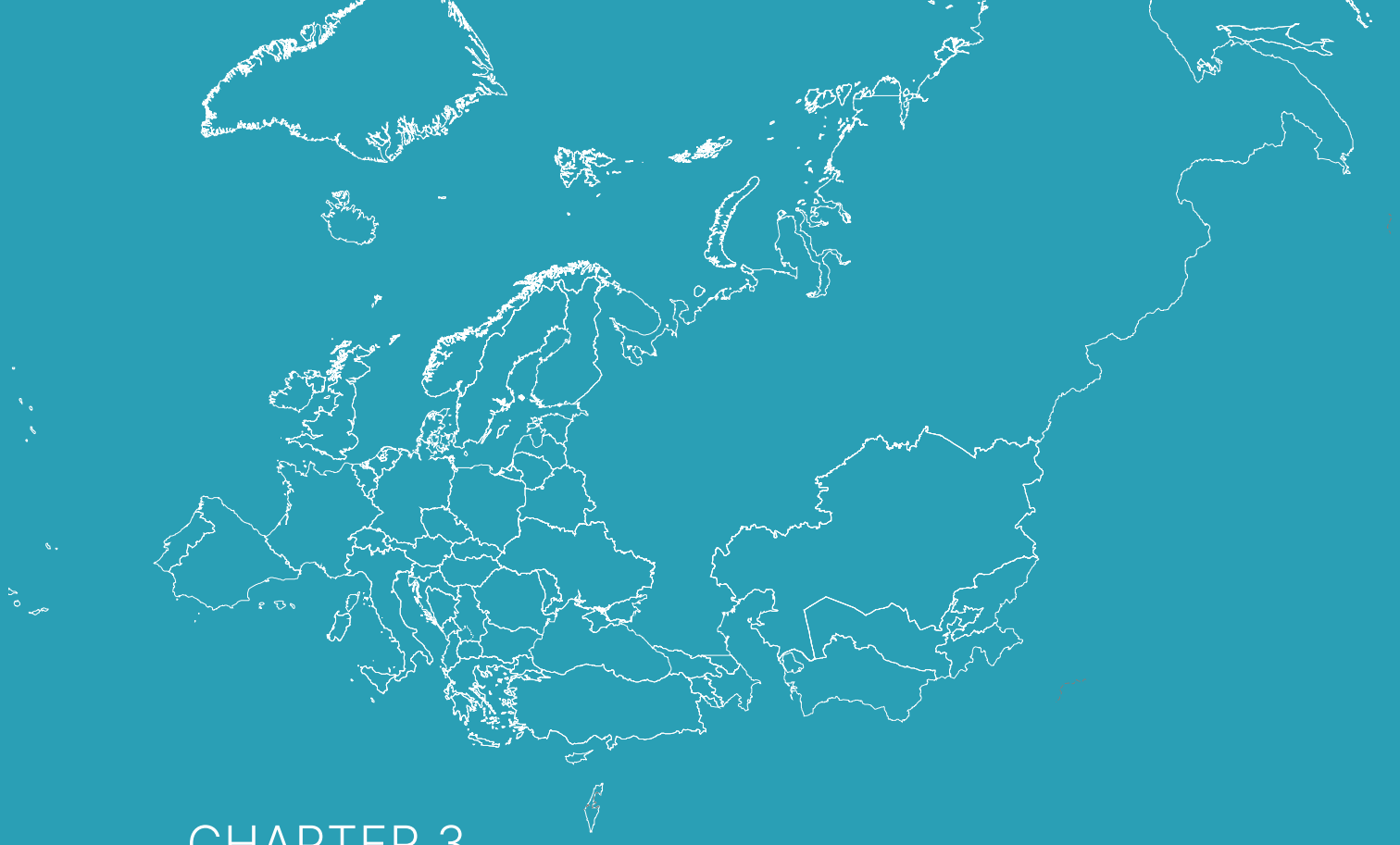

CHAPTER 3

Impacts of the COVID-19 pandemic on population health

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Aim and approach

This chapter aims to provide insight into the impacts of the COVID-19 pandemic on population health. These include both the direct effects of SARS-CoV-2 infection and the indirect effects of containment measures. The objective is to provide a comprehensive overview of impacts, while focusing on the particular effects of the pandemic on UHC, mental and physical health and well-being, and health inequalities, which are all important priorities under the EPW. For describing the number of confirmed or suspected cases and deaths due to COVID-19, data from the WHO Coronavirus (COVID-19) Dashboard were used. As there usually is a time lag of one to three years for the collection of official statistics, few other high-quality (representative) data were available that could be used for assessing the impact of the pandemic on population health across the European region at the time of writing. Consequently, for illustrating the wider impacts of the pandemic, emergent data and evidence from scientific literature were used, followed by reports by (inter)national organizations and NGOs, and data gained from behavioural insights surveys initiated by WHO headquarters and the WHO Regional Office for Europe. It should be noted that the lack of Region-wide reporting from Member States for representative data implies that there are limitations regarding the extent to which conclusions can be drawn in this chapter, and that only a preliminary indication of the impact of the COVID-19 pandemic on population health can be provided. More information on methods and data sources is provided in Annex 1.

Key messages

- The COVID-19 pandemic has had a detrimental effect on population health in the WHO European Region. Between 24 January 2020 and 31 December 2021, more than 102 million people out of a total population of 929 million in the Region were reported to be infected with SARS-CoV-2 and around 1.7 million people were reported to have died as a result. In addition, a substantial proportion of people who were infected suffered from prolonged health problems, including post COVID-19 condition. Estimating the prevalence of these conditions, however, is still challenging.
- The COVID-19 pandemic and its economic fallout are straining health systems and social care to their limits, leading to widespread disruption of regular service delivery with severe negative impacts on all three pillars of UHC: access to health-care services, quality of care and financial protection. While it is still difficult to assess the exact magnitude of the short- and long-term impacts of health service disruption on population health, the effects are likely to be substantial.
- The direct threat of the outbreak and spread of SARS-CoV-2, as well as the containment measures that were subsequently imposed, had a rapid and profound impact on mental health and well-being. This has resulted in feelings of loneliness, fear and pessimistic perspectives for the future, as well as an increase in symptoms of depression and anxiety among some members of the population. However, studies have shown that this

Key messages contd

does not apply to everyone and many people seem to be psychologically resilient to the effects of the pandemic.

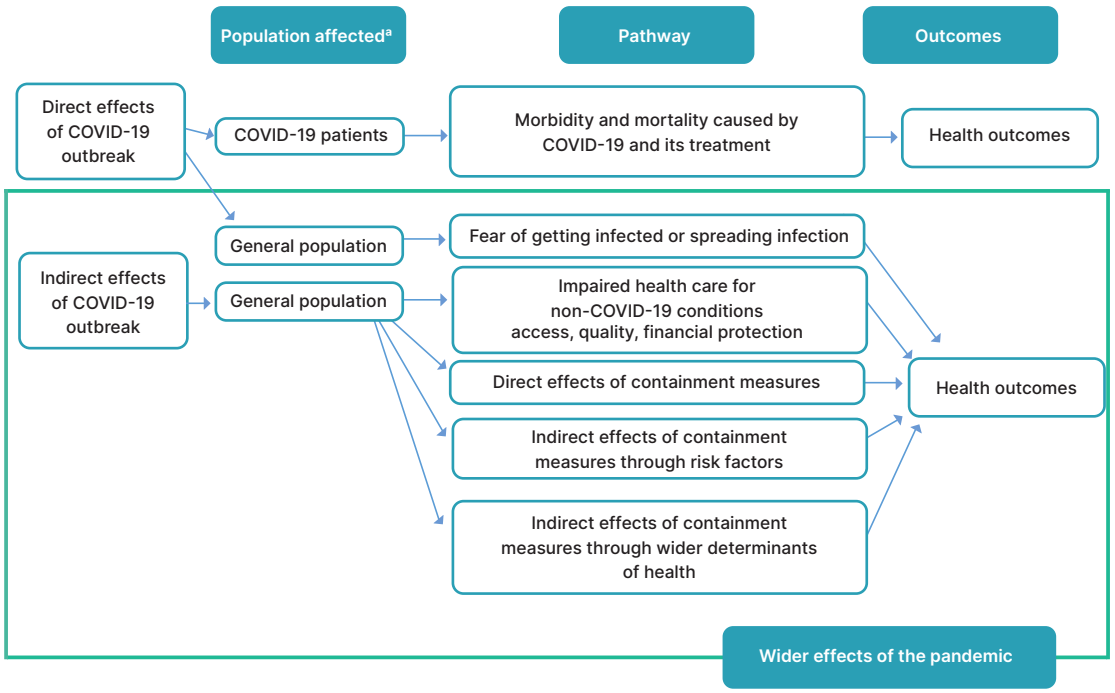
- The COVID-19 pandemic and related containment measures have negatively influenced health behaviours. They have impacted patterns of alcohol, tobacco and drug use in significant parts of the population. There has been an increase in sedentary behaviour and negative changes in nutrition. Emerging evidence points to a significant increase in BMI.
- The pandemic is not affecting everyone equally. To what extent people are affected is fundamentally shaped by the socioeconomic gradient in society and pre-existing inequalities in the conditions in which people are born, grow up, live, work and age. The direct and indirect effects of the COVID-19 pandemic have been much more damaging for the health and well-being for vulnerable and at-risk groups than for other groups. These groups include children, adolescents, women, older people, refugees and migrants, marginalized groups, people with long-term health conditions or disabilities, people working in vulnerable or insecure jobs, people who are unemployed and people living in poverty.

Impacts of the COVID-19 pandemic on population health

The first case of COVID-19 in Europe was reported on 24 January 2020 *(1)*. On 31 January 2020 the Director-General of WHO declared COVID-19 a public health emergency of international concern *(2)*. Since then, COVID-19 has had a devastating effect on our societies. A substantial proportion of people who fall ill still experience serious health problems weeks or even months after being infected. This direct harm caused by COVID-19 is overwhelming and, understandably, has been the focus of population health surveillance activities. However, more insights continue to emerge about how the pandemic is affecting not only the health of those who contracted SARS-CoV-2 infection but also the health of the general population.

This report refers to these impacts on general population health as the wider impacts of the pandemic, which can occur through various pathways (Fig. 3.1). First, taking care of large volumes of patients with COVID-19 puts enormous pressure on health-care systems; this has resulted in missed and postponed care for non-COVID-19-related conditions, which, in turn, can lead to worse health outcomes for patients in the short and long terms. Secondly, the financial and organizational strains that COVID-19 has put on health-care systems have prevented much-needed investments to improve quality. Thirdly, containment measures that were imposed to stop the spread of the virus, such as stay-at-home orders, school closures and physical distancing, can affect health in multiple ways. Lastly, the pandemic also caused fear of getting infected or spreading infection to others, such as loved ones or patients, which can result in anxiety and stress. All these factors have resulted in the indirect impact of the COVID-19 pandemic on population health being much more profound than the already enormous direct effects on death and disease *(3)*.

Fig. 3.1. Framework for pathways through which the COVID-19 pandemic affects population health



[a] Vulnerable groups and groups at risk (e.g. women, children, older people, prisoners, migrants) are likely to be affected more severely. Specific attention should be given to these groups and the social gradient of the impact of COVID-19 when monitoring the effects of the COVID-19 pandemic on population health.
Source: adapted from WHO Regional Office for Europe, 2021 *(3)*.

This chapter will first describe the direct effects of the COVID-19 pandemic on population health in the WHO European Region before addressing the wider effects. The different pathways through which these effects can occur, as depicted in Fig. 3.1, will be explained in more detail.

Morbidity and mortality caused by COVID-19

Number of COVID-19 cases and deaths

Between 24 January 2020 and 31 December 2021, more than 102 million people were reported to be infected with SARS-CoV-2 in the WHO European Region, with infections within Member States ranging from from 5085 to around 12.7 million reported cases. Given that there is usually a time lag of one to three years for the provision of official statistics, it is impossible at present to have consistent and high-quality data. Despite this, crude statistics provide a useful insight into the impact of COVID-19. The crude incidence rate for the Region is 7078 per 100 000 population *(4)*. In the same period, around 1.7 million people across the Region died as a result of COVID-19, ranging from 37 deaths at the lowest to 308 806 deaths at the highest across Member States. This corresponds to a crude cumulative mortality rate of 1800 per million population *(4)*. Fig. 3.2 shows the crude cumulative mortality rates for the Region as reported by Member States and areas.

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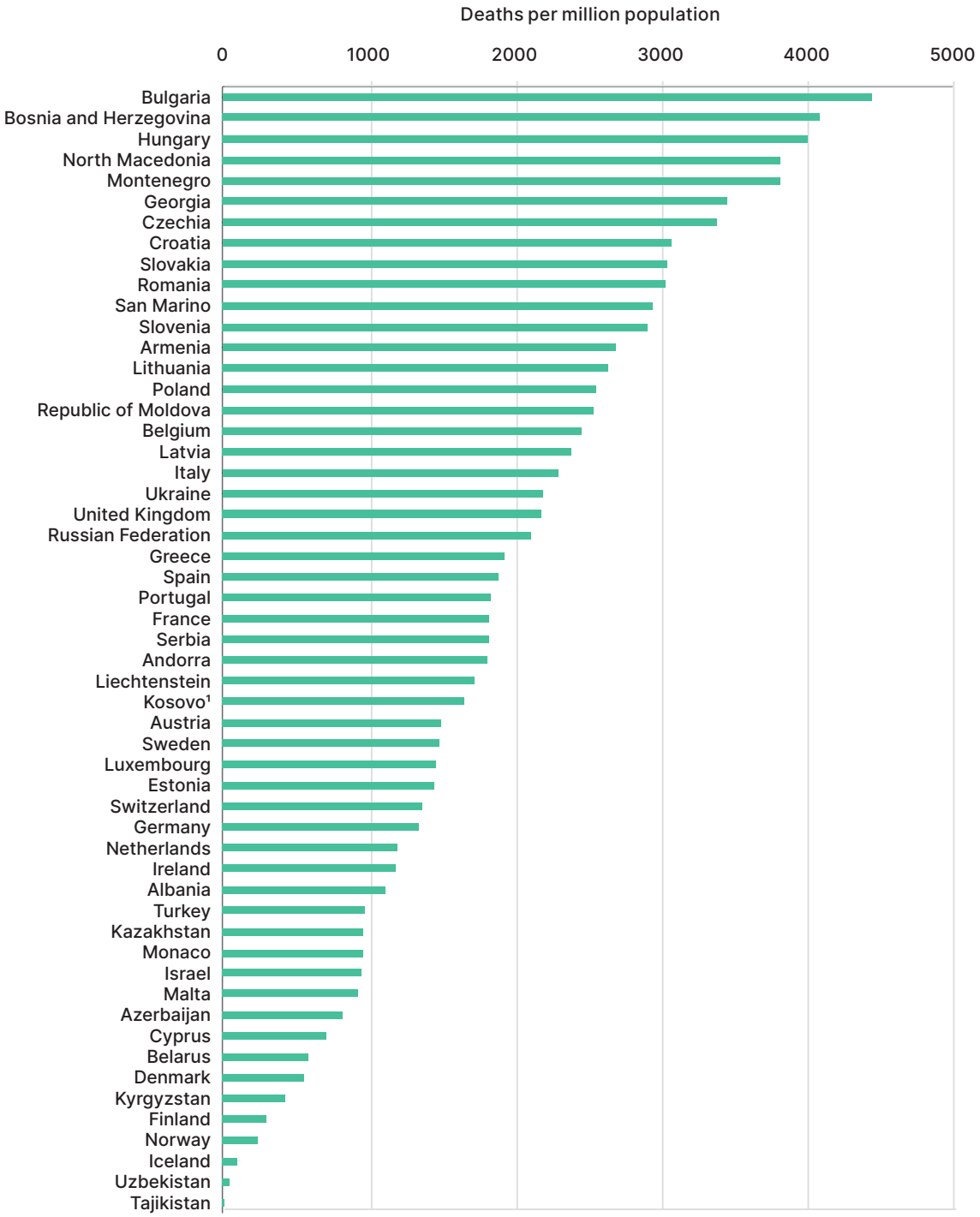
Fig. 3.2. Crude cumulative COVID-19-related mortality rates in the WHO European Region as reported by Member States and Kosovo[1] on 31 December 2021



[1] All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).

Source: WHO, 2021 *(4)*.

COVID-19 symptoms and presentation

COVID-19 is an infectious disease caused by SARS-CoV-2. The effects vary from person to person. Most people infected with SARS-CoV-2 will develop mild-to-moderate respiratory illness with symptoms such as fever, cough, tiredness and loss of taste and/or smell; this can be accompanied by less common symptoms such as sore throat, headaches, aches and pains, diarrhoea, a skin rash or discoloration of the fingers or toes, and red or irritated eyes. Some people, however, become seriously ill and require medical treatment. The more serious symptoms of COVID-19 encompass difficulty breathing or shortness of breath, loss of speech or mobility, and chest pain. COVID-19 may also directly lead to mental and neurological manifestations, which include delirium, confusion, anxiety, depression and risk of self-harm *(5,6)*.

Reported COVID-19 deaths and excess mortality

COVID-19 deaths are a key indicator to track the evolution and impact of the pandemic. Yet, there is some variation in both defining and ascertaining COVID-19 deaths across countries. While some countries, for example, use clinically confirmed or probable COVID-19 deaths to compose their death statistics, others rely on positive laboratory tests or a combination of both *(7)*. Monitoring all-cause excess deaths can give a more accurate impression of the scale of COVID-19 impact, since it will include COVID-19 deaths that have not been coded as such, as well as other pandemic-related deaths. At the same time, it facilitates more robust comparisons of COVID-19 mortality across countries. The WHO Technical Advisory Group on COVID-19 Mortality Assessment has developed harmonized methods for estimating excess mortality, which help to determine the total number of direct and indirect deaths attributable to COVID-19. Using this method, COVID-19 excess mortality estimates ranged between 1.11 million and 1.21 million in the WHO European Region in 2020. This represents about 50% more than the reported COVID-19 deaths in the same year *(8)*.

Vaccination efforts

The deployment of vaccines against COVID-19 is a fundamental step towards ending the pandemic, protecting health systems and helping to restore economies. In the WHO European Region, deployment of COVID-19 vaccines and vaccination began in December 2020. Rollout expanded quickly in the first quarter of 2021, and by the end of April encompassed all 54 countries and territories in the Region *(9)*. By 31 December 2021 almost 58.5% of the population of the Region,

roughly 545.8 million people, were fully vaccinated against SARS-CoV-2, with 63.9% of the population having had at least the first dose *(10)*.

COVID-19 and vulnerable groups

While COVID-19 can affect everyone, it is not affecting everyone equally. It is important to realize that, although this section specifically deals with vulnerable groups, COVID-19-related morbidity and mortality tends to follow a social gradient *(11–13)* and is related to the conditions in which people are born, grow up, live, work and age. There are also specific groups within the population that are at higher risk than others of being infected, falling severely ill or dying as a result of COVID-19. Some people have certain demographic or biomedical characteristics that make them more susceptible, while others are more at risk because of where they work or because of their social group. It should be noted that, although each characteristic does itself influence the risk of death or severe illness, individuals are usually exposed to multiple risk factors during their lifetime. For example, someone who is 70 years of age is likely to have one or several chronic conditions and may also belong to a minority group. Therefore, there is a degree of overlap between the vulnerable groups and the at-risk groups discussed below. This calls for an intersectional view of inequalities, as people can experience multiple dimensions of disadvantage or vulnerability.

Demographic factors: age and sex

Age and sex are associated with disease severity. For example, the risk of severe illness and death with COVID-19 increases with age, with people aged 85 years and older the most likely to become severely ill and die *(14–16)*. Furthermore, men are hospitalized at a higher rate than women and are up to three times more likely to require intensive care treatment *(14,15,17)*. Furthermore, the available data indicate that men are more likely to die because of COVID-19. The male-to-female case fatality ratio is usually higher than 1 (with some exceptions), ranging up to 3.5 in some instances *(18,19)*, although some studies suggest equal death rates among men and women *(20)*. Women are at greater risk of developing the post COVID-19 condition (as defined in an emergency coding in the International Classification of Diseases initially as code U09 and as code RA02 in the 11th revision in September 2020), as discussed in more detail below. Studies continue to highlight sex- and gender-based differences in the severity and outcomes of COVID-19 and how these relate to a combination of factors, such as comorbidities, immune responses, gender-based behaviours and social factors *(19,21)*. Further analysis

of sex- and age-disaggregated data is needed to better investigate the role(s) of sex and gender in the impact of COVID-19.

People with pre-existing conditions

Adults of any age and sex can be more likely to get severely ill from COVID-19 when they have a pre-existing condition, including a wide range of NCDs, such as cancer, cardiovascular diseases, chronic kidney disease, chronic liver disease, chronic lung diseases (particularly chronic obstructive pulmonary disease), diabetes mellitus and hypertension; sickle cell disease; substance use disorders; obesity; immunodeficiencies and immunosuppression (from use of drugs such as antiretroviral therapy for HIV or the use of tumour necrosis factor-alpha inhibitors). All of these can predispose patients to an unfavourable clinical course and increased risk of death *(14,15,22,23)*. People with cancer are more vulnerable to SARS-CoV-2 infection because of compromised immunity, probably caused by a combination of the illness itself, the associated therapies and the fact that most patients with cancer are in an older age group and have comorbidities *(24)*.

Pregnancy or recent pregnancy, while not a disease, is associated with an elevated risk of infection with SARS-CoV-2 due to physiological changes in the immune and respiratory system, and a consequently higher risk of requiring admission to an intensive care unit (ICU) *(14,25)*.

Health-care workers

Because of the nature of their work, health-care workers are at a higher risk of SARS-CoV-2 infection *(26)*, and the prevalence of infection is slightly higher among health-care workers than in the general population. Current estimates show that approximately 10% of health-care workers have been infected; roughly 50% of these were nurses and 25% were physicians *(27)*. This could be explained by the fact that nurses usually spend more time with direct patient care, involving tasks performed at the bedside. Other factors such as team composition in ICUs, age distribution among staff and data reported by occupational profile might also explain these differences. However, the above-mentioned prevalence of infection among health-care workers is likely to be an underestimation since WHO estimations show that the number of deaths among health-care workers due to COVID-19 is much greater than officially reported *(28)*. Most of the personnel who tested positive for SARS-CoV-2 were working in hospital non-emergency wards, which may suggest a difference in personal protective equipment (PPE) use and

compliance across settings *(27,29)*. However, it often remains unclear whether infections are workplace related or acquired in the community, for example at home *(27,30)*. Given their high representation in patient-facing roles, women have higher infection rates among health workers. Short supplies of PPE at earlier stages of the pandemic and equipment not designed to fit women's bodies have also increased their exposure *(31)*.

Refugees, migrants and minority groups

Most minority groups are at much higher risk of SARS-CoV-2 infection and COVID-19-related death than other groups. In large part, this is the result of existing social inequalities, such as a higher incidence of poverty, resulting in overcrowded or shared housing conditions, and jobs where physical distancing is difficult to maintain *(32)*. For example, studies show the infection risk can be as much as twice as high among refugees and migrants than in the general population *(33–35)*. Similarly, migrants, and particularly migrant women, are overrepresented in the informal care economy, putting them at higher risk of both infection and economic hardship *(36)*. They also perform low-paid, vulnerable jobs such as nurses, other health-care workers, cleaners, laundry workers, public transport workers and freight traffic workers, putting them at higher risk of infection *(37)*.

Furthermore, shared housing arrangements for vulnerable groups (such as newly arrived refugees; people with disabilities or developmental and behavioural disorders; and people with substance use disorders) increase the risk of infection, as communal living makes physical distancing and isolation challenging *(33,38,39)*. Box 3.1 illustrates the impact of COVID-19 on people in prisons and other places of detention. This also applies to people living in substandard or overcrowded houses, who usually have a lower income *(40)*. Even though data for the WHO European Region are not abundant, emerging evidence shows that ethnic minorities, such as Roma, are also disproportionally affected and are at higher risk of both getting infected and dying because of COVID-19 *(41–43)*.

Box 3.1. COVID-19 in prisons and other places of detention

People in prisons and other places of detention are a particular vulnerable population. They live in confined conditions and close proximity for prolonged periods of time; consequently, they are more likely to get infected with SARS-CoV-2 than the general population. Moreover, people deprived of their liberty often have underlying mental and physical conditions and are exposed to factors that negatively impact their immune system, such as smoking, poor hygiene, stress, poor nutrition, and/or diseases such as bloodborne viruses, TB and drug use disorders. This profoundly increases the risk of serious illness or death with COVID-19, especially given the often substandard health services provided in prisons and other places of detention *(44,45)*.

Children and adolescents deprived of their liberty are particularly at risk. Control measures restricting social interaction may aggravate behavioural problems, which they are already more prone to develop than their peers living in liberty *(46,47)*. As a result, they suffer more social and mental damage than adults.

Paying close attention to the health of people deprived of their liberty also benefits society at large, as experience shows that prisons and places of detention may act as a source of infection, amplification and spread of infectious diseases beyond prisons *(44,48)*.

Long-term effects of SARS-CoV-2 infection

The direct impact of COVID-19 is not limited to acute cases of COVID-19 and related deaths. It also includes more long-term effects of the disease or its treatment, such as post COVID-19 condition and post-intensive care syndrome (PICS).

Post COVID-19 condition

Although data are scarce, recent estimates found that 10–20% of people with COVID-19 experience continuing ill health for weeks or months following the acute phase of infection *(49,50)*. While there may be various reasons for this, one condition is now classified as post COVID-19 condition in the International Classification of Diseases 11th revision but is also referred to under various other names, including long COVID, post-acute COVID-19 syndrome, post-acute sequelae of SARS-CoV-2 infection and chronic COVID syndrome *(51–54)*.

On 6 October 2021 WHO published a new working clinical case definition for post COVID-19 condition, which states that it occurs in individuals with a history of probable or confirmed SARS-CoV-2 infection, usually three months from the onset of COVID-19, with symptoms that last for at least two months and that cannot be explained by an alternative diagnosis. Common symptoms include fatigue, shortness of breath and cognitive dysfunction, but also others, and symptoms generally have an impact on everyday functioning. Symptoms may be new onset following initial recovery from an acute COVID-19 episode or persist from the initial illness. Symptoms may also fluctuate or relapse over time *(50)*. This definition may change as new evidence emerges and our understanding of the consequences of COVID-19 continues to evolve.

Post COVID-19 condition is unpredictable and debilitating and can subsequently lead to mental health issues, such as anxiety, depression and post-traumatic symptomatology *(49,52)*. Furthermore, it seems to be associated with a variety of harmful consequences of the initial infection, including scarring in multiple organs, especially theadrenal glands, gastrointestinal tract, heart, kidneys, liver and lungs ; development of autoimmunity; and occurrence of blood clots causing strokes or other tissue damage *(49,52–54)*. The long-term cognitive effects of infection with SARS-CoV-2 might be severe. A recent study reported significant cognitive deficits among people who had recovered from COVID-19 versus controls *(55)*. Post COVID-19 condition and its different degrees of severity can

have a serious impact on a person's ability to return to family and community life after the acute phase of the illness, including going back to work and participating in other activities. Tailored and condition-specific multidisciplinary rehabilitation is essential to avoid harm and to progress recovery.

