



Special Commission of Inquiry into Healthcare Funding

Submission Number: 158
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Date Received: 31/10/2023

Outcome Based, Data -Driven
Optimisation of Staff **Morale** and
Performance – Keeping Australia
Ahead of the
W.H.O. defined European “Crisis”

31 October 2023

1. How is the Australian Health System **performing** currently ?



Health expenditure Australia 2021-22

Web report | Last updated: 25 Oct 2023 | Topic: [Health & welfare expenditure](#) | [Media release](#)



Summary

In 2021-22, an estimated \$241.3 billion was spent on health goods and services in Australia. This equated to an average of approximately \$9,365 per person and comprised 10.5% of overall economic activity.

After adjusting for inflation, total health spending (recurrent and capital) was 6.0% more than in 2020-21. This was higher than the average yearly growth rate over the decade to 2021-22 (3.4%).

Growth in per person health expenditure in 2021-22 was 5.4% in real terms, similar to the growth in 2020-21 (6.6%), but well above the average growth rate over the decade up to 2021-22 of 2.0%. This can be attributed to the impact of the pandemic which resulted in increased health expenditure and decreased population growth.

Governments funded around 72.9% of health spending - \$105.8 billion by the Australian Government and \$70.2 billion by state and territory governments in 2021-22.

Unlike the previous year, when health spending by government and non-government sources increased, in 2021-22 government spending grew by 9.5% while non-government spending declined by 2.4% in real terms.

The ratio of government health spending to total government expenses across all portfolios increased by 1.8 percentage points (from 15.5% in 2020-21 to 17.2% in 2021-22). This indicates that growth in government health spending grew stronger than other areas of government expenses.

Figure 1a: Nominal (a) and real (b) total health expenditure, 2011-12 to 2021-22

The line graph shows that total health spending in both current and constant prices increased each year from 2011-12 to 2021-22. Total health spending in current prices increased from \$141.5 billion in 2011-12 to \$241.3 billion in 2021-22. In the same period, total health spending in constant prices increased from \$173 billion to \$241.3 billion.

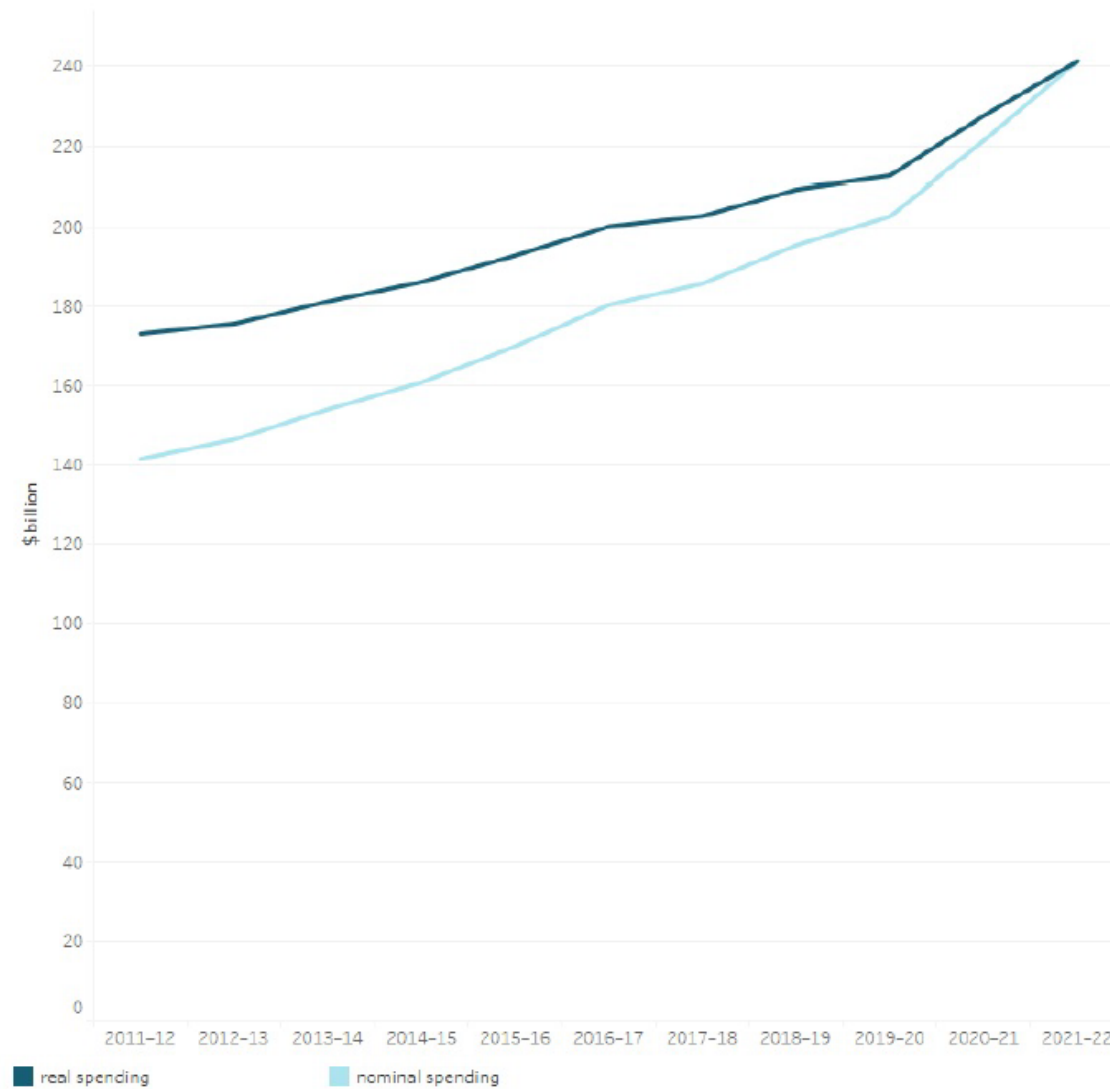
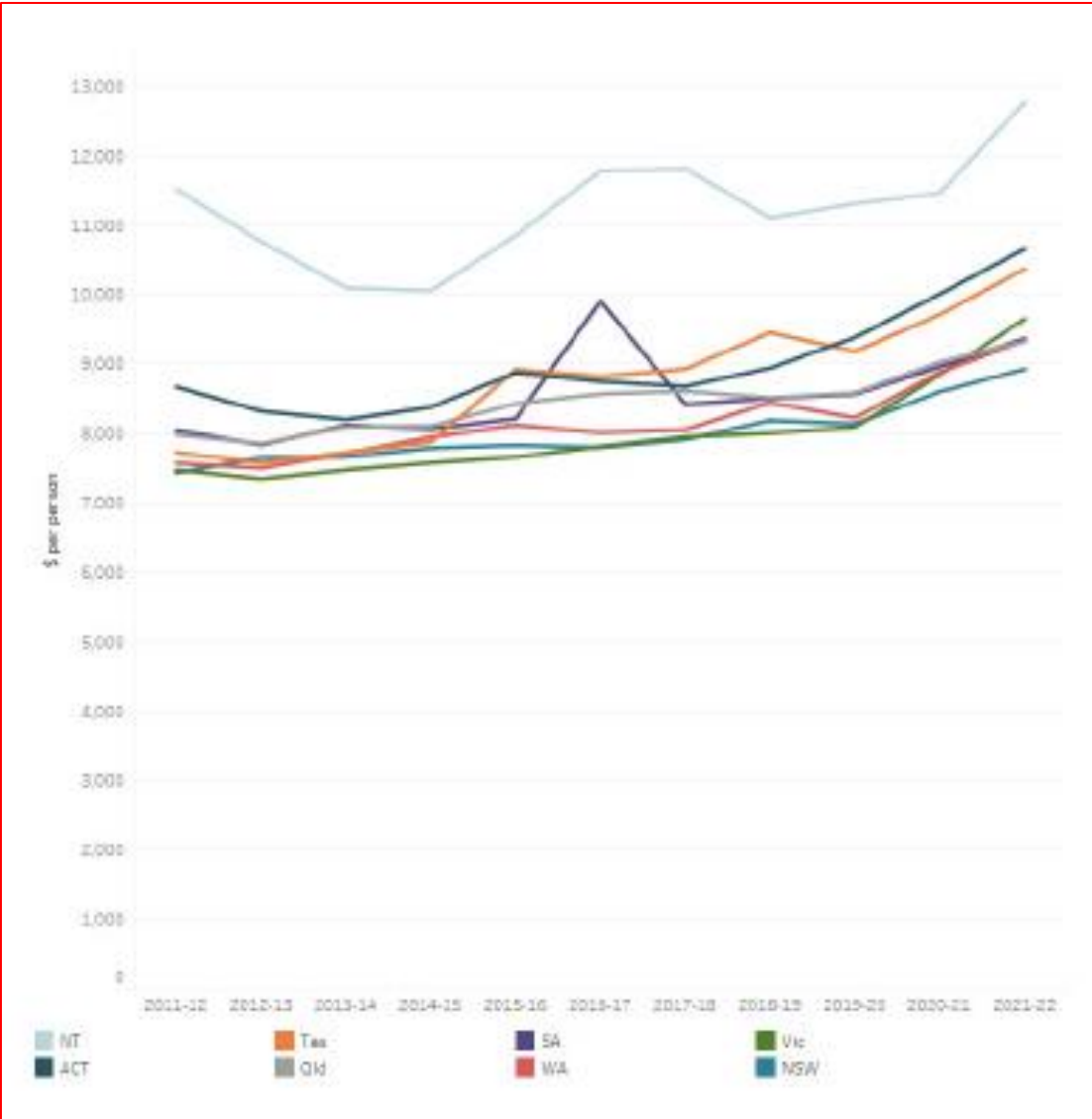


Figure 4: Average total health expenditure per person (a) for each state and territory, constant prices (b), 2011-12 to 2021-22

The line graph shows that average total health spending per person for each state and territory increased overall from 2011-12 to 2021-22. Australian Capital Territory is excluded from the graph, as the Australian Capital Territory population is not an appropriate denominator. In the 10-year period, Northern Territory maintained the highest average total health spending per person while the other states and territories recording similar values.



2.What are the Health Concerns **Globally** ?

Framework for action on the health and care workforce in the WHO European Region 2023–2030

The WHO Regional Office for Europe report *Health and care workforce in Europe: time to act*, which was launched at the 72nd session of the WHO Regional Committee for Europe, highlighted the challenges faced by the European health and care workforce. Many of these challenges are long-standing, but they were exacerbated by the COVID-19 pandemic. Urgent action is required to retain health and care workers, especially in rural and underserved areas; to protect their mental and physical health and well-being; to enhance their recruitment; to optimize their performance; and to ensure a supply of health and care workers to meet future needs.

The proposed framework for action on the health and care workforce in the WHO European Region 2023–2030 builds on the 2017 action framework and addresses new realities as well as long-standing challenges. Proposed actions support the advancement of the European Programme of Work, 2020–2025, including its flagship initiatives, and items that will be discussed by the Regional Committee at its 73rd session, such as primary health care, emergency preparedness, and refugee and migrant health.

This working document is submitted to the Regional Committee for consideration at its 73rd session,

PILLARS OF THE FRAMEWORK FOR ACTION 2023–2030

9. The framework for action has five interrelated pillars (Fig. 1):

- pillar 1: retain and recruit
- pillar 2: build supply
- pillar 3: optimize performance
- pillar 4: plan
- pillar 5: invest.

Fig. 1. Framework for action on the health and care workforce in the WHO European Region 2023–2030



HCWF: health and care workforce; SDG: sustainable development goal; HRH: human resources for health.



INVEST

- Increase public investment and optimize use of funds
- Make the case for investing in the health and care workforce:
 - economic and social contribution of the HCWF
 - vital component of rural development
 - fundamental role in ageing societies
 - critical to the SDG agenda



BUILD SUPPLY

- Modernize education and training
- Strengthen continuous professional development
- Build digital health competencies



RETAIN AND RECRUIT

- Improve working conditions
- Ensure fair remuneration
- Safeguard health and well-being
- Recognize gender-responsive policies
- Zero tolerance of abuse and violence
- Attract young students
- Recruit and retain in rural and under-served areas
- Address outmigration; ethical recruitment



OPTIMIZE PERFORMANCE

- Redefine teams and skill mix
- Improve interactions with patients
- Promote appropriate use of digital technologies
- Reconfigure services to be more efficient



PLAN

- Plan and forecast needs
- Adopt intersectoral approach to planning
- Strengthen capacity of HRH units
- Regulate education, service delivery and professions
- Strengthen HRH information systems



Health and care workforce in Europe: time to act



The aim of this report is to present for the first time a picture of the health and care workforce (HCWF) in the WHO European Region based on available data provided by countries in 2022. The focus is on the main policy options that can help countries strengthen their HCWF to meet current and future health needs and progress towards universal health coverage (UHC).

The report concentrates on six health professions for which data of sufficient quality are available. It therefore does not consider the entire breadth of the HCWF, including informal carers, due to current challenges around access to reliable data for these groups.

The COVID-19 pandemic has demonstrated the strengths and fragilities of the HCWF in the European Region

Many Member States entered the COVID-19 emergency with insufficient numbers of health and care workers (HCWs), suboptimal skill-mixes and imbalanced geographical distributions. This posed challenges to creating surge capacity and maintaining essential health services.

HCWs have been placed under extreme pressure, having to cope with heavy workloads and job-related stress and frequently facing physical and mental health risks, with some experiencing violence and harassment. Yet throughout the crisis, the HCWF has responded with agility and determination, rapidly acquiring new skills, adapting to new service requirements and responding effectively to an increase in health needs.

Health system recovery and future preparedness will fail without a strengthened HCWF

In the absence of targeted policy action, there is a risk that the pressures of COVID-19 will exacerbate long-standing shortcomings related to HCW shortages and difficulties in attracting and retaining HCWs. The economic climate (and cost-of-living

crisis) across Europe in mid-2022 is having an impact on pay, attrition rates and the attractiveness of working in the health and care sectors in many parts of the Region.

European countries must now prioritize their HCWs by investing more and investing smarter. They must protect their HCWF by implementing policies that place the interests and well-being of HCWs at the forefront. HCWs inspired everyone during the pandemic with their commitment and it is now time to place them not only at the centre of the health policy agenda, but also at the heart of economic and social recovery.

The report identifies effective policy and planning responses to HCWF challenges in the Region

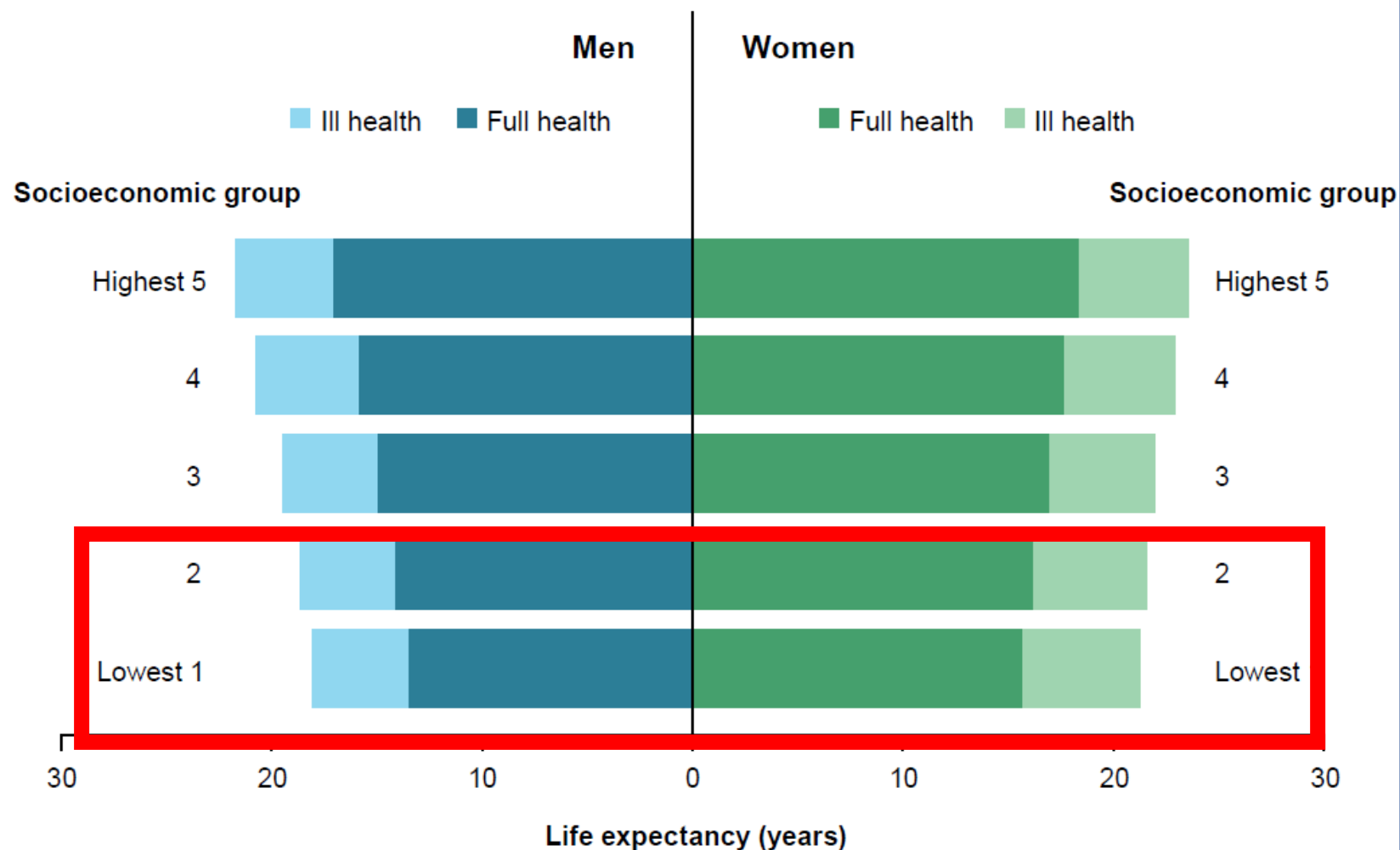
The report proposes key priority policy actions that can help countries strengthen their HCWF to meet current and future health needs and progress towards UHC. It is aimed at policy-makers at European, national and subnational levels across health and other relevant sectors.

The European Region HCWF has never been larger or more diverse in terms of available skills

Available data (until 2020), much of which do not yet capture the full effect of the pandemic, show that the HCWF of medical doctors, nurses and midwives in Europe increased by 10% between 2010 and 2020. The greatest increase was seen in western Asia (36%), followed by western Europe (26%) and southern Europe (15%), but there was a decline

3. Australian Outcomes

Figure 5.6: Life expectancy at age 65 in full health (HALE) and ill health, men and women, by socioeconomic group, 2015



Source: Appendix Table D4.

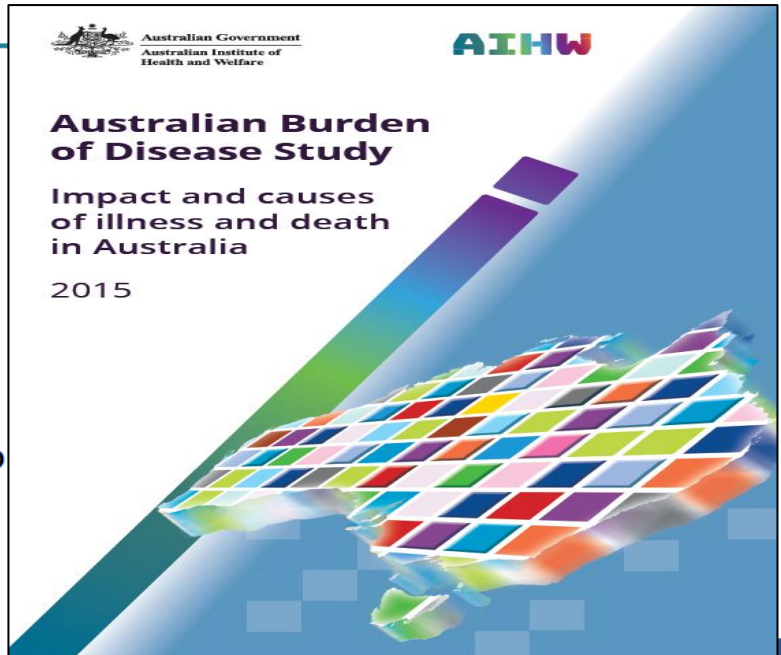
ADDENDUM TO NATIONAL HEALTH REFORM AGREEMENT

2020-2025

P 61. "Low health literacy **compounds the disadvantage** already experienced by marginalised groups"

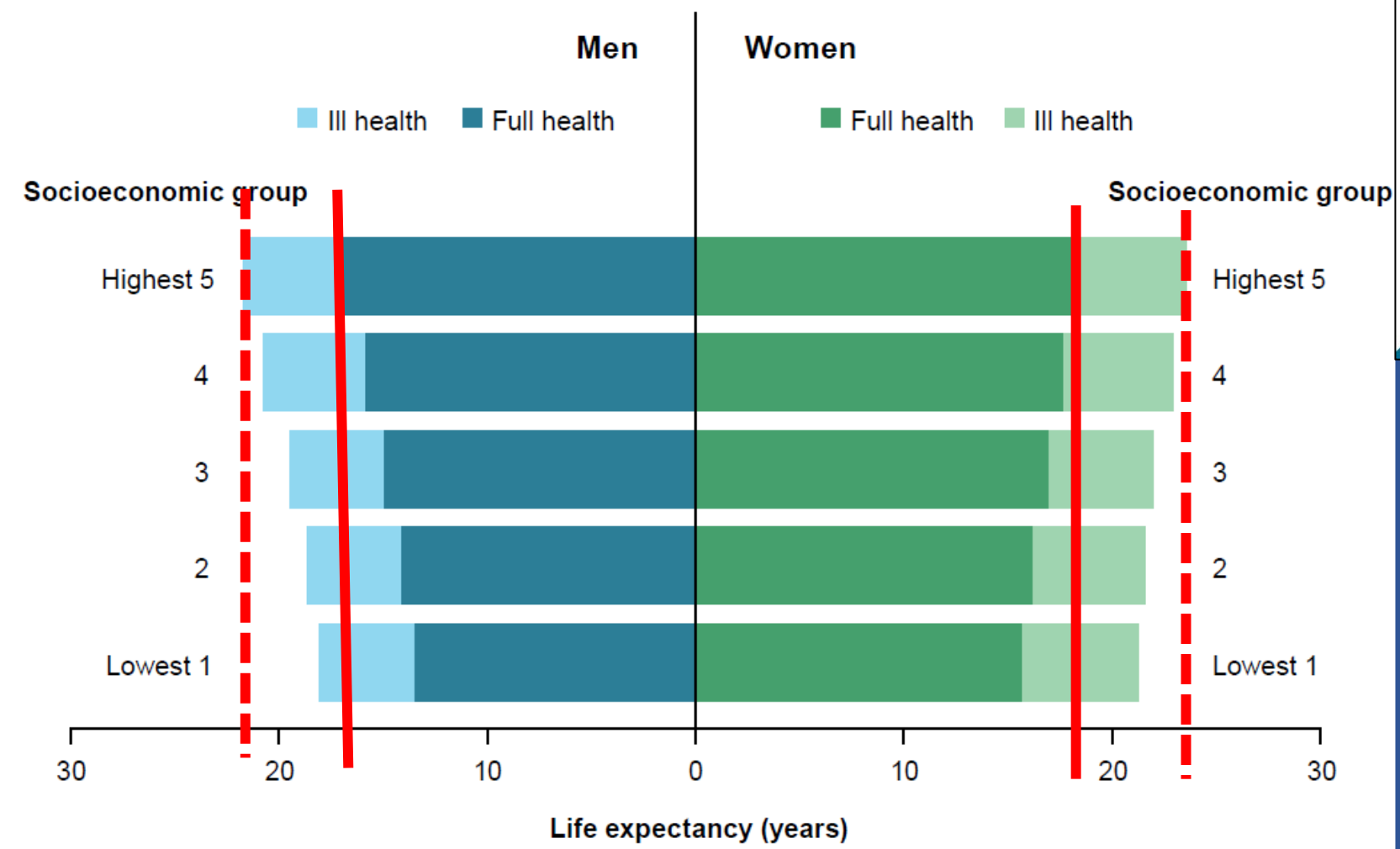
This document is a compilation and is provided for ease of reference.

The Addendum as signed by First Ministers is available at:



National Health Reform Agreement – Addendum 2020-25

Figure 5.6: Life expectancy at age 65 in full health (HALE) and ill health, men and women, by socioeconomic group, 2015



Source: Appendix Table D4.

ADDENDUM TO NATIONAL HEALTH REFORM AGREEMENT

P 61. "Low health literacy **compounds the disadvantage** already experienced by marginalised groups"

4. Australian Health **Vision** – Equity of **Outcome**

NSW Cancer Plan



Vision: To end cancers as we know them

Goals

Reduce inequity in cancer outcomes

Reduce the incidence of cancer

Increase cancer survival

Enhance quality of life and experience for people at risk of and affected by cancer

Overriding principles

✓ Equity of outcomes
Improve cancer outcomes in communities that continue to have poorer outcomes to help everyone achieve their best health.

✓ Person-centredness
Focus on the experiences of people with cancer and those accessing screening and prevention services, to ensure they achieve outcomes that are meaningful to them.

✓ Collaboration
Work together at the system, service and care team levels with clear roles, accountabilities and governance, to achieve the best cancer outcomes.

The Six Cities Region

The Vision

Delivering global competitiveness and local liveability for the Six Cities Region



We envision a connected region of six cities where we can move people and goods across the region in 90 minutes, and everyone in the region is digitally and globally connected in a nanosecond. In each city, great jobs are 30 minutes by public transport from great homes. We enjoy a greater range of lifestyle choices connected to economic opportunity and most people live in vibrant local centres and neighbourhoods where all our daily needs are met within a 15 minute walk.

More than 65,000 years of continuous culture is central to our shared identity and sets us apart from anywhere else in the world. The wisdom and aspirations of First Nations peoples are recognised and embedded in planning for our future, and we care for Country. Our diverse communities are recognised as a great strength, enriching our culture and meaningfully connecting us to every corner of the globe.

Housing is more affordable and accessible, leveraging our transport and social infrastructure investments, with the government playing a material role in enabling supply. People live in homes that are sustainable, efficient and adaptable, and that meet their changing needs over time.

Local infrastructure and growth are strategically coordinated to leverage diverse centres that support their communities. Our economic assets are coordinated and leveraged in an integrated way, capturing our potential as an Indo-Pacific economic powerhouse.

An interconnected ecosystem of innovation districts linked to places of learning supercharges knowledge jobs across the region while supporting the broader jobs economy. All six cities have greater resilience because of the economic diversification of their wider and

National Health Reform Agreement 2020-2025

National Health Reform Agreement – Addendum 2020-25

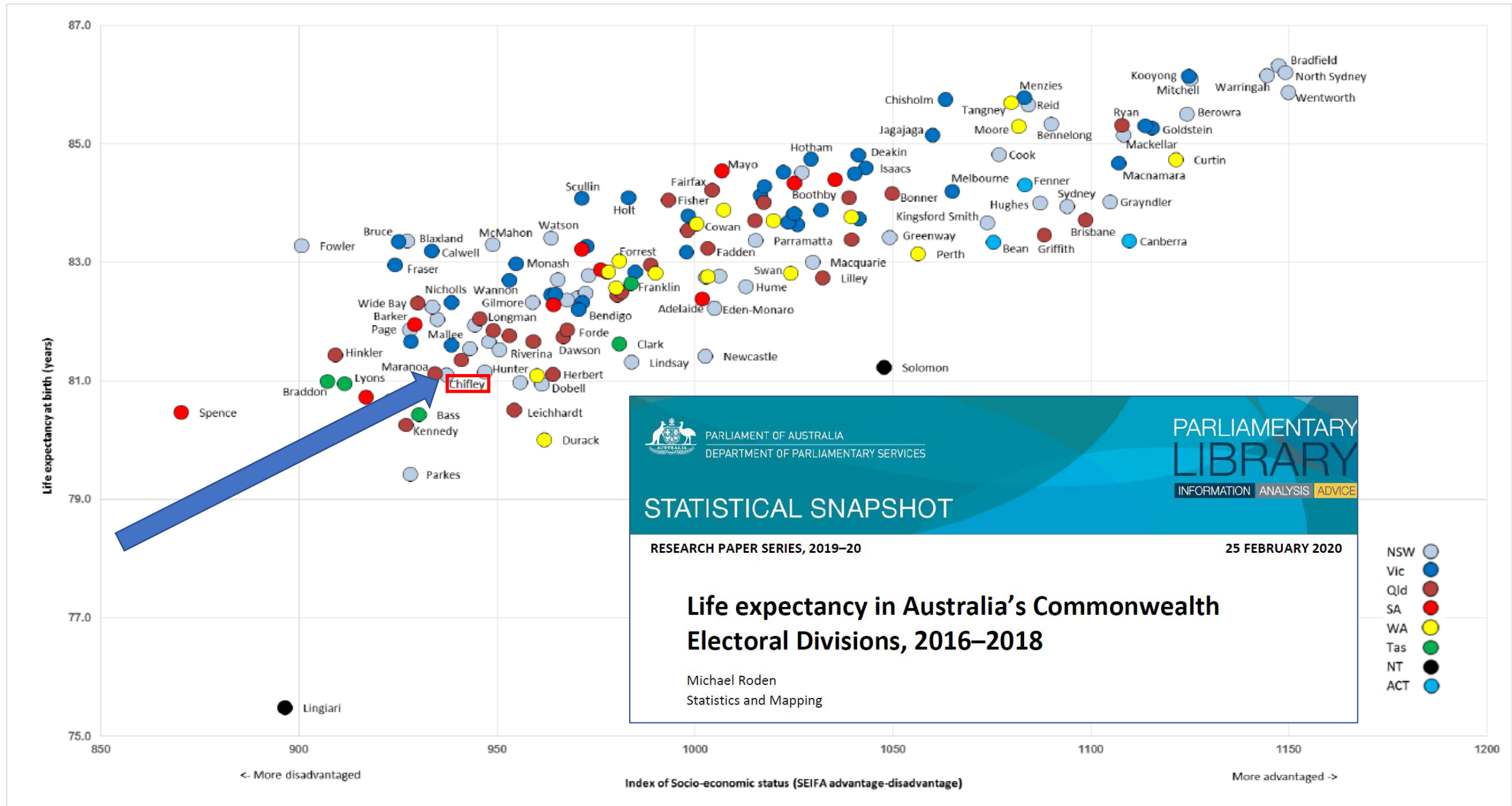
PRELIMINARIES, SYSTEM WIDE OBJECTIVES AND ROLES AND RESPONSIBILITIES

Preliminaries

1. This Addendum:
 - a. sets out the shared intention of the Commonwealth, State and Territory governments (the States) to work in partnership to improve health outcomes for all Australians and ensure the sustainability of the Australian health system;
 - b. re-affirms that all governments:
 - i. agree that the healthcare system will strive to eliminate differences in health status of those groups currently experiencing poor health outcomes relative to the wider community; and

5. Do we Know the Geographical Areas of
greatest **Need** ?

Figure 4: socio-economic status by life expectancy, Commonwealth Electoral Divisions, 2016-18



Life expectancy in Australia's Commonwealth Electoral Divisions, 2016–2018

Michael Roden
Statistics and Mapping

Socio-economic and Indigenous status

“The remoteness of an area does not of itself determine life expectancy, but rather is indicative of relationships with a range of direct and indirect health risk factors such as those previously mentioned. **Nevertheless the findings point to two factors long associated with health outcomes: socio-economic status (SES) and Indigenous status.** The ABS[5] reports that life expectancy is on average 8.2 years lower for Aboriginal and Torres Strait Islanders than the non-Indigenous population, **while the NSW Government[6] recently cited a 4.8 year e(0) gap between the highest and lowest SES quintile areas in that state.**

Figure 4 shows the association between SES and life expectancy across the 151 divisions ($r^2=0.64$, $p<0.0000$).[7] **The gradient indicates that for every 50 points (i.e. more advantage) on the 2016 Census Index of Relative Socio-economic Advantage and Disadvantage (SEIFA) an extra year of life expectancy is gained.**

The median life expectancy in the most advantaged quintile of 85.3 is 3.7 years higher than the median in the least advantaged quintile (81.6). Such results are consistent with earlier studies examining the effect that relative disadvantage and/or geographic remoteness has on mortality across Australia.[8] [9]

By adding divisional population proportions of Aboriginal and Torres Strait Islanders to the regression model, the predictive power increases to an adjusted r^2 of 0.84 ($p<0.0000$). Thus 84 per cent of the variation in divisional life expectancy can be explained by SES and Indigenous status.[10] These factors do not inherently determine life expectancy, but do point towards many of the known causes of better and poorer health outcomes”.

6. Is Health Outcome **Disparity** between the quintiles *decreasing* or *increasing* ?

Our concern

“Expansion of morbidity in the ***lowest*** socioeconomic areas ***and*** **compression** of morbidity in the highest.”

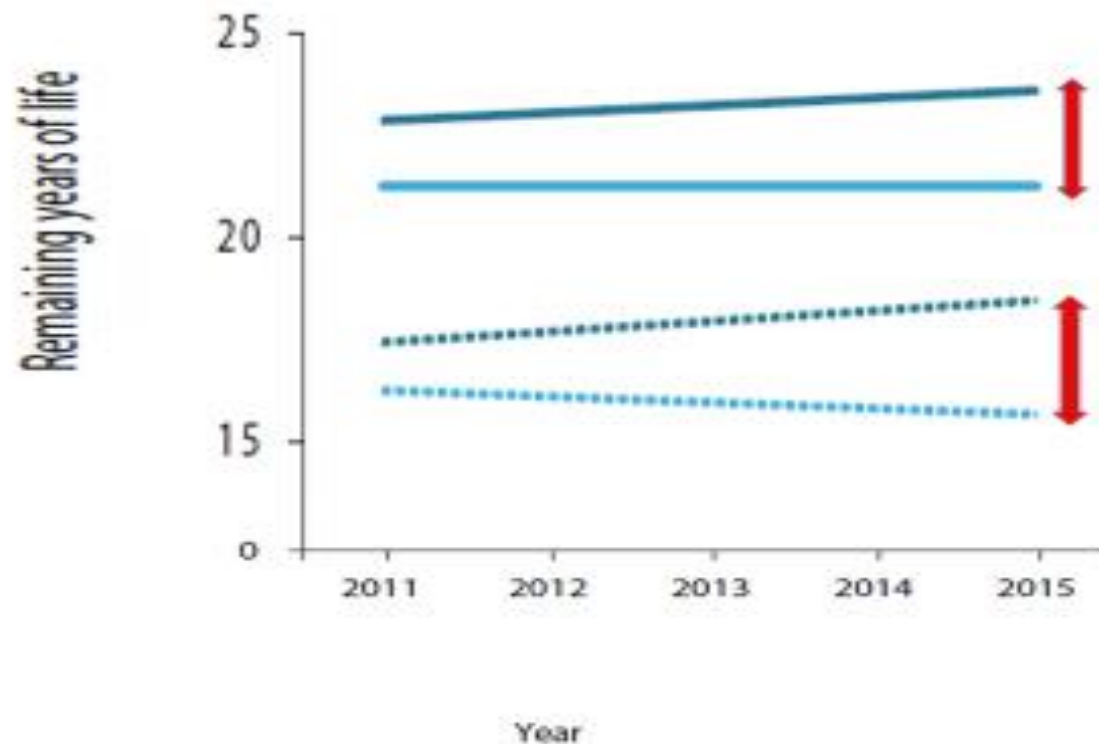
A.I.H.W. 2020

... *moving towards* **“Equity of Outcome”**.



The Australian Institute of Health and Welfare also reported increasing outcomes disparity by SES, again in July 2020

Figure 10.5: Life expectancy and health-adjusted life expectancy (HALE), at ages 65–69, by sex and socioeconomic area, 2011–2015



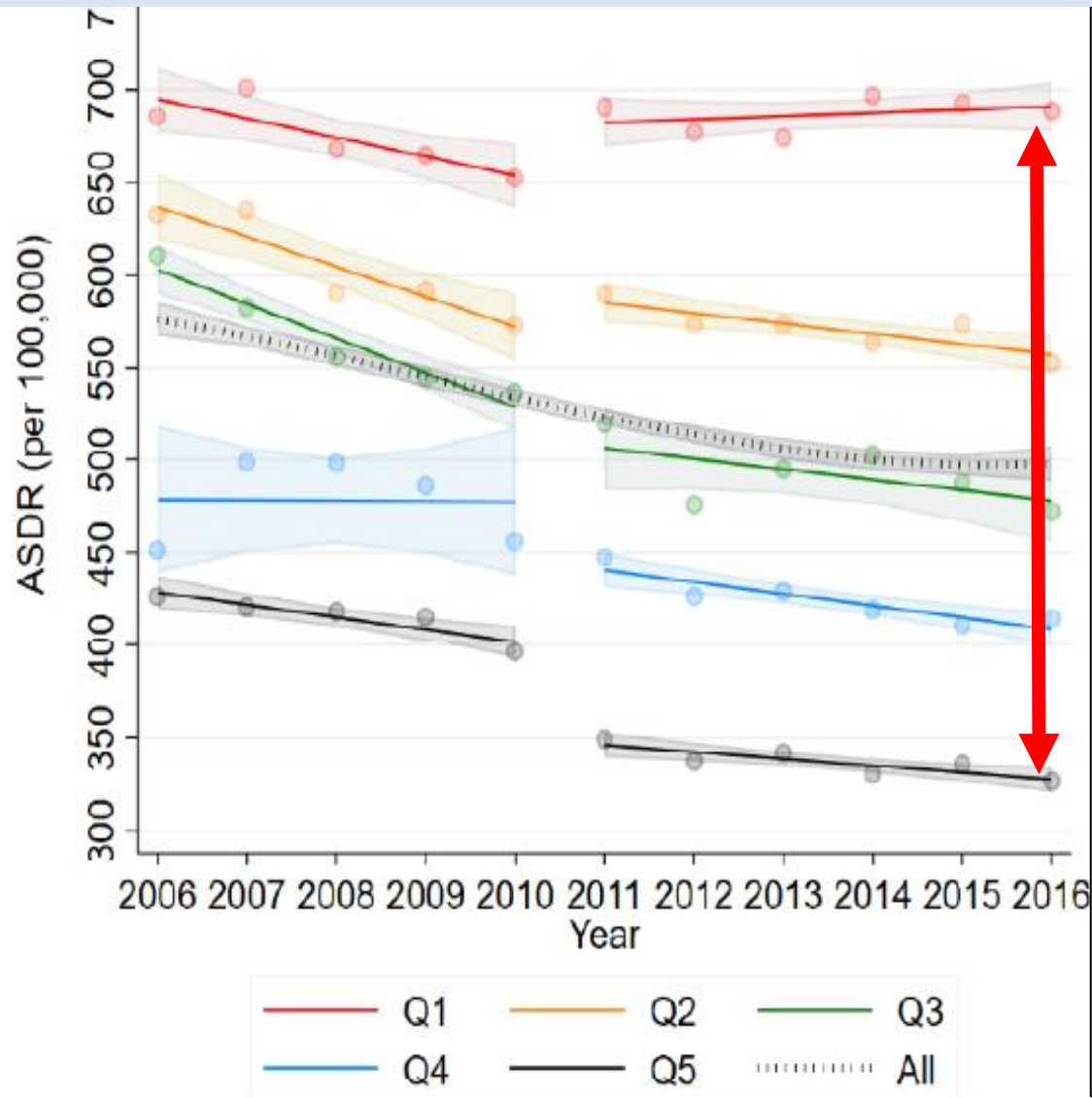
- Highest SE group 5: Life expectancy
- Lowest SE group 1: Life expectancy
- - - Highest SE group 5: HALE
- - - Lowest SE group 1: HALE

In summary, for men and women aged 65-69 living in the lowest (least advantaged) socioeconomic areas, the number and proportion of expected healthy years declined over a relatively short period of time (2011 to 2015). In contrast, it increased over time



This indicates an expansion of morbidity in the lowest socioeconomic areas, and a compression of morbidity in the highest socioeconomic areas.

Increasing disparities of Outcome based on Socio Economic quintile, Melbourne University (2020). BMDH external reviewers.



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Widening inequalities in premature mortality in Australia, 2006-16



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Paper received 13 December 2019; accepted 11 May 2020; published 25 May 2020.

International data :

Sir Michael Marmot

Chair, W.H.O.
Commission of Social
Determinants,

Professor of
Epidemiology and
Public Health ,
University College
London,

Director UCL, Institute
for Health Equity.

Life expectancy and disability-free life expectancy at birth by neighbourhood income deprivation, 1999-2003



Source: Office for National Statistics⁵

Concluding... "Further, the **gap** in health outcomes between the **most disadvantaged** in cities and the **most advantaged**, exceeded the gap attributed to rurality".

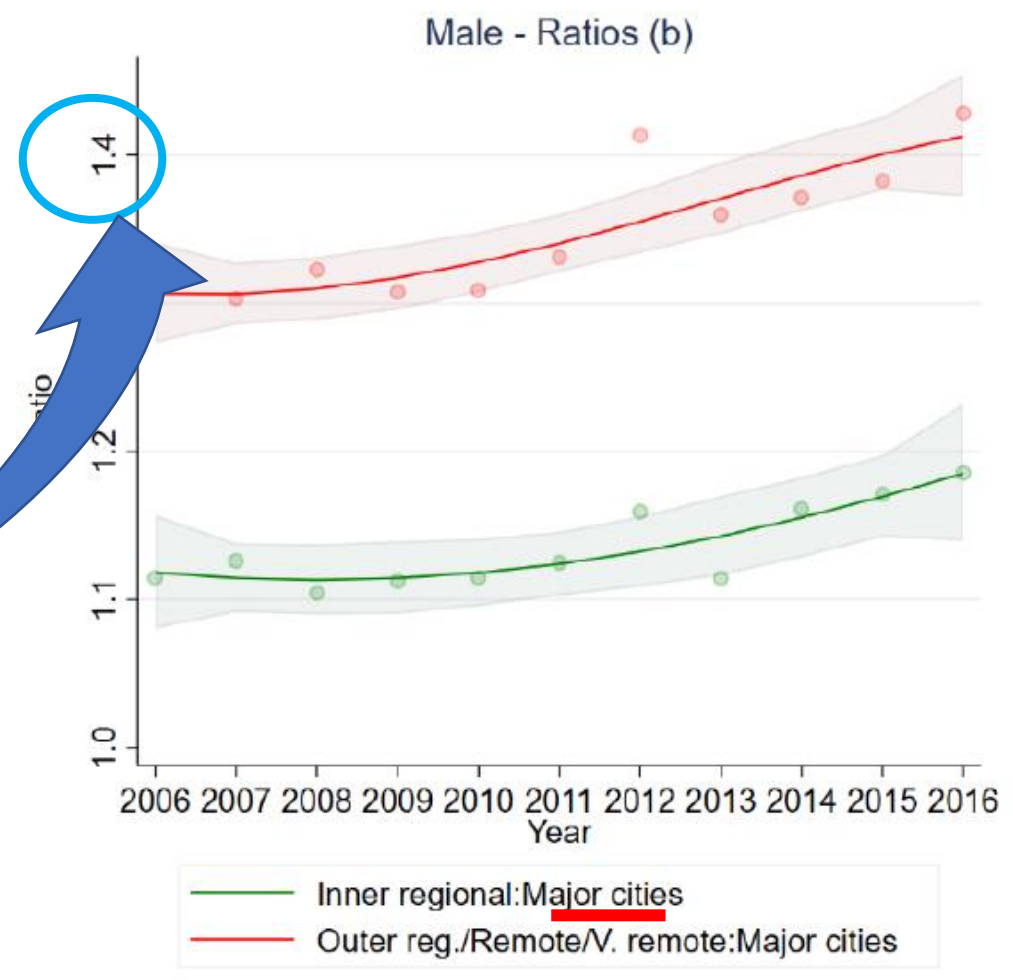
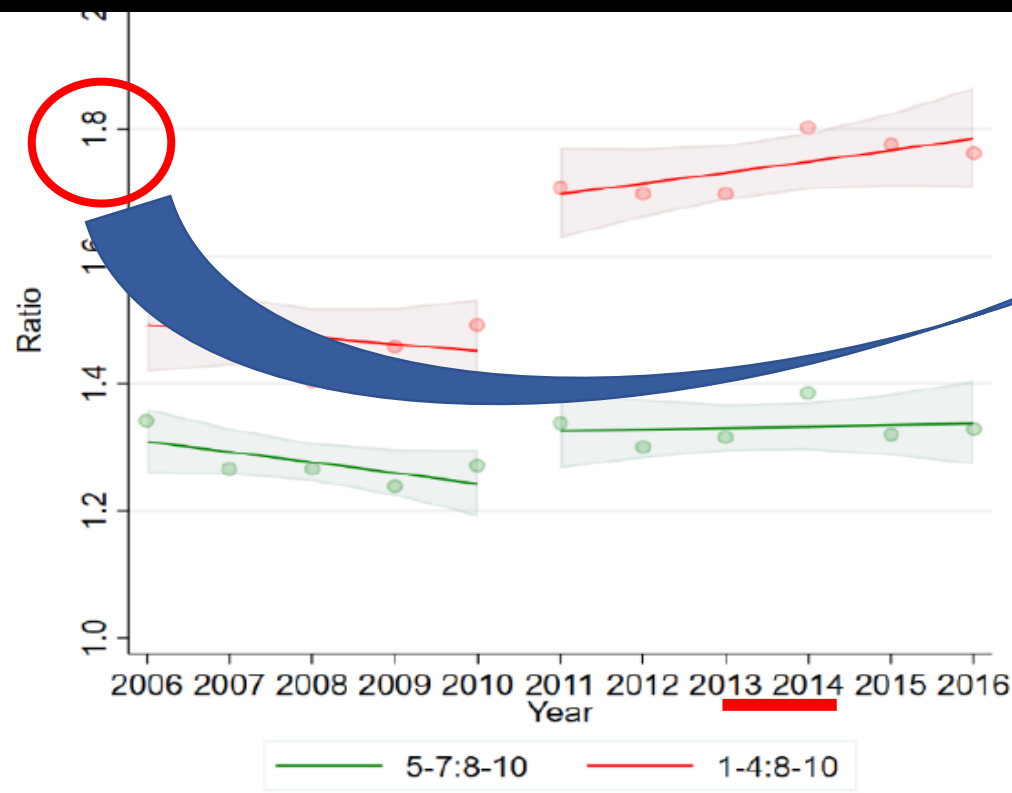
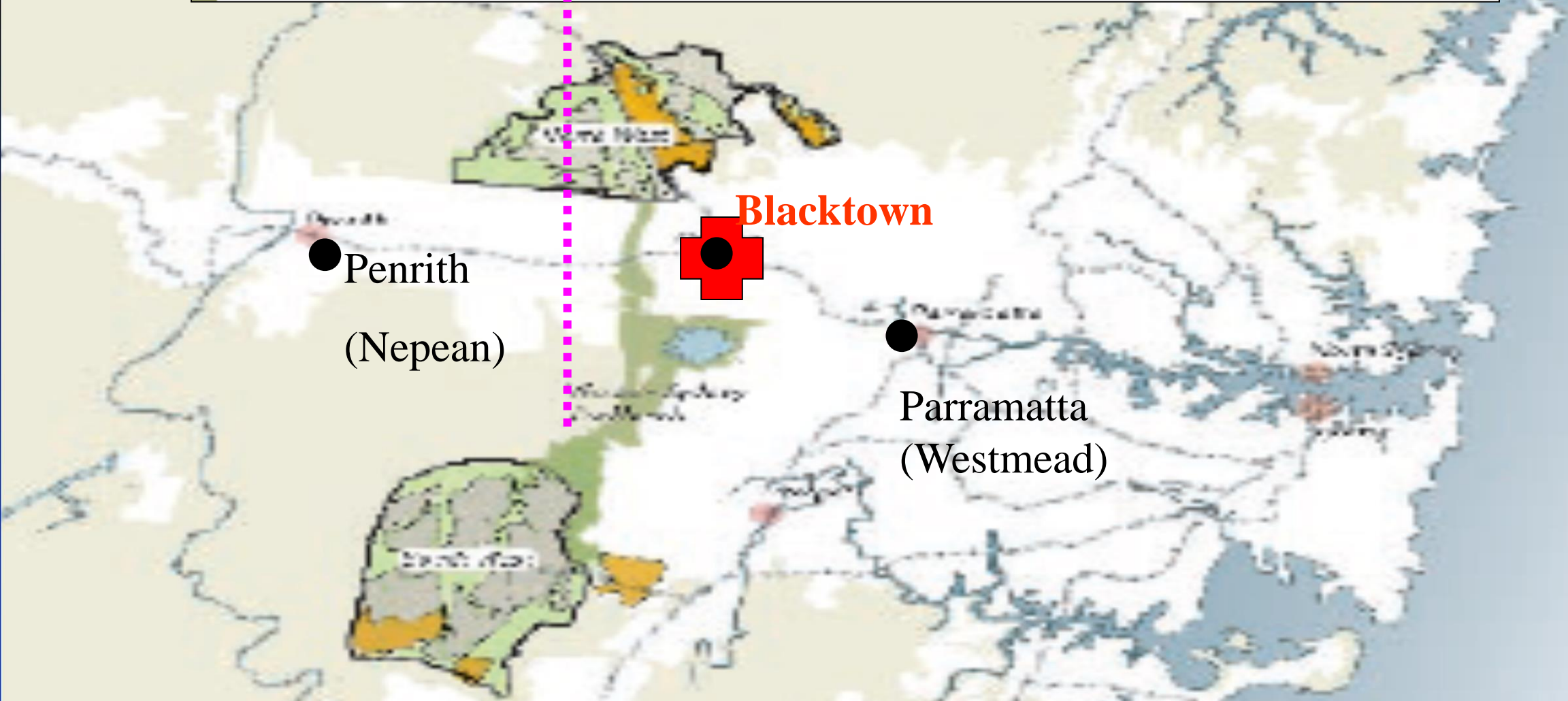


Figure 2: ASDR (per 100,000) by sex and remoteness: trends and ratios (versus Q5), 35-74 years, Australia, 2006-16

Figure 3: ASDR (per 100,000) by sex and major cities area socio-economic decile group (1-4, 5-7, 8-10): trends and ratios (versus 8-10), 35-74 years, Australia, 2006-10 and 2011-16

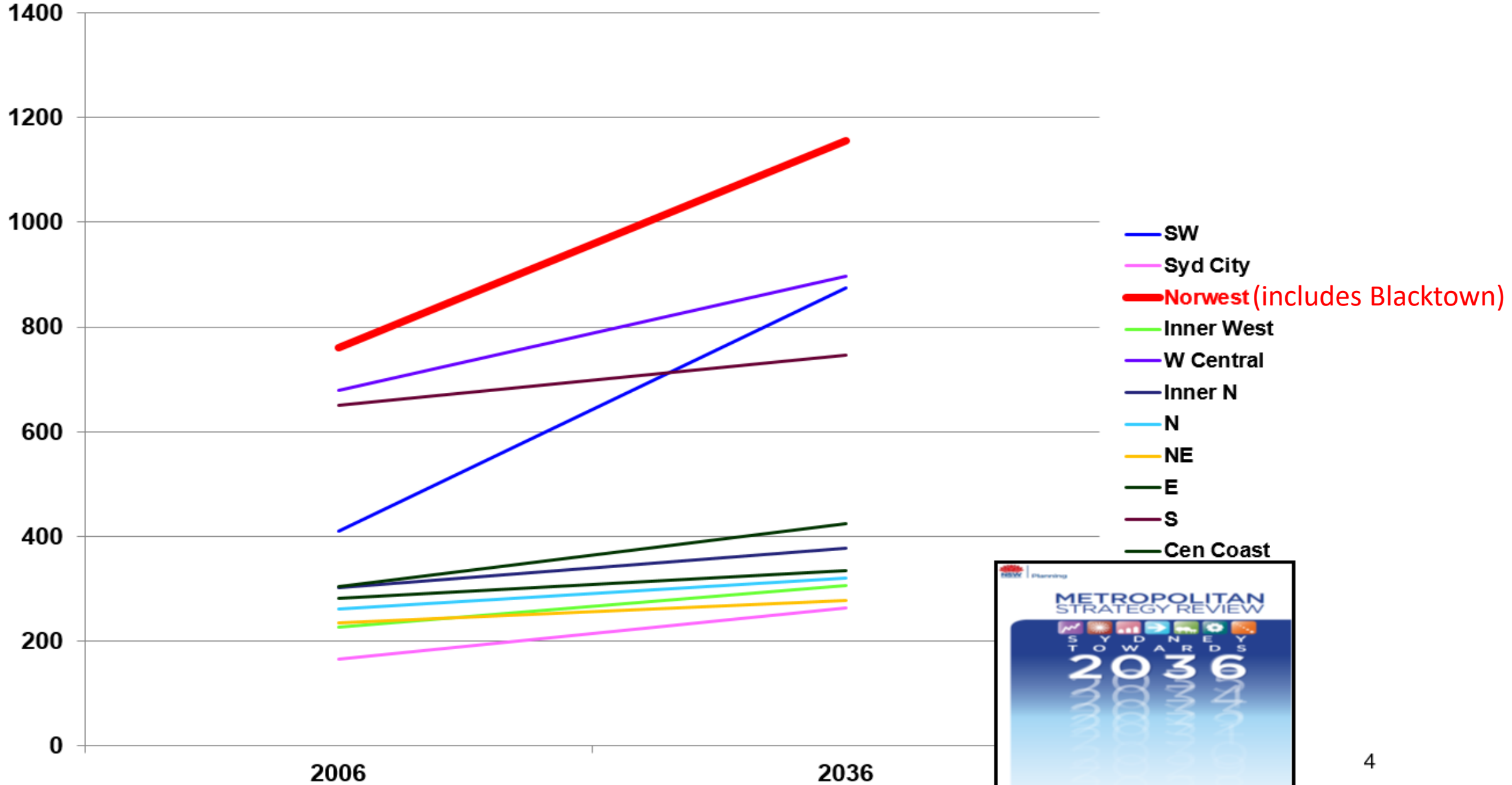
7.A Case Study : Blacktown (Western Sydney)

PLANNING REPORT FOR THE
NORTH WEST GROWTH CENTRE

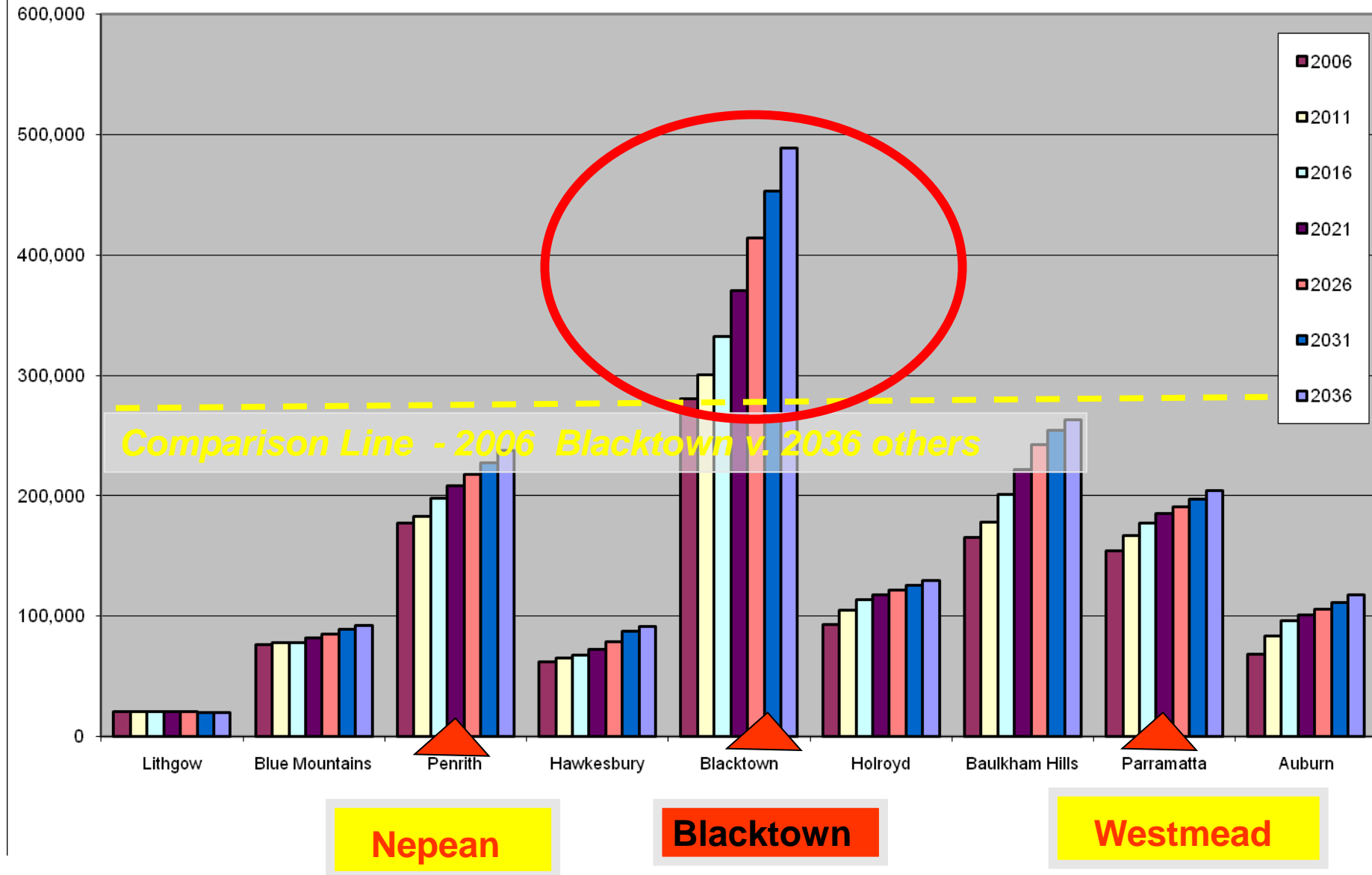


Distribution of N.S.W.'s Growth Centres

Population in 1000's to 2036



Population Growth Relative to Sydney West's 3 Major Campuses



Source: NSW Health Population Projection Series 1, 2009

Growth at BT till 2036 is large, by comparison

SYDNEY'S FORECAST "HIGH GROWTH" COUNCILS, 2006-2036

LGA NAME	LGA CODE	2006	2036	Inc 2006-36	% inc
Blacktown	750	280,612	481,267	200,655	71.5%
Camden	1450	50,940	249,771	198,831	390.3%
Liverpool	4900	170,915	324,438	153,523	89.8%
Sydney	7200	165,596	264,807	99,211	59.9%
Baulkham Hills	500	165,143	258,840	93,697	56.7%
Campbelltown	1500	147,440	233,757	86,317	58.5%
Wyong	8550	142,686	228,237	85,551	60.0%
Penrith	6350	177,152	234,308	57,156	32.3%
Bankstown	350	176,857	225,100	48,243	27.3%
Parramatta	6250	153,891	201,431	47,540	30.9%
Auburn	200	68,231	115,557	47,326	69.4%
TOTAL		2,712,771	4,172,743	1,459,942	53.8%
% OF GMA		52.0%	58.1%	74.0%	
TOTAL GMA		5,214,203	7,187,137	1,972,934	37.8%

Source: based on Bureau of Transport Statistics data, released May 2010

GMA: Greater Metropolitan Area (includes the Hunter and Illawarra)

Local Residential growth, accessible to employment



Central City District
0-5 year 53,500
20-year 207,500

North District
0-5 year 25,950
20-year 92,000

Western City District
0-5 year 39,850
20-year 184,500

Eastern City District
0-5 year 46,550
20-year 157,500

South District
0-5 year 23,250
20-year 83,500

The most new houses added over next 20 years in "Central City District" (= Blacktown)



24 x 7

... + the effect of major impending infrastructure

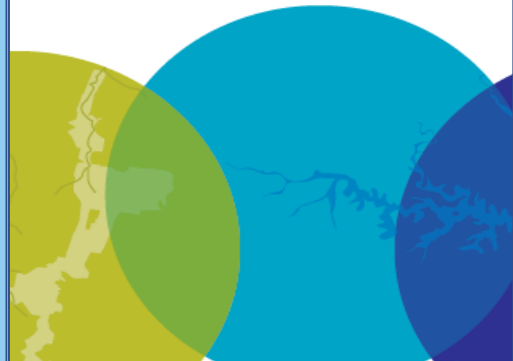


Greater Sydney Commission

GREATER SYDNEY REGION PLAN

A Metropolis of Three Cities

- connecting people



WESTERN SYDNEY PLANNING PARTNERSHIP

Western Sydney Aerotropolis Plan

September 2020

The Six Cities Region

Delivering global competitiveness and local liveability



Linking freight, ports and airports for economic growth

A robust and connected freight system is key to maximising our existing strategic advantages. The safe, productive and sustainable movement of freight within our Six Cities Region and between NSW and international ports, airports and logistics hubs will provide local opportunities and grow the NSW economy. New and upgraded connecting infrastructure is required to support the future needs of Port Botany, Port Kembla and the Port of Newcastle as well as Kingsford Smith Airport, Western Sydney International (Nancy-Bird Walton) Airport and Newcastle Airport and their surrounding areas. The Commission will work with Transport for NSW to identify other missing links in the freight network.

The Six Cities Region enjoys the benefits of three deep-sea ports. Port Botany will be the main container port for the near future. Port Kembla is planned to be the future second container terminal to support long-term demand and the resilience of the Six Cities Region's freight network. Port of Newcastle will continue its global role in energy exports as it transitions from coal to hydrogen, as well as grows and diversifies its trade base over the next 20 years.

The development of a new rail connection to Western Sydney is a crucial link that would support additional rail freight capacity in and out of Port Kembla and the Illawarra-Shoalhaven City.

There are at least nine existing airports in the Six Cities Region: three international passenger airports, three defence airbases and three general aviation airports. It is crucial to strategically plan for the passengers that use the region's airports, the businesses that co-locate near them and the freight that will pass through them. As the aviation industry moves towards net zero emissions, strategies to reduce the carbon footprint of our airports are needed.

The Six Cities Region has an immediate opportunity to grow the international and domestic passenger markets and improve air freight for markets to the north, particularly to areas where we have a free trade agreement.

The opening of the Western Sydney International (Nancy-Bird Walton) Airport in 2026 will be a game changer for the Six Cities Region. It offers a significant opportunity to transform the aviation sector and better connect our people and air freight to the rest of the world.

Progressing this Region Shaper

- 2.4 The Commission will work with Transport for NSW on six cities airports and ports strategies for integration in the Region and City Plans.
- 2.5 The Commission will work with Transport for NSW to consider the land use and spatial implications of the freight, ports and airport strategies.

On this page

[Key statistics](#)

[Capital cities](#)

[Regions](#)

[New South Wales](#)

 Latest release

 Data download

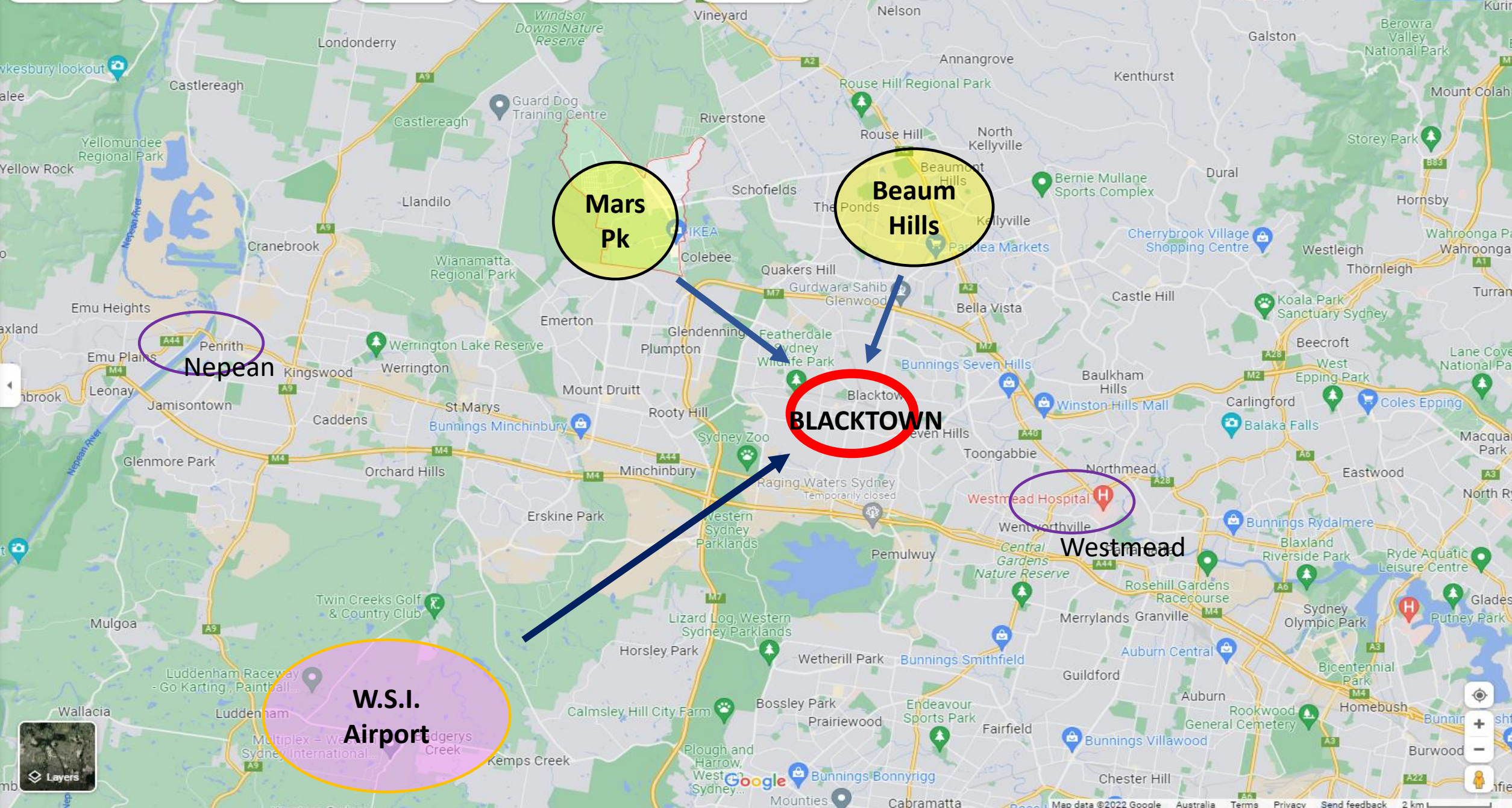
Regional population

Statistics about the population and components of change (births, deaths, migration) for Australia's capital cities and regions

Reference period 2020-21 financial year

Areas with the largest growth

SA2	SA4	ERP at 30 June 2021	2020-21 (no.)
Riverstone - Marsden Park	Sydney - Blacktown	48,063	7,360
Cobbitty - Leppington	Sydney - South West	42,386	5,352
Cranbourne East	Melbourne - South East	60,489	5,027
Rouse Hill - Beaumont Hills	Sydney - Baulkham Hills and Hawkesbury	40,333	4,260
Mickleham - Yuroke	Melbourne - North West	19,029	4,127



Mars Pk

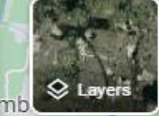
Beaum Hills

Nepean

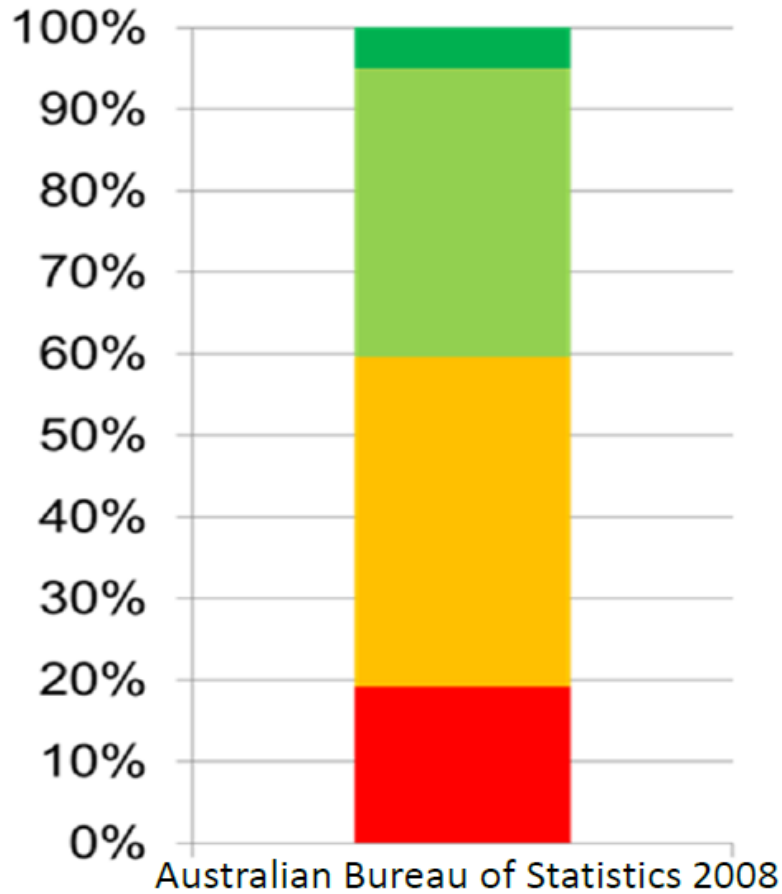
W.S.I. Airport

BLACKTOWN

Westmead



Poor health literacy is more common than most people think



–41% of adults were assessed as having **adequate or better health literacy skills**, scoring at Level 3 or above. Able to perform tasks such as combining information in text and a graph **to correctly assess the safety of a product.**

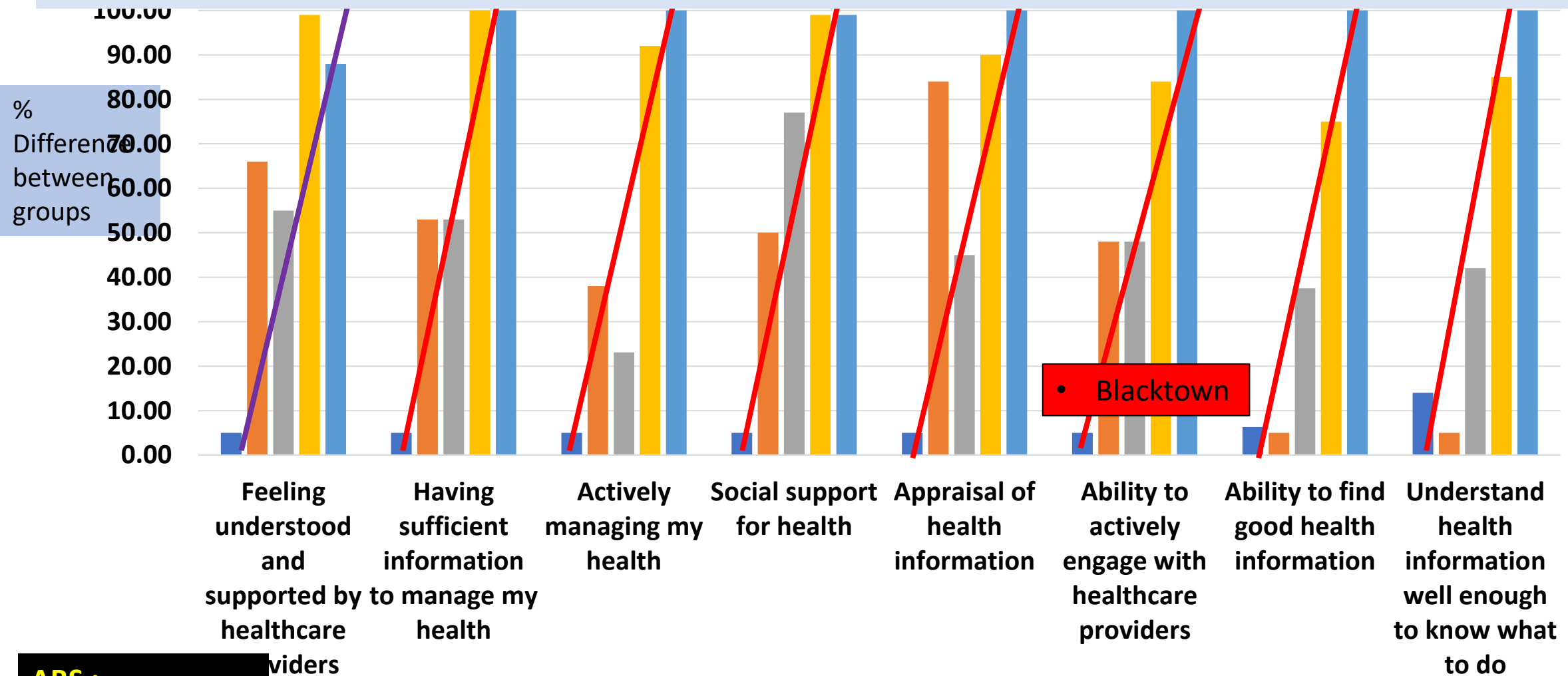
–Around one-fifth (19%) of adults had level 1 health literacy skills, with a further 40% having Level 2. These people had difficulty with tasks like:

locating information on a bottle of medicine about the maximum number of days the medicine could be taken, or drawing a line on a container indicating where one-third would be (based on other information on the container).

60%

7.1 Is there a **relationship between Low Health Literacy and Sociodemographic Quintile ?**

Health Literacy appears also to demonstrate a SES dependent gradient (2018 A.B.S data)



**ABS :
9 Domains of HL**

■ First quintile ■ Second quintile ■ Third quintile ■ Fourth quintile ■ Fifth quintile



DR

"What is the pain like?"

"How long have you had it?"

"What makes it worse?"

"What is long does it last?"