What exactly causes post COVID-19 condition and what influences its development and severity are, as yet, unknown. It does not appear to be correlated with the severity of the initial SARS-CoV-2 infection or the duration of symptoms associated with it, but it is more common in patients who were hospitalized for COVID-19 *(50,51,53,56)*. Strong predictors for the development of post COVID-19 condition are older age, being female, having a higher BMI, having pre-existing comorbidities (especially involving heart and lungs) and the number of symptoms of acute COVID-19 (such as hoarseness of voice, loss of smell and shortness of breath) *(50,52–54,56)*.

Estimating the prevalence of post COVID-19 condition is challenging because of variations in awareness, case definitions, methods and populations used in surveys. Furthermore, there is an overall lack of evidence from low- and middle-income countries, from primary care and for children *(49)*. Self-reported evidence from the Office for National Statistics in the United Kingdom suggests that roughly one in five patients with COVID-19 had symptoms associated with post COVID-19 condition at five weeks after the initial infection. For those aged 25–69 years this was one in four and roughly equally distributed between men and women *(57)*. Whether these findings represent the true scale of the problem is unclear. For example, a recent review of available evidence suggests that more than 60% of individuals infected by SARS-CoV-2 exhibited at least one of the above-mentioned symptoms more than 30 days after onset of infection or hospital admission *(54)*.

The absolute number of cases is expected to grow as new waves of infection occur in the Region, and further research and surveillance are needed. In August 2021 the Post-COVID Core Outcome Set Group started working with WHO on an international consensus study to address the urgent need to streamline data collection and reporting on post COVID-19 condition. The project, post COVID Condition Core Outcomes, will survey patients to establish what core patient outcomes need to be measured to understand the condition. Later, the project will focus on how to measure these outcomes *(58)*.

PICS

Whereas post COVID-19 condition refers to persistent ill health following the acute phase of infection in all patient populations, PICS refers to new or worsening physical, mental or cognitive problems after a period in the ICU. These impairments can persist for as long as 5–15 years *(59,60)* and require extensive multidisciplinary rehabilitation to reduce long-term disability. Physical problems are most prevalent and include muscular weakness, fatigue, dyspnoea, impaired pulmonary function, decreased exercise tolerance, sexual dysfunction and respiratory failure, all of which greatly impact quality of life *(61)*. Mental health problems include anxiety, depression and post-traumatic symptomatology, while cognitive impairments include memory loss and difficulty with concentration, comprehension and critical thinking. PICS impairments, most commonly mental health problems, are sometimes also found in patients' family members *(60)*.

Given the prolonged mechanical ventilation, increased exposure to sedatives, constraints on social support due to restricted visiting and limited physical therapy during and after hospitalization because of containment measures, it is likely that patients with COVID-19 treated in ICUs are at higher risk of developing PICs than patients treated in ICUs before the onset of COVID-19 *(61)*. This seems to be supported by studies in ICUs in Belgium, the Netherlands and the United States of America, which show that 80–90% of patients with COVID-19 presented PICS symptoms up to six months after discharge from the ICU *(62–64)*. This is slightly higher than the incidence of PICS symptoms in patients treated in ICUs for other reasons *(61,65)*. However, more robust studies are needed to establish the clinical relevance of these findings.

There is hardly any evidence concerning the occurrence of PICS in patients' family members. A study from the Netherlands showed that family members experienced above average absenteeism in roughly a third of cases. Psychologically, 63% of family members reported ongoing impaired well-being due to the COVID-19-related mandatory physical distance from their relative *(63)*.

Wider effects of the COVID-19 pandemic on population health

The impact of the COVID-19 pandemic on population health goes beyond the impact of the disease itself. It has also affected universal access to quality care without financial hardship and the promotion and protection of physical, mental and social health and well-being of the general population. Both fear of getting infected and of spreading infection and the widespread disruption of regular health-care services due to the pandemic have led to missed or postponed care for non-COVID-19 conditions *(66)*. While containment measures imposed to stop the spread of the virus impaired access to health services, they also had a profound impact on health and well-being through risk factors and wider determinants of health *(3)*. Consequently, the wider effects of the COVID-19 pandemic directly influenced two of the three core priorities of the EPW: moving towards UHC and promoting health and well-being *(67)*. These wider effects include both negative and positive impacts, which will be discussed in the following sections.

The COVID-19 pandemic and UHC

The COVID-19 pandemic and its economic fallout are straining health systems and social care to their limits. Organizing treatment for patients with COVID-19 and containing the transmission of SARS-CoV-2 resulted in reduced access to health services. Even now, health systems have to deal with increasing staffing problems, diminishing budgets and an accumulated backlog of people awaiting treatment *(66)*. As a result, the COVID-19 pandemic has put pressure on all three pillars of UHC: access to health services, quality of care and financial protection.

Disrupted access to health care for non-COVID-19 conditions

During the first months of the COVID-19 pandemic, the WHO Pulse Survey showed that around 40% of essential health-care services had been at least partially disrupted in the WHO European Region. Disruption of regular service delivery was seen in all areas of the health-care system (Table 3.1) *(3,68,69)*. Substantial disruptions proved to be persistent in 2021. The second Pulse Survey showed that during the first three months of 2021 about 29% of health services were still at least partially disrupted in the Region, although the generalizability of these findings is limited in that survey responses were only obtained from 23 of the 53 Member States *(66)*.

Table 3.1. Disruption of regular service delivery due to the COVID-19 pandemic

Affected health services	Sources
Primary health care	*70–72*
Emergency care	*70,73,74*
Perinatal/maternity care, including breastfeeding support	*75–77*
Outpatient care	*70,78,79*
Inpatient care	*73,80–83*
Dental care	*68,79,80*
Sexual and reproductive health services	*80,84–86*
Mental health services	*69,70,80,87*
Substance use disorder services, including opioid substitution therapy and clean drug-using equipment	*69,88,89*
Preventive services, including immunization programmes, screening programmes and surveillance	*79,80,90–94*
Diagnostic services, including imaging (radiology) and laboratory services	*69,80,83,95–97*
Rehabilitative care	*69,79,80*
Palliative care	*69,79*
Social care	*98,99*

Primary care was the most severely disrupted service delivery channel in 2021 in the WHO European Region, with 48% of Member States reporting disruptions to essential primary care services, mainly through major or partial cessations in visits, referrals, and health promotion and prevention services.

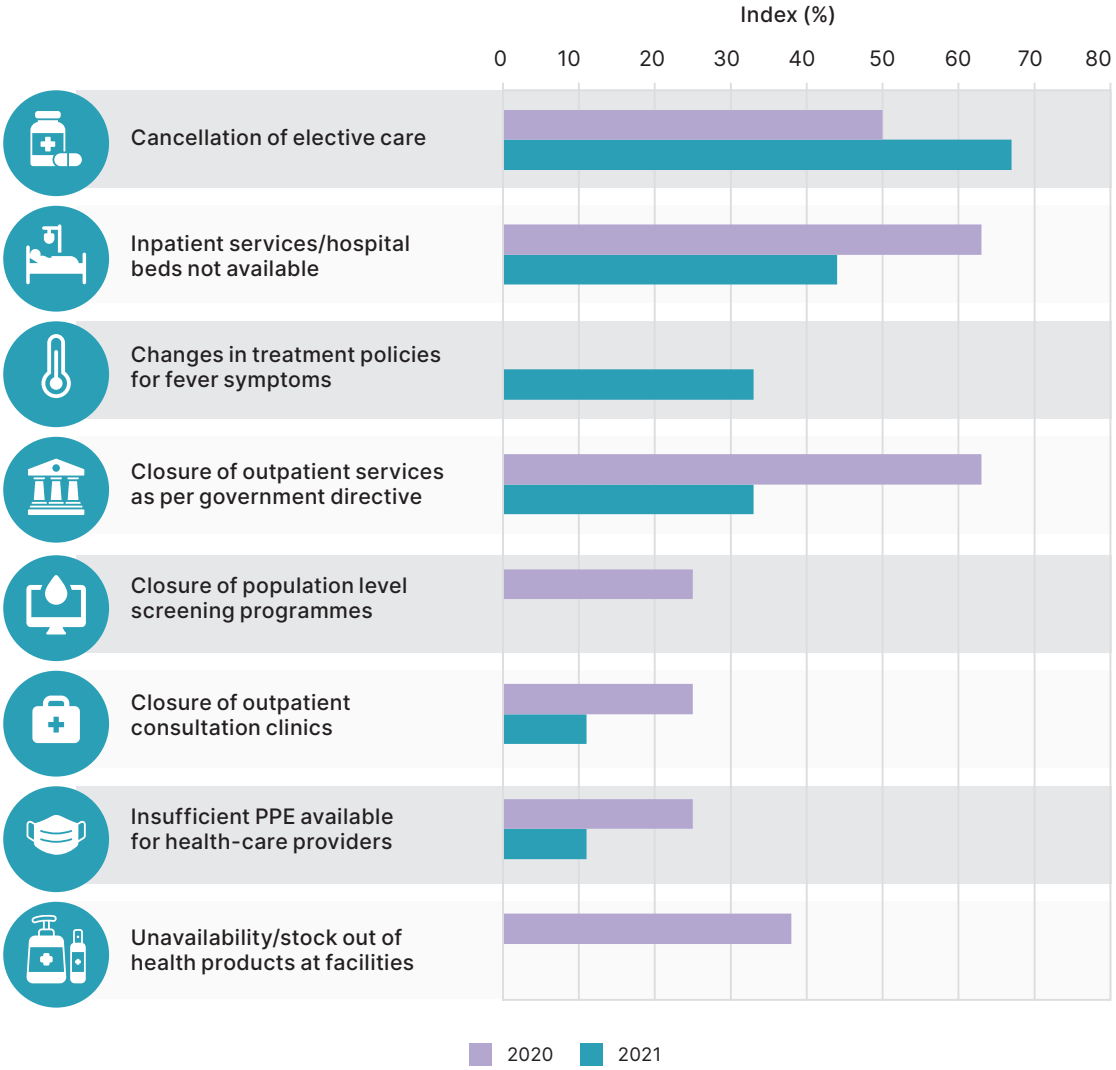
Disruptions to rehabilitative, palliative and long-term care were reported by 41% of Member States. With regard to service area, the most extensively affected health services in the Region were those for mental, neurological and substance use disorders, such as school mental health programmes, psychotherapy/counselling/psychosocial interventions and mental health services for children, adolescents and older people *(69)*; these were reported in more than 41% of Member States.

In general, however, it seems that progress was made. Compared with the situation in 2020, the magnitude and extent of health service disruptions seem to have decreased over the course of 2021.

The causes behind health service disruption also shifted between 2020 and 2021. On the supply side, the cancellation of elective care and changes in treatment policies for fever symptoms were reported to be major causes of health service disruption in 2020, in combination with staffing shortages, often related to reassignments to provide care for patients with COVID-19 and shortages of PPE (Fig. 3.3). In 2021 shortages in PPE no longer seem to pose a serious problem but cancellation of elective care was still a serious issue and linked to issues of availability of staff and inpatient beds for elective procedures.

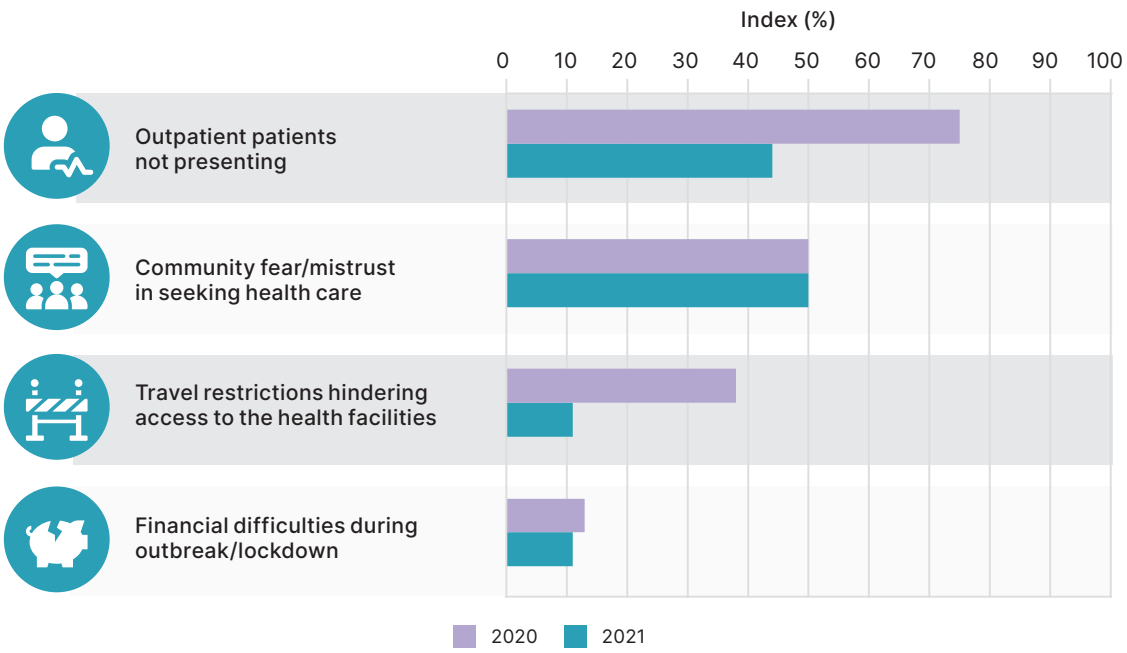
Looking at the demand side, disruption in 2020 seems to have been fuelled mainly by patients staying away, likely because governments instructed the population to relieve pressure on services by staying away from primary care facilities unless absolutely necessary and/or because patients assumed that care would not be available *(3)*. Yet, fear of getting infected or spreading infection, travel restrictions and financial barriers seemed also to have played a major role in not seeking health care. In 2021 the importance of travel restrictions declined but fear seems to be a persistent barrier for patients seeking health care (Fig. 3.4).

Fig. 3.3. Supply-side reasons reported for service disruption in the WHO European Region



Source: WHO, 2021 *(69)*.

Fig. 3.4. Demand-side reasons reported for service disruption in the WHO European Region



Source: WHO, 2021 *(69)*.

It is difficult to assess the impact of health service disruption on population health during the COVID-19 pandemic. First, because most Member States in the WHO European Region are still experiencing at least partial disruption of regular health care, the impact of COVID-19 is still an evolving situation. There is no comprehensive national or regional information available on the disruption of health services or on the extent of those disruptions and the factors associated with them. Quantifying health outcomes using routinely collected data is, for the most part, not possible. Secondly, while some short-term effects can be measured or estimated, it is much harder to quantify the long-term effects on population health of postponed or cancelled health care for non-COVID-19 conditions. For that reason, the following section does not assume to capture the whole picture but rather aims to illustrate the impact of health service disruption on population health by means of (preliminary) evidence from scientific literature and reports.

Emergency care

Emergency department visits for non-COVID-19 conditions drastically decreased during the first months of the outbreak of the COVID-19 pandemic. Data from the National Health Service in England (United Kingdom) showed an initial reduction in visits of 51.1% during the first months of the pandemic *(100)*; similar reduction rates were reported, albeit based on more limited data, in the Netherlands, Portugal and Turkey *(100–104)*. Lower numbers of visits to emergency departments can potentially lead to adverse health outcomes, especially with regard to people suffering from acute cardiovascular diseases. Studies have shown marked reductions, ranging between 15% and 60%, in admissions for acute coronary syndrome and in primary percutaneous coronary intervention procedures for acute myocardial infarction and acute stroke in Austria, Belgium, England (United Kingdom), France, Greece, Italy, the Netherlands and Spain *(105–114)*. Even though it is hard to quantify the health outcomes in terms of morbidity and mortality, Shoaib et al. *(106)* were able to link the decrease in visits to emergency departments in England (United Kingdom) for cardiovascular diseases with a 29% decrease in hospital deaths related to heart failure. In sharp contrast to this decrease, however, the study showed an increase in deaths from heart failure at home (31%) and in care homes and hospices (28%), as well as increased 30-day mortality after hospital discharge *(106)*.

Cancer screening and treatment

Similarly, cancer screening and treatment were affected by the COVID-19 pandemic and the subsequent containment policies. In most Member States of the WHO European Region, screening programmes for breast cancer, cervical cancer and colorectal cancer were partially paused or delayed *(115–118)*. The number of cancer diagnoses dropped significantly. For example, during the first months of 2020, cancer diagnoses (excluding skin cancer) fell to 73% of the normally observed number in the Netherlands *(92,119)*. Other studies in the Netherlands estimated about 2000 potentially delayed breast cancer diagnoses and a 31.2% reduction in detected individuals with advanced neoplasia, partially due to screening delays *(120,121)*. In Italy, the cessation of cancer screening is estimated to have led to 2200 undiagnosed cases of breast cancer, 4600 cases of (advanced) colorectal cancer and around 1500 cases of cervical cancer *(122)*. In France, the number of cancer diagnoses decreased by 35–50% in April 2020 compared with April 2019 *(72)*. In Germany, the number of new cancer diagnoses per general practice decreased significantly to 12–28% of normal.

In specialized practices, this trend was more pronounced, with decreases of between 28% and 45% *(123)*. Recent research in the United Kingdom showed a 70–89% decrease in urgent referrals of people with suspected cancer and a 45–66% decrease in chemotherapy appointments for patients with cancer in comparison with levels before the COVID-19 pandemic *(124,125)*.

Delayed cancer diagnoses and treatments impact patient survival rates. Studies vary on how substantial the increase in avoidable cancer deaths will be. For England (United Kingdom), Lai *(124)* estimated the total excess deaths after one year at around 6270 *(124)*, and Maringe *(126)* estimated the additional deaths within five years from breast cancer, colorectal cancer, lung cancer and oesophageal cancer to lie between 3300 and 3600. The total additional years of life lost across these cancers has been estimated as 59 204–63 229 years *(126)*. For the Netherlands, the disruption in screening programmes without catch-up of missed screens was estimated to lead to an increase in 10-year mortality of 2.0, 0.3 and 2.5 per 100 000 individuals, respectively, for breast, cervical and colorectal cancer *(127)*.

Elective surgery and non-urgent health care

In an effort to increase hospital capacity, most countries started to scale back the delivery of non-urgent health care between March and May 2020. Policies were implemented to reduce non-essential medical care, including hospital care, ambulatory and outpatient care, immunization programmes, laboratory testing, physical therapy, cancer screening and other routine health services. A systematic review based on data across 20 countries up to August 2020 found that overall health-care utilization decreased, on average, by 37%, which was roughly made up by 42% for visits, 31% for diagnostics, 30% for therapeutics and 28% for admissions *(83)*.

The dramatic fall in elective surgery is illustrative of this reduction effort. For example, in France ambulatory surgery fell by nearly 80% between 15 March and 11 May 2020 compared with same period in 2019 *(128)*. Policies of (partially) cancelling non-urgent elective surgeries and/or reducing the hospitalization time for patients have been implemented by many countries, including Belgium, Czechia, Denmark, Germany, Ireland, the Netherlands, Portugal, Switzerland, Turkey and the United Kingdom *(129)*. Overall, about 8.4 million operations were estimated to be cancelled due to COVID-19 in the World Bank Europe and

Central Asia Region (which does not exactly coincide with the WHO European Region) during the peak 12 weeks of the disruption, corresponding to an average cancellation rate of 72% *(130)*. Most of the cancelled or postponed operations, roughly 7.3 million, were assessed to be for benign diseases, followed by about 1 million for cancer and around 100 000 for obstetric surgery, primarily elective caesarean sections *(130)*. A study in the Netherlands provides an indication of the potential health impact of postponing non-urgent specialty care *(131)*. It estimated that the loss of healthy life-years due to postponed health care during the first wave of the pandemic amounts to 50 000 quality-adjusted life-years,[1] with reduced quality of life representing a relatively large share compared with premature death.

Apart from direct loss of healthy life-years, cancelling or postponing non-urgent health care has led to a backlog of care and subsequent growing waiting lists. Studies show an increase in elective surgery waiting times by as much as 30–45% in 2020, with some forecasting a possible doubling of waiting times in 2023 *(133–135)*. Even though the extent is still unclear, increased waiting times will have a negative effect on population health.

Primary care

During the peaks of the COVID-19 pandemic, significant reductions in the use of (outpatient) primary care services could also be discerned *(136)*. Belgium, for example, reported a reduction in primary care consultations of around 50% in April 2020 compared with April 2019, while similar numbers were reported from Germany *(137)*. During the same period, England (United Kingdom) reported a fall of 30% in the overall number of primary health-care appointments, while France and Norway reported decreases of 25% and 11%, respectively *(72)*. The Netherlands reported a fall of almost 50% in dentist visits and almost 20% fewer visits to a general practitioner during the second quarter of 2020 compared with the same period in 2019 *(138)*.

A study of a representative sample of the French population showed that 51% of people with chronic conditions had forgone care in ambulatory care services and 46% did not visit their family doctor or their routine care physician as part of their follow-up *(72)*.

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[1] A measure of longevity in years of life, adjusted for the quality of life during those years. Health outcomes are translated into time-based units, which express health outcomes in relation to a perfectly healthy year of life. This allows for the combination of information on both survivorship and the experience of health during the surviving years *(132)*.

While it is difficult to assess the actual impact on health outcomes, studies in the United Kingdom suggest that the most severe decreases in primary care consultations concerned care for cardiorespiratory conditions (including myocardial infarction and asthma), diabetic emergencies, depression and self-harm *(139)*.

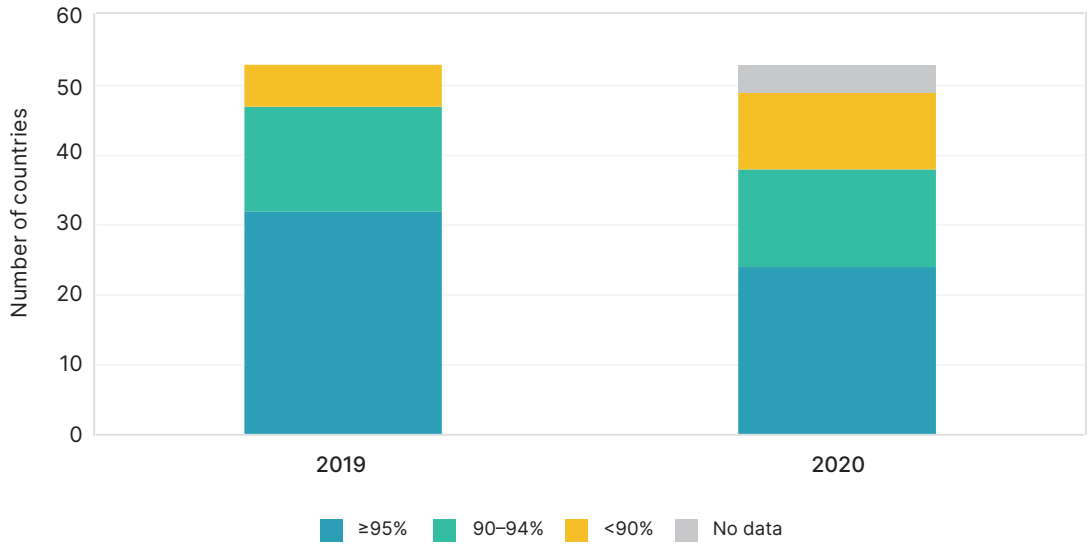
Rehabilitative care

With health systems gearing towards the treatment of patients with COVID-19, rehabilitation services aimed at optimizing physical and cognitive function and reducing disability *(140,141)* were also scaled down, with 79% of Member States in WHO European Region reporting disruptions *(142)*. In some cases, rehabilitation hospital beds and personnel were used to maximize acute inpatient capacity. For example, in Belgium, Germany, Spain and the United Kingdom, inpatient rehabilitation remained operational but either at reduced capacity or with patients being discharged more quickly. In Belgium and Spain, outpatient rehabilitation services were suspended altogether, while Germany and the United Kingdom reduced outpatient rehabilitation services and/or limited these services to high-need patients *(143)*. Estimates of the number of people affected by the reduction of rehabilitation services in outpatient and inpatient settings, early discharge and reduction of activities in 35 Member States in the Region ranged between 1.3 and 2.2 million people per day *(144)*. For some Member States, access to rehabilitation services was either absent or extremely limited even before the pandemic *(145)*; yet with the pandemic, the need has grown and barriers to access have increased.

Routine immunization

Preliminary data from the annual WHO/UNICEF Joint Reporting Form show that the WHO European Region experienced a 1 percentage point decrease in routine immunization coverage (using the third dose of the DTP vaccine (DTP3) as a tracer indicator for routine immunization coverage), from 95% in 2019 to 94% in 2020. According to data from 49 Member States, the Region seems to have experienced a smaller decline during the COVID-19 pandemic than all other WHO regions. While this is impressive, large variations among countries can still be discerned, with various countries reporting a significant (≥5 percentage points) general fall in routine immunization coverage. The impact of COVID-19 on immunization coverage is greater in middle-income countries, heightening the already existing inequality in access to immunization *(94,146,147)*. The number of Member States reporting coverage ≥95% (regional target) fell from 32 in 2019 to 24 in 2020, with 11 Member States reporting coverage <90% in 2020 (Fig. 3.5).

Fig. 3.5. Changes in routine immunization coverage as indicated by the DTP3 coverage rate between 2019 and 2020 in the WHO European Region



Source: WHO, 2021 *(147)*.

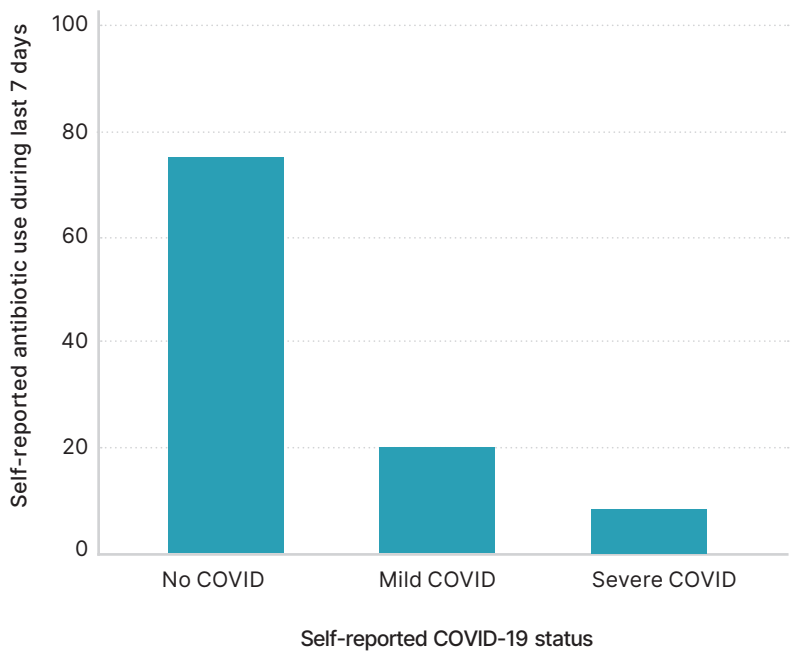
Inappropriate use of antimicrobial drugs

COVID-19 is an infectious disease caused by a virus and not by bacteria. This means that antibiotics will not be effective against the causative agent, SARS-CoV-2. Despite this, since the beginning of the COVID-19 pandemic, the use of antimicrobial drugs, especially antibiotics, for the treatment of patients with COVID-19 has been widespread. Although bacterial coinfections have been found in only 3.5% of patients with COVID-19, early findings indicate that around 70% received antibiotics *(148)*. This fact on its own reveals a worrying situation, characterized by an increase in both the inappropriate and overall use of antimicrobial drugs. However, the overall picture seems to be more complex and varied. The scientific evidence being collected during this ongoing pandemic, which was still limited and scattered at the time of writing, suggests that the impact of COVID-19 on AMR may ultimately vary depending on the national context and regulations and the type of setting considered, for example hospital versus community.