"What is the most active thing you do?"

Pt

"I don't know"

"A while"

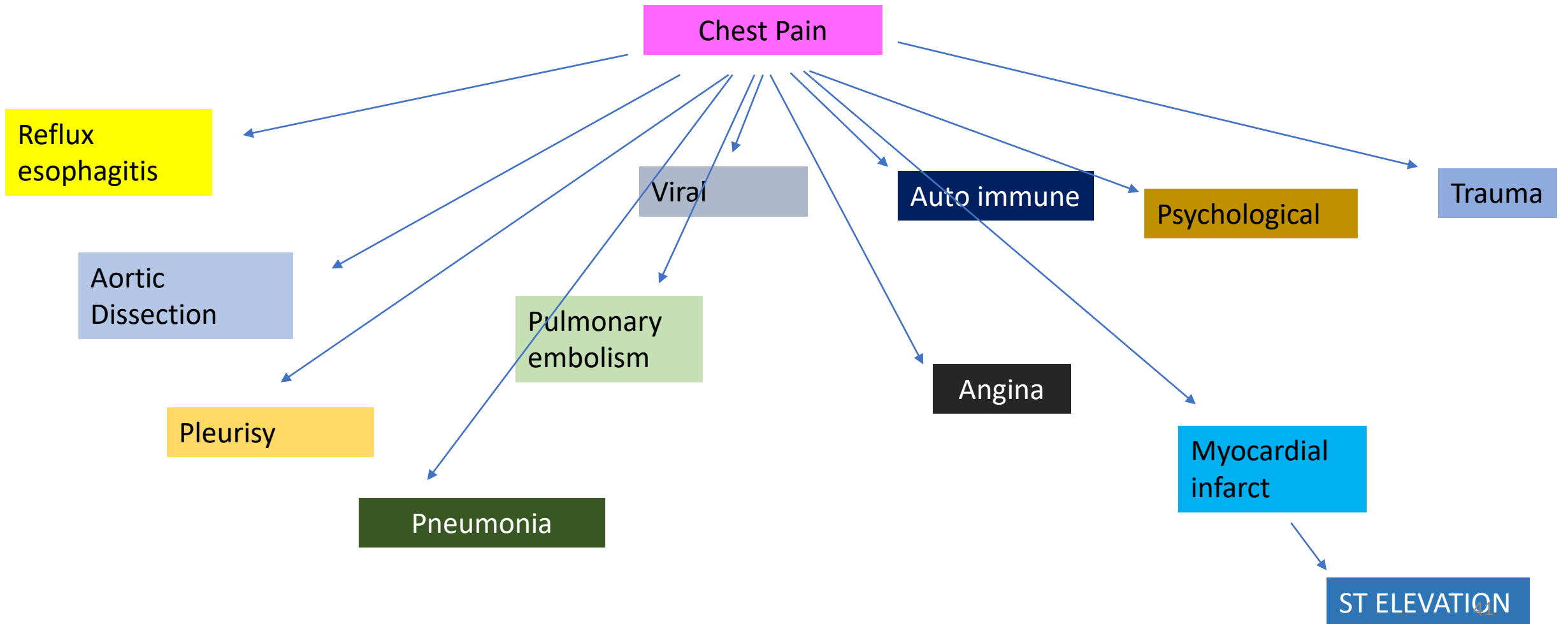
"I don't know"

"not long"

"I just move around the house"



Coming to the most likely “Diagnosis” is core and *pivotal*



By first principles : Health Literacy **complicates** day-to-day hospital care that patients receive as ...

Communication between the physician and the patient is critical. Various authors have asserted that the diagnosis is evident from the history alone in 80 – 90% of cases; if

Diagnostic Error
LEARNING RESOURCE FOR CLINICIANS

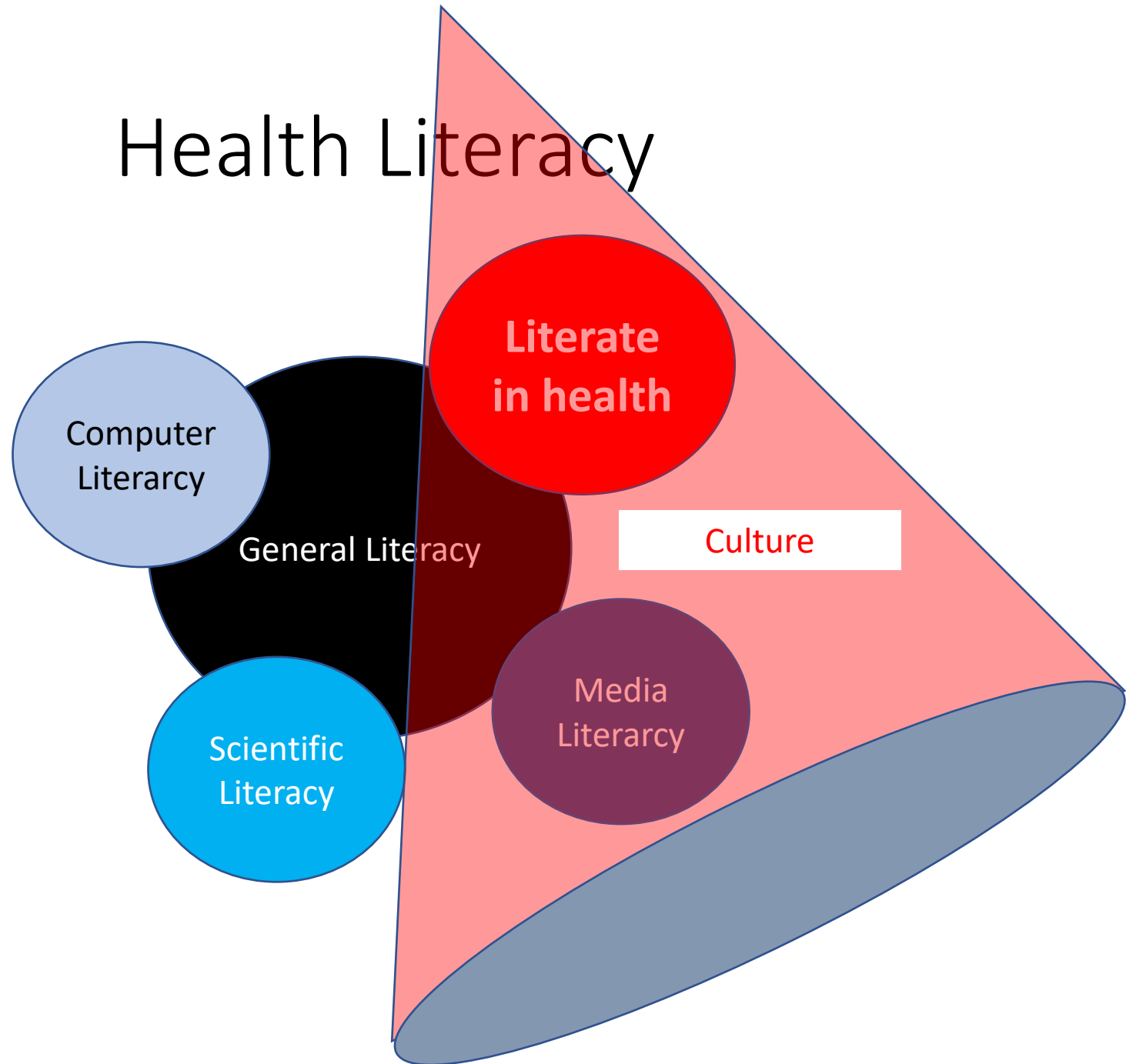
1. Late presentations
2. Diagnostic uncertainty
3. More severe, longer recovery
4. More investigations
5. More Challenging Family conferences



DR M. Graber : Society to Improve Diagnosis in Medicine, Chief Medical Officer

HL is amongst other attributes, **culturally contextual** ...

Health Literacy



7.2 The **overarching joy** from working at Blacktown...



“Service to Humanity”

International data :

Sir Michael Marmot

Chair, W.H.O.
Commission of Social
Determinants,

Professor of
Epidemiology and
Public Health ,
University College
London,

Director UCL, Institute
for Health Equity.

Life expectancy and disability-free life expectancy at birth by neighbourhood income deprivation, 1999-2003



7.3 ... and *more recent accomplishments* :





- **Courage**
- **Leadership**
- **Ingenuity**
- **Resources**

CE

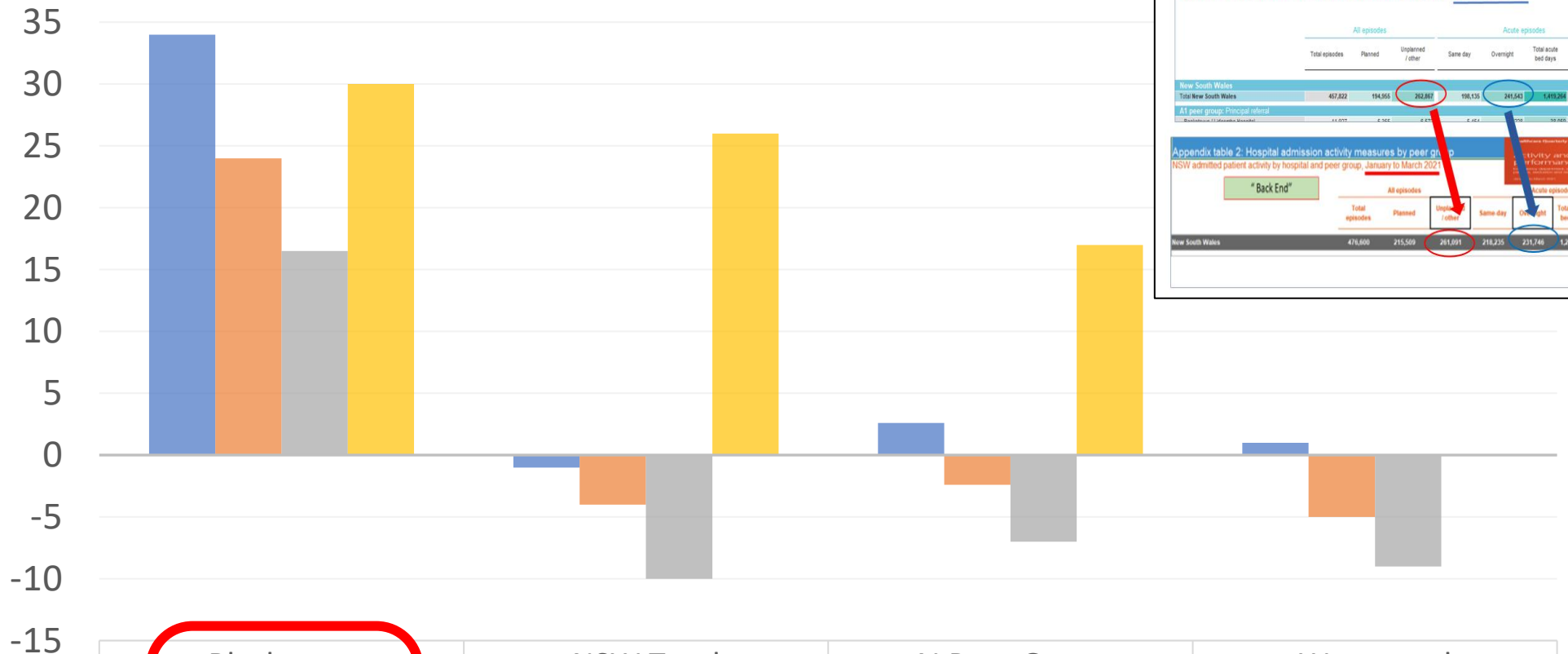
GM



7.4 The Challenge :

Percentage Change 2013 to 2021

(source : B.H.I. Quarterly Reports)



Appendix: activity by hospital and peer group

Appendix table 1b: NSW admitted patient activity by hospital and peer group, July to September 2013

	All episodes		Acute episodes		Total acute bed days	Average length of stay (days)
	Total episodes	Planned / other	Same day	Overnight		
New South Wales	457,822	194,955	262,867	195,135	2,419,251	3.2
AI peer group: Principal referral	41,077	2,362	38,715	2,424	59,948	2.9

Appendix table 2: Hospital admission activity measures by peer group
NSW admitted patient activity by hospital and peer group, January to March 2021

	All episodes		Acute episodes		Total acute bed days	Average length of stay (days)
	Total episodes	Planned / other	Same day	Overnight		
New South Wales	476,600	215,509	261,091	218,235	2,277,065	2.8

	Blacktown	NSW Total	AI Peer Group	Westmead
■ Unplanned Episodes	34	-1	2.6	1
■ Overnight Episodes	24	-4	-2.4	-5
■ Total Acute Bed Days	16.5	-10	-7	-9
■ E.D. Presentations	30	26	17	52

	Total episodes	Unplanned / other	Overnight
New South Wales	469,631	270,040	237,365
A1 peer group: Principal referral			
Bankstown-Lidcombe Hospital	11,866	6,108	5,615
Concord Repatriation General Hospital	15,238	5,418	4,667
Gosford Hospital	13,993	9,367	8,480
John Hunter Hospital	19,623	1 10,468	10,637
Liverpool Hospital	22,306	2 13,242	11,367
Nepean Hospital	16,056	3 10,053	8,789
Prince of Wales Hospital	12,325	6,637	5,513
Royal North Shore Hospital	19,935	4 12,252	10,249
Royal Prince Alfred Hospital	20,454	5 11,833	10,499
St George Hospital	16,318	9,187	8,562
St Vincent's Hospital Sydney	10,934	5,350	4,289
Westmead Hospital	25,166	6 11,263	10,896
Wollongong Hospital	13,431	9,449	8,014
Total A1 peer group	218,070	120,628	107,931
B peer group: Major			
Auburn Hospital	4,025	2,956	2,160
Blacktown Hospital	10,803	8,268	7,132
Mount Druitt Hospital	2,544	1,410	1,112
BMDH	13,347	7 9,678	8,244

Snapshot



Adults admitted to hospital

Results from the 2019 patient survey



Home > Reports > Patient survey results > Adult Admitted Patient Survey 2019



Patient survey results

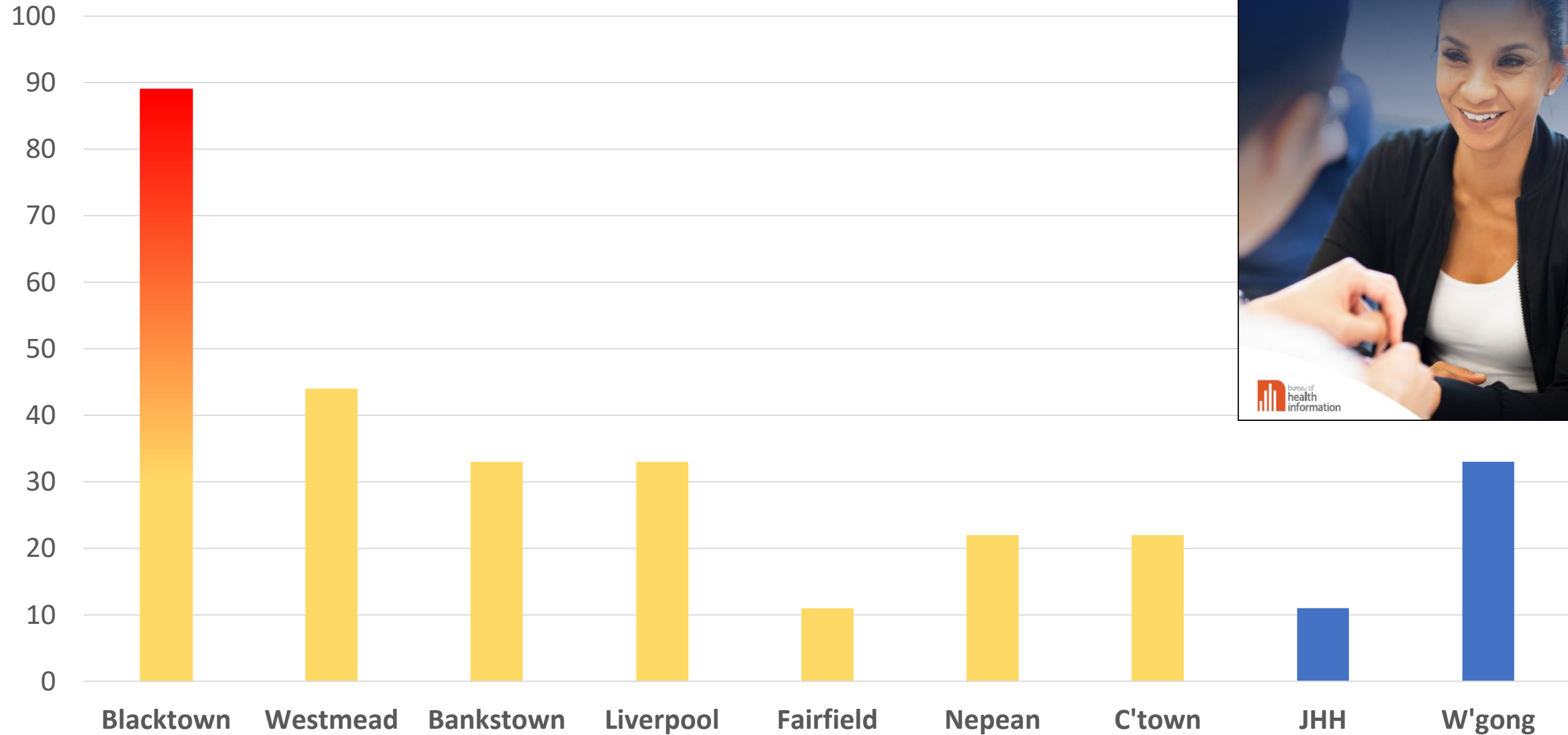
Adult Admitted Patient Survey 2019

Released: 21 October 2020

Hospital B.H.I. Adult Acute Admitted

Survey Questions

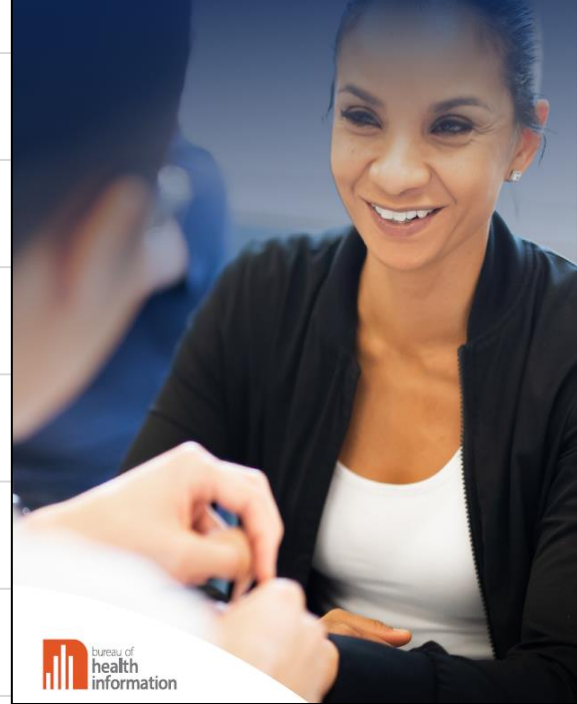
Percentage Significantly **Lower** Than NSW Mean



Snapshot

 Adults admitted to hospital

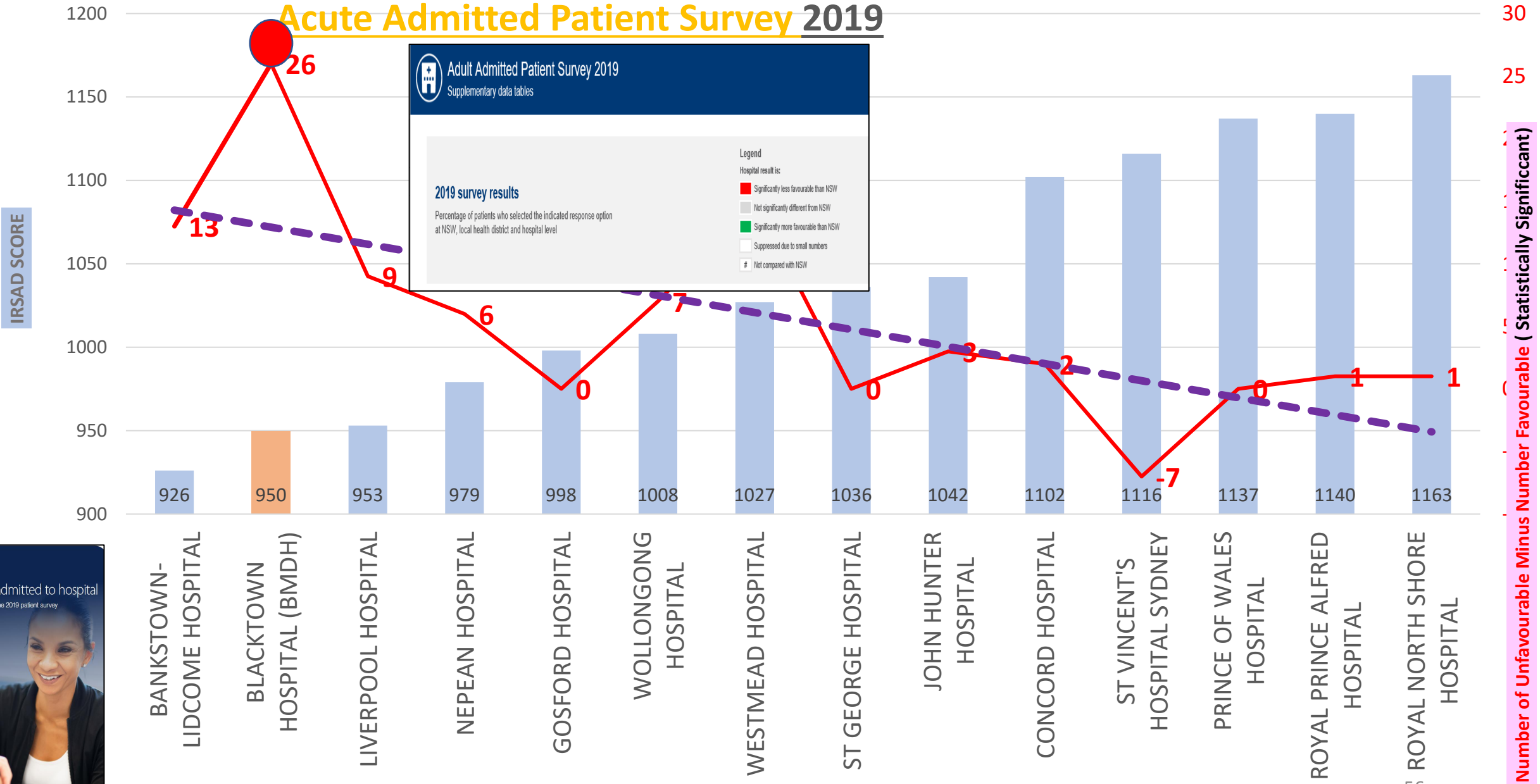
Results from the 2019 patient survey



 bureau of
health
information

Patient Experience/Satisfaction : Principle Referral Hospitals SEIFA Vs. B.H.I.

Acute Admitted Patient Survey 2019



Adult Admitted Patient Survey 2019
Supplementary data tables

2019 survey results
Percentage of patients who selected the indicated response option at NSW, local health district and hospital level

Legend
Hospital result is:

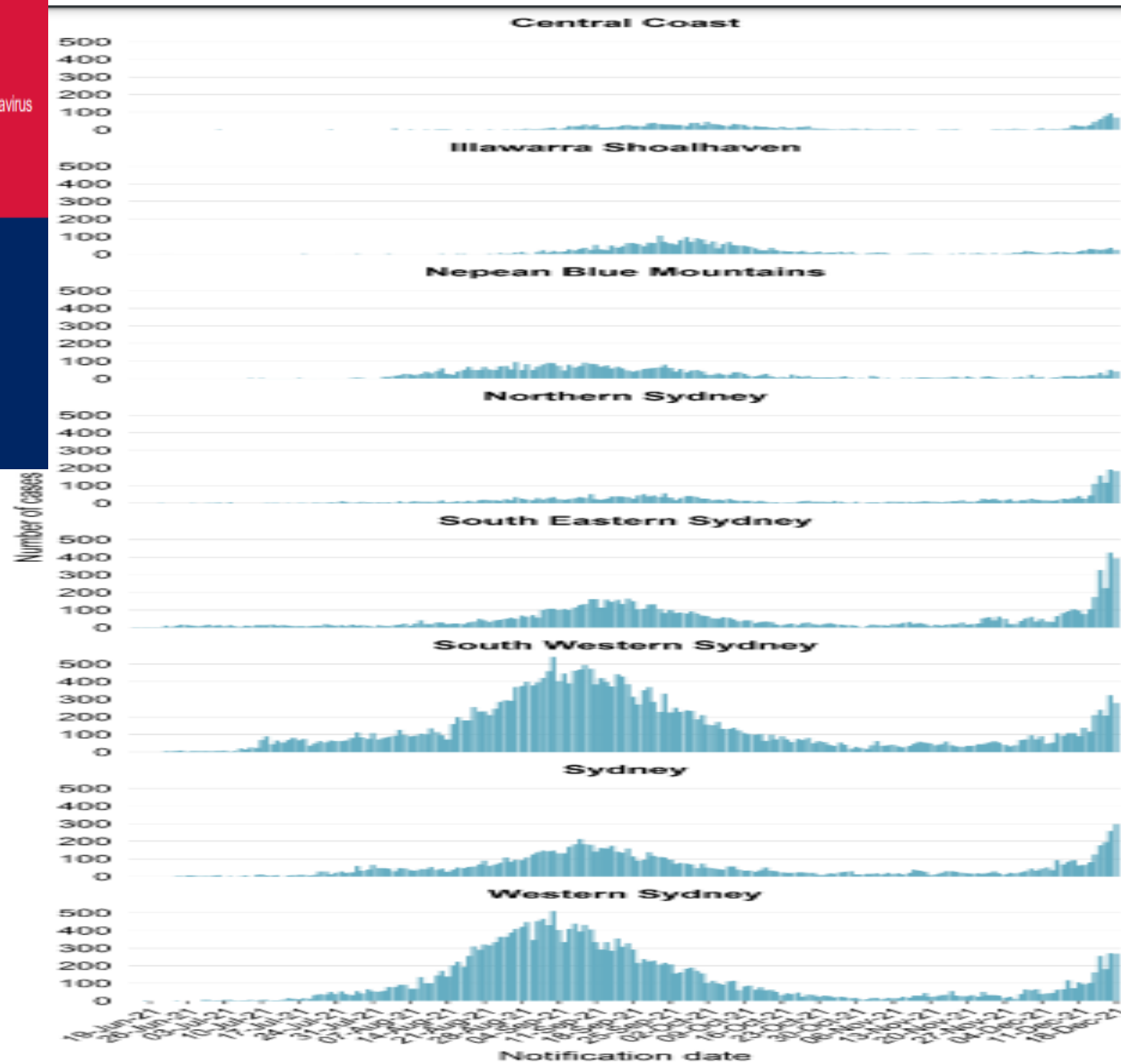
- Significantly less favourable than NSW
- Not significantly different from NSW
- Significantly more favourable than NSW
- Suppressed due to small numbers
- # Not compared with NSW

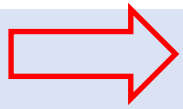


COVID-19 WEEKLY SURVEILLANCE IN NSW

EPIDEMIOLOGICAL WEEK 50 ENDING 18 DECEMBER 2021

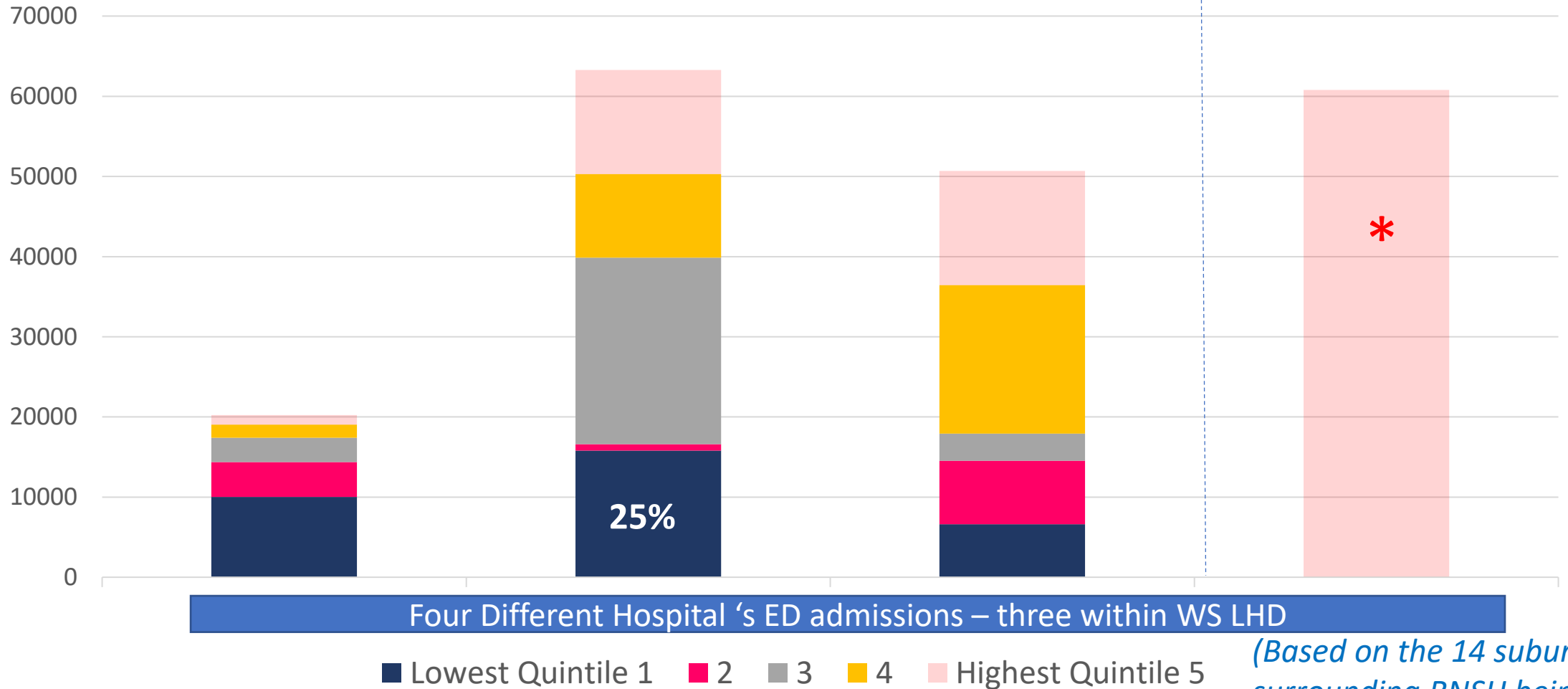
Published 30 December 2021





Are All E.D.'s treating patients with the same Health Literacy ?

by Quintile , Jan -Sept 2020



Four Different Hospital 's ED admissions – three within WS LHD

■ Lowest Quintile 1 ■ 2 ■ 3 ■ 4 ■ Highest Quintile 5

(Based on the 14 suburbs surrounding RNSH being I.R.S.A.D. Decile 10, i.e. Quintile 5)

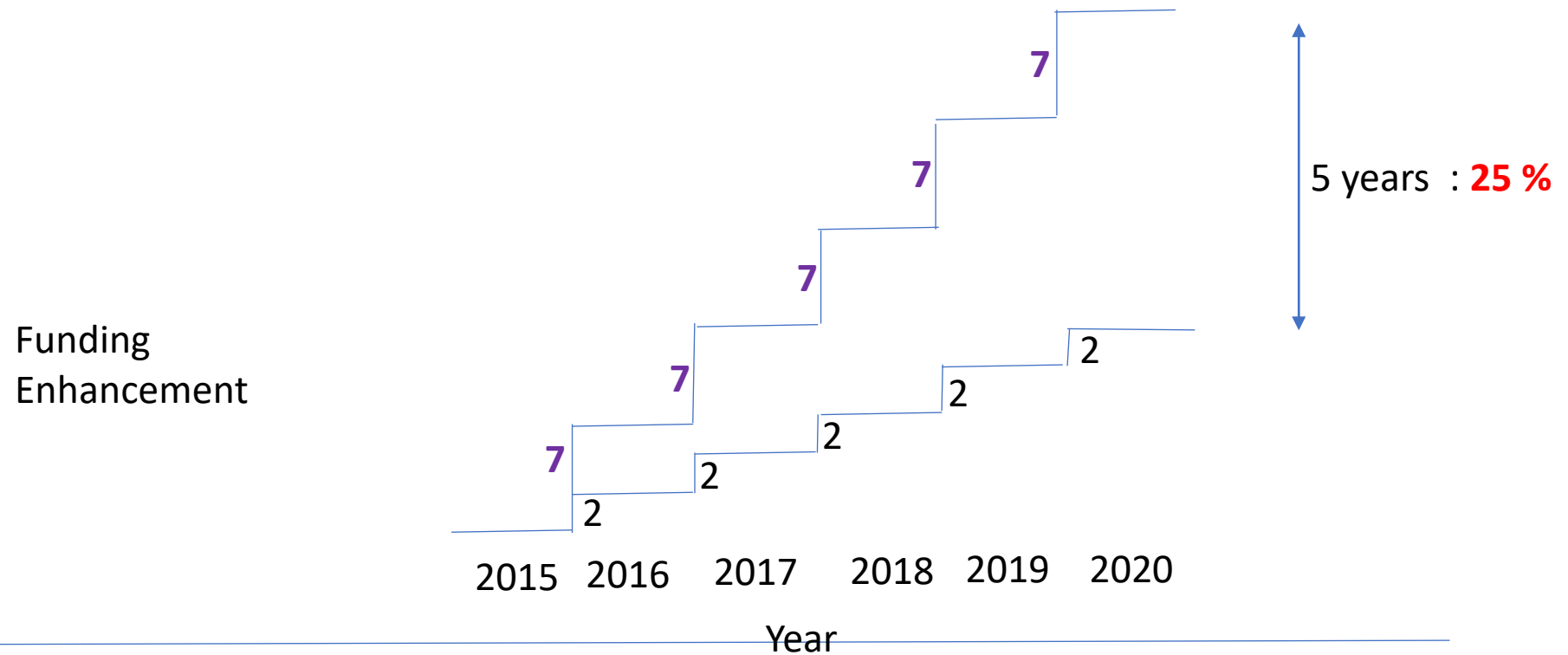
2019-2020 ABM Portal : Public hospital NWAU generation per capita

NWAU	WS LHD	NS LHD	SW LHD
NWAU 2019-2020	264,000	190,000	312,000
Population 2021	1,079,700	966,350	1,057,100
Ratio NWAU/Pop (000's)	244	197	295
<i>Relative Value Index</i>	- 7 %		- 3 %

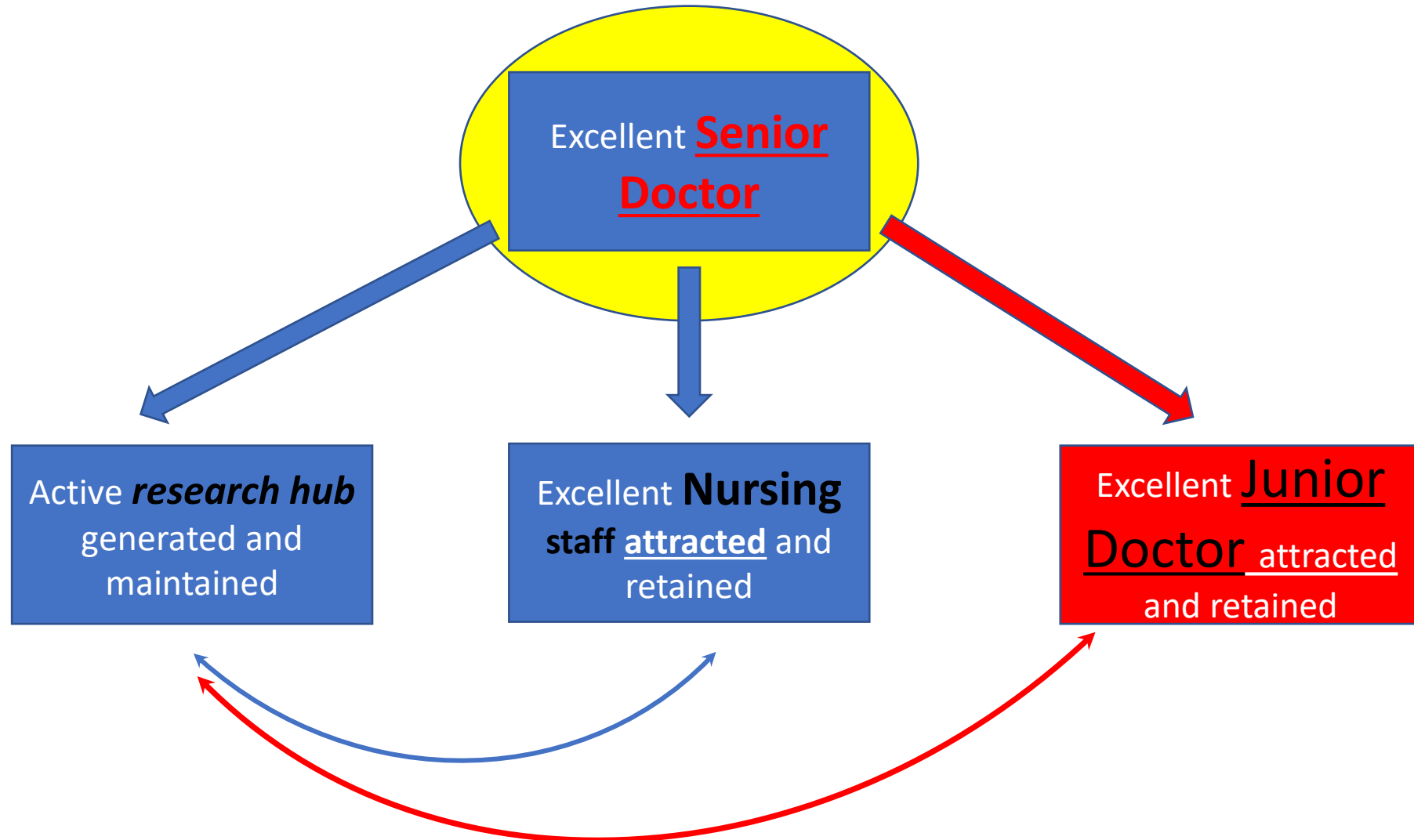
Director, Service Utilisation & Activity Modelling, System Information and Analytics Branch. (6 months meetings)

2. Effect on Service range, accessibility and morbidity

R.V.I. Difference between Debt and *Actual*



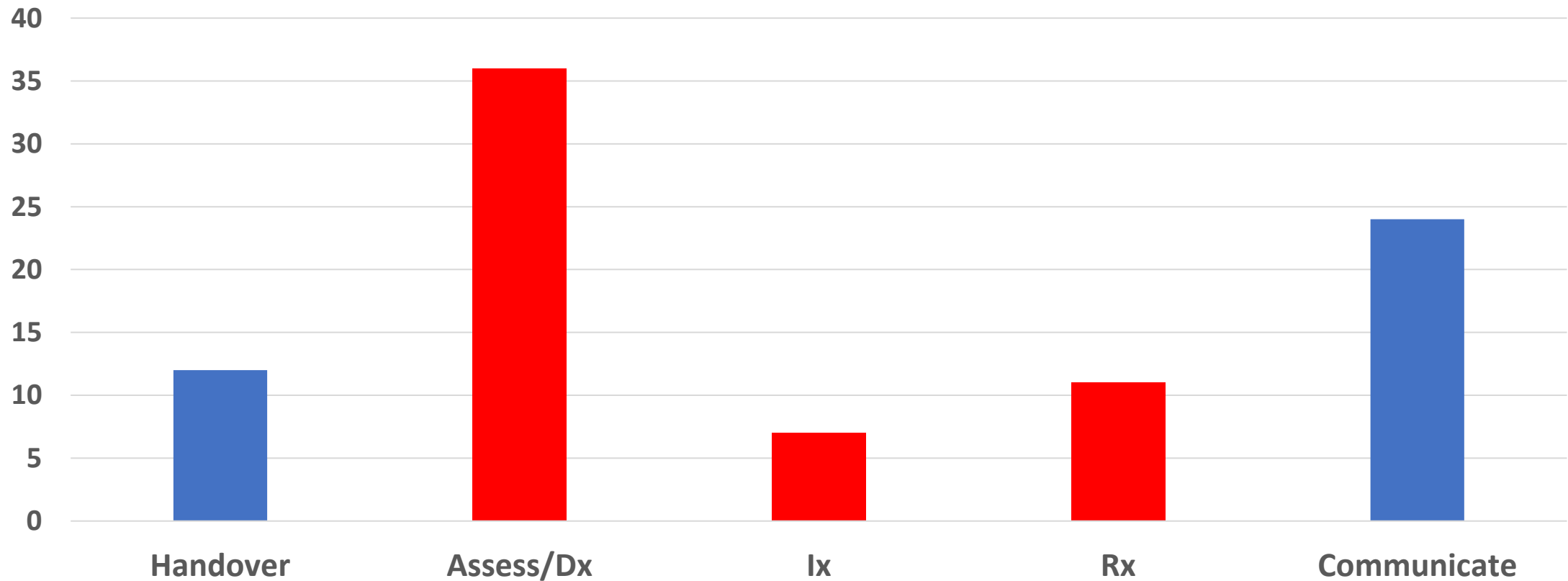
... *because*...Efficient, sustainable care :



> 80 % RCA's Due to Inadequate Bedside Senior Medical Acumen (S.A.C.1 and 2 over last 5 years)

Chart Title

% of
RCA's



2021, B2 Hub :

- Executive Director,

System Information and Analytics at NSW Health (+ “The Francis Report”)

“What must we do to attract more “high fraction” Staff Specialists to Bt ?”

- Director General (2011) – *asked the same question (and also in 2000)*

Blacktown and Campbelltown are special cases due to

- **socioeconomic status** and
- **growth**

therefore they require special arrangements.

DRAFT

CONFIDENTIAL

**REVIEW OF HEALTH SERVICES
- BLACKTOWN LGA**

WESTERN SYDNEY AREA HEALTH SERVICE

STRATEGIC APPOINTMENT OF SENIOR MEDICAL

Reid Harris & Associates

July 1994

STAFF IS CRUCIAL

Numbers of specialist staff 'geographically full time' is minimal.

JUNIOR MEDICAL STAFFING IS A KEY ISSUE. BOTH HOSPITALS, PARTICULARLY MT DRUITT, ARE EXPERIENCING INCREASING DIFFICULTY IN MAINTAINING APPROPRIATE LEVELS OF JUNIOR MEDICAL STAFFING, PARTICULARLY ATTRACTING JUNIOR MEDICAL STAFF WITH SUFFICIENT AND APPROPRIATE EXPERIENCE TO STAFF THE HOSPITALS OUT OF HOURS AND CRITICAL CARE AND EMERGENCY SERVICES

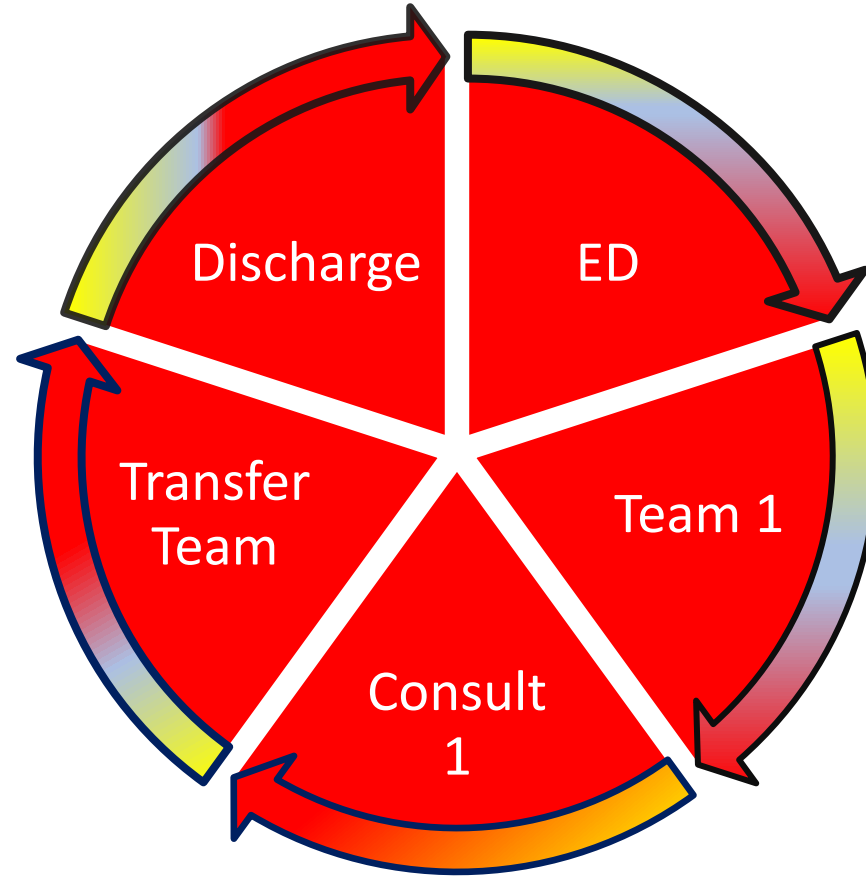
Mt Drutt Hospital is currently unable to recruit staff to cover the medical registrar / overnight registrar position and has found it necessary to prepare contingency plans including closure of the Emergency Department to all but walk-in patients from 11.00pm to 8.00am.

What makes the highest performing team ?



Francis Report -1

Quality Decisions (= more availability of senior Consultants to provide “Value Add”) drives “Flow”



Option 1 - Recruitment strains

(Note: Not limited to psychiatrists in Western Sydney)

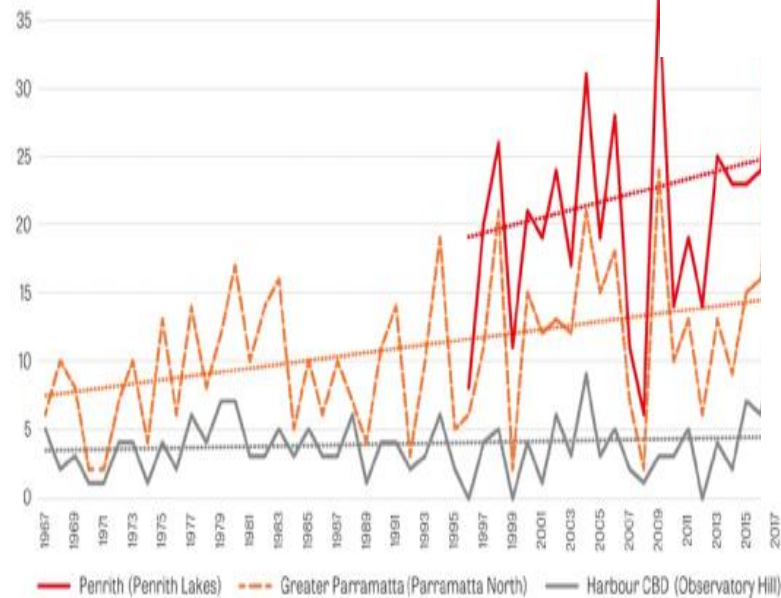


Australian Government
Productivity Commission

Mental Health

Productivity Commission
Inquiry Report
Volume 2

No. 95, 30 June 2020



- Australia relies heavily on the immigration of overseas-trained psychiatrists. The share of psychiatrists trained overseas (excluding New Zealand) has grown from about 30% to over 36% from 2013 to 2018. Immigration has major advantages in reducing the time taken to increase the workforce, brings diversity of backgrounds and expertise, and reduces net training costs. However, overseas-trained clinicians may also encounter more pronounced language and/or cultural adjustment where treatment relies on good communication. In addition, it may not always be easy to attract such professionals and there are benefits in some self-sufficiency. Above all, the need to attract overseas-trained psychiatrists without existing Royal Australian and New Zealand College of Psychiatrists (RANZCP) registration is a sign of workforce pressures.



Selection Job

	RNS	Concord	Blacktown
1. Current Clinical Environment			
• Junior Doctor performance			Reg14/15, RMO16/17
• Senior Doctors/Colleagues		Broad range	
• resources		Vascular, IR, NeuroSx	
• Patient Low Health Literacy %			
• Non medical team seniority incl. AHP number			
2. Professional prospects			
3. Aesthetics of locality			
4. Compensation			



The Iceberg Concept of Culture

Like an iceberg, nine-tenths of culture is below the surface.

SURFACE CULTURE
Most Easily Seen
Emotional Level: Low

Food, dress, music, visual arts, drama, crafts, dance, literature, language, celebrations, games

SHALLOW CULTURE
Unspoken Rules
Emotional Level: High

Courtesy, contextual conversational patterns, concept of time, personal space, rules of conduct, facial expressions, nonverbal communication, body language, touching, eye contact, patterns of handling emotions, notions of modesty, concept of beauty, courtship practices, relationships to animals, notions of leadership, tempo of work, concepts of food, ideals of child rearing, theory of disease, attitudes toward elders, concept of cleanliness, notions of adolescence, patterns of group decision-making, definition of insanity, preferences for competition or cooperation, tolerance of physical pain, concept of "self," concept of past and future, definition of obscenity, attitudes toward dependents, problem-solving roles in rel
sex, class, occupation, kinship . . .

DEEP CULTURE
Unconscious Rules
Emotional Level: Intense



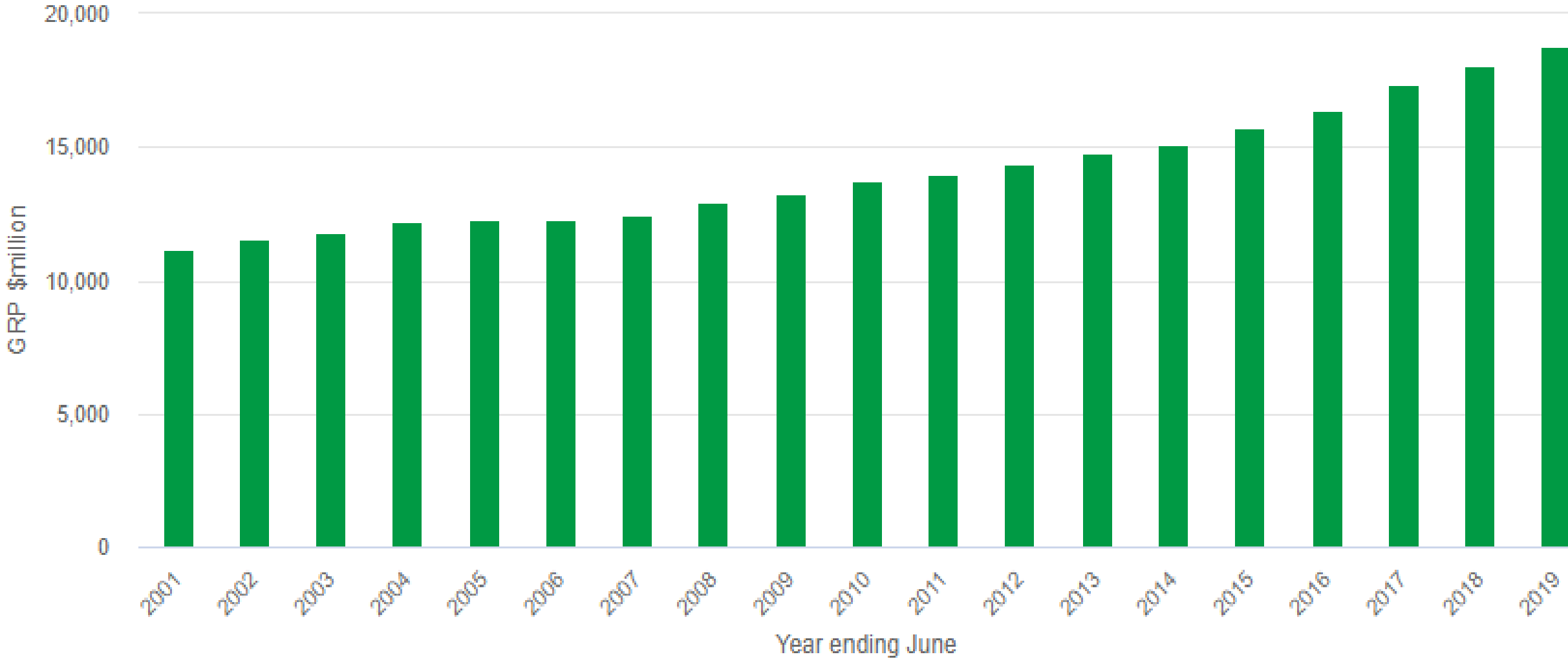
2. Effect on culture and Morbidity

7.5 What are the **economic benefits** of maximising health ?

Gross Regional Product

Blacktown City

expo



7.6 What are the **published costs** of Low Health Literacy in a larger Outer Metropolitan Hospital ?

Does low Health Literacy impact the cost of hospital service provision ?



Final Report
Confidential - Do not Duplicate
Economic Cost
of
Health illiteracy for Blacktown Hospital
Blacktown-Mt Druitt Health Medical Staff Council
19 October 2020

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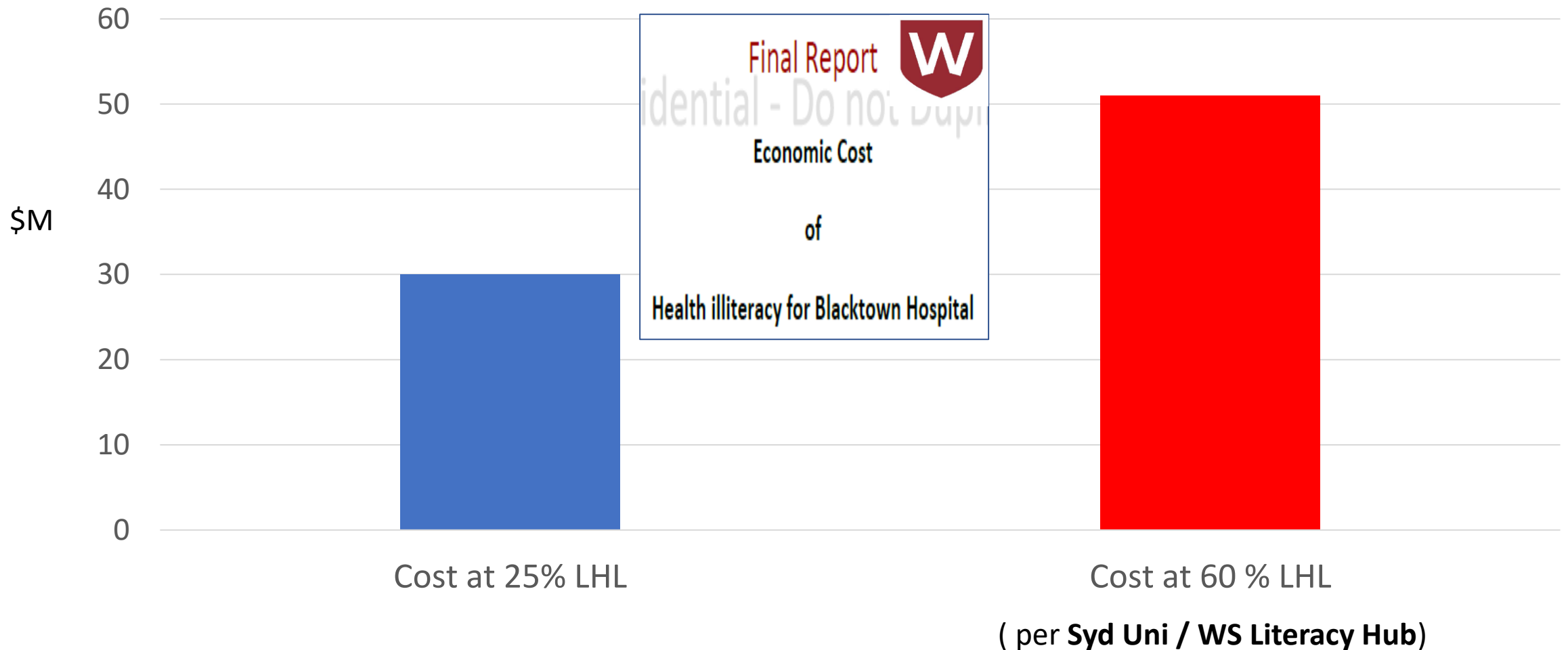
Authors
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Acknowledgements
Funding statement: This work was supported by Blacktown-Mt Druitt Health Medical Staff Council.

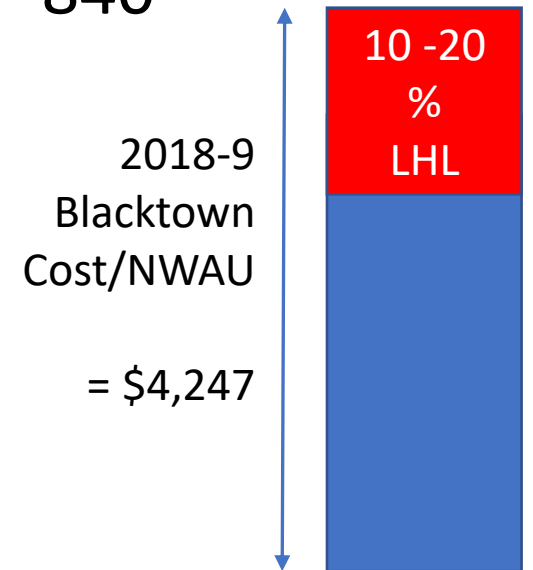
Total Annual Burden of LHL Blacktown Hospital (2020)



Pilot now: Block Fund **LHL Cost**, dynamically, until mitigation proves successful ,recognising *increased Cost of Production*.

- In 2018-9, Blacktown campus generated 70, 690 N.W.A.U *
- Low Health Literacy additional cost per N.W.A.U. = \$424 - 840 ^
- Blacktown total cost/N.W.A.U. = \$ 4,257

➔ 10 - 20 % of Blacktown's cost of production was due to LHL.



(Based on ABM Portal *and WSU Economic analysis^)

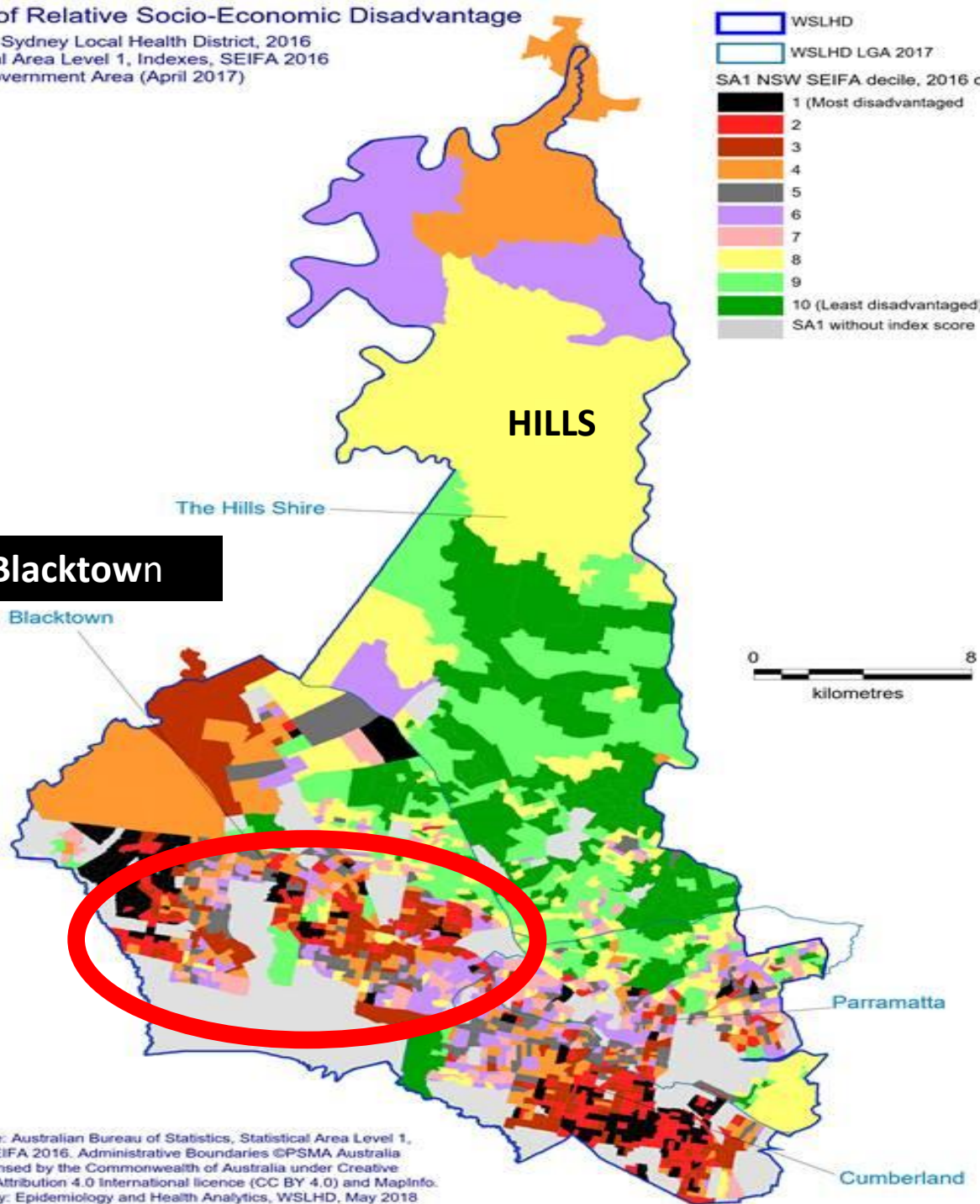
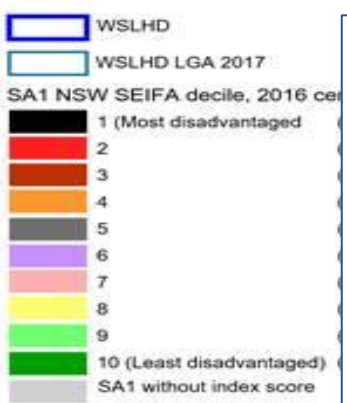
Financial Cost of LHL @Blacktown Hospital

Source	Formula	Calculation Factor	Calculated Cost
Literature	3-17 % Total Costs	9%	\$34 M
US (2009)	\$2,000/admission	16, 000 Adm/yr	\$32 M
Blacktown Point Prevalence Survey		47 %	Significant
Financial Impact Statement (Stage 2 BMDH Expansion, 2018)	Reviewed by 1. WS LHD and 2. AC External Auditors	Department by department ground up analysis, reviewed by Divisional Directors, DMS, DDMS, GM, DON, BMDH Expansion Project and LHD Workforce Planning	~ \$ 25M
WSU School of Economics, Finance and Property October 2020 Costing study	Only ... 1.analysed chronic diseases – no acute diseases. 2. if born outside Aus. and 3. age > 20.	1. ABS 2011 and 2016 2. ABS National Health Survey (2017-8) 3. NSW Population Survey 2019 4. Public Health Information Development Unit 5. Independent Hospital Pricing Authority report 6. Disease Expenditure in Australia 2015-6.	\$60 M inclusive

7.7 Can Funding be **Indexed** to **Need**, *Objectively*
and *Dynamically* (and **cost neutral**)?

Index of Relative Socio-Economic Disadvantage

Western Sydney Local Health District, 2016
 Statistical Area Level 1, Indexes, SEIFA 2016
 Local Government Area (April 2017)



Data source: Australian Bureau of Statistics, Statistical Area Level 1, Indexes, SEIFA 2016. Administrative Boundaries ©PSMA Australia Limited licensed by the Commonwealth of Australia under Creative Commons Attribution 4.0 International licence (CC BY 4.0) and MapInfo. Produced by: Epidemiology and Health Analytics, WSLHD, May 2018



HealthStats NSW

Search Topics, Locations, Keywords...

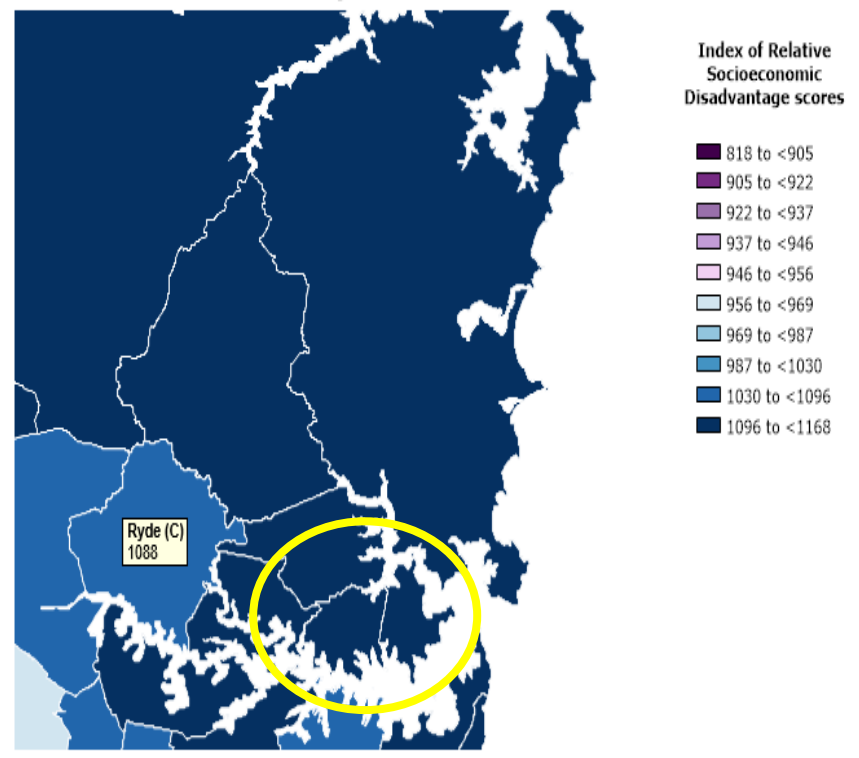
- Home
- Topics
- Locations
- HealthStats PLUS
- About
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Socioeconomic Indexes For Areas (SEIFA) by Local Government Area

Socioeconomic status by LGA

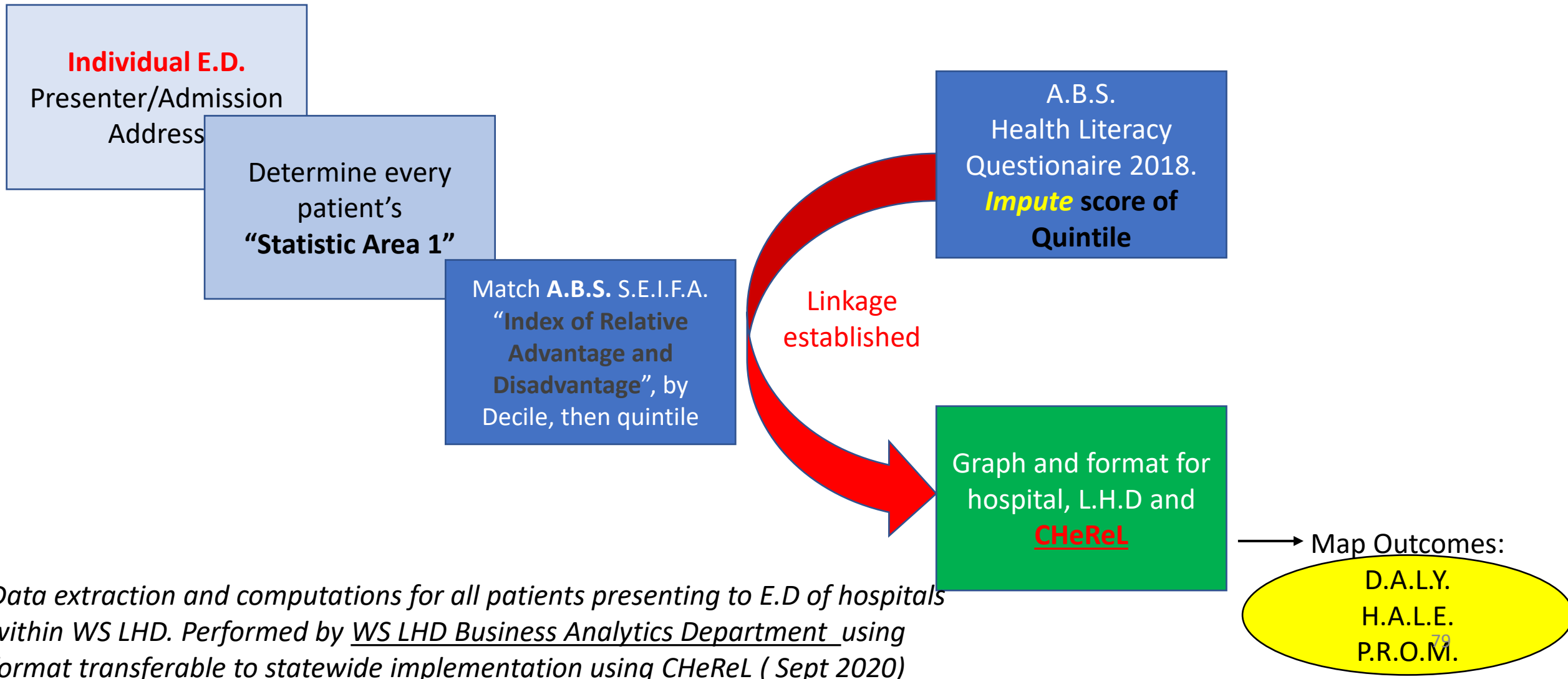
SEIFA Index of
 Relative Socio-Econom

Index of Relative Socio-Economic Advantage and Disadvantage, 2016

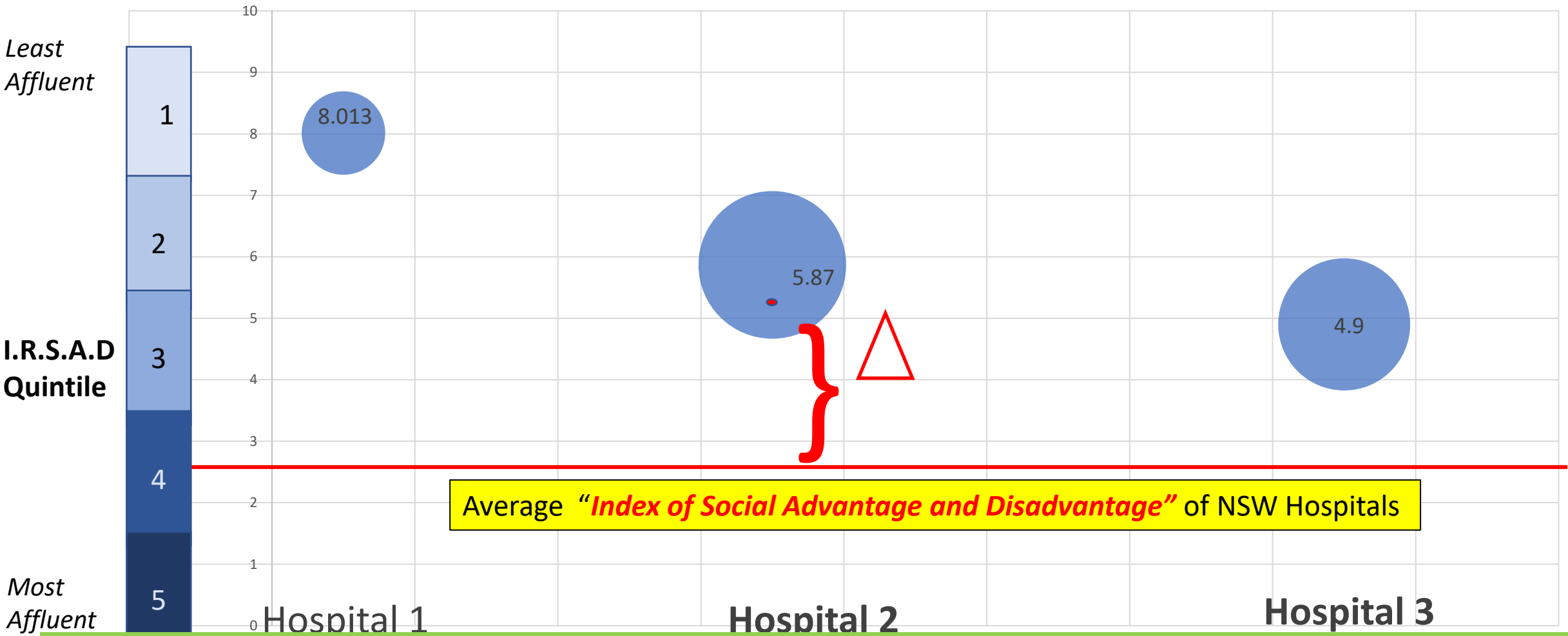


Local Health District Local Government Areas Primary Health Network

Do people from all localities within an LGA access that hospital equally – can presenters' HL be mapped ?



Dashboard : Comparative Emergency Dept Caseloads by S.E.I.F.A. (I.R.S.A.D. – *WS LHD Bus. Analytics Dept*) CHeReL



Weighted averages by I.R.S.A.D. quintile of residents who **actually access** the E.D., the entrance point for the bulk of the complex admissions in most hospitals, can be developed **across the state** using ABS data that is updated each 5 years.