The WHO Regional Office for Europe has observed altered use of antibiotics across the Region. This relates directly to the country context and how people

are responding to the crisis. There was a decrease in antibiotic use in some Member States, for example where surgical interventions were postponed, increased infection prevention and control measures were taken in hospitals and citizens had fewer doctor consultations. However, an increase in antibiotic use was observed in Member States where treatment guidelines were not available or followed or where people could buy antibiotics over the counter. Research conducted in nine countries and areas as part of the Regional flagship initiative on behavioural and cultural insights shows a worrying rise in the use of antibiotics to prevent COVID-19; of those self-medicating with antibiotics, 77% reported not having COVID-19 but believed antibiotic use would prevent infection (Fig. 3.6). The consequence of overuse and misuse of antimicrobial medicines related to the COVID-19 pandemic has yet to be detected in routine surveillance systems for AMR.

Fig. 3.6. Self-reported antibiotic use for prevention and treatment of COVID-19 in nine Member States of the WHO European Region, 2021



Note: respondents to the survey were asked if they had taken antibiotics to prevent or treat COVID-19 with usage shown in relationship to presence and severity of disease; the average rate of antibiotic usage (prescribed and self-medicating) in the population was 14.8%.

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Disrupted access to health care for vulnerable groups

To what extent people were, and are, affected by the health services disruption resulting from the COVID-19 pandemic is fundamentally shaped by pre-existing inequalities. Older people, people living in deprived areas, people with disabilities or living with chronic conditions, and minority groups such as Roma, refugees, migrants and lesbian, gay, bisexual, transgender/transsexual, intersex and queer/questioning (LGBTIQ) communities experienced poorer access to health care during the pandemic than those in good health or those living in less deprived areas *(77,149–152)*. Some studies have linked mortality rates and unmet health needs among older people to poorer access to health care *(153,154)*. Social inequalities in access to care were more persistent among people living with chronic conditions. A recent survey showed that among people aged over 50 years and in poor health in Europe, those who self-reported as economically vulnerable had a 3.5 percentage point greater likelihood of postponing scheduled care, a 3.4 percentage point greater likelihood of forgoing care for fear of COVID-19 and a 2.0 percentage point greater likelihood of being unable to obtain a medical appointment *(149)*.

Quality of care and the COVID-19 pandemic

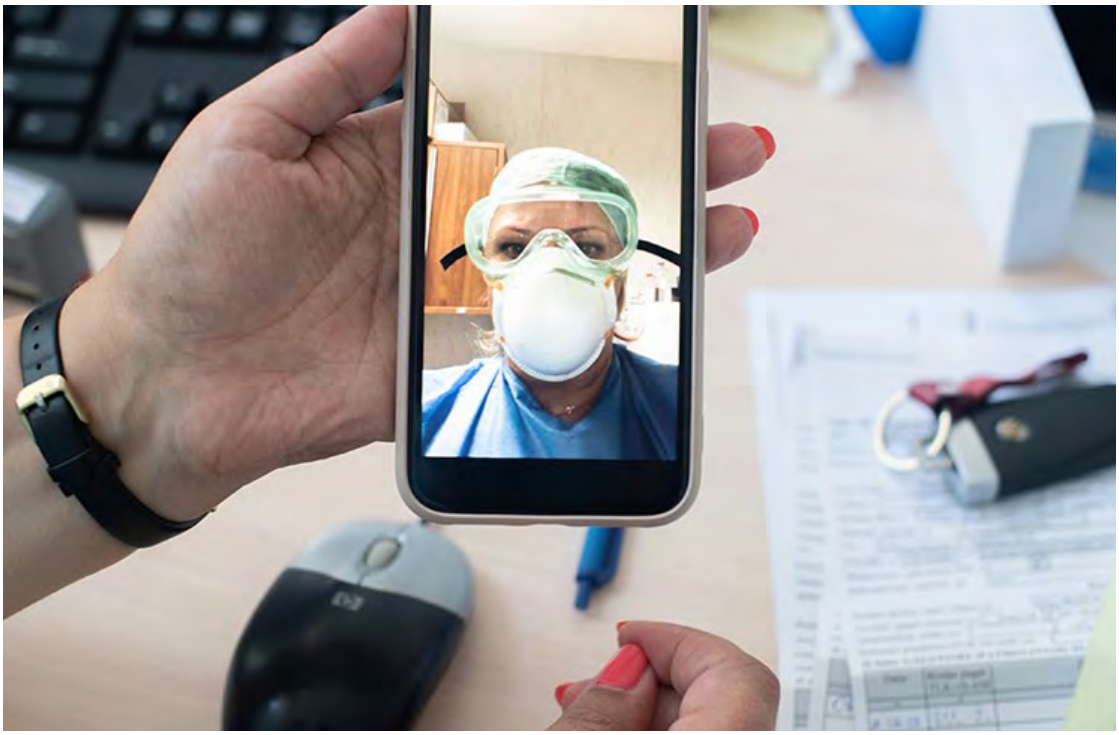
The general deterioration of access to health services due to the pandemic has had a significant impact on virtually all dimensions of quality of care: effectiveness, efficiency, safety, people centredness, timeliness, equitability and integrated care *(155,156)*. While health systems geared towards treating patients with COVID-19 and societies shifted towards containing transmission of the virus, patient and population safety prevailed. Yet, as illustrated in the previous section of this chapter, the widespread disruption of health services made it extremely challenging to provide effective, people-centred, timely, equitable and integrated health care to people with non-COVID-19 conditions.

Timeliness, continuity and people centredness

Solid data on the effects of the COVID-19 pandemic on quality of care in the WHO European Region are not yet available. There are, however, some data available on the experienced quality of care for the treatment of NCDs, as collected by various patient advocacy groups. These data particularly shed some light on quality dimensions such as people centredness and timeliness. For example, a survey by the European Patients' Forum on the impact of the COVID-19 pandemic on patients showed that almost half of respondents had faced treatment delay (49%) and 12% had experienced treatment discontinuation. Furthermore, it has proved difficult for patients to contact health-care providers. One third of individual respondents (33%) were unable to speak to or consult their health-care professional(s) *(157)*.

A similar picture emerges from a survey conducted by Carenity, an international online patient community, among adults affected by NCDs in Europe and the United States. This survey showed that 50% of respondents experienced a worsening of their medical condition and 17% developed a new disease. While there can be multiple reasons for this, such as changes in lifestyle, health behaviour and the normal progression of a condition, roughly 8% of the respondents did link it to the disruption of care *(158)*.

Another important challenge faced by patients was the lack of clear information and communication from national authorities and health-care providers on the availability and accessibility of health-care services, treatments or specific information related to their chronic illness in the context of the pandemic *(157–159)*. Furthermore, the surveys indicated lack of involvement of patients or patient organizations in the pandemic management decision-making process *(157,158)*.



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Digital health: telemedicine surges due to COVID-19

While COVID-19 poses serious challenges for sustaining high-quality health care, the pandemic also accelerated the digital transformation in health care. According to the WHO Pulse Survey, approximately 75% of the 23 responding Member States in the WHO European Region reported that the pandemic further stimulated the use of telemedicine *(69)*. As a result, telemedicine has expanded exponentially, primarily to mitigate the consequences of the COVID-19 pandemic on access to health services by providing an alternative pathway to in-person consultations, referrals, prescriptions, health monitoring and disease management. A survey of 21 general practices in England (United Kingdom) found that the rate of telephone and electronic/video consultations doubled, while face-to-face consultations fell by roughly 65% and home visits by 63% between July 2019 and July 2020 *(160)*. Similar shifts towards digital telemedicine took place in other Member States. In Norway, for example, the share of digital consultations in primary care rose from 5% to almost 60% in 2020 and in France, the number of teleconsultations grew to approximately 1 million per week in April 2020 compared with around 10 000 per week before March 2020 *(161)*. In Germany, an estimated 19 500 teleconsultations were performed in March 2020, compared with 1700 teleconsultations per month in January and February 2020 *(72)*.

With regard to telemedicine, the pandemic proved to be a catalyst for change. Traditional barriers for the uptake of telemedicine, such as the need for new legislation, guidelines and regulations, new reimbursement mechanisms and changes to the digital infrastructure, were quickly overcome *(161,162)*.

Financial protection and COVID-19

Health systems with strong financial protection and low levels of unmet need share the following features: there are no major gaps in any of the three dimensions of health coverage (population coverage, service coverage and user charges or co-payments); coverage policy is designed to minimize access barriers and out-of-pocket payments, particularly for people at risk of poverty or social exclusion; public spending on health is high enough to ensure timely access to a broad range of health services; and out-of-pocket payments are low and account for less than 15% of current spending on health *(163)*. Analysis from before the pandemic clearly shows that financial hardship and unmet need are most likely to affect poor households (see the discussion of SDG 3.8 in Chapter 2). Catastrophic health spending is mainly driven by out-of-pocket payments for outpatient medicines, followed by dental care.

As the pandemic took hold, countries in the WHO European Region moved quickly to adapt coverage policy to reduce financial barriers to COVID-19 treatment *(164)*. Some countries extended entitlement to COVID-19 treatment to irregular migrants and other people normally excluded from coverage, for example uninsured people in countries with social health insurance schemes. Many countries ensured that services relating to COVID-19 were exempt from co-payments; a few also extended co-payment exemptions to other health services, such as teleconsultations.

Despite these positive developments, the pandemic could increase unmet needs and financial hardship in several ways, with effects varying between poorer and richer households. First, the backlog caused by widespread disruption to health service delivery is likely to increase unmet needs for people who cannot afford to pay out of pocket for faster access to treatment. It may also cause financial hardship for some of those who do opt to pay out of pocket.

Secondly, as the economic shock of the pandemic reduces household incomes, unmet need and financial hardship is likely to grow among poorer households. This is particularly likely in countries where low-income households are not

exempt from co-payments and in countries where people who lose their job or experience a reduction in income also lose their health coverage because they can no longer afford to pay contributions; this is a problem in many countries with social health insurance schemes *(163)*. A survey carried out during 2020 and 2021 as part of the Regional flagship initiative on behavioural and cultural insights found that concerns and worries about the economic consequences of the COVID-19 pandemic varied between Member States and changed over the course of the pandemic. In the 13 Member States for which data were collected, the change in economic confidence between a 13 percentage point increase in economic confidence to a 5.5 percentage point decrease in confidence (Fig 3.7).

Fig. 3.7. Changes in economic confidence between 2020 and 2021 in 13 Member States of the WHO European Region, 2021

Note: blue columns indicate lessening economic concerns and yellow more concerns.

Thirdly, economic shocks are a challenge for health systems because they reduce government revenue at the same time as they increase the need for publicly financed health care. Many health systems are likely to experience growing budgetary pressure in the years ahead as they tackle the multiple health and health system challenges arising from COVID-19 *(115)*. To find the additional financial and human resources they need, countries will have to increase the priority given to health in allocating public spending (particularly where levels of public spending on health are already low) and reduce out-of-pocket payments for people at risk of poverty or social exclusion *(139,142)*. Health budget cuts and coverage restrictions

introduced in response to the 2008 global financial crisis led to higher levels of unmet need and catastrophic health spending in countries across the Region, undermining both health system resilience and progress towards UHC *(165)*.

Promoting and protecting health and well-being

The COVID-19 pandemic has had a far-reaching effect on our physical, mental and social health and well-being. It has taken a heavy toll on our mental health and has had effects on health behaviour regarding nutrition, the use of tobacco, alcohol and drugs, and physical activity and on our physical environment, including through the use of disinfectants in the home.

Impact of the COVID-19 pandemic on mental health and well-being

This section draws heavily on the work of the Technical Advisory Group on the Mental Health Impacts of COVID-19 in the WHO European Region (TAG on Mental Health Impacts of COVID-19), which considered the wide-ranging impacts of the COVID-19 pandemic on mental health and well-being in the Region, and appropriate responses to them (Box 3.2).

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Box 3.2. TAG on Mental Health Impacts of COVID-19

The TAG on Mental Health Impacts of COVID-19 was established at the request of Hans Henri P. Kluge, the WHO Regional Director for Europe, in February 2021 to provide advice and guidance to Member States in the Region and other interested parties on the key mental health impacts of the COVID-19 pandemic, and to suggest critical actions to be taken by national authorities in response. The TAG reviewed the available evidence, identified remaining gaps in the evidence base and identified key emergent needs and implications for mental health service development and system strengthening *(166)*. The recommendations covered the mental health impacts and needs related to (i) the general population; (ii) specifically affected groups, including adolescents and young adults, people with disabilities or in long-term care, and those directly affected by COVID-19 diseases; (iii) the health and social care workforce; and (iv) mental health services.

The findings and reflections of the TAG on Mental Health Impacts of COVID-19 were launched at a regional mental health summit co-hosted by the WHO Regional Office for Europe and the Government of Greece in July 2021, leading to the Athens Mental Health Summit Declaration on actions required to address the impact of the COVID-19 pandemic on mental health and service delivery systems in the WHO European Region *(167)*. In turn, these products have served as inputs into a new WHO European Framework for Action on Mental Health 2021–2025 *(168)*, which together with the associated Mental Health Coalition represents a flagship initiative of the EPW. The Coalition aims to improve mental health literacy, mobilize commitments for investment in mental health and advocate for necessary service reforms *(67)*.

The direct threat of the outbreak and spread of a novel coronavirus, as well as the public health containment measures that were subsequently imposed across the world, had a rapid and profound impact on mental health and well-being *(166)*. For many, the lack of connectedness and social interaction, resulting from physical distancing, home confinement, quarantine and isolation, the cancellation of group events, travel restrictions and closures of schools and businesses, led to feelings of loneliness, fear and pessimistic perspectives for the future *(169)*. A meta-review showed that one in three adults reported COVID-19-related psychological distress during the first months of the pandemic *(170)*, with other studies showing an increase in symptoms of depression and anxiety *(171)*.

Recent evaluations of the psychological impact of the COVID-19 pandemic show mixed results (Box 3.3). A large multi-wave survey across the EU observed a decline in mental well-being from the middle of 2020 that persisted well into 2021. In April 2021 the survey showed an overall increase in negative feelings, such as tension/anxiety, loneliness and feeling downhearted and depressed across all social groups *(172)*. Other studies, by comparison, have painted a somewhat different picture. A review of 23 multi-wave studies, for example, found that mental health problems increased during the implementation of public health and social measures and then decreased slightly after these measures were lifted *(173)*. A review of longitudinal cohort studies showed similar results, with an increase in levels of distress, anxiety and depression in the early phase of the pandemic followed by a decrease to pre-pandemic levels *(174,175)*. A further review of studies looking at the impact of public health and social measures on mental health showed that the impact was small in magnitude and highly heterogeneous, suggesting that public health and social measures did not have uniformly detrimental effects on mental health and that many people seemed to be psychologically resilient to their effects *(176)*.

This, however, does not mean that the COVID-19 pandemic only had a mild impact on population mental health. As discussed under COVID-19 and vulnerable groups, the impact of the COVID-19 pandemic follows a social gradient, with lower socioeconomic groups being worse off than higher socioeconomic groups *(12)*. However, some specific groups in society were affected severely. Some were already vulnerable to mental ill health, such as adolescents, older adults, refugees and migrants, people with long-term health conditions or disabilities, women in the perinatal period and people working in vulnerable or insecure jobs. Others were not, such as children and health-care workers.

Minorities already experiencing discrimination before COVID-19, such as LGBTIQ populations, experienced increased barriers in access to services and have seen higher levels of anxiety and depression *(177)*. Again, it should be noted that, while this section discusses specific vulnerable groups separately, individuals can experience multiple dimensions of disadvantage or vulnerability during the course of their lives.

Children, adolescents and young adults

In many countries, containment measures included school and university closures and switching to remote learning, which, in turn, led to a further decrease in interaction and the restriction of essential social contacts for children, adolescents and young adults. Social contact is a developmental necessity for children and adolescents, and puberty cannot be postponed. This had a negative impact on processes of socialization, identity development, feelings of self-worth and connection to school, which are all essential experiences for healthy development and an integral part of education *(178)*. School and university closures did have an impact on the mental well-being of children and adolescents. A recent review shows significant numbers of children suffering from anxiety, depression, irritability, inattention, fear, boredom and sleep disturbances *(179)*.

While it is still too early to grasp the full effect of the pandemic on the mental health of children, evidence is rising that the pandemic has had serious consequences. Systematic reviews and large follow-up surveys conducted in 2020 and 2021 have shown that depression, anxiety, stress, worry, social isolation and loneliness have increased *(180–184)*. Behavioural issues may have worsened in children with pre-existing behavioural problems such as autism and attention deficit hyperactivity disorder *(179)*. Even though almost all reviewed studies had a cross-sectional design (that is, the outcome and the exposures were measured in the study participants at a specific time point), the changes with respect to pre-pandemic levels seem substantial.

In addition, the closure of schools during the peaks of the pandemic in 2020 and 2021 has led to losses in learning and disruption in the cognitive development of children and adolescents. Emerging evidence shows that learning losses corresponding to a third to a fifth of a school year were reported even in countries with a relatively short implementation of public health and social measures and widespread Internet access. This suggests that children made little or no progress while learning from home.

Box 3.3. Changes in well-being: insights from the behavioural insights surveys

From April 2020 onwards, WHO headquarters and the WHO Regional Office for Europe initiated behavioural insights surveys in multiple countries, collecting representative data to inform the COVID-19 response in participating countries (see Annex 1). Information on changes in well-being was gathered using the Five Well-Being Index (WHO-5), a short self-reported measure of current mental well-being. No country or area had very high levels of self-reported well-being. Yet, changes over time during the pandemic varied significantly between countries, with some improving while others stayed the same or worsened (Fig. 3.8). Women tended to report lower well-being, as did those aged 50–64 years. Knowing someone who has had COVID-19 and perceiving the virus as spreading fast also contributed to reduced levels of well-being.

Fig. 3.8. Changes in well-being over the course of the pandemic in 13 Member States of the WHO European Region

Note: blue columns indicate increase in well-being (positive changes) and yellow decrease in well-being (negative changes).

Box 3.3 contd

In the five countries that collected data recently (in 2021), there is a slightly decreasing trend in self-reported well-being, with an average of 5% more people reporting lower levels of well-being over time. Regression analysis was used to compare different predictors of decreasing well-being. Those with higher perceptions of risk related to SARS-CoV-2 infection tended to have lower well-being, as did those with chronic illness, those already infected or with peers who they knew were infected, those thinking that infections were spreading fast and those worrying about the personal economic consequences of the pandemic. Women also had lower well-being than men in relation to the COVID-19 pandemic. By comparison, higher levels of health literacy contributed to increased well-being. Those who thought that public health and social measures were fair and those who followed recommended public health safety measures tended to have higher levels of well-being. People who believed that the COVID-19 pandemic had been exaggerated by the media also had higher levels of self-reported well-being.

Furthermore, the negative consequences for students from lower socioeconomic strata are probably much more severe *(185–187)*, especially since they usually live in smaller houses of poorer quality with less access to a stable Internet connection. It is unclear whether these learning losses will be made up for even if schools return to their prior performance levels *(188)*.

The mental health impact of working from home

Remote schooling had its adult counterpart in remote working, which has often been implemented as a mandatory part of containment policies. It is expected that (partially) working from home will remain in place even after the COVID-19 pandemic. Evidence on the mental health effects of remote working is mixed and seems to be related to quality of housing. In general, women tend to experience

more negative effects than men, as women in the WHO European Region spend, on average, more than twice as many hours than men in household and family care, household chores and unpaid work *(189)*. Remote working, consequently, has primarily added an extra burden for women. Much depends, however, on organizational responses/support and the work environment, such as leadership, collegial support and job design *(190)*. A complicating factor is the impact of home confinement, contact restrictions, home schooling and remote working on family functioning *(172)*. Particularly when the boundaries between work and family life become blurred, the combination of home schooling and remote working can lead to increased child anxiety and parental stress and anxiety *(190,191)*.

COVID-19, gender and mental health

Biological and gender-based factors contribute to differences in mental health outcomes for women and men *(192,193)*. Recent EU data from spring 2021 showed that, even though the largest fall in mental well-being occurred among men aged 18–24 years, the lowest mental well-being was registered among women aged 18–24 years and 35–44 years *(172)*. The socioeconomic impact of COVID-19, the gendered division of labour, differences in health-seeking behaviour and the stress that comes with juggling home schooling, remote work and limited outsourced help primarily affect women. This illustrates how the COVID-19 pandemic has exacerbated existing gender inequalities, with women spending significantly more time than men on housework, child care and other unpaid work *(194,195)*. Reinforcing gender roles is known to increase stress and feelings of dissatisfaction and disempowerment among women, thereby increasing the risk of mental health disorders *(196)*.

Moreover, the COVID-19 pandemic has created increased fear and a reduced sense of control for many pregnant women. While the perinatal period is known to be a time of high vulnerability to mental health problems, studies have shown that the COVID-19 pandemic has heightened worries about personal vulnerability and the baby's vulnerability and has led to decision stress, for example about whether to attend or skip prenatal care visits *(197)*. Studies show that pandemic-related stressors are profoundly increasing the risks of depression, anxiety disorder and substance use disorder among pregnant women. Social support and respecting the rights of women to information and consent, however, have been identified as key protective factors that significantly reduce the risk of depressive and anxiety symptoms during pregnancy *(196–199)*.

The pandemic and domestic and intimate partner violence

Public health and social measures have increased the risk of women being exposed to intimate partner violence. Between April and June 2020, WHO reported a worldwide increase in the reported cases of domestic violence, in particular child maltreatment and intimate partner violence against women in countries with severe social restrictions on movements *(200,201)*. This increase was also seen in the WHO European Region, with a reported 60% increase in emergency calls from women subjected to violence by their intimate partner *(202)*.

Despite the raised awareness of intimate partner violence, data are still scarce, often ambiguous and sometimes contradictory. There are few reliable data concerning violence at home against both women and men. On the one hand, Member States reported an increase in emergency calls, whereas, on the other hand, longitudinal data do not seem to show an increase in the rates of domestic violence. It is, however, unclear whether the latter data accurately reflect reality. Recent reviews suggest that unchanging or decreasing numbers of requests for help since the start of 2020 might not reflect changes in occurrence as much as effects of mobility restrictions, limited access to health services or help being administered differently as a result of physical distancing (for example, counselling by phone or email) *(203,204)*. There are various reasons why an increase of intimate partner violence during the COVID-19 pandemic is likely. First, stay-at-home measures increase the time spent with and exposure to abusers and limit access to protective support networks. Additionally, home confinement can result in increased consumption of alcohol and other substances, which is associated with the perpetration of violence *(201)*.

In the longer term, the pandemic might also lead to an increase in domestic violence through economic uncertainty and job losses, both of which are known to increase the perpetration of violence in the home *(205)*.

Health-care workers

During the course of the COVID-19 pandemic, many health-care workers were (and are still) exposed to increased workloads, challenging working conditions and contraction of COVID-19: they face and fear the risk of infection. They have had to witness or experience the fatal and nonfatal effects of COVID-19 on a daily basis and have often had to provide the emotional support to patients that normally would be provided by family members. Furthermore, given the prolonged

period of time that health-care workers have had to work under exceptional circumstances, there are reports of low morale and mental distress, leading to higher levels of absenteeism; this, in turn, leads to even greater stress among the remaining health-care workers *(26,206)*.

There is, however, little longitudinal research about the effects of COVID-19 on the mental health of health-care workers. Furthermore, most studies do not include comparative data on mental health symptoms before the pandemic, in the general population or across different groups of men and women. This makes it harder to assess changes in the prevalences of anxiety, depression, distress, burn-out and sleep problems among health-care workers *(207)*. Based on meta-analyses that do offer comparative data, it seems that the mental impact is comparable in health-care workers and the general population *(171,208–210)*. There is, however, ample evidence to show that the pandemic and working conditions during the pandemic have negatively affected the mental health of health-care workers, especially those working in close contact with patients with COVID-19, such as staff in ICU or in care/nursing homes *(166)*. Whether health-care workers have a higher risk of long-term mental health effects is still unclear.

People working in vulnerable or insecure jobs

The economic consequences of the COVID-19 pandemic are not yet fully clear and will vary greatly across Member States of the WHO European Region *(165)*. It is, however, clear that the consequences will not be gender neutral. According to the International Labour Organization, 2.5% of women have lost their jobs because of the pandemic in Europe and central Asia, compared with 1.9% of men *(211)*.

The pandemic has halted the positive trend of increasing women's employment rates in the Region *(211)*. The World Bank expects a sharp rise in unemployment through pandemic-related job losses and deprivation *(212)*. Recent data from the EU show that, a year after the first businesses closed because of the pandemic, 10% of those who had been employed before the pandemic were now unemployed, an increase of 2 percentage points from the situation in the summer of 2020 (8%) and double the figure of spring 2020 (5%). Young people aged 18–29 years were most likely to have lost their jobs, with 17% being unemployed in April 2021 compared with 9% of people aged 30 years or older *(193)*. It is not yet clear if similar patterns can be discerned for the entire Region *(165)*. However, unemployment, job insecurity and (the risk of) impoverishment are well-established risk factors

for mental ill health, including suicidal thoughts and suicide *(213–215)*, and impose a serious risk for future mental health problems in children growing up in adversity *(216)*.

Older people

The COVID-19 pandemic has had a profound impact on the mental health and well-being of older people living in long-term care facilities and the community. As the group with the highest risk of severe illness and death, the pandemic caused fear, worry and grief among older people, while physical distancing severely limited social engagement and increased the risk of profound social isolation and loneliness. All these factors are, in turn, associated with mental ill health, such as anxiety, depression and cognitive decline *(217–219)*. Moreover, older people are exposed to these negative effects on their mental health for longer than any other group in society, as public health and social measures, even when eased, still focus on their protection, and therefore social isolation, as the group most at risk from COVID-19 *(220)*.

Furthermore, the public discourse regarding COVID-19 often exposes older people to ageism, and definitions of being "other" have amplified *(221)*, for example by stressing the neediness or vulnerability of older people (them) versus the general population (we), or even linking the high need for health-care resources of older people with their perceived lower productivity. These forms of ageism have a detrimental effect on the self-worth and resilience of older people, and increases their marginalization *(220,222)*.

People with long-term conditions or disabilities

People with long-term conditions and those living with a disability face similar concerns to older people because of their reliance on social care and rehabilitation services, as well as detrimental stigma and barriers to accessing care that meets their needs. Many are affected by public health and social measures and are at increased risk of social isolation. This group was already vulnerable before the pandemic, but COVID-19 has increased exposure, especially for women, to financial hardship through economic difficulties threatening social, medical and financial support structures. These stressors have an impact on mental health, with potentially detrimental effects, since increased mental health problems can complicate existing physical impairments and vice versa *(166)*. People with long-term mental health conditions have often received reduced health care during

the pandemic *(182)*, which can lead to both short- and long-term deterioration of both physical and mental health. As yet, however, there have been few robustly designed studies to clarify such effects and to assess the long-term implications for the mental health of this group.