State-wide Implementation :

All four SEIFA Indexes / 4, per SA 1

S.E.I.F.A
Score

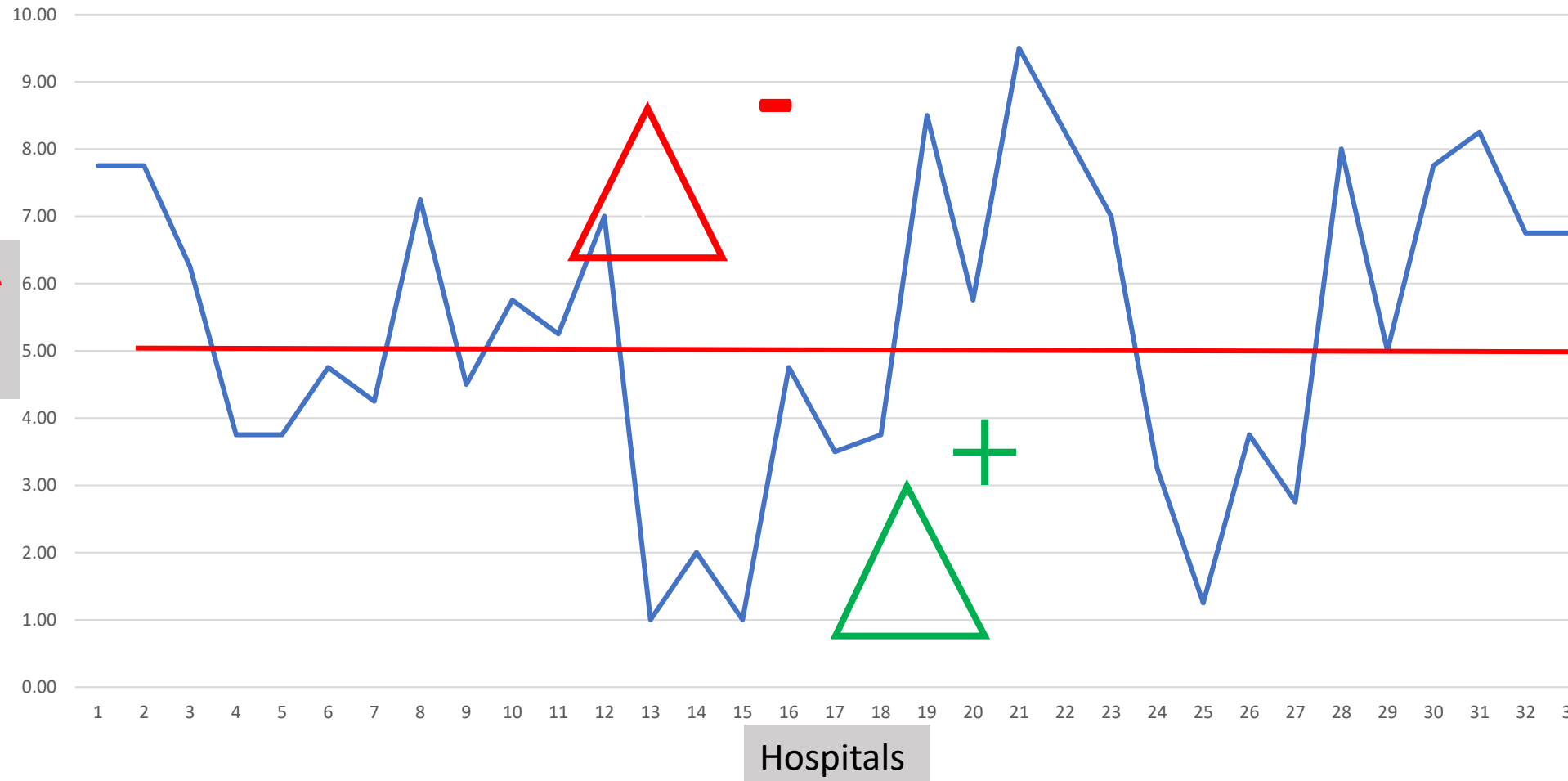


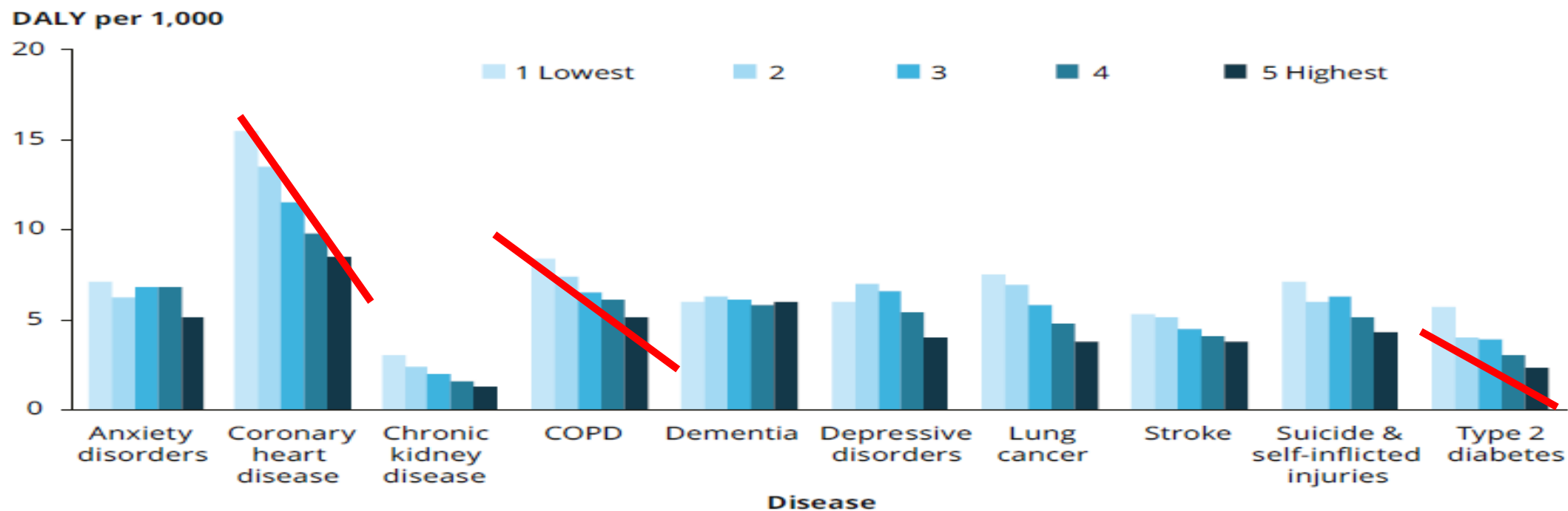
Table 1 Statistical Area Level 1 (SA1) SEIFA Summary, 2016

SA1	Index 1	Index 2	Index 3	Index 4	Score
1100709	1.01E+10	7	8	9	7.75
1100708	1.01E+10	7	7	8	7.75
1100707	1.01E+10	6	6	6	6.25
1100706	1.01E+10	4	3	5	3.75
1100705	1.01E+10	3	3	4	3.75
1100704	1.01E+10	4	4	5	4.75
1100703	1.01E+10	4	4	3	4.25
1100702	1.01E+10	7	7	8	7.25
1100701	1.01E+10	4	4	5	4.50
1100710	1.01E+10	6	5	6	5.75
1100801	1.01E+10	6	5	6	5.25
1100802	1.01E+10	7	7	8	7.00
1100803	1.01E+10	1	1	1	1.00
1100804	1.01E+10	2	2	2	2.00
1100805	1.01E+10	1	1	1	1.00
1100806	1.01E+10	5	5	6	4.75
1100807	1.01E+10	4	3	3	3.50
1100808	1.01E+10	3	4	4	3.75
1100810	1.01E+10	9	8	10	8.50
1100811	1.01E+10	6	6	6	5.75
1100812	1.01E+10	10	10	9	9.50
1100813	1.01E+10	9	8	9	8.25
1100814	1.01E+10	7	7	8	7.00
1100815	1.01E+10	4	3	3	3.25
1100816	1.01E+10	1	1	1	1.25
1100817	1.01E+10	4	4	4	3.75
1100818	1.01E+10	4	3	2	2.75
1100819	1.01E+10	8	8	10	8.00
1100820	1.01E+10	5	5	6	5.00
1100821	1.01E+10	8	8	10	7.75
1100822	1.01E+10	9	8	10	8.25
1100823	1.01E+10	6	7	7	6.75
1100901	1.01E+10	7	7	6	6.75
1100902	1.01E+10	5	6	7	5.75
1100904	1.01E+10	7	7	9	7.25
1100905	1.01E+10	5	5	6	5.25
1100907	1.01E+10	4	4	3	4.25

(Socioeconomic weighting /NWAU could be derived and applied based on SEIFA x ED presentation number)

7.8 Health Challenges of Hospitals serving LHL/Socioeconomically disadvantaged L.G.A.'s...

Figure 3.3: Total disease burden for selected diseases, by socioeconomic area, 2015



Notes

1. DALY = Disability-adjusted life year.
2. COPD = Chronic obstructive pulmonary disease.
3. Socioeconomic areas are based on the ABS Index of Relative Socio-economic Disadvantage (IRSD). The 5 groups represent the most disadvantaged 20% of the population to the least disadvantaged 20%, based on the individual's area of residence.
4. Rates were age-standardised to the 2001 Australian Standard population.
5. Prevalence estimates and deaths with insufficient geographic detail to align to a socioeconomic area are excluded from the analysis.

Source: AIHW ABDS 2015.

	A	B	C	D
1	Local Government Areas	Spatially Adjusted Number of Separatio	Spatially Adjusted Rate per	Significantly higher or lower
2	Blacktown	2,719	764.9	++
3	Camden	500	579.2	--
4	Campbelltown	1,159	704	++
5	Canada Bay	422	453.6	--
6	Canterbury-Bankstown	2,148	584.4	--
7	Central Coast	2,784	819.5	++
8	Cumberland	1,424	623.4	--
9	Griffith	225	854.2	++
10	Liverpool	1,331	610.1	--
11	North Sydney	291	397.9	--
12	Northern Beaches	1,311	490.8	--
13	Parramatta	1,324	535.6	--
14	Penrith	1,252	609.3	--
15	Sutherland Shire	1,278	560.5	--
16	Sydney	1,232	539.6	--
17	The Hills Shire	981	585.5	--
18	Wollongong	1,574	738.6	++

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A	B	C	D
Local Government Areas	Spatially Adjusted	Spatially Adjusted Rate per 100	Significantly higher or lower than State
Blacktown	592	168.5	++
Camden	107	128.3	0
Campbelltown	287	175.9	++
Canterbury-Bankstown	485	133	--
Central Coast	495	146.7	++
Liverpool	291	135.2	0
Mid-Coast	156	168.8	++
Newcastle	286	176.3	++
North Sydney	61	83.4	--
Northern Beaches	317	118.7	--
Parramatta	278	115.4	--
Penrith	346	170	++
Port Macquarie-Hastings	104	129.9	0
Randwick	191	127.7	-
Sutherland Shire	265	116.6	--
Sydney	237	104.6	--
The Hills Shire	179	108.6	--
Tweed	144	152.7	0
Wollongong	300	141.2	0

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A	B	C	D
Local Government Areas	Spatially Adjusted Num	Spatially Adjusted Rate per 100,00	Significantly higher or lower than State
Blacktown	2,875	808.8	++
Camden	739	857.1	++
Campbelltown	1,597	969.5	++
Central Coast	2,903	854.7	++
Cumberland	1,688	738.8	+
Liverpool	2,153	986.6	++
Narromine	52	790.1	0
Newcastle	1,818	1111.2	++
North Sydney	405	554.2	--
Northern Beaches	1,599	598.7	--
Parramatta	1,545	624.8	--
Penrith	1,394	678.6	--
Port Macquarie-Hastings	561	695.4	0
Sutherland Shire	1,505	660.1	--
The Hills Shire	1,217	726.5	0
Wollongong	1,566	734.6	0

Diabetes hospitalisations by Local Government Area and type of diabetes: Type 2, NSW 2017-18

Local Government Area	Spatially Adjusted Number	Spatially Adjusted Rate	Significantly higher or lower than State
Berrigan	10	112.4	0
Blacktown	422	117.4	++
Camden	104	116.1	++
Campbelltown	253	152.4	++
Canterbury-Banks	428	115.4	++
Central Coast	362	106	++
Hornsby	80	53.1	--
Liverpool	283	127.8	++
Murrumbidgee	5	120.6	0
North Sydney	27	36	--
Northern Beaches	113	42.3	--
Parramatta	166	65.4	--
Penrith	183	88	0
The Hills Shire	76	44.8	--
Wentworth	10	141.3	0
Western Plains Region	44	84.9	0

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World Health
Organization

European Region

Health and care workforce in Europe: time to act





World Health
Organization

European Region

Health and care workforce in Europe: time to act

ABSTRACT

All countries of the WHO European Region currently face severe challenges related to the health and care workforce (HCWF). This report focuses on identifying effective policy and planning responses to these HCWF challenges across the Region. The report presents an overview of the HCWF situation in the Region (focusing on medical doctors, nurses, midwives, dentists, pharmacists and physiotherapists, for whom data are available) and identifies relevant policy options, their expected benefits and potential facilitators or barriers to successful implementation. Examples of sound evidence-informed practices in countries are also provided. The aim of the report is to describe the data, rather than to analyse. Data supplied by countries have been used, but in many cases these have been incomplete. It is expected that data will grow progressively in future. No data on informal health workers are included. The WHO Regional Office for Europe, working with stakeholders, will support Member States' efforts to strengthen their HCWF. It will continue to make the case for investment in the HCWF not only to secure health gains, but also to achieve economic and social benefits.

Keywords

HEALTH PERSONNEL, HEALTH AND CARE WORKFORCE, WORLD HEALTH ORGANIZATION, COVID-19

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Foreword



Hans Henri P. Kluge
WHO Regional Director for Europe

Every single country of the WHO European Region owes huge gratitude to their health and care workforce. Never was this more evident than at the height of the COVID-19 pandemic, when health and care professionals stood as the main defence, striving to provide the care our populations needed, often at great personal risk, putting their own lives on the line.

Their heroic efforts came at a cost. Stress, fatigue, distress, burnout and the deadly effects of the virus itself were constant companions. Thousands of health and care workers succumbed to the impacts of some or all of these. WHO's population-based estimate for Europe is that around 50 000 health and care workers may have lost their lives during the pandemic¹ due to the severe acute respiratory syndrome coronavirus-2 virus.

The pressure on the workforce, mainly constituting women, remains high. The backlogs created by postponed health interventions are placing enormous strain on services and workers as they try to make up for lost time, while still standing on the COVID-19 frontline. Combined with the normal burdens of providing services to populations that are ageing and living with chronic conditions, this is creating huge challenges for health and care workers across the Region.

This is happening as they try to recover from the psychological trauma and physical exhaustion experienced during the pandemic. This is happening as we face no less than three public health emergencies of international concern: monkeypox, polio and COVID-19.

The problems WHO Member States face existed before the pandemic, but have been exacerbated since. Countries are responding to the challenges at a time of acute economic crisis, which demands the introduction of effective, imaginative, innovative and smart approaches. The WHO Regional Office for

Europe stands with them to put in place appropriate measures to protect and nurture their workforce.

Health and care workers need our support as never before. That is why this report is so important. The report is underpinned by an understanding that all countries of the WHO European Region are facing significant challenges with their health and care workforce. Personnel shortages, insufficient recruitment and retention, migration of qualified workers, unattractive working conditions and poor access to continuing professional development opportunities are blighting health systems. These are compounded by inadequate data and limited analytical capacity, poor governance and management, lack of strategic planning and insufficient investment in developing the workforce.

The focus of this report is on identifying effective policy and planning responses to support countries to meet these very challenges. It recognizes, however, that while common prerequisites for efficient health and care workforce management apply to all countries, there is no one-size-fits-all solution. Countries need to design their own path to reflect their historical, economic, social and political contexts.

The Region is at a critical juncture. Strategic planning and smart investment are crucial next steps in supporting our health and care workers to deliver on the promises of ensuring health for all, and leaving no one – including our health and care professionals – behind. It is time to act.

¹ The impact of COVID-19 on health and care workers: a closer look at deaths. Health Workforce Department – Working Paper 1. Geneva: World Health Organization; 2021:6 (WHO/HWF/WorkingPaper/2021.1; <https://apps.who.int/iris/handle/10665/345300>, accessed 14 July 2022).

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Abbreviations

AMEE	Association for Medical Education in Europe
ASPIRE	International Recognition of Excellence in Medical Education (initiative)
CHN	community care network (Ireland)
CPD	continuing professional development
ECC	Enhanced Community Care (programme) (Ireland)
EEA	European Economic Area
EPW	WHO's European Programme of Work 2020–2025: United Action for Better Health in Europe
EU	European Union
GCNMOs	government chief nursing and midwifery officers
GCNO	government chief nursing officer
GDP	gross domestic product
GP	general practitioner
HCWs	health and care workers
HCWF	health and care workforce
HLM	health labour market
HRH	human resources for health
Int\$	international dollars
NHS	National Health Service (United Kingdom)
NIPH	National Institute of Public Health (Slovenia)
NMC	Nursing and Midwifery Council (United Kingdom)
OECD	Organisation for Economic Co-operation and Development
P4P	pay-for-performance (system)
PHC	primary health care
PPP	purchasing power parity
REAL	Research and Economic Analysis for the Long term (Centre) (United Kingdom)
TAPIC	transparency, accountability, participation, integrity, capacity (framework)
UCAT	University Clinical Aptitude Test
UHC	universal health coverage

Executive summary

The aim of this report is to present for the first time a picture of the health and care workforce (HCWF) in the WHO European Region based on available data provided by countries in 2022. The focus is on the main policy options that can help countries strengthen their HCWF to meet current and future health needs and progress towards universal health coverage (UHC).

The report concentrates on six health professions for which data of sufficient quality are available. It therefore does not consider the entire breadth of the HCWF, including informal carers, due to current challenges around access to reliable data for these groups.

The COVID-19 pandemic has demonstrated the strengths and fragilities of the HCWF in the European Region

Many Member States entered the COVID-19 emergency with insufficient numbers of health and care workers (HCWs), suboptimal skill-mixes and imbalanced geographical distributions. This posed challenges to creating surge capacity and maintaining essential health services.

HCWs have been placed under extreme pressure, having to cope with heavy workloads and job-related stress and frequently facing physical and mental health risks, with some experiencing violence and harassment. Yet throughout the crisis, the HCWF has responded with agility and determination, rapidly acquiring new skills, adapting to new service requirements and responding effectively to an increase in health needs.

Health system recovery and future preparedness will fail without a strengthened HCWF

In the absence of targeted policy action, there is a risk that the pressures of COVID-19 will exacerbate long-standing shortcomings related to HCW shortages and difficulties in attracting and retaining HCWs. The economic climate (and cost-of-living

crisis) across Europe in mid-2022 is having an impact on pay, attrition rates and the attractiveness of working in the health and care sectors in many parts of the Region.

European countries must now prioritize their HCWs by investing more and investing smarter. They must protect their HCWF by implementing policies that place the interests and well-being of HCWs at the forefront. HCWs inspired everyone during the pandemic with their commitment and it is now time to place them not only at the centre of the health policy agenda, but also at the heart of economic and social recovery.

The report identifies effective policy and planning responses to HCWF challenges in the Region

The report proposes key priority policy actions that can help countries strengthen their HCWF to meet current and future health needs and progress towards UHC. It is aimed at policy-makers at European, national and subnational levels across health and other relevant sectors.

The European Region HCWF has never been larger or more diverse in terms of available skills

Available data (until 2020), much of which do not yet capture the full effect of the pandemic, show that the HCWF of medical doctors, nurses and midwives in Europe increased by 10% between 2010 and 2020. The greatest increase was seen in western Asia (36%), followed by western Europe (26%) and southern Europe (15%), but there was a decline

in central Asia (15%) and eastern Europe (6%). An overall upward trend is welcome in a context of growing prevalence of noncommunicable diseases, multimorbidity, disabilities and chronic conditions.

The ageing of the HCWF is a concern throughout the Region and poses a threat to the sustainability of the workforce due to the challenge of replacing workers when they retire, especially for medical doctors (13 of the 44 countries that reported data on this issue have a workforce in which 40% of medical doctors are aged 55 or older). While the proportion of women in the medical workforce increased over the past 10 years from 42% to 48%, women comprise the majority of workers in lower-paid and lower-status occupations. More data and research on gender gaps and occupational segregation in critical areas are required to ensure a health and care system that recognizes all the competencies and contributions of women.

There is wide variability in the production of HCWs across countries. Countries with a low number of graduates may not be providing sufficient staff to replace losses due to retirement and other causes. For medical doctors, the numbers of graduates as a percentage of the HCWF size varies across countries from under 1% (not sufficient to replace losses) to 15%. For nurses, the percentages range from under 1% to nearly 25%.

Building on innovative strategies implemented during the COVID-19 pandemic will support and sustain an effective workforce

Countries across the Region have had to adopt innovative strategies to meet surge capacity during the pandemic. They must now sustain and develop the HCWF and protect its health and well-being.

Policy responses have involved ensuring the availability of more workers by, for example, deploying students in care settings, bringing back retired and inactive workers, using volunteers and fast-tracking deployment of foreign-trained professionals. Reskilling and repurposing the workforce and the accelerated use of digital technology have made a critical contribution to creating surge capacity and meeting the specific demands of the pandemic. Urgent action has also been taken to protect HCWs by creating safe working environments, supporting mental health and providing financial and practical help (such as childcare) to motivate and enable HCWs to continue working effectively.

Many of the strategies adopted during COVID-19 to protect, retain and reskill HCWs are not new, but required rapid changes to policy, regulation, financing and ways of working to create an enabling environment for implementation. Learning from and building on these initiatives can help support and sustain the HCWF going forward.

The report proposes 10 actions to strengthen the HCWF in the European Region

The report outlines policy options that can help countries strengthen their HCWF, proposing 10 actions to strengthen the HCWF in the European Region. All interventions require intersectoral collaboration, engaging different ministries and government functions and other stakeholders (including organizations representing HCWs and employers). WHO will continue to support Member States to make policy change happen and drive improved health outcomes.

This report comes at a critical moment that presents an unprecedented opportunity to take firm action to address persistent HCWF challenges in the WHO European Region. It is time to act.



TEN ACTIONS

to strengthen the health and care workforce



Action 1.

Align education with population needs and health service requirements

Action 2.

Strengthen continuing professional development to equip the workforce with new knowledge and competencies



Action 3.

Expand the use of digital tools that support the workforce

Action 4.

Develop strategies that attract and retain health workers in rural and remote areas



Action 5.

Create working conditions that promote a healthy work-life balance

Action 6.

Protect the health and mental well-being of the workforce



Action 7.

Build leadership capacity for workforce governance and planning

Action 8.

Strengthen health information systems for better data collection and analysis

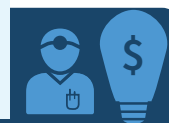


Action 9.

Increase public investment in workforce education, development and protection

Action 10.

Optimize the use of funds through innovative workforce policies







Why do we need this report, and why now?

All countries of the WHO European Region face severe problems related to their health and care workforce (HCWF). These are not new challenges, but the COVID-19 pandemic has exacerbated the problems and created some of its own. In addition, the economic climate (and cost-of-living crisis) across Europe in mid-2022 is having an impact in relation to pay, attrition rates and the attractiveness of at least some parts of the HCWF to potential recruits. The Region is at a critical juncture in being able to ensure a fit-for-purpose HCWF.

Irrespective of their income level, countries are, to varying extents, having to deal with:

- **shortages of health and care workers (HCWs):** despite the Region having the highest density of HCWs of all WHO regions, many countries face shortages, and trends are concerning as the workforce is ageing and efforts to replace professionals finishing their careers are suboptimal;
- **insufficient recruitment** in services such as primary care, long-term care, rehabilitation and mental health;
- **problems with retention of HCWs** in health and care services, particularly public services, as increasing numbers leave or intend to leave due to experiencing high levels of workload, stress and fatigue since the beginning of the COVID-19 pandemic;
- **difficulties in attracting HCWs** to work in underserved geographical areas (especially rural, remote or poor urban zones);
- **increased internal and international mobility of HCWs** (rural to urban, public to private sector), cross-border working and emigration as part of a globalized health labour market (HLM);
- **skills mismatches** originating from poor alignment of basic education and lifelong learning with practice requirements to meet population health needs;
- **inefficient organization of work**, with narrow and poorly defined scopes of practice for some professions, underdevelopment of multiprofessional teamwork, underuse of digital health tools and limited integration of services;
- **unattractive employment and working conditions** that are demotivating, fail to protect the physical and mental health of HCWs and allow bias and gender- or ethnic-based discrimination to flourish, with women clustered in lower-status jobs and being underrepresented in decision-making positions;
- **a lack of gender-responsive policies** to improve the gender balance across services, increase recruitment in underserved services and geographical areas and reduce attrition rates of women, who are particularly exposed to difficult working conditions;
- **inadequate HCWF governance and management mechanisms**, which makes it difficult to balance supply and demand for HCWs;
- **lack of strategic planning informed by a sound analysis of the HLM**, exacerbated by a lack of data and information to plan effectively; and
- **insufficient investment** in the development of the HCWF, leading to suboptimal provision of health and care services.

The report offers a picture of the HCWF in the Region based on available data provided by countries in 2022. In many cases, these data are incomplete, which points to the crucial need to strengthen data sources. It focuses only on six groups of HCWs for whom data are available (medical doctors, nurses, midwives, dentists, pharmacists and physiotherapists) and does not include data on informal health workers, a category that remains poorly documented despite the indispensable contribution they make in all countries.

The report nevertheless is a significant achievement as the first of its kind to describe the situation of the HCWF in the whole European Region. It represents the start of a process to gain a much more comprehensive view of the HCWF, which will create the foundation and provide impetus for more robust and consistent data-collection and analysis to inform health workforce policies in Member States in the future.

The report focuses on identifying effective policy and planning responses to HCWF challenges in the Region. It recognizes that an effective governance system and strategic planning informed by reliable data and information are prerequisites for effective HCWF management, but that there is no single one-size-fits-all solution. Each country needs to design its own path to a stronger HCWF to reflect their historical economic, social and political contexts.

The report is presented in two main parts:

1. **an overview of the HCWF situation in the Region**, highlighting how the COVID-19 pandemic has affected the HCWF and how countries are responding to its pressures; and
2. **a focus on “What to do?”**, identifying relevant policy options, their expected benefits and potential facilitators or barriers to successful implementation, with 10 proposed actions to strengthen the HCWF in the European Region.

Examples of sound evidence-informed practices for Member States to consider as they design and implement HCWF policy and planning interventions are also presented.

The priority of coordinated action across the Region is stressed throughout.

The report is framed by WHO’s European Programme of Work, 2020–2025: United Action for Better Health in Europe (EPW) (1). The EPW places the HCWF at the heart of efforts to improve access to quality health services. It builds on evidence-informed analyses, recommendations and tools that can support Member States in responding to their HCWF needs (see Annex 1).

The WHO Regional Office for Europe, working with stakeholders, national authorities and partners, will support Member States’ efforts to strengthen their HCWF. It will continue to make the case for investment in the HCWF not only to secure health gains, but also to achieve economic and social benefits.

Annex 2 presents detailed individual health workforce profiles of the 53 countries of the Region and regional and subregional aggregated data.





Profile of the HCWF in the WHO European Region

The focus of this report is medical doctors, nurses, midwives, dentists, pharmacists and physiotherapists (see Box 1 for data methods).

Comprehensive headcount data over time are available for these professions, except physiotherapists. Data on sex and age are available for medical doctors, nurses and midwives, but are sparse for other professions. The absence of

consistent data on other HCWs, including informal carers and workers, explains the incomplete profile presented in this report. WHO supports countries' efforts to progressively expand the production of data on all components of the HCWF.



Box 1. Data methods

Health workforce headcount data are from the National Health Workforce Accounts, provided through data returns from Member States. These data were collected from a large number of countries that may count their workforce in different ways. There are gaps where some countries have not returned any data, and places where the data are inconsistent. All countries were asked to review their draft profiles. Some provided updated health workforce data, which have been used in the report, and revised population data, which have not. Population data from the United Nations Department of Economic and Social Affairs Population Division have been used across all countries for consistency.

If the National Health Workforce Accounts data had gaps, data from the Eurostat, Organisation for Economic Development and Co-operation (OECD) and WHO joint data collection on non-monetary health-care statistics were used (wherever possible) to fill them. If no data were available, the value “not available” was returned.

Inconsistencies occur because the National Health Workforce Accounts collect data on HCWs who are practising, professionally active and are licenced to practise, but countries do not always return the right values. For example, countries may return the same value for all of them, return the number licenced to practise instead of the number practising, or have the number practising greater than the number licenced to practise. These errors have been corrected where possible. Data from the joint data collection on non-monetary health-care statistics were helpful in this process.

The headcount therefore may not match the number given by the National Health Workforce Accounts. Because of this, the National Health Workforce Accounts workforce density were not used. Instead, density was calculated from the corrected headcount and country populations from the United Nations Department of Economic and Social Affairs Population Division.

Where a 10-year period of assessment (from 2010 to 2020) is required, gaps in the data mean that a full 10-year period may not be available, or the 10-year period does not span 2010 to 2020. In this case, the nearest years to 2010 and 2020 were used to get a 10-year range if possible.

2.1 What do the data show?

There are few comparable data available on numbers in training, workforce entry and exit rates, vacancy rates, attrition rates and full-time equivalents. Lack of standardized data on these indicators in multiple countries makes projecting the future supply of HCWs in the Region difficult. Building a comprehensive and reliable HCWF database and workforce planning system is a major challenge for most countries of the Region.

The planning of the HCWF also requires an understanding of the health-care needs of a population, its demographic profile and geographic distribution, and demand for and utilization of services.

2.1.1 Workforce densities

The most commonly used, and most available, indicator is density of HCWs (the number of active HCWs in an occupation divided by the population). For all density data cited below, the population is per 10 000 people.

It does not account for the actual time that occupations work to deliver services – their full-time equivalents. Neither does it account for the variations in the services delivered – the scope of practice. For example, the scope of practice of nurses differs widely between countries, so nurse density often does not measure the same thing.

Workforce density is a simple measure that is useful for basic comparisons between countries and occupations.

2.1.1.1 Health professional densities

Densities vary five-fold between countries. The total medical doctor-, nurse- and midwife-to-population density ranges from 54.3 in Türkiye to over 200 for Iceland, Norway, Monaco and Switzerland.

Densities for the other professions also vary. At subregional level (Table 1), central and western Asia have the lowest densities and northern and western Europe the highest.

Table 1. Countries by subregion^a

Subregion	Countries
Central Asia	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
Eastern Europe	Belarus, Bulgaria, Czechia, Hungary, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia, Ukraine
Northern Europe	Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Norway, Sweden, United Kingdom
Southern Europe	Albania, Andorra, Bosnia and Herzegovina, Croatia, Greece, Italy, Malta, Montenegro, North Macedonia, Portugal, San Marino, Serbia, Slovenia, Spain
Western Asia	Armenia, Azerbaijan, Cyprus, Georgia, Israel, Türkiye
Western Europe	Austria, Belgium, France, Germany, Luxembourg, Monaco, Netherlands, Switzerland

Note: countries of the WHO European Region only.

^a The geographic subregions are as defined by the United Nations Statistics Division and used in all United Nations publications and databases. This provides consistency across data sources, including United Nations population data that are used to calculate health workforce density. The official United Nations country names are also used as these are not standard across all the data sources used. In the case of the western Asian subregion, only those countries that are part of the WHO European Region are considered (others are part of the WHO Eastern Mediterranean Region and are excluded as not being within the remit of this report).

Source: United Nations Department of Economic and Social Affairs Population Division (2).

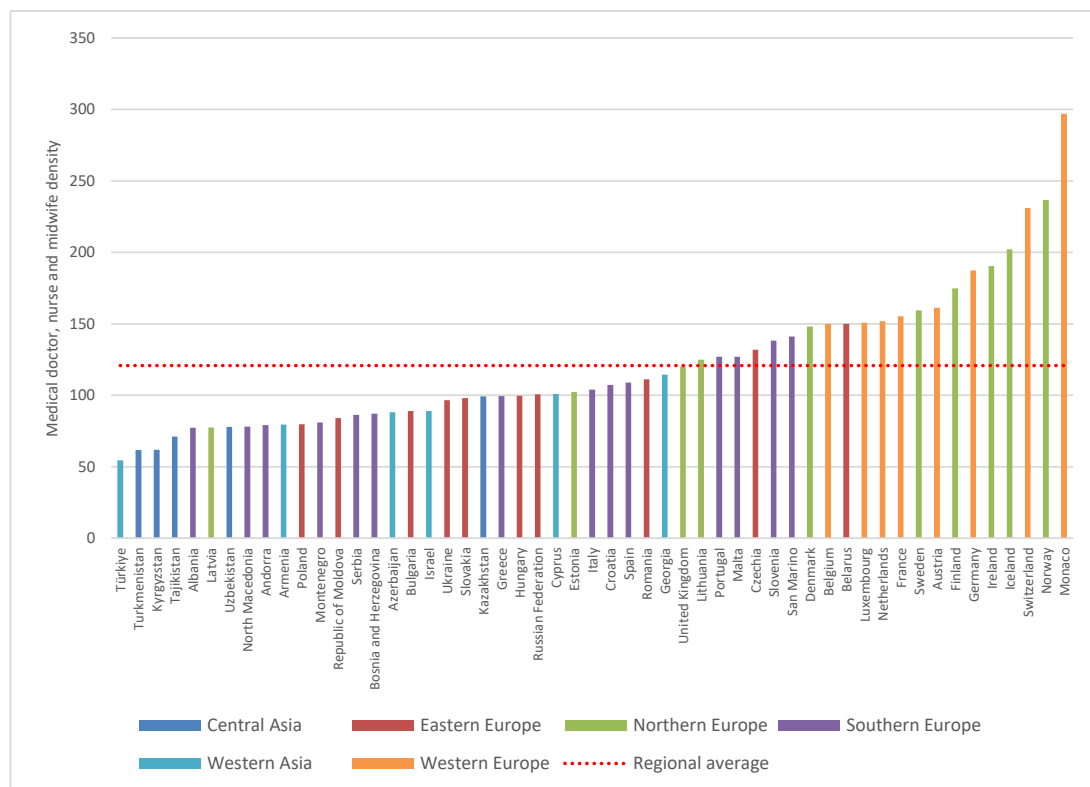
Medical doctor density varies from 17.3 in Tajikistan and 17.5 in Kyrgyzstan to 88.7 in Monaco. Central Asia has the lowest regional density (average 21.3), with western Europe (45.5) the highest. The available data show that **nurse density** also shows strong country-level variations, from 27.0 in Türkiye to 183.7 in Switzerland and 202.7 in Monaco. WHO European Region countries in the western Asia subregion have the lowest density (48.2), followed by those in central Asia (48.9), southern Europe (61.7) and eastern Europe (65.3). The highest reported ratios are in northern (108.4) and western Europe (136.0). The **density of midwives** varies significantly by country, from 1.4 in Georgia to 21.3 in Ireland, although the latter figure represents

midwives who are licenced to practise rather than those actually practising. The regional average ratio in 2020 of doctors to nurses was 2.11 and 2.25 of doctors to nurses and midwives.

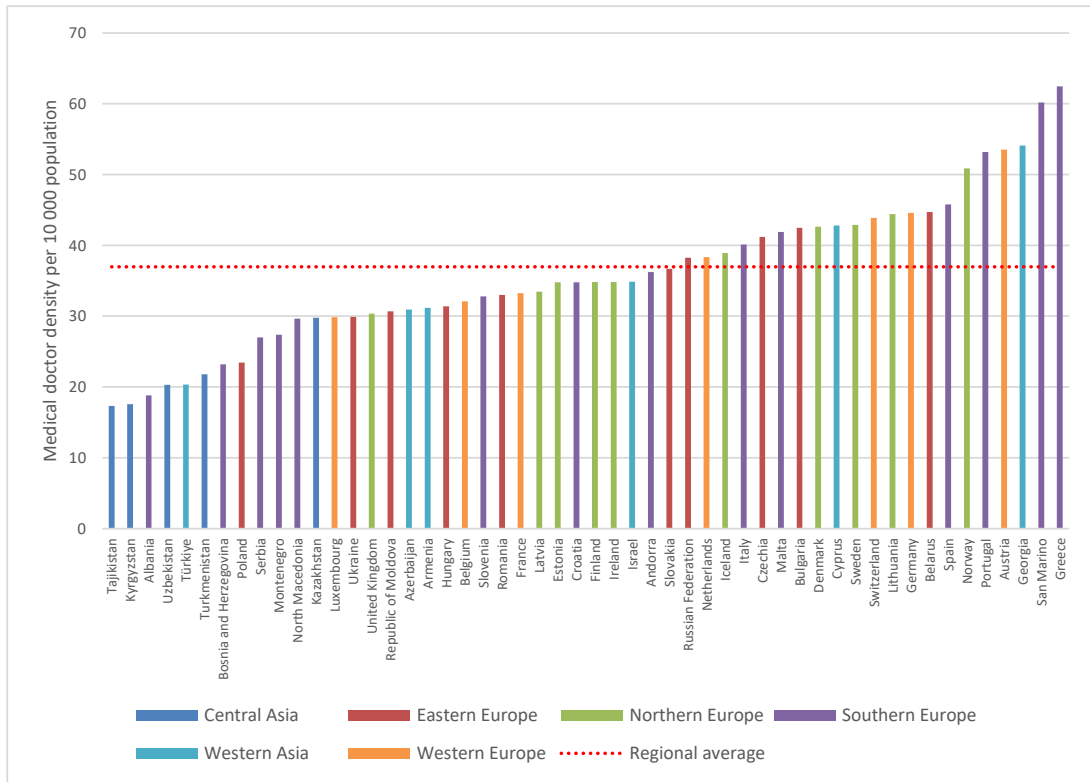
Dentist density varies from 1.7 in central Asia to 6.4 in western Asia and 8.0 in southern and northern Europe. The lowest density is in Montenegro (0.5) and the highest in San Marino (17.6). The lowest **pharmacist density** of 1.7 is found in central Asia and the highest in northern and western Europe (8.3 and 9.7 respectively). According to the data available, **physiotherapist density** varies greatly across the Region. Densities range from 0.2 in central Asia to 7.9 in southern Europe, 12.5 in northern Europe and 17.9 in western Europe (Fig. 1 (a-g)).

Fig. 1. Health professional densities compared to regional averages, 2020 or latest year

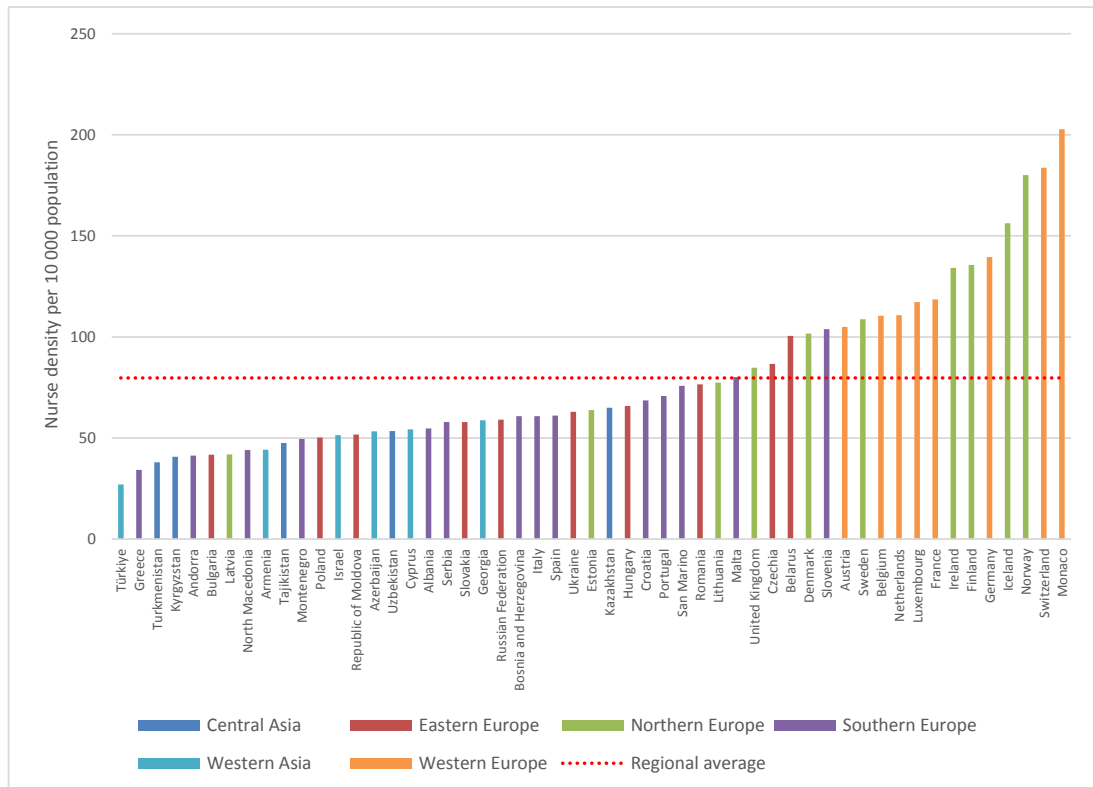
a. Medical doctor, nurse and midwife total density compared to regional average of 121 per 10 000 population



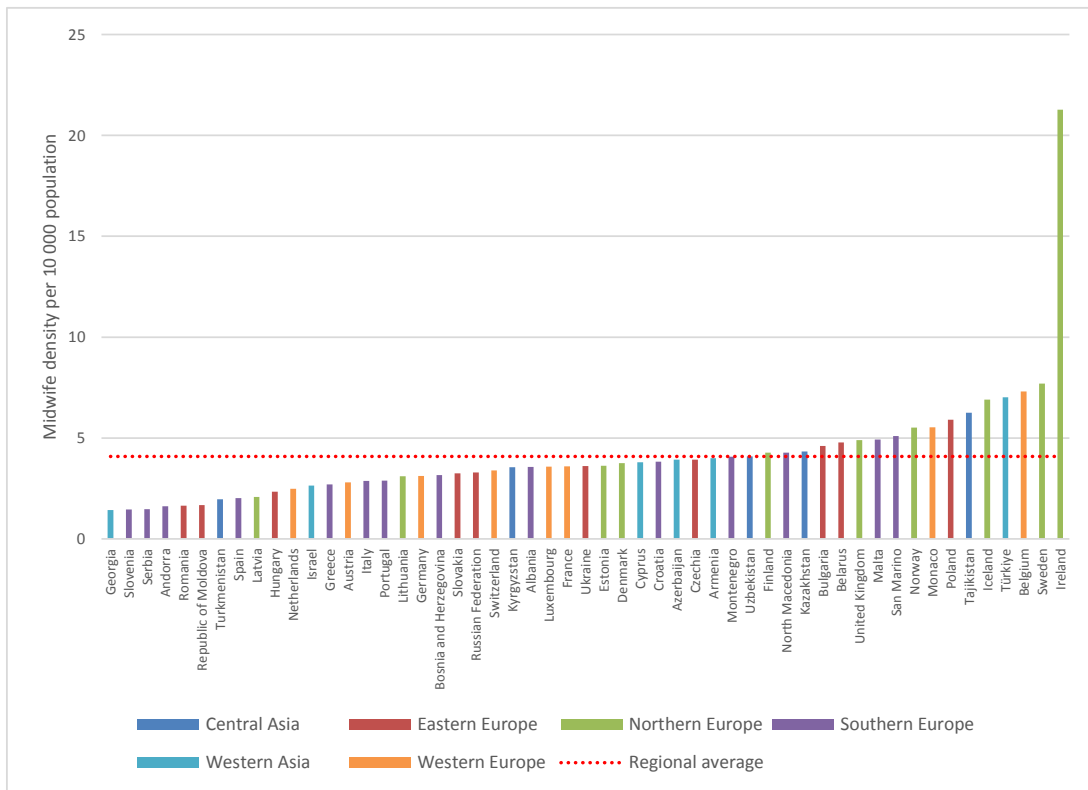
b. Medical doctor density compared to regional average of 37 per 10 000 population



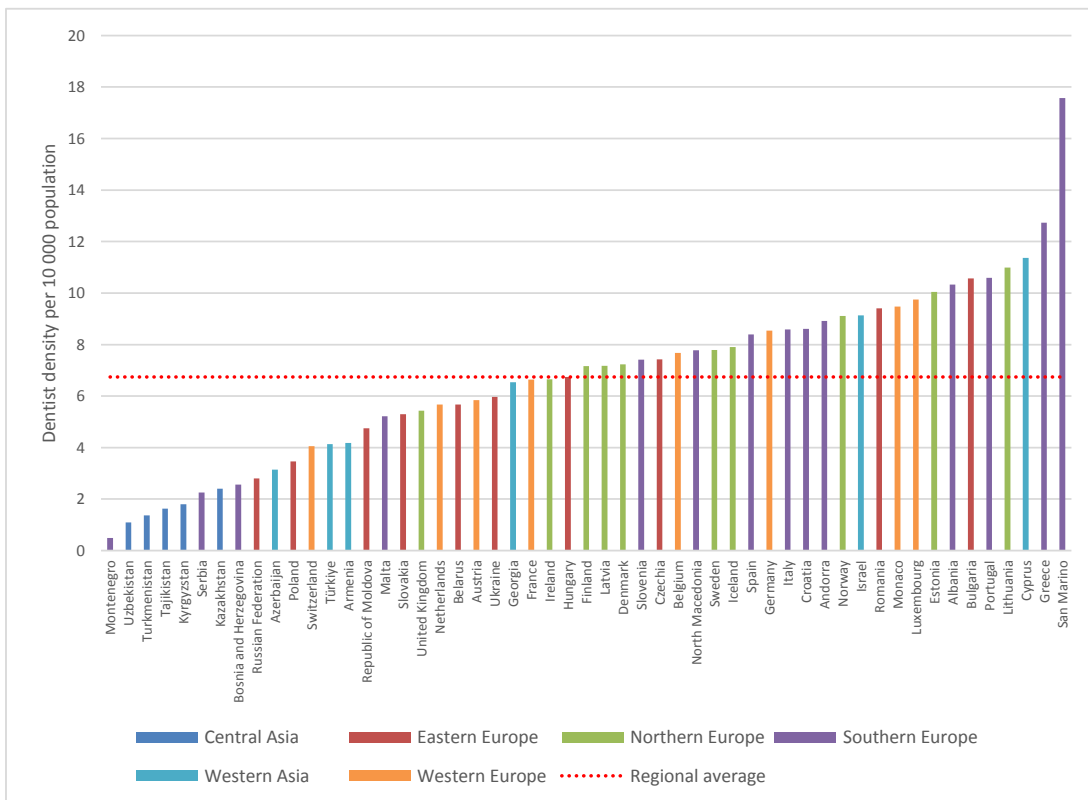
c. Nurse density compared to regional average of 80 per 10 000 population



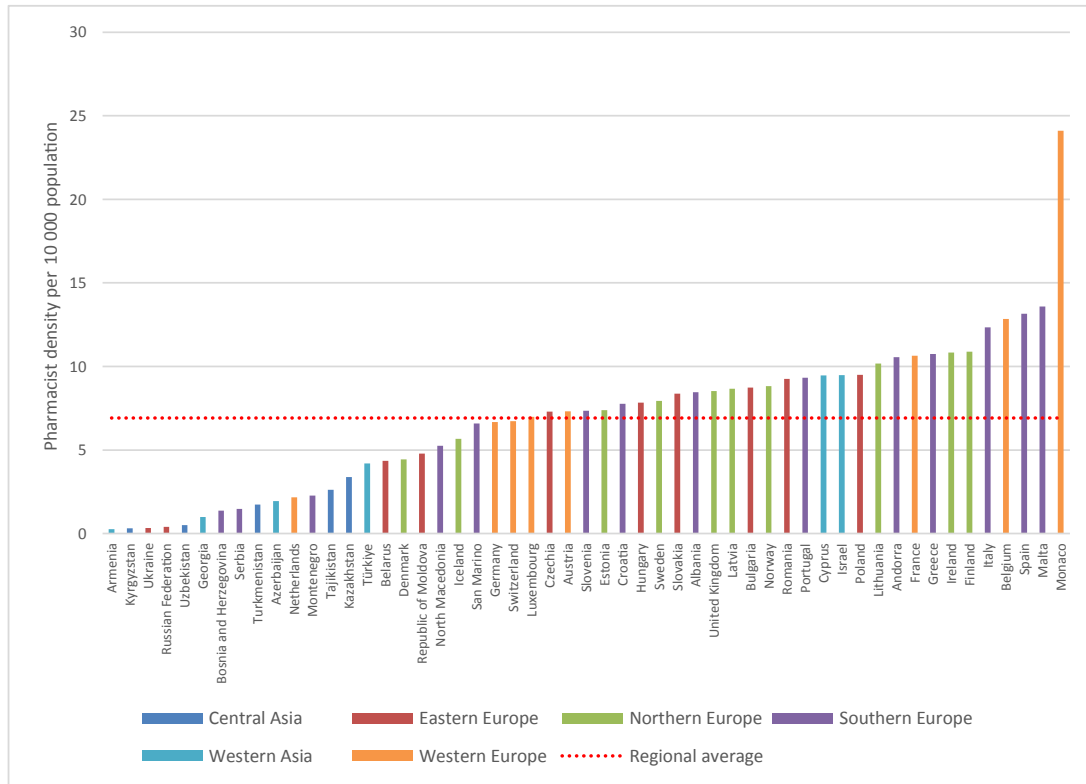
d. Midwife density compared to regional average of 4.1 per 10 000 population



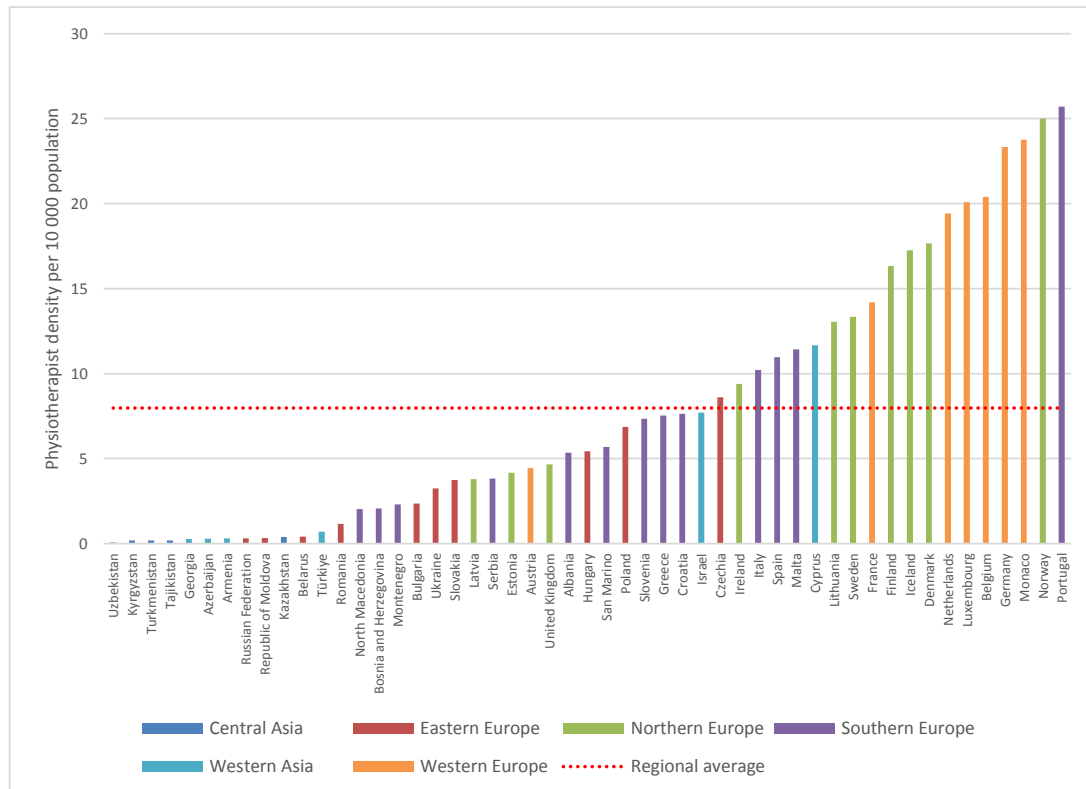
e. Dentist density compared to regional average of 6.7 per 10 000 population



f. Pharmacist density compared to regional average of 6.9 per 10 000 population



g. Physiotherapist density compared to regional average of 8.0 per 10 000 population



Source: Health workforce density is estimated using the latest numbers of staff practising from the WHO National Health Workforce Accounts Data Portal (3) supplemented with recent country submissions to the Eurostat, OECD and WHO joint data collection on non-monetary health-care statistics. For a small number of countries where the number of practising HCWs is not available, the number professionally active or the number licenced to practise is used. For most countries, the data are for 2019 to 2020. Population data are from the United Nations Department of Economic and Social Affairs Population Division (2).

2.1.2 HCWF: profile in the European Region

2.1.2.1 HCWF growth

Overall, the HCWF in the Region grew significantly between 2010 and 2020, but there are exceptions (Fig. 2).

The most recent data (from 2019 or 2020, depending on country) give a 10-year period of assessment. Data from 2020, however, may reflect temporary responses to the COVID-19 pandemic, showing an increase in the availability of HCWs as a response to the pandemic, though it is not possible to define the extent.

Overall, the HCWF of medical doctors, nurses and midwives in the Region increased by 10%, while the HCWF in central Asia declined by 15% and in eastern Europe by 6%. The greatest increase of 36% was seen in western Asia, followed by western Europe with 26%, southern Europe with 15% and northern Europe with 12%.

The number of medical doctors in the Region increased by 11%, with an increase of 14% and 28% in all subregions other than central Asia, where there was limited growth of about 1%, and eastern Europe, with little change.

The number of nurses² in the Region increased by 9.5% but wide variation was seen, increasing by 50% in western Asia due to a large rise in numbers in Türkiye and decreasing by 19% in central Asia, mostly due to a decline in Uzbekistan. Eastern Europe also saw a reduction (-9%), while nurses in northern Europe increased by 8%.

The number of midwives increased by 2.1% and showed a similar variation to nurses, increasing in northern and western Europe by 28% and 26% respectively, and decreasing by 25% in central Asia and 15% in eastern Europe. The number of dentists in the Region increased by 17%. Dentist numbers decreased by 9% in central Asia and increased by 57% in western Asia and 41% in southern Europe, driven by rises in Georgia, Israel, Italy, Spain and Türkiye.

The number of pharmacists increased by 21%. Pharmacist numbers increased in all subregions by over 26% apart from central Asia, which declined by 20%, and western Europe, which had a small increase of 3%. Data on physiotherapist numbers are too incomplete to allow subregional comparisons.

2.1.2.2 Demand for HCWF

As a consequence of the challenges facing countries in ensuring their health and social systems are prepared to adapt to changing health needs that arise through ageing populations with increased multimorbidity and chronic conditions, demand for health professionals is growing. Demand for home-

and community-based care that requires a HCWF with the right composition of professionals and skills is increasing and will continue to rise. Future improvements in data collection and analysis will enable projections and modelling of future health workforce demand.

2.1.2.3 Ageing of the HCWF

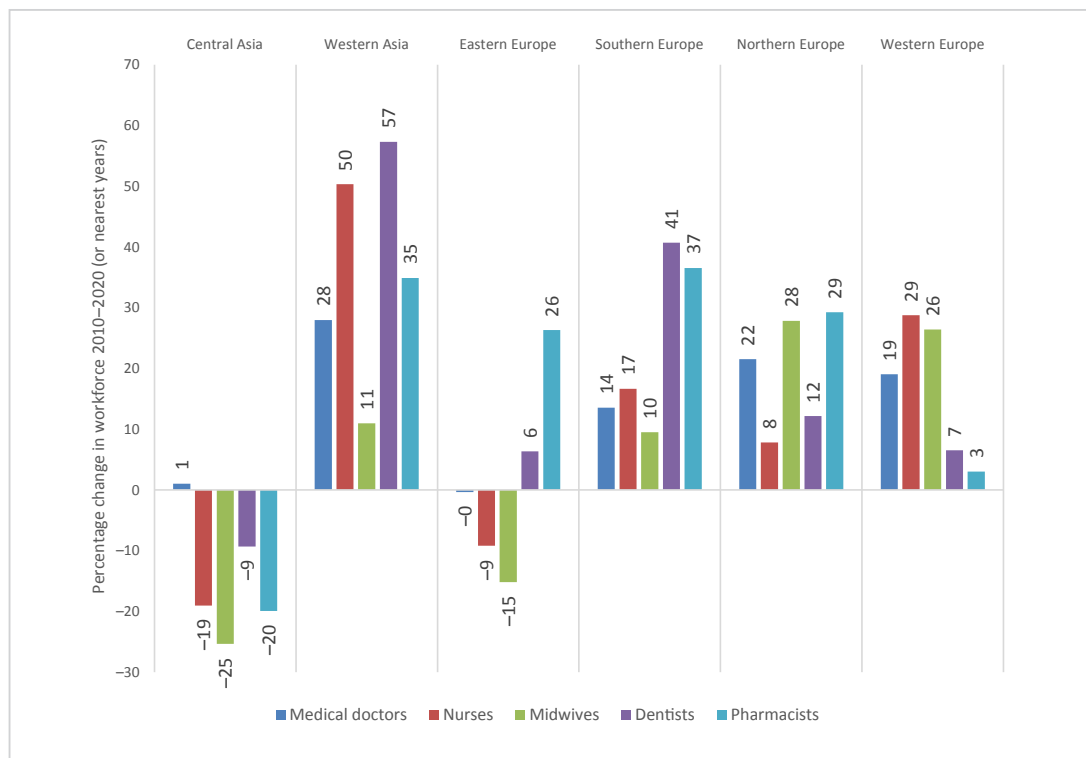
The ageing of the HCWF is a particular concern in all Member States, but particularly so in those in which a significant percentage of the workforce is aged 55 years and older and therefore face the challenge of replacing them when they retire. Thirteen of the 44 countries that reported data on this issue have a workforce in which 40% of medical doctors are aged 55 or older (Fig. 3). This poses a big challenge to the sustainability of the medical workforce.

Only four of the 36 countries reporting data have a workforce in which 40% of nurses are aged 55 or older (Fig. 4). The median percentage for medical doctors is about 30%, but for nurses it is around 18%.

These statistics point to important replacement needs in the coming decade.

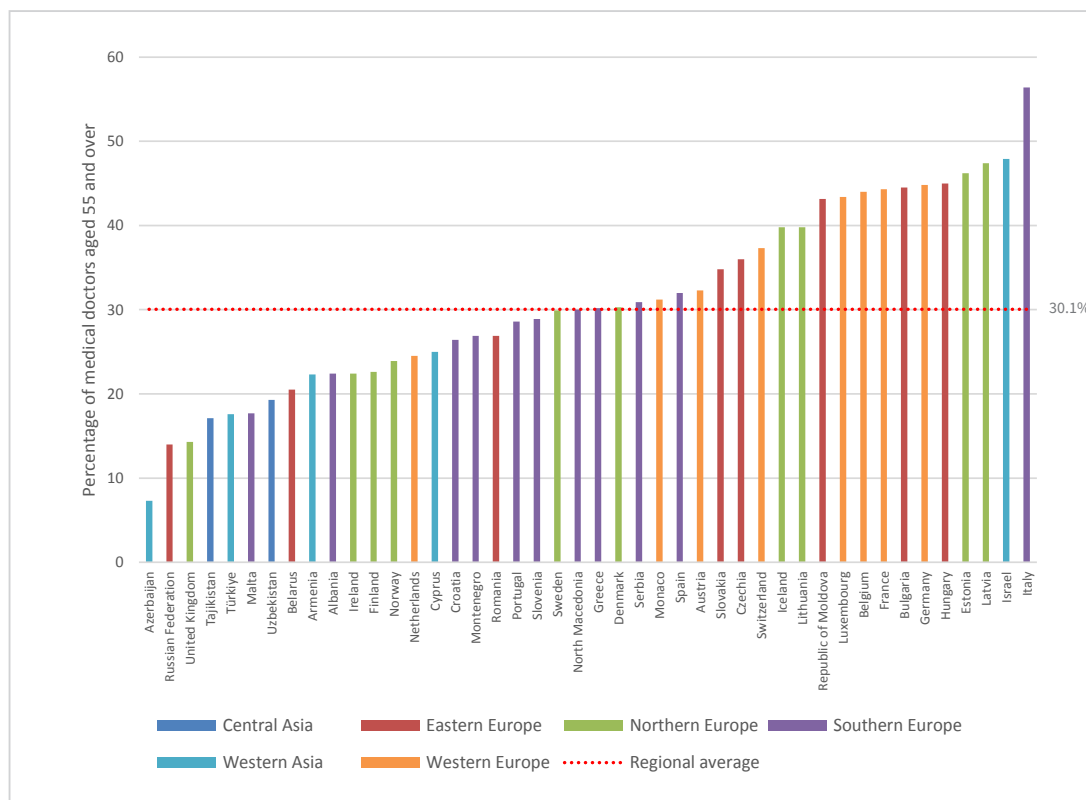
² The interpretation of data on nurses is difficult, given important variations in their scope of practice across the 53 countries of the European Region.

Fig. 2. Change in workforce from 2010 (or nearest year) to 2020 (or nearest year) by subregion (percentage)



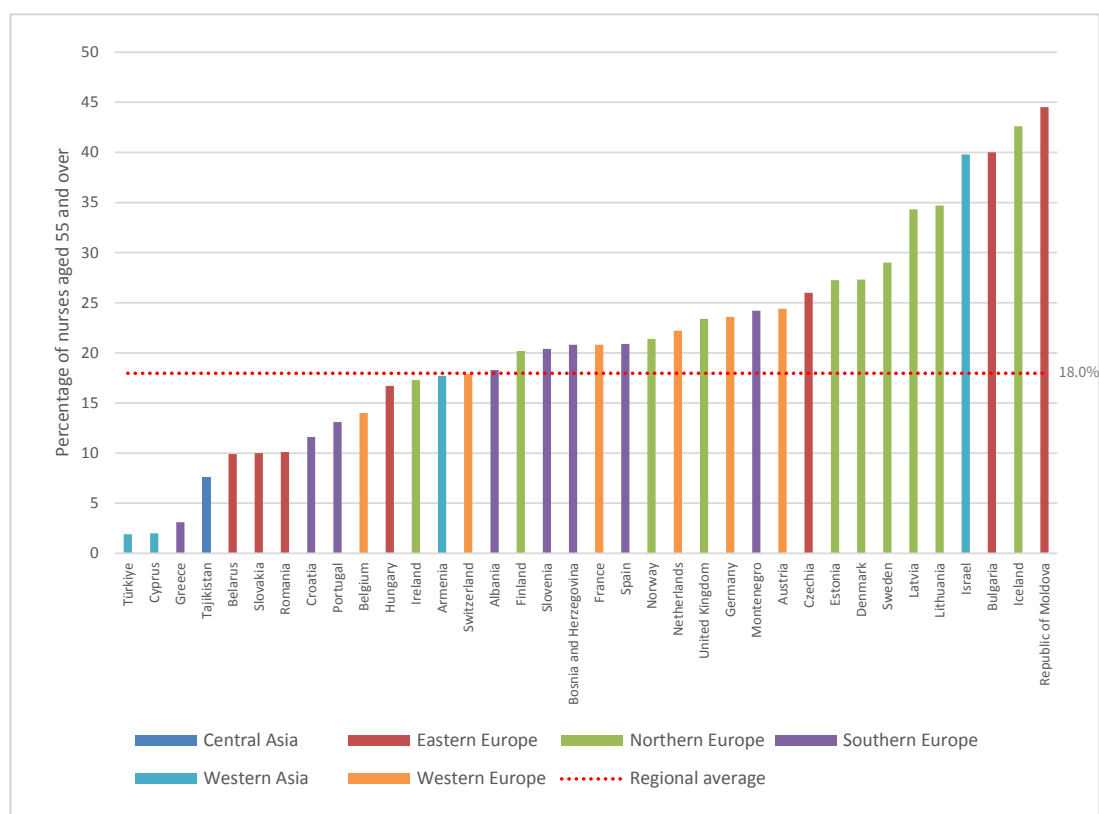
Source: health workforce density is estimated using the latest numbers of staff practising from the WHO National Health Workforce Accounts Data Portal (3) supplemented with recent country submissions to the Eurostat, OECD and WHO joint data collection on non-monetary health-care statistics. For a small number of countries where the number of practising HCWs is not available, the number of professionally active or the number licenced to practise is used.

Fig. 3. Percentage of medical doctors aged 55 and over, 2020 or latest year



Source: WHO (3).

Fig. 4. Percentage of nurses aged 55 or over, 2020 or latest year



Source: WHO (3).

2.1.2.4 HCWF gender characteristics

Women constitute the majority of the nursing workforce in all countries, and the percentage of female medical doctors in the Region increased from approximately 43% in 2010 to 48% in 2020.

A gender analysis of HCWF reveals that health systems can replicate many existing gender biases and social inequalities across and within health occupations – both paid and unpaid. The health sector faces lower than average earnings for women compared to other economic sectors (4), with a raw gender pay gap of 20% compared to an estimated 12% among all other economic sectors (4). The largest gender pay gaps are found in top pay categories. The largest pay penalties are for women of reproductive age and there is clear evidence in the European Region of a motherhood pay gap among HCWs. Men are subsequently overrepresented at top pay categories and women overrepresented at the bottom (4).

Existing gender inequalities have increased since the beginning of the COVID-19 pandemic (5). The

pandemic has disproportionately affected workers at the low end of the pay scale in the sector, most of whom are women, hitting them harder and jeopardizing some equality gains (6).

Where pandemic control and system response measures have not taken an equity-focused approach, a deepening of pre-existing inequalities in the HCWF has been seen. This includes interruption of nursing and midwifery services, difficulties in mobilizing necessary surge capacity due to women workers needing to also care for their older and younger family members, increased rates of mental health issues among nurses and midwives (7–9), rapid depletion of the long-term and primary care workforce as a result of early retirement or rapid turnover, problems in securing stable resources and geographical coverage of care, and overall difficulties in reaching and preventing the spread of the virus. The pandemic also highlighted the lack of visibility in most countries of women leadership in the health sector response.

More data and research on gender gaps and occupational segregation in critical areas are required to ensure a health and care system that

uses all the competencies of women as well as looking after their needs (10,11).

2.1.2.5 Subnational distribution of HCWF

It is difficult to assess the subnational distribution of HCWs due to limited data from countries.

is recognized in many countries of the European Region, and the issue of distribution needs to be considered urgently.

Very few countries report on HCWs by urban/rural, hospital/primary health care (PHC) and public/private distribution. Unequal distribution

2.1.2.6 Existing vacancies by countries

Very limited data on existing vacancies are reported by countries. Planned but unfilled posts – vacancies – can be an indicator of shortage and mismatch. Countries should progressively improve the data available on vacancies, especially in rural areas. There is little country-level data on vacancies, retention and attrition within the different occupational groups. It is essential for

effective planning to understand the dynamics of the HLM, in particular the distribution of HCWs (urban/rural) and flows in and out of the HCWF. These include vacancies (unfilled vacancies may indicate a problem in recruitment and retention), age (potential retirement exits), and education completion and participation rates (are new graduates joining the HLM or going elsewhere?).

2.1.2.7 HCWF production across countries

There is wide variability in the production of HCWs across countries. Fig. 5 and 6 show the wide variation in the number of graduates produced in the latest year. Countries with a low number of graduates may not be providing sufficient staff to replace losses due to retirement and other causes. For medical doctors, the numbers of graduates as a percentage of the

HCWF size varies from under 1% (not sufficient to replace losses) to 15%, suggesting that graduates are seeking work outside of their country of training. For nurses, the percentages range from under 1% to nearly 25%. The figures do not appear to be correlated by subregion.

2.1.2.8 Health professional graduates across subregions

Caution is needed when interpreting data on graduates as a source of new recruits. Not all graduates join the domestic HLM, and those who do may leave it before retirement age. Tracking of graduates can document these phenomena, but very few countries do so.

show that the highest increase was in western Asia. Data for central Asia were very limited as few countries reported, so the percentage changes are not representative of the subregion.

The number of health professional graduates increased between 2010 and 2020 in most subregions. Overall, the number of graduates has increased in five of the professions³ since 2010 (Fig. 7). This is due to the expansion of domestic recruitment and, in some countries, to the opening of programmes for international students.

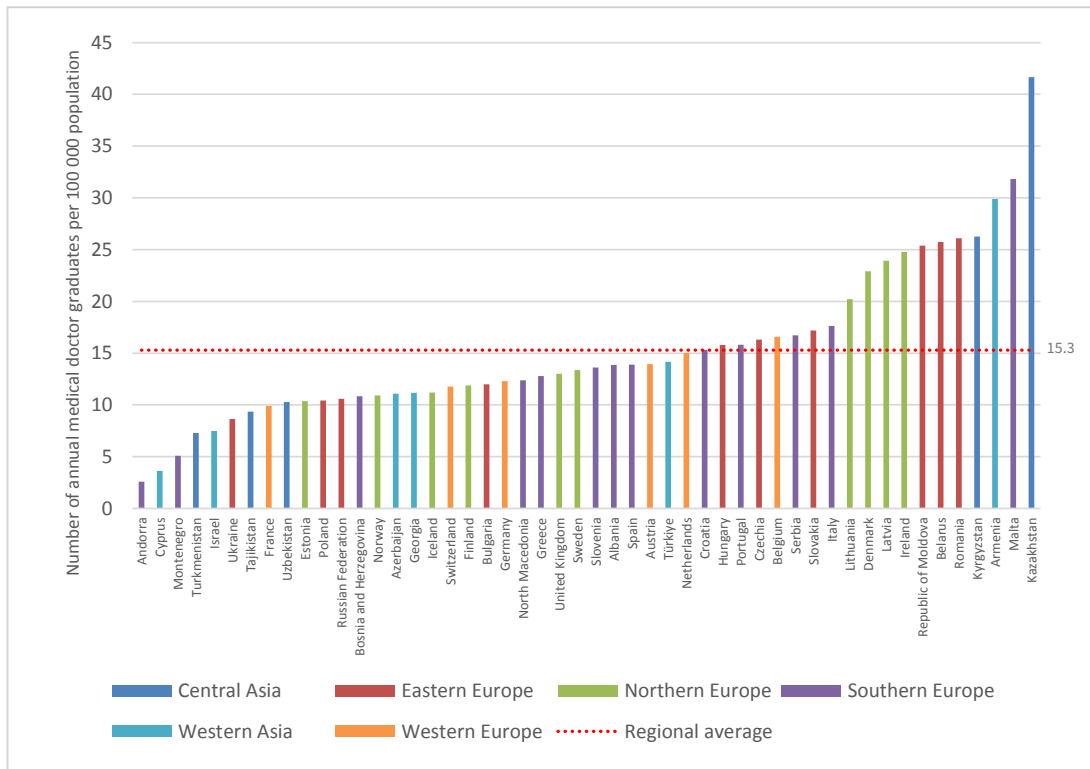
In the European Region, several professions showed strong growth, with the number of medical doctor graduates increasing by 37%, dentists by 29% and nurses by 26%. Western Asia had high increases across all professions.

The numbers presented in Fig. 7 are estimates due to gaps in the available data, but they nevertheless

Of note is the fall in the number of midwifery graduates in central Asia, and eastern and southern Europe (-30%, -20% and -14% respectively). Midwives had the lowest growth at 4%.

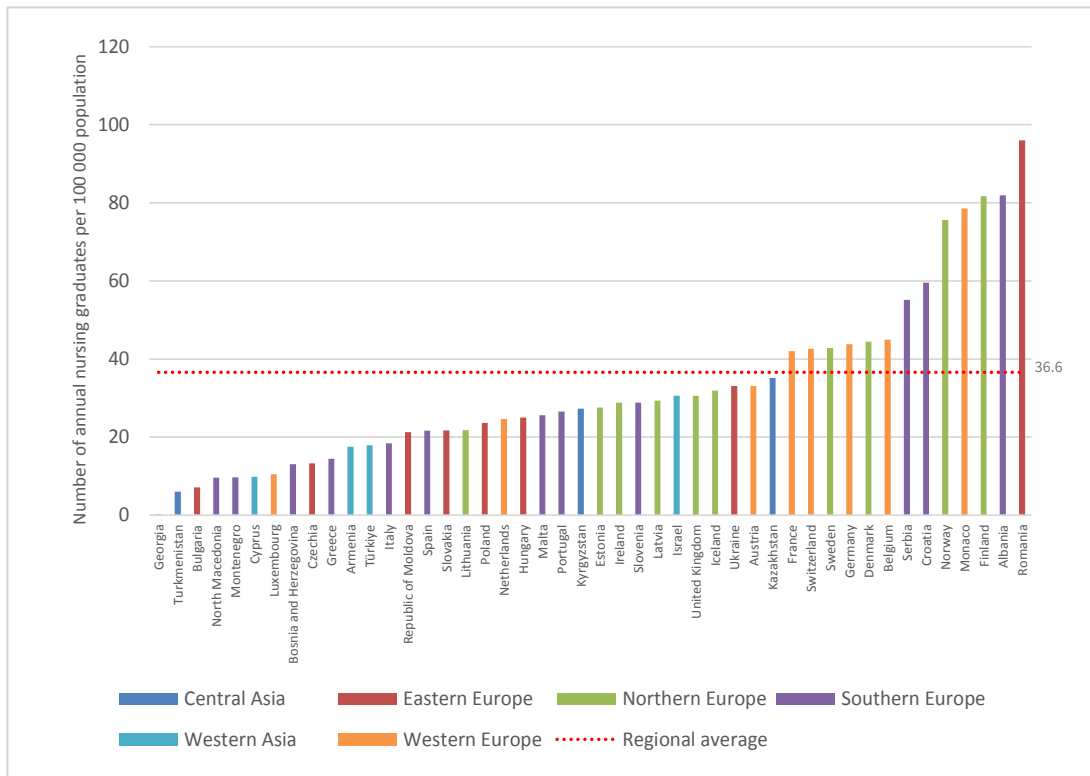
³ Sufficient data on physiotherapists were not available.