Refugees and migrants

Refugees, asylum seekers, irregular migrants, migrant workers and other migrant groups are known to be at higher risk of mental ill health than the general population *(223)*. Even though data are still scarce, especially for these groups, it can be assumed that the pandemic has increased that risk *(33)*. However, the results of the global ApartTogether survey provide an indication *(224)*. A majority of respondents to the survey experienced increased discrimination and increased daily life stressors. Perceived discrimination was found to have a significant effect on anxiety, depression, hyperarousal and levels of mental distress. ApartTogether also showed that daily life stressors, such as the absence of basic needs (housing, work, food and clothes), the lack of professional mental health care and the pressures generated by talking about trauma and distress with people in the same situation greatly increased stress and mental ill health *(224,225)*.

Effects of the COVID-19 pandemic on health determinants and behaviours

Public health and social measures to contain the spread of the SARS-CoV-2 have disrupted our routines and behaviours, which could lead to a worsening of lifestyle and an increase in the burden of NCDs. This section describes the potential effects of the COVID-19 pandemic on health determinants and population health.

Use of alcohol, tobacco and drugs

Despite the paucity of high-quality data on the use of alcohol, tobacco and drugs during the COVID-19 pandemic, emerging evidence suggests that the pandemic primarily changed patterns of use, with significant parts of the population reporting either a decrease or increase in substance use *(226)*.

The COVID-19 pandemic has significantly changed people's drinking habits and shifted alcohol consumption from bars and restaurants to home settings *(227)*. With regard to alcohol use, both European and national surveys show a slight decrease

in alcohol consumption during the first months of the COVID-19 pandemic, with some exceptions *(228–233)*. This decrease is, in all likelihood, a result of the declining availability of alcohol because of public health and social measures and the closure of typical drinking locations such as bars and restaurants. Decreases in drinking were mainly driven by a reduced frequency of heavy episodic drinking events, at least in the western part of the WHO European Region during the first half of 2020; in the eastern part of the Region, the most pronounced decline was found in drinking frequency *(228,234)*. Within the overall slight decrease in alcohol consumption in Europe, declines were less marked among those with low or average incomes and those experiencing distress, as well as among people who reported negative impacts on their jobs and finances and among people with already risky or addictive consumption patterns *(16,228,231,235)*. In contrast, international studies found that, during the period when strict public health and social measures were in place, the highest increase in alcohol consumption was reported by people in the more vulnerable groups, such as people with anxiety and depressive symptoms, parents of young children, and women *(226)*. The documented increases in domestic violence, exacerbated by public health and social measures, were also associated with alcohol use *(226)*.

Although more data are needed to evaluate the link, the preliminary evidence suggests that the marked differences between countries in decreases or increases in alcohol use were at least partially driven by whether or not alcohol was deemed part of essential goods and subsequent decisions to allow or limit alcohol online sales or delivery services *(236)*. Furthermore, based on past experiences, the economic downturn due to the COVID-19 pandemic will likely increase alcohol consumption levels in the coming years, especially for men and those in a low socioeconomic stratum *(237)*.

The impact of the pandemic on smoking behaviour seems to have varied greatly for different populations. Some people have reported smoking more than usual, with heavy smokers, in particular, indicating increased tobacco use *(226,233,238)*. Many people who smoke do so because they believe it helps them to cope with stress and anxiety; therefore, it is not surprising that studies show that increased smoking during strict public health and social measures was associated with higher levels of subjective stress linked to the COVID-19 pandemic *(232,235)*. Additionally, boredom, loneliness at home and restrictions in movement might have stimulated smoking *(239)*. At the same time, both the awareness of the link

between tobacco use and developing worse symptoms of COVID-19 and the public health and social measures themselves seem to have motivated a record number of smokers to improve their health by stopping smoking *(238,240)*. Despite this, the observed upward trend in smoking in some populations could pose a serious setback to efforts to reduce smoking prevalence and the attributable burden of disease, both of which remain high in the WHO European Region *(241)*.

The available surveys did not show a clear pattern of change for the use of drugs *(226,235,242,243)*. Cannabis use seemed to have increased, primarily among current users. Whether or not this actually reflects an increase because of the COVID-19 pandemic is not yet clear, as the increase might also reflect a continuation of trends observed in recent years *(244,245)*. Increased use may be related both to stress and to the arrival of unexpected leisure time or boredom related to public health and social measures. For other illicit substances, it is much harder to discern change. According to the European Monitoring Centre for Drugs and Drug Addiction, the European drug market has proven to be quite resilient to COVID-19 disruptions *(244)*. Furthermore, the Monitoring Centre reported that, despite a decrease in drug consumption during the initial period of public health and social measures, drug use seemed to have returned to pre-pandemic levels when distancing measures were eased over the summer of 2020 *(246)*. Some changes in use were observed. For example, the use of ecstasy (3,4-methyl-enedioxy-methamphetamine) appears to have decreased as a result of restrictions in nightlife and recreational events. However, there were also signs of a possible increase in crack cocaine availability and use in some Member States of the Region *(160)*.

Despite many hypotheses on the possible impact of the COVID-19 pandemic on substance use disorders and other addiction problems, little information is available on its actual impact. While it is still unclear whether the pandemic itself and the containments measures have led to many new cases of substance use disorders, the evidence suggests there is a substantial risk that they exacerbated pre-existing disorders *(247–249)*. For example, the closure or reduction of drug treatment and harm reduction services during the pandemic put individuals with opioid use disorder particularly at risk of relapse or of involuntary withdrawal *(39)*. A fairly similar picture emerges from a recent review on the impacts of the COVID-19 pandemic on gambling and problematic gambling. These impacts are diverse, possibly causing a reduction in current or future problems in some

while promoting increased problematic gambling in others – especially among younger men *(250)*.

Physical activity, sedentary and food behaviours and obesity

Many Member States in the WHO European Region imposed containment measures from March 2020, such as remote working, school closures, curfews and travel restrictions. These measures had effects on many aspects of unhealthy behaviours, including physical activity and sedentary behaviour, eating habits, smoking and drinking (Box 3.4).

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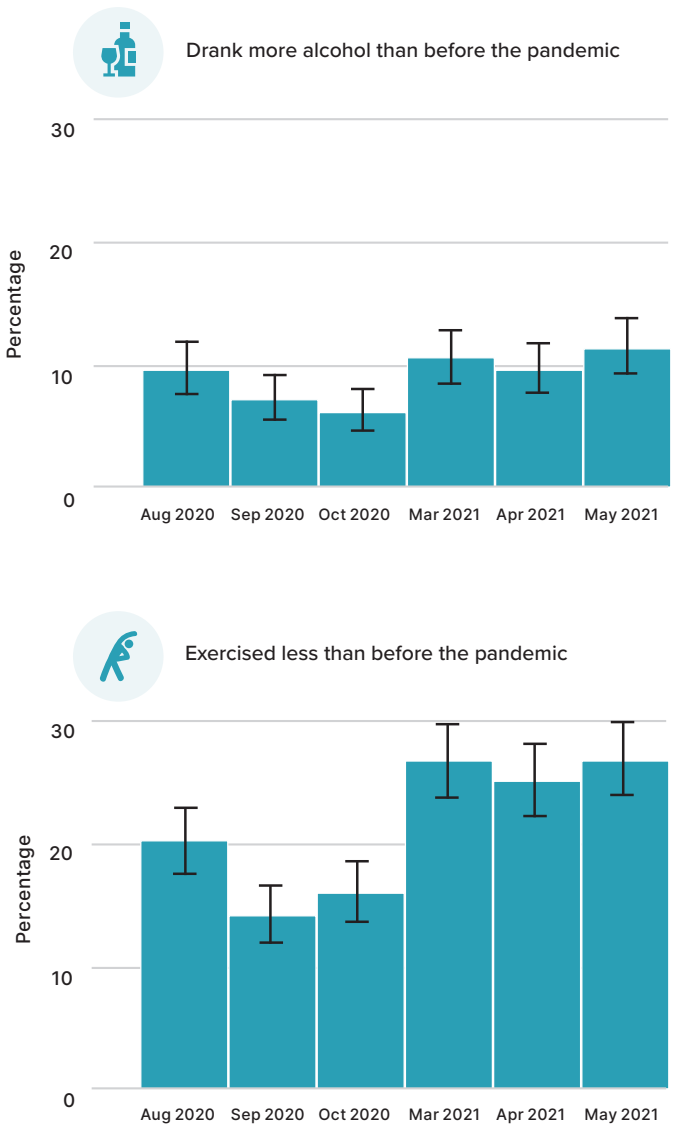
Box 3.4 Unhealthy behaviours in Ukraine, August 2020 to May 2021

Ukraine is a participating country in the WHO Regional Office's for Europe's COVID-19 behavioural insights surveys. The WHO Country Office in Ukraine has coordinated 15 rounds of data collection (extending to the end 2021), measuring 17 different variables, including negative pandemic-related behaviours. Surveys are conducted on a representative sample of 1000 adults using a combination of online and computer-assisted telephone interviewing. Data were collected over six waves of the survey from August 2020 to May 2021 (see Annex 1). Chi-square tests were used to measure changes in unhealthy behaviours in the most recent wave of data by core demographic characteristics: age group, sex, type of settlement and macro-region of the country.

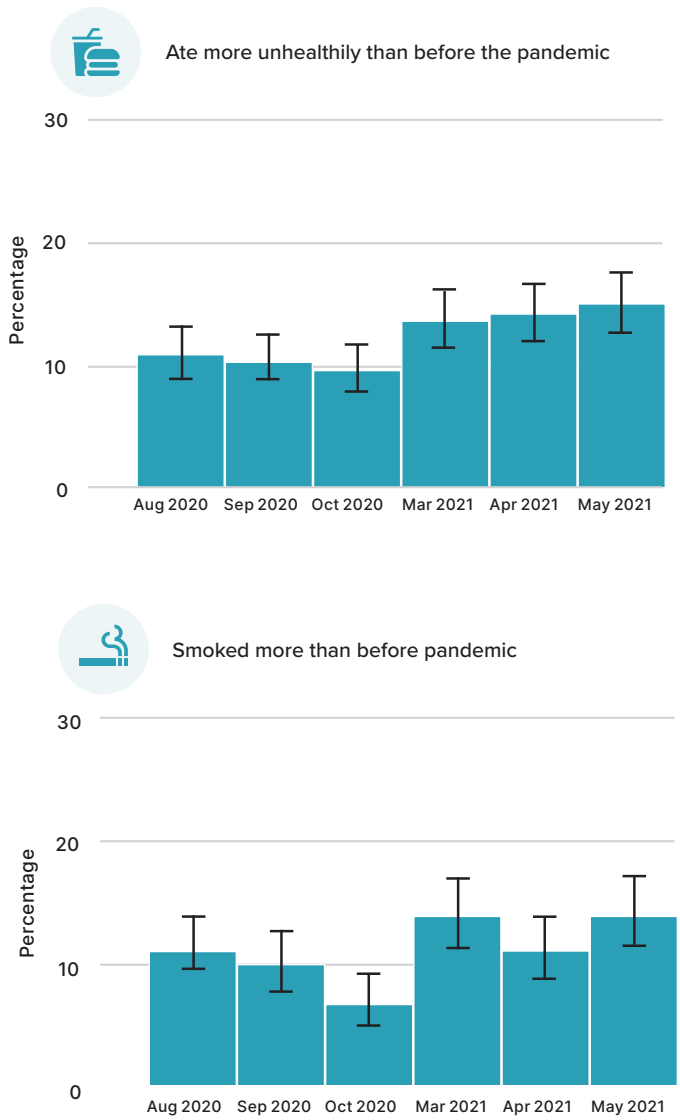
In May 2021 almost one out of every three adult Ukrainians reported exercising less within the previous two weeks than they had before the pandemic. Self-reported exercise levels in May 2021 had also decreased compared with August 2020. Eating a less healthy diet, drinking more alcohol and smoking more were reported by at least one in 10 adult Ukrainians in May 2021. Eating more unhealthy food and smoking showed a statistically significant increasing trend starting in August 2020; the increase in drinking was not statistically significant. The most recent survey of self-reported unhealthy behaviours found that younger people were disproportionally more likely to drink more alcohol, smoke more and eat more unhealthy foods. In addition, men were more likely than women to smoke and to drink more alcohol within the previous two weeks compared with pre-pandemic levels. Smoking levels were higher in urban areas.

Fig 3.9. Self-reported unhealthy behaviours in Ukraine, August 2020 to May 2021



Box 3.4 contd

Fig 3.9 contd



Notes: analyses estimated the percentages of unwanted behaviours in each round with the respective 95% confidence intervals and tested for trends in these estimates over 10 rounds of data collection; all analyses were performed using STATA version 16.

A recent review showed profound decreases in physical activity and increases in sedentary behaviours across several populations, with some studies reporting a decrease in physical activity of more than 50% among children and patients with a variety of medical conditions *(251)*. An observational study in 10 European countries conducted in May and June 2020, found that only one in five children met the WHO global physical activity recommendations *(252)*. The interpretation of these findings, however, is complicated by the divergent definitions of both physical activity and sedentary behaviour across studies and the predominant use of subjective, nonvalidated questionnaires and convenience sampling.

The available information shows that the increase in sedentary behaviour is strongly associated with the fact that many people worked from home, leading to extended sedentary periods and increased screen time *(253)*. Additionally, keeping up physical activity was further impeded by the closure of sporting facilities, including gyms; the introduction of curfews; the lack of commuting; and, especially for parents with home-schooled children, a decrease in opportunities to be active *(254)*.

Notwithstanding the limited power of the available evidence, decreases in physical activity and increases in sedentary behaviour are worrying, particularly because public health and social measures are also associated with an increased use of frozen meals, canned foods, instant foods, snacks and other high-sodium foods *(255)*. Public health and social measures have led to increased snacking behaviour *(256)* and an increased use of digital channels to access meals *(257)*, which tend to offer foods that are more energy dense and higher in sodium, saturated fats, trans-fats and sugar than their retail counterparts *(258–260)*. Many people experienced barriers to weight management, such as problems with motivation and control around food, especially those with a higher BMI *(261)*. Emerging evidence indicates a significant increase in BMI in the general population in the period after public health and social measures compared with the period before these measures *(262)*.

The detrimental effects of these changes on population health associated with public health and social measures are potentially significant. Overweight and obesity are strongly associated with adverse health outcomes and are strong predictors of developing NCDs, such as cardiovascular diseases and diabetes *(262,263)*. Older adults (over 60 years of age), by comparison, were at higher risk for weight loss and potentially malnutrition induced by public health and social measures *(262)*.

It should be noted that, while reliable evidence on the magnitude and impact of food insecurity on the WHO European Region is still lacking, the pandemic and subsequent containment measures are causing an increase in food insecurity worldwide, often with direct consequences on nutrition *(264–266)*. Food insecurity is defined as disruptions in food intake or eating patterns because of lack of money or other resources. It can lead to malnutrition but also to changes in eating behaviour, such as replacing healthy food with cheaper unhealthy alternatives. Food insecurity is strongly associated with sustained deterioration of mental health, inability to manage chronic disease and worsening child health *(267,268)*. The prevalence of food insecurity had increased in several European countries during recent (pre-pandemic) years *(269–271)* but recent surveys suggest that the pandemic has led to further increases *(272–275)*.

COVID-19 and the physical environment

Public health and social measures have resulted in a significant reduction in travel by road, air, rail and waterways worldwide, with a concomitant significant decline in air, water, soil and noise pollution *(276–279)*. The beneficial effects on individual and population health will, in all likelihood, be both small and temporary as the world gradually returns to pre-pandemic levels of pollution. However, the potential health effects of reducing pollution are significant *(280)*. Earlier estimates indicated that well-tested environmental health interventions could reduce total deaths in the Member States of the WHO European Region by almost 20% *(281)*. For example, about half of EU citizens are estimated to live in areas that do not ensure acoustical comfort to residents *(282)*; as noise pollution is a known causative factor in the development of numerous medical conditions, including myocardial infarction, cardiovascular diseases, hypertension, sleep disorders and psychiatric disorders *(283)*, the potential beneficial effects of noise pollution reduction are clear.

Household safety

The increased attention to hygiene and clean environments has led to an increased exposure to hazardous products at home. As a result, the number of home accidents with disinfectants and cleaning products, such as bleach, hand sanitizers, ethanol and hydrogen peroxide, seem to have increased *(284–287)*. Although most cases appear to relate to ingestion and inhalation, unintentional

eye exposure to (alcohol-based) cleaning products has also increased, especially among children *(285)*. For example, a study based on data from the national database of the French poison control centres and from a paediatric ophthalmology referral hospital in Paris showed a sevenfold increase in children with eye exposure to alcohol-based hand sanitizers *(288)*.

In addition to an apparent increase in the number of home poisonings, inappropriate self-medication seems to be on the rise. Even though data from the whole of the WHO European Region are still not available, reports from France tentatively suggest an increase in adverse drugs events associated with self-medication with analgesics, psycholeptics and antibacterial drugs for systemic use *(289)*.

Decreasing incidence of seasonal influenza and other common infectious diseases

The implementation of measures to prevent the transmission of SARS-CoV-2, such as the mandatory use of masks, regular hand sanitizing and washing, physical distancing, the avoidance of crowds, remote working and the cancellation of public events, seems to have had a positive effect on the incidence of other infectious diseases. Many Member States reported a significant reduction in the circulation of influenza viruses compared with previous years, and a further decrease in the activity and reported cases of other infectious diseases, such as TB and pneumonia, and of infections with rhinovirus, enterovirus and adenovirus *(290)*. Some caution is needed when considering these observations, since these declining numbers can in part be explained by a decreasing number of tests or registration errors, especially for diseases with similar manifestations such as influenza and COVID-19 *(290)*.

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CHAPTER 4

Building back better under the EPW and the role of HIS strengthening

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Aim and approach

Chapter 4 describes how the WHO Regional Office for Europe together with the Member States will work under the EPW to overcome the challenges described in the earlier chapters and build back better after the COVID-19 pandemic. It starts with a description of the overarching priorities of the EPW and the more specific priorities set for the WHO European Region in the implementation of the EPW in the next biennium (2022–2023). A well-performing HIS is a prerequisite for evidence-informed policy implementation and evaluation. Therefore, this chapter also looks in more detail at the Regional Office's work under the EPW aimed at improving the performance of HISs and the availability of data for key indicators in the Region. It provides an overview of current data gaps and HIS challenges, illustrating what issues concretely will be worked on over the next few years. The chapter concludes by presenting the main tools and activities that the Regional Office will deploy to support Member States to enhance evidence-informed implementation of the SDGs, the GPW13 and the EPW, with specific attention for the challenges and opportunities related to the digitalization of HISs.

Key messages

- The EPW will be the leading policy framework in the WHO European Region for the coming years to take on the challenges identified in Chapters 2 and 3 by steering and coordinating action towards building back better after the COVID-19 crisis. For the next biennium (2022–2023), priority areas for action have been defined, including establishing the Mental Health Coalition and a cancer movement; ensuring equitable access to immunization through a transformative immunization agenda; forging a new social contract to address access to affordable medicines; improving health care for refugees and migrants; improving emergency prevention and preparedness; promoting and generating behavioural science/insights to maximize health outcomes; tackling childhood obesity and alcohol consumption; and operationalizing One Health. In addition, supporting Member States in strengthening their HIS has historically been a strong focus of WHO's activities, and this will continue to be an important area under the EPW.
- Data gaps exist for several health-related SDG indicators and for other areas that are highly relevant for the WHO European Region, such as health inequalities, intersectoral action for health, ageing populations and mental health. The development list of the measurement framework of the EPW will be an important tool to achieve sustainable improvement of data availability and quality for key indicators for the Region. The WHO Regional Office for Europe will work together with the European Commission and the OECD to minimize the reporting burden for

Key messages contd

Member States.

- The main HIS challenges relate to limited resources and capacity; insufficient coordination and collaboration, leading to fragmentation and problems with interoperability; lack of central governance; and limited use of health information for decision-making. To support Member States in tackling these, WHO offers a comprehensive package of tools and guidance documents, covering all main HIS functions (data collection, analysis, health reporting, knowledge translation and governance and resources).
- The COVID-19 pandemic has emphasized the importance of health information and sparked innovative ways of data collection and processing. Nevertheless, HISs have been strained and the need for implementing digital solutions to improve the efficiency of a HIS has been exposed. The WHO Regional Office for Europe will help Member States with the further digitalization of their HISs and with effective measures to leverage the potential of the volume and types of information that will become available in order to support health policy-making.

The EPW

Chapter 2 shows that the WHO European Region is on track towards reaching some of the SDGs, but important challenges and delays exist for all three core priorities of the EPW: moving towards UHC, protecting people better against health emergencies, and ensuring healthy lives and well-being for all at all ages. Inequalities between Member States in the Region are persistently large. The impact of the COVID-19 pandemic is not yet reflected in the data presented in Chapter 2. Chapter 3 shows that, even though it is too early to tell what the full impact of the pandemic is on population health, there are clear indications that this impact is substantial, most notably related to UHC and mental health. The pandemic also exacerbates health inequalities, as several vulnerable groups are more susceptible to the virus or the consequences of the actions taken to contain it and the consequential economic crisis. This implies that even more effort will be needed to make sure that the Region is on track towards achieving the health-related goals of the 2030 Agenda *(1)*. The EPW will be the leading policy framework in the WHO European Region for the coming years to take on this challenge by steering and coordinating action towards building back better after the COVID-19 crisis. This section outlines the priorities and approaches within the EPW to achieve this.

Leaving no one behind and strengthening health leadership

The EPW has been developed through a process of extensive consultation with Member States, the European Commission, non-State actors, and intergovernmental and United Nations organizations, as well as WHO staff *(2)*. It was submitted for adoption to the 70th session of the WHO Regional Committee for Europe in September 2020. This EPW sets priorities for the period 2020–2025 by starting from what citizens in the Region can legitimately expect from their health authorities. People want their health authorities to guarantee their right to universal access to quality care without fear of financial hardship and to offer effective protection against health emergencies. They also want to be able to thrive in healthy communities, where public health actions and appropriate public policies secure a better life in an economy of well-being. The EPW sets out a vision

of how the WHO Regional Office for Europe can support health authorities in Member States to rise to that challenge, in each country and collectively in the Region.

The convergence in health between Member States in the Region remains disappointingly slow and is associated with wide disparities in investment in health. This is mirrored by stalled progress, and sometimes a worsening, in health equity within many Member States. Against this background, COVID-19 has hit the poor and most vulnerable most severely, by exacerbating pre-existing inequalities, as shown in Chapter 3. The regrettably slow pace of regional convergence is further hampered by the persistence of gender and social gaps in health outcomes within Member States, insufficient attention to large groups of vulnerable people and challenges related to migration into and within Member States. The EPW, therefore, puts strong emphasis on leaving no one behind.

The EPW also emphasizes the need to reinforce the leadership capabilities of health authorities. The COVID-19 crisis has boosted the standing of the health workforce in the eyes of the public in most Member States. However, in several Member States, pre-existing dissatisfaction has been exacerbated by the difficulties their health authorities have encountered in managing the COVID-19 crisis. The EPW puts a particular focus on supporting capacities for effective health leadership and engagement with other policy sectors so that health authorities can live up to the legitimate expectations of the populations they serve. The need to focus on the recovery, resilience and robustness of health systems and public health services in the wake of the COVID-19 pandemic only reinforces the determination to leave no one behind and strengthen the leadership capabilities of health authorities.

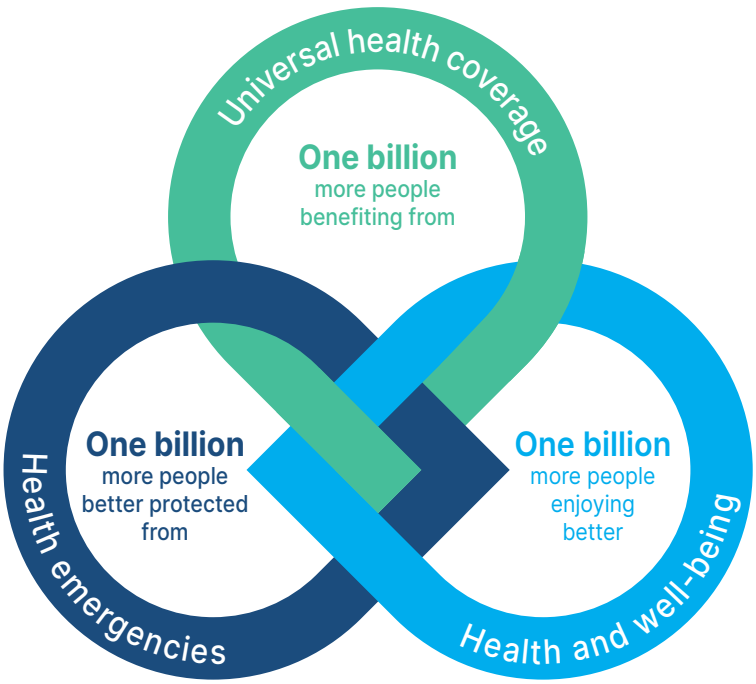
Three core priorities and four flagships

Member States of WHO globally are committed to implementing three interconnected strategic priorities that constitute the pillars of WHO's GPW13:

- moving towards UHC
- protecting against health emergencies
- promoting healthy lives and well-being for all at all ages.

These core priorities are anchored in the 2030 Agenda and the SDGs *(1)* and are linked to three bold targets for the health sector's contribution to the SDGs: the triple billion targets (Fig. 4.1). The EPW shapes the WHO European Region's contribution to the GPW13 and these global targets.

Fig. 4.1. The global triple billion targets



The WHO Regional Office for Europe has identified four flagship initiatives to complement the EPW *(3)*. These flagship initiatives are intended as accelerators of change, mobilizing around critical issues that feature prominently on the agendas of Member States and for which high-visibility, high-level political commitment can be transformative (Fig. 4.1):

- The Mental Health Coalition
- Empowerment through Digital Health Initiative
- The European Immunization Agenda 2030
- Healthier Behaviours: incorporating behavioural and cultural insights.

The focal areas of the WHO Regional Office for Europe's work related to the three core priorities are summarized in Box 4.1.

Box 4.1. The focal areas of the WHO Regional Office for Europe's work for the three core priorities listed in the EPW

Core priority 1. Moving towards UHC

1. Support Member State efforts to put people at the centre of services.
2. Support Member State efforts to ensure and enhance financial protection.
3. Support Member State efforts to face post-COVID-19 recovery health workforce challenges.
4. Support Member State efforts to ensure access for all to medicines, vaccines and health products.
5. Support Member State efforts to improve governance and stewardship.

Related flagship initiatives

The Mental Health Coalition

Empowerment through Digital Health

Box 4.1 contd

Core priority 2. Protecting against health emergencies

1. Learn lessons: expand the ongoing review of the COVID-19 crisis into a formal review of the Region's response to recent health emergencies.
2. Support country preparedness and response capacity.
3. Reinforce regional preparedness and capacity to respond, and produce the public goods required to manage crises.

Core priority 3. Promoting health and well-being

1. Supporting local living environments that enable health and well-being.
2. Promoting safer, healthier and better lives.
3. Improving patient safety and tackling antimicrobial resistance.
4. Developing strategic intelligence on levels and inequalities of health and well-being.
5. Reviewing major well-established programmes within the WHO Regional Office for Europe's technical portfolio, assessing their need for improved efficiency through innovation in terms of digitalization, technology and organization.