Fig. 5. Number of annual medical doctor graduates per 100 000 population, 2020 or latest year



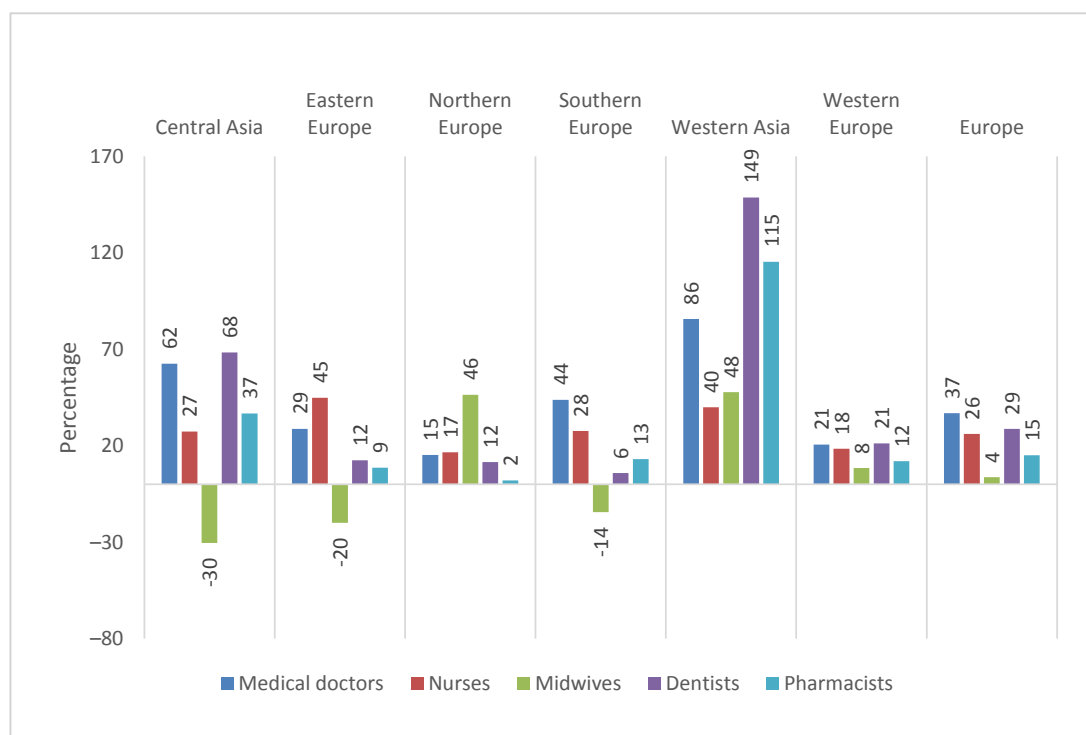
Source: number of graduates taken from WHO (3). Country population data taken from United Nations Department of Economic and Social Affairs Population Division (2).

Fig. 6. Number of annual nursing graduates per 100 000 population, 2020 or latest year



Source: number of graduates taken from WHO (3). Country population data taken from United Nations Department of Economic and Social Affairs Population Division (2).

Fig. 7. Change in the number of graduates from 2010 (or nearest year) to 2020 (or nearest year), by subregion (percentage)



Source: number of graduates from WHO (3). Country population data from United Nations Department of Economic and Social Affairs Population Division (2).

2.1.2.9 Foreign-trained HCWF

The proportion of foreign-trained HCWs tends to be larger in higher-income countries. Medical doctors and nurses trained abroad form an important part of these occupational groups in a number of countries, mostly in northern and western Europe.

Germany, Spain and the United Kingdom were the main countries of destination in absolute terms for foreign-trained doctors and nurses in 2020. The number of foreign-trained medical doctors entering the HLM in Ireland, Norway and Switzerland in 2019 was greater than domestic graduates. This trend has been apparent in a number of countries since 2010, suggesting that international recruitment forms an increasing source of new HCWs in some Member States.

Freedom of movement and mutual recognition of the qualifications of some health professions (such as medical doctors, dentists, nurses, midwives and pharmacists) facilitate intraregional mobility in the European Union (EU). In addition, many countries of the Region are destinations for health workers from other (non-EU/European Economic Area (EEA)) countries of the Region and beyond. Most foreign-trained professionals in the European Region come from other countries of the EU. Some (such as Belgium, Germany and Ireland) are both major source and destination countries, while others, predominantly EU Member States in the south and east of the Region, are source countries.

Countries monitor intentions to emigrate based on the number of requests for certificates of qualifications, a document that is required by destination countries. They do not monitor emigration itself, however, so no reliable data are available on outflows of HCWs.

2.1.3 Links to health outcomes

2.1.3.1 Universal health coverage

Important variations in universal health coverage (UHC)⁴ remain in the European Region. UHC progressed in all countries of the European Region between 2000 and 2019, but the range from the lowest to the highest percentage – in the order of 25% – is important (12).

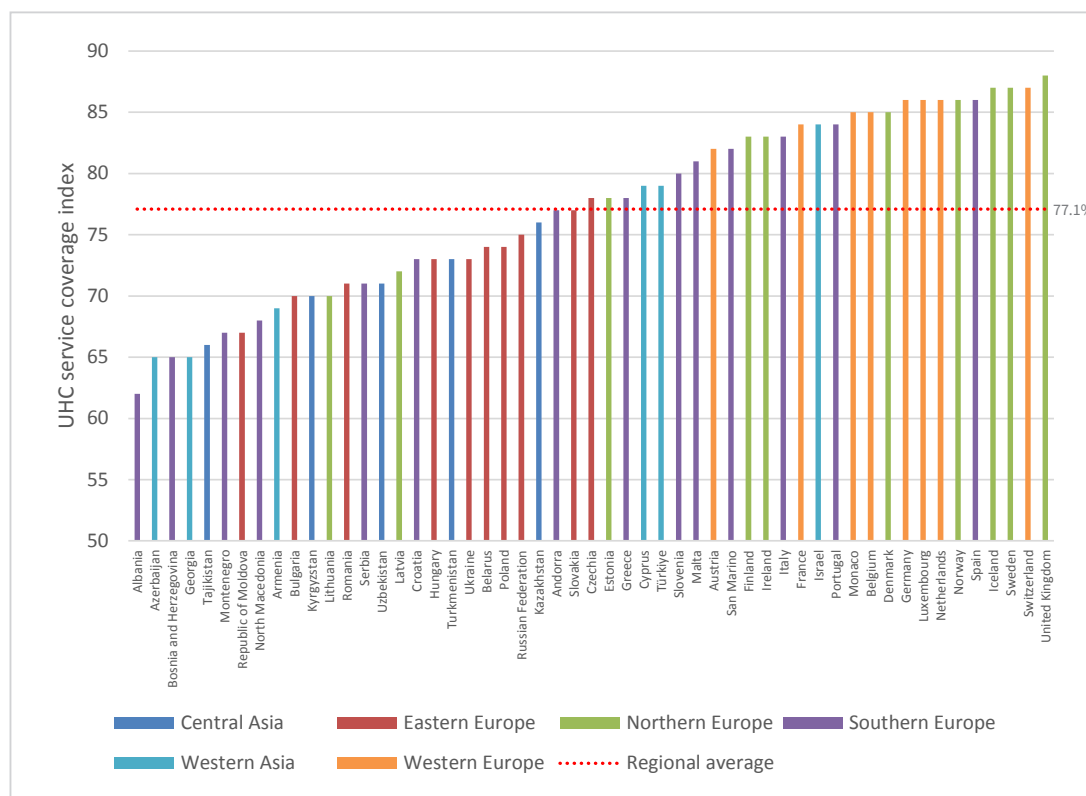
Some countries reported UHC service coverage of below 70% (the lowest was 62%); 23 countries had between 70% and 80% and 21 were above 80% (Fig. 8). These variations broadly reflect those in the density of HCWs, but this indicator is only one of many, which also include productivity and model of service delivery.

2.1.3.2 Country expenditure

Based on the data available, it appears that HCW density is generally higher in countries with a higher gross domestic product (GDP) and in those that report better health outcomes. These factors are summarized in Fig. 9. The three outliers on the right are Luxembourg, Ireland and Monaco respectively. Total expenditure on health as a percentage of GDP tends to be higher in high-income countries. HCW densities also tend to be higher.

Data are not available for all countries, but those that are available show a 10% average proportion of the total workforce employed in health and social care activities across the European Region. This ranges from 5% in Latvia and Türkiye to over 15% in Denmark, Finland, the Netherlands, Norway and Sweden (Fig. 10).

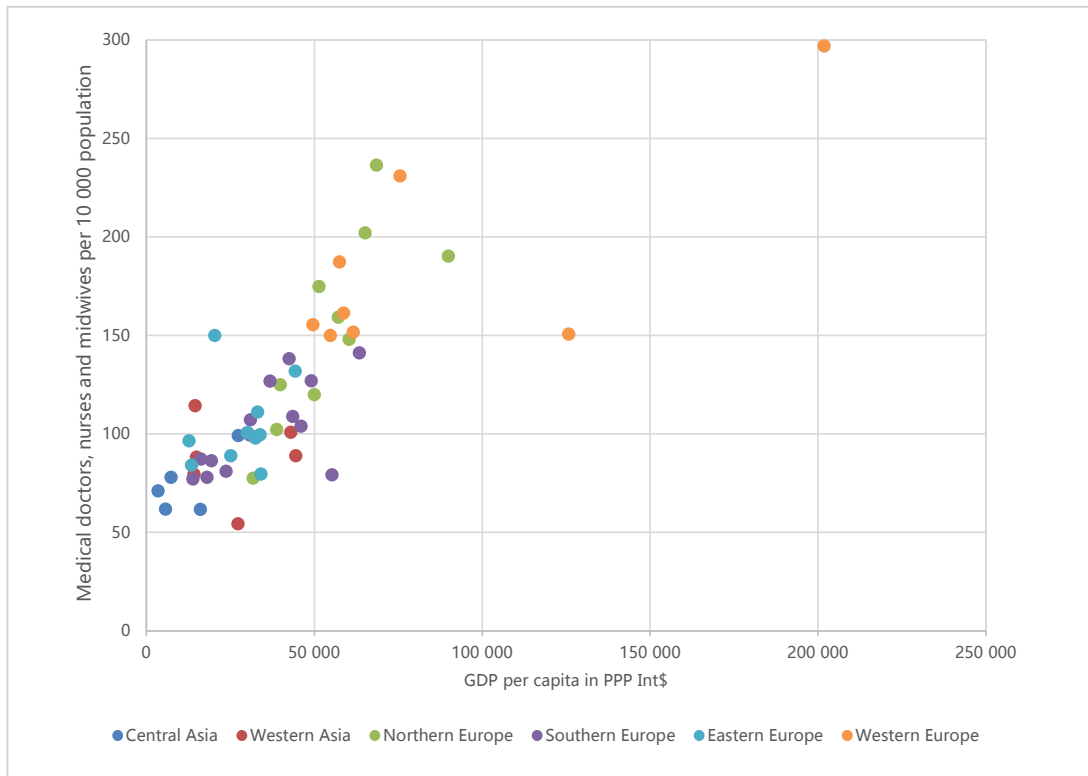
Fig. 8. UHC service coverage index, 2019



Source: WHO (12).

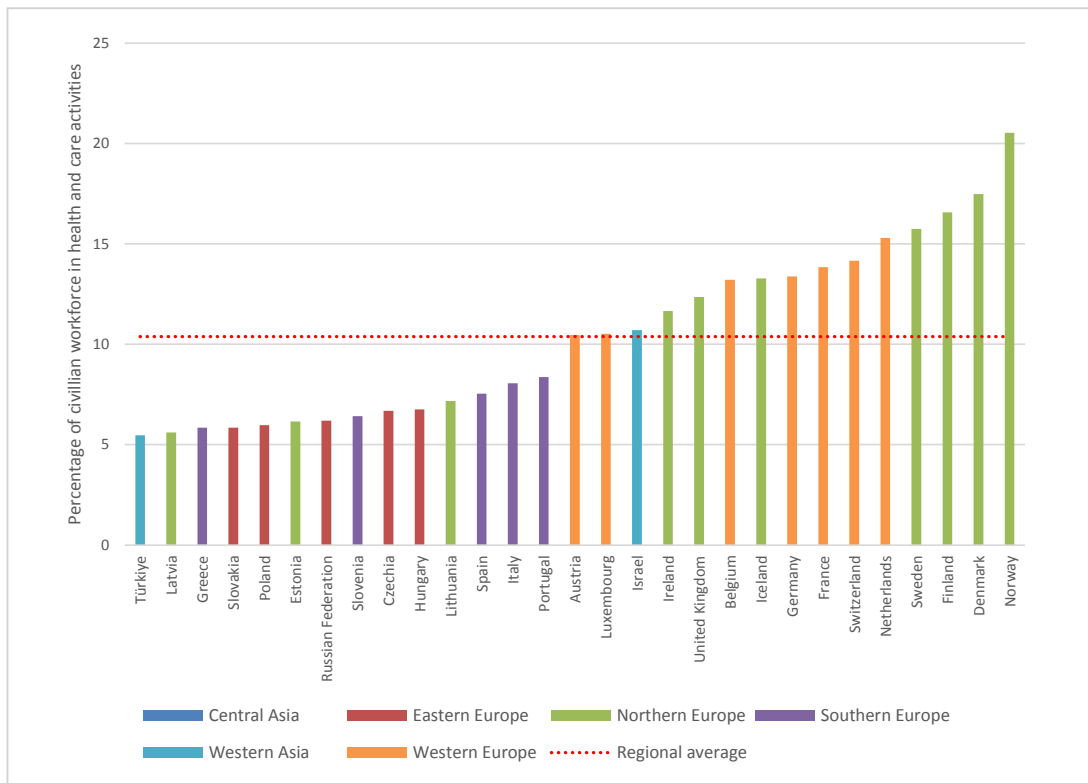
⁴ Coverage of essential health services is defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, noncommunicable diseases and service capacity and access, among the general and the most disadvantaged populations.

Fig. 9. GDP and HCWF density, 2019



Int \$: international dollars.
 PPP: purchasing power parity.
 Source: WHO (12).

Fig. 10. Total health and social employment as percentage of total civilian employment, 2020 or latest year



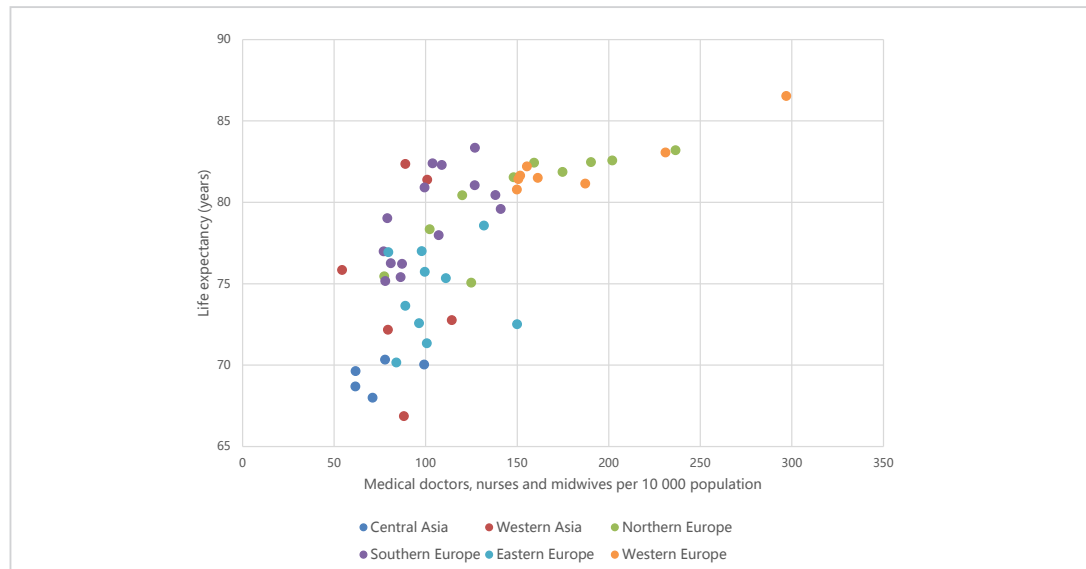
Note: based on classifications from the United Nations Department of Economic and Social Affairs Statistics Division (13).
 Source: OECD (14).

2.1.3.3 Country life expectancy and mortality rates

The available data suggest that subregions reporting lower life expectancy and higher maternal mortality, under-5 mortality and noncommunicable disease mortality rates tend to have lower HCWF density. Life expectancy, for instance, is lowest in central Asia and highest in southern, northern

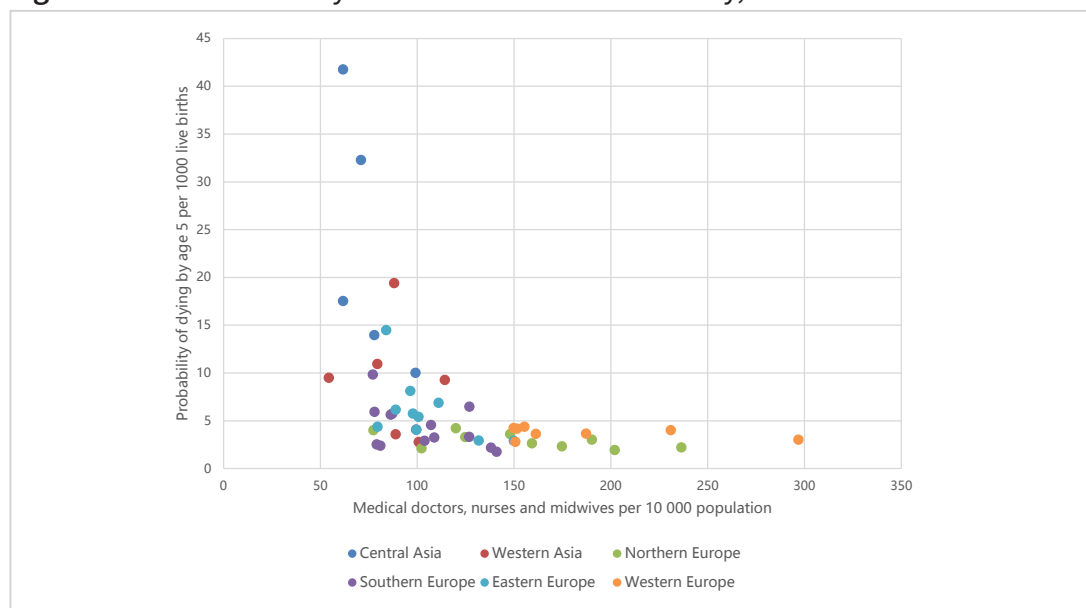
and western Europe (Fig. 11). The central Asia subregion also has the highest under-5 mortality and maternal mortality rates and the lowest HCW density (Fig. 12 and 13). This may suggest that higher density of HCWF is among the various factors that can contribute to better health outcomes.

Fig. 11. Life expectancy and health workforce density, 2020



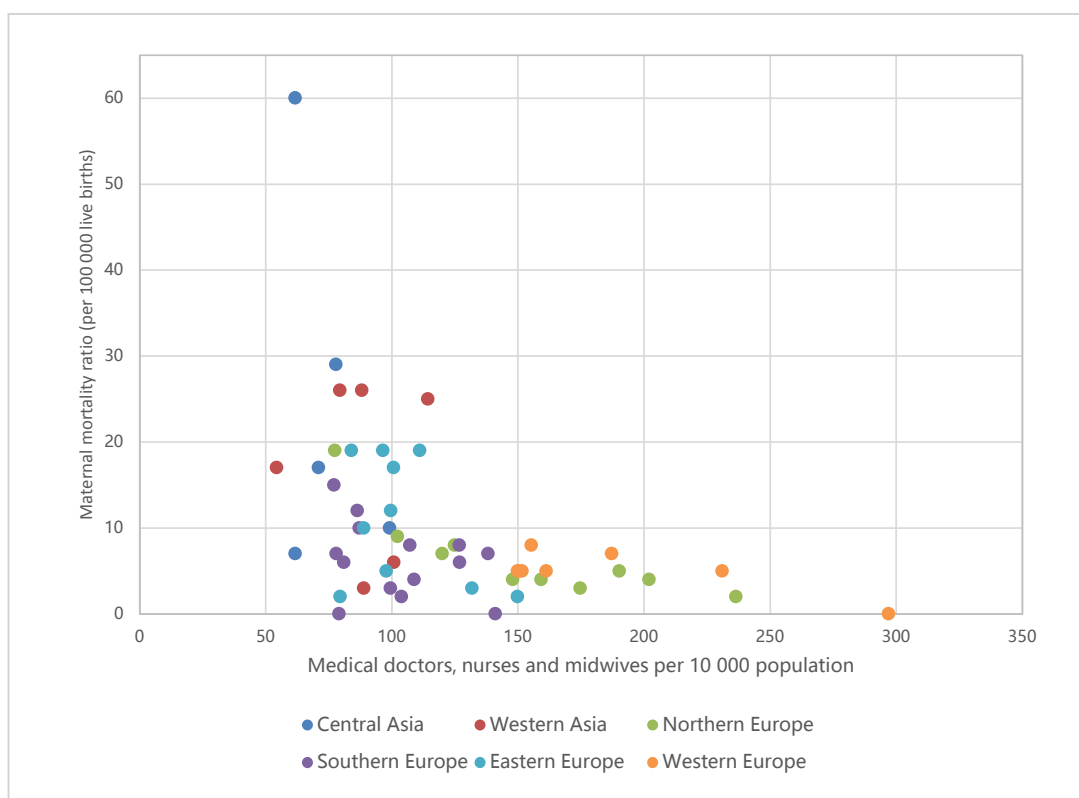
Source: health workforce density is estimated using the latest numbers of staff practising from the WHO National Health Workforce Accounts Data Portal (3) supplemented with recent country submissions to the Eurostat, OECD and WHO joint data collection on non-monetary health-care statistics. For a small number of countries where the number of practising HCWs is not available, the number of professionally active or the number licenced to practise is used. Life expectancy data are from the United Nations Department of Economic and Social Affairs Population Division (2).

Fig. 12. Under-5 mortality and health workforce density, 2020



Source: health workforce density is estimated using the latest numbers of staff practising from the WHO National Health Workforce Accounts Data Portal (3) supplemented with recent country submissions to the Eurostat, OECD and WHO joint data collection on non-monetary health-care statistics. For a small number of countries where the number of practising HCWs is not available, the number professionally active or the number licenced to practise is used. Under-5 mortality data are from WHO (15).

Fig. 13. Maternal mortality ratio and health workforce density, 2017



Note: health workforce density is estimated using the latest numbers of staff practising from the WHO National Health Workforce Accounts Data Portal (3) supplemented with recent country submissions to the Eurostat, OECD and the WHO joint data collection on non-monetary health-care statistics. For a small number of countries where the number of practising HCWs is not available, the number of professionally active or the number licenced to practise is used. Maternal mortality data are from WHO (16).

2.2 How countries responded to the pressures of the COVID-19 pandemic on the HCWF

COVID-19 has placed an unprecedented strain on Member States' HCWF. Many countries entered the health emergency with insufficient numbers of HCWs, suboptimal skill-mixes and imbalanced geographical distributions. This was exacerbated during the COVID-19 pandemic as HCWs had higher rates of infection than the general population (17) and experienced the negative impacts of burnout and stress. It has been reported that HCW absences increased by 62% in the first days of the pandemic (18). High levels of psychological impacts have been reported by several countries in the Region, with

over 80% of nurses reporting negative psychological impacts due to the pandemic in some countries (19,20). Up to nine out of 10 nurses had declared an intention to quit their jobs (21).

Countries across the Region have had to adopt innovative strategies to increase surge capacity to manage demand generated by the pandemic. This has involved ensuring the availability of more workers, improving retention rates and re-skilling the existing HCWF.

2.2.1 Targeting the existing HCWF

Strategies adopted by Member States that targeted the existing workforce included asking HCWs to work longer hours or work full-time instead of part-time, suspending exemptions to night shifts or on-call activities, and cancelling leaves of absence.

Some countries eased minimum staffing requirements in settings such as intensive care units (22). Workers in some instances were redeployed from areas with spare capacity to wards or health facilities experiencing high demand, such as emergency departments and intensive care units. Often this was achieved at the expense of availability of services in other areas, including long-term and home care.

Transfers and reallocations occurred between cities, regions and even between Member States in an act of regional solidarity.

Frontline workers such as nurses and personal support workers had to cope with heavy workloads, high risks of stress, susceptibility to infection and being vulnerable to burnout, leading to higher rates of absenteeism, lower job satisfaction and more intentions to leave employment. Levels of violent incidents against HCW increased after the COVID-19 pandemic started (23). Maintaining workforce capacity depended on protecting the physical and mental health of workers to reduce absenteeism (24,25).

2.2.2 Boosting surge capacity

Member States primarily have relied on four sources to further increase surge capacity:

- graduates entering the workforce early;
- workers who at the time were inactive;
- private sector workers recruited into the public HCWF; and
- foreign-trained professionals.

Most countries allowed final-year medical and nursing students to graduate early and join the HCWF, or to take a gap semester to support active HCWs. Some permitted students who were not in their final year of study to participate in non-clinical tasks such as operating COVID-19 hotlines or contact-tracing (26).

Workers not active in the HLM were brought into the workforce in a number of Member States, either by drawing on existing medical care reserves (inactive workers who can be deployed in times of emergency), as was the case in Belgium and France, or through special campaigns to encourage retired or otherwise inactive workers to rejoin the workforce (27).

Registration processes for bringing inactive workers back included automatic renewal of licenses for those who had left the workforce within the past year. Countries such as Cyprus, Hungary,

Malta, Montenegro, North Macedonia and the United Kingdom (England) adopted measures to enable private sector workers to work in the public sector. In United Kingdom (England) an agreement was brokered for the United Kingdom Government to take over private hospitals and their staff for the duration of the crisis, resulting in tens of thousands of clinical staff moving to the public sector during 2020 (26).

Some countries put special measures in place to accelerate the registration process for bringing foreign-trained professionals into the workforce (22). The European Commission issued guidance on free movement of health professionals and minimum harmonization of training in relation to COVID-19 emergency measures (28). Belgium, Czechia, Germany, Ireland, Italy, Luxembourg, Spain and the United Kingdom adopted procedures to bring foreign-trained health professionals into the workforce temporarily or to speed up recognition procedures.

Overall, however, pandemic-related travel restrictions were an obstacle to foreign-trained or previously foreign-licensed health workers arriving in 2020 with the intention to practise in Europe.

2.2.3 Reskilling and repurposing HCWF

Reskilling and repurposing the workforce made a critical contribution to creating surge capacity. COVID-19 has driven an increase in the number and pace of skill-mix innovations in the Region. Redeployment of health workers, development of new competencies and the accelerated use of digital technology have proved critical to creating surge capacity and meeting the specific demands of the pandemic (22,29).

HCWs took up new tasks like testing, contact-tracing and monitoring of COVID-19 patients. France and the United Kingdom (England) temporarily authorized community pharmacists to renew prescriptions for specified chronic conditions or as part of ongoing care. A range of workers across the Region, such as dentists (Ireland), physician assistants (Germany and the Netherlands), paramedics (Austria), pharmacists (Austria, Croatia, France, Ireland, Italy and Portugal) and nurses (Israel and Poland), were

authorized to administer vaccinations and carry out testing (30,31).

Changes to scopes of practice were put in place rapidly to support new ways of working. Previous resistance from professional bodies was overcome and new training programmes were developed. A shift towards remote working and greater use of digital health tools, such as e-prescriptions and electronic health records, were observed in all care areas, particularly in primary care. This often entailed HCWs having to learn about and adapt to new ways of working.

It is important to ensure these actions around changes to the skill-mix, task-sharing and task-shifting do not remain ad hoc, but are part of strategic measures to build a more efficient HCWF.

2.2.4 Retaining HCWs

Multifaceted efforts were made to retain HCWs during the pandemic. Maintaining sufficient numbers of workers during the pandemic depended on policies to scale-up supply and target retention (29). Measures to improve retention had to encompass a range of actions in addition to those supporting mental health and well-being.

Provision of financial support in addition to normal salaries, either to compensate for lost income as a result of the suspension or scaling-back of non-urgent care or to explicitly reward health workers for their work, was common (27). This usually took the form of bonus payments, with countries like Latvia and Lithuania putting salary increases in place. Alongside these forms of financial compensation, some countries (Denmark, France, Lithuania and Spain) recognized COVID-19 as a work-related injury, enabling access to associated benefits.

Continuing education credits were awarded for work done during the pandemic. Medical doctors, dentists, nurses and pharmacists in Italy who continued working during the pandemic received 50 continuing medical education credits for 2020.

Other interventions aimed to provide practical support to ensure that HCWs could continue working in the face of pandemic-related restrictions. These included keeping schools and childcare facilities open for their children and providing alternative accommodation to reduce the risk of transmission to family members who might be vulnerable to COVID-19.

Regional data on HCW retention rates during the pandemic are scarce. Evidence from the United Kingdom suggests that nurse retention rates in 2020–2021 were higher than average, as many delayed retirement or leaving for other reasons to support the pandemic response (32). The number leaving then increased in 2021–2022, with an important proportion citing pressures from the pandemic (Vignette 1).

Further efforts to improve retention will be needed to tackle an expected increase in people leaving the workforce due to COVID-19-related burnout, ill health and general dissatisfaction. Such efforts are fundamentally important to maintaining sufficient numbers of health workers to cope with increasing backlogs due to the pandemic.



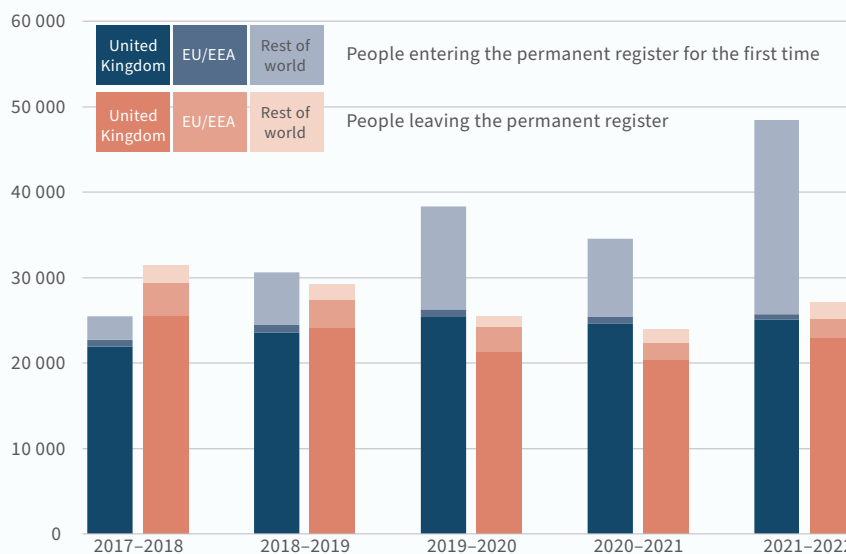
Vignette 1.

United Kingdom:

trends in the number and region of origin of entrants and leavers to the permanent register of nurses and midwives

Data from the United Kingdom Nursing and Midwifery Council (NMC) (32) show that 48 436 people joined the permanent register of nurses and midwives eligible to practise in the United Kingdom for the first time in 2021–2022 (a full year runs from 1 April–31 March), an increase of 40.3% from the previous year. This reverses a decline in the number of new joiners in 2020–2021 compared to the previous year, driven in part by the COVID-19 pandemic and the fall in the number of people joining from abroad (Fig. 14).

Fig. 14. Joiners and leavers of the United Kingdom permanent register of nurses and midwives by country/region of initial registration



Note: figures capture those eligible to practise in the United Kingdom, but not all may be working in the health sector as nurses, nursing associates or midwives; country of initial registration captures country where first professional registration was held.

Source: author, compiled from data from the Nursing and Midwifery Council (32).

The number leaving the register in 2021–2022 also rose, reversing a general downward trend in recent years. The most common reason identified for leaving was retirement

Vignette 1 contd

(42.9% of respondents to the NMC leavers' survey), with 21.7% citing personal circumstances and 18.3% feeling too much pressure; 36.5% of leavers stated that the COVID-19 pandemic had "some" or a "strong" influence on their decision to leave.

Almost 50% of those joining the permanent register in 2021–2022 had an initial registration from outside the United Kingdom. The vast majority (97.2%) were from outside the EU/EEA, with India, Nigeria and the Philippines the most common countries for initial registration..

In terms of total stock of foreign-trained nurses, 113 579 people with an initial registration from outside the United Kingdom/EU/EEA were on the United Kingdom register in 2022, an increase of approximately 66% since 2017–2018. Conversely, the number on the permanent register with an initial registration in the EU/EEA had declined by almost 18% over the same period, dropping to 28 864 in 2021–2022.

This probably is influenced by the United Kingdom vote to leave the EU (so-called Brexit) and suggests that nurses coming from EU/EEA countries are no longer the major source of recruitment, with a major switch to recruiting from other regions and countries.





Responses to challenges to HCWF policy development in the Region

How Member States can build back better their HCWF to support improvements in the performance of their health service systems is the focus of this chapter. More specifically, it addresses health service backlogs generated during the COVID-19 pandemic and reports examples of good practices observed in the Region and elsewhere. These examples can help policy-makers to design and implement their own country responses to HCWF challenges.

A comprehensive approach to addressing shortages and the imbalanced distribution of the HCWF must consider how best to:

- align the production, recruitment and deployment of new workers;
- increase retention and productivity rates; and
- manage international flows of HCWs.

Corrective interventions need intersectoral collaboration, engaging different ministries and government functions (such as labour, public administration and finance with health and education) and other stakeholders (including organizations representing HCWs and employers).

The chapter also provides recommended actions to help address HCWF challenges and defines the support the WHO Regional Office for Europe can offer in implementing them in the Region. The proposed actions correspond with the priorities of the EPW (1) and are informed by analysis, evidence and known good practices.

To achieve maximum benefit from the proposed actions, countries should look to implement them all. The actions complement and support each other. Opting to implement only some of the actions will not fully produce the positive impacts a comprehensive approach would realize.

3.1 Strengthening education and improving training

Education and training are areas in which data are very weak. The issue of strengthening data around the HCWF is addressed in section 3.5.

To transform HCW education and training, education institutions need adequately prepared personnel, appropriate infrastructure and equipment, sufficient clinical training settings and appropriate funding.

Many countries already have shortages of qualified educators and trainers. The problem in nursing is global and recurrent (33) – even in Norway, one of the richest countries of the Region, the Norwegian

Nurses Organisation reports severe shortages of faculty in nursing schools (34). Small countries often do not have a critical mass of educators in some specialties and would benefit from international cooperation (35).

Education institutions need to design and implement strategies to attract additional staff as they expand their admission capacity. Professional fields in which demand will increase, like rehabilitation, mental health, care of older people and palliative services, require specific actions to attract and retain candidates.

Infrastructures should adapt to emerging challenges and new ways of learning that increasingly take place in small groups, making big amphitheatres obsolete and placing more demands on digital technology and simulation laboratories. Technical capacity to support distance learning needs to

be put in place, as occurred in North Macedonia (Vignette 2).

Admitting more students requires additional clinical training settings and trainers in the field. This may be problematic when health services already are overloaded.



Vignette 2.

North Macedonia: online training platform for primary care nurses

The Ministry of Health, in collaboration with the WHO Country Office, launched the national PHC strategy in 2019 (36). Actions to develop the PHC workforce include a pilot experiment that enabled nurses to deliver clinical care after completing an online training programme, based on the Regional Office competency framework for nurses in PHC (37).

The programme's aim was to develop the knowledge and skills of PHC nurses and midwives to enable them to contribute more effectively to the delivery of the new model of PHC.

The programme included six modules: 1) Introduction; 2) Foundations of communication and professionalism; 3) PHC nursing and COVID-19; 4) Public health; 5) Health education; and 6) Empowerment of nurses and midwives.

It was reviewed by the Nurse Facilitators' Group, a subgroup of the National Working Group for Moving PHC Nursing Forward that includes representatives from nursing, midwifery, PHC, allied health, the ministries of health and education and science, and clinical managers from the two pilot PHC health centres.

Once reviewed, the pedagogical materials were translated into Macedonian and modules were uploaded to the Moj Termin (e-health) platform from December 2020. They were made available to the end of 2021 and could be undertaken in any order. Information was disseminated to PHC and other nurses by the WHO Project Manager.

The programme was evaluated via a questionnaire to participants in March 2021. By that time, 429 nurses had accessed the modules and 70–100 had attended workshops, including 177 doctors, two dentists, four health associates and 39 other health practitioners.

Key findings include (WHO Country Office in North Macedonia, unpublished data, 2021):

- wide sharing of module content with colleagues and team members;
- reports of application of learning to practice (such as COVID-19 protection and prevention, communication skills and patient counselling); and
- support for further continuing professional development (CPD).

Online programmes allow many more nurses from a much wider geographical area to participate. Delivery during the pandemic meant that the PHC nurses were better prepared to contribute fully to the pilot PHC areas and the new model of PHC.

3.1.1 Educating the next generations of HCWs and training current HCWs differently

Future HCWs will assume roles and tasks different from those of today. The burden of disease is changing, and rapid technological, social and organizational developments mean HCWs already in the workforce need to acquire knowledge, skills and attitudes on a continuous basis to meet future health service requirements.

In addition to the basic cognitive and technical fundamentals of their professions, education programmes need to equip future graduates with competencies to (38,39):

- use digital and artificial intelligence tools;
- practise in an interprofessional and intersectoral team environment with shared decision-making;
- think in a critical and systemic way;
- search and analyse information for evidence-informed practice;
- assess health needs and plan accordingly;
- lead and manage population-level health programmes;

- address public health priorities that require behaviour change, such as noncommunicable disease risk factors;
- communicate effectively with their patients and colleagues; and
- develop sociocultural sensitivity and openness.

New programmes and learning strategies need to attract and select candidates with the personal traits and aptitudes to deliver person-centred, high-quality services. Many medical and dental schools in the United Kingdom have been using the University Clinical Aptitude Test (UCAT) since 2006. UCAT assesses the verbal, quantitative and abstract reasoning, decision-making and situational judgement characteristics of candidates (40). Selection criteria can also include candidates' geographical or social origins to address the issue of underrepresentation of certain regions or populations, as recommended by WHO (41).



Action 1. **Align education with population needs and health service requirements**

Equipping new HCWs with the right competencies is necessary to respond to the changing health needs of individuals and populations.

The WHO Regional Office for Europe will:

- support health and education institutions in reviewing and updating health and care education curricula and programmes; and
- support the development and strengthening of regulation and accreditation of health and care education institutions and programmes.

Efforts to attract more students will benefit from including measures to address gender issues and imbalances.

Workers already active in health and care services need to adapt to changes in demand for services and the introduction of new tasks through CPD activities. CPD includes formal face-to-face and distance courses, self-learning, participation in scientific and professional meetings, and in-service training.

Some countries make CPD mandatory, placing a requirement on practitioners to complete CPD activity as a condition of renewal of authorization to practise (42).⁵

In others, CPD remains voluntary. Intercountry initiatives are in place to improve the competencies of HCWs through common training frameworks (43–45).

Policy-makers are challenged with assigning responsibility for the delivery of CPD to, for instance, education institutions, professional councils or associations and private consultancy firms. They also ensure its quality and alignment with health priorities through accreditation of providers and programmes. Regulators and employers must create conditions that make lifelong learning attractive to HCWs and, above all, enable access to participation.

Many countries accelerated the integration of digital competencies in CPD programmes during the COVID-19 pandemic, including for nurses in the United Kingdom (46) and medical doctors in Germany (47). EU countries can benefit from CPD programmes that focus on digital skills within the EU4Health programme (48).

Education institutions that adopt the objective of producing fit-for-purpose HCWs will have to transform the traditional silo approach of educating each professional group separately. They can do this by creating bridges between programmes through interprofessional activities and increasing cooperation with other institutions, as is done through the ASPIRE initiative (Vignette 3).

Moving gradually from a system of lecturing to large uniprofessional groups to one of supervising small groups of students using e-learning and developing interprofessional curricula requires buy-in from educators and students. Educators and trainers need training, support and motivation to adopt new methods aligned with the objective of equipping future HCWs and those in practice with the desired competencies.

German-speaking (Austria, Germany and Switzerland) and Nordic (Denmark, Finland, Iceland, Norway and Sweden) countries, the Netherlands and the United Kingdom integrate the Global Confederation for Interprofessional Education and Collaborative Practice within their systems. This offers support and guidance to institutions engaging in interprofessional learning (51).

Mobilizing additional funding to cover the costs of better educating the HCWF is the overarching challenge. Funding should be seen as an investment that will result in better coverage and more effective health services, and at the same time benefit society and the economy (50).



⁵ In the EU, some countries link CPD to licencing and revalidation. Cycles of CPD vary, however, from three-yearly (in, for example, France and Italy) to five-yearly (in Hungary, Lithuania and the Netherlands). The cycle in Slovenia is seven-yearly.



Action 2.
Strengthen continuing professional development to equip the workforce with new knowledge and competencies

CPD activities support HCWs to adapt to changes in demand for services and the introduction of new tasks.

The WHO Regional Office for Europe will:

- provide support in improving CPD standards and approaches for the HCWF and promote access to CPD opportunities.



Action 3.
Expand the use of digital tools that support the workforce

Extensive shifts towards greater use of digital health in service delivery and HCW training and development took place during the COVID-19 pandemic. Their ongoing and increased use will require a HCWF that is skilled in the use of digital health tools.

The WHO Regional Office for Europe will:

- support the development of guidance and frameworks to equip HCWs with digital competencies.



Vignette 3.

Association for Medical Education in Europe (AMEE): building communities of good practice in health profession education – the ASPIRE to Excellence programme and AMEE responses to the COVID-19 pandemic

Health profession education and training at undergraduate, postgraduate and CPD levels should effectively support the development and sustainability of the European health workforce. Educational curricula must adapt to constantly changing societal and population health needs to ensure the European population receives the required services now and in the future.

AMEE is engaging with countries in the WHO European Region to support the development of a community of good practice in health profession education and add real value to the technical assistance Member States seek.

The ASPIRE (International Recognition of Excellence in Medical Education) initiative (49), which was launched in 2012, aims to promote outstanding performance in education institutions. ASPIRE has an international board of experts in health profession education and is supported by AMEE and other organizations.

Nine areas currently are selected for ASPIRE awards following a holistic evaluation of excellence in education: student assessment; student engagement; social accountability; faculty development; simulation; curriculum development; technology-enhanced learning; international collaboration; and inspirational approaches to health profession education. ASPIRE provides expert support to organizations that do not yet meet the necessary criteria but aim to do so in future.

The defined areas of excellence were emphasized during the rapid shift towards digital education and digital health in the COVID-19 pandemic. As early as May 2020, AMEE initiated open-access webinars supporting educators', trainers' and learners' responses to COVID-19 and sharing good practice examples. This was supported by a new online COVID-19 facility with extensive resources and toolkits (50).

The 2020 AMEE conference was delivered online using virtual-reality technology. It managed to create a forum to further develop the health profession education community of practice despite lockdown restrictions and teachers' and learners' additional workloads. The 2021 conference was also virtual and the 2022 was a hybrid event, featuring joint Regional Office/AMEE symposia and workshops.

AMEE continues to act to ensure the highest-quality learning opportunities are available for all and are adjusted to health professions' diverse needs. The aim is to leave no one behind in education.

3.2 Retention of new and existing graduates in domestic HLMs

Retention policies and measures are necessary throughout HCWs' careers, from studentship to established practitioner. Larger attrition rates at all levels of the system because of the COVID-19 pandemic emphasize the urgency of improving retention.

Effective mentoring and support will increase the probability that students will complete their programmes of study. On exiting their programme, some new graduates (and active HCWs) in lower-income countries of the Region may choose to seek better working conditions and professional development opportunities elsewhere.

The free movement of persons in the EU and the directive on the mutual recognition of professional qualifications (52) make it relatively easy to move to a higher-income country. Romanian doctors and nurses, for example, go to France, Italy and Spain, where there is demand for their services and language is not a major obstacle.

Beyond the EU, other countries of the Region also face challenges in retaining their best qualified HCWs. Many migrate to EU countries (from non-

EU Balkan countries to Germany, for example) even if they find it is more difficult to have their qualifications recognized in the destination country.

Some countries are both destination and source countries for HCWs. Patterns vary, with some short (sometime daily) cross-border mobility and longer-term migrations. Nurses based in France, for example, go to Switzerland and Luxembourg, or to Quebec (Canada). Austrian and German doctors go to Switzerland, Portuguese and Spanish nurses go to the United Kingdom, and Australia and New Zealand recruit nurses and doctors based in Ireland and the United Kingdom.

The evidence base on so-called magnet institutions – those that improve nursing staff retention and therefore patient care – is well established (53). Initially developed in the United States of America, the approach is now being taken forward in a European context. The EU-funded Magnet4Europe study (54) covers 60 hospitals in six European countries (Belgium, Germany, Ireland, Norway, Sweden and the United Kingdom) and focuses on using redesign of workplaces to improve staff health and well-being, productivity and patient safety.

3.2.1 Tackling geographical and public sector shortages

Some geographical areas face particular difficulties in recruiting and retaining HCWs. Most countries struggle with the problem of eliminating so-called medical deserts, which are areas where the population has insufficient access to HCWs and to health services. These tend to be in rural, remote or isolated areas, but they also exist in some urban settings, often in zones of poverty.

Finland uses a mix of strategies to cover underserved areas. These include adjusting the geographical distribution of training admissions, delegating tasks from physicians to nurses and providing incentives (including salary benefits and flexibility of working time) to encourage settlement in underserved areas.

Medical universities in Latvia give priority to applicants who agree to practise in a rural area on completion of their training. General practitioners (GPs) practising

in underserved areas receive monthly bonuses, a higher capitation rate and other financial incentives, including for continuous development of staff (55). The *WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas* (41) sets out further evidence-informed options for policy interventions to help retain HCWs in understaffed geographical areas.

Better data on distribution of HCWs at subnational level can provide impetus to policies for attracting professionals to underserved areas. EU countries benefit from support under the third Health Programme (56) to better diagnose and address problems of the so-called medical deserts and improve retention and task-shifting policies. Good practices from this ongoing work may be replicated in the future.

Policies to improve recruitment and retention and thereby mitigate shortages are more likely to work when they include a mix of interventions that are adapted to local contexts. Financial incentives alone are not sufficient. An overall package of incentives should also include support for professional development through access to mentoring and CPD opportunities, and attractive career prospects and working conditions, including adaptation to the needs of women with family constraints and of older workers.

Public services in some countries lose staff who move to the private sector to find better working conditions. Many of the interventions proposed in the WHO guideline (41) can be adapted to address this issue.

The WHO *Health labour market analysis guidebook* (57) proposes an analytical approach that supports countries to assess critical flows of staff. It provides tools to help countries understand why individuals choose specific education pathways or places of work.



Action 4.

Develop strategies that attract and retain health workers in rural and remote areas

The issue of so-called medical deserts in which populations have insufficient access to HCWs and health services is affecting rural, remote, isolated and even some urban settings in many countries.

The WHO Regional Office for Europe will:

- support countries and national policy dialogues in developing evidence-informed strategies, informed by the *WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas* (41).

3.2.2 Managing international workforce flows and their impact

International flows of HCWs are a feature of European HLMs. These flows occur between, into and out of countries in the Region. In the EU/EEA, freedom of movement of persons and mutual recognition of qualifications facilitate the mobility of HCWs.

Some countries have signed government-to-government agreements with non-European countries to recruit HCWs. These include Germany with the Philippines and Viet Nam (nurses), Portugal with Cuba (medical doctors and nurses), and the United Kingdom with Malaysia and the

Philippines (58). Countries must monitor these flows to assess the implications for workforce planning and policy.

A key issue is the impact that such flows have on HCWs' availability and on service delivery. Some countries are very dependent on international recruitment to fill HCWF gaps. This can have a knock-on effect on service delivery in source countries and create shortages. It is therefore important that all international recruitment activity conforms with the requirements of the WHO Global Code of Practice on the International Recruitment of Health Personnel

(59), which all Member States have endorsed. The Code commits Member States to ethical practices that avoid negative effects on source countries and on individuals who migrate. WHO insists there

should be no recruitment from countries included in its Health Workforce Support and Safeguard List (60).

3.3 Organization of work and the performance of the HCWF

The performance of the HCWF is influenced by:

- individual factors (competencies, experience and motivation of workers);
- health-system factors (structure, financing modalities and funding available, and regulation); and
- factors related to the organization of work (division of roles among categories of HCWs and the composition of the HCWF).

These three factors determine the extent to which HCWs can produce the services needed in a more productive manner.

Changing how work is organized to make it more efficient mitigates shortages by increasing productivity and improving quality. Implementing teamwork and strengthening PHC are examples (Vignette 4–6).

Multiprofessional teams that share information and medical records are more efficient. Coordination between clinicians is enhanced and they are better able to access complementary expertise.

Teams that have greater autonomy and the option of organizing their own work tend to provide more effective and more efficient services. Examples of this in action in PHC include family health units in Portugal (66) and the Buurtzorg model of autonomous nursing teams that collaborate with physicians as required in the Netherlands and 10 other countries in Europe (67–69). The Buurtzorg approach enables patients to avoid repeated examinations and consultations and allows them to access more holistic management of their problems. HCWs benefit from mutual learning, recognition of

their specific competencies and higher degrees of work satisfaction.

Information and communication technologies such as telehealth, mobile health (m-health), electronic medical records, electronic health records, big data and artificial intelligence are transforming how HCWs work. They promote interaction with patients and with fellow HCWs and contribute to service efficiency.

The COVID-19 pandemic stimulated and accelerated the use of digital tools to ensure continuity of health care and prevention of virus transmission (46). European countries have used digital tools to remotely monitor COVID-19 patients in isolation at home (France and Luxembourg), for remote medical triage and referral (Malta and Portugal), and for maintaining access to ambulatory care (Norway) or to services provided by a multiprofessional team (Lithuania). Countries have also adopted emergency regulations to allow electronic digital prescriptions (Ireland) and sickness certifications (Malta).

Teleconsultations have become an important part of the work pattern of physicians in many countries. In Portugal, 50% of physicians expressed satisfaction with teleconsultations, with only 16% dissatisfied or very dissatisfied (70). The national “Min læge” [“My doctor”] mobile application has been providing patients in Denmark with direct access to their doctor via their mobile phones since 2018. The app offers video consultations with GPs and specialists. In 2020, 46% of people in Denmark reported having received an online or telephone medical consultation during the first 12 months of the pandemic, more than the EU average of 39% (71).



Vignette 4.

Ireland: the Enhanced Community Care (ECC) programme – reducing the health service model's dependency on the acute hospital system

The ECC programme is the Government's Sláintecare [health-care] policy to provide more care in the community as close to home as possible to allow the ageing population to maintain independence (61). It releases pressure on the hospital system and brings enhanced community care services to towns and villages across the country.

Ireland's population is growing and ageing quickly. Demographic projections suggest the over-65 population will increase by 3% per annum compared to national population growth of 1% over the next 10 years. By 2028, there will be more people aged over 65 than those under 14. This highlights the scale of the challenge of responding to increasing demand for services.

The *Health service capacity review 2018* (62) projected increases in demand for PHC of 46%, 39% for long-term residential care, 70% for home care and 24% for non-elective inpatient services. Ireland needs to develop a more sustainable integrated health-care system that can meet these growing needs.

The ECC programme aims to deliver increased levels of health care oriented towards general practice, PHC and community-based services. The focus is on a countrywide end-to-end pathway that prevents referrals to acute hospitals where it is safe and appropriate to do so and enables a home-first approach. The ECC programme involves 3500 additional staff across a range of medical, health and social care professional, nursing and support roles (budget €240 million) to increase levels of care and support delivery of the transformation programme.

The main elements of the programme are:

- 96 community health-care networks (CHNs) serving a population of 50 000, through which integrated care is delivered with community health-care staff empowered at local level to drive multiprofessional integrated care delivery and support egress in the community; and
- 30 community specialist teams for older people and 30 for those with chronic disease, ideally co-located, servicing populations of 150 000 (equating to three CHNs) by supporting GPs and CHN teams to respond to the specialist needs of this population, bridging and linking care pathways between acute and community services with a view to improving access to, and departure from, acute hospital services.

Vignette 4 contd

Work undertaken by integrated care programmes for older people and chronic disease shows that improved outcomes can be achieved particularly for older people who are frail and those with chronic disease through a model of care that allows specialist multiprofessional teams to engage and interact with GPs and services at CHN level on diagnosis and ongoing care.

The ECC programme places the service user at the centre. It is changing structures and ways of working to transform care from uniprofessional to multiprofessional structures.

Key roles in the CHN model include: network manager, who provides multiprofessional management; GP lead, who provides strategic oversight for GPs and engages with colleagues to improve participation in PHC teams and clinical team meetings; key worker, who supports integration of services for service users with complex needs; and clinical co-ordinator(s) to facilitate multiprofessional work.

Community specialist teams are fully aligned with the acute system. Clinical governance is provided through the relevant acute medical unit (Model 4 hospital) or acute medical assessment unit (Model 3) but with services being delivered in community settings. Increased direct access to radiology diagnostics supports the community focus of the ECC programme.

Implementation is progressing at the expected pace. Reports suggest improved integration, access and enhanced experiences for services users, improved staff relationships, positive perceptions of local management, and good progress on communications and clarity.

The ECC programme is focused on delivery of integrated care, staff recruitment, target-population initiatives and activity and outcome monitoring. The infrastructure and approach are being explored in the context of the roll-out of other transformation and change programmes. Information on policies that are supporting these transformations can be found on the Government of Ireland publications webpage (63).



Vignette 5.

Slovenia:

community health centres with multiprofessional teams provide an effective dual-track approach to COVID-19

The Ministry of Health and a COVID-19 advisory board, with the support of the National Institute of Public Health (NIPH), conducted the response to the pandemic while maintaining essential routine PHC services through a dual-track approach (64). The approach included: providing surge capacity for testing and tracing; identifying and responding to vulnerabilities for COVID-19 and essential health services; and continuing to deliver health promotion and disease prevention services.

The NIPH carried out monitoring and surveillance of COVID-19 cases and traced high-risk contacts. PHC teams participated in public health actions such as implementing early detection and surveillance protocols. They also provided outreach services for frail older people, those living alone and people whose clinical status could rapidly deteriorate. Mobile teams were established for this purpose to closely follow-up patients in their home environments.

Population health management during the pandemic was facilitated by existing multiprofessional teams operating in community health centres. These teams offered a comprehensive basket of services, supported by social care services and local community organizations.

A pilot project that was already underway enabled clinical pharmacists to be mobilized rapidly into GPs' teams to support medication review. Existing multidisciplinary teams enabled rapid responses to new patients' needs, providing rehabilitation services for patients with post-COVID conditions and rapidly deploying vaccination programmes. The Government and the NIPH were responsible for vaccination promotion and the supply of vaccines, while PHC services played a key role in ensuring access to vaccination for all population groups.

The ability to adapt quickly and to effectively operate the dual-track system depended on effective collaboration between primary care and public health. This provided a vital shield for hospitals during the pandemic and is conducive to protecting vulnerable and marginalized groups.



Vignette 6.

Kazakhstan:

multiprofessional teams to better align PHC services with needs and expectations of the population

Kazakhstan is transforming PHC from a biomedical and doctor-centred model to one that is person-centred (65). More preventive, social care and mental health services are being provided alongside strengthened delivery of clinical services. Nurses, social workers and psychologists working with family doctors are increasing their competencies and enjoying greater professional autonomy.

An intensive six-month retraining programme was introduced to improve family doctors' clinical knowledge in evidence-informed medicine and non-clinical competencies. The programme focused on areas such as communication with patients and within the PHC team, and assessment of patients' medical and social needs.

Interprofessional courses provided opportunities for PHC team members from different professions to better understand their respective roles and jointly adjust task profiles. This resulted in better recognition and acceptance by GPs of the role of PHC nurses, social workers and psychologists.

Kazakhstan followed international experiences in its gradual expansion of nurses' scope of practice. The number of nurses in PHC teams tripled to up to three nurses per family doctor. Typically, one is a patronage (community) nurse, a second is responsible for disease management programmes and the third supports triage of patients for doctors' consultations.

A new regulation provided for a minimum of one social worker and one psychologist per 10 000 population. The scope of practice of psychologists includes counselling of patients referred to them by other PHC team members or through self-referral. In addition to assessing the needs of referred patients, social workers now have more proactive roles in identifying the social needs of vulnerable groups, such as people with disabilities, older people and socially disadvantaged families with small children.

Special disease management programmes provide PHC teams with contextualized evidence-informed clinical protocols and guidelines and supportive tools for patient education. Initially, these focused on four priority noncommunicable diseases — arterial hypertension, diabetes, chronic heart failure and chronic obstructive pulmonary disease.

Vignette 6 contd

The integration of PHC services with specialized care was introduced through evidence-informed clinical pathways that enable patients to get the right services from the right specialist at the right time. This avoids care fragmentation and optimizes the use of scarce health-care resources.

The Ministry of Health introduced a phased stepwise approach to achieving sustainable transformation of the PHC model. It started with 17 selected good-practice centres in every region and the bigger cities, followed by further roll-out after evaluation. The approach applied a unique model of change management through partnerships with the national PHC association and municipal administrations. Academic institutions designed and implemented training for PHC professionals and managers, with municipalities covering costs.

3.3.1 Making the division of labour more efficient

The COVID-19 health emergency has reinforced the recognition that over-rigid definitions of scopes of practice of health professions can be an obstacle to a rapid response to an emergency. Flexibility in the division of tasks among occupational groups is therefore required.

Flexible scopes of practice and skill-mix facilitate the use of the full range of competencies of all categories of HCWs, permitting sharing, delegating and even

shifting of tasks as required (see the European Commission empowering EU health policies on Task SHifting project (72)).

Many countries in the Region have legislated over the last two decades to allow nurses and pharmacists to perform tasks traditionally defined as medical. This frees time for doctors to see more patients and concentrate on more complex interventions.

3.3.2 Making the composition of the HCWF more efficient

There is no benchmark for the most efficient proportions of different types of workers (sometimes called skill-mix) in the composition of the HCWF. Each country has specific needs, its own model of care delivery and division of tasks among HCWs, and different capacity to employ HCWs.

The challenge is to find the combination of occupations that corresponds best to the needs of the population. For example, countries that have

occupational groups like feldshers (Azerbaijan, Bulgaria, Kazakhstan, Kyrgyzstan, the Russian Federation, Ukraine and Uzbekistan) or physician assistants (Germany, Ireland, Israel, the Netherlands and the United Kingdom) will opt for a different combination than those that do not. A country that has developed teleconsultations on a large scale, like Denmark, will have different needs from one that has not yet done so.

3.4 Creating an attractive work environment that is protective of the health and well-being of the HCWF

Terms of employment and working conditions are key determinants of HCWs' productivity and the quality of their work. Factors such as an open-ended contract and access to a pension, health insurance, professional development opportunities, career advancement, autonomy, supportive and transparent management, recognition of merit, protection against occupational risks, reasonable workloads and fair remuneration all contribute to engaging and motivating HCWs.

The Netherlands has fewer shortages of nurses than, for instance, Switzerland or the United Kingdom thanks to work arrangements that give nurses an expanded role and more autonomy in organizing and managing the delivery of their services (73).

Different dimensions of decent working conditions highlight the challenge of developing a fit-for-purpose HCWF. The list of factors goes beyond financial incentives (see [Vignette 7](#) for an example of pay-for-performance), indicating that interventions to create and maintain a motivating work environment need to be multiple and adapted to the specific needs of subgroups of the HCWF, such as those with family responsibilities and older workers.

Some hospitals in Germany adopted family-friendly measures such as providing childcare support and putting in place flexible working hours (74). Decent working conditions in Slovenia are defined through the Regulation on Continuous Health Care and collective agreements with trade unions, including those for physicians and dentists (74).

Protection against occupational health and safety risks is also a critical component of decent work. WHO and the International Labour Organization have joined forces to propose guidance that countries can deploy at national, subnational and facility levels (75). The guidelines define processes that will help identify and mitigate risks and ensure the well-being of HCWs.

The COVID-19 pandemic highlighted the importance of good working conditions to the physical and mental health of HCWs in general, but particularly those on the frontline. Pressures and stress are inherent to working in health and care services, but while HCWs are trained to cope with these, increased workloads and the need to adapt rapidly to new roles in times of crisis can take their toll.

Countries in the Region launched many preventive and supportive actions to address mental health risks. In the United Kingdom, for example, the Government of Scotland has allocated £12 million (approximately €14 million) to support the well-being of HCWs since 2020. It has adopted measures to support staff of its NHS staff, including:

- providing access to support via a national helpline;
- developing an online national well-being hub; and
- providing a workforce specialist service that offers support in identifying the mental health needs of health and social care professionals who may be reluctant to seek help or who are struggling to find confidential care.

A review of the first 100 service users of the workforce specialist service, utilization of the national well-being helpline and an analysis of the national well-being hub suggests they have had a positive impact on well-being (76). [Vignette 8](#) presents an example from Belgium.

The WHO *Supporting the mental health and well-being of the health and care workforce* document (78) proposes that countries adopt a stepped approach to supporting the mental health and general well-being of HCWs. This will ensure that workers receive the right support at the right time. Measures should range from specialized and primary care services to family and community support.

In addition to short-term responses to adjust working conditions to the environment created by the crisis, long-term actions by governments and employers are also needed to support the sustainability of the HCWF. Well designed and competently implemented interventions can prevent negative effects on the availability and quality of services due to HCWs' coping behaviours. Such behaviours include unjustified absence from work, asking for under-the-table payments, carrying out illegal dual practice, exiting early from the HLM and emigrating.

Policy-makers and employers are obliged to care those who care (75). The Global Health and Care Worker Compact captures international frameworks and instruments to support improvements in working conditions and uphold HCWs' rights (79).



Vignette 7. Kyrgyzstan: pay-for-performance system in primary care

Kyrgyzstan introduced a pay-for-performance (P4P) system for PHC from October 2018 to March 2021. The aim was to attract more doctors by increasing salaries for well performing providers. The system was accompanied by an offer for specialists to retrain as family doctors, as 30% of family doctors in 2020 were of retirement age.

Prior to implementation, family doctors' low salaries had the dual effect of promoting informal payments and disincentivizing doctors from staying in the field.

The P4P system was based on 12 quality indicators covering priority areas of health policy, among them maternal and child health, and prevention and treatment of cardiovascular diseases and diabetes mellitus. A maximum possible score for all 12 indicators was defined and linked to a bonus payment of up to 30% in addition to base salary.

WHO completed a qualitative and quantitative assessment of the P4P system effect in 2022. Despite P4P only being in place for a short period, the number of specialists who had retrained had increased, resulting in more family doctors in urban areas. The system also had a significant impact on family doctors' work motivation – 76% of respondents indicated it had increased and 69% noted that P4P had a strong impact on the quality of their work.

P4P was replaced by a higher base salary. This has noticeably reduced young professionals' motivation, as remuneration has dropped significantly compared to that under the P4P system

The P4P assessment clearly indicated that the goals set by the Government of improving the attractiveness of PHC, increasing the quality and performance of PHC workers and boosting the motivation of providers were achieved. The Government is now considering reintroducing the system.



Vignette 8.

Belgium:

implementation of a plan to increase the attractiveness of the profession by improving the working conditions, career prospects and social recognition of nurses

The Belgian Federal Government agreed to invest about €1 billion in 2020 to improve the working conditions of nurses and other staff in acute and psychiatric hospitals and community care. The main objectives were to improve salaries (with €600 million allocated) and create additional jobs via a special health-care staff fund (worth €402 million) started in November 2019.

With the agreement of unions and employer organizations, the Government decided to spend €500 million on accelerated implementation (from July 2021 onwards) of a new salary scheme for all salaried staff of the sectors involved. Functions instead of degrees served as the basis, with salaries increasing proportionally more in the first years of careers to attract more people into the health-care sector. New staff are hired within the new salary scheme while current staff can choose to opt-in.

The additional €100 million was earmarked to improve working conditions via bonuses and other measures like social leave and investments in human resource department projects.

The largest part of the health-care staff fund targets the creation of additional jobs and improvements to working conditions in hospitals through, for example, mentorship programmes. Additional nursing and caring staff jobs are prioritized, though the fund can also serve to hire support staff where it results in nurses being able to spend more time on direct patient care.

Budget spending is approved by local committees of employee and employer representatives and reported to the Ministry of Public Health. Part of the fund goes to attracting individuals from other sectors to consider a career as a nurse or health-care assistant by providing them with a salary during their education.

The new salary scheme corresponds to an average increase of 6%, but impacts at individual level strongly depend on years of experience (with a higher increase at the start of the career) and function. Although the salaries of the vast majority of staff have increased, this has not been the case for all. For nurses with a specialized professional title (such as intensive and emergency care), the advantage has been limited or non-existent, since yearly bonuses for their professional title have been incorporated into the new scheme. A recent study showed that 75% of nurses working in intensive care units were not satisfied with their salary.

Although a first evaluation in 2020 demonstrated that the health-care staff fund resulted in the additional recruitment of 4250 full-time equivalents (64.8% nurses and health-care assistants) and 446 people starting nurse or health-care assistant education, 69% of intensive care nurses reported problems with staffing and resource adequacy (77). Implementation was carried out during the COVID-19 pandemic, so occurred at a time characterized by nurses being absent or leaving the profession and a very tight labour market.

The Federal Minister of Public Health announced in 2022 an additional budget of €45 million to finance annual bonuses for nurses with a specialized title. This rewards their specific competencies, which were perceived to have been undervalued by the new salary scheme.



Action 5.

Create working conditions that promote a healthy work–life balance

The aim is to sustain decent work. This relates to workload and staffing levels, remuneration and benefits, work flexibility, access to training and mental health services, protection against occupational risks, violence and all forms of discrimination, and attention to the needs of older HCWs and those with demanding family responsibilities.

The WHO Regional Office for Europe will:

- support the development of legislation and regulation to guarantee optimal working conditions for HCWs as part of comprehensive recruitment and retention strategies.



Action 6.

Protect the health and well-being of the workforce

The benefits of taking care of the health of the HCWF are numerous. They include more motivated and better performing HCWs, less harm and absenteeism, higher retention rates and, most importantly, more available, accessible and effective health and care services and higher user satisfaction.

The WHO Regional Office for Europe will:

- support identification and implementation of effective measures to ensure the health and well-being of HCWs.

3.4.1 Addressing gender segregation in working environments

Meaningful improvements and solutions require action by ministries of health in collaboration with other sectors, such as departments for women's issues, social protection, social affairs, education, labour, finance and employment, to address both horizontal and vertical gender segregation. This includes driving gender-transformative measures in promoting better working conditions, addressing issues of safety in the workplace and dealing with gender-based differences in terms of burnout and attrition.

Family-friendly measures such as provision of childcare support, flexible working hours, part-time contracts and good annual leave arrangements for fathers and mothers have been put in place to make workplaces more attractive. It must be ensured, however, that such policies do not keep women in low-paid jobs with less pension benefits and do not dissuade men from taking paternity leave or working flexible hours to support family care.

In rebuilding more responsive and resilient health and economic systems in the aftermath of the COVID-19 pandemic, countries will benefit from reviewing the sustainability of their workforces through an equity-focused lens. Reform efforts

should be oriented towards reducing and closing existing gender gaps and understanding how a more gender-equal HCWF can contribute to larger regional goals, based on balanced economic growth, full employment and social progress. The continued lack of sex-disaggregated data makes assessments of gender in the age composition of different parts of the workforce and retention, recruitment and migration dynamics difficult.

The Regional Office has been able to address some of these issues by creating a community of practice on gender, PHC and the COVID-19 response by building the capacity of WHO staff and national counterparts in countries, engaging with civil society representing groups experiencing vulnerability and increasing advocacy with partners in the Issue-based Coalition on Gender. The Regional Office is aiming to mainstream gender into the HCW and is engaged with the country-driven forum on long-term care service delivery. It is also collaborating with the forum of government chief nursing and midwifery officers (GCNMOs) to influence policy and management and inspire others to commit to the implementation of a new vision to achieve better population health outcomes.

3.5 Governance for a strong and effective HCWF

3.5.1 HCWF governance

There are at least three prerequisites for successfully addressing the challenge of developing a HCWF that ensures UHC: an effective governance system, strategic planning and adequate financing.

Governance of the HCWF is the system and process of designing and implementing policies, decisions and rules that shape the HCWF (80,81). This occurs, for example, through regulating and accrediting education institutions and programmes, developing policies on access to the HLM, defining the division of tasks among HCWs and setting conditions of employment and work.

Governance has a direct influence on the availability, accessibility, acceptability and quality of the HCWF.

It is therefore critical that Member States “build the capacity of institutions at subnational, national and international levels for effective leadership and governance of actions on human resources for health” (82).

The European Observatory on Health Systems and Policies identifies five dimensions of governance of a country health system that serve to assess its quality (81). This approach applies well to governance of the HCWF. The dimensions are known as the TAPIC framework and comprise:

- **t**ransparency of decisions – who took them, and with what justification;
- **a**ccountability of decision-makers;
- **p**articipation of those affected in the decision process through, for example, a consultation mechanism;

- integrity through clarity and fairness of procedures and in the management of workers' careers; and
- capacity – the availability of competent technical assistance to conduct policy-making that is informed by reliable data and valid information.

The exercise of governance of the HCWF involves the choice of what should be regulated. This may include conditions of entry into the HLM, fitness to practise, required competencies, number and type of jobs created, wage levels and work conditions, and quality of practice. Key components of the HCWF are already highly regulated; the challenge is not to regulate more, but to make regulation more effective.

There is no standard, one-size-fits-all model of governance. The configuration of actors in the process of governance and their respective capacity to influence the design and implementation of HCWF policies and decisions are country-specific. Countries can use the TAPIC framework to guide their choices in building their HCWF governance system; whatever countries choose, they will need the technical capacity to make it work.

Vignette 9–11 give examples of how some countries have improved the governance of their HCWF.



Action 7. Build leadership capacity for workforce governance and planning

This includes strengthening strategic planning capacity to inform policy- and decision-making and ensuring more equitable representation of women in decision-making positions. It also means more intersectoral collaboration, sharing of data and information, and engagement of stakeholders through, for example, policy dialogues.

The WHO Regional Office for Europe will:

- support countries in strengthening HCWF governance functions through the provision of leadership training and facilitation of action learning programmes;
- support countries in strengthening HRH units for stronger leadership, strategic planning and management capacity;
- support countries in implementing effective HCWF planning approaches and tools;
- support countries in conducting HLM analysis by training a critical mass of analysts and developing national health workforce strategies; and
- support national policy dialogues on HCWF analysis and policy development.



Vignette 9.

Israel:

contribution of nursing leadership to the HCWF governance system in general and during the COVID-19 pandemic in particular

World Health Assembly resolution 74.15 calls on Member States to establish and strengthen national and subnational senior leadership roles for nurses and midwives. These leaders should have authority and responsibility for managing nursing and midwifery workforces and be able to input into health decision-making, including by appointing GCNMOs. Having GCNMOs and senior leadership programmes in place is associated with better regulation of education and work (83).

The Government Chief Nursing Officer (GCNO) in Israel serves as Deputy to the Ministry of Health General Manager and is a key contributor to determining policies and leading the national health workplan. The Nursing Division oversees 11 departments, including that for Managing the Health Workforce in Emergencies.

The GCNO led the process of rapidly mobilizing, repurposing and upskilling the country's health workforce to meet the requirements of the COVID-19 response during the pandemic.

Three main challenges were faced in managing the HCWF during the pandemic:

- monitoring the incidence of the disease;
- combatting staff shortages; and
- dealing with the absence of a robust routine data-collection system on the HCWF that provided real-time information to inform policy-making.

Policy responses led by the GCNO included creating thousands of new permanent positions, increasing training in intensive care and extracorporeal membrane oxygenation, and using a data-driven decision-making process to assess the utilization of resources. The Nursing Division provided intensive care training for 2000 nurses and 4000 newly graduated nurses and recruited 7418 nursing students from July 2020 until 2021.

Eight hundred paramedics and 700 other health workers, including social workers, physiotherapists, nutritionists, technological assistants and laboratory workers, joined the HCWF. New permanent positions for nurses (2550) and medical doctors (700) were also created.

This data-driven process increased efforts to gather, synthesize and analyse data. It enabled the Nursing Division to provide daily reports that helped identify staff shortages in real time and target recruitment, allocation and training where it was most needed.

The Nursing Division's work illustrates the benefits a GCNO can bring when placed in a position to steward, resource and monitor education and work at national scale to rapidly adjust to demand in a pandemic.



Vignette 10.

Scotland (United Kingdom):

how government actors collaborated in the production of the National Workforce Strategy for Health and Social Care in Scotland

The National Workforce Strategy for Health and Social Care in Scotland (84) sets out a collective vision for the HCWF, based on coordination of planning.

The strategy, which addresses the needs of over 400 000 skilled people working in the NHS, social care and third-sector nongovernmental organizations in many different roles, presents a long-term framework for progressively realizing the workforce vision, underpinned by a clear ambition to deliver recovery, growth and transformation. It acknowledges that sustained action is required to improve policy and operational interventions across the five key pillars of the workforce lifecycle: plan, attract, train, employ and nurture.

The strategy's vision is based on the core values of continual improvement, engagement, honesty, co-design and accountability. Achieving the vision will be critical to delivering the national mission to address health inequalities through early intervention and prevention.

Improving decision-making at all levels of the system to promote sustainability is a strategic priority. In particular, the strategy aims to enhance integrated workforce, service and financial planning, ensuring that workforce skills-mix and capacity:

- supports Scotland's National Performance Framework outcomes for health and social care; and
- responds to the changing environments in which health and care is being delivered.

The strategy sets out over 100 actions across three time horizons. The actions will be reviewed annually. They commit to improving planning capability, specifically focusing on shared learning and better alignment of national and local planning using improved data and modelling. Local services will assess changing workforce needs through three-year workforce plans, based on an assessment of population health and demand for health and care services.



Vignette 11.

Iceland:

establishing a national council of staffing and education in health services

Iceland is an island country with a small population and its own language. Some parts are rural and hard to access during winter, which influences the challenges in ensuring adequate numbers and education for the HCWF.