Related flagship initiatives

The European Immunization Agenda 2030

Healthier Behaviours: incorporating behavioural and cultural insights

Priority country and regional deliverables for the 2022–2023 biennium

The Regional Plan for Implementation (RPI) of the Programme Budget 2022–2023 presents the core priorities that the WHO Regional Office for Europe will concentrate on for the first biennium of the EPW *(4)*. These priorities and initiatives are strictly aligned with country priorities and are focused on meeting the EPW objectives. The RPI is not exhaustive in the sense that it does not capture all the Regional Office's contribution towards the triple billion targets and health sector contributions in the Region to the SDGs. The RPI unpacks the priority deliveries for Member States and the Region over the coming biennium, particularly focusing upon the major flagship initiatives planned to move the agenda forward. These include establishing the Mental Health Coalition and a cancer movement; harnessing the enormous potential of digital technologies and health data to complement the health workforce and deliver renewed primary health care; promoting and generating behavioural science/insights to maximize health outcomes; ensuring equitable access to immunization through a transformative immunization agenda; and forging a new social contract to address access to affordable medicines. Furthermore, to accelerate progress towards the triple billion targets and the SDGs, the WHO Regional Office for Europe will take bold and innovative steps to strengthen leadership through a new pan-European leadership academy; increase health investments; improve the standard and access to health care for refugees and migrants; tackle persisting major challenges, such as childhood obesity, alcohol consumption and AMR; and tackle environmental threats, such as climate change, loss of biodiversity and pollution, which pose a growing burden on health systems. The RPI outlines the outcome indicators that define what success means for these major workstreams. Table 4.1 shows the measures of success for the major workstreams directly related to the three EPW core priorities *(4)*. In addition to these major workstreams, the RPI also focuses action on primary health care (reimagining the future of primary health care, as the cornerstone for delivering our priorities) and three enablers to maximize country impact: strengthening country capacity in data and innovation (see below), reinforcing health leadership, and ensuring a fit-for-purpose, agile and financially sustainable WHO Regional Office for Europe.

Table 4.1. Measures of success for the major workstreams in the RPI

Major workstream	Measures of success for 2022–2023
Core priority 1. Moving towards UHC	
The Mental Health Coalition	Over 2022 and 2023 the Mental Health Coalition will measurably impact the service, care and advocacy networks that aim at improving mental health for all in the WHO European Region, acting as the means of bringing together all stakeholders in regional and local initiatives to: • transform attitudes about mental health • expedite mental health service reforms • accelerate progress towards UHC for people with mental health conditions • support Member States to develop multisectoral plans to address prevention of self-harm and suicide in children, adolescents and younger people and improve mental health literacy
The European Immunization Agenda 2030	To tackle the challenges of the next decade (including the impact of SARS-CoV-2 and COVID-19 on immunization systems and coverage): • operationalize the new immunization strategy for the Region • ensure national plans are based on primary health care and are equity and people focused, country owned, data enabled and partnership based • demonstrate political commitment at the regional, subregional and country levels and assign resources towards meeting the goals and objectives of the Agenda

Table 4.1 contd

Major workstream	Measures of success for 2022–2023
Cancer prevention and management	Stabilize cancer incidence and cancer mortality through increased impact of improved early detection, diagnostic and treatment; specific actions are: • for cervical cancer, increase the proportion of women benefiting from vaccination for human papillomavirus by age 15 years, screening at ages 35 and 45 years, and treatment for pre-cancer or invasive cancer in target countries • for childhood cancer, increased survival for six index cancer types in target countries (baseline under development) • for breast cancer, increase diagnosis at an earlier stage and survival in target countries (baseline under development)
Universal access to quality medicines and health products with strengthened financial protection	Success depends on: • increased access to quality medicines and health products that people need without creating financial hardship • creation of a closer relationship with industry in pursuit of win–win opportunities • increased political commitment to reducing financial hardship associated with out-of-pocket payments for everyday medicines

Table 4.1 contd

Major workstream	Measures of success for 2022–2023
Migration and health	Success in this area of work depends on ensuring that more Member States meet their obligations under regional and global instruments, and that WHO supports cross-border and interagency dialogue and collaboration to ensure quality and continuity of care for refugees and migrants; specifically, success over 2022 and 2023 means: • a higher proportion of refugees and migrants enjoying access to inclusive health systems • improved data disaggregation based on migration status and integration of migration variables in HISs • improved border health checks/screening for refugees and migrants • improved advocacy for the rights of refugees and migrants, promoting social inclusion
Core priority 2. Protecting against health emergencies	
Prevention and preparedness	The Action Plan to Improve Public Health Preparedness and Response in the WHO European Region (5) will be enhanced and adjusted to the Member States' national action plans and will be based on the lessons learned and the recommendations of relevant review committees to match Member States' needs, capacities and capabilities; success means: • adjusting the Action Plan, relevant tools and frameworks to build resilience against health emergencies • strengthening pan-European, national and local governance of health emergency preparedness and response • accelerating the implementation of the IHR with an accountability framework

Table 4.1 contd

Major workstream	Measures of success for 2022–2023
Detection and response	Success in this area will become visible as emergencies occur, in the speed and quality of the detection, reporting and overall response; overall, success will mean that the potential public health impact of acute public health events and protracted emergencies is minimized through (i) decreased exposure to hazards and (ii) better health outcomes for those exposed; this may be measured using: • prompt detection, reporting and risk assessment under IHR of any public health event that may be or become of significance for the affected country and internationally • achievement of a rapid, effective and coordinated operational response at country level that is coordinated and communicated internationally, with support from WHO and partners • continued provision of all essential health services during the emergency period
Core priority 3. Promoting health and well-being	
Healthy Behaviours: incorporating behavioural and cultural insights	• Documented Member State applications of behavioural and cultural insights to enrich the evidence base for policy design and interventions with the aim to make healthy practices possible, acceptable, convenient and attractive • In-country behavioural and cultural insight capacity established (e.g. dedicated staff or units) in at least 10 Member States, with WHO technical support and guidance provided • A well-functioning and active Member State Community of Practice maintained

Table 4.1 contd

Major workstream	Measures of success for 2022–2023
Reducing alcohol consumption	Reduced alcohol consumption in Member States by the end of 2023; success would mean: • further reduction of alcohol consumption towards a 10% relative reduction target (2025), with at least 35 Member States being below their baseline of 2010 • use of alcohol pricing, as the most underutilized best buy intervention, and alcohol marketing as key priority areas to support reductions, which have become even more important during the ongoing COVID-19 pandemic • alcohol becomes less affordable in the Region as the number of Members States that regularly adjust the level of excise duty in line with inflation increases from 22 to 30 • reduced exposure to marketing for young people as more Member States introduce a marketing ban on the Internet for beer, wine or spirits (from 11 Member States to at least 20)
Tackling childhood obesity	• Implementation of the Childhood Obesity Surveillance Initiative (COSI, the largest childhood obesity surveillance initiative worldwide) increased from the 2021 figure of 41 Member States to 44 • By 2023 five Member States will have started to implement at least three of the six recommended actions identified by the Commission on Ending Childhood Obesity • Policy dialogues for childhood obesity will have been conducted in 10 Member States

Table 4.1 contd

Major workstream	Measures of success for 2022–2023
Operationalizing One Health	Success in operationalizing One Health in Member States means: • formal and functional multisectoral coordination mechanisms to address One Health issues in place in 60% of Member States • increased cross-programme alignment in pursuing One Health objectives across government sectors • increased inclusion of One Health considerations in relevant national strategies and programmes • increased awareness within Member States of the One Health nexus and greater capacity and empowerment to engage in policy and advocacy beyond disciplinary silos • enhanced prevention, preparedness, detection and response capacity in line with country needs as identified through the IHR monitoring and evaluation framework • evidence of better quantitative and qualitative data used to inform policy decisions • focused and coordinated delivery of the One Health Coordination Mechanism for Europe and central Asia to maximize impact at country level

The coming biennium will see the WHO Regional Office for Europe carrying forward the pertinent and regionally contextual recommendations of the pan-European Commission on Health and Sustainable Development *(6)* and supporting health leadership in rethinking regional health policies and social care systems in the light of the pandemic. A special Regional Director's initiative, the Youth Forum, is also to be scaled up during the biennium; this will engage with young people and frame the agenda of future generations, bringing the constituency closer to the work of WHO and facilitating young people's engagement with health authorities and public health partners. Enhancing country focus across the Region stands at the core of the EPW. The WHO Regional Office for Europe will build on the significant work undertaken during 2020–2021 to increase direct support for

health leadership in Member States towards development and implementation of engagement strategies with the aims of strengthening bottom-up prioritization and planning with Member States and facilitating effective collaboration with and between Member States and partners at subregional levels. More specific approaches and interventions that the WHO Regional Office for Europe will use to reach the goals for the next biennium are described in the RPI *(4)*.

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Strengthening HISs in the EPW and the 2022–2023 biennium

It is essential for policy-makers to have a reliable and clear picture of how health is distributed in a given population, and what indicators contribute to or reduce opportunities to be healthy. Therefore, the surveillance of population health and well-being is the first of the 10 Essential Public Health Operations defined by WHO *(7)*. Supporting Member States in strengthening their national HISs to improve evidence-informed decision-making has been a strong focus of WHO's work historically. The COVID-19 crisis has underscored the critical need for all Member States to strengthen their health data and information systems and circuits. The EPW identified a need for a quantum leap in the ability to generate credible, reliable and actionable information, and for classic data collection to be complemented by the robust use of big data, online surveys, consensus panels and expert opinion to facilitate public health monitoring and forecasting and ensure that decisions are driven by data. Therefore, the strengthening of HISs continues to be a priority area of WHO's work to further develop credible, timely and high-quality country health data. The EPW pays particular attention to leveraging the use of digital technologies, via the Empowerment through Digital Health flagship initiative *(3)*.

Strengthening country capacity in data and innovation is one of the enablers in the RPI for achieving its ambitions. For the 2022–2023 biennium, the WHO Regional Office for Europe aims to:

- operationalize the measurement framework for the EPW *(8)*;
- enhance country capacities to establish, enhance and evaluate integrated and effective HISs; and
- use digital data sources and big data to leverage the predictive power of data to improve the health and well-being for the whole WHO European Region.

This will be achieved through:

- an annual update of all core indicators included in the measurement framework for the EPW *(9)*, beginning in 2022;
- support for the development of indicator areas for topics identified in the measurement framework that are deemed highly important for the WHO European Region;
- country profiles for a set of Member States that are not in the EU (a Health Systems in Action Insights pilot series);
- HIS assessments in a set of Member States based on the WHO Support Tool to Strengthen Health Information Systems *(10)*; and
- a country implementation toolkit on the digitalization of HISs, including the use of digital data sources and big data *(4)*.

The measurement framework for the EPW is a set of targets, indicators and milestones for tracking progress towards the goals and ambitions of the EPW and ultimately towards the SDGs *(9)*. This measurement framework is described in more detail in the next section, including the specific tools and activities that the WHO Regional Office for Europe is planning to provide to support achieving the three core priorities of the EPW. First, the term HIS and what that means will be discussed, together with the scope of WHO's HIS strengthening activities and the main gaps that currently challenge effective HISs in the WHO European Region.

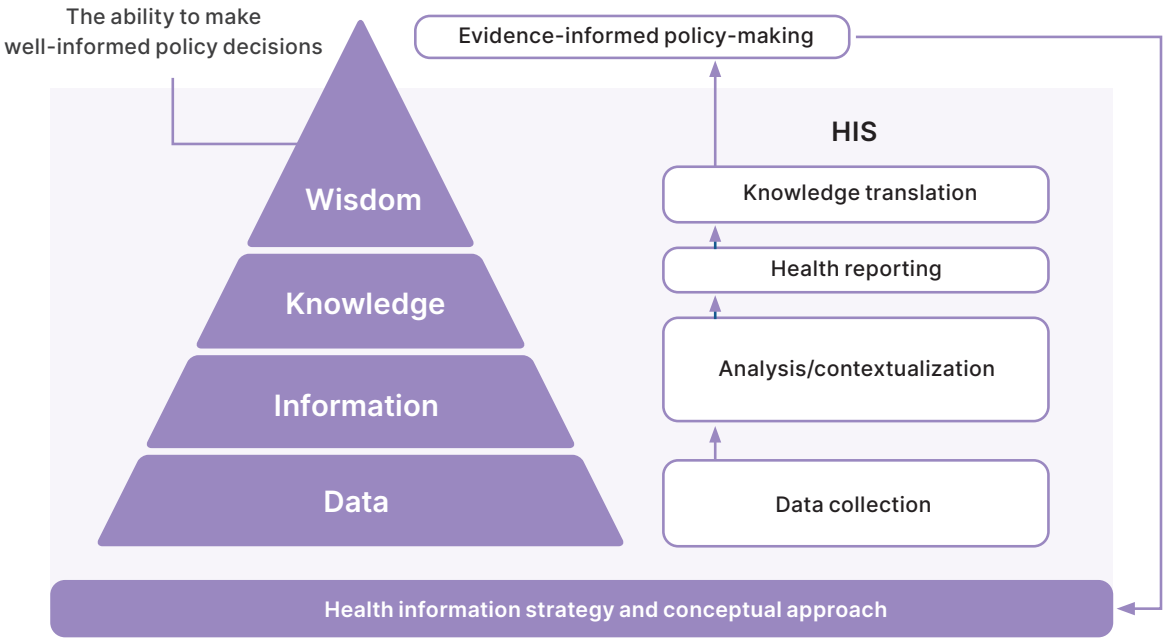
Defining HISs

WHO supports Member States in strengthening their HISs. But what does that mean exactly? There often appears to be confusion about what exactly a HIS is. It is often equated with a central database or an electronic health record system; however, a HIS is much more than that. Although many different definitions of a HIS exist, a common feature is that it is a complex multilevel system that is intended to provide health intelligence to inform decision-making. In WHO's Support Tool to Strengthen Health Information Systems *(10)*, which will be discussed in more detail below, a model developed by Verschuuren and van Oers *(11)* is used for defining a HIS (Fig. 4.2) *(11)*.

This model is based on the well-known data, information, knowledge and wisdom hierarchy *(12)*, with the following HIS functions or domains:

- data collection
- analysis
- health reporting
- knowledge translation
- governance and resources.

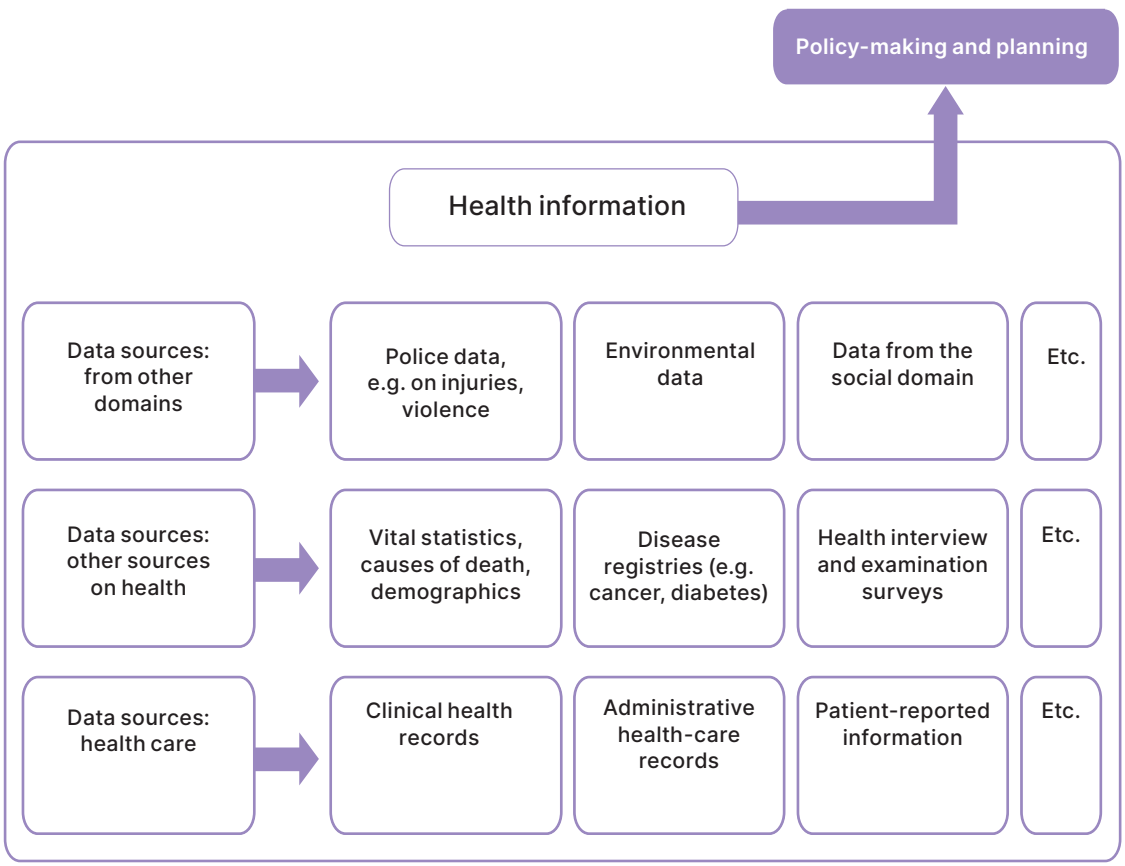
Fig. 4.2. Population health monitoring model combining HIS outputs and activities



Note: the levels in the data, information, knowledge and wisdom hierarchy (knowledge hierarchy or information pyramid) can be seen as the outputs that a HIS generates by performing the activities depicted on the right side of the figure. If all these are performed, the pyramid can be climbed to achieve evidence-informed policy-making, as shown at the top.
Source: adapted and reproduced with permission of Springer from Verschuuren and van Oers, 2019 *(11)*.

This definition of a HIS makes clear that its function goes far beyond collecting data: it starts with defining a conceptual approach, after which data are collected, analyses are performed, and knowledge is generated and actively brought into policy and practice. A HIS plays an important role in health system governance, where health system means the system in the broadest sense: in addition to primary, secondary and tertiary health-care services, it includes public health and preventive services, as well as intersectoral action to address the wider determinants of health. This implies that a well-functioning HIS needs data not only from the health sector but also from other domains (Fig. 4.3) *(13)*. All these different data sources can either be paper based or, which is more and more the case in the WHO European Region, electronic.

Fig. 4.3. The different data sources that constitute health information



Source: adapted and reproduced with permission of Springer from Verschuuren and van Oers, 2019 *(13)*.

Current gaps and challenges in health information in the WHO European Region

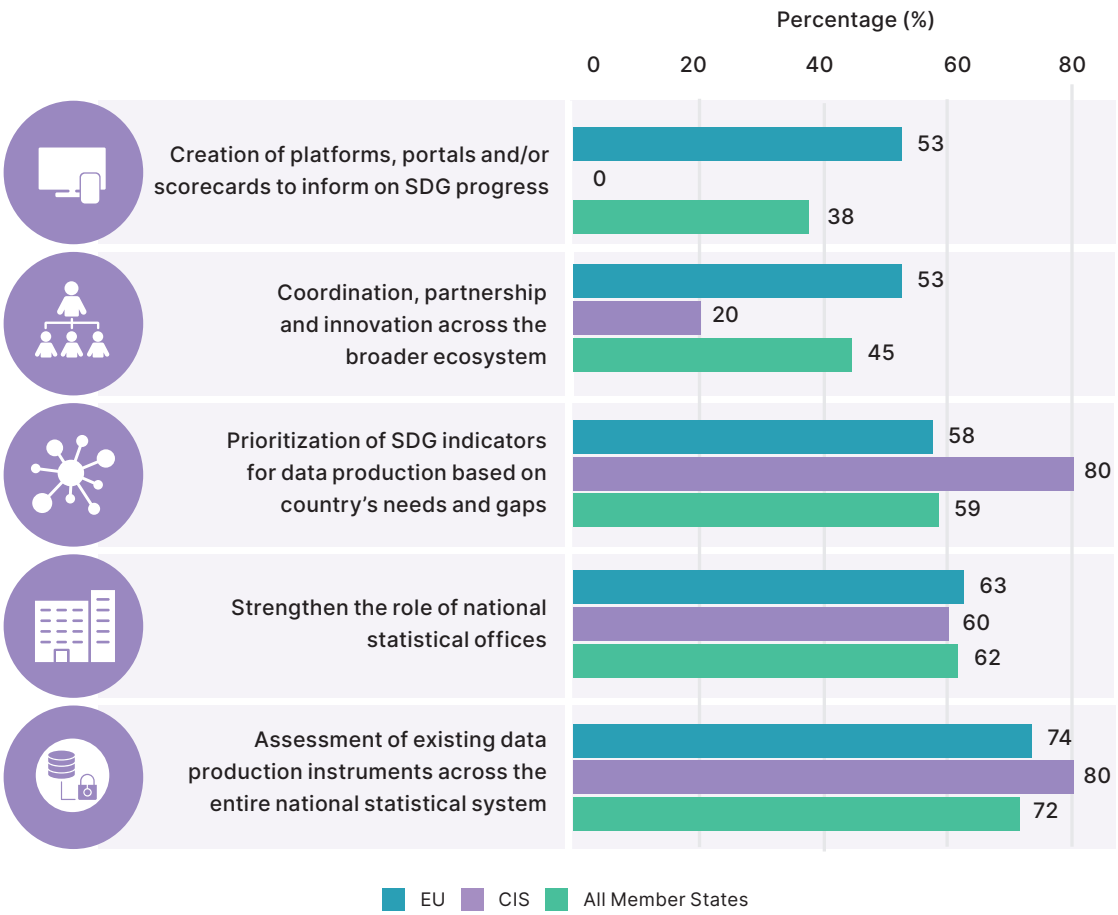
Important data gaps for measuring the SDGs

Chapter 2 highlights the important data gaps that still exist in the WHO European Region for monitoring progress towards the health-related SDGs. When the SDGs were adopted in 2015, it was already clear that major issues regarding data availability would need to be tackled to enable comprehensive and policy-relevant monitoring and reporting, not only in relation to the health-related SDGs but for all SDGs. The Sustainable Development Goals Report 2019 found that most Member States were still not regularly collecting data for more than half of the global indicators *(14)*. In addition, the lack of accurate and timely data on many marginalized groups and individuals makes them invisible and exacerbates their vulnerability. While considerable effort has been made to address these data gaps since 2015, progress has been limited. Increased investment is urgently needed to ensure that adequate data are available to inform decision-making on all aspects of the 2030 Agenda *(14)*. In addition, many SDG indicators are available only with a significant time lag. This is highlighted in the data presented in Chapter 2, which in some cases are several years old. To make matters worse, the COVID-19 crisis is disrupting routine operations throughout the global statistical and data system, with delays in planned censuses, surveys and other data programmes *(15)*. An estimated 63% of low- and lower-middle-income countries need additional financing for data and statistics to face the challenges posed by COVID-19 *(16)*. Even though the estimated cost of collecting data to monitor the SDGs is high (US$ 650 million per year *(17)*), the cost of not obtaining timely, credible, reliable and actionable data is even higher, as the COVID-19 pandemic has demonstrated *(18)*.

A 2019 survey by the WHO Regional Office for Europe to assess Member States' activities in relation to the WHO European Region's Roadmap to implement the 2030 Agenda for Sustainable Development *(19)* had responses from 29 Member States, of which 21 (72%) reported that they had begun the initial work of collecting

and ordering data to support SDG monitoring *(20)*. Only 13 (45%) had carried out activities related to increasing coordination, partnership and innovation across the broader data ecosystem and to making this information available and accessible to the public (Fig. 4.4).

Fig 4.4. Processes carried out to support data and statistical development to monitor health-related SDGs in 29 Member States



CIS: Commonwealth of Independent States.
Source: WHO Regional Office for Europe, 2021 *(20)*.

The measurement framework of the EPW was adopted during the 71st session of the WHO Regional Committee for Europe in September 2021 *(8,9)*. This measurement framework builds on the SDGs and the GPW13. In line with the general data situation for the SDGs, important data gaps were identified for the

health-related SDG indicators included in the measurement framework. These are reflected in the lack of data noted in Chapter 2. However, lack of data also appeared to be an issue for indicator areas that are not explicitly covered by the SDGs but which are highly relevant for the WHO European Region, such as ageing populations and mental health. In addition, data disaggregated by subgroups and subnational geographical areas to allow the analysis of health inequalities are often lacking. This is a persistent problem that hampers the identification of vulnerable groups and the implementation of evidence-informed policies to make sure that no one is left behind. Another important overarching information gap is related to the current lack of data to measure implementation and effectiveness of intersectoral action for health. The SDG framework clearly illustrates the importance of coordination effort across sectors and government departments to ensure health for all (see Fig. 1.1). These EPW measurement framework indicator areas for which adequate data are lacking in the Region are collated in a development list (Table 4.2), which is an integral part of the measurement framework *(9)*. The WHO Regional Office for Europe's plans for how to implement the EPW measurement framework and take this development list forward are described later in this chapter.

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Table 4.2. Important data gaps in the WHO European Region: indicator areas on the development list of the measurement framework of the EPW[a]

No.[b]	Indicator area	Type
Core priority 1. Moving towards UHC		
1	Coverage of treatment interventions for substance use disorders (%)	SDG 3.5.1
2	Proportion of women aged 15–49 years who have their need for family planning satisfied with modern methods	SDG 3.7.1
3	Proportion of health facilities that have a core set of relevant essential medicines available and affordable on a sustainable basis and/or other indicators on the availability and/or quality of medicines	SDG 3.b.3
4	Ageing populations: long-term care and rehabilitation	New topic
5	Unmet needs in health care	New topic
6	Digital health	New topic
7	Specific primary health-care aspects such as quality of care, integrative care, multisectorality and multidisciplinarity	New topic
8	Intersectoral action for health	New topic
9	Health inequalities	Cross-cutting issue
Core priority 2. Protecting against health emergencies		
10	Minimum package of health services in emergencies	Sendai Framework for Disaster Risk Reduction *(21)*, global indicator D-7
11	Availability of preparedness plans and guidelines to mitigate the risk of high-threat or emerging pathogens	New topic

Table 4.2 contd

No.[b]	Indicator area	Type
Core priority 3. Promoting health and well-being		
12	Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being and/or alternative indicators of early childhood development	SDG 4.2.1
13	Proportion of children who have experienced any physical punishment and/or psychological aggression	SDG 16.2.1
14	Mental health	New topic
15	Behavioural insights	New topic
16	Burden of nonfatal injuries (e.g. road traffic injuries, falls, burns)	New topic
17	Self-perceived health and well-being	New topic
18	Health effects of climate change	New topic
19	Ageing populations: healthy ageing	New topic
20	Ageing populations: dementia (burden of dementia, dementia policies)	New topic

[a] The development list items in this table have been ordered slightly differently to those in the measurement framework for the EPW *(9)* to enhance coherence with the structure of Chapter 2.
[b] The numbers do not represent any ranking or order of priority.

With regard to indicators related to emergency preparedness and response (EPW core priority 2), WHO and Member States are reviewing existing tools for emergency preparedness monitoring and evaluation based on lessons learned from the COVID-19 pandemic response. Based on a global consultation process in 2021, the SPAR tool, which is related to the IHR and from which data are reported in Chapter 2, is being updated to incorporate lessons learned from COVID-19 and adjust indicators accordingly for the 2021 reporting round *(22)*. Additional initiatives include the Universal Health and Preparedness Review, which is being developed as a voluntary, state led review mechanism to strengthen national, regional and global capacity for pandemic preparedness and UHC. More information on the SPAR tool is provided in Chapter 2 and Annex 1.