Iceland's policy is to provide access to quality health services to all citizens in remote, rural and urban areas. To enable this, working groups for three health-care professions (general nurses, practice nurses and medical doctors) submitted reports to the Minister of Health in 2019 that presented proposals on how to improve staffing.

In May 2021, the Minister established a national council to tackle challenges in staffing and education in the health-care system. The council acts as a consultation forum to provide advice on HCWF education and employment priorities, including cross-government and stakeholder involvement.

The council comprises representatives from the ministries of education and children, and higher education, science and innovation, national health-care institutions, PHC, universities, the Icelandic Association of Local Authorities and the Directorate of Health. Among its key aims is improving connections between the education and training of HCWs and the identified priorities of employment and skills required.

Main tasks include:

- building a stronger education system for HCWs, especially for specialist education and postgraduate training programmes;
- improving task-sharing or task-shifting between health professions to build stronger cooperation;
- placing greater emphasis on the self-sufficiency of the system;
- providing sufficient staffing in rural areas; and
- performing analytical work to profile the workforce and assess future needs.

The council meets twice monthly (one face-to-face and one virtual meeting). Other stakeholders are invited to participate when appropriate.

Reports suggest the national council has been a significant catalyst in getting different parties to the table to jointly define system-wide HCWF goals. It is strongly committed to a team ethos in examining policy advice, including developing policy and action-oriented proposals, projects and actions with relatively quick turnaround times.

The national council has been operational for little more than a year. It will continue to focus on enabling the education system to increase the number of workers in professions where there is a need and build up a more productive HCWF. The emphasis is always on quality, safety and efficiency in the health-care service.

3.5.2 Strategic planning: an indispensable approach

Some policy decisions around the HCWF taken today will produce their effects only in 5–10 years' time, or perhaps longer. Decisions need to reflect a plausible assessment of future needs. Objectives and a strategy that take account of optimal HCW numbers, locations and competencies need to be in place to support the achievement of UHC by 2030.

Strategic planning therefore goes beyond projections. It is a starting point; effective forward-looking strategic workforce planning needs to be complemented by the identification of future competency requirements. Corresponding to this are the required education capacity, the desired division of tasks, organization and conditions of work, and the regulatory framework to ensure HCWs' quality of practice.

The overarching challenge of strategic planning is how to coordinate actions in education and training, regulation, organizational change, employment and working conditions.

Effective planning (80–82):

- covers the whole HCWF and factors-in the complex interactions of occupational groups involved in the delivery of health and care services;
- considers variations in HCWF needs within the country;
- requires valid, reliable, up-to-date and comprehensive data on the baseline HCWF situation and on trends in the supply and demand for health services and for HCWs;
- has access to the technical capacity (such as policy analysts, demographers, statisticians and informaticians) to collect and analyse relevant data and information;
- engages stakeholders in supporting proposed objectives and strategies to progress towards UHC;
- is informed by rigorous estimates of the costs of reforms, including costs for educating and employing more workers and the additional services they will generate; and
- is flexible and adapts strategies and interventions when monitoring shows that objectives are not being achieved or that undesirable effects are being observed.

The COVID-19 health emergency illustrated the challenge of planning for unexpected shocks like a pandemic, an economic crisis or a major ecological catastrophe. It presents a unique opportunity

to draw lessons on what makes a health system resilient.

Analysis of the current HCWF situation is the foundation of informed planning. Reliable up-to-date data on the HCWF is therefore of prime importance (42,85). The WHO National Health Workforce Accounts (86,87) and the OECD/Eurostat/Regional Office joint questionnaire on non-monetary health-care statistics (88) propose standard indicators and sources of data. Table 2 presents information sources and tools that countries can use to identify trends in health services and HCWF needs.

Good quantitative data, combined with the consultation of experts (epidemiologists, demographers and researchers) and key informants (policy-makers and leaders of education institutions and professional organizations), make it possible to envisage different scenarios of future HCWF requirements. The European Commission-funded Support for the Health Workforce Planning and Forecasting Expert Network (89) and *The toolkit for a sustainable health workforce in the WHO European Region* (90) present good practices and planning tools.

Work at EU level will continue with the launch of the Joint Action Heroes on health workforce planning and forecasting in autumn 2022.

[Vignette 12–15](#) provide examples of how Kyrgyzstan, Malta and Georgia estimate future requirements for medical and dental personnel, education capacity to meet need and resources required – a complex exercise in any context.

Failure to plan may mean that current HCWF problems will persist or worsen and policy-makers will not be informed about the causes of, or options to address, them. This has negative consequences on the health and quality of life of people now and in the future and will cause inefficiencies in the use of training resources.

Populations everywhere place high value on the ability to access quality health services. A poor response to this expectation may cost political capital. Planning the HCWF is not an exact science, but with a clear vision of the health system the country wants to have in place in the future, planners can propose policy options from which decision-makers can choose to strengthen their HCWF in an informed way.

Table 2. Data and information useful for informing planning

Variable	Data/information needs	Sources
Epidemiological and demographic changes	Population projection: fertility rates, life expectancy, migratory flows	Census data; national information system on mortality and morbidity; national health surveys; WHO Global Health Observatory; Global Burden of Disease
	Burden of disease projections: mortality, morbidity, risk factors, by sex and age group	
Demand and utilization of health services	Utilization of services by type of service (PHC, hospital, long-term, home care), by sex and age group	Administrative databases Demographic and health surveys
	Unmet demand	
Policies	Stated goals and objectives of the government relative to: health priority needs, funding of health services, decentralization/ regionalization of decision-making and management, contracting health workers	Public policy documents and reports: national health plan, public administration and ministry of finance policies Survey of opinion of key informants
Models of care	Stated goals and objectives of the government relative to organization and management of health services (priority to PHC, integration, coordination of services, management autonomy of facilities)	Public policy documents: national health plan, public administration and ministry of finance policies Recommendations by international bodies (WHO, other United Nations agencies, professional organizations) Survey of opinion of key informants
Regulatory changes	Stated goals and objectives of the government relative to: regulation of the private sector; division of tasks among the various categories of health workers; quality of professional practice	Public policy documents: national health plan, public administration policies Survey of opinion of key informants
Technological changes	Information on the potentialities of existing technological innovations and of those in the pipeline	Literature review Survey of opinion of key informants



Action 8.

Strengthen health information systems for better data collection and analysis

Primarily, countries should optimize the use of available data, identify possible gaps and take steps to fill them. Data collection should focus on indicators that are more likely to influence policy choices, and cover behavioural and cultural barriers to, and facilitators of, HCWF performance. It is crucial to extend data collection to all occupations in the HCWF to attain a full picture of the HLM. Strengthening information systems and developing National Health Workforce Accounts is critical to supporting labour-market analysis, planning, advocacy for increased investment, and policy- and decision-making.

The WHO Regional Office for Europe will:

- support countries in assessing their HRH information systems and in developing plans for their improvement; and
- support the strengthening of data collection and analysis for policy decision-making.



Vignette 12.

Kyrgyzstan:

applying and adapting health workforce tools to support COVID-19 surge response

Two tools were used:

- an epidemiological model (Adaptt) (91) to project how the pandemic might evolve; and
- a WHO HCWF estimator to highlight where problems might occur in future.

The tools used data collected by the e-health team in Kyrgyzstan on the available national HCWF and hospitals in the Bishkek (capital) region, together with the daily number of patients hospitalized with COVID-19 and their severity. The hours per day required for the treatment of moderate, severe and critical COVID-19 cases were estimated and confirmed against actual hospital statistics.

The epidemiological tool was used to show how COVID-19 case numbers might unfold and their likely severity. The HCWF estimator tool then used these data to assess the potential impacts on the HCWF.

Outputs showed the number of cases that could be handled by the current workforce and identified predicted gaps by occupation and health facility in the Bishkek region. This allowed the Ministry of Health to manage the situation by, for example, moving staff between regions or task-sharing to reduce any deficits or surpluses.

The tools played a major role in supporting effective overall management and planning systems and mechanisms during the pandemic and highlighted the need to improve HCWF data. They showed the importance of contingency planning to deal with situations where the number of patients exceeds the capacity of the health-care system and the need for additional data to extend the analysis across other hospitals and regions.

Work to improve data capabilities and the wider workforce-planning process is ongoing.



Vignette 13.

Malta:

planning future health worker requirements informed by data analysis and consultations with experts and stakeholders

The Ministry for Health is responsible for national health services and provides primary, secondary and tertiary care.

Currently, the Ministry submits a rolling three-year business and human resource plan to central government. The plan is not evidence-informed and therefore is exposed to being challenged. It is considered too short-term, given that most health-care students take years to train. Service leaders only plan for the following year, and the current process also poses a challenge with (re)deploying HCWs where they are needed most.

The COVID-19 pandemic has exposed system deficiencies and the need for a more rigorous planning approach.

The final draft HCWF strategy goals include strategic HCWF planning, strengthening of data management, enhancement of communication between the education and health sectors, and improving the physical and psychological well-being of workers.

The Ministry is collaborating with WHO advisors to develop a bespoke data-driven tool aimed at transforming HCWF planning into a more evidence-informed and longer-term system. The tool is being tested to improve workforce decision-making in multiple staff categories. Consultations with stakeholders and service leaders are being taken forward to obtain a better understanding of current HCWF needs and challenges and build stronger stakeholder relationships. Resistance to change from some stakeholders is foreseen as the major barrier to this new approach being accepted.

The expected outcome is more accurate, evidence-informed HCWF planning processes that take into consideration a number of factors not considered in the current system. These include demographic, epidemiological, sociocultural, political, productivity, technological and task-shifting trends.

More effective HRH projections are also expected. Ministry for Health advocacy for additional resources will gain credibility with higher authorities, including central government and the Ministry for Finance and Employment. The Ministry will also be supported during consultations with education institutions to identify gaps between demand and supply for specific staff categories. This will contribute to delivery of the highest quality of care to the population.

Once finalized, the tool will be shared with heads of health entities and service leaders, followed by a comprehensive training programme to provide the necessary skills and competencies in use of the tool.

This system can be easily adapted to address the needs of other small countries that do not currently have a robust HRH planning system in place.



Vignette 14.

Georgia:

from absence of planning to strategic planning

With the exception of rural PHC services and a handful of public hospitals, Georgia has a highly privatized health-care system dominated by for-profit entities. Georgia has been striving to provide UHC since 2013, but the organization of the health system and financial incentives favour emergency and inpatient care, where funding is based on a fee-for-service basis.

This approach also applies to the HCWF, whose supply has been left to the market. Since deregulation of the health system began in 2004, Georgia has not undertaken any formal HCWF planning, relying instead on the choices of students, the output of education institutions and demands of health service providers in the market. The Ministry has not actively influenced the supply of HCWs, and governance links between the Ministry and key stakeholders have not been in place.

The result was a laissez-faire and unplanned approach to HCW supply, leading to oversupply of medical doctors (mainly in narrow specialties), undersupply of nurses and midwives, and concentration of the workforce in big cities around private health-care networks.

The Government renewed its commitment to investing in and strengthening PHC in December 2019. Successful reform will depend in large part on addressing supply constraints related to human resources for PHC to achieve appropriate and sustainable long-term numbers, composition, competencies and working conditions.

To support this renewed interest, WHO contributed to the first comprehensive HCWF assessment in Georgia, with a particular focus on PHC. The assessment found the following.

- PHC workforce demographics were unfavourable, with an ageing profile. A significant number of workers were within 10 years of the retirement age (60 for women and 65 for men) and a number were working well into retirement.
- Wages were low by comparative standards, though the Government has adjusted the taxation requirement for HCWs to raise the real-term equivalent.
- Rural staff retention is a challenge. Practices are small, leading to professional isolation and potential deskilling due to limited exposure to professional development opportunities.
- CPD was being implemented in an ad hoc way. In addition to changing the model of care, opportunities exist for a more systematic approach to CPD for PHC services to continually improve the quality of care and enhance patient experience.

Vignette 14 contd

The assessment findings will support the creation of the country's first HCWF development strategy, beginning in June 2022. Successful implementation of the strategy relies on attracting additional professionals to PHC in a sustainable way. Key recommendations include:

- establishing and investing in an HRH planning and governance unit;
- substantially increasing investment in human resources for PHC;
- providing support to improve quality through CPD;
- developing formal HRH reporting mechanisms and review of the HRH information system;
- improving the regulatory environment, including revalidation of accreditation; and
- developing a new approach to recruitment and retention.

WHO is committed to supporting Georgia's capacity development through participation in the ongoing Workforce Planning Leadership Development programme (89). This includes providing technical assistance to support the drafting of a HCWF development strategy and facilitating a policy dialogue with key stakeholders on the implementation of recommendations and reforms to establish the structures and capacity to shape the HCWF.



Vignette 15. **England (United Kingdom):** addressing shortages in general practice

PHC services in England, based on general practices, have consistently faced workforce pressures. These have been exacerbated by the COVID-19 pandemic.

Concerns about current and future workforce supply–demand gaps were a major driver for the REAL Centre (Research and Economic Analysis for the Long term) of the Health Foundation to undertake independent analysis of long-term supply and demand in the NHS in England to 2030–2031 (92). The analysis focuses on patient-care staff in general practice (fully qualified, permanently employed GPs, general practice nurses and other patient-care staff).

The REAL Centre's projections were informed by analysis of publicly available data from multiple sources, with underlying assumptions developed in consultation with key stakeholders in government, the professions, regulation and employers.

Vignette 15 contd

The GP supply projections explored future changes in qualified permanent GP supply through alternative supply channels:

- GP retention: retention of GPs currently practising in England (captured by changes in GP leaver rates);
- shifts in workforce composition: the extent to which significant increases in recruitment in other patient-care roles in general practice could alleviate GP workload pressures;
- domestic training: changes in the number of GP specialty trainees, the GP trainee attrition rate and workforce joiner rates; and
- international recruitment: recruitment of GPs with a primary medical qualification from outside the United Kingdom.

The analysis considers how policy choices might affect recruitment and retention of these staff groups under alternative scenarios:

- current policy scenario: continuation of historical trends and existing policies;
- optimistic scenario: further policy intervention that achieves increased recruitment and retention; and
- pessimistic scenario: negative impacts to future supply arising largely from incomplete realization of existing policy potential, a lack of longer-term planning and COVID-19.

The results highlighted that in all three scenarios, the supply of GPs and general practice nurses is projected to fall short of demand. Under current policy, the NHS faces a shortfall of around one in four GP and general practice nurse posts by 2030–2031. This increases to around one in two GP and nurse posts in the pessimistic scenario, raising concerns about patient safety, quality of care and equity of access.

In the optimistic scenario, the GP shortfall can be substantially mitigated by 2030–2031, with a lower projected GP shortfall of around 1200 full-time equivalents (around 3% of projected GP posts), but this assumes substantial improvements in GP retention and more effective integration of new direct patient care roles helping to lower GP demand by 9% by 2030–2031.

The REAL Centre stressed that policy choices around staff recruitment, retention, training, funding and equity in general practice have a vital role to play in addressing workforce pressures in general practice in the medium term. It recognizes that:

- addressing general practice workforce shortages requires comprehensive long-term planning and acknowledgement that improvement will take many years;
- top-down targets are unlikely to be effective in addressing workforce supply–demand shortfalls, meaning policy-makers should account for geographic and sector variation in supply and demand;
- policies need to be fully costed and funded to be implemented effectively;
- joined-up policy-making needs to be underpinned by substantive research on the drivers of workforce supply and demand and rigorous projections analysis; and
- substantial gaps in accessible data about the NHS workforce should be acknowledged and mitigated.

3.6 Investing smartly in the HCWF

The HCWF in all countries requires financial support to take on new responsibilities and face challenges over the short and longer terms.

The absence of adequate funding leads to unrealistic options and spurious projections, while funding without planning risks producing inefficiencies and waste. Funding needs to be smart (targeted) to achieve best results. This can include greater investment in skill-mix innovations, improved working conditions for HCWs, incentives to attract new talent (including through increased investment in training and education) and policies to retain HCWs. All of these are key ingredients of successful HCWF strategies (93).

Expenditure on training and employment of HCWs is variable among countries of the Region, as is their capacity to spend more. During the COVID-19 pandemic, however, many Member States managed to mobilize additional resources to strengthen their response to the crisis.

Among them, EU countries had access to grants and loans from the Recovery and Resilience Facility to support the health sector, including the HCWF, though more resources went on infrastructure. Non-EU countries also spent more on their HCWF. Türkiye, for example, recruited an additional 44 000 HCWs in 2020 (94). Others, like Albania, Armenia, Belarus, Bosnia and Herzegovina, Kyrgyzstan, Montenegro and the Russian Federation, paid bonuses to HCWs or increased their remuneration (95).

Immediate challenges require urgent responses. Looking to the longer term, additional investments should be part of the strategic planning process of the HCWF to, for example:

- determine where investment should be made in educating and training HCWs (more students, more and better qualified educators and trainers, better infrastructure, and promoting the attractiveness of joining the professions by improving working conditions and increasing the compensation/wage bill), or in research to produce the data and knowledge to inform policy development;
- define the expected results in the short, medium and long terms and how to monitor them;
- estimate how much additional financial resources are needed in the short, medium and long terms and how to access them; and
- build the technical capacity required to ensure the investment is effective.

Funding such investments depends on the capacity of the country to create fiscal space to spend more on the HCWF. Classic examples of how a government can raise more revenue to strengthen the HCWF include:

- reallocating funds within current health sector expenditure without spending more by, for example, improving allocative efficiency;
- improving organizational efficiency in health through making savings by, for instance, reducing the inappropriate utilization of hospital services, eliminating wastage, making procurement more cost-efficient or simplifying decision-making and bureaucratic procedures;
- reallocating funds from other government budget areas;
- generating additional revenue from taxation, including from contributions of users of services;
- borrowing on the financial markets or, if this is not possible, applying for external aid; and
- using a mix of these options.

The potential to use these policy options depends principally on the political context. All require collaboration from many stakeholders whose interests and objectives may be affected.

Private sector capacity to invest in education or services depends on users' willingness to pay more for its services through higher fees for studies, higher insurance premiums and out-of-pocket payments.

The development of a fit-for-purpose and resilient HCWF comes at a cost, but it brings a huge return. The High-level Commission on Health Employment and Economic Growth showed convincingly that spending more on HCWs, if done well, is a productive social and economic investment (96). Failure to invest has a higher cost in the form of unmet needs, poor-quality health services and loss of workers to other sectors or countries.

Expenditure on training and employment of HCWs is variable among countries of the Region, as is their capacity to spend more. During the COVID-19 pandemic, many countries managed to mobilize additional resources to strengthen their response to the crisis. Looking to the longer term, additional investments should be part of the strategic planning process for the HCWF.



Action 9.

Increase public investment in workforce education, development and protection

Ministries of health and health sector stakeholders need to make the case to other ministries and potential funders for increased and targeted investment in the HCWF. Addressing backlogs of services post-COVID-19 and the economic and employment returns from such investment are powerful advocacy arguments. Public and private investment should be mobilized.

The WHO Regional Office for Europe will:

- support countries in making the investment case to ministries of finance for increased financing of the HCWF; and
- support countries in making the case to education and labour ministries for increased and targeted investment in the HCWF.



Action 10.

Optimize the use of funds through innovative workforce policies

Countries will benefit from investing in innovative ways to increase the availability, accessibility and productivity of HCWs. Prioritizing investments in the PHC workforce is the best strategy to improve the performance of health services.

The WHO Regional Office for Europe will:

- support countries in developing investment strategies to: improve HCWF optimization by defining new roles and introducing multiprofessional teams; improve digital health skills; introduce more flexible working arrangements; and improve working conditions; and
- support countries in strengthening their PHC workforce.



The way forward: 10 actions to strengthen the HCWF in the European Region

This chapter brings together the recommended actions to help address HCWF challenges across the Region set out in Chapter 3. There is no implied hierarchy in the listing of the actions – they each carry equal significance.

4.1 Proposed actions



Action 1.

Align education with population needs and health service requirements

Equipping new HCWs with the right competencies is necessary to respond to the changing health needs of individuals and populations.

The WHO Regional Office for Europe will:

- support health and education institutions in reviewing and updating health and care education curricula and programmes; and
- support the development and strengthening of regulation and accreditation of health and care education institutions and programmes.



Action 2.

Strengthen continuing professional development to equip the workforce with new knowledge and competencies

CPD activities support HCWs to adapt to changes in demand for services and the introduction of new tasks.

The WHO Regional Office for Europe will:

- provide support in improving CPD standards and approaches for the HCWF and promote access to CPD opportunities.



Action 3.
Expand the use of digital tools that support the workforce

Extensive shifts towards greater use of digital health in service delivery and HCW training and development took place during the COVID-19 pandemic. Their ongoing and increased use will require a HCWF that is skilled in the use of digital health tools.

The WHO Regional Office for Europe will:

- support the development of guidance and frameworks to equip HCWs with digital competencies.



Action 4.
Develop strategies that attract and retain health workers in rural and remote areas

The issue of so-called medical deserts in which populations have insufficient access to HCWs and health services is affecting rural, remote, isolated and even some urban settings in many countries.

The WHO Regional Office for Europe will:

- support countries and national policy dialogues in developing evidence-informed strategies, informed by the *WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas (41)*.



Action 5.
Create working conditions that promote a healthy work-life balance

The aim is to sustain decent work. This relates to workload and staffing levels, remuneration and benefits, work flexibility, access to training and mental health services, protection against occupational risks, violence and all forms of discrimination, and attention to the needs of older HCWs and those with demanding family responsibilities.

The WHO Regional Office for Europe will:

- support the development of legislation and regulation to guarantee optimal working conditions for HCWs as part of comprehensive recruitment and retention strategies.



Action 6.
Protect the health and mental well-being of the workforce

The benefits of taking care of the health of the HCWF are numerous. They include more motivated and better performing HCWs, less harm and absenteeism, higher retention rates and, most importantly, more available, accessible and effective health and care services and higher user satisfaction.

The WHO Regional Office for Europe will:

- support identification and implementation of effective measures to ensure the health and well-being of HCWs.



Action 7. **Build** leadership capacity for workforce governance and planning

This includes strengthening strategic planning capacity to inform policy- and decision-making and ensuring more equitable representation of women in decision-making positions. It also means more intersectoral collaboration, sharing of data and information, and engagement of stakeholders through, for example, policy dialogues.

The WHO Regional Office for Europe will:

- support countries in strengthening HCWF governance functions through the provision of leadership training and facilitation of action learning programmes;
- support countries in strengthening HRH units for stronger leadership, strategic planning and management capacity;
- support countries in implementing effective HCWF planning approaches and tools;
- support countries in conducting HLM analysis by training a critical mass of analysts and developing national health workforce strategies; and
- support national policy dialogues on HCWF analysis and policy development.



Action 8. **Strengthen** health information systems for better data collection and analysis

Primarily, countries should optimize the use of available data, identify possible gaps and take steps to fill them. Data collection should focus on indicators that are more likely to influence policy choices, and cover behavioural and cultural barriers to, and facilitators of, HCWF performance. It is crucial to extend data collection to all occupations in the HCWF to attain a full picture of the HLM. Strengthening information systems and developing National Health Workforce Accounts is critical to supporting labour-market analysis, planning, advocacy for increased investment, and policy- and decision-making.

The WHO Regional Office for Europe will:

- support countries in assessing their HRH information systems and in developing plans for their improvement; and
- support the strengthening of data collection and analysis for policy decision-making.



Action 9.

Increase public investment in workforce education, development and protection

Ministries of health and health sector stakeholders need to make the case to other ministries and potential funders for increased and targeted investment in the HCWF. Addressing backlogs of services post-COVID-19 and the economic and employment returns from such investment are powerful advocacy arguments. Public and private investment should be mobilized.

The WHO Regional Office for Europe will:

- support countries in making the investment case to ministries of finance for increased financing of the HCWF; and
- support countries in making the case to education and labour ministries for increased and targeted investment in the HCWF.



Action 10.

Optimize the use of funds through innovative workforce policies

Countries will benefit from investing in innovative ways to increase the availability, accessibility and productivity of HCWs. Prioritizing investments in the PHC workforce is the best strategy to improve the performance of health services.

The WHO Regional Office for Europe will:

- support countries in developing investment strategies to: improve HCWF optimization by defining new roles and introducing multiprofessional teams; improve digital health skills; introduce more flexible working arrangements; and improve working conditions; and
- support countries in strengthening their PHC workforce.

КАБИНЕТ

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Conclusion

The need to strengthen HCWF policies in the European Region has been highlighted by experiences during the COVID-19 pandemic.

HCWs have been critical not only to countries' response to the pandemic, but also to maintaining essential health services. HCWs quickly acquired new skills, adapted to new service requirements and responded to surges in health needs. Often, doing so meant they had to put themselves at risk of contracting the virus and cope with much heavier-than-normal workloads.

All of this was happening at a time when HCWs were also having to contend with the same dread of COVID-19 as the rest of the population. They feared most of all that their high exposure to the virus in health and care settings might lead to them passing it on to loved ones and family members. Yet they still took their places in the frontline and delivered for the communities they serve.

HCW shortages, difficulties in attracting and retaining HCWs, increased international mobility, skill-mix mismatches, inefficient organization of work, unattractive working conditions, lack of gender-responsive policies, inadequate HRH governance and management, lack of strategic HCWF planning and insufficient investment – all these existed before the pandemic. There is no doubt, however, that the pandemic has exacerbated the impacts of each.

It nevertheless is plain that the COVID-19 pandemic offers an unprecedented opportunity to address HCWF challenges. Central to this will be maintaining and growing some of the successful policy interventions implemented by countries during the pandemic, particularly in relation to digital delivery of health services and education.

At stake is the capacity of health systems to respond to current and future health and care needs, to be more resilient, and to optimize the investment countries make in the health and care sector. European countries must prioritize their HCWs by investing more and investing smarter. They must protect their HCWF by developing and implementing policies that place the interests and well-being of HCWs at the forefront.

This report offers a range of policy options that can strengthen countries' HCWF. WHO will continue to support Member States to make policy change happen and drive improved health outcomes.

HCWs inspired everyone during the pandemic. It is time to place them at the centre of the health policy agenda and prioritize investment in the HCWF. It is time to act.





References⁶

1. European Programme of Work 2020–2025: United Action for Better Health. Copenhagen: WHO Regional Office for Europe; 2021 (<https://apps.who.int/iris/handle/10665/339209>).
2. World Population prospects, 2022. In: United Nations Department of Economic and Social Affairs Population Division [website]. New York (NY): United Nations Department of Economic and Social Affairs Population Division; 2022 (<https://population.un.org/wpp/>).
3. National Health Workforce Accounts data portal [online database]. Geneva: World Health Organization; 2022 (<https://apps.who.int/nhwportal/>).
4. WHO, International Labour Organization. The gender pay gap in the health and care sector: a global analysis in the time of COVID-19. Geneva: World Health Organization; 2022 (<https://apps.who.int/iris/handle/10665/358057>).
5. What's needed now to protect health workers: WHO COVID-19 briefing. In: World Economic Forum [website]. Geneva: World Economic Forum; 2022 (<https://www.weforum.org/agenda/2020/04/10-april-who-briefing-health-workers-covid-19-ppe-training/>).
6. Women at the core of the fight against COVID-19 crisis. Paris: Organization for Economic Cooperation and Development; 2020 (<https://www.oecd.org/coronavirus/policy-responses/women-at-the-core-of-the-fight-against-covid-19-crisis-553a8269/>).
7. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsis E, Katsaounou. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. *Brain behave Immun.* 2020;88:901–7. doi:10.1016/j.bbi.2020.05.026 (correction in: *Brain Behav Immun.* 2021;92:245).
8. Shaukat N, Ali DM, Razzak J. Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. *Int J Emerg Med.* 2020;40. doi:10.1186/s12245-020-00299-5
9. Luo M, Guo L, Yu M, Jiang W, Wang H. The psychological and mental impact of coronavirus disease 2019 (COVID-19) on medical staff and general public – a systematic review and meta-analysis. *Psychiatry Res.* 2020;291:113190. doi:10.1016/j.psychres.2020.113190.
10. Delivered by women, led by men: a gender and equity analysis of the global health and social workforce. Geneva: World Health Organization; 2019 (<https://apps.who.int/iris/handle/10665/311322>).
11. World Health Organization, International Labour Organization. The gender pay gap in the health and care sector: a global analysis in the time of COVID-19. Geneva: World Health Organization; 2022 (<https://apps.who.int/iris/handle/10665/358057>).
12. The Global Health Observatory [online database]. Geneva: World Health Organization; 2022 (<https://www.who.int/data/gho>).
13. United Nations Department of Economic and Social Affairs Statistics Division. International standard industrial classification of all economic activities (ISIC), Revision 4. New York (NY): United Nations; 2008 (https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf).
14. Health care resources. In: OECD.stat [online database]. Paris: Organization for Economic Cooperation and Development; 2022 (https://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_REAC).

6 All references accessed 14 July 2022, unless otherwise indicated.

15. Under-five mortality rate (per 1000 live births) (SDG 3.2.1). In: The Global Health Observatory [online database]. Geneva: World Health Organization; 2022 ([https://www.who.int/data/gho/data/indicators/indicator-details/GHO/under-five-mortality-rate-\(probability-of-dying-by-age-5-per-1000-live-births\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/under-five-mortality-rate-(probability-of-dying-by-age-5-per-1000-live-births))).
16. Maternal mortality ratio (per 100 000 live births). In: The Global Health Observatory [online database]. Geneva: World Health Organization; 2022 ([https://www.who.int/data/gho/data/indicators/indicator-details/GHO/maternal-mortality-ratio-\(per-100-000-live-births\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/maternal-mortality-ratio-(per-100-000-live-births))).
17. Nguyen LH, Drew DA, Graham MS, Joshi AD, Guo C-G, Ma W et al. Risk of COVID-19 among front-line health-care workers and the general community: a prospective cohort study. *Lancet Public Health*. 2020;5(9):e475–83. doi:10.1016/S2468-2667(20)30164-X.
18. Lintern S, Pogrund G. NHS struggles as sickness takes out 1 in 10 staff. *The Times*. 2 January 2022 (<https://www.thetimes.co.uk/article/115e417c-6b47-11ec-bb37-1b2eed73c283?shareToken=2207c3e9ac71d5e7a38878abfa13f532>).
19. Pérez-Raya F, Cobos-Serrano JL, Ayuso-Murillo D, Fernández-Fernández P, Rodríguez-Gómez JA, Almeida Souza A. COVID-19 impact on nurses in Spain: a considered opinion survey. *Int Nurs Rev*. 2021;68(2):248–55. doi:10.1111/inr.12682.
20. Lambert S, Mahon A. An exploration of the wellbeing of nurses and midwives in Ireland: a research project to inform the “Let’s talk about it” mental health collective for INMO members. 10.13140/RG.2.2.10935.24480.
21. The global nursing shortage and nurse retention. Geneva: International Council of Nurses; 2021 (https://www.icn.ch/sites/default/files/inline-files/ICN%20Policy%20Brief_Nurse%20Shortage%20and%20Retention_0.pdf).
22. Winkelmann J, Webb E, Williams GA, Hernández-Quevedo C, Maier CB, Panteli D. European countries’ responses in ensuring sufficient physical infrastructure and workforce capacity during the first COVID-19 wave. *Health Policy*. 2022; 126(5):362–72. doi:10.1016/j.healthpol.2021.06.015.
23. International Council of Nurses, International Council of the Red Cross, International Hospital Federation, World Medical Association. Violence against health care: current practices to prevent, reduce or mitigate violence against health care. Geneva: International Council of Nurses; 2022 (<https://www.icn.ch/system/files/2022-07/Violence%20against%20healthcare%20survey%20report.pdf>).
24. Williams GA, Scarpetti G, Langins M, Callies I, Fourcade A, van Ginneken E et al. Human resources for health during Covid-19: supporting and protecting health. *Eurohealth*. 2022;28(1):24–8. CID:20.500.12592/191p31.
25. Zapata T, Buchan J, Azzopardi-Muscat N. The health workforce: central to an effective response to the COVID-19 pandemic in the European region. *Int J Health Plann Manage*. 2021;36(suppl. 1):9–13. doi:10.1002/hpm.3150.
26. Williams GA, Maier CB, Scarpetti G, de Belvis AG, Fattore G, Morsella A et al. What strategies are countries using to expand health workforce surge capacity during the COVID-19 pandemic? *Eurohealth*. 2020;26(2):51–7 (<https://apps.who.int/iris/handle/10665/336296>).
27. Williams GA, Maier CB, Scarpetti G, Galodé J, Lenormand M-C, Ptak-Bufken K et al. Human resources for health during COVID-19: creating surge capacity and rethinking skill mix. *Eurohealth*. 2022;28(1):19–23. CID: 20.500.12592/9q106w.
28. Communication from the Commission. Guidance on free movement of health professionals and minimum harmonisation of training in relation to COVID-19 emergency measures – recommendations regarding Directive 2005/36/EC 2020/C 156/01. OJ C 156, 8.5.2020, p. 1–4 ([https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020XC0508\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020XC0508(01))).
29. Buchan J, Williams GA, Zapata T. Governing health workforce responses during COVID-19. *Eurohealth*. 2021;27(1):41–8. (<https://apps.who.int/iris/handle/10665/344948>).
30. Strengthening the frontline: how primary

- health care helps health systems adapt during the COVID 19 pandemic. Paris: Organization for Economic Cooperation and Development; 2021 (<https://www.oecd.org/coronavirus/policy-responses/strengthening-the-frontline-how-primary-health-care-helps-health-systems-adapt-during-the-covid-19-pandemic-9a5ae6da/>).
31. State of health in the EU. Poland: country health profile 2021. Paris/Brussels: OECD Publishing, European Observatory on Health Systems and Policies; 2021 (<https://www.oecd.org/publications/poland-country-health-profile-2021-e836525a-en.htm>).
 32. The NMC register: 1 April 2021–31 March 2022. London: Nursing and Midwifery Council; 2022 (<https://www.nmc.org.uk/globalassets/sitedocuments/data-reports/march-2022/nmc-register-march-2022.pdf>).
 33. Global strategic directions for nursing and midwifery 2021–2025. Geneva: World Health Organization; 2021 (<https://apps.who.int/iris/handle/10665/344562>).
 34. Aamodt PO, Nesje K, Olsen BM. Rekruttering til forskning i sykepleie: En kartlegging av rekrutteringsbehov, rekrutteringsgrunnlag og stipendiatenes karriereplaner [Recruitment for research in nursing: a survey of recruitment needs, recruitment basis and the research fellows' career plans]. Oslo: Nordic Institute for Studies of Innovation, Research and Education (NIFU); 2018 (<https://www.nsf.no/sites/default/files/2022-01/rekruttering-til-forskning-i-sykepleie.-nifu-2018-pdf.pdf>) (in Norwegian).
 35. Small countries initiative: micro case studies on human resources for health. Copenhagen: WHO Regional Office for Europe; 2020 (<https://apps.who.int/iris/handle/10665/336233>).
 36. Adding more health to life: the road to quality and efficient primary health care in the Republic of North Macedonia 2020–2030. Skopje: Ministry of Health of the Republic of Macedonia; 2019 (white paper).
 37. Competencies for nurses working in primary health care. Copenhagen: WHO Regional Office for Europe; 2022 (https://www.euro.who.int/__data/assets/pdf_file/0004/441868/Competencies-nurses-primary-health-care-eng.pdf).
 38. Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *Lancet*. 2010;376(9756):1923–58. doi:10.1016/S0140-6736(10)61854-5.
 39. Transforming and scaling up health professionals' education and training. World Health Organization guidelines 2013. Geneva: World Health Organization; 2013 (<https://apps.who.int/iris/handle/10665/93635>).
 40. UCAT: the University Clinical Aptitude Test [website]. London: UCAT Consortium; 2019. (www.ucat.ac.uk).
 41. WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas. Geneva: World Health Organization; 2021 (<https://apps.who.int/iris/handle/10665/341139>).
 42. Kovacs E, Girasek E, Eke E, Szocska M, WHO Regional Office for Europe. Strengthening data for planning a sustainable health workforce: what data to collect for health workforce development and why. *Public Health Panor*. 2017;3(3):497–504 (<https://apps.who.int/iris/handle/10665/325264>).
 43. Common training framework – HP education in Europe. In: European Association of Hospital Pharmacists [website]. Prague: European Association of Hospital Pharmacists; 2022 (<https://www.eahp.eu/hp-practice/hospital-pharmacy/common-training-framework>).
 44. Wieringa G, Queraltó J, Homšak E, Jassam N, Cavalier E, Svinarov D et al. A proposed common training framework for specialists in laboratory medicine under EU Directive 2013/55/EC (the recognition of professional qualifications). *Clin Chem Lab Med*. 2021;59(3):505–12. doi:10.1515/cclm-2020-1504.

45. Common training framework (CTF) for EBVS-recognized specialists: update October 2017. In: European Board of Veterinary Specialisation [website]. Thessaloniki: European Board of Veterinary Specialisation; 2017 (<https://ebvs.eu/news/common-training-framework-ctf-for-ebvs-recognized-specialists-update-october-2017>).
46. Fahy N, Williams GA, COVID-19 Health System Response Monitor Network. Use of digital health tools in Europe before, during and after COVID-19. Policy brief 42. Copenhagen: WHO Regional Office for Europe; 2021 (<https://apps.who.int/iris/handle/10665/345091>).
47. Aulenkamp J, Mikuteit M, Löffler T, Schmidt J. Overview of digital health teaching courses in medical education in Germany in 2020. *GMS J Med Educ.* 2021;38(4):Doc80. doi:10.3205/zma001476.
48. EU4Health. In: European Commission [website]. Brussels: European Commission; 2022 (https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/eu4health_en).
49. ASPIRE: international recognition of excellence in education [website]. Dundee: Association for Medical Education in Europe; 2022 (<https://www.aspire-to-excellence.org>).
50. Covid-19. In: AMMEE [website]. Dundee: Association for Medical Education in Europe (AMMEE); 2022 (<https://amee.org/covid-19>).
51. Interprofessional.Global [website]. Gronigen: Global Confederation for Interprofessional Education and Collaborative Practice; 2022 (<https://interprofessional.global/>).
52. Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications (Text with EEA relevance). *OJ L 255, 30.9.2005, p. 22–142* (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32005L0036>).
53. Rodríguez-García MC, Márquez-Hernández VV, Belmonte-García T, Gutiérrez-Puertas L, Granados-Gámez G. How magnet hospital status affects nurses, patients, and organizations: a systematic review. *Am J Nurs.* 2020;120(7):28–38. doi:10.1097/01.NAJ.0000681648.48249.16.
54. Magnet4Europe [website]. Brussels: European Union; 2022 (<https://www.magnet4europe.eu/>).
55. State of health in the EU. Latvia: country health profile 2021. Paris/Brussels: OECD Publishing, European Observatory on Health Systems and Policies; 2021 (https://www.oecd-ilibrary.org/social-issues-migration-health/latvia-country-health-profile-2021_919f55f0-en).
56. About the Health Programme. In: European Commission [website]. Brussels: European Commission; 2022 (https://ec.europa.eu/chafea/health/programme/index_en.htm).
57. Health labour market analysis guidebook. Geneva: World Health Organization; 2021 (<https://apps.who.int/iris/handle/10665/348069>).
58. Government-to-government agreements on health and social care workforce recruitment. In: GOV.UK [website]. London: Department of Health and Social Care; 2021 (<https://www.gov.uk/government/collections/government-to-government-agreements-on-health-and-social-care-workforce-recruitment>).
59. WHO global code of practice on the international recruitment of health personnel. Geneva: World Health Organization; 2010 (<https://apps.who.int/iris/handle/10665/3090>).
60. Health Workforce Support and Safeguard List, 2020. Geneva: World Health Organization; 2020 (https://cdn.who.int/media/docs/default-source/health-workforce/hwf-support-and-safeguards-list8jan.pdf?sfvrsn=1a16bc6f_5).

61. Enhanced Community Care (ECC) programme – care closer to home. In: Health Service Executive [website]. Dublin: Health Service Executive; 2022 (<https://www.hse.ie/eng/services/list/2/primarycare/enhanced-community-care/>).
62. Health service capacity review. 2018. Dublin: Department of Health; 2018 (<https://www.gov.ie/en/publication/26df2d-health-service-capacity-review-2018/>).
63. Sláintecare: publications. In: gov.ie [website]. Dublin: Government of Ireland; 2022 (<https://www.gov.ie/en/publication/0d2d60-slaintecare-publications/>).
64. Vračko P, Petrič VK, Borgermans L. Slovenia. Transforming primary health care during the pandemic. Community health centres with multidisciplinary teams provide an effective dual-track approach to COVID-19. Copenhagen: WHO Regional Office for Europe; 2021 (https://www.euro.who.int/__data/assets/pdf_file/0016/511801/primary-health-care-Slovenia-eng.pdf).
65. Gyniat A, Jurgutis A, Abeuova Z, Stetsyk V, Jakab M. Kazakhstan: transforming primary health care during the pandemic. Multidisciplinary teams for better alignment of primary health care services to meet the needs and expectations of people. Copenhagen: WHO Regional Office for Europe, 2021 ([https://www.who.int/kazakhstan/publications/kazakhstan-multidisciplinary-teams-for-better-alignment-of-primary-health-care-services-to-meet-the-needs-and-expectations-of-people-\(2021\)](https://www.who.int/kazakhstan/publications/kazakhstan-multidisciplinary-teams-for-better-alignment-of-primary-health-care-services-to-meet-the-needs-and-expectations-of-people-(2021))).
66. Dussault G, Fronteira I. Promoting teamwork in Portugal: family health units and integrated dialysis care. In: Wismar M, Glinos I, editors. Patients, peers, professionals: skill-mix innovations and developments in primary and chronic care settings. Brussels: European Observatory of Health Systems and Policies; 2022:185–94.
67. International partners. In: Buurtzorg [website]. Almelo: Buurtzorg; 2022 (<https://www.buurtzorg.com/collaboration/international-partners/>).
68. Hegedüs A, Schürch A, Bischofberger I. Implementing Buurtzorg-derived models in the home care setting: a scoping review. *Int J Nurs Stud Adv.* 2022;4:100061. doi:10.1016/j.ijnsa.2022.100061.
69. Maybin J. Going Dutch in West Suffolk: learning from the Buurtzorg model of care. In: The King's Fund [website]. London: The King's Fund; 2019 (<https://www.kingsfund.org.uk/blog/2019/09/buurtzorg-model-of-care>).
70. O'Neill C, Matias MV. Estudo da opinião dos médicos sobre o uso de teleconsulta no Serviço Nacional de Saúde durante a 1a fase da pandemia COVID-19 [Study of physicians' opinion on the use of teleconsultation in the National Health Service during the 1st phase of the COVID-19 pandemic]. Lisbon: Portuguese Telemedicine Association; 2021 (https://aptelemedicina.com/wp-content/uploads/2021/08/Relatorio_Opiniaao_medicos_teleconsulta_1a_fase_pandemia_Mar2021.pdf) (in Portuguese).
71. Christian W. Danes gain easy access to GPs via new app. In: CPH Online [website]. Copenhagen: Copenhagen Post; 2019 (<https://cphpost.dk/?p=108569>).
72. Empowering EU health policies on Task Shifting [website]. Budapest: Semmelweis University; 2022 (<https://tashiproject.eu/contacts/>).
73. Maier CB, Buchan J. Integrating nurses in advanced roles in health systems to address the growing burden of chronic conditions. *Eurohealth.* 2018;24(1):24–7.
74. European Commission, Consumers, Health, Agriculture and Food Executive Agency, Kovács E, Szegner P, Langner L, Sziklai M et al. Mapping of national health workforce planning and policies in the EU-28. Luxembourg: Publications Office of the European Union; 2021 (<https://op.europa.eu/en/publication-detail/-/publication/f995186a-7b06-11eb-9ac9-01aa75ed71a1/language-en>).

75. WHO, International Labour Organization. Caring for those who care: guide for the development and implementation of occupational health and safety programmes for health workers. Geneva: World Health Organization, International Labour Organization; 2022 (<https://apps.who.int/iris/handle/10665/351436>).
76. NHS in Scotland 2021. Edinburgh: Audit Scotland; 2022 (https://www.audit-scotland.gov.uk/uploads/docs/report/2022/nr_220224_nhs_overview.pdf).
77. Van den Heede K, Bouckaert N, Detollenaere J, Kohn L, Maertens de Noordhout C, Vanhooreweghe J et al. Nurse staffing on Belgian intensive care units: the impact of two years of COVID-19 pandemic. Health Services Research (HSR). KCE report 353. Brussels. Belgian Health Care Knowledge Centre; 2022 (D/2022/10.273/24; <https://kce.fgov.be/en/nurse-staffing-on-belgian-intensive-care-units-the-impact-of-two-years-of-covid-19-pandemic>).
78. Supporting the mental health and well-being of the health and care workforce. Copenhagen: WHO Regional Office for Europe; 2021 (<https://apps.who.int/iris/handle/10665/340220>).
79. Global health and care worker compact: technical guidance compilation. Geneva: World Health Organization; 2022 (<https://www.who.int/publications/m/item/carecompact>).
80. Barbazza E, Langins M, Kluge H, Tello J. Health workforce governance: processes, tools and actors towards a competent workforce for integrated health services delivery. Health Policy. 2015;119(12):1645–54. doi:10.1016/j.healthpol.2015.09.009.
81. Greer SL, Wismar M, Figueras J, editors. Strengthening health system governance: better policies, stronger performance. European Observatory on Health Systems and Policies Series. Maidenhead: Open University Press; 2016 (<https://eurohealthobservatory.who.int/publications/m/strengthening-health-system-governance-better-policies-stronger-performance>).
82. Global strategy on human resources for health: workforce 2030. Geneva: World Health Organization; 2016 (<https://apps.who.int/iris/handle/10665/250368>).
83. State of the world's nursing 2020: investing in education, jobs and leadership. Geneva: World Health Organization; 2020 (<https://apps.who.int/iris/handle/10665/331677>).
84. Scottish Government, Convention of Scottish Local Authorities. National workforce strategy for health and social care in Scotland. Edinburgh, Scotland: Scottish Government; 2022 (<https://www.gov.scot/publications/national-workforce-strategy-health-social-care/>).
85. Towards a sustainable health workforce in the WHO European region: framework for action. Resolution at the sixty-seventh Regional Committee for Europe, Budapest, 11–14 September, 2017. Copenhagen: WHO Regional Office for Europe; 2017. (EUR/RC67/10; <https://apps.who.int/iris/handle/10665/338467>).
86. National health workforce accounts: a handbook. Geneva: World Health Organization; 2017 (<https://apps.who.int/iris/handle/10665/259360>).
87. National health workforce accounts: implementation guide. Geneva: World Health Organization; 2018 (<https://apps.who.int/iris/handle/10665/275473>).
88. OECD health data questionnaire 2022: guidelines for completing the questionnaire. Paris: Organisation for Economic Co-operation and Development; 2022 (https://www.oecd.org/statistics/data-collection/Guidelines_OECD_Health_Data%202022_Questionnaire.pdf).
89. Support for the health workforce planning and forecasting expert network. In: Healthworkforce.eu [website]. Budapest: Healthworkforce.eu; 2022 (<https://healthworkforce.eu/>).
90. The toolkit for a sustainable health workforce in the WHO European Region. Copenhagen: WHO Regional Office for Europe; 2018 (<https://apps.who.int/iris/handle/10665/345687>).

91. Adaptt surge planning support tool. In: WHO Regional Office for Europe [website]. Copenhagen: WHO Regional Office for Europe; 2022 (<https://www.who.int/europe/tools-and-toolkits/strengthening-the-health-system-response-to-covid-19/Surge-planning-tools/adaptt-surge-planning-support-tool>).
92. Shembavnekar N, Buchan J, Bazeer N, Kelly E, Beech J, Charlesworth A et al. REAL Centre projections. NHS workforce projections 2022. Report July 2022. London: Health Foundation; 2022 (<https://www.health.org.uk/publications/nhs-workforce-projections-2022>, accessed 22 July 2022).
93. European Commission. State of health in the EU: companion report 2021. Brussels: Publications Office of the European Union; 2022 (<https://eurohealthobservatory.who.int/publications/m/state-of-health-in-the-eu-companion-report-2021>).
94. Campbell J, Koca F. Financing and protection for the health and care workforce. Bull World Health Organ. 2021;99(2):2. doi:10.2471/BLT.20.284380.
95. Williams GA, Scarpetti G, Bezzina A, Vincenti K, Grech K, Kowalska-Bobko I et al. How are countries supporting their health workers during COVID-19? Eurohealth. 2020;26(2):58–62 (<https://apps.who.int/iris/handle/10665/336298>).
96. Horton R, Araujo EC, Borhat H, Bruysten S, Jacinto CG, McPake B et al. High-level Commission on Health Employment and Economic Growth. Final report of the expert group. Geneva: World Health Organization; 2016 (<https://apps.who.int/iris/handle/10665/250040>).

Annex 1. Sources of strategic recommendations and tools

Sources of strategic recommendations

- European Programme of Work 2020–2025: United Action for Better Health (2021) (1)
- Pan-European Commission on Health and Sustainable Development (2022) (2)
- European Observatory studies and policy briefs (3)
- Global Strategy on Human Resources for Health: Workforce 2030 (2016) (4)
- Final report of the expert group to the High-Level Commission on Health Employment and Economic Growth (2016) (5)
- Five-year Action Plan for Health Employment and Inclusive Economic Growth (2017–2021) (2018) (6)
- *Health employment and economic growth: an evidence base* (2017) (7)
- *Building the primary health care workforce of the 21st century* (2018) (8)
- *Building better together. Roadmap to guide implementation of the global strategic directions for nursing and midwifery in the WHO European Region* (2021) (9)
- *Global strategic directions for nursing and midwifery 2021–2025* (2021) (10)
- *Horizon scanning future health and care demand for workforce skills in England, UK: noncommunicable disease and future skills implications* (2017) (11)
- *How can structured cooperation between countries address health workforce challenges related to highly specialized health care?* (2016) (12)
- *International migration of doctors and nurses to OECD countries: recent trends and policy implications* (2017) (13)
- *Noncommunicable diseases and human resources for health: a workforce fit for purpose* (2018) (14)
- Organisation for Economic Co-operation and Development (OECD) policy and research papers (15)
- *Recruitment and retention of health professionals across Europe: a literature review and multiple case study research* (2015) (16)
- The International Labour Organization Decent Work agenda (17)
- The WHO Global Code of Practice on the International Recruitment of Health Personnel (2010) (18)
- *Towards a sustainable health workforce in the WHO European Region: framework for action* (2017) (19)
- *Transforming and scaling up health professionals' education and training* (2013) (20)
- Working for Health (2022) (21)
- *Working for health and growth: investing in the health workforce* (2016) (22)
- *Global health and care worker compact* (2022) (23)

Tools to support health and care worker policies

- *Health labour market analysis guidebook* (2021) (24)
- Health Workforce Estimator (HWFE) (25)
- *Health workforce policy and management in the context of the COVID-19 pandemic response: interim guidance* (2020) (26)
- *Health system performance assessment: a framework for policy analysis* (2022) (27)
- Eurostat/OECD/WHO Regional Office for Europe joint questionnaire (2022) (28)
- *The toolkit for a sustainable health workforce in the WHO European Region* (2018) (29)
- *WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas* (2021) (30)

- WHO minimum data set for health workforce registry (2015) (31)
- WHO National Health Workforce Accounts (2022) (32,33)
- Joint Action Health Workforce Planning and Forecasting (2015) (34)
- Workload indicators of staffing need (revised 2014) (35)
- Adaptt surge planning support tool (2022) (36)
- *National workforce capacity to implement the essential public health functions including a focus on emergency preparedness and response* (2022) (37)

References⁷

1. European Programme of Work 2020–2025: United Action for Better Health. Copenhagen: WHO Regional Office for Europe; 2021 (<https://apps.who.int/iris/handle/10665/339209>).
2. WHO Regional Office for Europe. Pan-European Commission on Health and Sustainable Development. In: World Health Organization [website]. Geneva: World Health Organization; 2022 (<https://www.who.int/europe/groups/pan-european-commission-on-health-and-sustainable-development>).
3. European Observatory on Health Systems and Policies [website]. Brussels: European Observatory on Health Systems and Policies; 2022 (<https://eurohealthobservatory.who.int/>).
4. Global strategy on human resources for health: workforce 2030. Geneva: World Health Organization; 2016 (<https://apps.who.int/iris/handle/10665/250368>).
5. Horton R, Araujo EC, Bhorat H, Bruysten S, Jacinto CG, McPake B et al. High-level Commission on Health Employment and Economic Growth. Final report of the expert group. Geneva: World Health Organization; 2016 (<https://apps.who.int/iris/handle/10665/250040>).
6. Five-year action plan for health employment and inclusive economic growth (2017–2021). Geneva: World Health Organization; 2018 (<https://apps.who.int/iris/handle/10665/272941>).
7. Buchan J, Dhillon IS, Campbell J, editors. Health employment and economic growth: an evidence base. Geneva: World Health Organization; 2017 (<https://apps.who.int/iris/handle/10665/326411>).
8. Dussault G, Kawar R, Castro Lopes S, Campbell J. Building the primary health care workforce of the 21st century. Technical series on primary health care. Background paper to the Global Conference on Primary Health Care: from Alma-Ata towards Universal Health Coverage and the Sustainable Development Goals. Geneva: World Health Organization; 2018 (<https://apps.who.int/iris/handle/10665/328072>).
9. Building better together: roadmap to guide implementation of the global strategic directions for nursing and midwifery in the WHO European Region. Copenhagen: WHO Regional Office for Europe; 2021 (<https://apps.who.int/iris/handle/10665/350207>).
10. Global strategic directions for nursing and midwifery 2021–2025. Geneva: World Health Organization; 2021 (<https://apps.who.int/iris/handle/10665/344562>).

11. Edwards M. Horizon scanning future health and care demand for workforce skills in England, UK: noncommunicable disease and future skills implications: good practice brief. Copenhagen: WHO Regional Office for Europe; 2017 (<https://apps.who.int/iris/handle/10665/345589>).
12. WHO Regional Office for Europe, European Observatory on Health Systems and Policies, Kroezen M, Buchan J, Dussault G, Glinos I et al. How can structured cooperation between countries address health workforce challenges related to highly specialized health care? Improving access to services through voluntary cooperation in the EU. Policy brief 20. Copenhagen: WHO Regional Office for Europe; 2016 (<https://apps.who.int/iris/handle/10665/331986>).
13. Dumont J-C, Lafortune G. International migration of doctors and nurses to OECD countries: recent trends and policy implications. In: Buchan J, Dhillon IS, Campbell J, editors. Health employment and economic growth: an evidence base. Geneva: World Health Organization; 2017:81–118 (<https://apps.who.int/iris/handle/10665/326411>).
14. Dussault G, Buchan J. Noncommunicable diseases and human resources for health: a workforce fit for purpose. In: Jakab M, Farrington J, Borgermans L, Mantingh F, editors. Health systems respond to noncommunicable diseases: time for ambition. Copenhagen: WHO Regional Office for Europe; 2018:182–99 (<https://apps.who.int/iris/handle/10665/342223>).
15. OECD: better policies for better lives [website]. Paris: Organisation for Economic Co-operation and Development; 2022 (<https://www.oecd.org/>).
16. Kroezen M, Dussault G, Craveiro I, Dieleman M, Jansen C, Buchan J et al. Recruitment and retention of health professionals across Europe: a literature review and multiple case study research. Health Policy. 2015;119(12):1517–28. doi:10.1016/j.healthpol.2015.08.003.
17. Decent Work. In: International Labour Organization [website]. Geneva: International Labour Organization; 2022 (<https://www.ilo.org/global/topics/decent-work/lang--en/index.htm>).
18. The WHO global code of practice on the international recruitment of health personnel. Sixty-third World Health Assembly. Geneva: World Health Organization; 2010 (WHA63.16; <https://www.who.int/publications/m/item/migration-code>).
19. Towards a sustainable health workforce in the WHO European Region: framework for action. Resolution at the sixty-seventh Regional Committee for Europe, Budapest, 11–14 September, 2017. Copenhagen: WHO Regional Office for Europe; 2017 (EUR/RC67/10; <https://apps.who.int/iris/handle/10665/338467>).
20. Transforming and scaling up health professionals' education and training. World Health Organization guidelines 2013. Geneva: World Health Organization; 2013 (<https://apps.who.int/iris/handle/10665/93635>).
21. Working for health [website]. Geneva: World Health Organization; 2022 (<https://working4health.org/>).
22. Working for health and growth: investing in the health workforce. Report of the High-Level Commission on Health Employment and Economic Growth. Geneva: World Health Organization; 2016 (<https://apps.who.int/iris/handle/10665/250047>).
23. Global health and care worker compact: technical guidance compilation. Geneva: World Health Organization; 2022 (<https://www.who.int/publications/m/item/carecompact>).
24. Health labour market analysis guidebook. Geneva: World Health Organization; 2021 (<https://apps.who.int/iris/handle/10665/348069>).
25. Health workforce estimator (HWE). In: WHO Regional Office for Europe [website]. Copenhagen: WHO Regional Office for Europe; 2022 ([https://www.who.int/europe/tools-and-toolkits/strengthening-the-health-system-response-to-covid-19/Surge-planning-tools/health-workforce-estimator-\(hwe\)](https://www.who.int/europe/tools-and-toolkits/strengthening-the-health-system-response-to-covid-19/Surge-planning-tools/health-workforce-estimator-(hwe))).
26. Health workforce policy and management in the context of the COVID-19 pandemic response: interim guidance 3 December 2020. Geneva: World Health Organization; 2020. (<https://apps.who.int/iris/handle/10665/337333>).

27. World Health Organization, European Observatory on Health Systems and Policies, Papanicolas I, Rajan D, Karanikolos M, Soucat A et al. Health system performance assessment: a framework for policy analysis. Health policy series 57. Geneva: World Health Organization; 2022 (<https://apps.who.int/iris/handle/10665/352686>).
28. OECD health data questionnaire 2022: guidelines for completing the questionnaire. Paris: Organisation for Economic Co-operation and Development; 2022 (https://www.oecd.org/statistics/data-collection/Guidelines_OECD_Health_Data%202022_Questionnaire.pdf).
29. The toolkit for a sustainable health workforce in the WHO European Region. Copenhagen: WHO Regional Office for Europe; 2018 (<https://apps.who.int/iris/handle/10665/345687>).
30. WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas. Geneva: World Health Organization; 2021 (<https://apps.who.int/iris/handle/10665/341139>).
31. Human resources for health information system: minimum data set for health workforce registry. Geneva: World Health Organization; 2015 (<https://apps.who.int/iris/handle/10665/330091>).
32. National health workforce accounts data portal. In: World Health Organization [website]. Geneva: World Health Organization; 2022 (<https://apps.who.int/nhwportal/>).
33. National health workforce accounts (NHW). In: WHO Regional Office for Europe [website]. Copenhagen: WHO Regional Office for Europe; 2022 ([https://www.who.int/europe/news-room/questions-and-answers/item/what-is-the-national-health-workforce-accounts-\(nhw\)](https://www.who.int/europe/news-room/questions-and-answers/item/what-is-the-national-health-workforce-accounts-(nhw))).
34. Joint Action Health Workforce planning and forecasting (2013–2016). In: European Commission [website]. Brussels: European Commission; 2022 (https://health.ec.europa.eu/health-workforce/overview_en#joint-action-health-workforce-planning-and-forecasting-2013--2016).
35. Workload indicators of staffing need (WISN): user's manual. Geneva: World Health Organization; 2010 (revised 2014) (<https://apps.who.int/iris/handle/10665/44414>).
36. Adaptt surge planning support tool. In: WHO Regional Office for Europe [website]. Copenhagen: WHO Regional Office for Europe; 2022 (<https://www.who.int/europe/tools-and-toolkits/strengthening-the-health-system-response-to-covid-19/Surge-planning-tools/adaptt-surge-planning-support-tool>).
37. National workforce capacity to implement the essential public health functions including a focus on emergency preparedness and response: roadmap for aligning WHO and partner contributions. Geneva: World Health Organization; 2022 (<https://apps.who.int/iris/handle/10665/354384>).



АПТЕКА
ПОДОРОЖНИК

Віталію
Завідувач аптеки

Annex 2. Country profiles

The following 53 country profiles provide health workforce data across key areas to support individual countries in their policy and planning responses.

The data used in the country profiles are, wherever possible, from the National Health Workforce Accounts Data Portal, the WHO Global Observatory for Health, the WHO Global Health Expenditure database and the United Nations Department of Economic and Social Affairs Population Division.

The latest published data are used. Other useful sources of data are Eurostat health care resources and the Organisation for Economic Co-operation and Development (OECD) health database, which may have more recent or easier-to-access data.

Data sources

Population, median age and life expectancy data for 2022 are from the United Nations Department of Economic and Social Affairs Population Division (1).

Universal health coverage (UHC) service coverage index data are from the WHO Global Health Observatory for Health (2).

Health workforce density is calculated using population data from the United Nations Department of Economic and Social Affairs Population Division (1).

Data for charts showing **Trends in health workforce density, Percentage of professional health workforce, Health workforce trends (headcount), Graduates per year per 100 000 population** and

Graduates per year per 1000 practitioners are from the WHO National Health Workforce Accounts data portal (3) supplemented with recent country submissions to the Eurostat, OECD and WHO joint data collection on non-monetary health-care statistics.

Data for charts showing **Health workforce distribution by age group, Health workforce distribution by gender, Percentage of workforce aged over 65, Country of training** and **Country of birth** are from the WHO National Health Workforce Accounts Data Portal (3).

Data on **Annual intake from other countries** are from the Eurostat data explorer (4).

Technical notes

The UHC coverage index is defined as (2):

coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population). The indicator is an index reported on

a unitless scale of 0 to 100, which is computed as the geometric mean of 14 tracer indicators of health service coverage. The tracer indicators are as follows, organized by four components of service coverage: 1. Reproductive, maternal, newborn and child health 2. Infectious diseases 3. Noncommunicable diseases 4. Service capacity and access.

The **share of foreign-born health and care workers (HCWs)** is calculated as:

- $\text{stock of foreign-born} / (\text{stock of foreign-born} + \text{stock of national-born})$.

The **share of foreign-trained HCWs** is calculated as:

- $\text{stock of foreign-trained} / (\text{stock of foreign-trained} + \text{stock of national-trained} + \text{stock of unknown place of training})$.

The **annual intake of HCWs from another country** is reported based on the country of training.

In charts showing **Percentage of professional health workforce**, the focus is on medical doctors, nurses, midwives, dentists, pharmacists and physiotherapists, as these are the professions for which quality data are available. These are also the professions covered in the report.

For charts showing **Trends in health workforce density, Percentage of professional health workforce, Health workforce trends (headcount) and Graduates per year per 1000 practitioners**, where the number of practising HCWs is not available for certain years, the number of professionally active or the number licenced to practise is used.

References⁸

1. World Population prospects, 2022. In: United Nations Department of Economic and Social Affairs Population Division [website]. New York (NY): United Nations Department of Economic and Social Affairs Population Division; 2022 (<https://population.un.org/wpp/>).
2. The Global Health Observatory [online database]. Geneva: World Health Organization; 2022 (<https://www.who.int/data/gho>).
3. National Health Workforce Accounts data portal [online database]. Geneva: World Health Organization; 2022 (<https://apps.who.int/nhwportal/>).
4. Health workforce migration. In: Eurostat [online database]. Brussels: Eurostat; 2022 (http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=hlth_rs_wkmg&lang=en).





Albania

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
2 866 849

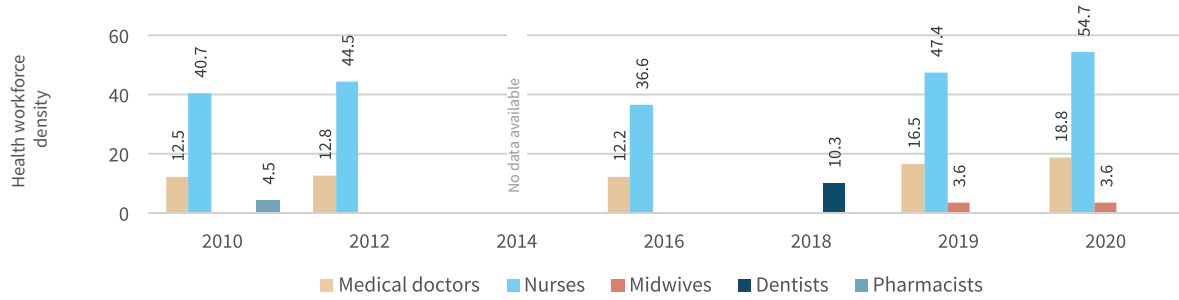
LIFE EXPECTANCY AT BIRTH (YEARS)
77.0

MEDIAN AGE (YEARS)
36.9

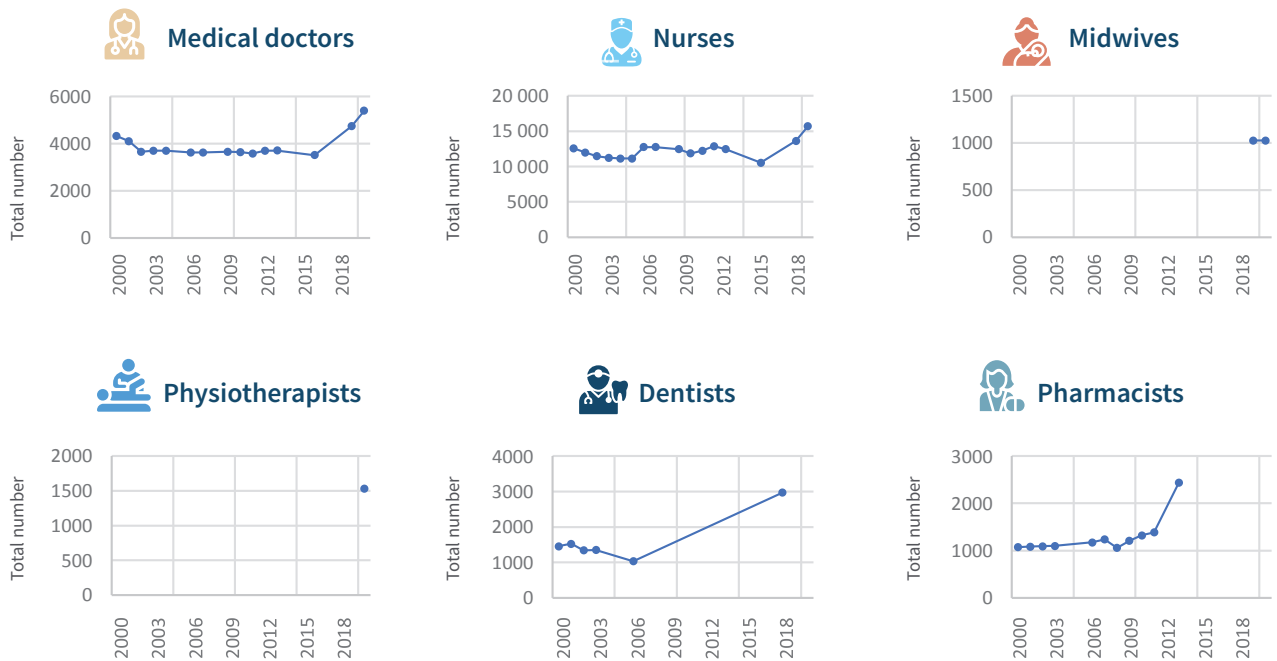
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
77.1

UHC SERVICE COVERAGE INDEX
62

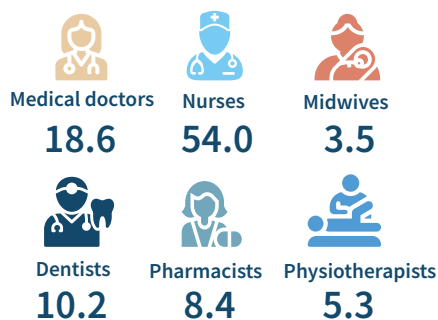
Health workforce density per 10 000 population



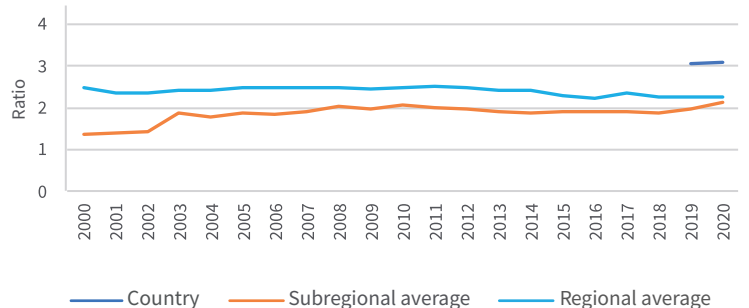
Health workforce trends (total number)



Composition by six professional categories covered in the report, percentage (latest year)



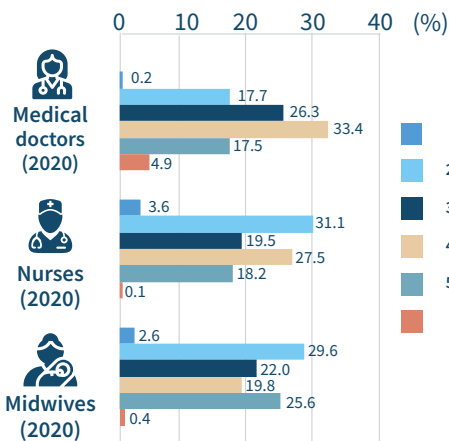
Ratio of nurses and midwives to medical doctors



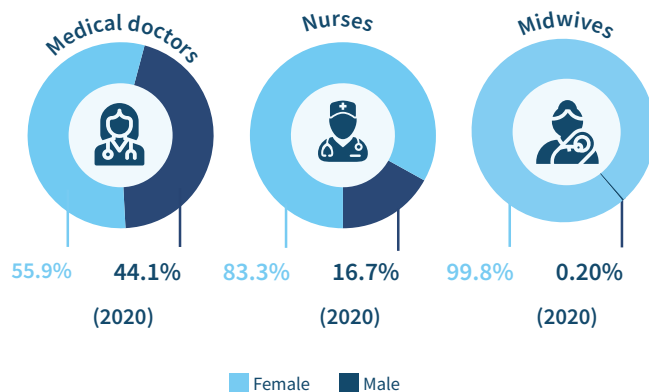
Health workforce availability



Health workforce distribution by age group, percentage

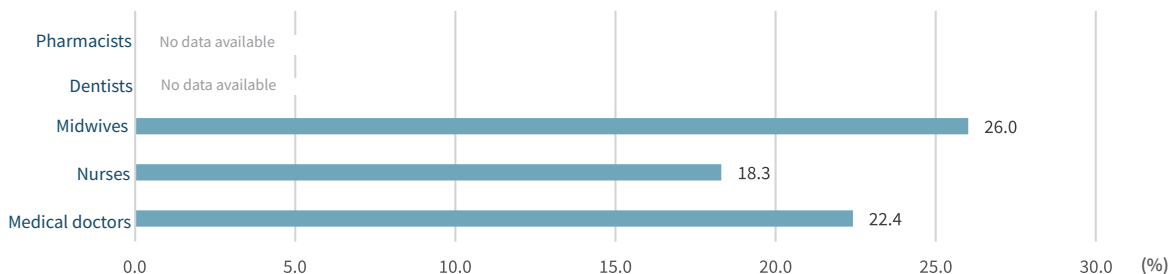


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

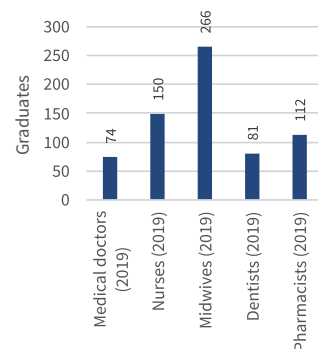
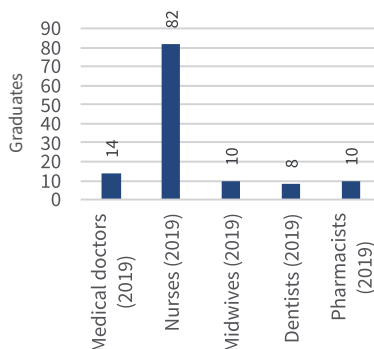
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2019)	397
Nurses (2019)	2348
Midwives (2019)	273
Dentists (2019)	240
Pharmacists (2019)	274



Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE



Andorra

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

77 700

LIFE EXPECTANCY AT BIRTH (YEARS)

79.0

MEDIAN AGE (YEARS)

42.1

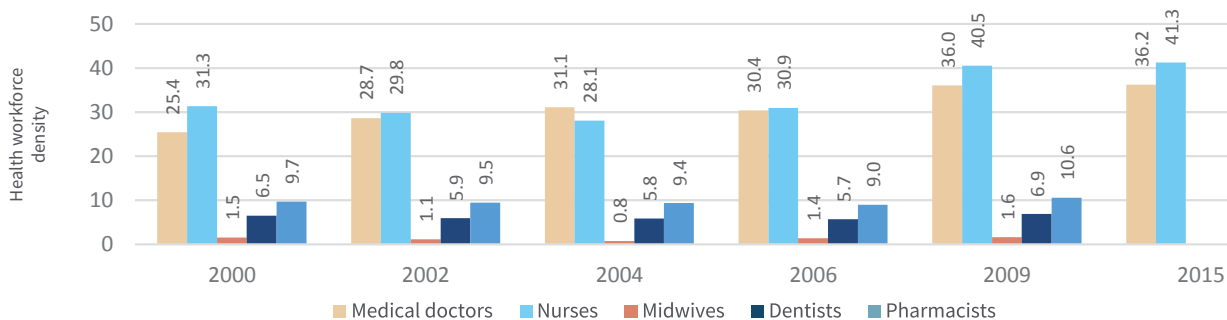
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

79.1

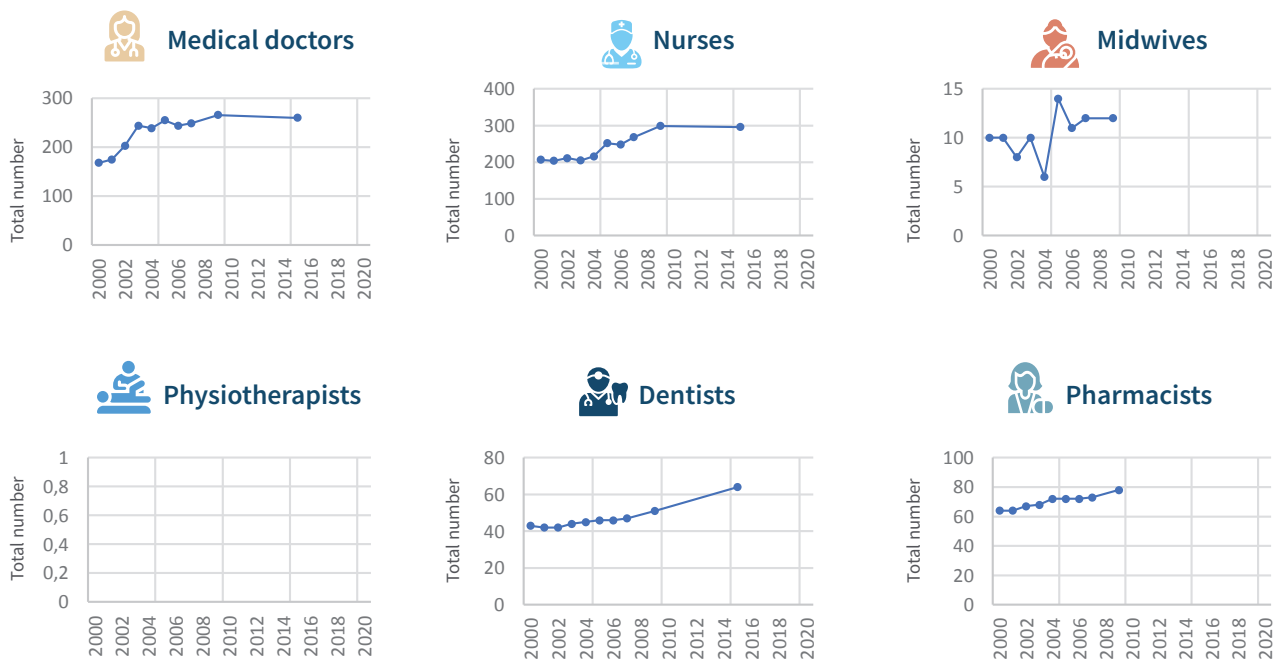
UHC SERVICE COVERAGE INDEX

77

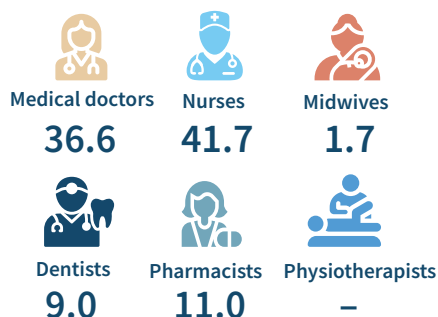
Health workforce density per 10 000 population



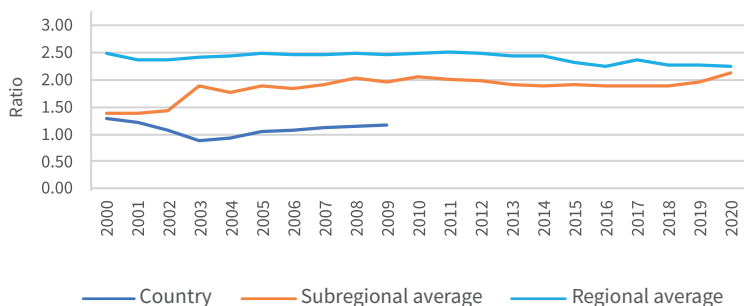
Health workforce trends (total number)



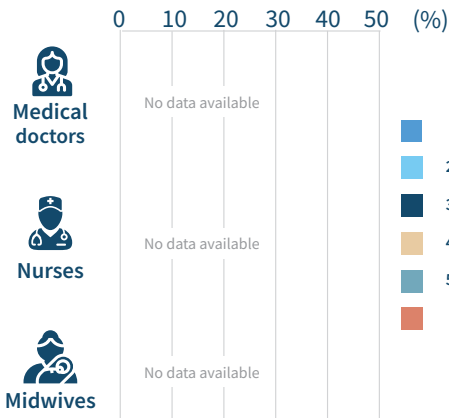
Composition by six professional categories covered in the report, percentage (latest year)



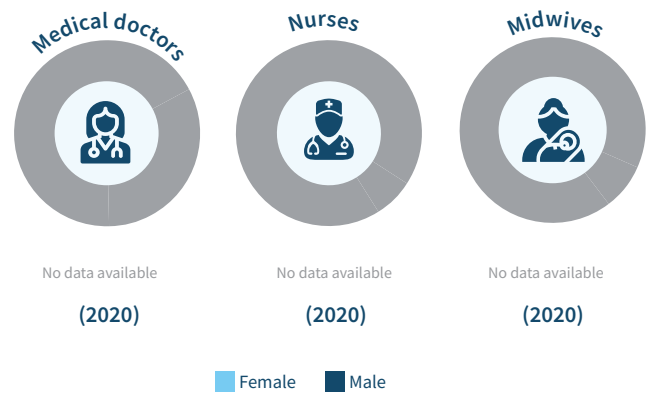
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

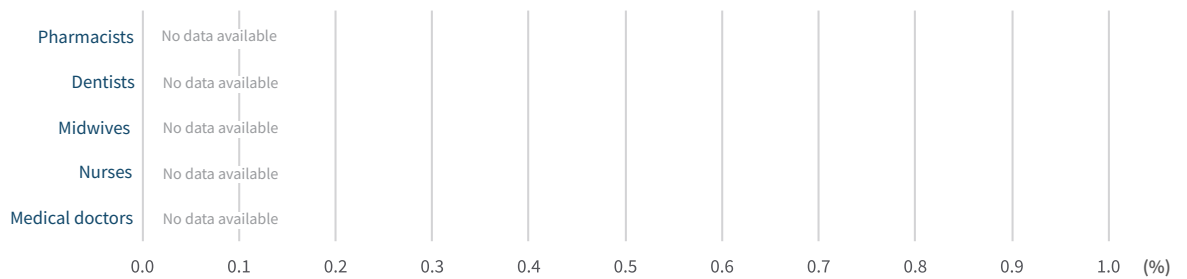


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

Professions	Annual graduates (total number)	Graduates per year per 100 000 population	Graduates per year per 1000 practitioners
Medical doctors (2009)	2	3	8
Nurses	No data available	No data available	No data available
Midwives (2009)	2	3	167
Dentists (2007)	1	1	16
Pharmacists (2007)	1	1	No data available

Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE



Armenia

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
2 805 608

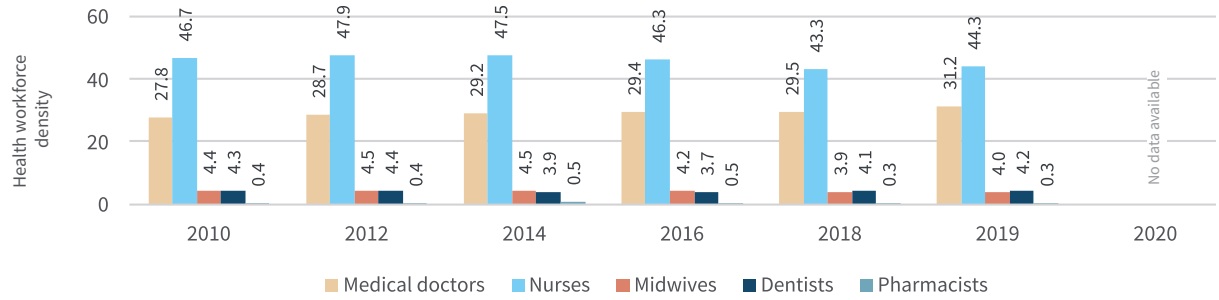
LIFE EXPECTANCY AT BIRTH (YEARS)
72.2

MEDIAN AGE (YEARS)
34.1

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
79.4

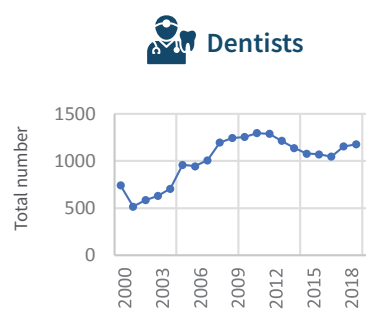
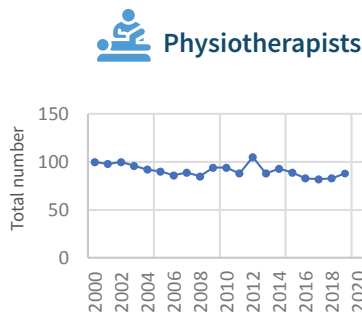
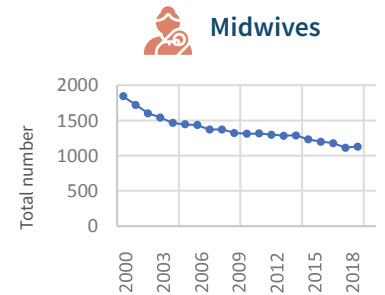
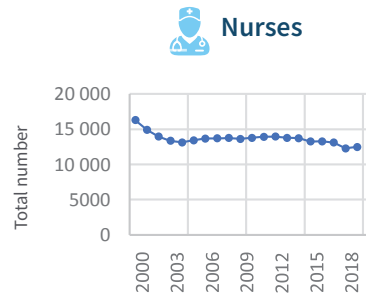
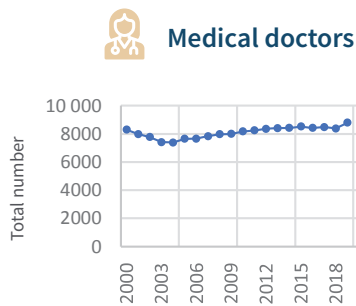
UHC SERVICE COVERAGE INDEX
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Health workforce density per 10 000 population

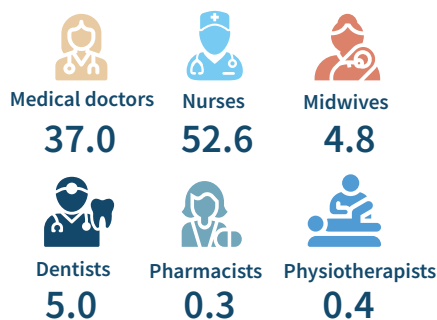


Health workforce availability

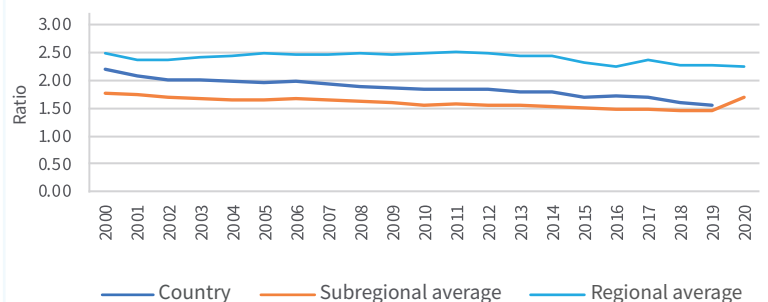
Health workforce trends (total number)



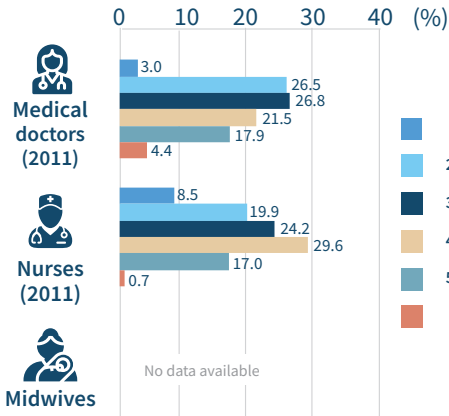
Composition by six professional categories covered in the report, percentage (latest year)



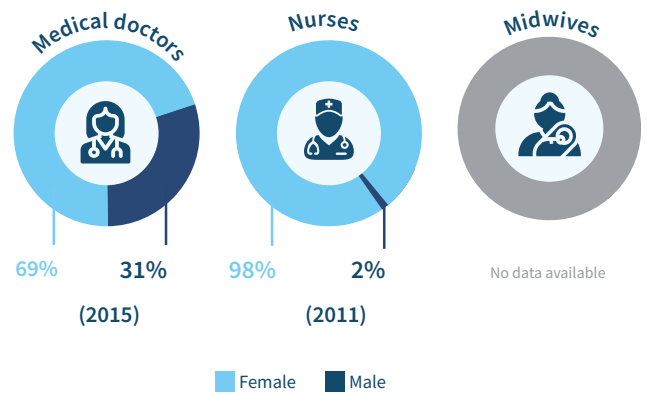
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

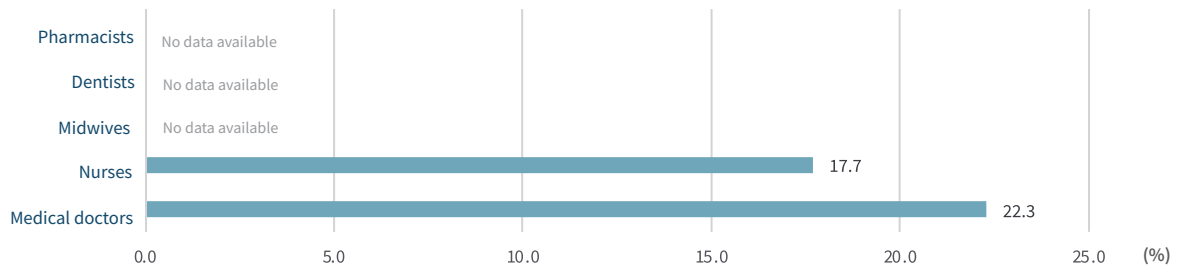


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



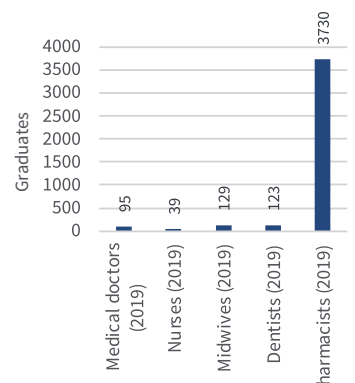
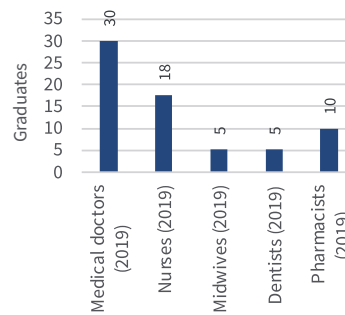
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2019)	839
Nurses (2019)	491
Midwives (2019)	145
Dentists (2019)	145
Pharmacists (2019)	276

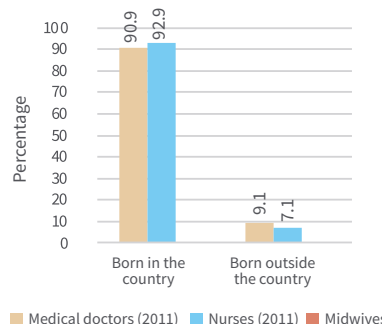


Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE



NO DATA AVAILABLE

Health workforce domestic and international supply



Austria

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

8 907 777

LIFE EXPECTANCY AT BIRTH (YEARS)

81.5

MEDIAN AGE (YEARS)

42.6

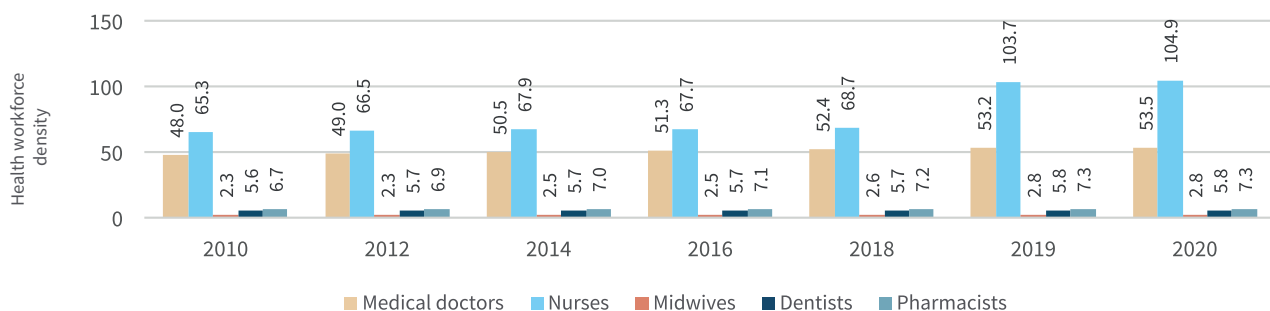
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

161.3

UHC SERVICE COVERAGE INDEX

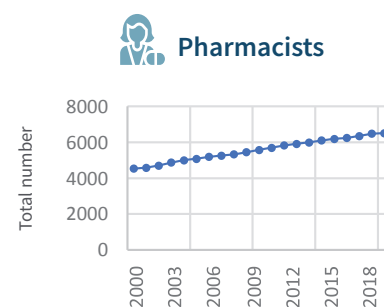
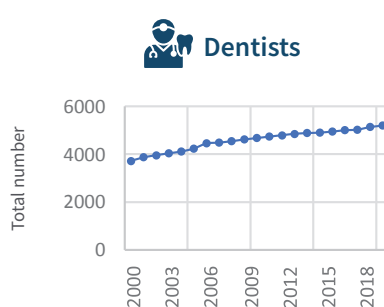
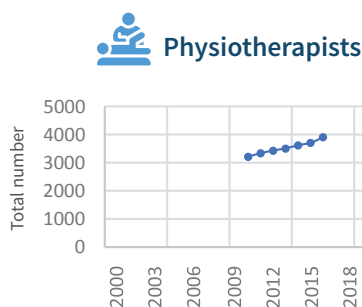
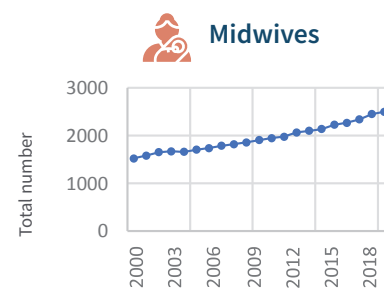
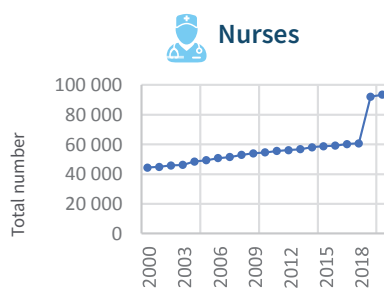
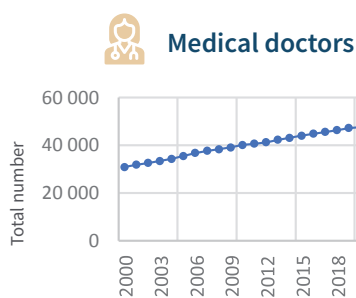
82

Health workforce density per 10 000 population

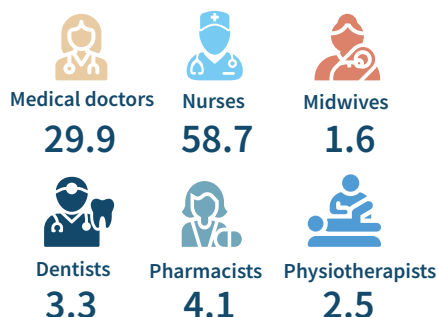


Health workforce availability

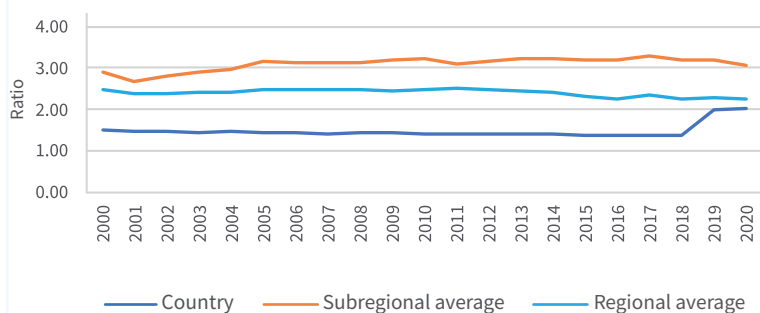
Health workforce trends (total number)



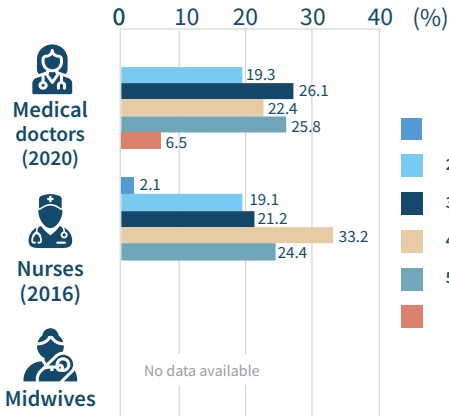
Composition by six professional categories covered in the report, percentage (latest year)



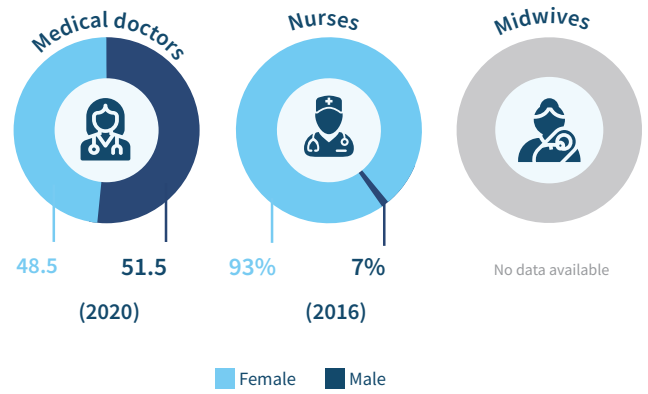
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

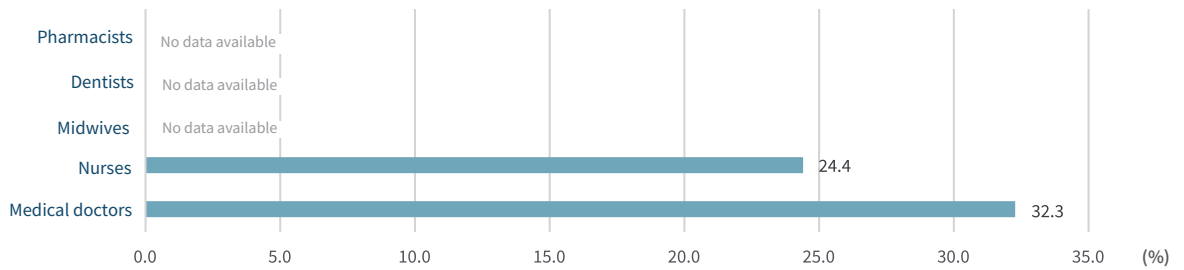


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



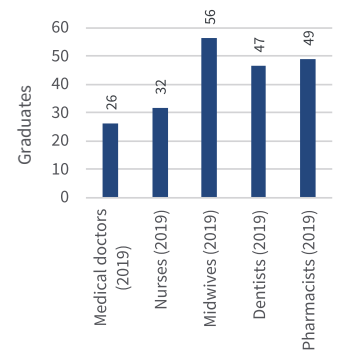
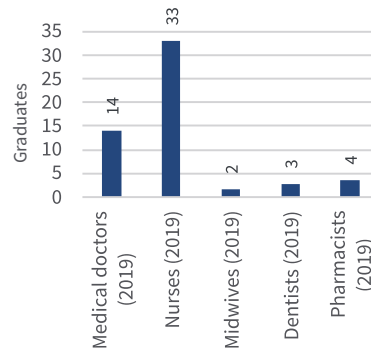
Professions

Annual graduates (total number)

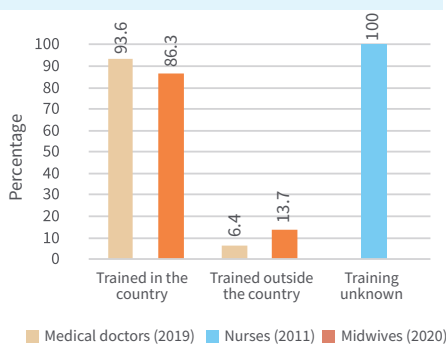
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

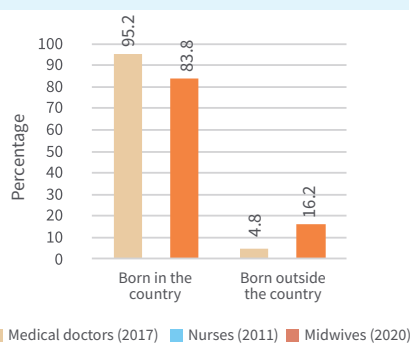
Medical doctors (2019)	1242
Nurses (2019)	2949
Midwives (2019)	141
Dentists (2019)	243
Pharmacists (2019)	319



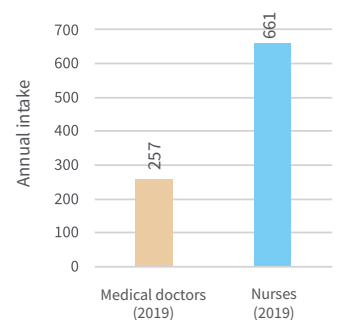
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Azerbaijan

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
10 284 951

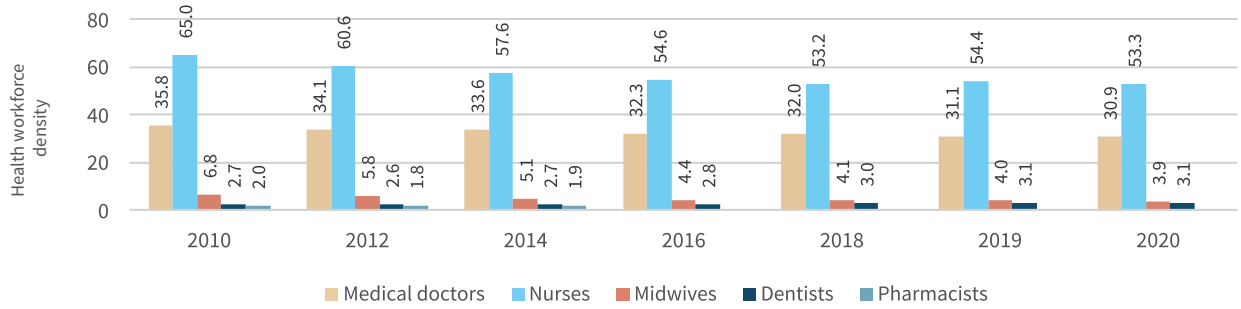
LIFE EXPECTANCY AT BIRTH (YEARS)
66.9

MEDIAN AGE (YEARS)
31.0

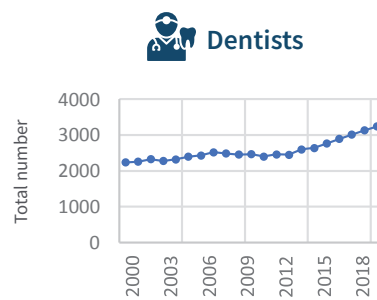
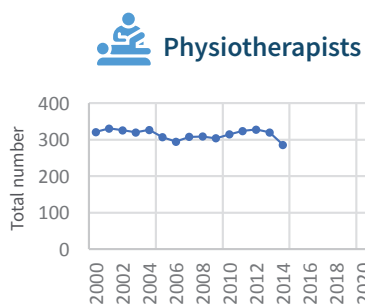
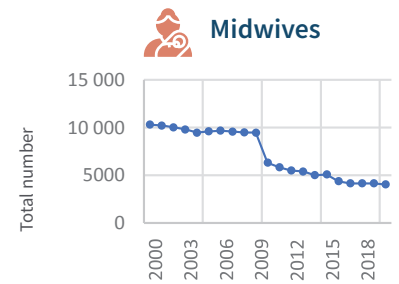
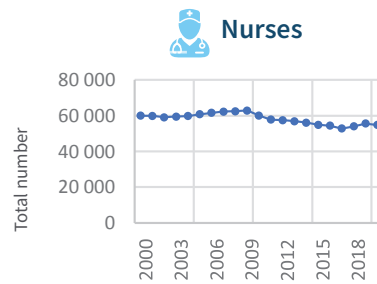
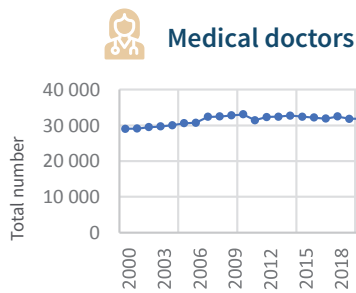
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
88.1

UHC SERVICE COVERAGE INDEX
65

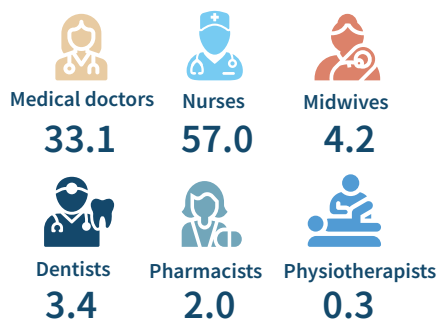
Health workforce density per 10 000 population



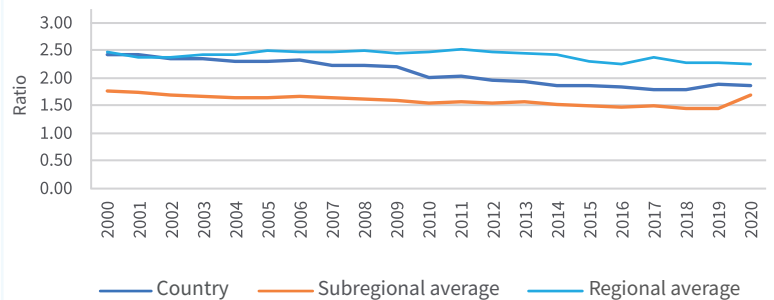
Health workforce trends (total number)



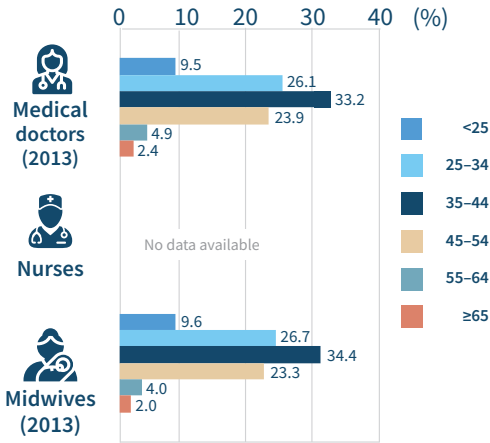
Composition by six professional categories covered in the report, percentage (latest year)



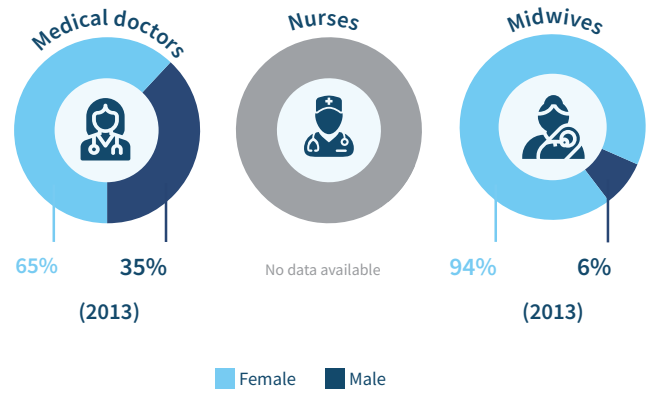
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

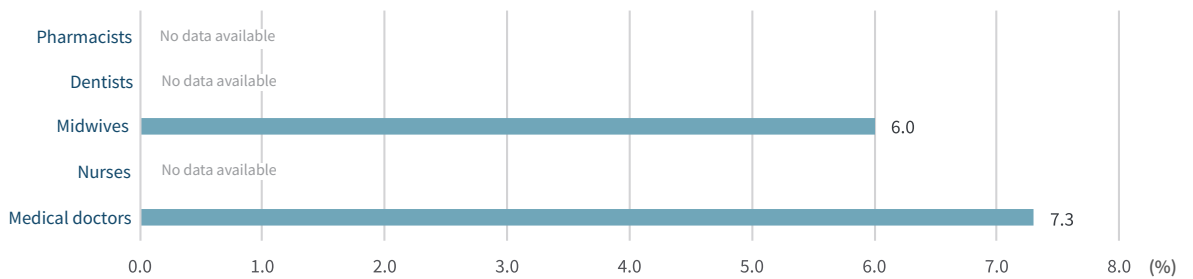


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



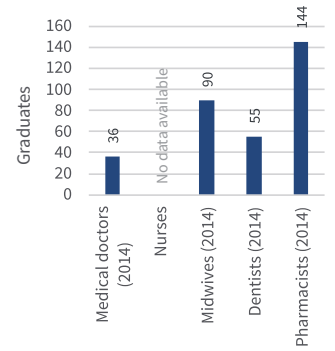
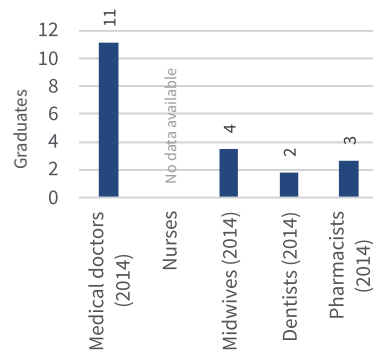
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2014)	1141
Nurses	No data available
Midwives (2014)	362
Dentists (2014)	179
Pharmacists (2014)	274



Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE

Health workforce domestic and international supply



Belarus

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

9 633 740

LIFE EXPECTANCY AT BIRTH (YEARS)

72.5

MEDIAN AGE (YEARS)

40.0

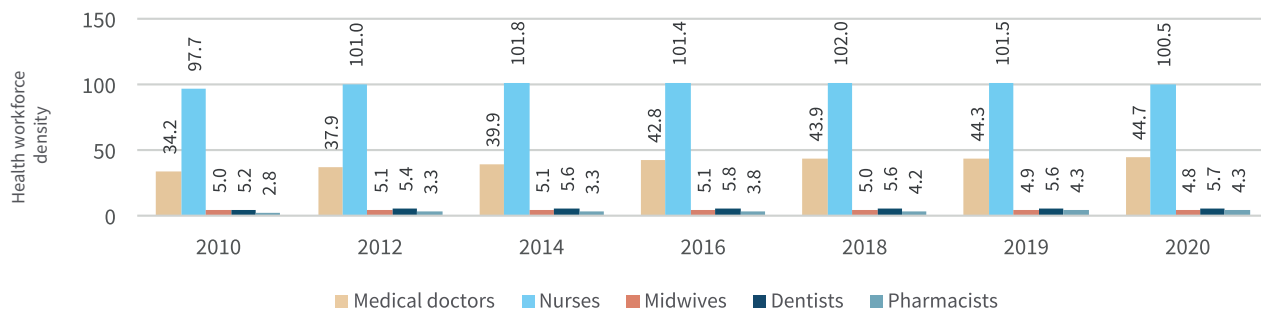
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

149.9

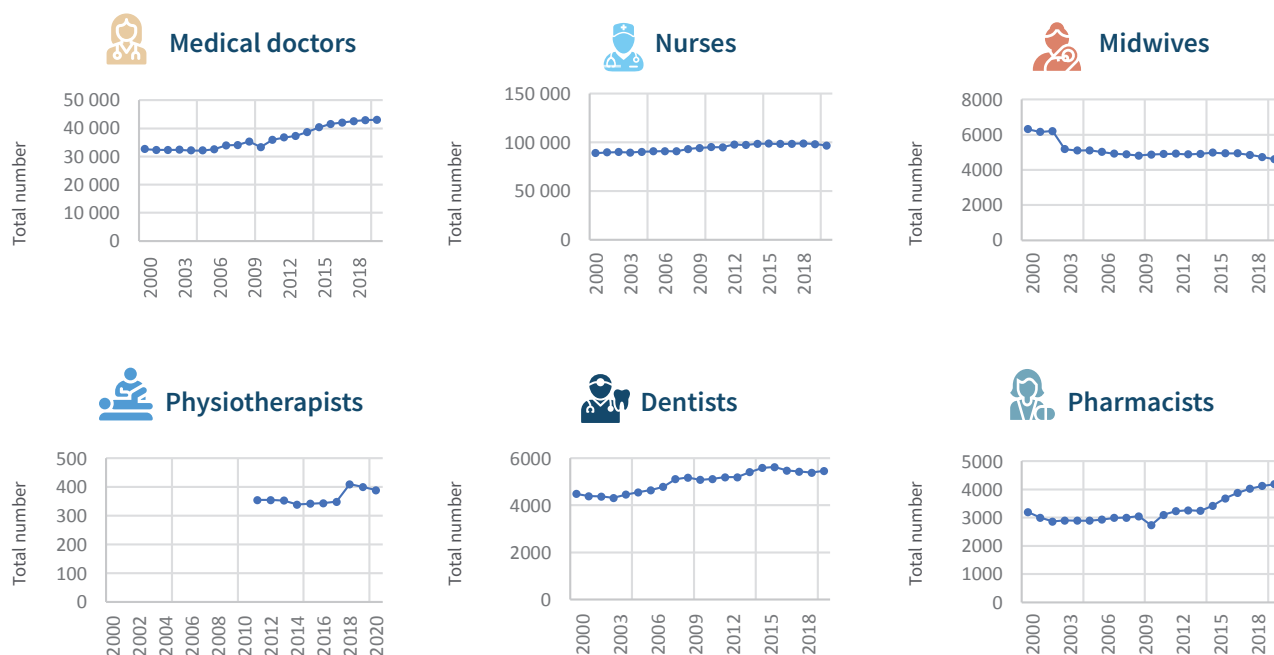
UHC SERVICE COVERAGE INDEX

74

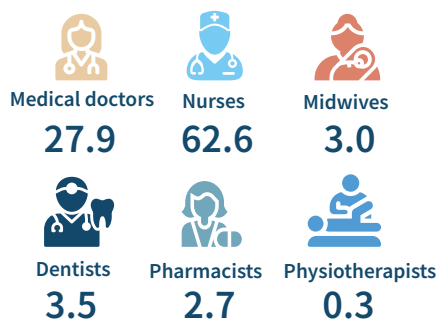
Health workforce density per 10 000 population



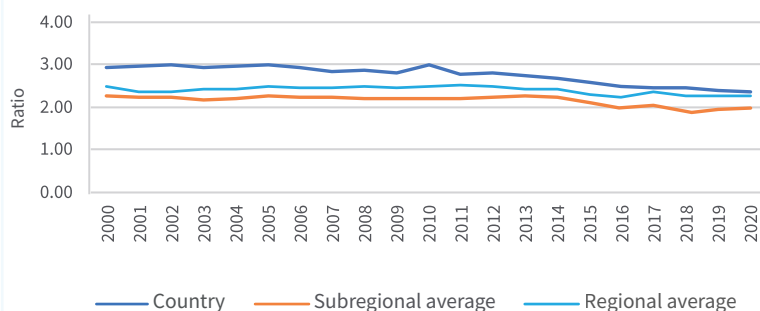
Health workforce trends (total number)



Composition by six professional categories covered in the report, percentage (latest year)



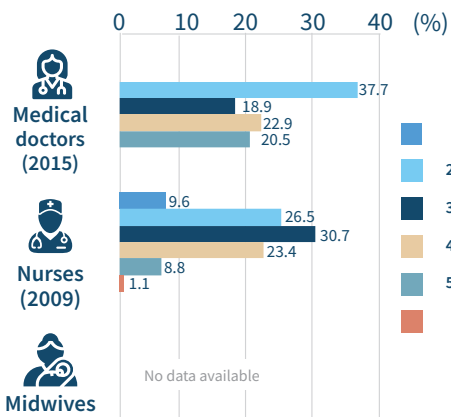
Ratio of nurses and midwives to medical doctors



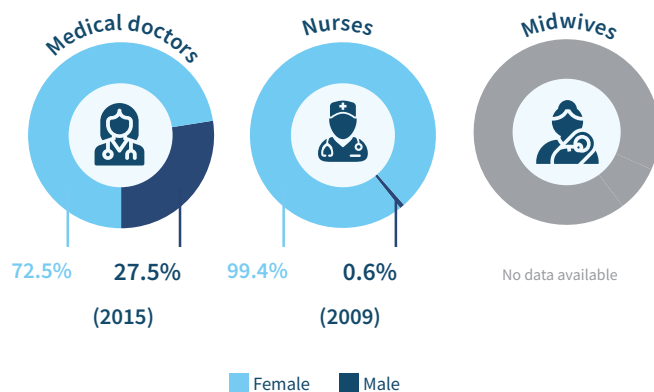
Health workforce availability



Health workforce distribution by age group, percentage

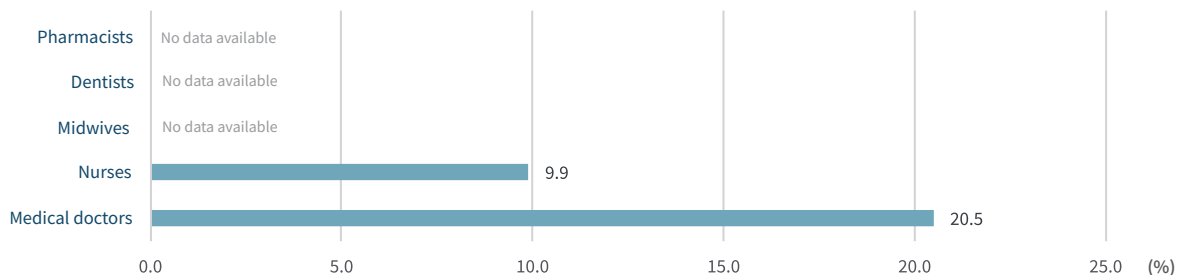


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

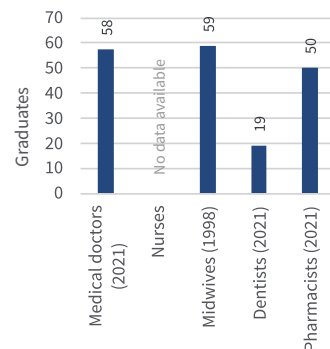
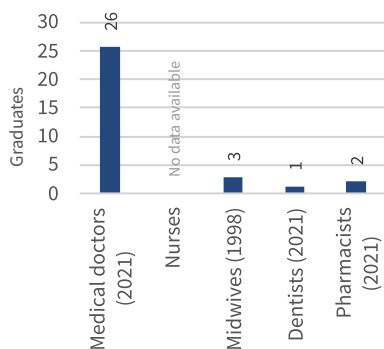
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2021)	2480
Nurses	No data available
Midwives (1998)	271
Dentists (2021)	104
Pharmacists (2021)	210

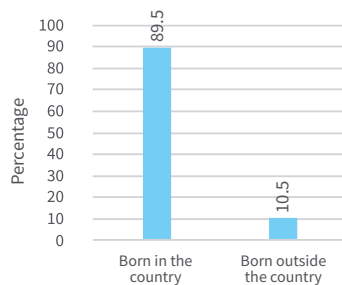


Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE



NO DATA AVAILABLE

Medical doctors (N/A) Nurses (2009) Midwives (N/A)



Belgium

Human resources for health profile

See pages 82–83 for data sources and technical notes



POPULATION

11 561 717

LIFE EXPECTANCY AT BIRTH (YEARS)

80.8

MEDIAN AGE (YEARS)

40.8

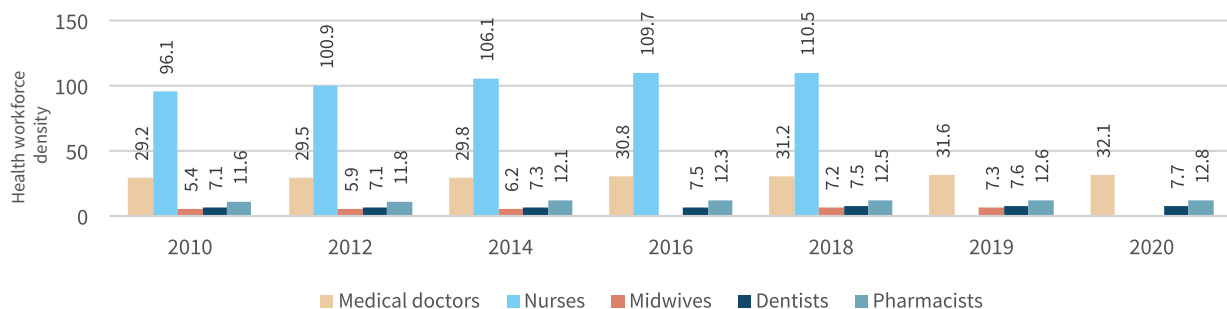
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

149.9

UHC SERVICE COVERAGE INDEX

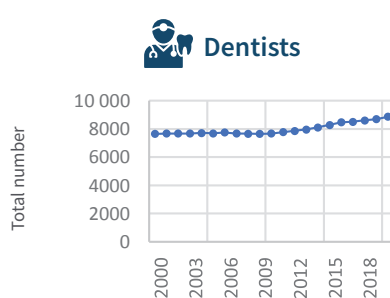
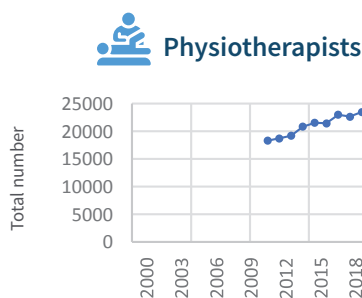
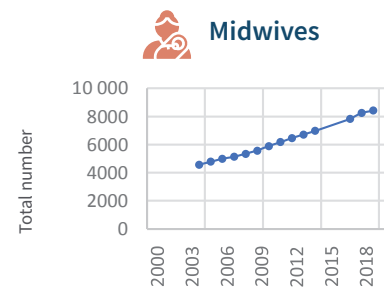
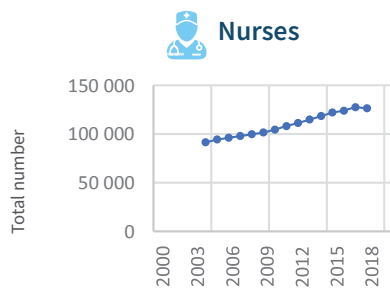
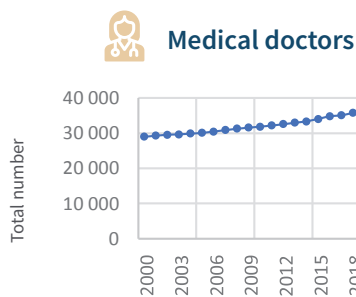
85

Health workforce density per 10 000 population

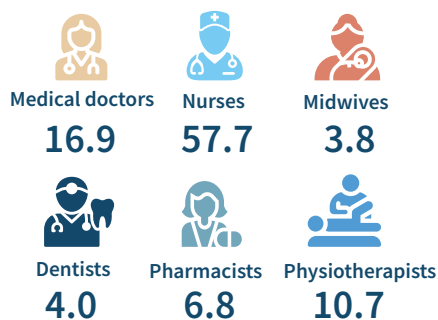


Health workforce availability

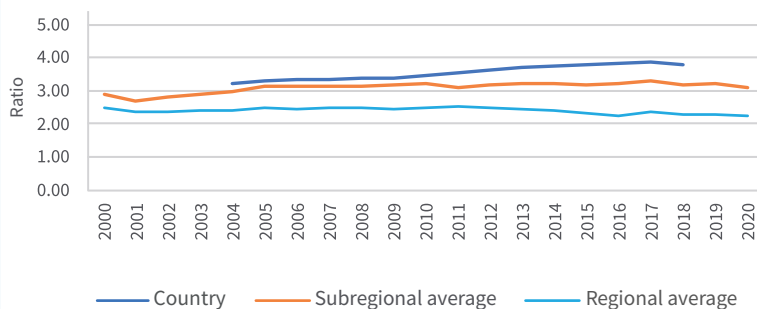
Health workforce trends (total number)



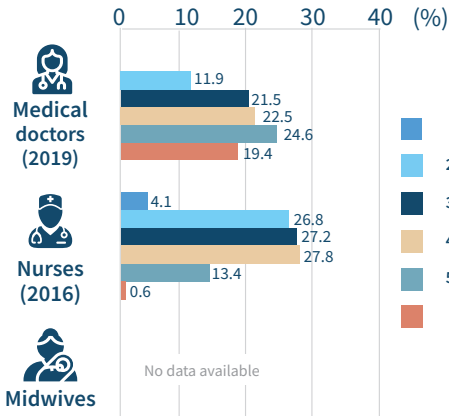
Composition by six professional categories covered in the report, percentage (latest year)



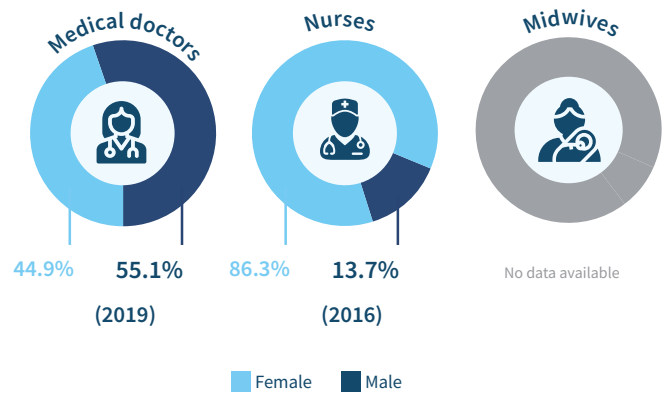
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

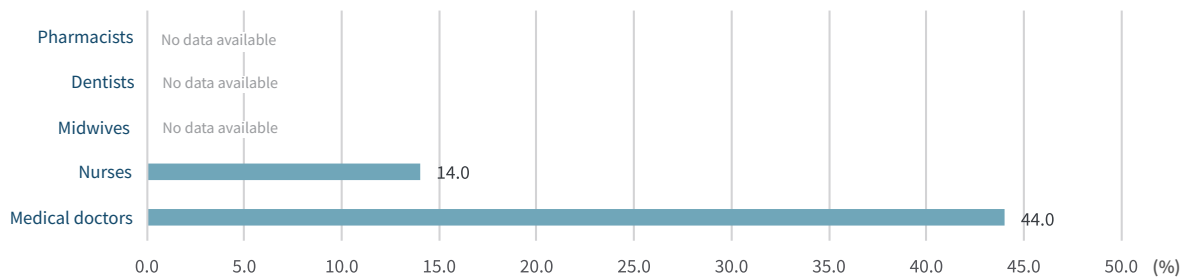


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

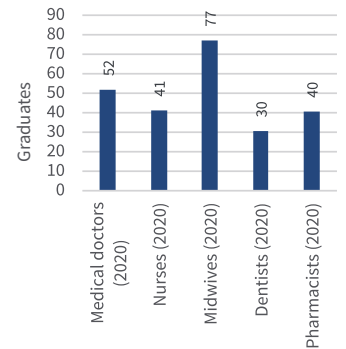
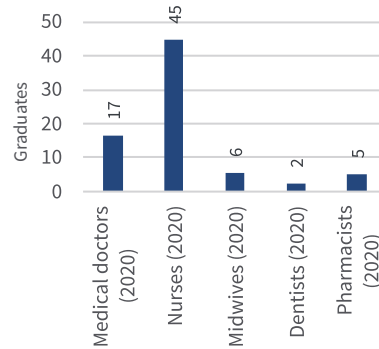
Professions

Annual graduates (total number)

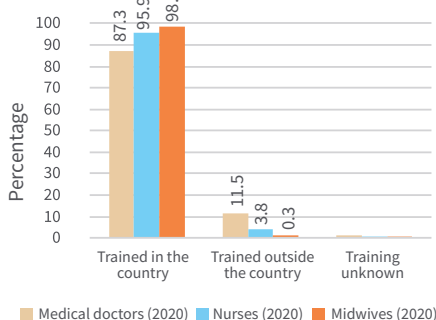
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

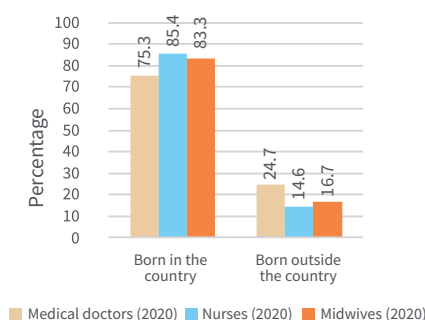
Medical doctors (2020)	1917
Nurses (2020)	5194
Midwives (2020)	648
Dentists (2020)	270
Pharmacists (2020)	599



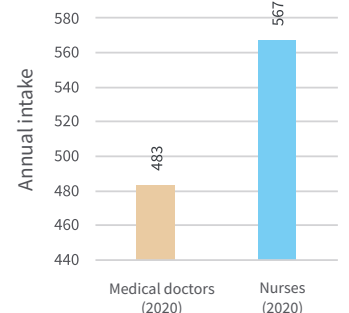
Country of training, percentage



Country of birth, percentage



Annual intake from other countries





Bosnia and Herzegovina

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
3 318 407

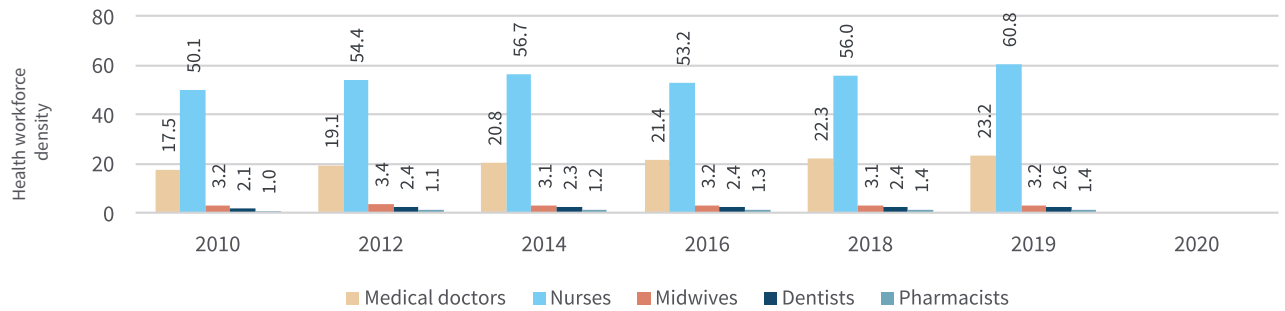
LIFE EXPECTANCY AT BIRTH (YEARS)
76.2

MEDIAN AGE (YEARS)
41.5

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
87.1

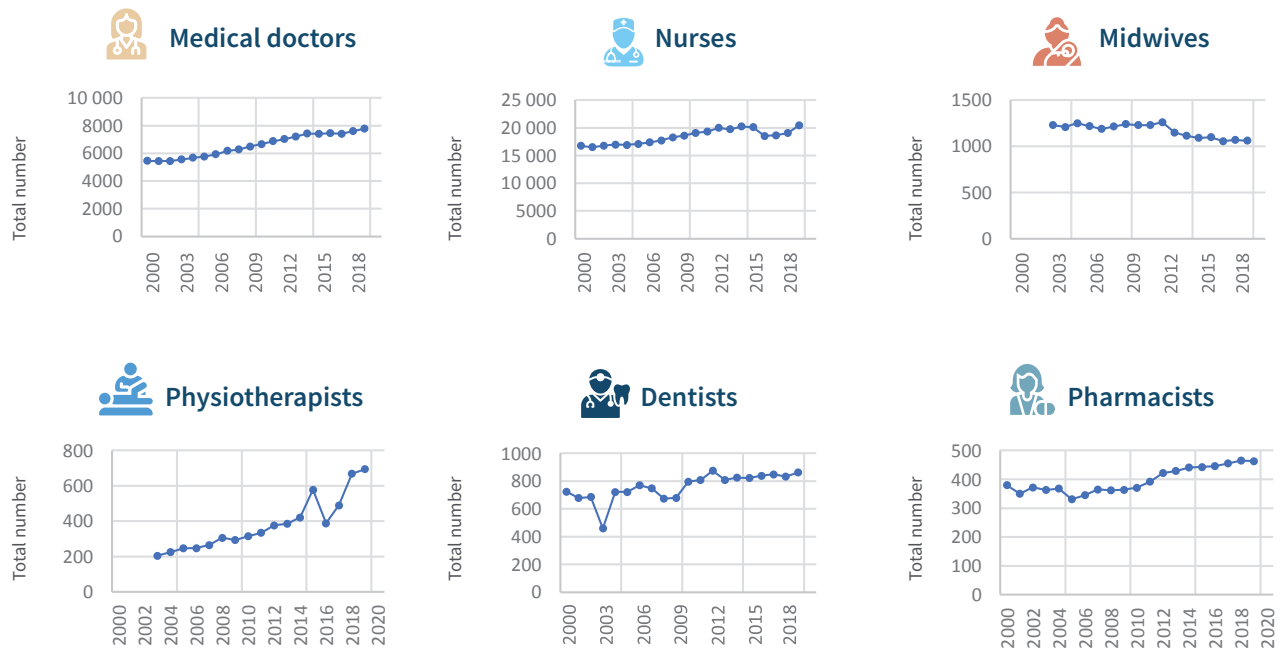
UHC SERVICE COVERAGE INDEX
65

Health workforce density per 10 000 population

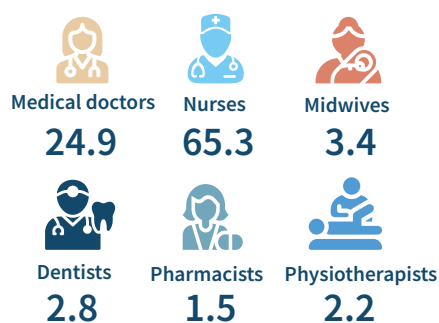


Health workforce availability

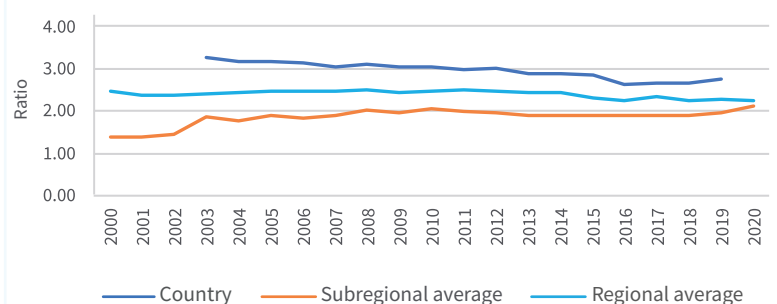
Health workforce trends (total number)



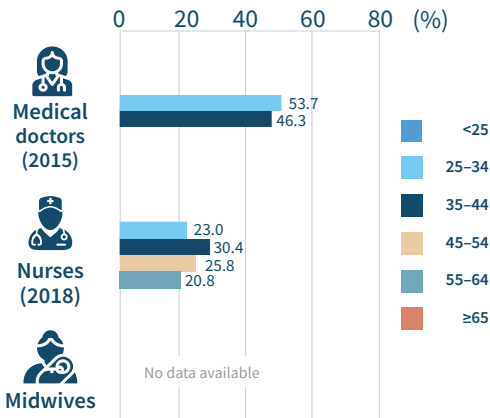
Composition by six professional categories covered in the report, percentage (latest year)



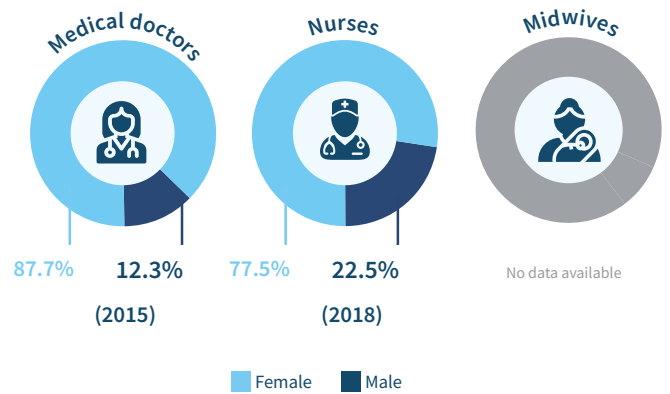
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

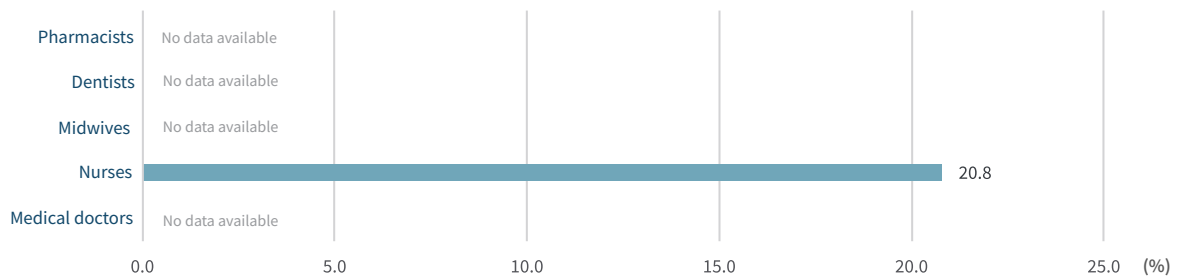


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

Professions	Annual graduates (total number)	Graduates per year per 100 000 population	Graduates per year per 1000 practitioners
Medical doctors (2019)	360	11	46
Nurses (2018)	432	13	21
Midwives	No data available	No data available	No data available
Dentists (2019)	94	3	109
Pharmacists (2019)	324	10	700

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE



Bulgaria

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
6 979 175

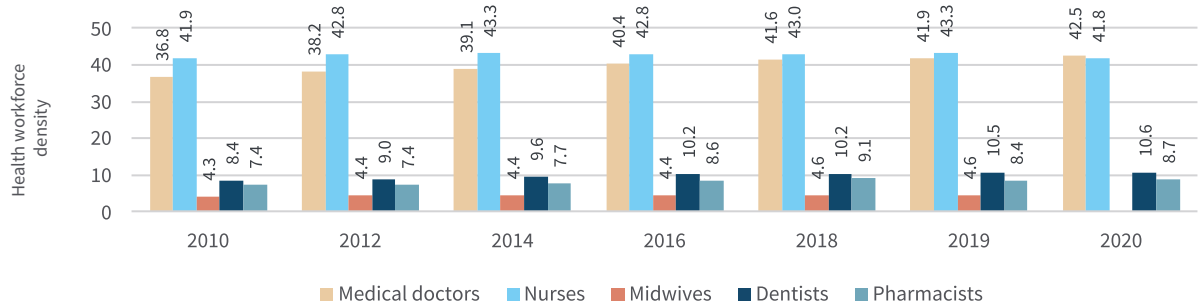
LIFE EXPECTANCY AT BIRTH (YEARS)
73.6

MEDIAN AGE (YEARS)
44.3

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
88.9

UHC SERVICE COVERAGE INDEX
70

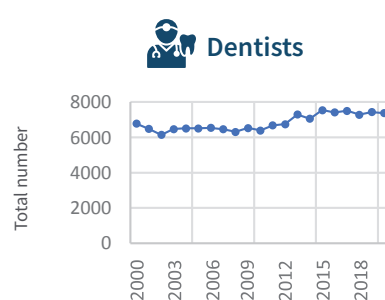
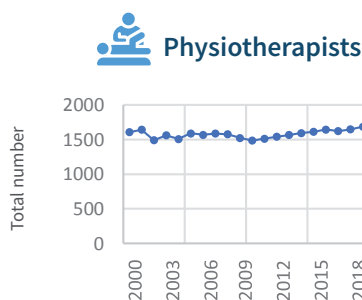
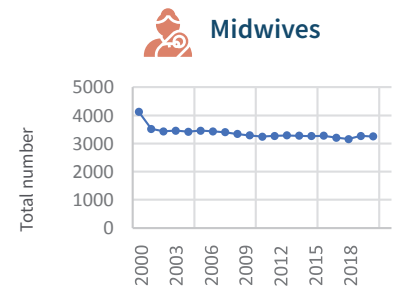
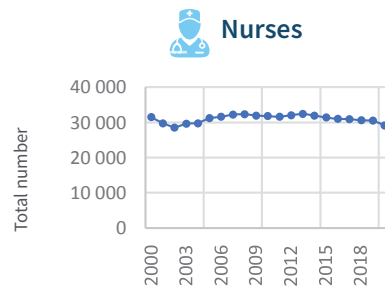
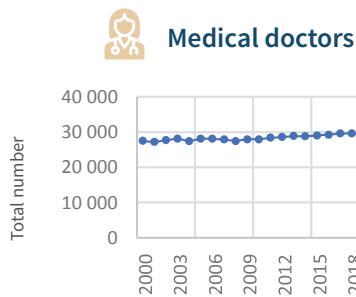
Health workforce density per 10 000 population



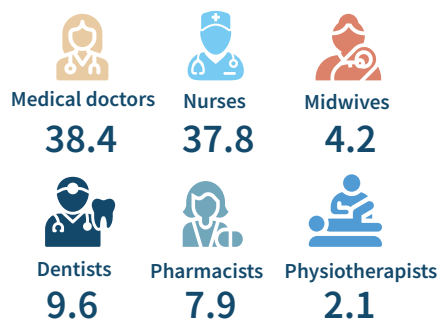
Health workforce availability



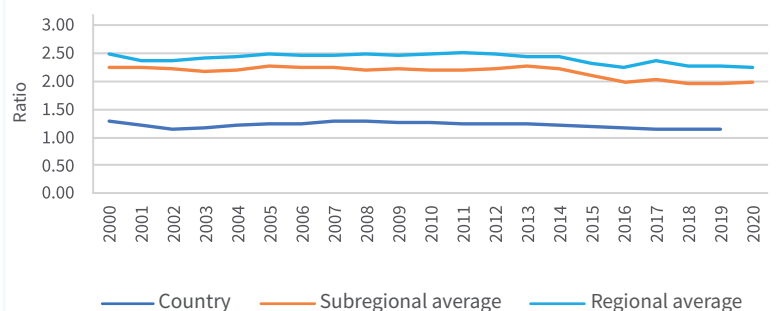
Health workforce trends (total number)



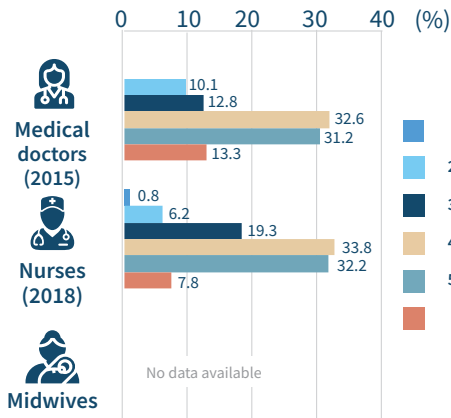
Composition by six professional categories covered in the report, percentage (latest year)



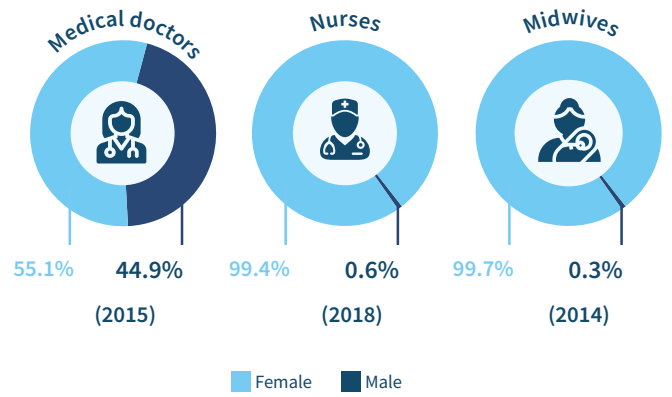
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

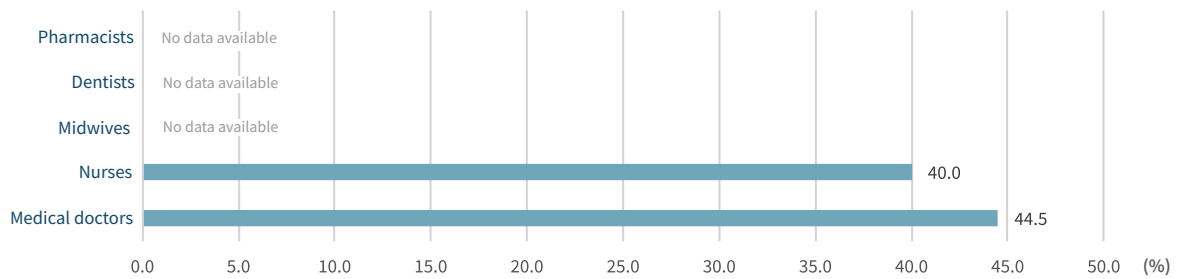


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

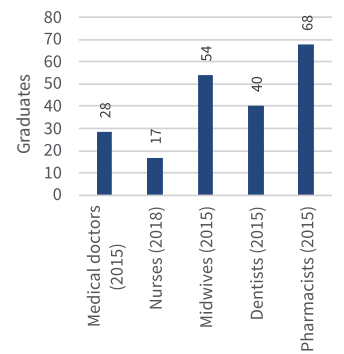
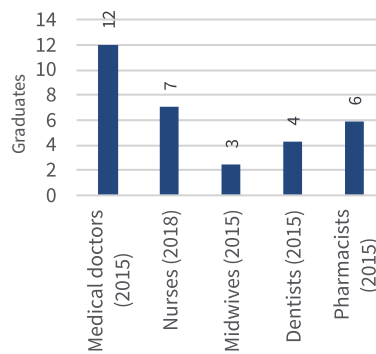
Professions

Annual graduates (total number)

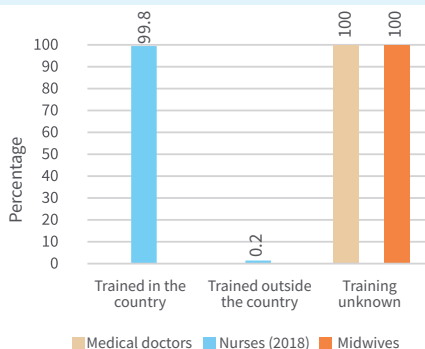
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

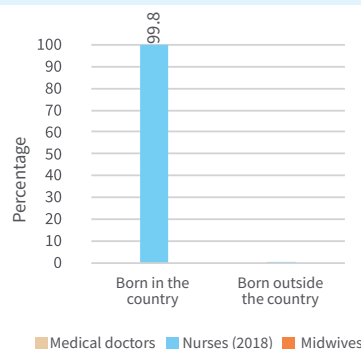
Medical doctors (2015)	837
Nurses (2018)	494
Midwives (2015)	175
Dentists (2015)	296
Pharmacists (2015)	414



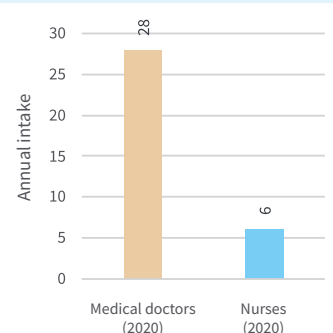
Country of training, percentage



Country of birth, percentage



Annual intake from other countries





Croatia

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

4 096 869

LIFE EXPECTANCY AT BIRTH (YEARS)

78.0

MEDIAN AGE (YEARS)

43.5

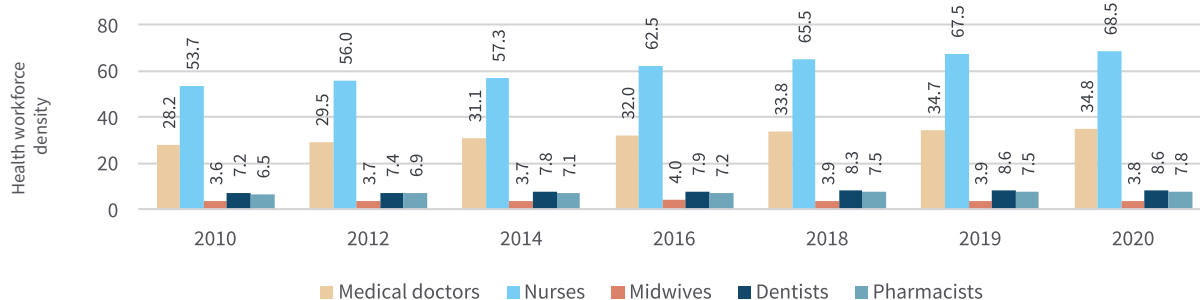
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

107.2

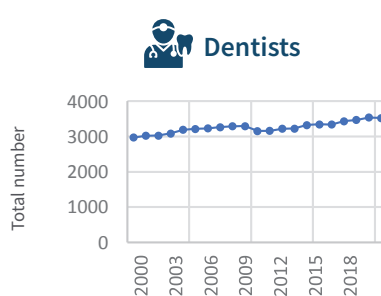
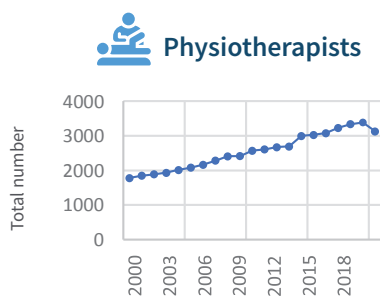
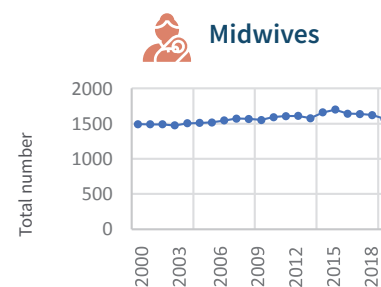
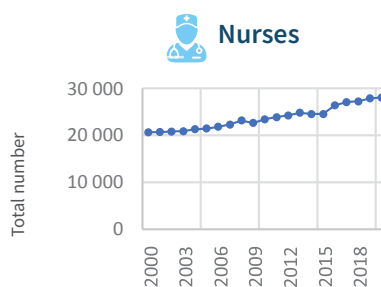
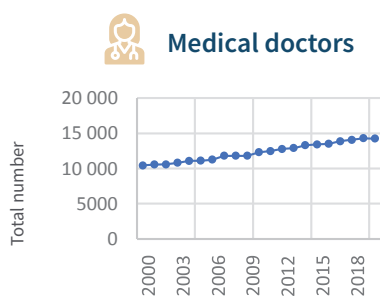
UHC SERVICE COVERAGE INDEX