Comprehensive monitoring frameworks needed for capturing the full impact of the COVID-19 pandemic

Chapter 3 highlights the importance of looking beyond the mortality and morbidity caused by COVID-19 directly and mapping and monitoring the wider effects of the pandemic. As many health data collections that are used for population health monitoring tend to lag by one to three years, it is difficult currently to get a good picture of the wider impact of the pandemic. Nevertheless, commonly used indicators are suitable for capturing the main health impacts. It is, therefore, important to assess which existing indicators should be added to national and subnational monitoring frameworks and dashboards to ensure that a comprehensive picture of the impact of COVID-19 can be provided. Such comprehensive monitoring frameworks will inform recovery strategies by enabling the development of targeted interventions and the effective application of resources to counteract the wider health effects of the current pandemic; they will also be a good starting point for monitoring the impact of future pandemics. To help Member States to select suitable indicators, the WHO Regional Office for Europe developed the guidance document, Strengthening Population Health Surveillance: a Tool for Selecting Indicators to Signal and Monitor the Wider Effects of the COVID-19 Pandemic *(23)*. Chapter 3 also discusses the importance of computing advanced metrics such as quality- and disability-adjusted life-years and of producing forecasts to help achieve a complete picture of population health. From HIS assessments carried out in the Region, it is clear that capacities and resources for developing metrics of these types are often inadequate in national HISs.

Common challenges for HISs in the WHO European Region

Data gaps such as the ones described in the previous section for the WHO European Region are not stand-alone problems but relate to wider issues with the functioning of HISs. In a global exercise in 2020, WHO assessed the HISs in 133 countries, including 10 in the WHO European Region, using the SCORE assessment instrument *(24,25)*. SCORE represents five key interventions: survey (populations and health risks), count (births, deaths and causes of death), optimize (health service data), review (progress and performance) and enable (data use for policy and action). The assessment found that up to 60% of the Member States had a well-developed or sustainable capacity for reviewing progress and performance

of their health sector and more than 50% had a well-developed or sustainable capacity to survey populations and health risks. Fewer reached such capacity for the other three interventions, but over 50% of all Member States had moderate or better capacity for each of the five interventions. Although the study revealed marked differences between the maturity of HISs in high- and low-income countries, no single assessed country had achieved sustainable capacity across all five interventions or met best practice guidelines across the full spectrum of the HIS *(25)*. Consequently, all countries could benefit from understanding the gaps in their HIS and following SCORE recommendations for improvement.

Specifically for the WHO European Region, the WHO Regional Office for Europe carried out more in-depth HIS assessments in 13 Member States in 2015–2019 at the request of the ministries of health. These assessments revealed common strengths and challenges across all main functions of the HISs. Common challenges included limited resources and capacity; insufficient coordination and collaboration between HIS stakeholders, leading to fragmentation and problems with interoperability; lack of central governance; and limited use of health information for decision-making (Table 4.3) *(10)*. A recent SWOT study (analysing strengths, weaknesses, opportunities and threats) of nine Member States, based on a peer-review application of the same methodology used for the 13 assessments carried out by WHO, shows similar results *(26)*. The five most important barriers for optimal functioning of HISs across the EU and associated countries identified in the study were (i) fragmentation of data sources, limited accessibility and use/reuse of data; (ii) barriers in the implementation of electronic health record systems; (iii) governance issues related to unclear responsibilities, discontinuous financing and weak intra- and intersectoral collaboration; (iv) legal gaps and General Data Protection Regulation (mis)interpretation; and (v) limited numbers of skilled staff *(26)*.

Table 4.3. Common strengths and weaknesses based on the findings of assessments carried out in 13 Member States of the WHO European Region

HIS area	Strengths	Weaknesses
Data collection: data availability and usability	• Functioning data collection systems • Most countries have implemented a generic unique personal identification number or are planning to do so	• Limited analytical capacity • Data quality issues • Lack of data from private health-care facilities • Unclear roles and responsibilities for data exchange • Limited data linkage
Data collection: digital HISs and e-health	• Growing interest and promising developments in the area of digitalization of HISs/e-health • Most countries work with an EHR system or are planning to implement it	• Large parts of data flows are still paper based • Fragmentation and lack of interoperability • The EHR system is implemented only in some health-care facilities
Analysis and health reporting: indicators	• Clearly defined indicators are commonly published at national level • Growing interest at health-care facility level in using indicators for quality control and performance improvement	• Underlying selection criteria for published indicators are not always clear • Published indicators are not always clearly related to the health policy in the country • Lack of good data and indicators for benchmarking across health-care facilities and a need for capacity-building in this area

Table 4.3 contd

HIS area	Strengths	Weaknesses
Knowledge translation, governance and resources	• Understanding by policy-makers and managers of the need for sound health information for decision-making	• Limited use of health information for decision-making • Lack of a clear HIS strategy • Central multisectoral coordination mechanisms are missing or functioning poorly • Lack of resources and a general need for capacity-building • A HIS is often understood to be the same as an EHR system • Dependency on (temporary) donor funding

EHR: electronic health record.
Source: WHO Regional Office for Europe, 2021 *(10)*.

The COVID-19 pandemic exposes existing HIS flaws and underscores the importance of infodemic management

The COVID-19 pandemic has clearly shown the importance of a well-functioning HIS that produces robust, timely and policy-relevant health intelligence. It has, however, also put a spotlight on existing problems and malfunctions in HISs. The WHO Regional Office for Europe performed a survey in November 2020 among Member States that are part of the WHO European Health Information Initiative (EHII) and the WHO Central Asian Republics Information Network (CARINFONET) to assess how well the HISs of Member States were able to respond to information needs for managing the pandemic and which challenges were encountered. Input was received from WHO national focal points from 19 Member States *(27)*. Although the respondents felt that their HISs had worked reasonably well in addressing the needs arising during the COVID-19 pandemic by rapidly adapting to identify, collect, store, manage and transmit accurate and timely data, critical gaps were also experienced. These include underresourced public health services, obsolete health information technologies and lack of interoperability. One of the survey

questions asked respondents to elaborate on their experiences and lessons learned throughout the COVID-19 pandemic. The consensus across the sample was that information needs were very different in an emergency versus general public health or health system monitoring, and that the existing HIS processes and protocols had been developed to serve the latter. Comments from survey respondents are shown in Box 4.2 *(27)*.

Box 4.2. Lessons learned: comments from survey respondents

"The timeliness is central, and the demand for rapid data capture, analysis and response is quite different in an emergency scenario such as the COVID-19 pandemic, compared with the general health system monitoring."

"There is still a lot of work to do to improve data capture, timeliness and interoperability of different information systems."

"The dashboard has been especially successful as a transparency tool."

"Coordinated communication efforts to the political level, the general public and media are essential as the final output from any surveillance system."

"Development of information systems needs good coordination to ensure good interoperability across the health sector."

"Planning and systemic approach in building health information systems were far from desired."

Box 4.2 contd

"An advanced health information system is a fundamental component for both expertise and evidence, policy development and political action."

"Strong and competent legal teams are needed to quickly assess new situations and to support actions in any area, including information management."

"There is a need for clarifying the application and limits of existing laws governing privacy during the emergency."

"Constant investment and funding will be required for the health information system going into the future."

"Underinvestment in public health administration and public health research has a negative effect on pro-active interventions."

"Better use of health data for secondary purposes, linkage, sharing and accessing will become the norm due to COVID."

Source: Negro-Calduch et al., 2021 *(27)*.

The COVID-19 pandemic is the first pandemic in history in which technology and social media are being used on a massive scale to keep people safe, informed, productive and connected. With growing digitization – an expansion of social media and Internet use – information can spread more rapidly. This can help to fill information voids more quickly but can also amplify harmful messages. A situation in which there is too much information, including false or misleading information, in digital and physical environments during a disease outbreak is called an infodemic. It causes confusion and risk-taking behaviours that can harm health,

leads to mistrust in health authorities and undermines the public health response. An infodemic can intensify or lengthen outbreaks when people are unsure about what they need to do to protect their health and the health of people around them. Infodemic management is the systematic use of risk- and evidence-based analysis and approaches to manage the infodemic and reduce its impact on health behaviours during health emergencies. WHO is working with partners across society to strengthen the scientific discipline of infodemiology by bolstering digital capabilities and leveraging social inoculation principles to foster higher digital and health literacy, build resilience to misinformation and deliver innovative ways to reach communities with reliable health information. The purpose is to build and deliver sustainable tools that health authorities and communities can use to prevent and overcome the harmful impacts of infodemics *(28)*.

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WHO tools to support Member States in strengthening their HIS and overcoming data gaps

This section presents the main tools and activities that the WHO Regional Office for Europe aims to deploy under the EPW to support the strengthening of national HIS and overcome data gaps. They are organized according to the three priorities of the 2022–2023 biennium related to health information:

- operationalizing the measurement framework for the EPW;
- enhancing country capacities to establish, enhance and evaluate integrated and effective HISs; and
- using digital data sources and big data to leverage the predictive power of data to improve the health and well-being of all in the WHO European Region.

The support that the WHO Regional Office for Europe is providing to the Member States of the Region builds on the activities of the WHO global office in Geneva in the field of health information. One of the main global activities currently focuses on strengthening HISs to support implementation of the SDGs and GPW13 by means of the SCORE technical package *(24)* and on streamlining data collection from Member States for generating improved health information at both the global and regional levels (Box 4.3). The tools complement global HIS strengthening guidance and activities by specifically taking into account the contexts, maturity levels and needs of HISs in the WHO European Region, and by building networks in the Region to facilitate collaborative action and mutual learning.

Box 4.3. The WHO SCORE for Health Data Technical Package

The SCORE for Health Data Technical Package was developed by WHO and partners to assist Member States in strengthening country data systems and capacity to monitor progress towards the health-related SDGs, the triple billion targets and other national and subnational health priorities *(24)*. It provides a harmonized package of the most effective interventions needed to address critical gaps and strengthen country health data for planning and monitoring purposes. SCORE stands for survey (population and health risks), count (births, deaths and causes of death), optimize (health services data), review (progress and performance) and enable (data use for policy and action). A number of resources are currently available as part of the SCORE Package.

- SCORE Essential Interventions: provides an overview of HISs with the underlying key elements of each of the interventions, the indicators used to assess and monitor these and examples of actions to be taken.
- SCORE Tools and Standards: a list of up-to-date resources for each intervention.
- SCORE Assessment Instrument: a data collection instrument (and accompanying user guide) to assess a country's HIS and identify gaps.
- SCORE Assessment Methodology: a technical explanation of the scoring method used in the Global Report for Quantifying SCORE Indicators, Elements and Interventions.
- SCORE Country Assessment Summary: documents showing country-specific results.

Box 4.3 contd

- SCORE Online Data Portal: an interactive data platform that allows Member States and regions to view their assessment result summaries and conduct other regional analyses using validated SCORE data.

The SCORE Global Report on Health Data Systems and Capacity, 2020 presents assessment results from 133 country HISs, covering 87% of the global population *(25)*.

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Priority 1. Operationalizing the measurement framework for the EPW

Development of the EPW measurement framework

The measurement framework for the EPW was adopted at the 71st session of the WHO Regional Committee for Europe in September 2021 *(8)*. This measurement framework is aligned with the measurement frameworks of the GPW13 and the SDGs and considers the impacts of the COVID-19 pandemic on population health, as well as metrics to monitor progress towards leaving no one behind. It was developed in close consultation with Member States through the establishment of a dedicated expert group on the measurement framework of the EPW, which included experts appointed by Member States. Two existing advisory bodies for the WHO Regional Office for Europe in the field of health information, the EHII and CARINFONET, were consulted during the development process.

The EPW measurement framework uses a subset of the SDG targets and outcome indicators included in the GPW13 methods for impact measurement *(29)*. This is complemented by other indicators as well as concrete milestones to be achieved by 2025 in order to ensure that the framework is well aligned with the WHO European Region's context. All indicators included in the main part of the measurement framework (containing the targets, indicators and milestones) are existing indicators for which data are already being collected at the WHO regional or global level. In addition, a development list is included in the EPW measurement framework, as well as a roadmap for its implementation. The development list contains 20 indicator areas that are important for the Region, but for which either no well-defined measures have yet been included in Region-wide international data collections or where data are available only for a limited number of Member States (Table 4.2). This list is intended to serve as a priority list for developmental work on indicators in the WHO European Region in the coming years *(9)*.

Networks are an important tool in the WHO European Region for improving health information, at both the Member State and Regional levels. Box 4.4 lists the health information networks currently active in the Region.

Box 4. 4. WHO health information networks in the WHO European Region

Expert group on the measurement framework of the EPW

This expert group was established to provide advice during the development of the measurement framework for the EPW and, at the time of writing, consisted of representatives of 39 Member States. The expert group will also remain active during the implementation of the measurement framework. Most notably, it will be instrumental in the developmental work on indicators that is expected to occur in coming years in relation to the development list in the EPW measurement framework. The other health information networks mentioned below will also be involved in this.

EHII

EHII is a WHO network committed to improving the information that underpins health policies in the WHO European Region. It fosters international cooperation to support the exchange of expertise, build capacity and harmonize processes in data collection and reporting *(30)*. EHII contains representatives from 29 Member States, as well as from the Wellcome Trust, the European Centre for Disease Prevention and Control, the Institute for Health Metrics and Evaluation, EuroHealthNet, the European Public Health Association, The Commonwealth, the European Commission, the OECD and the Manchester Urban Collaboration on Health/Centre for Epidemiology at Manchester University, United Kingdom *(31)*.

CARINFONET

CARINFONET was originally founded in 1996 but ceased operations in 2006 owing to lack of funding. At the express request of Member States, the WHO Regional Office for Europe relaunched CARINFONET in 2014 to support better and more-targeted approaches to HIS

Box 4.4 contd

strengthening in central Asia. The network promotes collaboration within and between five Member States in central Asia to produce relevant, objective and accurate statistics *(32)*.

Small Countries Health Information Network

The Small Countries Health Information Network was developed from the WHO Regional Office for Europe's Small Countries Initiative, which was established in 2013 to bring together the eight Member States with populations of less than 1 million. The Network was first proposed at the High-level Meeting of Ministers of Small Member States in Andorra in 2015 with the aim of bringing these Member States together to exchange experiences and address shared health information challenges, for example by implementing a harmonized approach to data collection in order to minimize the reporting burden for each Member State *(33)*.

European Burden of Disease Network

Burden-of-disease methodology is complex and used in variable ways. This can lead to difficulties in comparing studies and can affect the quality of the conclusions drawn from them. The European Burden of Disease Network was established in 2016 to harmonize methodologies across Member States and enable meaningful knowledge exchange (34). During the last meeting of the Network in 2019, experts from 13 Member States were present *(35)*.

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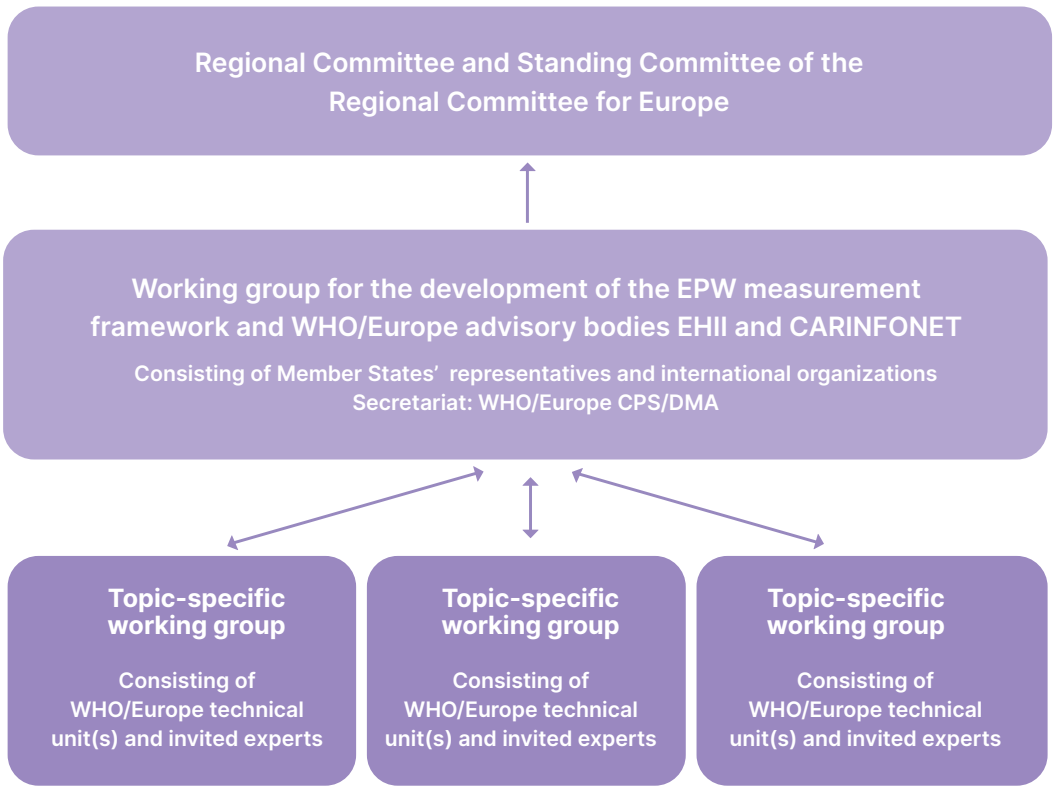
Implementing the EPW measurement framework

In the resolution on the EPW measurement framework, the WHO Regional Committee for Europe agreed that the Regional Office would implement the framework by collecting, analysing and regularly including the data for the indicators in its publications, and by providing an annual update of all main indicators through the annual publication of core health indicators beginning in 2022 and with a more extensive update in the European health report for 2024. In addition, the WHO Regional Committee for Europe requested the Regional Director, Dr Hans Henri P Kluge, to continue with the work of the expert group on the measurement framework of the EPW to develop indicator areas for topics that are deemed highly important for the WHO European Region, as indicated in the development list of the EPW measurement framework *(8)*. The EPW measurement framework contains a roadmap for further work on the indicator areas included in the development list (Fig. 4.5) *(9)*. The roadmap includes recommendations on how to organize this work. These are to:

- make development work a long-term institutionalized activity
- ensure strong involvement of Member States
- ensure strong involvement of international organizations
- align development work with relevant policy processes
- create flexible structures that bring together relevant expertise.

Fig. 4.5. Proposed organizational structure for the implementation of the roadmap for the development list



CPS/DMA: Data, Metrics and Analytics Unit of the Division of Country Health Policies and Systems; WHO/Europe: WHO Regional Office for Europe.
Source: WHO Regional Office for Europe. 2021 *(9)*.

As a result, the WHO Regional Office for Europe will engage in developing more comprehensive health information, using the approach outlined above, to overcome important data gaps for the SDG indicators and other indicator areas for the EPW. This will enhance evidence-informed policy-making for both Member States and the Region. For the work on indicator areas included in the development list, it will be important to align with relevant existing or ongoing policy developments and data collections, such as the United Nations Decade of Healthy Ageing (2021–2030) *(36)*, the Global Dementia Observatory *(37)* and the WHO global Mental Health Action Plan, which was recently extended from 2020 to 2030 *(38)*. In addition, it will be important to build on existing work, for example the extensive work relating to measurement of well-being by WHO and other international actors such as the United Nations and OECD, some of

which were highlighted in the European Health Report 2012 *(39)*. This raises the final point to highlight in this section, which is the need to collaborate with other international organizations. Member States have repeatedly requested such collaboration to prevent overlaps between various data collections and reduce the reporting burden. Again in resolution EUR/RC71/R7, Member States requested the Regional Director to work towards achieving harmonization of data requirements with other relevant international bodies, taking into account their work in this area *(8)*. The European Commission, Eurostat and the OECD have been participating in the EHII for several years and are now also participating in the recently established expert group on the measurement framework of the EPW. The WHO Regional Office for Europe will build on these existing collaborations to ensure that synergies between the expertise and health information activities of the international organizations are utilized to the maximum extent.

Priority 2. Enhancing country capacities to establish, enhance and evaluate integrated and effective HISs

The WHO Regional Office for Europe is in the process of developing a comprehensive package of guidance materials for HIS strengthening. At its core is the Support Tool to Strengthen Health Information Systems, first published in 2015 *(40)* and updated in 2021 *(10)*. The support tool comprises two main parts: it provides guidance for performing an overall assessment of a full HIS, and it provides guidance for the subsequent development of a HIS strategy. The 2021 edition updates the assessment methodology to better reflect the current context of HIS in the Region *(10)*. Most notably, the balance between data collection and actual data use was improved by placing more emphasis on data analysis, reporting and dissemination. For this purpose, the tool discerns five main HIS functions: data collection, analysis, health reporting, knowledge translation, and governance and resources (Fig. 4.2). In addition, the assessment methodology reflects the growing importance of electronic health records and other digital solutions in HISs in the WHO European Region, and the 2021 version has several add-on modules *(10)*. Finally, the guidance for HIS strategy development was made more concise and practical.

The HIS assessment is guided by a HIS assessment item sheet, which consists of a core module and several add-on modules (on infectious disease surveillance,

NCD monitoring, health information for the GPW13 and EPW, human resources for health, and health data governance). The aim of the core module is to provide an overview of the functioning of the entire HIS under assessment. The aim of the add-on modules is to shed more light on specific parts or functions of the HIS. The core module forms the basis of the HIS assessments, and one or several add-on modules can be added to it according to the needs and preferences of the country being assessed. The assessment results in an overview of strengths and weaknesses of the HIS, including a HIS maturity score *(10)*.

To subsequently support Member States in strengthening those parts and functions of the HIS that need improvement, the WHO Regional Office for Europe has developed extensive training in population health surveillance as well as a set of guidance documents covering all five main HIS functions as outlined in the 2021 version *(10)*. These documents range from guidance for integrating gender data into health statistics, to guidance for making good data visualizations to support impactful health reports and to guidance for HIS governance (Table 4.4). For the launch of these documents, webinars are organized in which the authors present their work and explain the tools. Furthermore, the WHO Regional Office for Europe has conducted research and developed evidence resources to support Member States in strengthening their data and information systems (Table 4.5).

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Table 4.4. Overview of the package of HIS strengthening tools developed by the WHO Regional Office for Europe to support Member States

Tool	**Short description**	**HIS function**
Support tool to Strengthen Health Information Systems. Guidance for Health Information System Assessment and Strategy Development *(10)*	2021 update of the 2015 Support tool *(40)*, consisting of step-by-step guidance for (i) performing a HIS assessment and (ii) the subsequent development of a HIS strategy; the first part entails a core module for an evaluation of the entire HIS, to which several add-on modules can be added for in-depth evaluation of specific HIS functions	Cross-cutting
EPW monitoring tool: surveillance of population health: generating and using health information for policy-making[a]	Comprehensive, one-week training addressing all main HIS functions; the core programme can be tailored to the specific needs of participating Member State(s); the training was implemented for the first time (in a virtual form due to the COVID-19 pandemic) in 2020 in Uzbekistan (see Box 4.5)	Cross-cutting
The Protection of Personal Data in Health Information Systems: Principles and Processes for Public Health *(41)*	While data protection justly receives widespread recognition, it should be noted that this right is not absolute but needs to be balanced with other fundamental rights and public interests, such as the right to health; this document aims to give guidance on how specific decisions that are unavoidable should be taken to balance the rights and interests at stake	Data collection, governance and resources
Integrating Gender Data in Health Information Systems: Challenges, Opportunities and Good Practices *(42)*	Explores the common challenges in producing and using gender and health data and suggests opportunities and examples of good practices; recommendations are provided to support national HISs to improve data quality	Data collection, analysis, governance and resources

Table 4.4 contd

Tool	**Short description**	**HIS function**
Strengthening Population Health Surveillance: a Tool for Selecting Indicators to Signal and Monitor the Wider Effects of the COVID-19 Pandemic *(23)*	This tool contains: • a long list of mechanisms through which the COVID-19 pandemic influences population health (the wider effects of the pandemic) and related indicator areas • considerations related to health inequalities, data sources and working with trends • a list of core indicators to serve as a starting point for Member States to monitor the wider effects	Data collection, analysis
Guidance for Creating Impactful Health Reports *(43)*	This guidance provides practical advice on how to make health reports that have a real impact on policy and practice; it describes quality criteria for content, process and marketing (how to get the message out)	Health reporting, knowledge translation
Tools for Making Good Data Visualizations: the Art of Charting *(44)*	Use of good data visualizations is essential to make impactful health reports; the tool provides practical guidance on how to make good data visualizations to support convincing policy messages	Analysis, health reporting
Intersectoral monitoring and reporting (expected publication in 2022)	The guide aims to support the organization of intersectoral monitoring by explaining general prerequisites and potential barriers; it will also provide practical examples in terms of conceptual frameworks, indicator sets and tools	Governance and resources
Guidance for Health Information System Governance *(45)*	HIS governance mechanisms are commonly ill-defined and/or function inadequately; this guidance provides an overview of attributes and tools for good governance in general and for good HIS governance in particular	Governance and resources

[a] The training protocol is available upon request from the Data, Metrics and Analytics Unit of the WHO Regional Office for Europe.

Table 4.5. Overview of the package of HIS strengthening evidence resources developed by the WHO Regional Office for Europe to support Member States

Tool	Short description	HIS function
A Call to Strengthen Data in Response to COVID-19 and Beyond *(46)*	To ensure that critical decisions related to the wider health and socioeconomic effects of the COVID-19 pandemic are data driven, each country needs to develop or enhance a national data governance plan that includes a clear coordination mechanism, well-defined and documented data processes, the exchange of data and a data culture to empower users	Cross-cutting
Routine Health Information Systems in the European Context *(47)*	The aim of this study is to provide a better understanding of the requirements to improve routine HISs for the management of health systems, including the identification of best practices, opportunities and challenges in the Member States of the WHO European Region	Cross-cutting
Health Information Systems in the COVID-19 Pandemic: a Short Survey of Experiences and Lessons Learned from the European Region *(27)*	A qualitative survey was administered online in November 2020 to all 37 Member States that are part of the WHO EHII and the WHO CARINFONET; this paper presents the answers from the 19 countries that responded	Cross-cutting
Data and Digital Solutions to Support Surveillance Strategies in the Context of the COVID-19 Pandemic *(48)*	This research provides a comprehensive overview of digital epidemiology, available data sources and components of current digital surveillance, early warning and response, outbreak management and control, and digital interventions	Data collection, analysis, governance and resources, health reporting

Table 4.5 contd

Tool	Short description	HIS function
Technological Progress in Electronic Health Record System Optimization *(49)*	Technological advancements can improve efficiency in the implementation of electronic health record and personal health record systems in numerous ways; natural language-processing techniques (rule based, machine learning or deep learning based) can extract information from clinical narratives and other unstructured data locked in these record systems, allowing secondary research (phenotyping)	Data collection, analysis, health reporting
Digital Data Sources and their Impact on People's Health *(50)*	Digital data sources are essential for collecting and mining information about human health; the key impact of social media, electronic health records and websites is in the area of infectious diseases, early warning systems and personal health (e.g. mental health and smoking and drinking prevention)	Data collection, analysis, health reporting
Impact of Big Data Analytics on People's Health *(51)*	The study assessed the impact of the use of big data analytics on people's health based on the health indicators and core priorities in the GPW13 and EPW	Data collection, analysis, health reporting

Several Member States already have experience with some of these tools, most notably the HIS assessment part of the Support Tool (2015 edition *(40)*) and the population health surveillance training. Box 4.5 highlights one of these experiences, describing how the tools helped Uzbekistan with improving the performance of its HIS.

Box 4.5. WHO support for strengthening the HIS in Uzbekistan in 2018–2021

The Government of Uzbekistan is embarking upon a health reform with the aim of health systems strengthening, including digitalization of the HIS. The reform is being piloted in the Sirdaryo Region and will be rolled out throughout the entire country by 2025. WHO is highly committed to supporting the Ministry of Health of Uzbekistan in the ongoing health reform, particularly in the modernization and digitalization of the HIS.

Since September 2018 the WHO Country Office in Uzbekistan has been systematically supporting the Government in its efforts in strengthening and modernizing the HIS. The provided support and activities were guided through the comprehensive HIS assessments performed in 2018 by WHO. The assessment revealed that the HIS was fragmented, largely based on paper records and lacking digital components; its content (data and final indicators) had quality issues. International standards for classification and coding were not universally observed, and its capacity for health analysis, reporting and e-health were unclear.

Based on the HIS assessment results and recommendations,a multidimensional HIS strengthening project was developed and implemented by WHO. The range of key components that were implemented in the context of this project follow, with short descriptions.

Coordination and strengthening of Ministry of Health capacity for HIS development

This is one of the key components of the project and included activities such as supporting the Ministry of Health in the development of a draft HIS strategy and holding regular HIS technical working group meetings, chaired by the Ministry of Health and WHO, to facilitate the sharing of updates and the development of synergies and smooth collaboration

Box 4.5 contd

between national and international partners, development partners and other stakeholders. In the scope of the capacity-strengthening component, WHO also provided expert support to the Ministry of Health in design of the structure of a medical information system and software development, sharing the international practice of modernization, and the digitalization of national electronic health records.

Assessment of strength and gaps of the current HIS
WHO conducted a situational analysis of the data management system in Uzbekistan to inform the Government about the strengths, gaps and possibilities for improvement, particularly in the context of the health reform.

Strengthening monitoring and indicator development
This component allowed the review of national indicators in comparison with WHO's main frameworks and provided recommendations for improvement. WHO also provided training on the best practices of reporting national health indicators and developed an electronic dashboard instrument to support the analysis and reporting of aggregated data.

Strengthening data sources, data management and data quality
This was another key component and WHO implemented several capacity-building activities for implementation of the International Classification of Diseases (version 10), including training of trainers and initiation of training sessions across the country. Currently, the WHO Country Office is supporting the translation of version 11 into the Uzbek language and its integration into the national electronic health record system.

Fostering the exchange of technical experience with other countries.
WHO organized an e-health study tour to Estonia and Ukraine for members of the Government and also held the third Steering Group

Box 4.5 contd

Meeting of CARINFONET in Tashkent, Uzbekistan, in June 2019, followed by regular online workshops to strengthen the systems and foster the exchange of knowledge and best practice in the Region. In the scope of this component, WHO organized online training on population health surveillance tailored to the findings of the WHO assessments and implemented a training course in knowledge translation (Evidence-Informed Policy Network) for the Ministry of Health to expand the international network for peer exchange and to support building local capacity for developing evidence briefs for policy.

Priority 3. Using digital data sources and big data to leverage the predictive power of data to improve health and well-being in the WHO European Region

The fuel of the current digital revolution is the availability of data and the value that corporations, systems and nations can extract from the analysis of vast amounts of data. There is common agreement that data form a new strategic asset for any health-care system. Consequently, governments and regions must invest in the human resources, facilities and technologies to manage and process datasets of vast size. At this point, and to make these investments and efforts effective, it is of the utmost importance to define a clear strategy for the adoption of big data technologies and their integration into the process of health and care provision at national level. As in many other domains, the adoption of technology is not a goal but rather a means that will support the achievement of health policy goals.

The development of the strategy will be governed by a number of questions. What is the starting point? Where should the focus be? How much should be invested? What returns do there have to be?

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The availability of data has boosted the adoption of evidence-informed methodologies and the development of new evaluation frameworks centred on the processing of health-related data. Moreover, health-care organizations and administrations are demanding the optimization of health services by increasing their quality and improving their cost–effectiveness *(52)*. The implementation of data science principles and the integration of heterogeneous datasets into systems for managing and analysing health data allow for the design of new public health and clinical care services that fulfil needs and are supported by the best available evidence. To harness the potential of big data, however, data collection and processing systems need to be digitalized in an interoperable way. As outlined under priority 2, for many HISs in the WHO European Region this still is an important area requiring improvement.

Big data describes a new approach to define strategies based on the massive processing and analysis of heterogeneous datasets *(53)*. The quantity of data generated every day offers a huge opportunity for health organizations that can add big data facilities into their data pipelines. This is particularly relevant for WHO as big data could be key not only for provision of personalized health but also as an indispensable resource to support policy-makers.

Industries have progressively discovered the enormous value of the data they generate through their processes, and how the collection of these data allows companies to offer better client-oriented services and can also drive strategic decisions. This new culture based on the value of data is transforming the way in which health services are provided, creating a move from an expertise-centred model to a data-driven model. Data science, a combination of science and art, is the discipline of building solutions based on the exploitation and analytics of large and heterogeneous datasets to bring new knowledge to respond to specific problems. In health, data science is an approach to improve the decision-making process, at both the clinical and organizational levels, to maximize the chances of successful service provision. The use of big data and artificial intelligence in public health systems requires new skills to manage and analyse the data lifecycle and to adapt the current legal and ethical framework (data protection and privacy) for health services.

Data science endows organizations with the capacity to transform data into information to answer specific questions. Data processing and analytics support the decision-making process and add value to the continuous improvement of health-care processes. Nowadays, the systems for managing and analysing health data include analytical tools for aggregated data and dashboards to connect these data with strategic objectives and monitoring metrics. These systems have been adapted to new technologies such as machine learning, big data and processes automation, which enable health-care organizations to benefit from advanced analytics. The WHO Regional Office for Europe is developing a conceptual framework and toolkit to guide and support Member States in the Region in creating strategies, policies and work programmes to further digitalize their HISs and stimulate the adoption of big data. The overall aim is to leverage the predictive power of algorithms to improve health and well-being. A set of guidance documents is also being developed to cover all aspects relating to the implementation of a data-driven model, from inception to impact assessment (Table 4.6). The strategic objective is to provide a set of resources and guidelines for national health decision-makers to support the implementation of policies and strategies to take advantage of combining health data with big data storage, processing and visualizing capabilities. The framework will also provide guidelines for policy-makers to define policies reinforcing the adoption of big data and to overcome the existing barriers to big data paradigm.

Table 4.6. Overview of the package of tools related to digital data sources and big data that will be developed by the WHO Regional Office for Europe to support Member States to leverage the predictive power of algorithms to improve health and well-being during the 2022–2023 biennium

Tools	Short description	HIS function
Guidance document: strategic and general aspects to support adoption of the big data paradigm and evidence-based health care	To ensure that the macro/micro-contexts of national health systems are well aligned and ready to support the organizational, cultural, legal and ethical changes that the adoption of the big data model implies National strategies, policies, directives and intentions will need to be assessed in depth to support a smooth transition and the coexistence of expertise-driven models and data-driven models	Cross-cutting
Guidance document: interoperability and identification of standards and guidelines	ACID (atomicity, consistency, isolation, durability) is a set of properties of database transactions intended to guarantee data validity despite errors, power failures and other mishaps *(54)*; this is particularly important in health-care systems as data interoperability and understandability is a key factor to avoid data silos and take advantage of heterogeneous data sources	Cross-cutting
Guidance document and training: toolkit to deploy technology and infrastructure for the support of effective, scalable and interoperable big data management	Increased numbers and optimization of communication networks have supported cloud-based technologies rather than on-premises systems; however, in cutting-edge applications or in domains involving sensitive data, options to leverage the computational and storage demands to external servers are not available	Cross-cutting

Table 4.6 contd

Tools	Short description	HIS function
Guidance document: identification of the workforce skills needed to address big data challenges at different levels	Health-care organizations will need to consider cooperation between different professional roles at different decision-making levels to mobilize and enable the organizational shifts implied by the big data paradigm	Governance and resources
Training: structured training to be offered for the different stakeholders engaged in the big data process	Big data, artificial intelligence and distributed computing are rapidly changing research domains; while regression models have been the only option for statisticians, new strategies are now being developed to model data, including deep neural networks and reinforcement learning Training to ensure that the workforce is kept up to date with the latest evidence and resources will be vital	Cross-cutting
Research: analysis of the evolution of big data, artificial intelligence and machine learning in real settings in the WHO European Region	A systematic analysis of the available literature has been carried out; surveys and field studies of the current use of big data, artificial intelligence and machine learning in the Region will support the effective deployment of assets, governance and training for their use	Governance and resources
Guidance document and capacity-building: adoption	Study the extent to which national health services, regions and private health-care organizations are adopting big data principles and exploiting advanced tools based on artificial intelligence to cope with the current challenges of health-care systems, the ageing population and personalized medicine	Governance and resources; analysis; health reporting
Guidance document: evaluation	Analysis of health technology assessment tools and frameworks to assess whether they are sufficient to evaluate the impact, adoption and efficiency of big data systems in health care	Data collection; analysis; health reporting

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ANNEX 1

Technical background information

Analysis of SDG health-related indicators and data sources used in Chapter 2

The health-related SDG indicators analysed in this Report included SDG 3 (ensure healthy lives and promote well-being for all at all ages) as this is central to WHO's work, but also health-related indicators from other SDGs if they were closely related to health. The close relation to health means that the indicator is also used in the GPW13 Impact Measurement Framework *(1)*.

The SDG indicators were collated with the indicators used in the GPW13 Impact Measurement Framework. The goal was to have an SDG indicator in both the GPW13 and SDG lists. In addition to the indicators within SDG 3, the specific health-related SDG, six indicators from SDGs 2, 4, 5, 6 and 16 were also analysed for the Report.

Some indicators were removed from the list based on the following exclusion criteria.

- Insufficient data available for drawing conclusions at the level of the WHO European Region: five indicators (3.3.1, 3.5.1, 3.b.2, 3.b.3, 7.2.1).
- Less relevance for the Region: two indicators (3.3.3 (malaria incidence) and 3.3.5 (interventions against neglected tropical diseases)).

Fig. A1.1 outlines the selection process.

Some additional indicators were briefly described in the Report as they reflect areas that are of particular importance to the WHO European Region. These indicators are included in the measurement framework for the EPW *(2)* and cover catastrophic and impoverishing health expenditures (WHO European Region measures) and coverage of treatment for TB and HIV. Two indicators with insufficient data were replaced by more suitable measures to describe the SDGs in the Region: 2.2.2 (prevalence of malnutrition among children under 5 years of age) and 3.3.4 (hepatitis B surface antigen prevalence among children).

Fig. A1.1. Selection criteria for SDG indicators

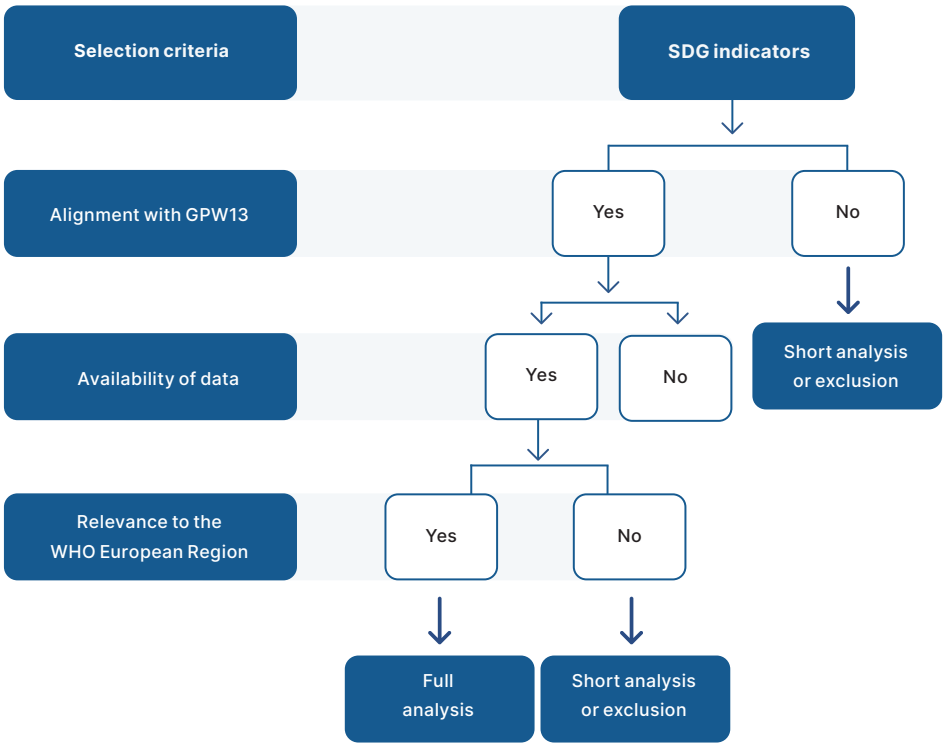

Table A1.1 outlines the indicators and the data sources used for them in this Report *(3–22)*. Chapter 2 provides the latest available official WHO or United Nations data. Technical units in the WHO Regional Office for Europe were consulted in order to choose the best and most relevant data source for each indicator. Where data were not available in WHO databases or publications, other sources were used, with preference given to other United Nations agencies. Most data for the indicators presented in this Report come from the Global Health Observatory database. A full overview of all data used for the graphs, maps and tables presented in Chapter 2 of this Report is available in Annex 2. Detailed descriptions of SDG indicators can be found in the SDG Indicators Metadata Repository *(23)*. Metadata available in this repository are a work in progress.

Table A1.1. Health-related SDG indicators used in the Report and their data sources

SDG target	SDG indicator	Data source
SDG 3. Ensure healthy lives and promote well-being for all at all ages		
3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100 000 live births	3.1.1 Maternal mortality ratio	WHO, 2019 *(3)*
	3.1.2 Proportion of births attended by skilled health personnel	UNICEF, 2021 *(4)*
3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-5 mortality to at least as low as 25 per 1000 live births	3.2.1 Under-5 mortality rate	WHO, 2021 *(5)*
	3.2.2 Neonatal mortality rate	WHO, 2021 *(5)*
3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, waterborne diseases and other communicable diseases	3.3.1 Number of new HIV infections per 1000 uninfected population, by sex, age and key populations	WHO Regional Office for Europe, 2021 *(6)*

Table A1.1 contd

SDG target	SDG indicator	Data source
3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, waterborne diseases and other communicable diseases (contd)	3.3.2 Tuberculosis incidence per 100 000 population	WHO Regional Office for Europe, 2021 *(7)*
	3.3.3 Malaria incidence per 1000 population	Excluded as not relevant to the WHO European Region
	3.3.4 Hepatitis B incidence per 100 000 population	No comparable data
	3.3.5 Number of people requiring interventions against neglected tropical diseases	Excluded as not relevant to the WHO European Region
3.4 By 2030, reduce by one third premature mortality from noncommunicable diseases through prevention and treatment and promote mental health and well-being	3.4.1 Mortality rate attributed to cardiovascular diseases, cancer, diabetes or chronic respiratory disease	WHO, 2020 *(8)*
	3.4.2 Suicide mortality rate	WHO, 2021 *(5)*; underlying data source: WHO, 2021 *(9)*

Table A1.1 contd

SDG target	SDG indicator	Data source
3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol	3.5.1 Coverage of treatment interventions (pharmacological, psychosocial and rehabilitation and after-care services) for substance use disorders	Insufficient data
	3.5.2 Alcohol per capita consumption (aged 15 years and older) within a calendar year in litres of pure alcohol	WHO, 2021 *(5)*: underlying data source: WHO, 2018 *(10)*
3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents	3.6.1 Death rate due to road traffic injuries	WHO, 2021 *(5)*
3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes	3.7.1 Proportion of women of reproductive age (aged 15–49 years) who have their need for family planning satisfied with modern methods	WHO, 2021 *(5)*
	3.7.2 Adolescent birth rate (aged 10–14 years; aged 15–19 years) per 1000 women in that age group	WHO, 2021 *(5)*

Table A1.1 contd

SDG target	SDG indicator	Data source
3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all	3.8.1 Coverage of essential health services	WHO, 2021 *(5)*
	3.8.2 Proportion of population with large household expenditures on health as a share of total household expenditure or income	WHO, 2021 *(5)*
3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	3.9.1 Mortality rate attributed to household and ambient air pollution	WHO, 2021 *(5)*
	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe water, sanitation and hygiene for all (WASH) services)	WHO, 2021 *(5)*
	3.9.3 Mortality rate attributed to unintentional poisoning	WHO, 2021 *(5)*

Table A1.1 contd

SDG target	SDG indicator	Data source
3.a Strengthen the implementation of the WHO Framework Convention on Tobacco Control in all countries, as appropriate	3.a.1 Age-standardized prevalence of current tobacco use among people aged 15 years and older	WHO, 2021 *(5)*; underlying data source: WHO, 2019 *(11)*
3.b Support the research and development of vaccines and medicines for the communicable and noncommunicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all	3.b.1 Proportion of the target population covered by all vaccines included in their national programme	WHO, 2021 *(12)*
	3.b.2 Total net official development assistance to medical research and basic health sectors	Insufficient data
	3.b.3 Proportion of health facilities that have a core set of relevant essential medicines available and affordable on a sustainable basis	Insufficient data
3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States	3.c.1 Health worker density and distribution	WHO, 2021 *(5)*

Table A1.1 contd

SDG target	SDG indicator	Data source
3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks	3.d.1 International Health Regulations (IHR) capacity and health emergency preparedness	WHO, 2019 *(13)*
	3.d.2 Percentage of bloodstream infections due to selected antimicrobial-resistant organisms	European Centre for Disease Prevention and Control, 2020 *(14,15)*; WHO Regional Office for Europe, 2020 *(16)*
SDG 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture		
2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women, and older persons	2.2.2 Prevalence of malnutrition (weight for height >+2 or <–2 standard deviation from the median of the WHO child growth standards) among children under 5 years of age, by type (wasting and overweight)	WHO Regional Office for Europe, 2020 *(17)*
SDG 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all		
4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education	4.2.1 Proportion of children aged 24–59 months who are developmentally on track in health, learning and psychosocial well-being, by sex	UNICEF, 2021 *(18)*

Table A1.1 contd

SDG target	SDG indicator	Data source
SDG 5. Achieve gender equality and empower all women and girls		
5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation	5.2.1 Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of violence and by age	United Nations Economic Commission for Europe, 2021 *(19)*
SDG 6. Ensure availability and sustainable management of water and sanitation for all		
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking-water for all	6.1.1 Proportion of population using safely managed drinking-water services	WHO and UNICEF, 2021 *(20)*
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water	WHO and UNICEF, 2021 *(21)*
SDG 7. Ensure access to affordable, reliable, sustainable and modern energy for all		
7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	7.1.2 Proportion of population with primary reliance on clean fuels and technology	Insufficient data

Table A1.1 contd

SDG target	SDG indicator	Data source
SDG 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels		
16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children	16.2.1 Proportion of children aged 1–17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month	UNICEF, 2021 *(22)*

For the analysis in Chapter 2, the SDG indicators were arranged based on the three core priorities of the EPW *(24)*:

- moving towards UHC
- protecting against health emergencies
- promoting health and well-being.

Based on the compilation of areas of work under these three core priorities, each SDG indicator was assigned to one priority. This means that each SDG indicator is analysed in relation to only one priority, even though some of them are relevant for multiple areas of work.

Data quality and comparability

WHO databases are updated several times each year; therefore, the data presented in this Report are a snapshot of the most recent data available at the time this Report was written. Regional averages, along with specific indicator values for Member States in the Region, may change after publication of this Report since Member States can provide data retrospectively. Similarly, minimum and maximum values in the Region presented for some indicators should be interpreted with

caution, particularly for recent years, as here there can be the most gaps in data coverage. As can be seen in Chapter 2, this limits conclusions on progress towards SDG achievement since the baseline.

The Global Health Observatory data repository compiles datasets and provides access to many indicators on priority health topics including mortality and burden of diseases, the SDGs, NCDs and their risk factors, health systems and more. Many of these datasets represent the best estimates of WHO using methodologies for specific indicators that aim for comparability across countries and time. They are updated as more recent or revised data become available, or when significant changes occur in the methodology being used. Consequently, they are not necessarily the same as official national estimates, although WHO whenever possible will provide Member States with the opportunity to review and comment on data and estimates as part of a thorough country consultation process.

In cases where data were not available through WHO sources, other internationally recognized data collections and databases have been used.

Official United Nations databases have been used wherever possible. For specific information on the limitations of these indicators, please visit the source directly.

SPAR (State Party Self-Assessment Annual Reporting)

- SPAR reporting (see SDG 3.d.1) is an obligation of States Parties to the IHR and is used to report annually to the World Health Assembly on the status of a country's emergency preparedness based on 13 core capacities.
- WHO has no legal mandate to question or correct the reports that are submitted by States Parties, and no enforcement mechanism to ensure identified gaps are addressed. It is, therefore, up to each country to ensure that the data submitted are accurate and validated and that identified gaps are addressed. This limits the cross-country comparability of SPAR submissions from countries.
- This tool helps to identify capacities that are in place but does not measure their functionality during public health emergencies. Other tools/methodologies are designed for that, such as simulation exercises and intra/after action reviews, for which WHO guidance exists.

- SPAR mainly measures capacities at national level but does not capture the subnational situation.
- Furthermore, the tool is not intended to address unique characteristics of unknown emerging pathogens or severe pandemics such as the ongoing COVID-19 pandemic. Although experience with the COVID-19 response (in which crude epidemiological parameters did not correlate well with SPAR capacity scores) has shown that the tool may require revision, SPAR covers a wide range of health threats, and its integrity for long-term analyses of capacity development should be preserved. Additionally, direct comparisons of pandemic performance measured in epidemiological parameters (incidence or mortality) and SPAR scores should include consideration of confounding factors that are likely to influence comparisons.
- Good interpretation of SPAR data requires linkage to other national indicators that look at functionality of the system, at the whole-of-government approach, and at the financial commitment to fill the identified gaps.
- Based on lessons learned from the COVID-19 pandemic response, WHO and Member States are reviewing existing tools for emergency preparedness monitoring and evaluation (Chapter 4 contains information in this area).

Literature review and behavioural insights data analysis for impact of the COVID-19 pandemic on population health in Chapter 3

At the time of writing Chapter 3, few high-quality data were available that could be used for assessing the impact of the pandemic on population health. Therefore, for illustrating the wider impacts of the pandemic, emergent data and evidence from scientific literature were used, followed by reports by (inter)national organizations and NGOs. The wider impact framework, as developed in Strengthening population health surveillance *(25)*, was used as guidance for defining the topics discussed in Chapter 3. Available databases, Ovid MEDLINE®, Embase and Scopus were searched for recent literature. The selection of literature was based as much as possible on the common evidence-based medicine hierarchy, giving preference to

data from systematic reviews and meta-analyses, yet using narrative reviews and observational studies or case studies if evidence synthesis was lacking.

The WHO Regional Office for Europe launched a tool for collection of behavioural insights data in April 2020 with the support of the University of Erfurt, Germany. Since then, 34 Member States have made use of the tool either with direct support from the WHO Regional Office for Europe or independently. Chapter 3 describes a cross-sectional, observational study carried out in each Member State at multiple time points to assess a representative sample (1000) of the population for risk perceptions, behaviours, trust, well-being and other variables related to the COVID-19 pandemic. National ethical approval was obtained in every case and where the Regional Office provided support ethical clearance was also provided by WHO.

Data were collected through online panels, computer-assisted telephone interviews or a combination of both, most often by local data collection companies or by government or academic institutions. Data were analysed using the R tool. In addition to descriptive statistics, linear and logistic regression analyses were conducted using backwards elimination. The standardized coefficients were derived with 95% confidence intervals.