73

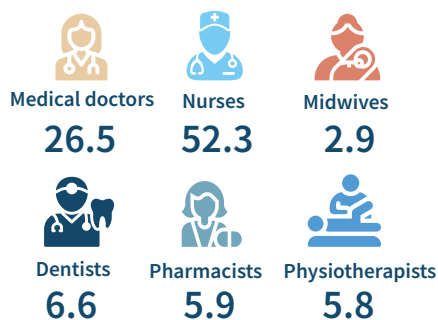
Health workforce density per 10 000 population



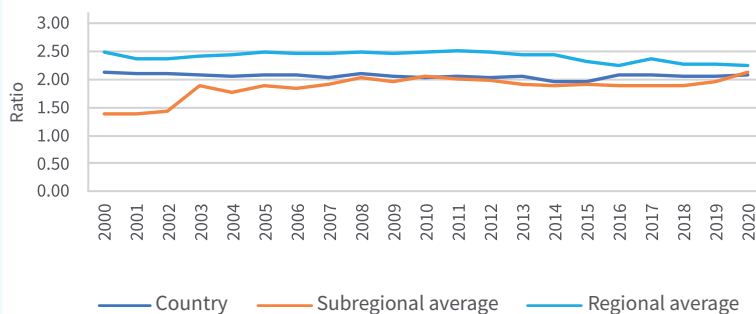
Health workforce trends (total number)



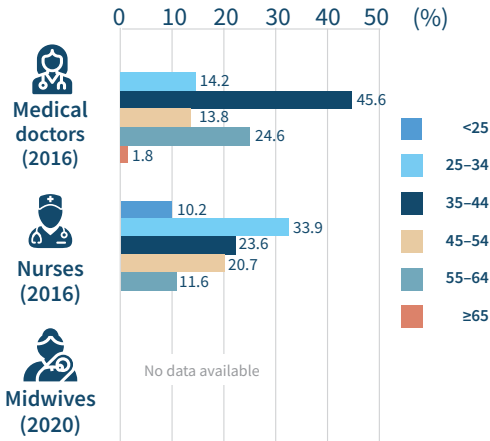
Composition by six professional categories covered in the report, percentage (latest year)



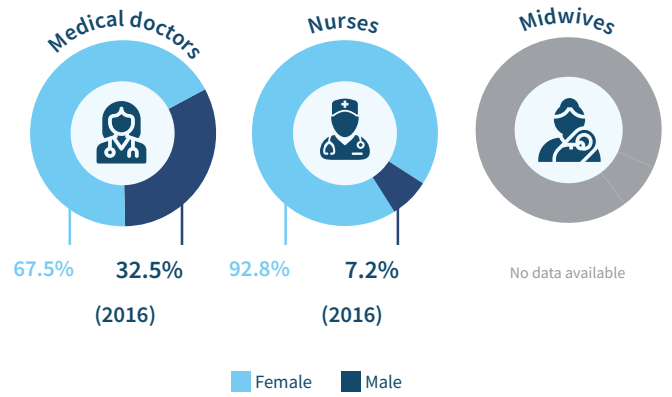
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

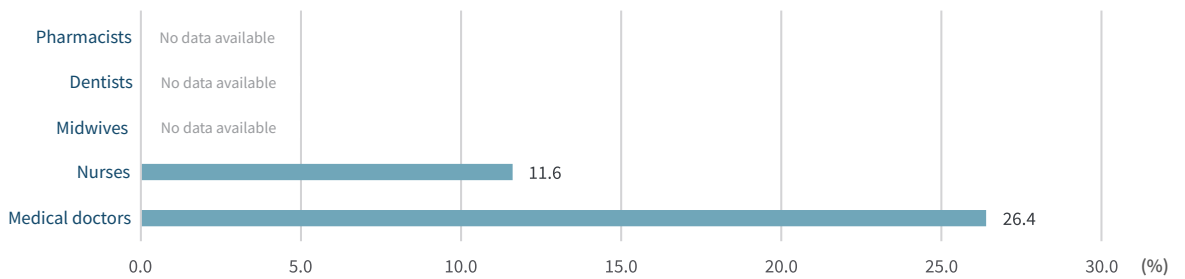


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



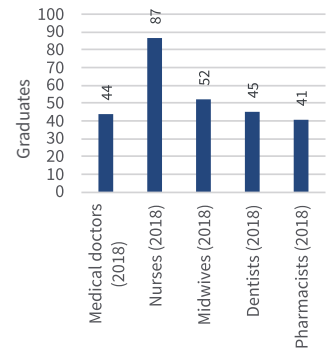
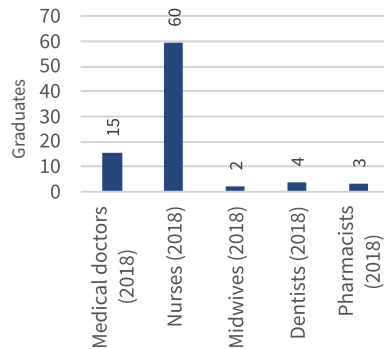
Professions

Annual graduates (total number)

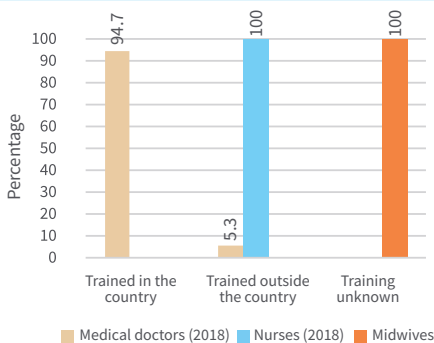
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2018)	627
Nurses (2018)	2439
Midwives (2018)	82
Dentists (2018)	160
Pharmacists (2018)	130



Country of training, percentage



Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries

NO DATA AVAILABLE



Health workforce domestic and international supply



Cyprus

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
1 237 537

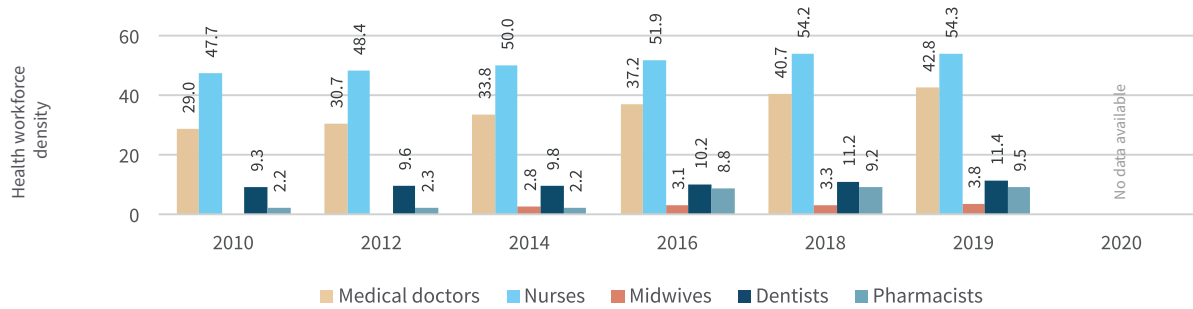
LIFE EXPECTANCY AT BIRTH (YEARS)
81.4

MEDIAN AGE (YEARS)
37.1

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
100.9

UHC SERVICE COVERAGE INDEX
79

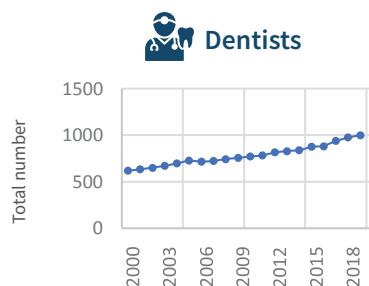
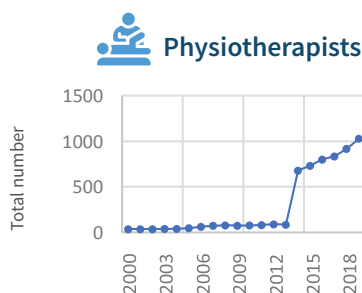
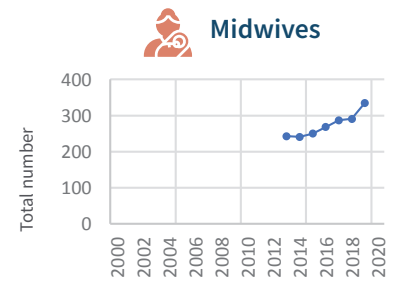
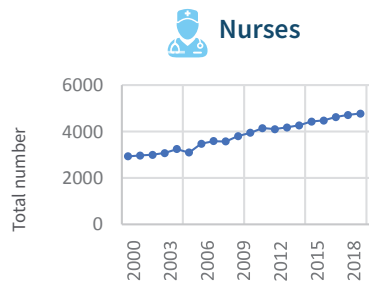
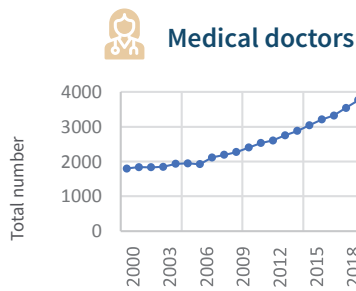
Health workforce density per 10 000 population



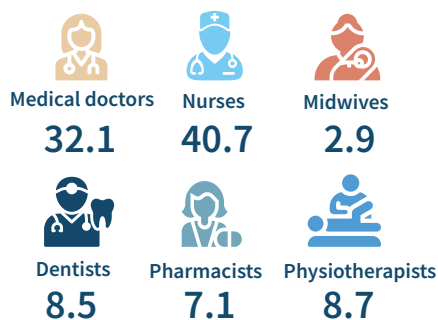
Health workforce availability



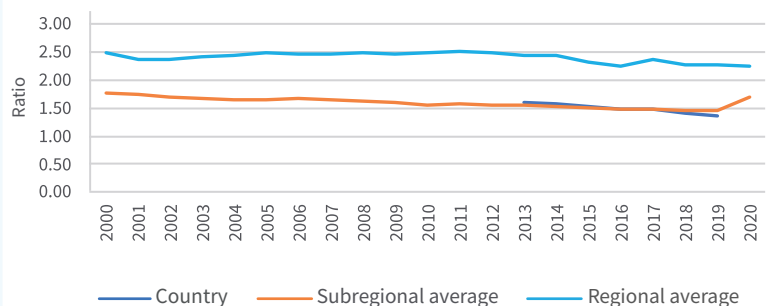
Health workforce trends (total number)



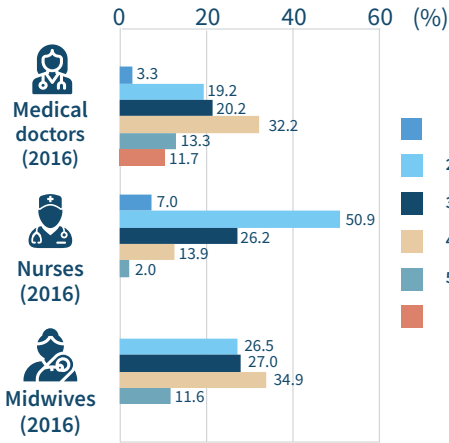
Composition by six professional categories covered in the report, percentage (latest year)



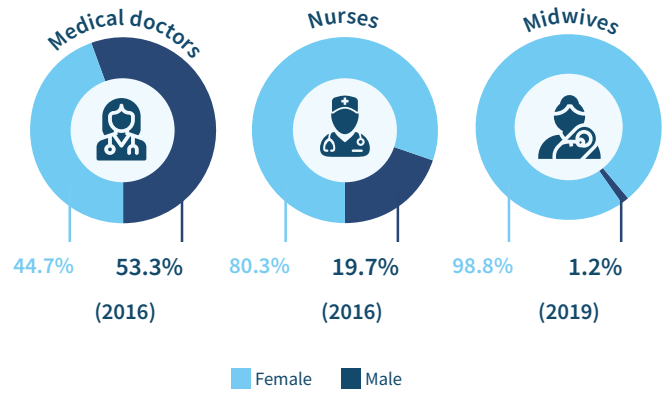
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

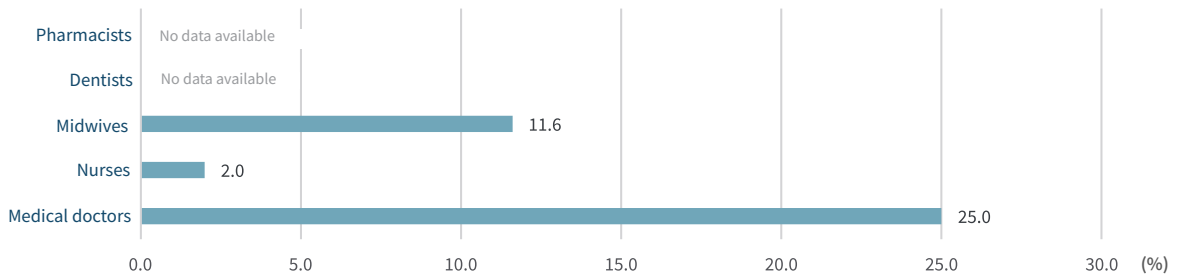


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



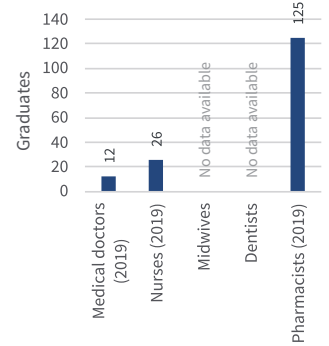
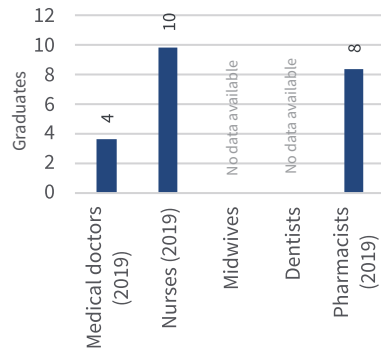
Professions

Annual graduates (total number)

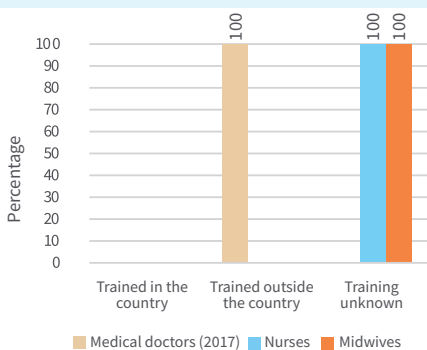
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

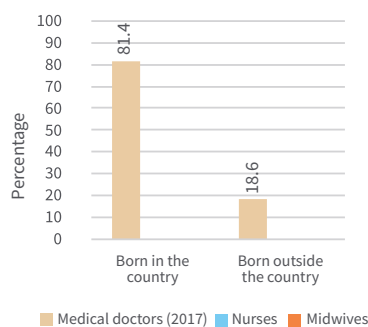
Medical doctors (2019)	45
Nurses (2019)	122
Midwives	No data available
Dentists	No data available
Pharmacists (2019)	104



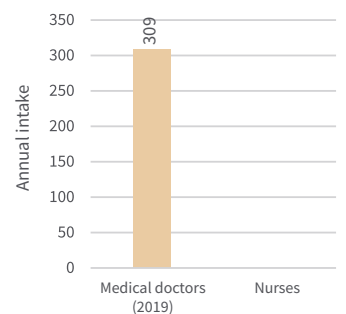
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Czechia

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

10 530 953

LIFE EXPECTANCY AT BIRTH (YEARS)

78.6

MEDIAN AGE (YEARS)

42.2

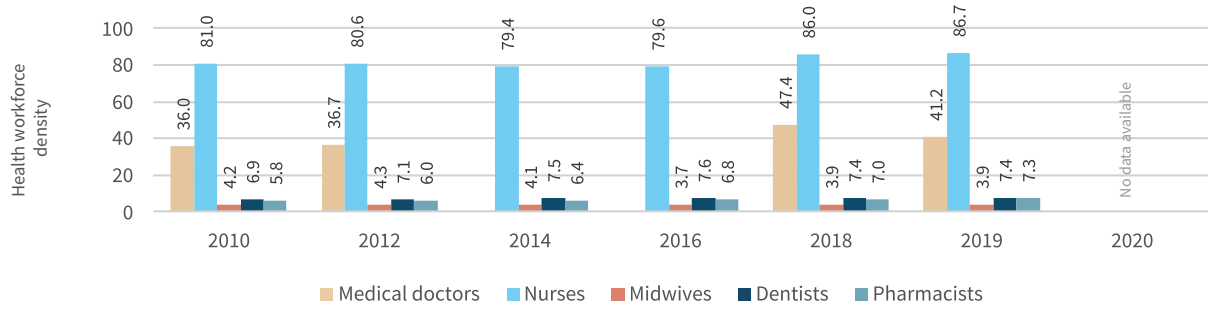
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

131.8

UHC SERVICE COVERAGE INDEX

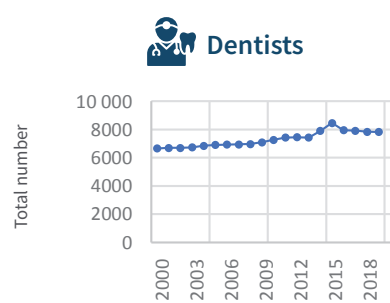
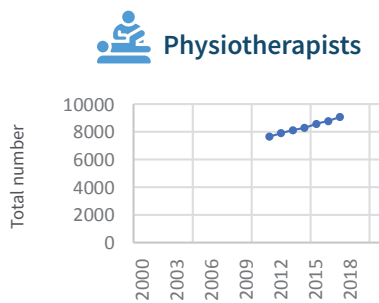
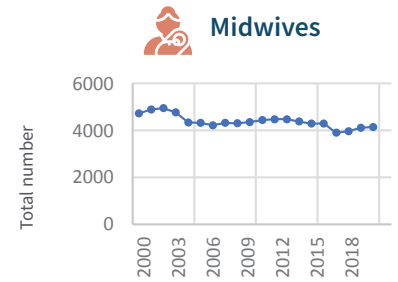
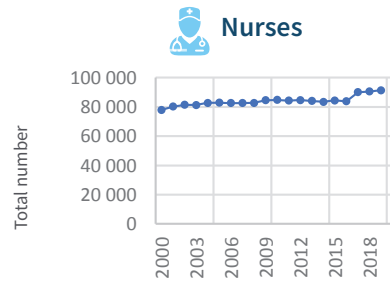
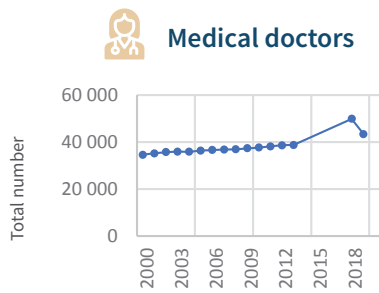
78

Health workforce density per 10 000 population

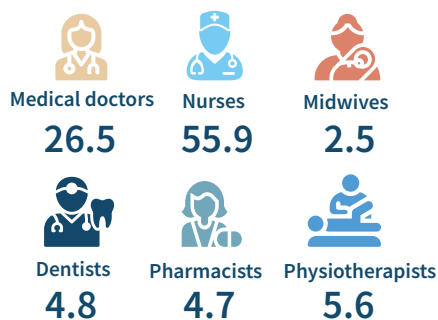


Health workforce availability

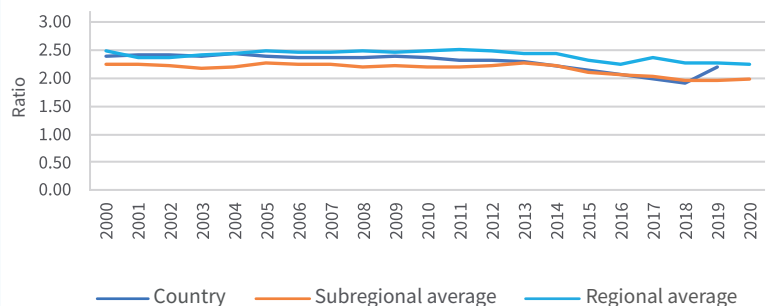
Health workforce trends (total number)



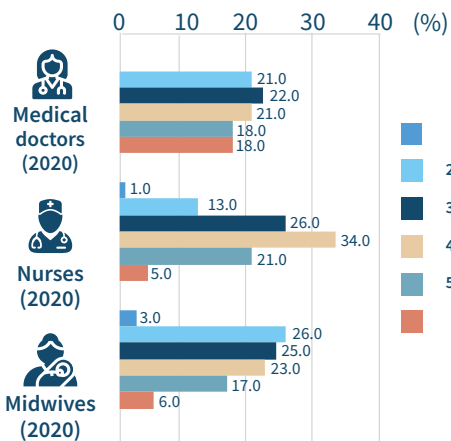
Composition by six professional categories covered in the report, percentage (latest year)



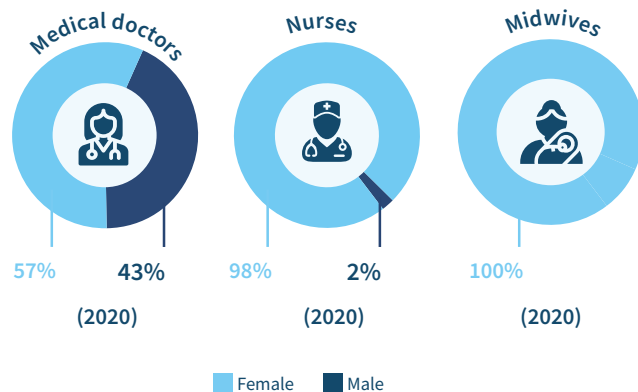
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

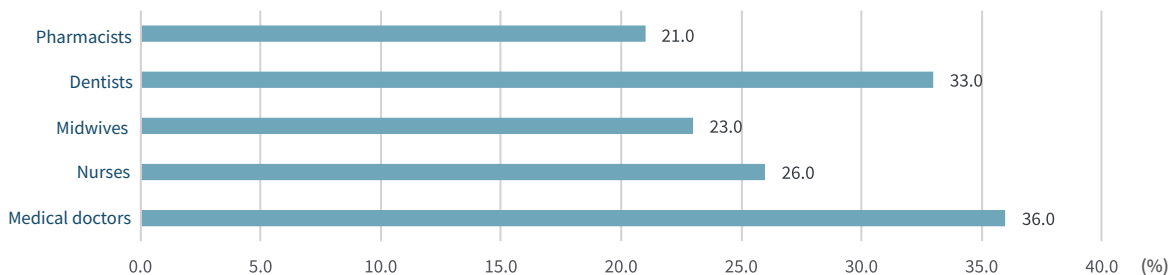


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2019)

1718

Nurses (2019)

1400

Midwives (2019)

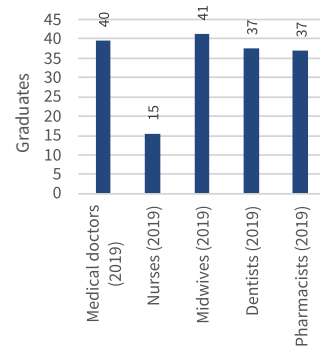
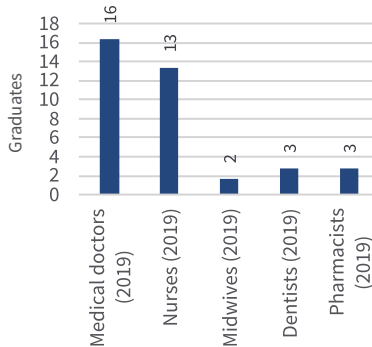
171

Dentists (2019)

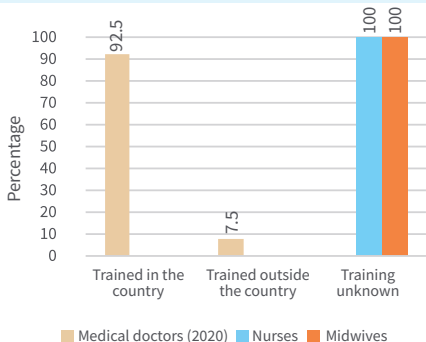
293

Pharmacists (2019)

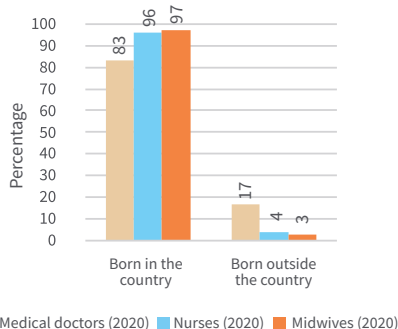
284



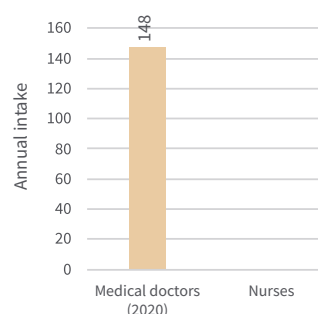
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Denmark

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
5 825 641

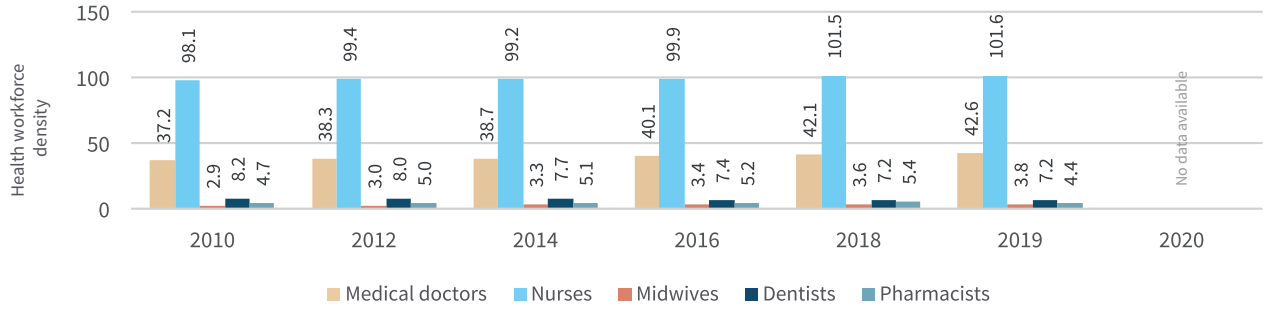
LIFE EXPECTANCY AT BIRTH (YEARS)
81.5

MEDIAN AGE (YEARS)
41.2

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
148.0

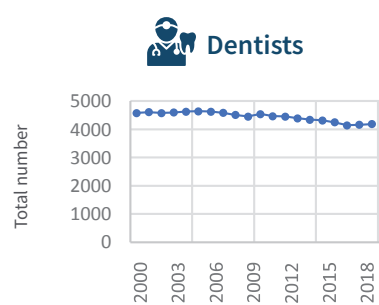
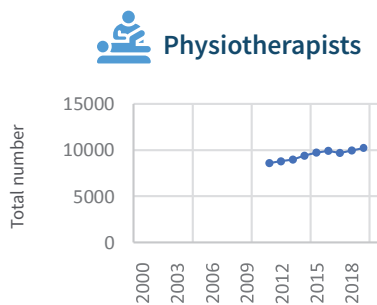
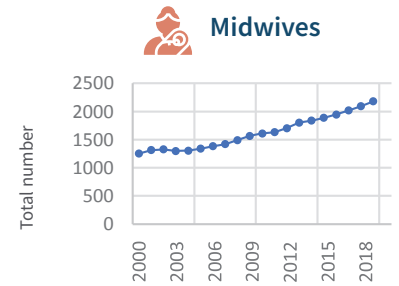
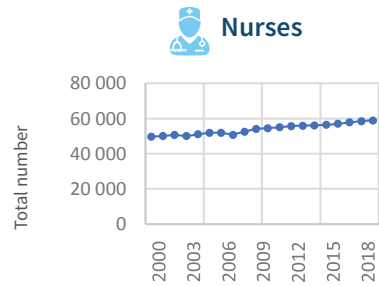
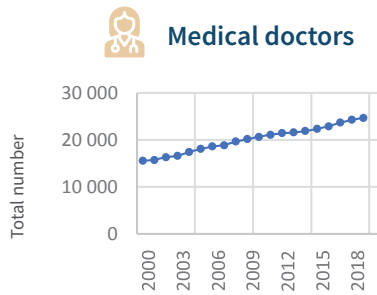
UHC SERVICE COVERAGE INDEX
85

Health workforce density per 10 000 population

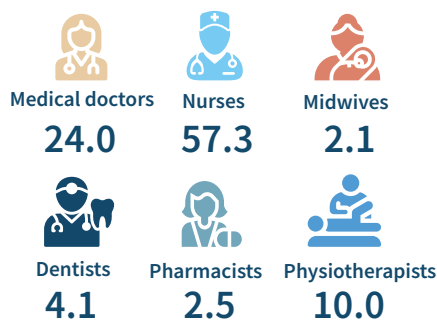


Health workforce availability

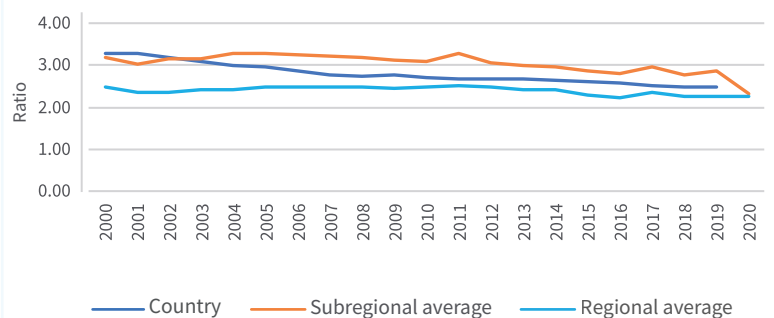
Health workforce trends (total number)



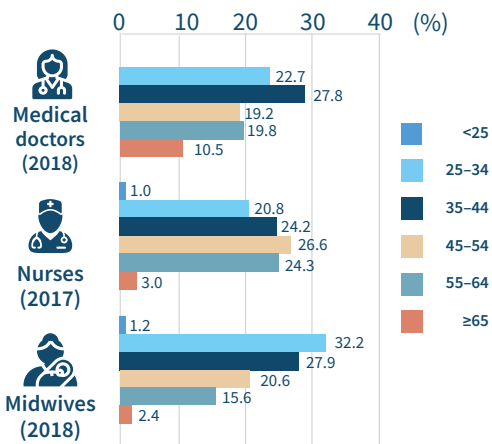
Composition by six professional categories covered in the report, percentage (latest year)



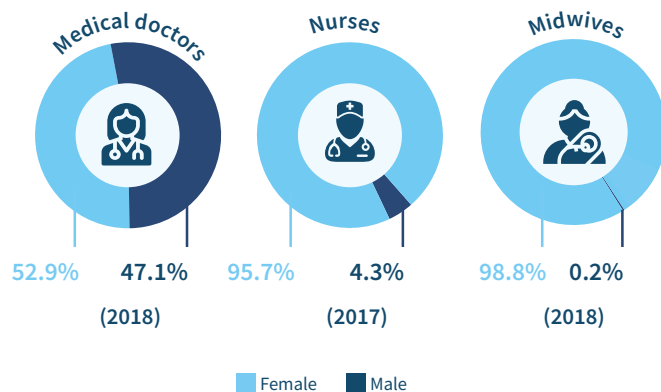
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

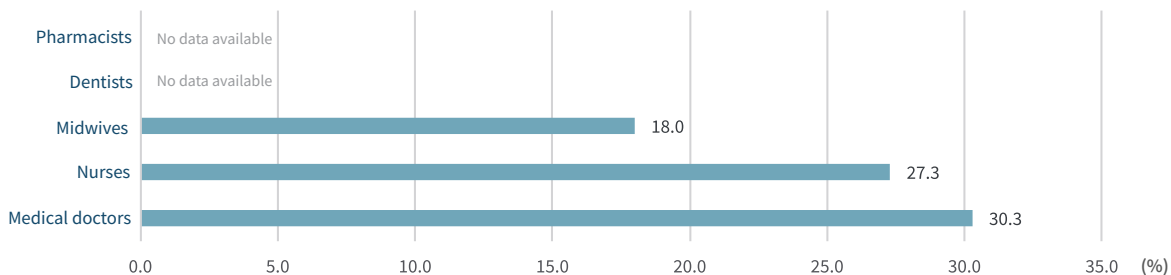


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Professions

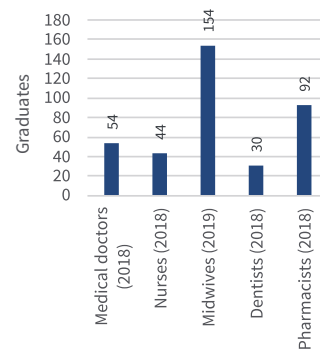
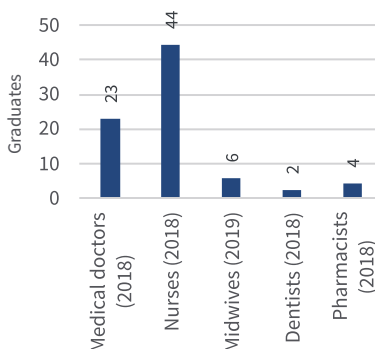
Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2018)

1335



Nurses (2018)

2587

Midwives (2019)

335

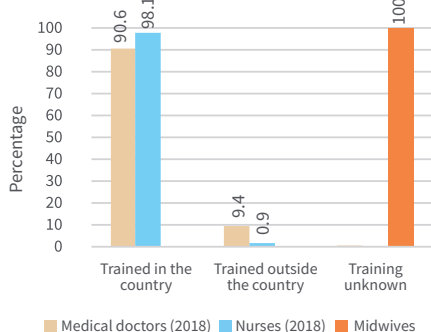
Dentists (2018)

127

Pharmacists (2018)

238

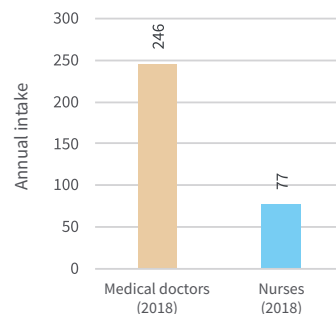
Country of training, percentage



Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries



Health workforce domestic and international supply



Estonia

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

1 329 444

LIFE EXPECTANCY AT BIRTH (YEARS)

78.3

MEDIAN AGE (YEARS)

41.4

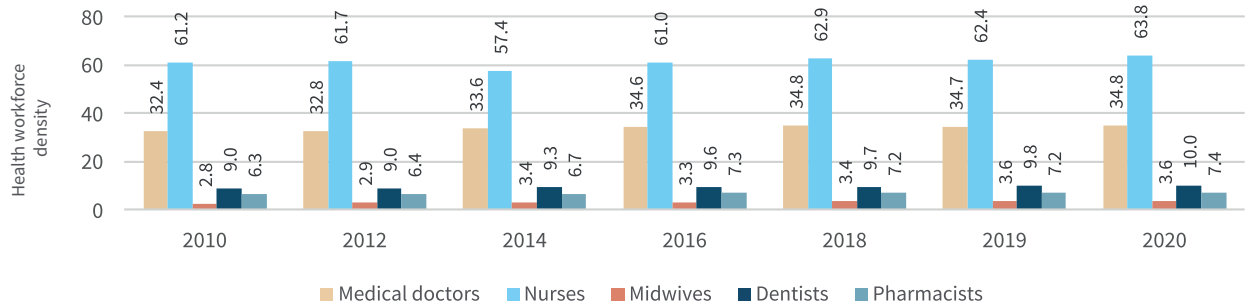
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

102.2

UHC SERVICE COVERAGE INDEX

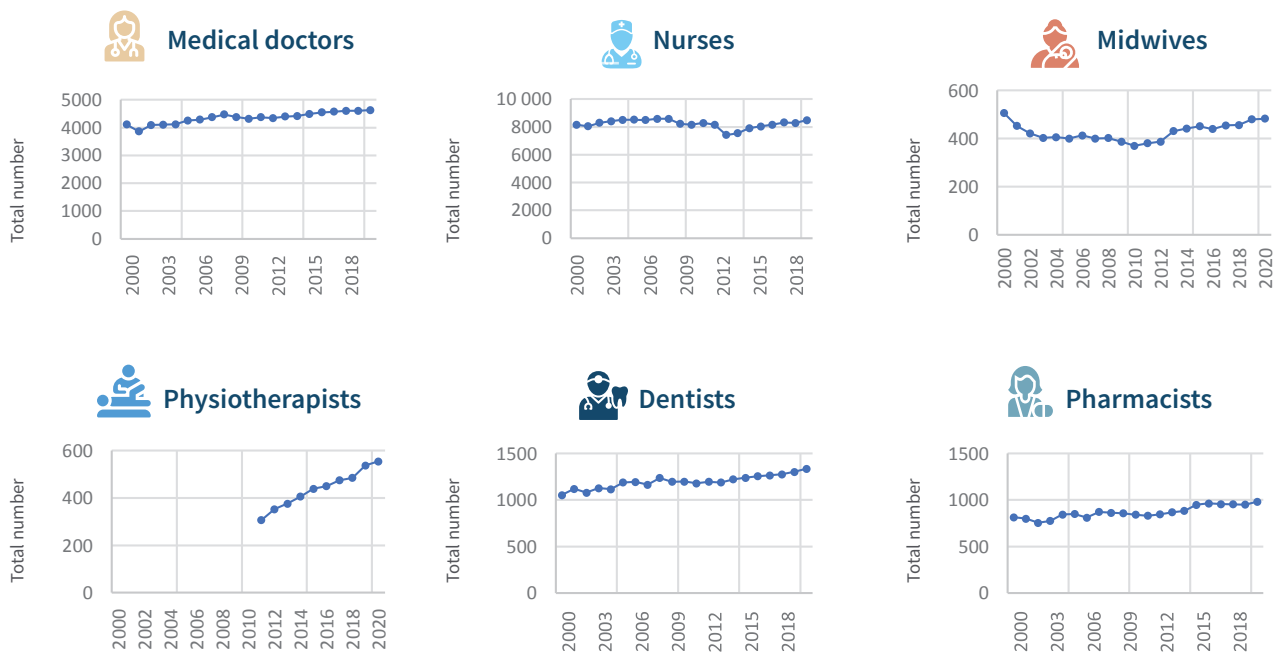
78

Health workforce density per 10 000 population

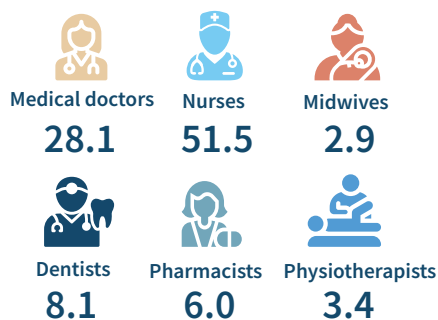


Health workforce availability

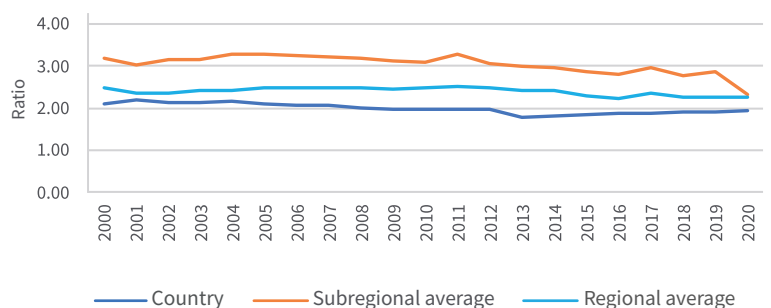
Health workforce trends (total number)



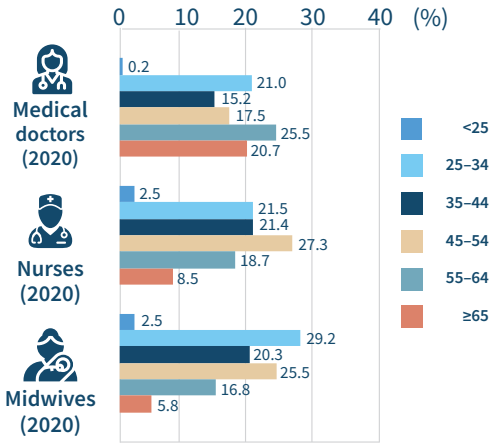
Composition by six professional categories covered in the report, percentage (latest year)



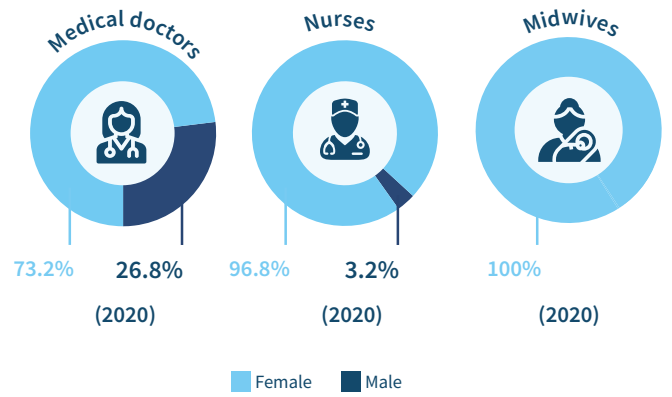
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

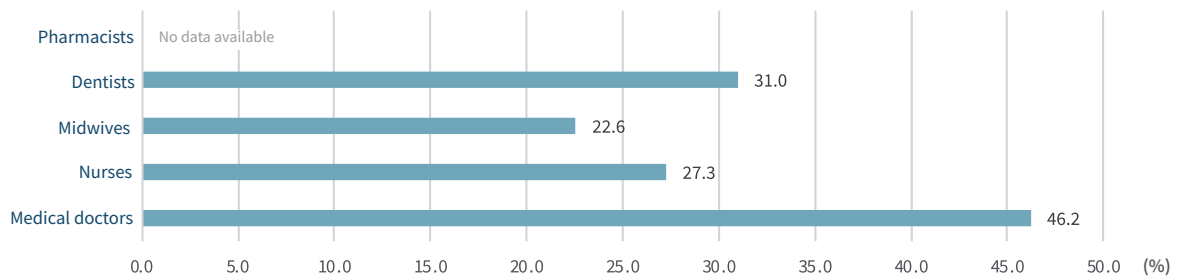


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



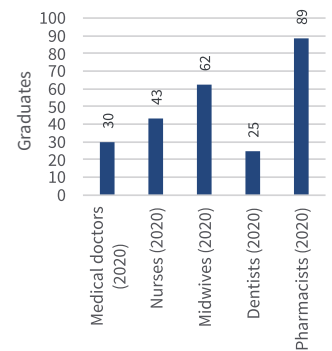
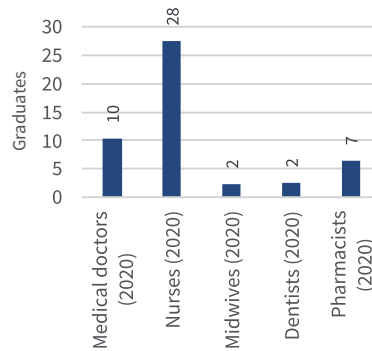
Professions

Annual graduates (total number)

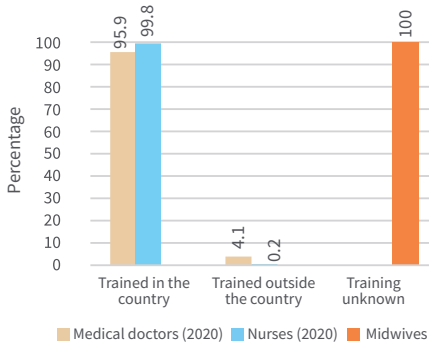
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2020)	138
Nurses (2020)	367
Midwives (2020)	30
Dentists (2020)	33
Pharmacists (2020)	87



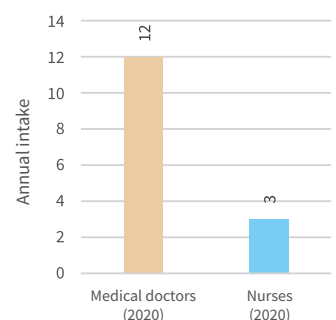
Country of training, percentage



Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries



Health workforce domestic and international supply



Finland

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
5 529 468

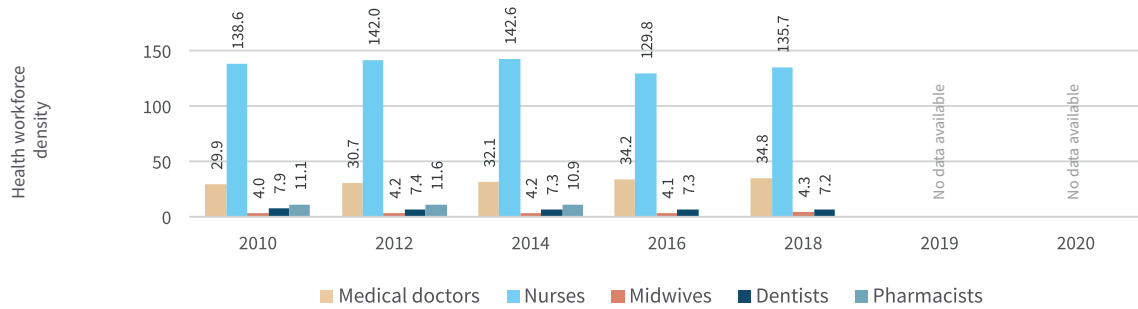
LIFE EXPECTANCY AT BIRTH (YEARS)
81.9

MEDIAN AGE (YEARS)
42.2

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
174.7

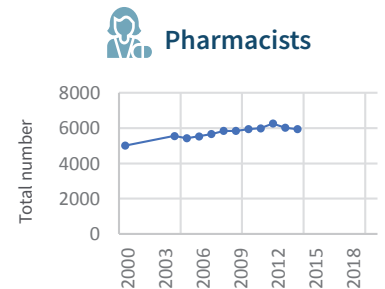
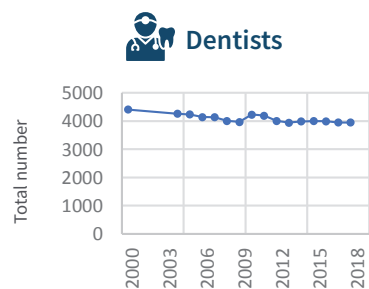
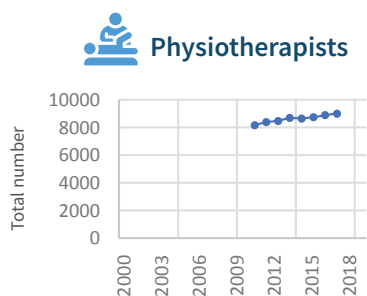
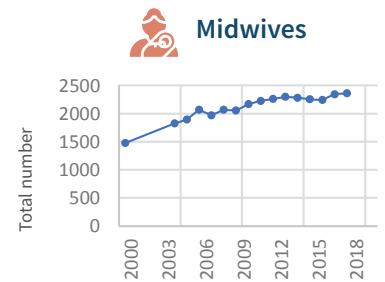
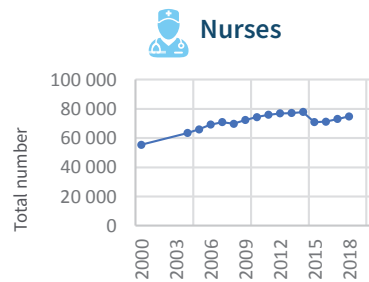
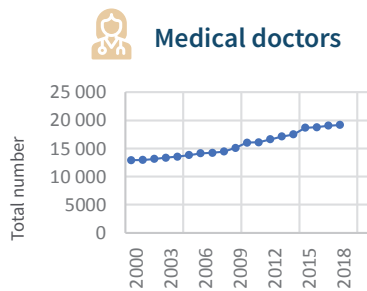
UHC SERVICE COVERAGE INDEX
83

Health workforce density per 10 000 population

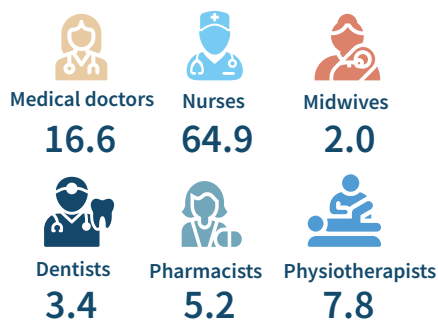


Health workforce availability

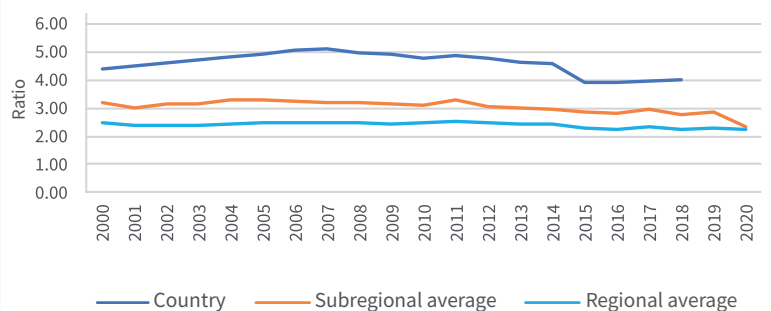
Health workforce trends (total number)



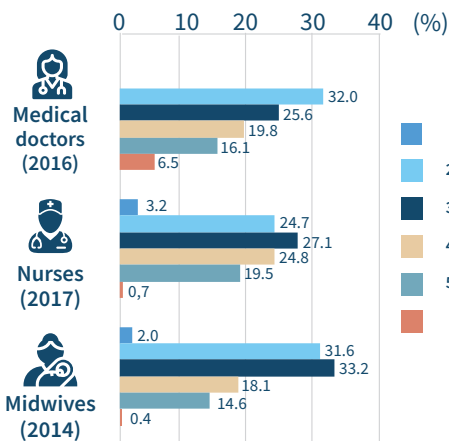
Composition by six professional categories covered in the report, percentage (latest year)



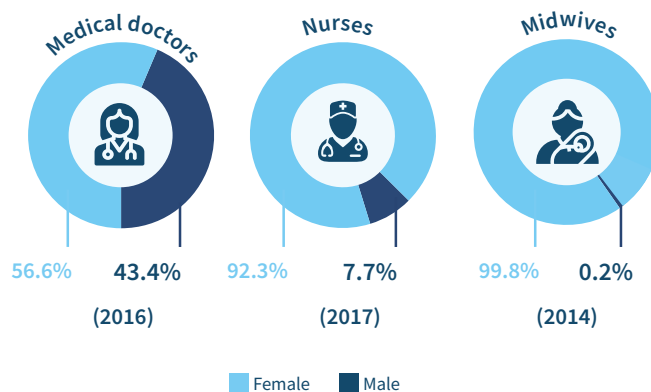
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

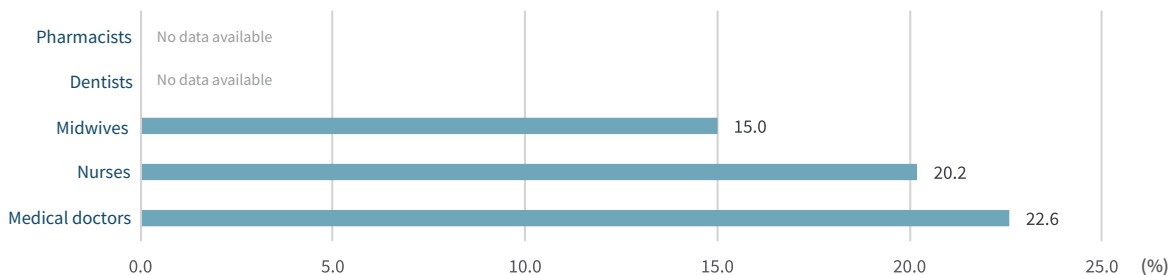


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

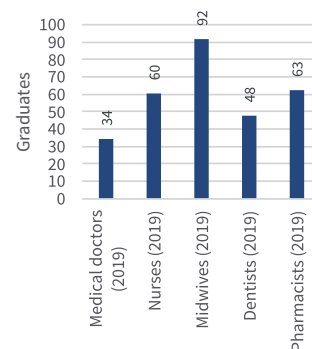
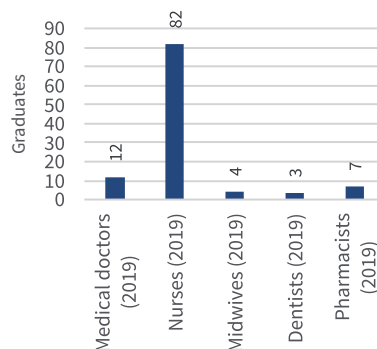
Professions

Annual graduates (total number)

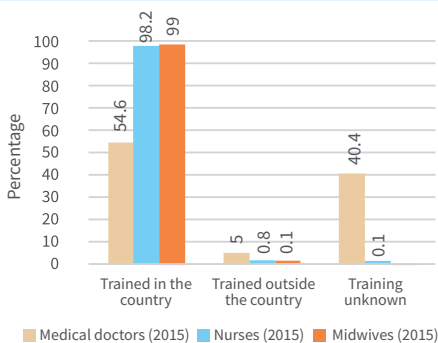
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

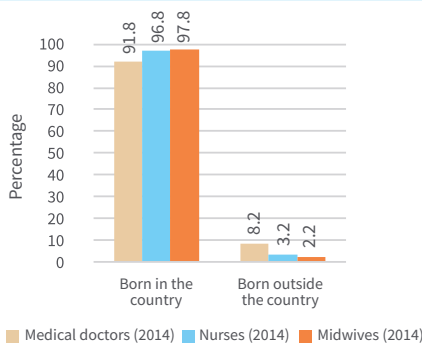
Medical doctors (2019)	657
Nurses (2019)	4519
Midwives (2019)	217
Dentists (2019)	188
Pharmacists (2019)	372



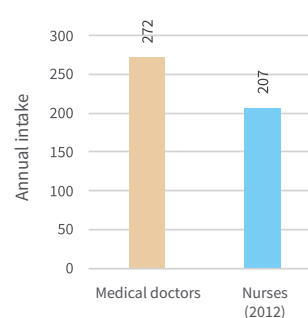
Country of training, percentage



Country of birth, percentage



Annual intake from other countries





France

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

64 480 053

LIFE EXPECTANCY AT BIRTH (YEARS)

82.2

MEDIAN AGE (YEARS)

41.4

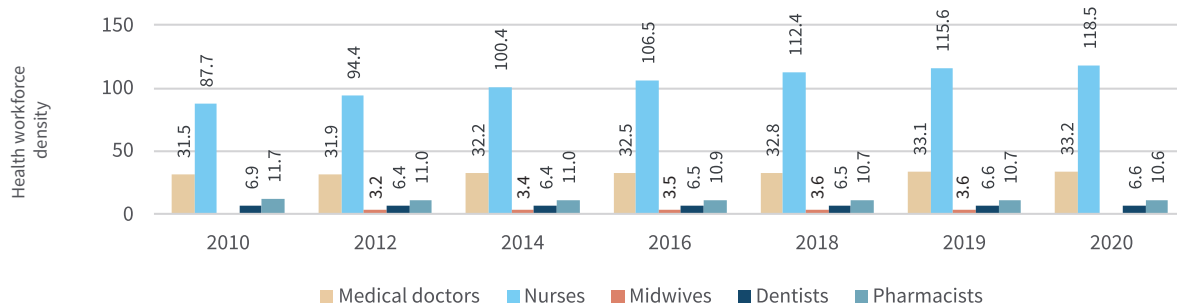
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

155.4

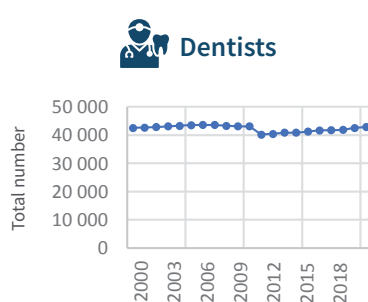
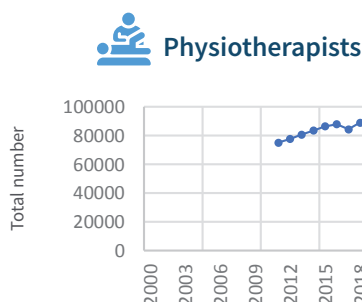
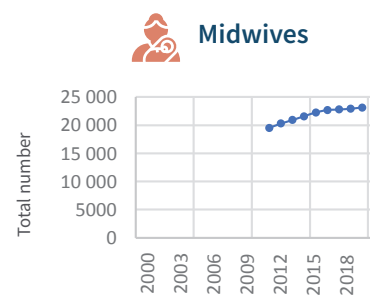
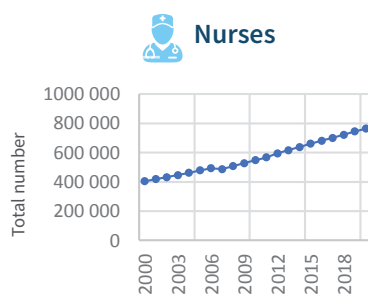
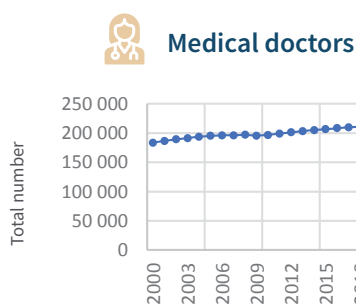
UHC SERVICE COVERAGE INDEX

84

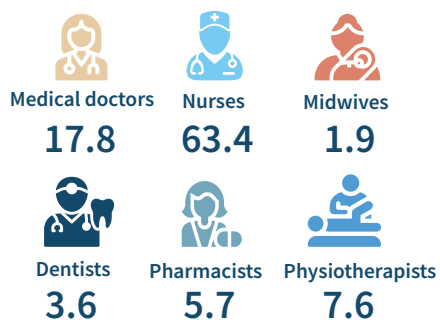
Health workforce density per 10 000 population



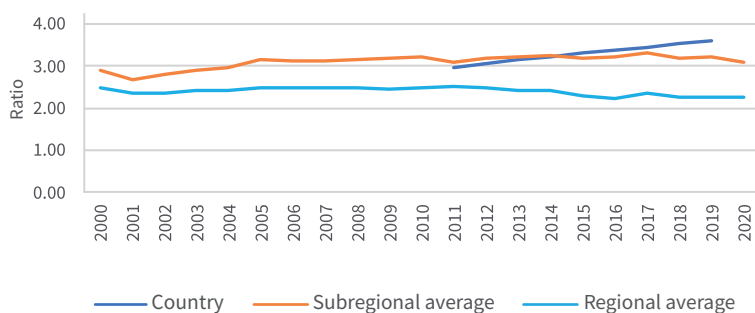
Health workforce trends (total number)



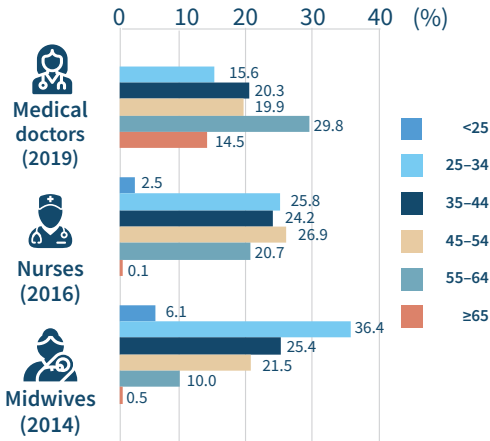
Composition by six professional categories covered in the report, percentage (latest year)



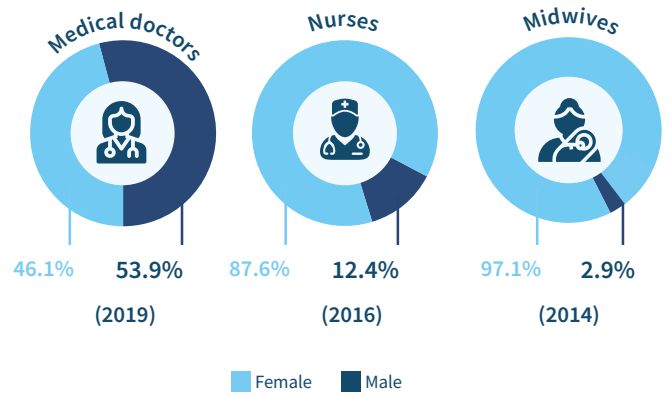
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

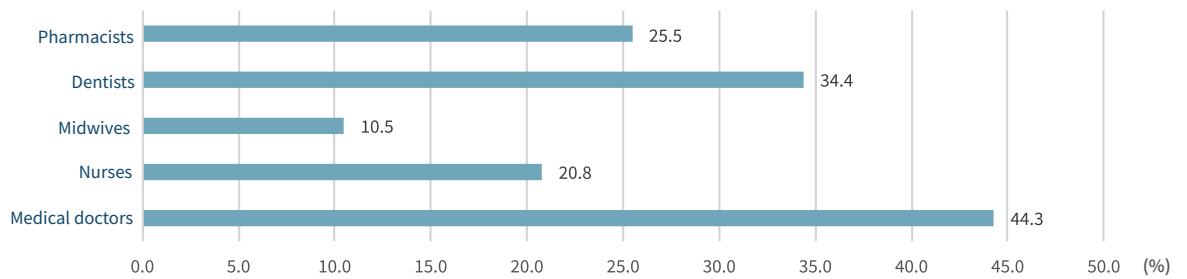


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



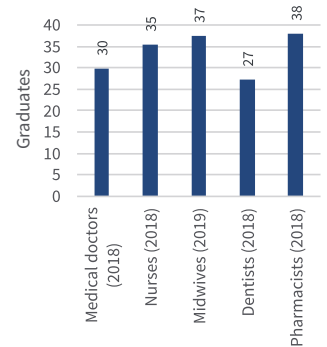
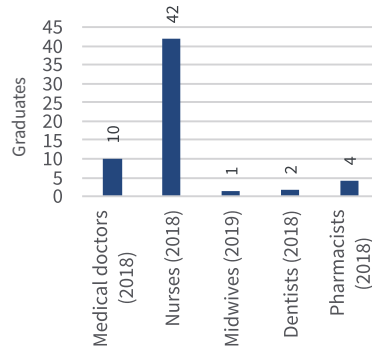
Professions

Annual graduates (total number)

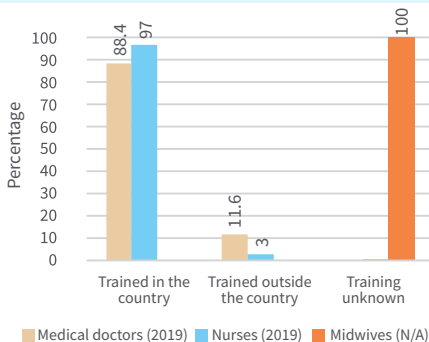
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

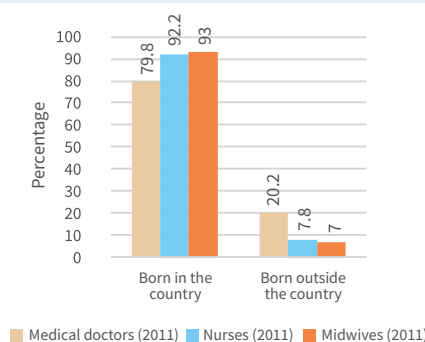
Medical doctors (2018)	6387
Nurses (2018)	27 076
Midwives (2019)	864
Dentists (2018)	1168
Pharmacists (2018)	2612



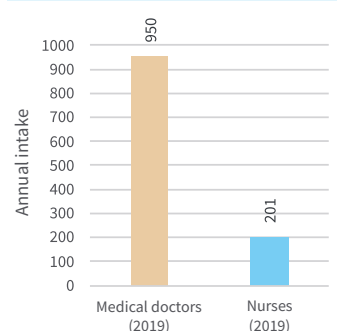
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Georgia

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
3 765 912

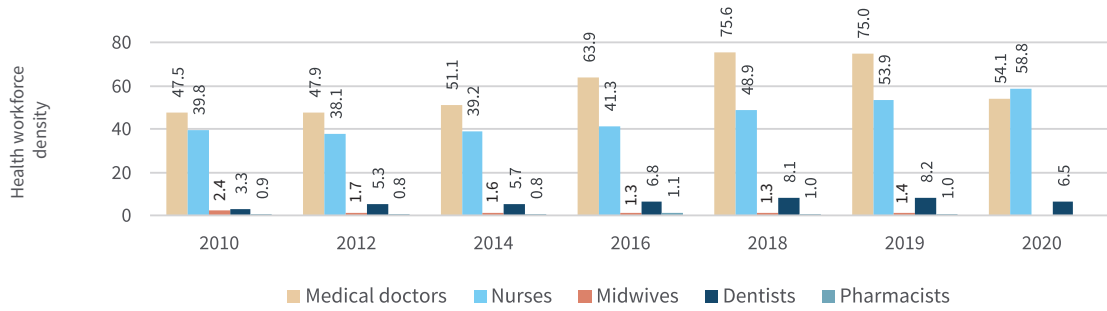
LIFE EXPECTANCY AT BIRTH (YEARS)
72.8

MEDIAN AGE (YEARS)
36.3

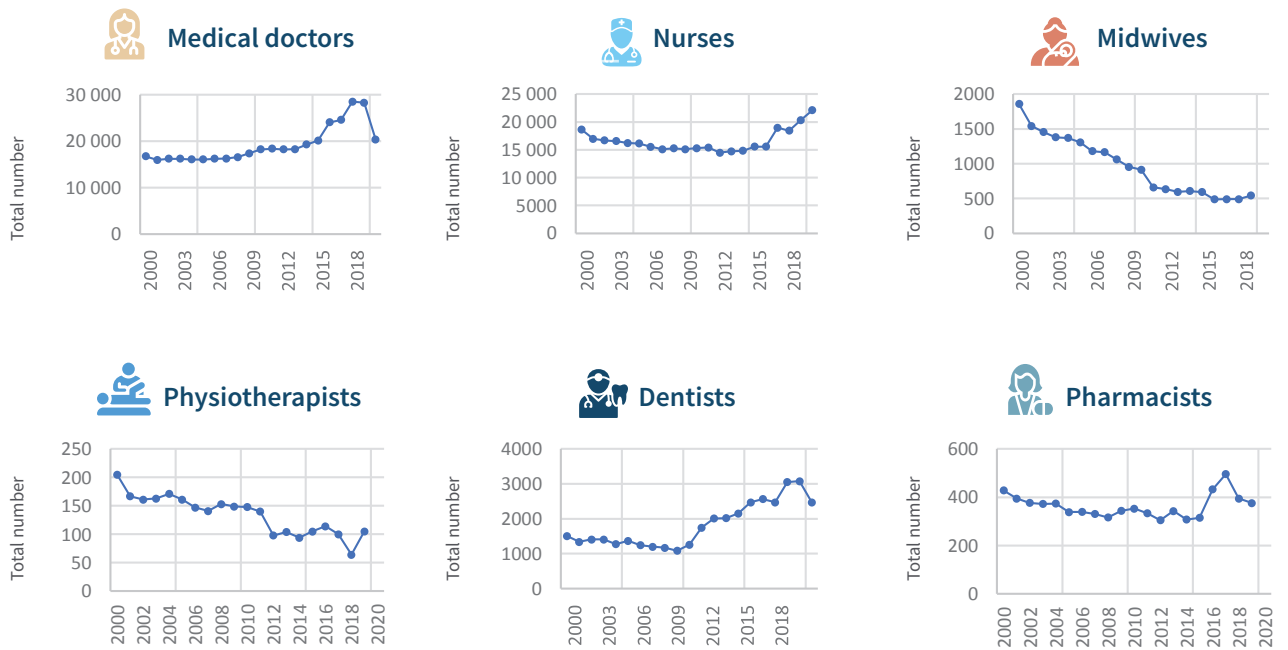
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
114.3

UHC SERVICE COVERAGE INDEX
65

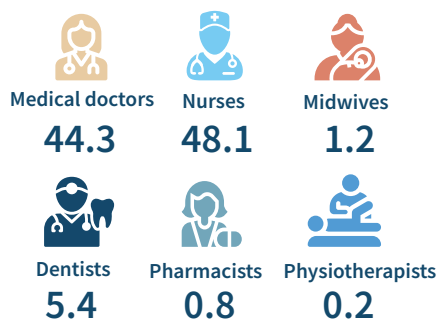
Health workforce density per 10 000 population



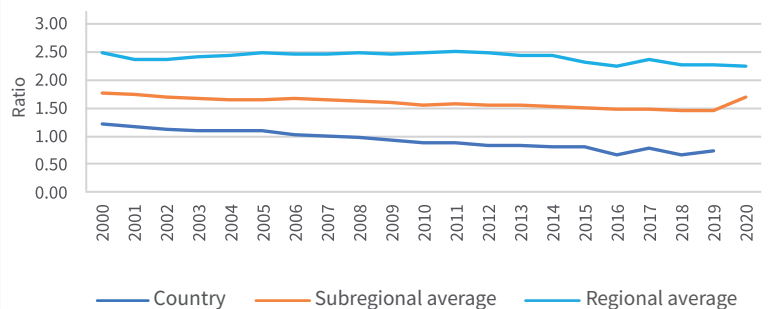
Health workforce trends (total number)



Composition by six professional categories covered in the report, percentage (latest year)



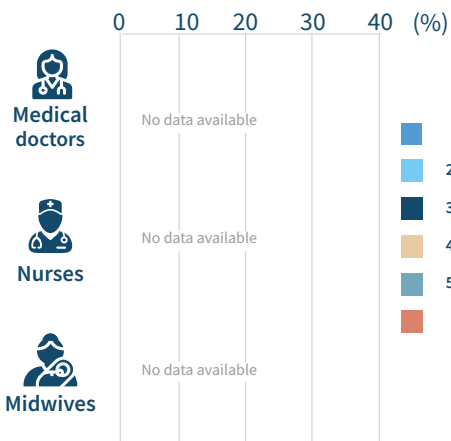
Ratio of nurses and midwives to medical doctors



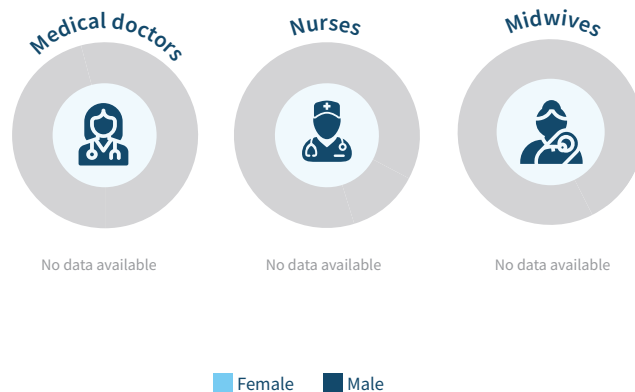
Health workforce availability



Health workforce distribution by age group, percentage

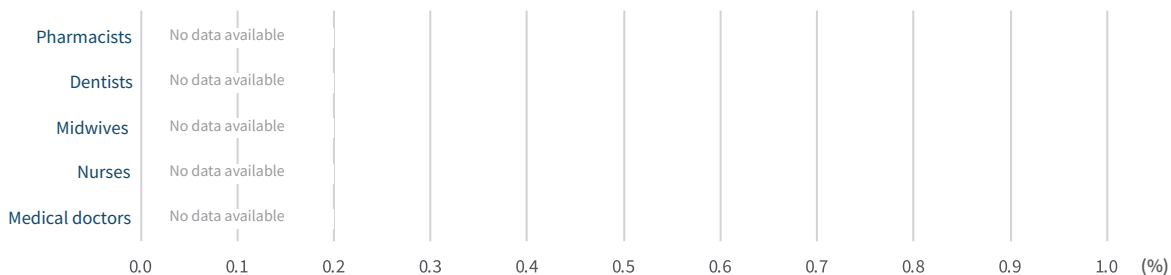


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2015)

420

Nurses (2015)

9

Midwives (2013)

7

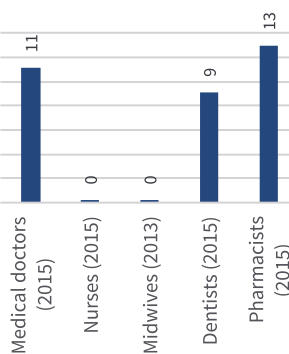
Dentists (2015)

342

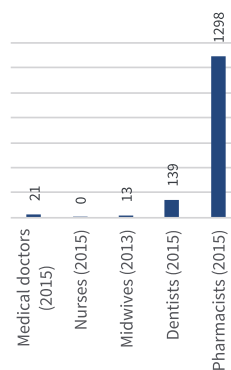
Pharmacists (2015)

488

Graduates



Graduates



Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE



Health workforce domestic and international supply



Germany

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

83 328 988

LIFE EXPECTANCY AT BIRTH (YEARS)

81.1

MEDIAN AGE (YEARS)