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ANNEX 2

Data analysed for Chapter 2

Table A2.1. Data collected for Chapter 2

SDG	2.2.2				3.1.1		3.1.2	3.2.1	3.2.2
Indicator	Country-specific prevalence of overweight (including obesity) according to WHO definition among children 6–9 years (%)		Country-specific prevalence of obesity according to WHO definition among aged children 6–9 years (%)		Estimated maternal mortality per 100 000 live births		Proportion of births attended by skilled health personnel (%)	Under-5 mortality rate (probability of dying by age 5 years per 1000 live births)	Neonatal mortality rate (per 1000 live births)
Data source	WHO Regional Office for Europe, 2021 *(1)*		WHO Regional Office for Europe, 2021 *(1)*		WHO, 2021 *(2)*	WHO, 2021 *(2)*	UNICEF, 2021 *(3)*	WHO, 2021 *(4)*	WHO, 2021 *(4)*
Country	Latest available data (2015–2017)		Latest available data (2015–2017)		2017	2015–2017 average	Latest available data (2011–2020)	2019	2019
	Boys	Girls	Boys	Girls					
Regional average	—	—	—	—	13.0	13.3	99.0	8.0	4.0
Albania	23.2	16.5	10.7	5.3	15.0	15.3	100.0	9.7	7.5
Andorra	—	—	—	—	—	—	100.0	3.0	1.4
Armenia	—	—	—	—	26.0	26.7	100.0	11.8	6.4
Austria	30.3	22.3	12.4	6.2	5.0	5.0	98.0	3.5	2.1
Azerbaijan	—	—	—	—	26.0	26.3	99.0	20.4	10.9
Belarus	—	—	—	—	2.0	2.7	100.0	3.2	1.2
Belgium	—	—	—	—	5.0	5.0	—	3.4	2.0
Bosnia and Herzegovina	—	—	—	—	10.0	10.0	100.0	5.9	4.2
Bulgaria	30.2	28.6	15.7	11.4	10.0	10.0	100.0	6.7	3.3
Croatia	37.1	28.5	16.2	10.3	8.0	7.7	100.0	4.8	2.9
Cyprus	43.0	43.1	21.5	19.2	6.0	6.3	99.0	2.3	1.3
Czechia	22.9	19.1	10.9	5.5	3.0	3.7	100.0	3.2	1.6
Denmark	17.6	20.1	4.9	5.1	4.0	4.0	95.0	3.8	3.0
Estonia	28.6	23.3	11.4	7.9	9.0	10.0	100.0	2.4	1.1
Finland	28.3	26.7	11.5	9.0	3.0	3.0	100.0	2.4	1.4
France	24.6	23.4	8.9	6.2	8.0	8.0	98.0	4.5	2.7
Georgia	26.1	22.2	10.3	7.2	25.0	26.0	100.0	9.6	4.9
Germany	—	—	—	—	7.0	5.7	99.0	3.8	2.3
Greece	42.0	37.8	20.1	14.3	3.0	3.0	—	3.8	2.3
Hungary	28.0	27.8	14.1	11.2	12.0	12.0	100.0	3.7	2.0
Iceland	—	—	—	—	4.0	4.0	98.0	2.0	1.0
Ireland	27.1	19.8	9.3	5.3	5.0	5.7	100.0	3.3	2.1
Israel	—	—	—	—	3.0	3.0	—	3.7	1.9
Italy	41.9	38.5	21.0	14.0	2.0	2.0	100.0	3.1	1.9
Kazakhstan	17.5	19.8	4.8	6.2	10.0	10.7	100.0	10.5	4.7
Kyrgyzstan	10.9	8.8	3.5	1.6	60.0	63.0	100.0	18.3	12.3
Latvia	24.8	20.6	8.8	6.5	19.0	22.7	100.0	3.6	1.9
Lithuania	28.5	22.9	12.2	7.8	8.0	8.3	100.0	3.7	2.0
Luxembourg	—	—	—	—	5.0	5.0	—	2.8	1.5
Malta	37.0	34.6	18.0	14.9	6.0	6.3	100.0	7.0	4.7
Monaco	—	—	—	—	—	—	—	3.1	1.7
Montenegro	37.4	28.8	18.9	8.7	6.0	6.0	99.0	2.3	1.3
Netherlands	—	—	—	—	5.0	5.7	—	4.0	2.6
North Macedonia	32.2	29.5	17.3	12.9	7.0	7.7	100.0	6.1	3.9
Norway	24.0	22.4	7.2	4.7	2.0	2.7	99.0	2.4	1.4
Poland	31.7	28.8	14.3	10.5	2.0	2.0	100.0	4.4	2.7
Portugal	29.0	32.4	12.0	10.7	8.0	8.7	100.0	3.7	2.0
Republic of Moldova	—	—	—	—	19.0	20.3	100.0	14.4	10.7
Romania	30.6	25.8	15.0	8.8	19.0	20.3	95.0	7.0	3.4
Russian Federation	27.0	22.4	10.2	6.5	17.0	17.7	100.0	5.8	2.6
San Marino	39.1	32.2	19.5	8.7	—	—	—	1.7	0.8
Serbia	32.6	28.5	15.0	9.7	12.0	12.3	100.0	5.3	3.2
Slovakia	30.1	23.3	12.4	10.5	5.0	5.7	98.0	5.8	2.9
Slovenia	24.3	24.5	10.5	8.4	7.0	7.0	100.0	2.1	1.2
Spain	42.2	40.4	18.7	16.8	4.0	4.0	100.0	3.1	1.8
Sweden	27.5	28.2	10.4	7.1	4.0	4.0	—	2.6	1.4
Switzerland	—	—	—	—	5.0	5.0	—	4.0	2.8
Tajikistan	9.4	5.2	1.8	1.1	17.0	17.3	95.0	33.8	15.0
Turkey	27.3	25.4	12.7	8.8	17.0	18.0	99.0	10.0	5.3
Turkmenistan	11.5	11.4	3.6	2.3	7.0	7.7	100.0	42.0	23.6
Ukraine	—	—	—	—	19.0	20.0	100.0	8.4	5.0
United Kingdom	—	—	—	—	7.0	7.3	—	4.3	2.8
Uzbekistan	—	—	—	—	29.0	29.3	100.0	17.4	9.9
Number of countries for which data are unavailable	18	18	18	18	3	3	10	0	0

Table A2.1 contd

SDG	3.3.1	3.3.2	3.4.1	3.4.2	3.5.2	3.6.1
Indicator	**New HIV infections per 1000 population**	**TB incidence per 100 000 population**	**Probability (%) of dying between ages 30 and 70 years from any of cardiovascular diseases, cancer, diabetes, or chronic respiratory disease**	**Age-standardized estimated suicide mortality rate per 100 000 population**	**Alcohol, total per capita (15+) consumption in litres of pure alcohol**	**Road traffic mortality rate (per 100 000 population)**
Data source	WHO Regional Office for Europe, 2020 *(5)*	WHO Regional Office for Europe, 2020 *(6)*	WHO, 2021 *(4)*	WHO, 2021 *(4)*	WHO, 2021 *(4)*	WHO, 2021 *(4)*
Country	**2019**	**2019**	**Latest available data (2007–2019)**	**2019**	**2019**	**2019**
Regional average	15.4	26.0	15.6	10.5	9.5	7.4
Albania	3.5	16.0	8.4	3.7	6.8	11.7
Andorra	—	7.5	7.4	—	12.3	—
Armenia	15.1	26.0	19.0	2.7	4.7	20.0
Austria	2.5	6.2	9.8	10.4	11.9	4.9
Azerbaijan	7.2	60.0	21.6	4.0	1.0	6.7
Belarus	22.6	29.0	24.0	16.5	11.0	7.6
Belgium	—	8.9	10.2	13.9	10.8	5.8
Bosnia and Herzegovina	0.9	27.0	19.3	8.2	7.8	13.5
Bulgaria	3.7	21.0	23.0	6.5	12.5	9.2
Croatia	2.5	8.0	16.6	11.0	8.7	7.9
Cyprus	11.4	5.3	9.0	3.2	10.8	5.8
Czechia	2.1	4.9	13.8	9.5	14.3	5.9
Denmark	3.3	5.0	10.3	7.6	10.1	3.7
Estonia	13.4	13.0	16.5	12.0	10.8	4.5
Finland	2.7	4.7	9.8	13.4	10.7	3.9
France	7.3	8.7	9.9	9.6	12.2	5.1
Georgia	16.7	74.0	19.4	7.6	9.5	12.4
Germany	3.7	5.8	10.8	8.3	12.8	3.8
Greece	5.6	4.3	11.5	3.6	10.5	8.3
Hungary	2.4	6.3	22.0	11.8	11.1	7.7
Iceland	7.8	4.4	8.2	11.2	9.2	2.0
Ireland	10.9	5.8	10.4	8.9	12.7	3.1
Israel	4.8	2.9	7.8	5.1	4.4	3.9
Italy	4.2	7.1	9.1	4.3	8.0	5.3
Kazakhstan	19.8	68.0	19.6	18.1	5.0	12.7
Kyrgyzstan	13.2	110.0	21.9	8.3	4.9	12.7
Latvia	15.4	26.0	21.8	16.1	13.2	8.1
Lithuania	5.4	42.0	19.1	20.2	12.8	8.1
Luxembourg	7.8	9.0	6.9	8.6	12.4	4.1
Malta	16.2	14.0	10.2	5.3	8.3	4.1
Monaco	—	0.0	—	—	—	—
Montenegro	4.1	15.0	19.5	16.2	12.2	7.6
Netherlands	3.3	5.0	9.8	9.3	9.7	4.0
North Macedonia	—	12.0	19.8	7.2	6.4	5.1
Norway	3.2	3.3	8.8	9.9	7.1	2.1
Poland	3.9	15.0	16.2	9.3	11.9	9.4
Portugal	7.6	19.0	10.5	7.2	12.1	8.2
Republic of Moldova	22.8	80.0	24.2	12.2	12.9	7.3
Romania	3.6	66.0	21.1	7.3	12.3	10.3
Russian Federation	54.9	50.0	22.9	21.6	10.5	12.0
San Marino	0.0	0.0	7.1	—	—	—
Serbia	2.0	14.0	20.7	7.9	8.9	7.5
Slovakia	1.9	4.5	17.8	9.3	11.1	6.1
Slovenia	1.6	5.4	10.8	14.0	12.1	5.1
Spain	5.6	9.3	9.5	5.3	12.7	3.9
Sweden	4.4	5.5	8.3	12.4	9.0	3.1
Switzerland	4.9	5.4	7.6	9.8	11.2	2.2
Tajikistan	14.2	83.0	23.1	5.3	0.9	15.7
Turkey	3.9	16.0	12.5	2.3	1.8	6.7
Turkmenistan	—	45.0	26.9	6.1	3.1	13.5
Ukraine	39.0	77.0	24.6	17.7	8.3	10.2
United Kingdom	6.2	8.0	11.0	6.9	11.4	3.2
Uzbekistan	—	67.0	22.2	8.3	2.6	11.7
Number of countries for which data are unavailable	6	0	1	3	2	3

Table A2.1 contd

SDG	3.7.1	3.7.2	3.8.1	3.8.2		3.9.1
Indicator	Women of reproductive age (15–49 years) who are married or in union and have their need for family planning satisfied by modern methods	Adolescent birth rate (per 1000 women aged 15–19 years)	UHC SCI	Population with household expenditures on health >10% of total household expenditure or income (%)	Population with household expenditures on health >25% of total household expenditure or income (%)	Mortality rate atributed to ambient air pollution (per 100 000 population, age-standardized)
Data source	WHO, 2021 *(4)*	WHO, 2021 *(4)*	WHO, 2021 *(4)*	WHO, 2021 *(4)*	WHO, 2021 *(4)*	WHO, 2021 *(4)*
Country	2020	Latest available data (2014–2018)	2017	Latest available data (1995–2016)	Latest available data (1995–2016)	2016
Regional average	76.7	17.1	77.0	7.4	1.2	36.3
Albania	9.1	15.9	59.0	16.7	5.0	68.0
Andorra	—	2.7	—	—	—	—
Armenia	43.3	21.2	69.0	16.1	4.9	54.8
Austria	88.9	6.7	79.0	4.3	0.7	15.3
Azerbaijan	31.3	45.0	65.0	8.1	1.1	64.0
Belarus	78.0	14.2	76.0	9.2	0.7	60.7
Belgium	90.5	5.9	84.0	11.5	1.4	15.7
Bosnia and Herzegovina	37.3	11.0	61.0	8.2	1.4	—
Bulgaria	69.4	38.2	66.0	12.8	0.8	61.8
Croatia	61.7	9.1	71.0	2.8	0.3	35.5
Cyprus	—	4.4	78.0	16.1	1.5	20.1
Czechia	83.8	12.1	76.0	2.2	0.1	29.6
Denmark	87.5	2.8	81.0	2.9	0.5	13.2
Estonia	79.9	10.5	75.0	12.8	2.7	25.0
Finland	90.1	4.9	78.0	6.4	1.0	7.2
France	91.5	8.6	78.0	1.4	0.2	9.7
Georgia	50.6	32.3	66.0	29.2	9.0	101.8
Germany	87.7	5.7	83.0	1.7	0.1	16.0
Greece	64.7	8.6	75.0	16.9	1.6	27.6
Hungary	79.5	22.9	74.0	7.4	0.3	38.8
Iceland	—	6.0	84.0	6.9	0.9	8.7
Ireland	87.5	7.2	76.0	6.4	0.7	12.0
Israel	68.1	9.9	82.0	6.7	1.0	15.4
Italy	73.6	4.4	82.0	9.3	1.1	15.0
Kazakhstan	75.3	25.6	76.0	2.6	0.1	62.7
Kyrgyzstan	66.0	33.9	70.0	3.5	0.7	110.7
Latvia	80.0	16.1	71.0	15.5	3.5	41.3
Lithuania	71.0	12.6	73.0	9.8	1.6	34.0
Luxembourg	—	4.0	83.0	3.4	0.2	11.6
Malta	74.5	12.5	82.0	15.9	2.8	20.2
Monaco	—	—	—	—	—	—
Montenegro	39.6	10.0	68.0	10.3	0.8	78.6
Netherlands	88.9	2.9	86.0	—	—	13.7
North Macedonia	35.1	15.1	72.0	5.4	0.6	—
Norway	88.5	2.9	87.0	5.1	0.5	8.6
Poland	71.9	11.1	75.0	14.1	1.3	37.9
Portugal	78.5	8.0	82.0	18.4	3.3	9.8
Republic of Moldova	65.5	21.4	69.0	18.7	3.6	78.3
Romania	73.8	38.1	74.0	13.4	2.2	59.3
Russian Federation	74.7	21.5	75.0	4.9	0.6	49.4
San Marino	—	1.4	—	—	—	—
Serbia	50.5	15.2	65.0	8.1	0.5	62.5
Slovakia	78.2	26.8	77.0	3.8	0.4	33.5
Slovenia	77.9	4.1	79.0	2.9	0.3	22.6
Spain	85.0	7.1	83.0	5.7	1.2	9.9
Sweden	86.5	4.6	86.0	5.5	0.7	7.2
Switzerland	88.8	2.4	83.0	19.7	6.7	10.1
Tajikistan	54.0	54.3	68.0	17.7	5.7	—
Turkey	60.8	20.9	74.0	3.2	0.4	46.6
Turkmenistan	75.9	28.0	70.0	—	—	79.3
Ukraine	73.5	19.1	68.0	7.8	0.9	70.7
United Kingdom	85.4	12.4	87.0	1.6	0.5	13.8
Uzbekistan	83.7	18.9	73.0	6.7	1.9	81.1
Number of countries for which data are unavailable	6	1	3	5	5	6

Table A2.1 contd

SDG	3.9.2	3.9.3	3.a	3.b.1		
Indicator	Mortality rate attributed to exposure to unsafe WASH services (per 100 000 population)	Mortality rate from unintentional poisoning (per 100 000 population)	Age-standardized prevalence of current tobacco smoking among persons aged 15 years and above	DTP3 immunization coverage among 1-year-olds (%)	MCV2 immunization coverage by the nationally recommended age (%)	Pneumococcal conjugate vaccine immunization coverage among 1-year-olds (%)
Data source	WHO, 2021 *(4)*	WHO, 2021 *(4)*	WHO, 2021 *(4)*	WHO, 2021 *(7)*	WHO, 2021 *(7)*	WHO, 2021 *(7)*
Country	2016	2019	2018	2019	2019	2019
Regional average	0.3	1.1	26.3	95.0	91.0	80.0
Albania	0.2	0.3	29.2	99.0	96.0	96.0
Andorra	—	—	33.8	99.0	94.0	96.0
Armenia	0.2	0.7	26.7	92.0	96.0	92.0
Austria	0.1	0.2	29.1	85.0	84.0	—
Azerbaijan	1.1	0.9	19.6	94.0	97.0	95.0
Belarus	0.1	3.3	26.6	98.0	98.0	—
Belgium	0.3	0.4	25.0	98.0	85.0	94.0
Bosnia and Herzegovina	0.1	0.4	38.3	73.0	76.0	—
Bulgaria	0.1	0.5	38.9	93.0	95.0	88.0
Croatia	0.1	0.4	36.6	94.0	95.0	—
Cyprus	0.3	0.3	36.7	96.0	88.0	81.0
Czechia	0.2	0.4	31.5	97.0	84.0	—
Denmark	0.3	0.1	18.6	97.0	90.0	97.0
Estonia	<0.1	0.6	30.5	91.0	90.0	—
Finland	<0.1	0.4	19.7	91.0	93.0	89.0
France	0.3	0.3	34.6	96.0	83.0	92.0
Georgia	0.2	0.6	29.7	94.0	97.0	84.0
Germany	0.6	0.3	28.0	93.0	93.0	84.0
Greece	<0.1	0.2	39.1	99.0	83.0	96.0
Hungary	0.2	0.5	30.6	99.0	99.0	99.0
Iceland	0.1	1.0	13.8	92.0	94.0	92.0
Ireland	0.1	0.3	23.6	94.0	—	86.0
Israel	0.2	0.0	25.5	98.0	96.0	95.0
Italy	0.1	0.3	23.4	96.0	88.0	92.0
Kazakhstan	0.4	1.9	24.4	97.0	98.0	89.0
Kyrgyzstan	0.8	0.9	27.9	95.0	98.0	96.0
Latvia	<0.1	1.2	36.7	99.0	96.0	84.0
Lithuania	0.1	1.7	27.1	92.0	93.0	82.0
Luxembourg	<0.1	0.2	21.7	99.0	90.0	96.0
Malta	<0.1	0.1	25.1	98.0	95.0	—
Monaco	—	—	—	99.0	79.0	—
Montenegro	<0.1	0.6	—	85.0	81.0	—
Netherlands	0.2	0.1	23.4	94.0	90.0	93.0
North Macedonia	0.1	0.5	—	92.0	94.0	—
Norway	0.2	0.3	18.4	97.0	95.0	95.0
Poland	0.1	0.5	26.0	95.0	92.0	60.0
Portugal	0.2	0.3	27.9	99.0	96.0	98.0
Republic of Moldova	0.1	5.5	25.3	91.0	95.0	80.0
Romania	0.4	1.9	25.5	88.0	76.0	88.0
Russian Federation	0.1	3.8	28.3	97.0	97.0	85.0
San Marino	—	—	—	88.0	79.0	76.0
Serbia	0.7	0.3	40.6	97.0	91.0	99.0
Slovakia	<0.1	0.5	32.3	97.0	98.0	96.0
Slovenia	<0.1	0.2	22.7	95.0	94.0	65.0
Spain	0.2	0.4	27.9	96.0	94.0	95.0
Sweden	0.2	0.2	28.8	98.0	95.0	97.0
Switzerland	0.1	0.2	25.1	96.0	90.0	84.0
Tajikistan	2.7	0.4	—	97.0	97.0	—
Turkey	0.3	0.4	25.5	99.0	88.0	97.0
Turkmenistan	4.0	0.6	—	99.0	99.0	—
Ukraine	0.3	2.5	19.2	80.0	92.0	—
United Kingdom	0.2	0.3	29.3	93.0	87.0	91.0
Uzbekistan	0.4	0.8	12.3	96.0	99.0	99.0
Number of countries for which data are unavailable	3	3	6	0	1	13

Table A2.1 contd

SDG	3.b.1	3.c.1		3.d.1	3.d.2	
Indicator	Girls aged 15 years old who received the recommended doses of human papillomavirus vaccine (%)	Density of medical doctors (per 10 000 population)	Density of nursing and midwifery personnel (per 10 000 population)	IHR (2005) capacity and health emergency preparedness	Bloodstream infection due to E. coli resistant to 3GC (%)	Bloodstream infection due to MRSA (%)
Data source	WHO, 2021 *(7)*	WHO, 2021 *(4)*	WHO, 2021 *(4)*	WHO, 2019 *(8)*	European Centre for Disease Prevention and Control, 2020 *(9)*	WHO Regional Office for Europe, 2020 *(10)*
Country	2019	Latest available data (2011–2019)	Latest available data (2011–2019)	2020	2019	2020
Regional average	27.0	43.2	77.8	74.0	—	—
Albania	—	16.5	50.9	73.0	—	—
Andorra	64.0	33.3	40.1	41.0	—	—
Armenia	7.0	44.0	43.7	84.0	30.0	8.0
Austria	—	52.1	70.9	67.0	9.3	5.6
Azerbaijan	—	34.5	64.3	86.0	—	—
Belarus	—	51.9	110.0	97.0	40.0	36.0
Belgium	67.0	59.6	118.1	81.0	10.0	6.7
Bosnia and Herzegovina	—	21.6	57.3	—	20.0	11.0
Bulgaria	4.0	42.1	47.9	70.0	38.6	14.8
Croatia	—	30.0	81.2	78.0	19.9	24.9
Cyprus	64.0	19.5	2.8	67.0	20.7	36.2
Czechia	—	41.2	84.2	—	15.9	12.5
Denmark	62.0	42.2	105.5	94.0	7.5	2.2
Estonia	54.0	34.6	66.3	72.0	11.5	3.0
Finland	60.0	46.4	13.1	82.0	7.8	2.1
France	33.0	65.3	114.7	83.0	8.8	11.6
Georgia	—	70.8	52.2	59.0	56.0	17.0
Germany	43.0	43.0	134.9	89.0	11.5	6.7
Greece	—	62.3	37.0	60.0	18.9	37.6
Hungary	78.0	34.1	52.6	66.0	20.6	19.4
Iceland	93.0	41.4	171.9	—	7.0	6.6
Ireland	69.0	33.5	130.1	64.0	12.1	12.6
Israel	54.0	54.7	66.0	—	—	—
Italy	52.0	80.1	58.9	83.0	30.9	35.6
Kazakhstan	—	39.8	72.9	81.0	—	—
Kyrgyzstan	—	22.1	56.0	52.0	—	—
Latvia	51.0	33.0	46.2	77.0	19.7	7.4
Lithuania	66.0	50.4	94.5	85.0	13.9	9.3
Luxembourg	14.0	30.1	121.7	95.0	12.6	6.2
Malta	81.0	28.6	94.8	61.0	17.5	24.0
Monaco	—	75.1	201.6	—	—	—
Montenegro	—	27.6	52.3	55.0	38.0	26.0
Netherlands	53.0	37.1	114.9	90.0	7.5	1.6
North Macedonia	40.0	28.7	37.9	66.0	61.0	45.0
Norway	91.0	48.9	183.5	94.0	6.2	1.1
Poland	—	23.8	68.9	50.0	17.1	14.9
Portugal	81.0	53.1	69.0	82.0	16.1	34.8
Republic of Moldova	31.0	25.6	39.3	62.0	59.0	22.0
Romania	—	29.8	73.9	67.0	20.3	46.7
Russian Federation	—	44.4	45.3	100.0	53.0	23.0
San Marino	50.0	61.1	82.1	33.0	—	—
Serbia	—	31.1	60.9	71.0	25.0	26.0
Slovakia	59.0	35.2	60.2	72.0	23.0	27.2
Slovenia	79.0	31.7	102.2	—	9.8	7.5
Spain	—	40.3	60.8	88.0	14.0	19.2
Sweden	80.0	43.3	216.7	91.0	7.8	1.8
Switzerland	59.0	43.3	178.9	—	10.0	3.0
Tajikistan	—	17.2	47.5	—	—	—
Turkey	99.0	18.1	30.0	88.0	53.0	31.0
Turkmenistan	—	22.2	44.3	68.0	—	—
Ukraine	—	29.9	66.6	69.0	43.0	2.0
United Kingdom	82.0	58.2	102.9	95.0	11.5	6.0
Uzbekistan	—	23.7	112.8	55.0	—	—
Number of countries for which data are unavailable	22	0	0	8	12	12

Table A2.1 contd

SDG	4.2.1			5.2.1	6.1.1	6.1.2	16.2.1	Crude cumulative COVID-19-related deaths per million population
Indicator	Proportion of children aged 24–59 months who are developmentally on track in health, learning and psychosocial well-being			Proportion of ever-partnered women and girls subjected to physical and/or sexual violence by a current or former intimate partner in the previous 12 months, by age (%)	Population using safely managed drinking-water services (%)	Population using safely managed sanitation services (%)	Proportion of children aged 1–17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month	
Data source	UNICEF, 2021 *(11)*			United Nations Economic Commission for Europe, 2021 *(12)*	WHO and UNICEF, 2021 *(13)*	WHO and UNICEF, 2021 *(14,15)*	UNICEF, 2021 *(16)*	WHO European Region database
Country	2019			2018	2020	2020	Latest available data (2006–2019)	14/09/2021
	Girls	Boys	Total					
Regional average	—	—	—	—	91.8	70.1	—	—
Albania	—	—	—	6.2	71.0	48.0	48.0	885.4
Andorra	—	—	—	—	91.0	100.0	—	1682.5
Armenia	—	—	—	4.6	87.0	69.0	69.0	1698.8
Austria	—	—	—	3.6	99.0	100.0	—	1193.9
Azerbaijan	—	—	—	5.2	88.0	—	77.0	605.0
Belarus	89.0	84.0	87.0	6.3	95.0	74.0	57.0	2210.7
Belgium	—	—	—	4.8	100.0	89.0	—	3067.8
Bosnia and Herzegovina	97.6	95.3	96.4	3.4	89.0	—	55.0	415.8
Bulgaria	—	—	—	5.9	98.0	72.0	—	2828.3
Croatia	—	—	—	4.0	—	68.0	—	2083.7
Cyprus	—	—	—	3.1	100.0	77.0	—	599.1
Czechia	—	—	—	4.1	98.0	85.0	—	2844.2
Denmark	—	—	—	3.3	97.0	92.0	—	448.9
Estonia	—	—	—	4.2	96.0	93.0	—	1114.5
Finland	—	—	—	8.1	100.0	84.0	—	988.0
France	—	—	—	5.0	99.0	79.0	—	188.0
Georgia	88.5	90.8	89.6	2.9	66.0	34.0	67.0	1717.2
Germany	—	—	—	—	100.0	97.0	—	2077.4
Greece	—	—	—	5.1	100.0	92.0	—	1327.0
Hungary	—	—	—	5.7	93.0	88.0	—	3081.2
Iceland	—	—	—	2.8	100.0	84.0	—	90.6
Ireland	—	—	—	3.3	97.0	83.0	—	1038.4
Israel	—	—	—	5.6	99.0	95.0	—	855.6
Italy	—	—	—	3.5	96.0	96.0	—	2178.9
Kazakhstan	86.3	84.8	85.5	6.0	89.0	—	53.0	800.5
Kyrgyzstan	75.0	68.2	71.7	—	70.0	92.0	74.0	394.8
Latvia	—	—	—	6.3	96.0	83.0	—	1496.9
Lithuania	—	—	—	5.2	95.0	94.0	—	1689.6
Luxembourg	—	—	—	3.5	99.0	97.0	—	1332.0
Malta	—	—	—	4.0	100.0	92.0	—	1369.7
Monaco	—	—	—	—	100.0	100.0	—	872.6
Montenegro	90.6	90.0	90.2	4.4	85.0	45.0	66.0	1620.2
Netherlands	—	—	—	5.1	100.0	97.0	—	3012.9
North Macedonia	89.3	75.9	81.8	4.2	77.0	12.0	69.0	2866.0
Norway	—	—	—	4.4	99.0	65.0	—	891.9
Poland	—	—	—	3.1	98.0	91.0	—	1038.2
Portugal	—	—	—	4.4	95.0	85.0	—	154.4
Republic of Moldova	84.2	83.4	83.8	9.1	74.0	—	76.0	1987.3
Romania	—	—	—	6.9	82.0	83.0	—	1735.3
Russian Federation	—	—	—	—	76.0	61.0	—	1817.6
San Marino	—	—	—	—	100.0	70.0	—	1331.1
Serbia	98.5	95.9	97.2	—	75.0	18.0	43.0	2651.9
Slovakia	—	—	—	5.9	99.0	82.0	—	1804.1
Slovenia	—	—	—	3.4	98.0	72.0	—	1093.6
Spain	—	—	—	2.9	100.0	96.0	—	2301.6
Sweden	—	—	—	6.3	100.0	95.0	—	2286.9
Switzerland	—	—	—	1.7	94.0	100.0	—	1423.7
Tajikistan	—	—	—	—	55.0	—	69.0	1216.6
Turkey	78.0	69.8	73.7	—	—	78.0	—	13.1
Turkmenistan	95.3	94.7	95.0	—	95.0	—	68.6	712.8
Ukraine	89.3	88.7	89.0	8.7	89.0	72.0	61.0	1245.2
United Kingdom	—	—	—	4.2	100.0	98.0	—	1977.7
Uzbekistan	—	—	—	—	59.0	—	—	34.8
Number of countries for which data are unavailable	42	42	42	12	2	7	39	0

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THE WHO REGIONAL OFFICE FOR EUROPE

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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The publication of the European Health Report every three years gives readers – including policy-makers, politicians, public health specialists and journalists – a vital snapshot of health in the WHO European Region and progress towards health and well-being for all. The European Health Report 2021 shows trends in and progress towards the health-related Sustainable Development Goals (SDGs), and the goals of the European Programme of Work 2020–2025 and provides insights into the effects of the COVID-19 pandemic on population health. It reveals gaps in progress, persistent health inequalities and other areas of concern and uncertainty, where action must be taken. The Report also lays bare, and not for the first time, considerable data gaps for key indicators, as well as operational problems in Member States' health information systems. As strong health information systems are a prerequisite for evidence-informed policy-making, overcoming these issues is critical. The Report describes how the WHO Regional Office for Europe aims to support Member States in tackling the major challenges in the Region and building back better after the pandemic. The European Health Report 2021 is a valuable, comprehensive direction-setting resource to inform future work for the WHO Regional Office for Europe together with Member States, demonstrating where action is most urgently needed to make sure that we get back on track to achieve the health-related SDGs. Today's actions and decisions will be felt for generations to come.

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