45.0

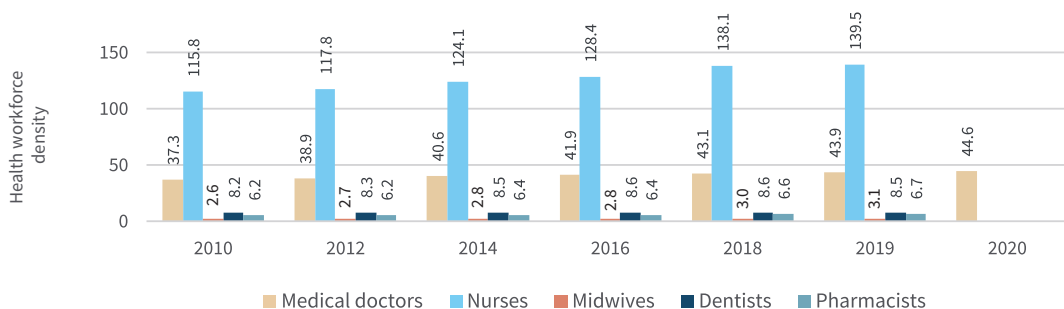
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

187.2

UHC SERVICE COVERAGE INDEX

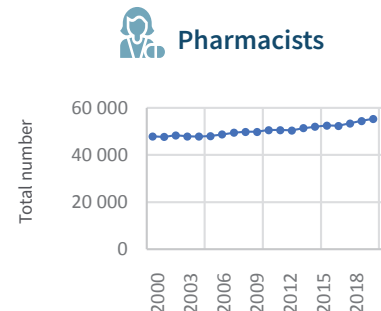
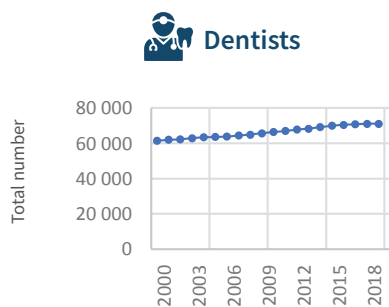
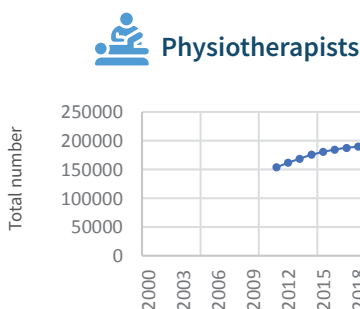
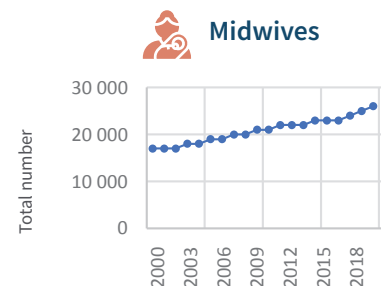
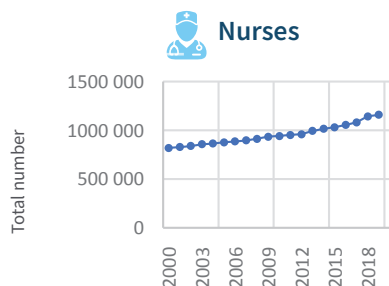
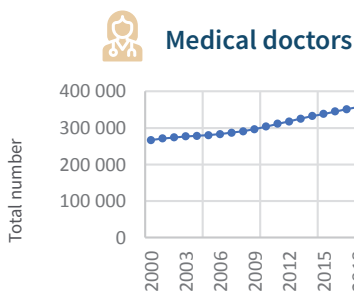
86

Health workforce density per 10 000 population

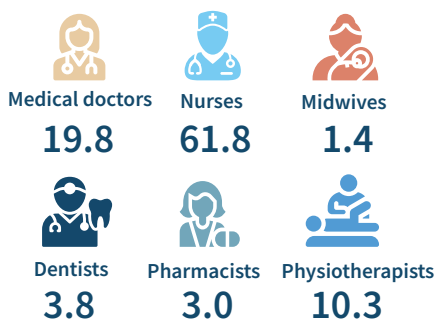


Health workforce availability

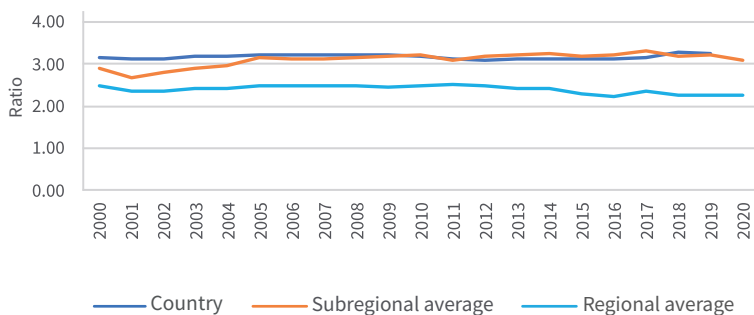
Health workforce trends (total number)



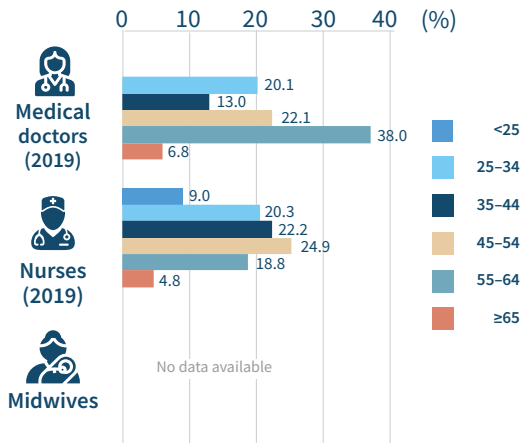
Composition by six professional categories covered in the report, percentage (latest year)



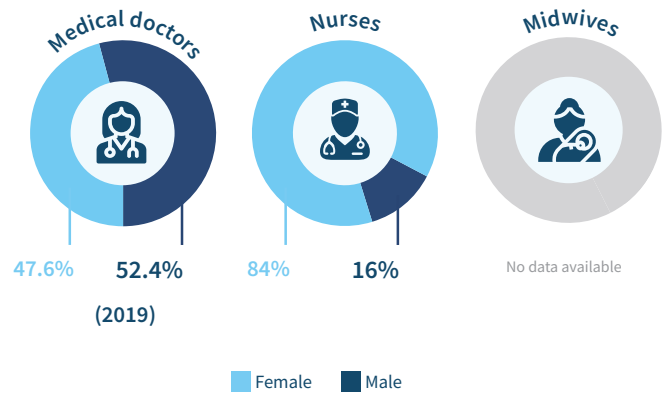
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

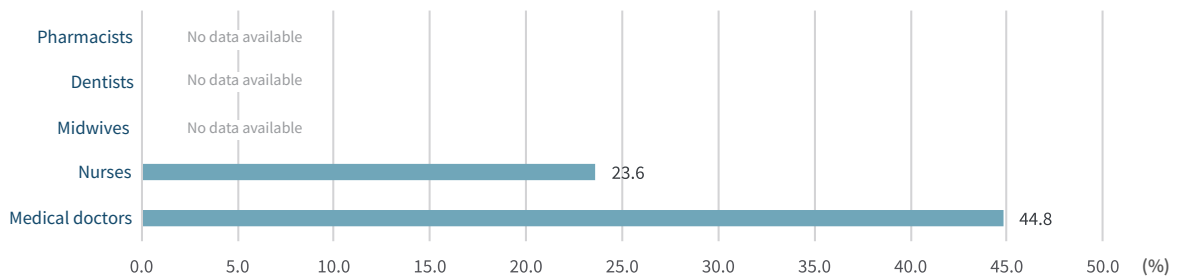


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



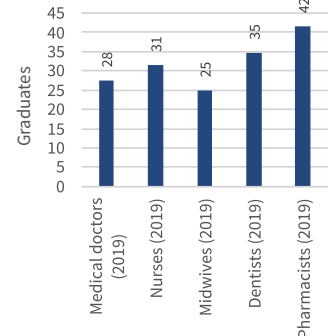
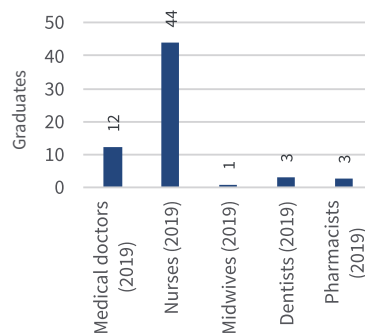
Professions

Annual graduates (total number)

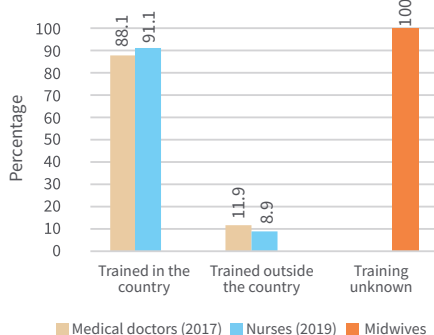
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

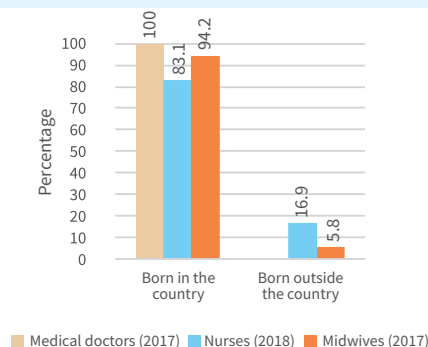
Medical doctors (2019)	10 234
Nurses (2019)	36 498
Midwives (2019)	648
Dentists (2019)	2463
Pharmacists (2019)	2304



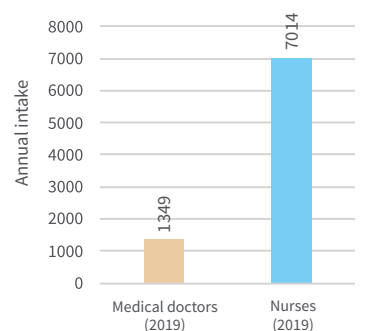
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Greece

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

10 512 232

LIFE EXPECTANCY AT BIRTH (YEARS)

80.9

MEDIAN AGE (YEARS)

44.4

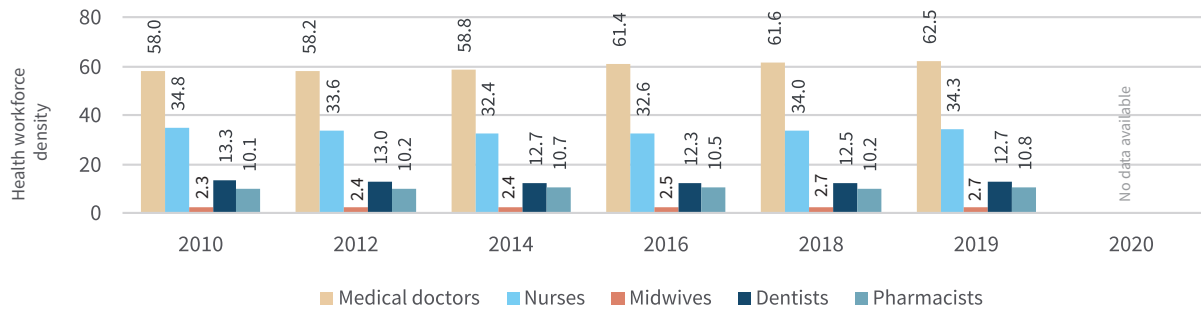
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

99.5

UHC SERVICE COVERAGE INDEX

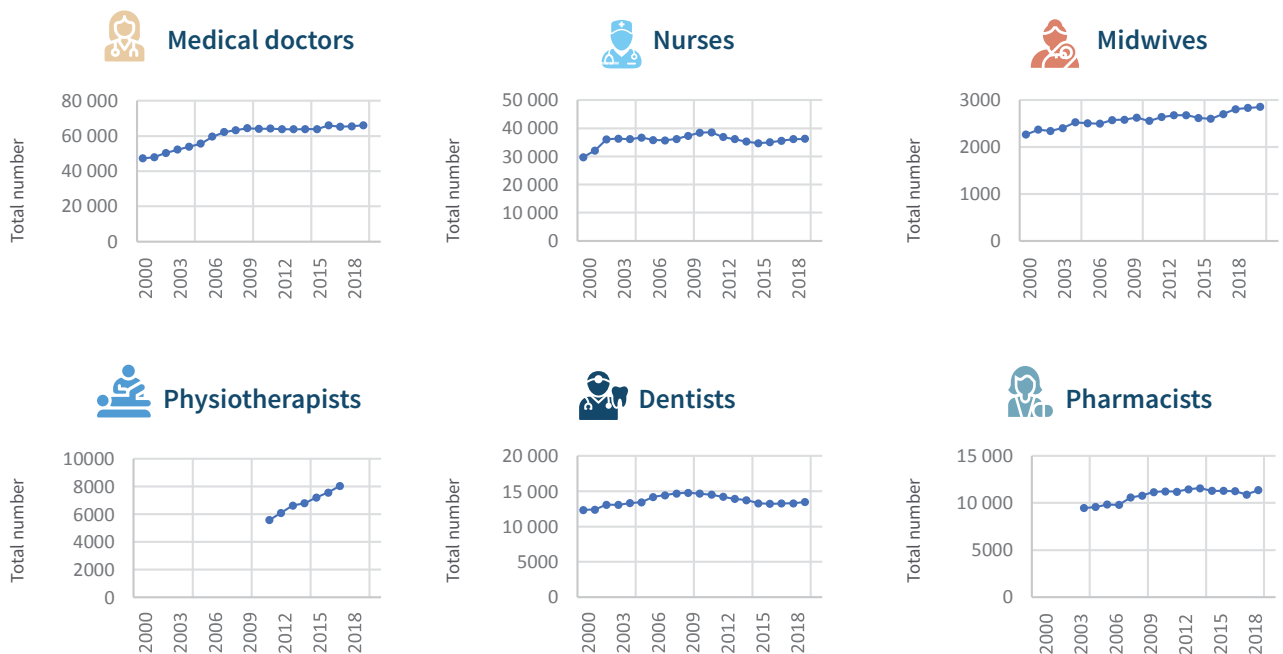
78

Health workforce density per 10 000 population

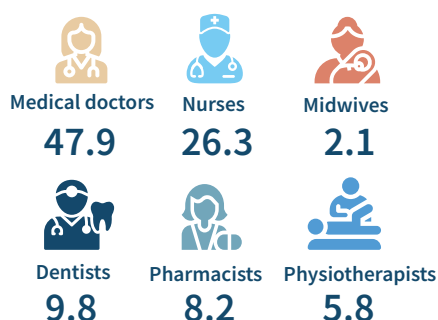


Health workforce availability

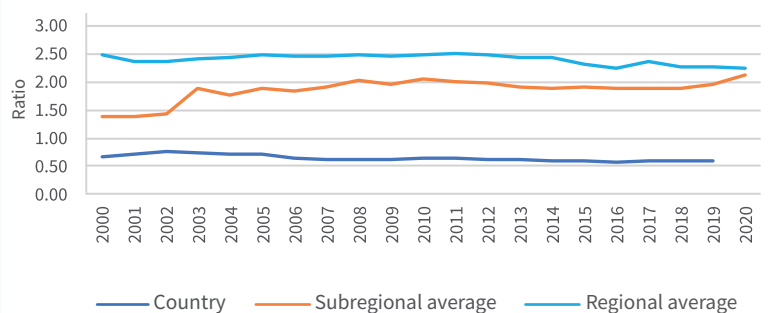
Health workforce trends (total number)



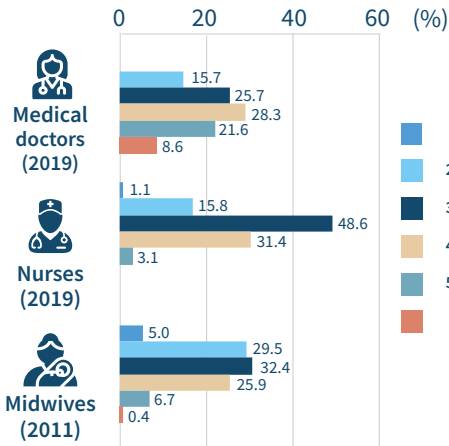
Composition by six professional categories covered in the report, percentage (latest year)



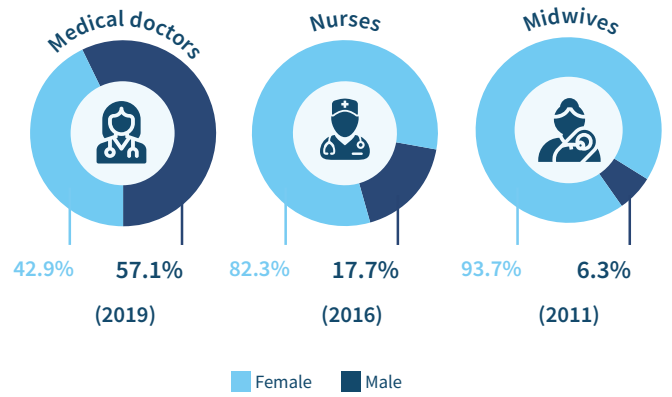
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

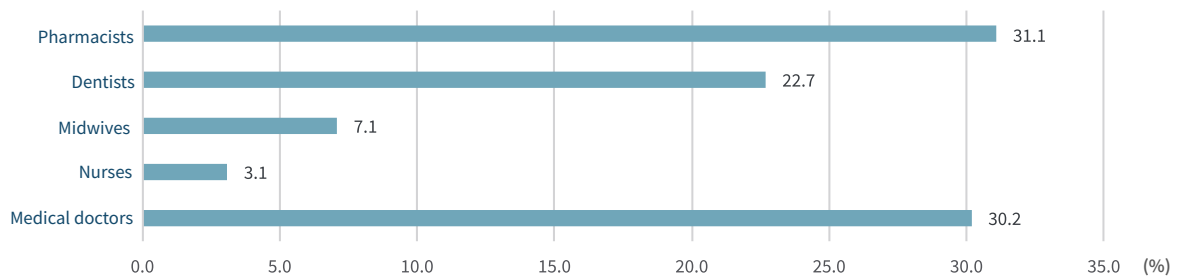


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



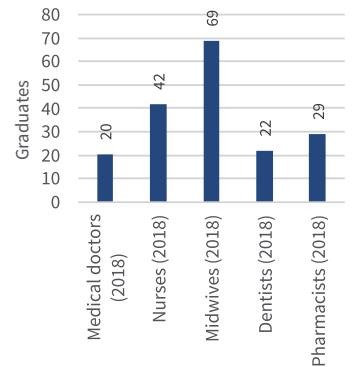
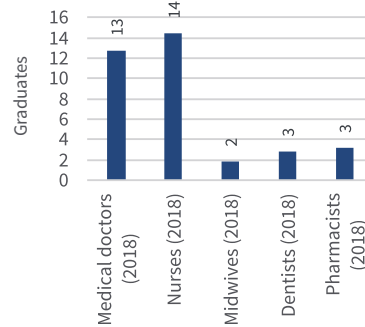
Professions

Annual graduates (total number)

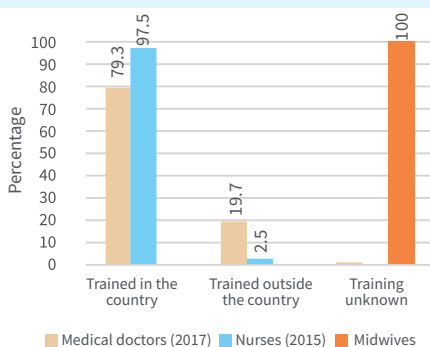
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

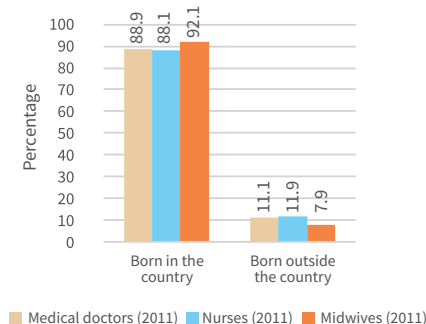
Medical doctors (2018)	1344
Nurses (2018)	1519
Midwives (2018)	196
Dentists (2018)	296
Pharmacists (2018)	330



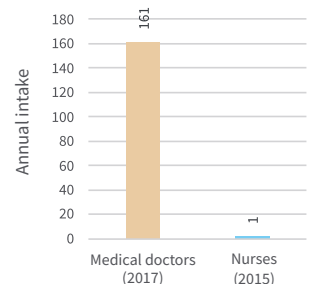
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Hungary

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

9 750 573

LIFE EXPECTANCY AT BIRTH (YEARS)

75.7

MEDIAN AGE (YEARS)

42.5

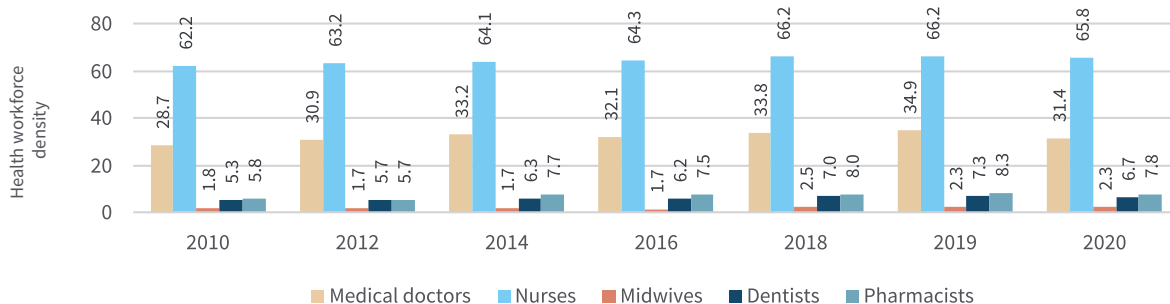
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

99.6

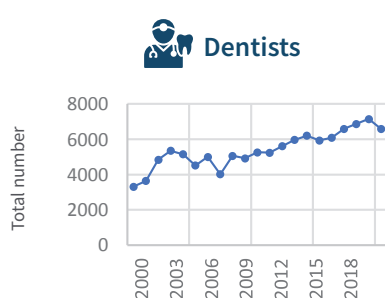
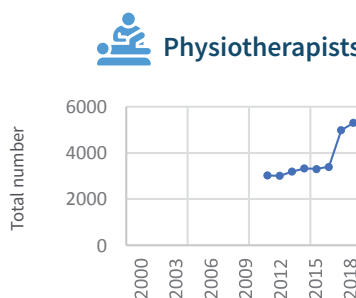
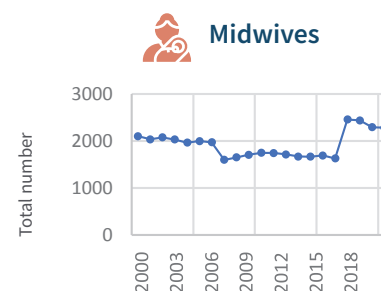
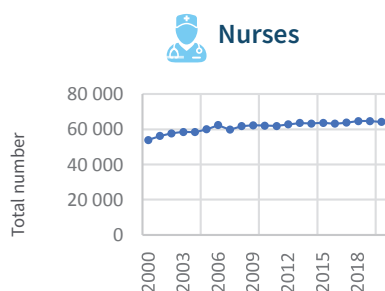
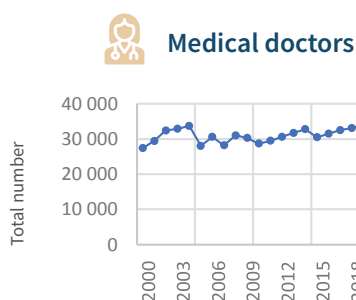
UHC SERVICE COVERAGE INDEX

73

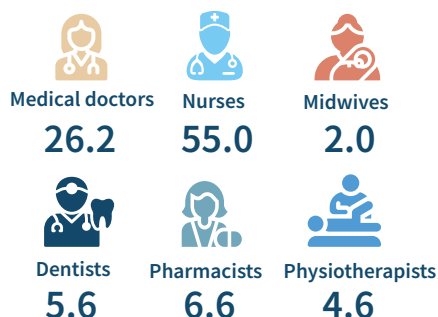
Health workforce density per 10 000 population



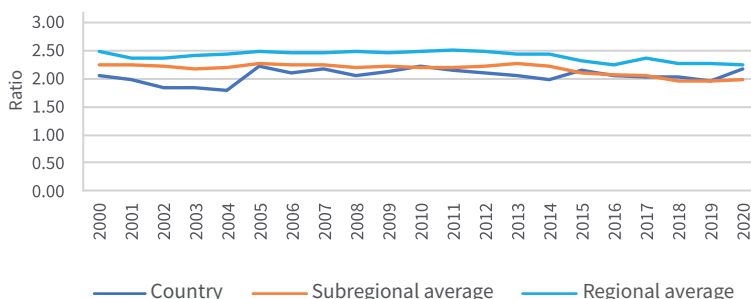
Health workforce trends (total number)



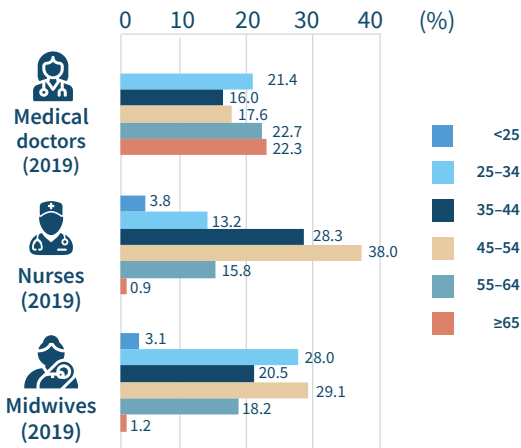
Composition by six professional categories covered in the report, percentage (latest year)



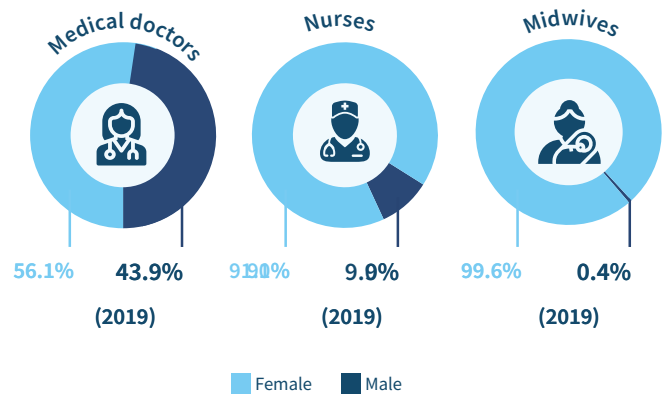
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

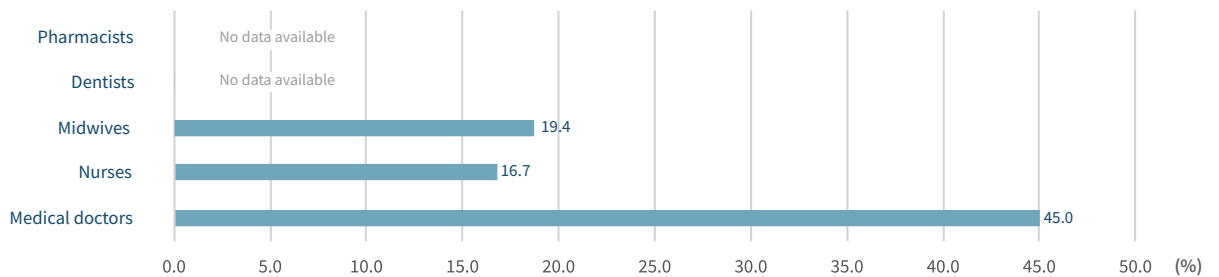


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



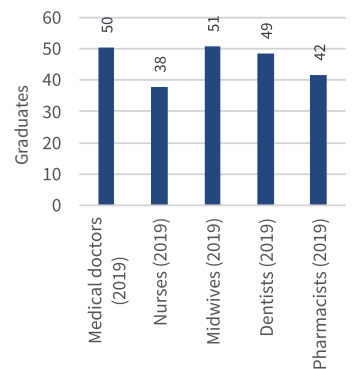
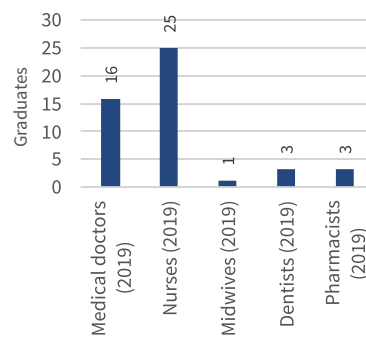
Professions

Annual graduates (total number)

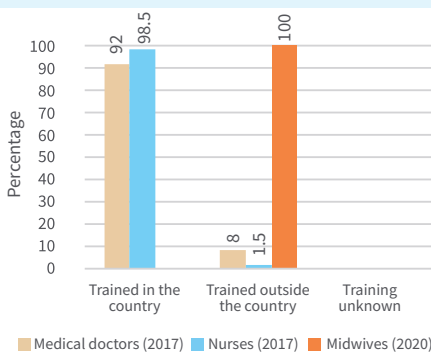
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

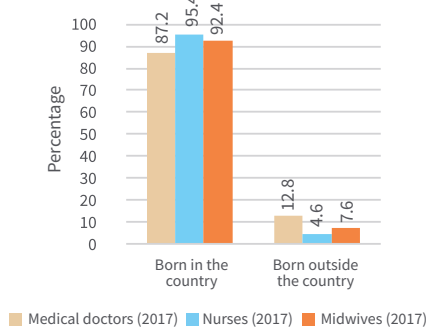
Medical doctors (2019)	1540
Nurses (2019)	2437
Midwives (2019)	116
Dentists (2019)	320
Pharmacists (2019)	318



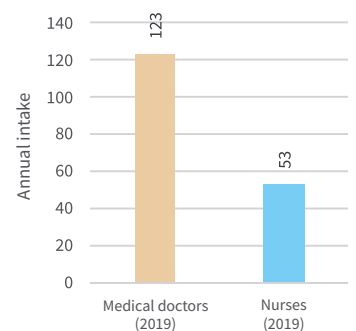
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



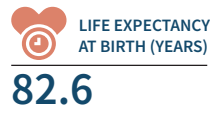
Health workforce domestic and international supply



Iceland

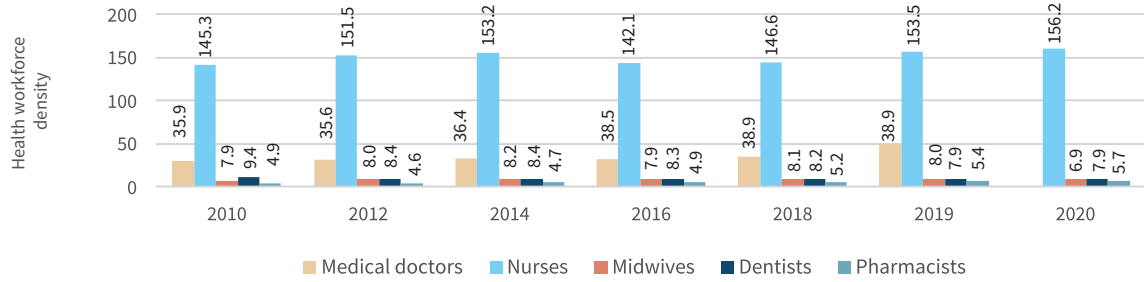
Human resources for health profile

See pages 82–83 for data sources and technical notes



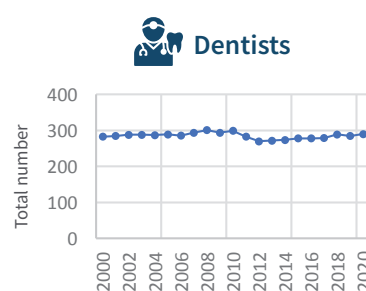
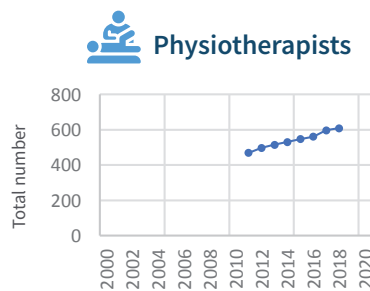
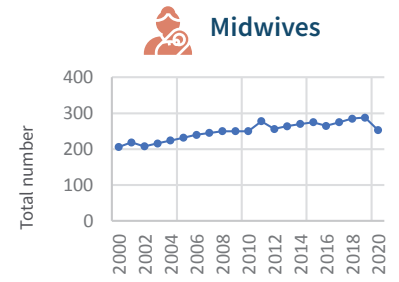
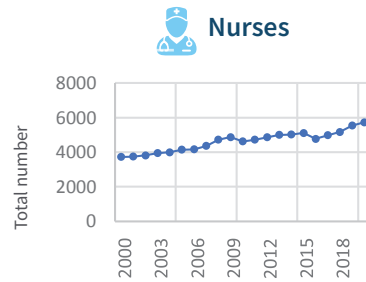
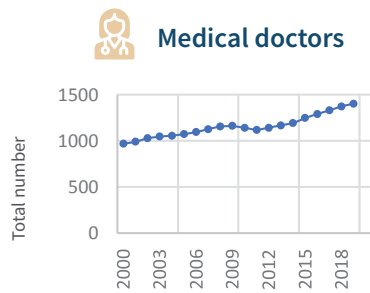
Country at a glance

Health workforce density per 10 000 population

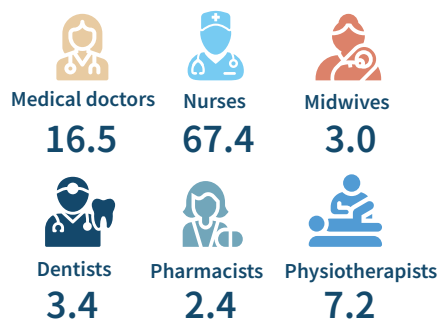


Health workforce availability

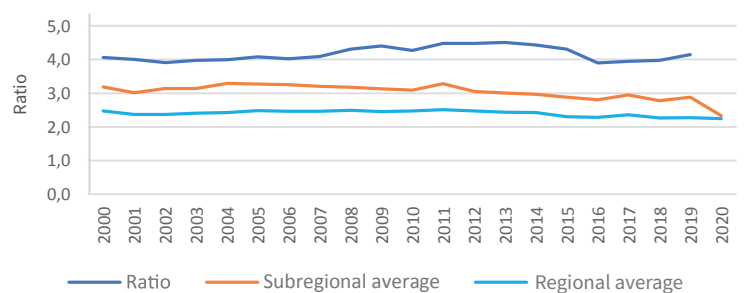
Health workforce trends (total number)



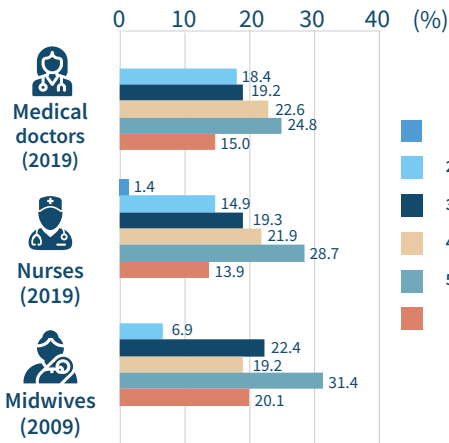
Composition by six professional categories covered in the report, percentage (latest year)



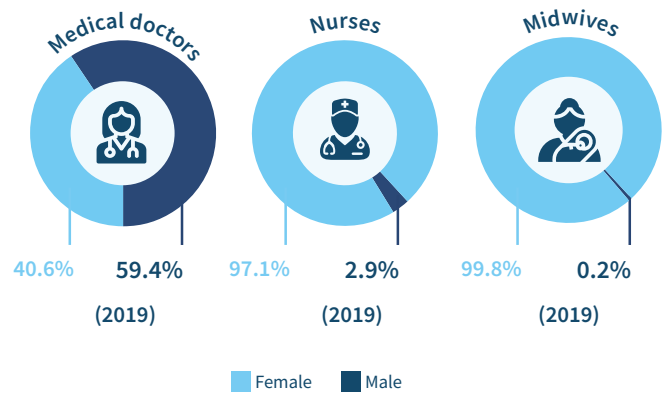
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

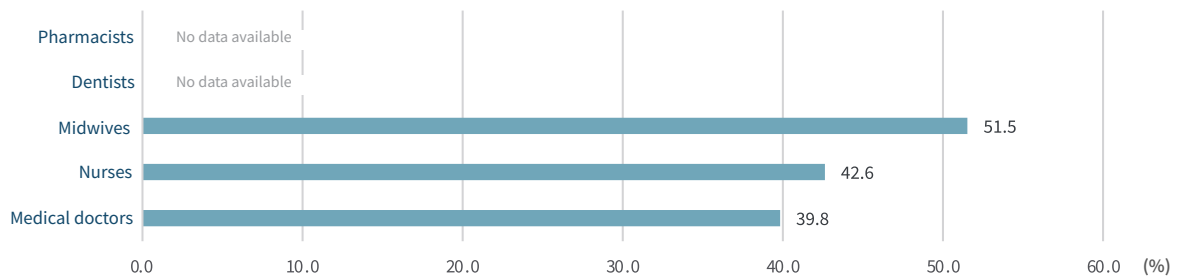


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



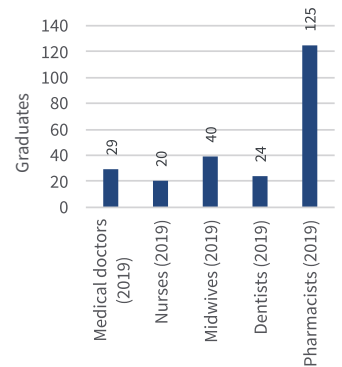
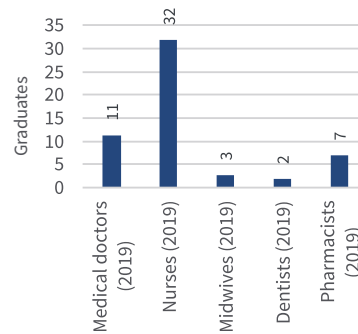
Professions

Annual graduates (total number)

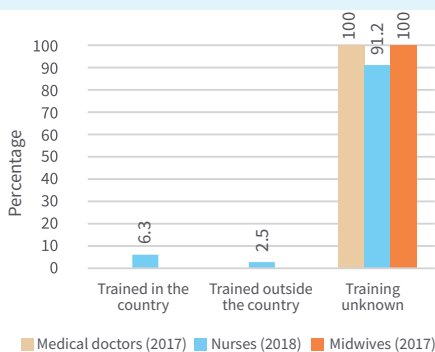
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

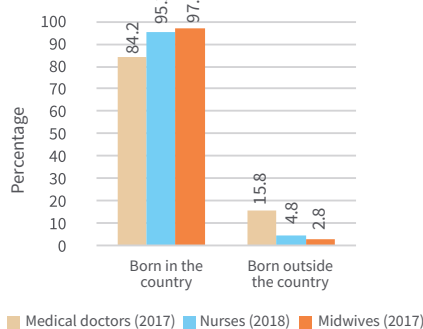
Medical doctors (2019)	41
Nurses (2019)	117
Midwives (2019)	10
Dentists (2019)	7
Pharmacists (2019)	26



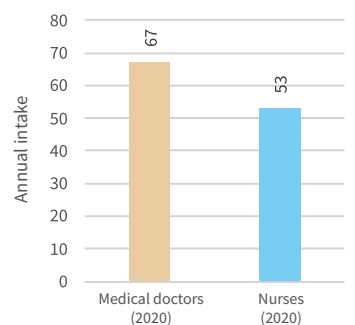
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Ireland

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

4 946 119

LIFE EXPECTANCY AT BIRTH (YEARS)

82.5

MEDIAN AGE (YEARS)

37.3

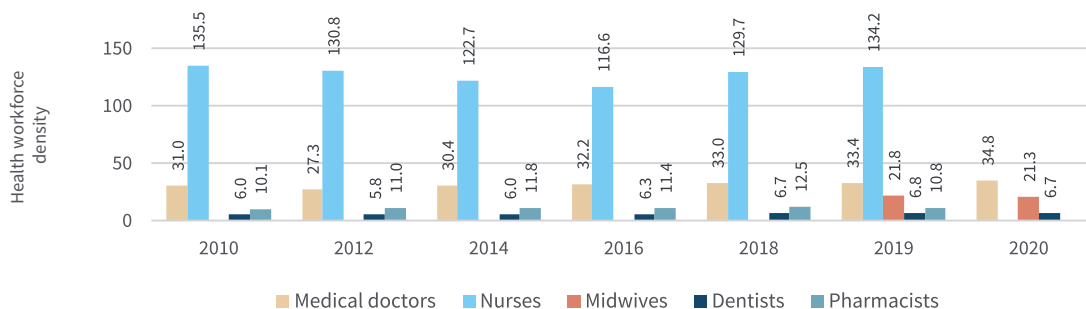
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

190.3

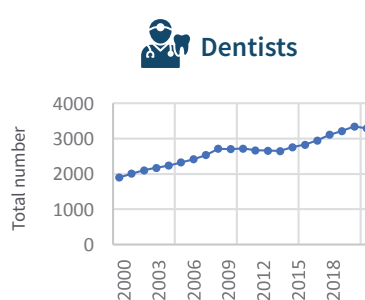
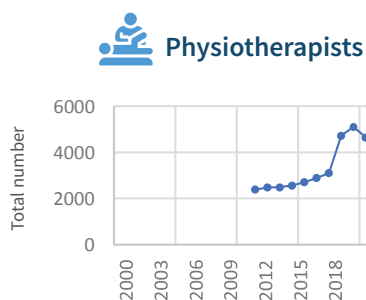
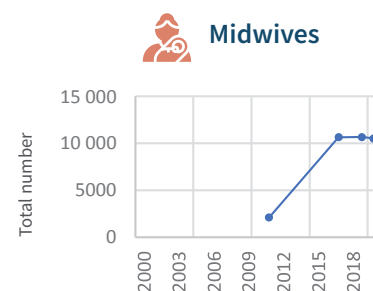
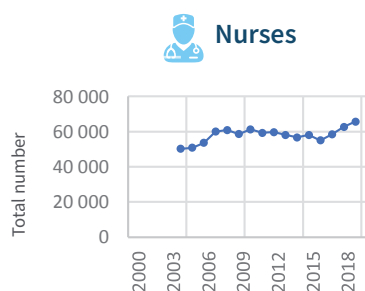
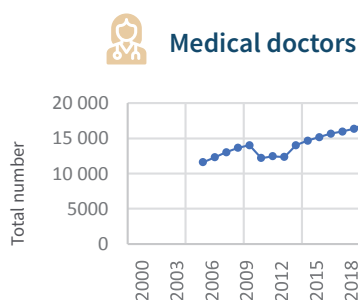
UHC SERVICE COVERAGE INDEX

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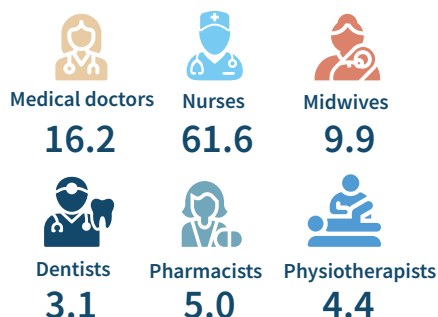
Health workforce density per 10 000 population



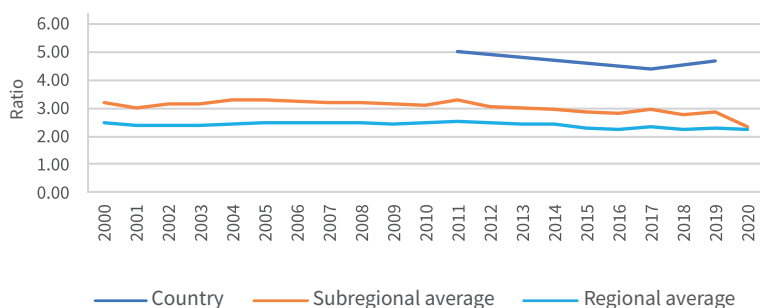
Health workforce trends (total number)



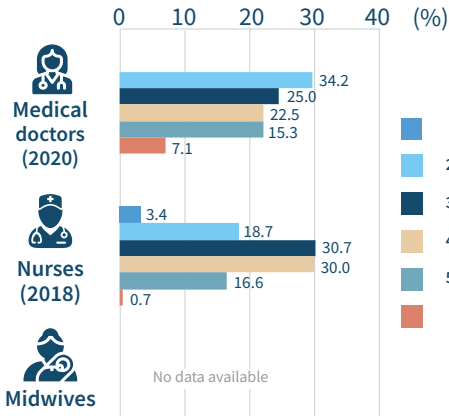
Composition by six professional categories covered in the report, percentage (latest year)



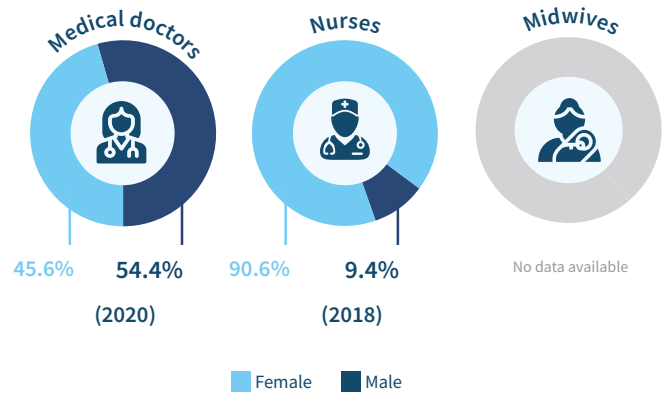
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

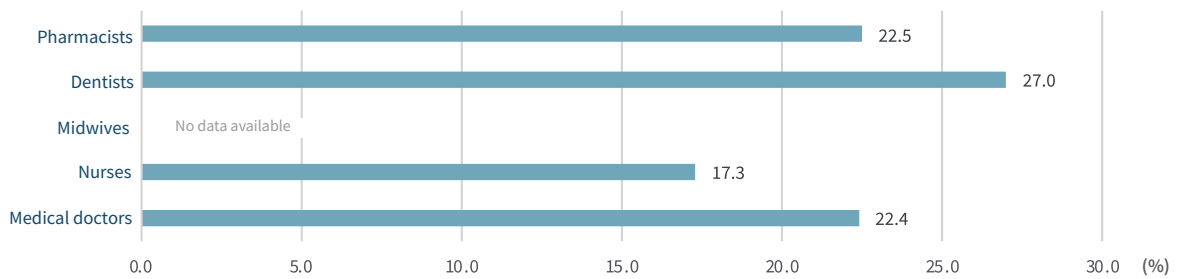


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



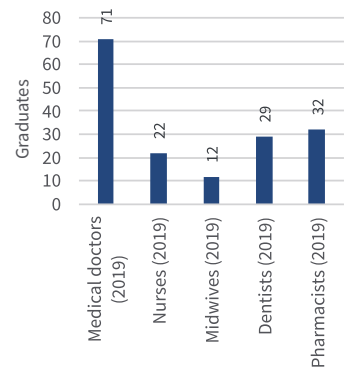
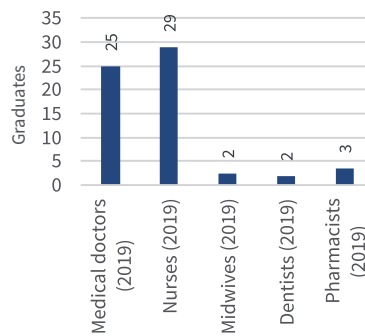
Professions

Annual graduates (total number)

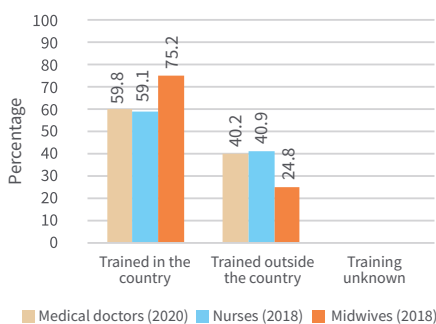
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

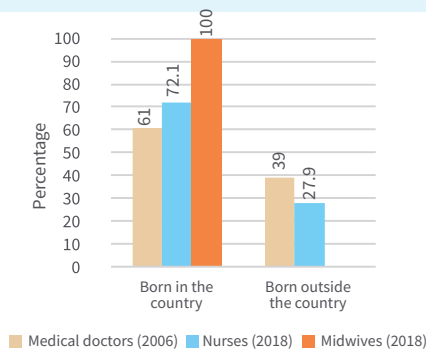
Medical doctors (2019)	1225
Nurses (2019)	1427
Midwives (2019)	121
Dentists (2019)	95
Pharmacists (2019)	170



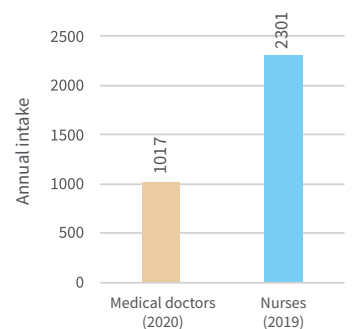
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Israel

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

8 757 489

LIFE EXPECTANCY AT BIRTH (YEARS)

82.4

MEDIAN AGE (YEARS)

29.0

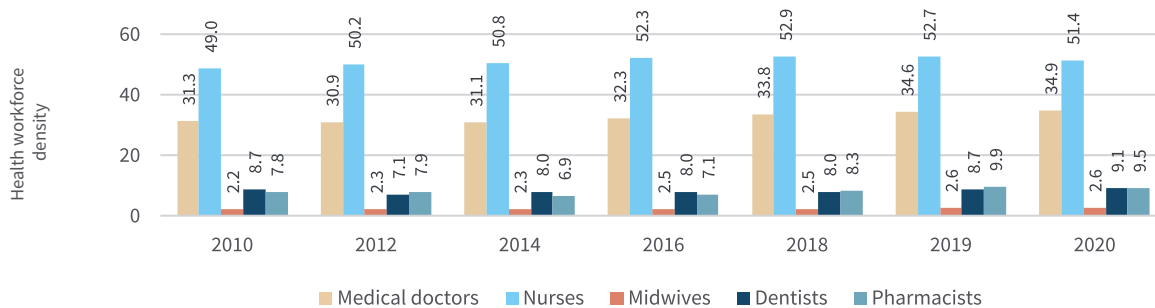
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

88.9

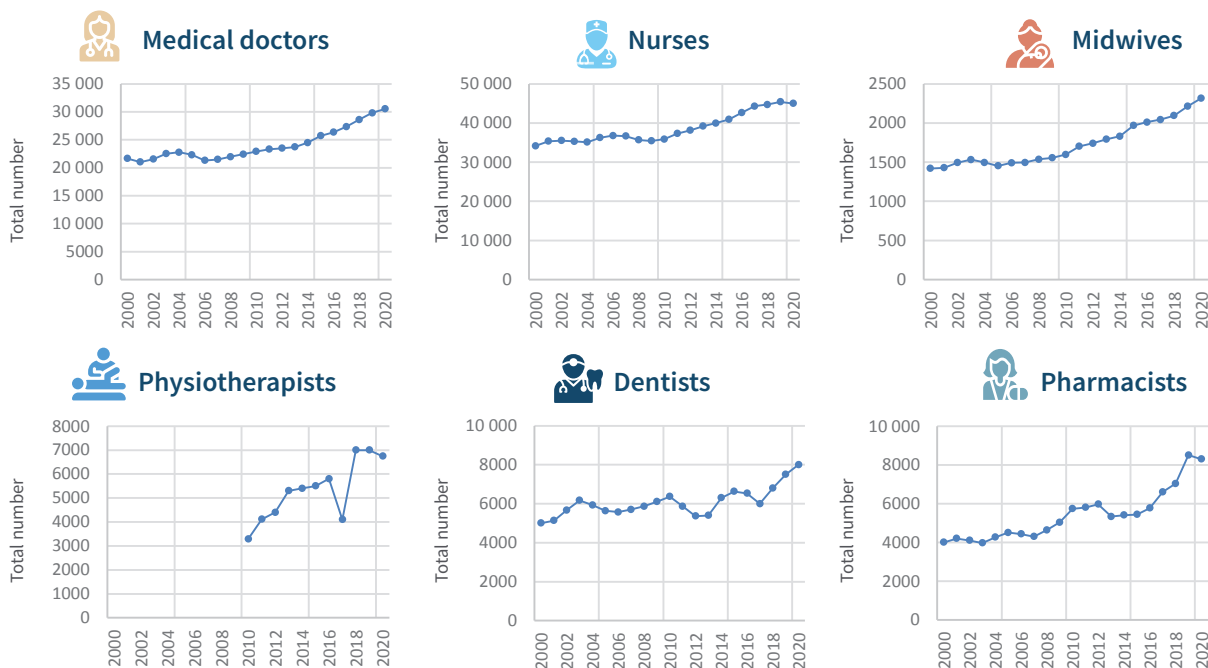
UHC SERVICE COVERAGE INDEX

84

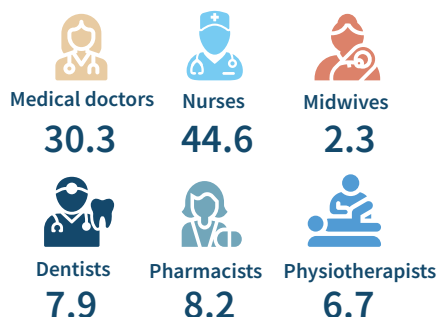
Health workforce density per 10 000 population



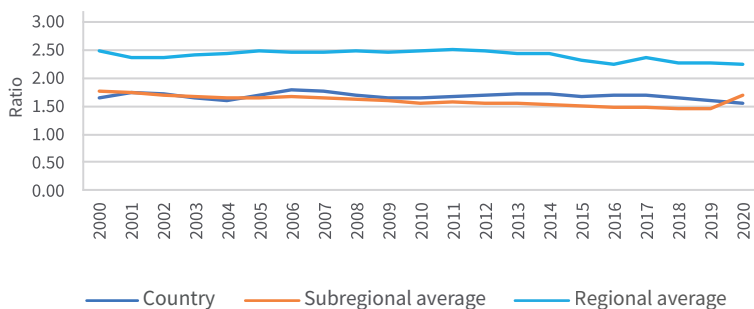
Health workforce trends (total number)



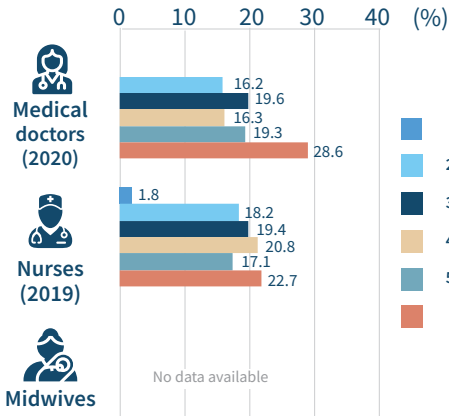
Composition by six professional categories covered in the report, percentage (latest year)



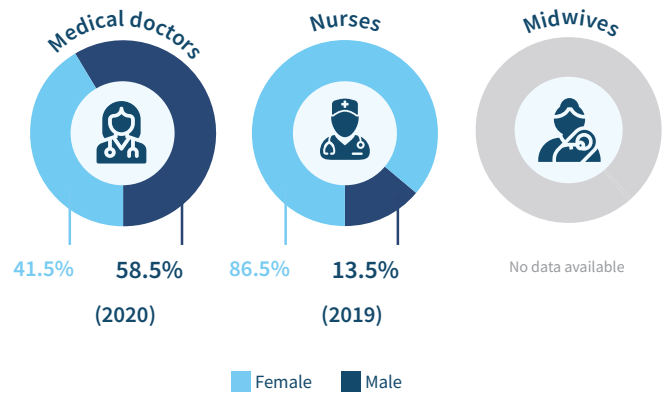
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

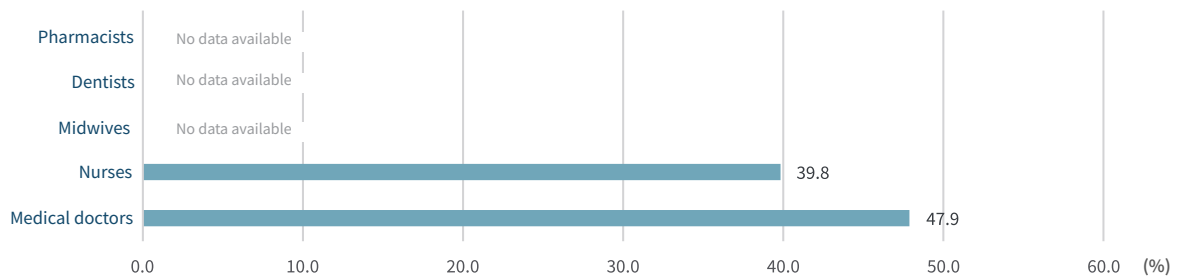


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



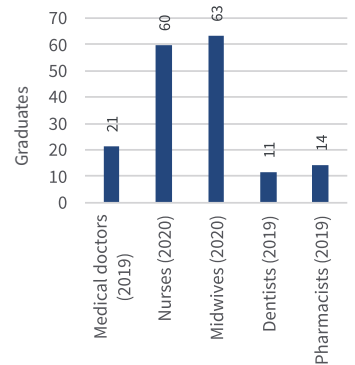
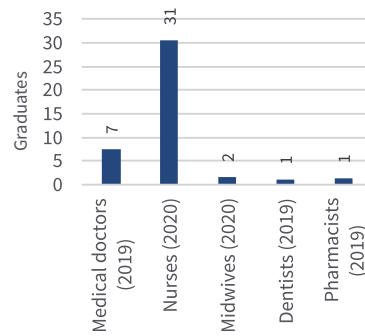
Professions

Annual graduates (total number)

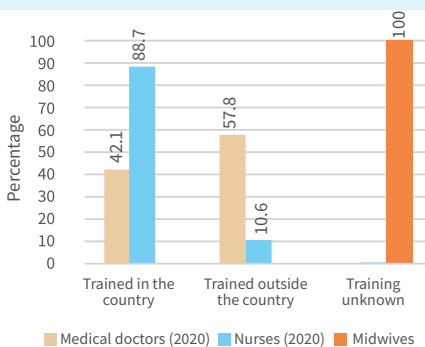
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

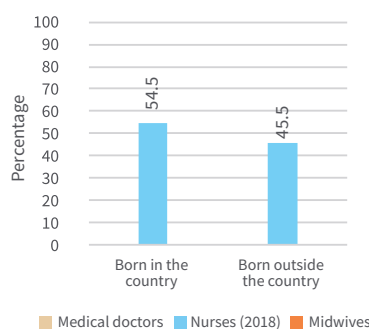
Medical doctors (2019)	654
Nurses (2020)	2680
Midwives (2020)	147
Dentists (2019)	91
Pharmacists (2019)	116



Country of training, percentage



Country of birth, percentage



Annual intake from other countries

NO DATA AVAILABLE



Health workforce domestic and international supply



Italy

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

59 500 579

LIFE EXPECTANCY AT BIRTH (YEARS)

82.4

MEDIAN AGE (YEARS)

46.4

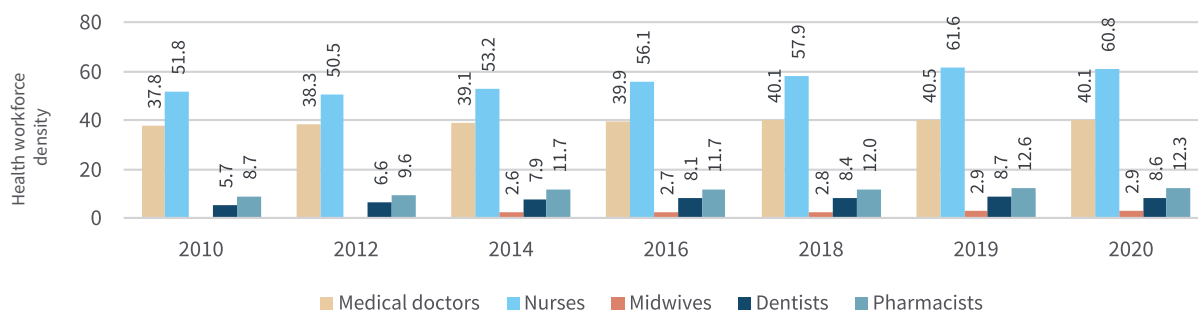
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

103.8

UHC SERVICE COVERAGE INDEX

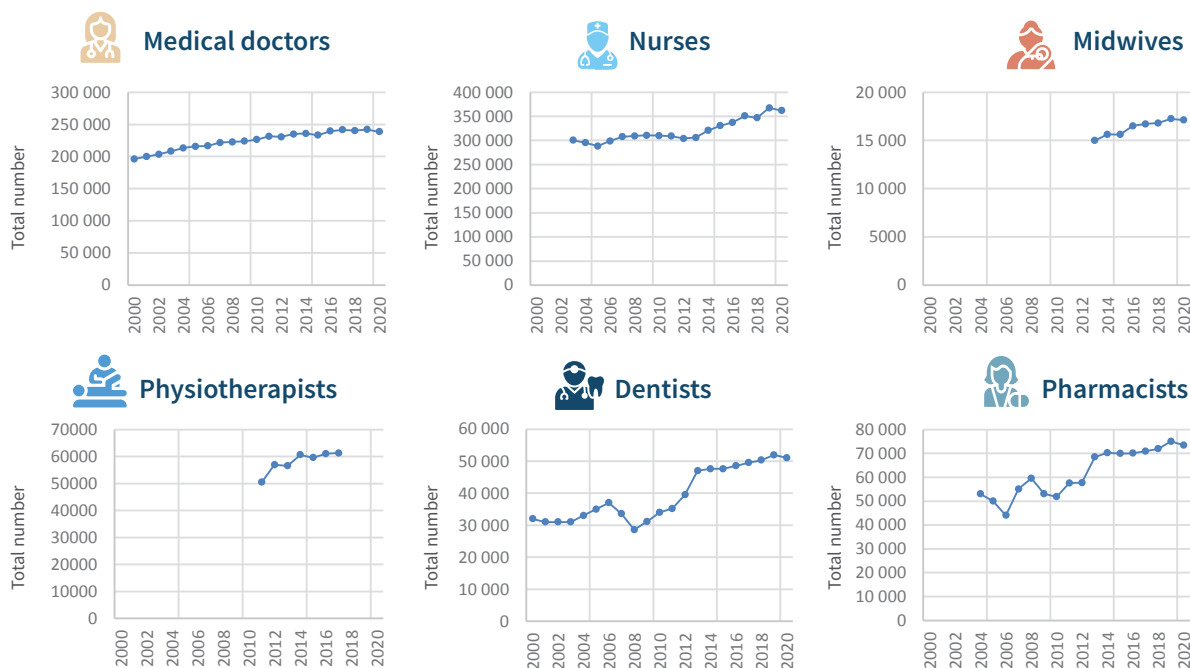
83

Health workforce density per 10 000 population

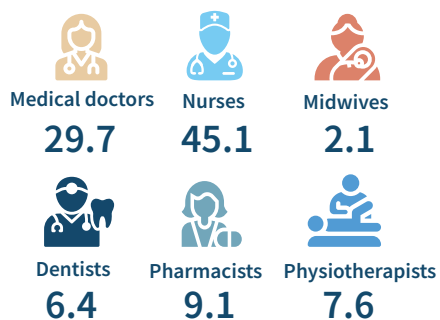


Health workforce availability

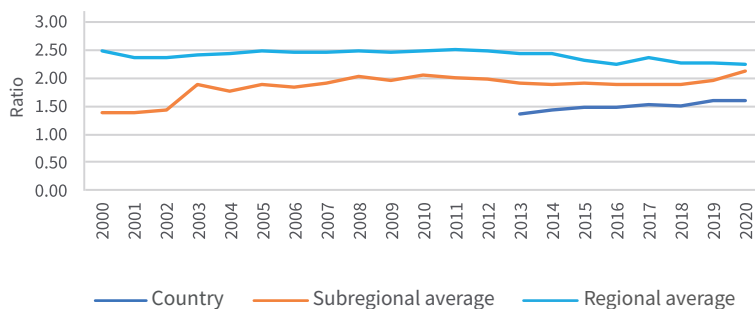
Health workforce trends (total number)



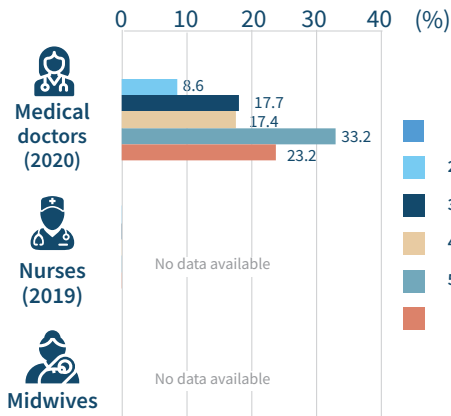
Composition by six professional categories covered in the report, percentage (latest year)



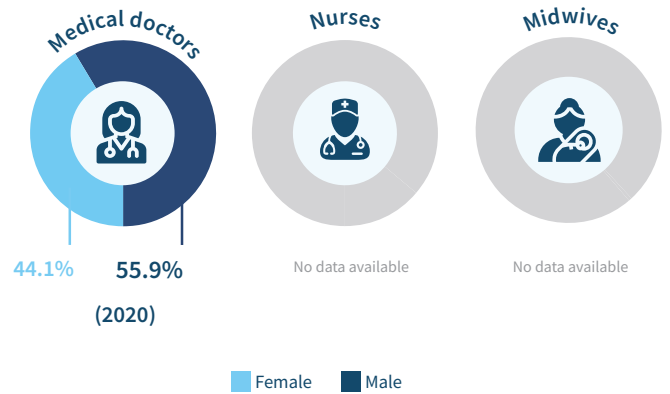
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

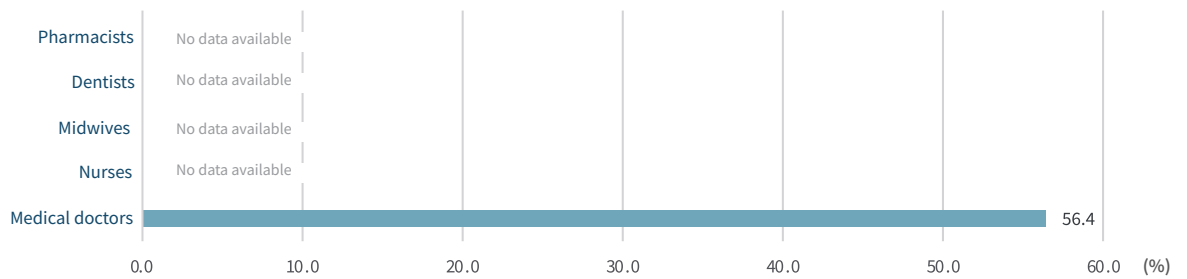


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



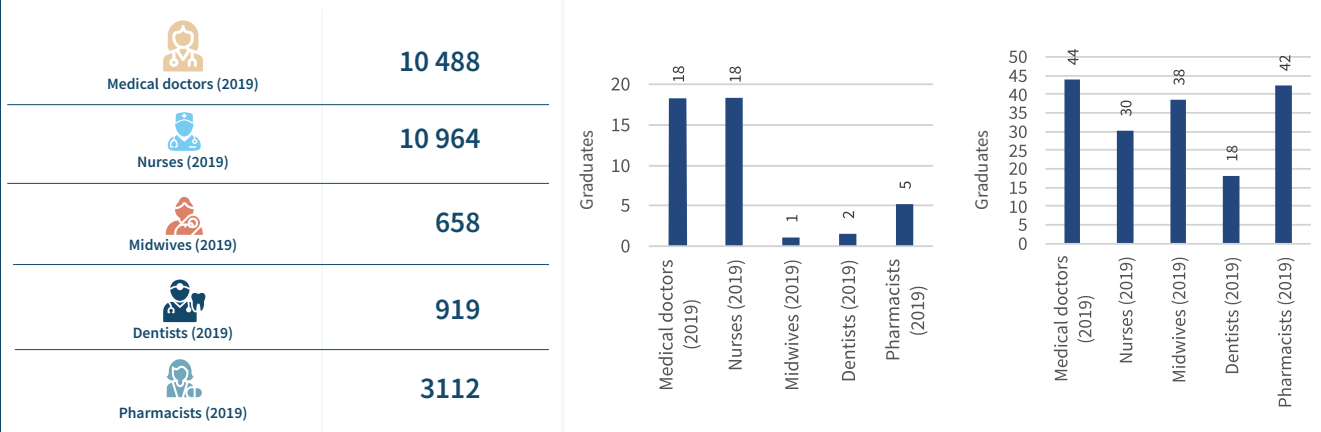
Health workforce domestic and international supply

Professions

Annual graduates (total number)

Graduates per year per 100 000 population

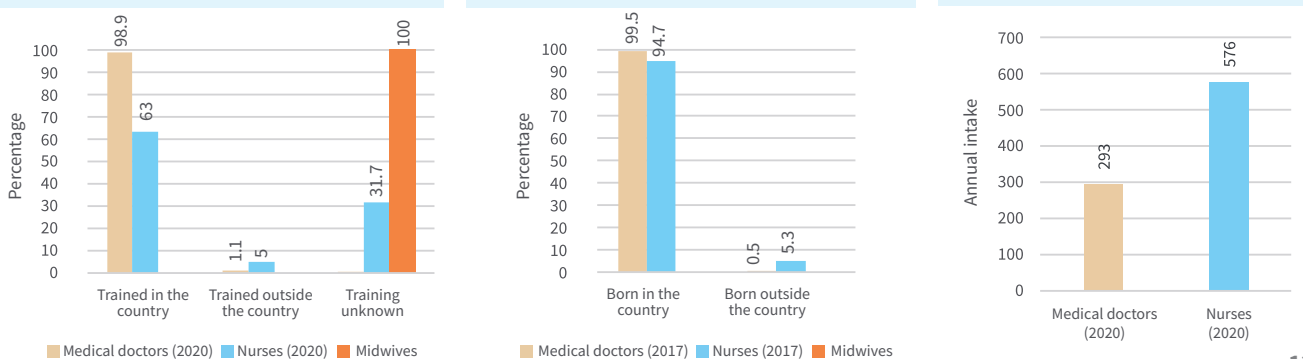
Graduates per year per 1000 practitioners



Country of training, percentage

Country of birth, percentage

Annual intake from other countries





Kazakhstan

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
18 979 243

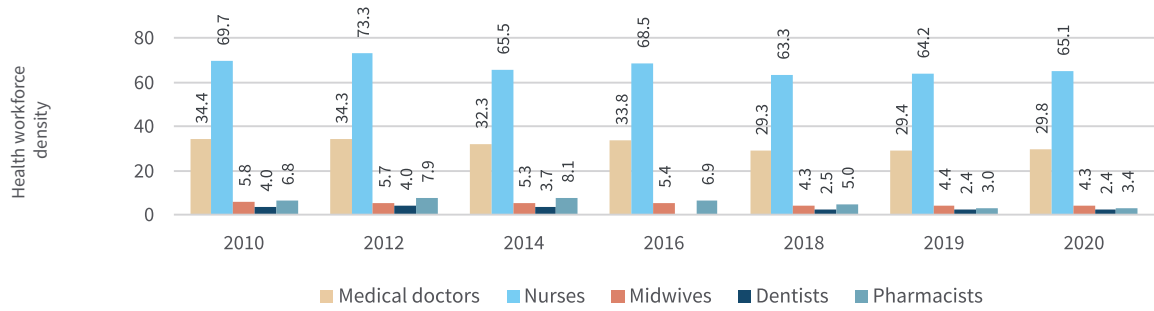
LIFE EXPECTANCY AT BIRTH (YEARS)
70.0

MEDIAN AGE (YEARS)
29.5

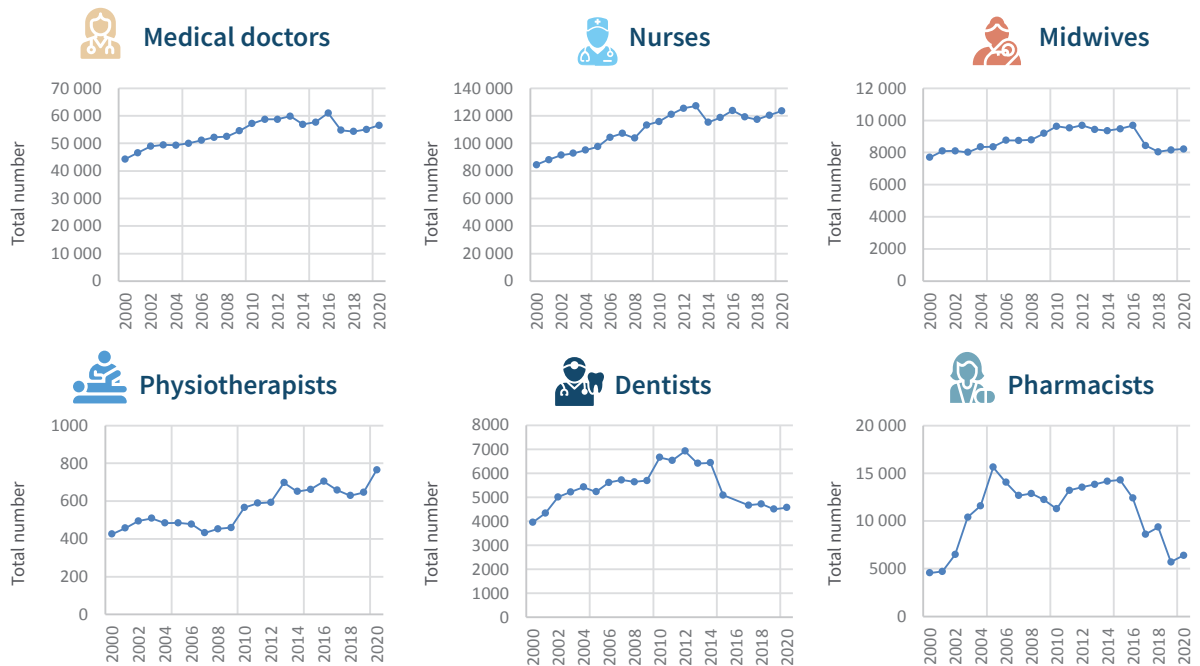
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
99.2

UHC SERVICE COVERAGE INDEX
76

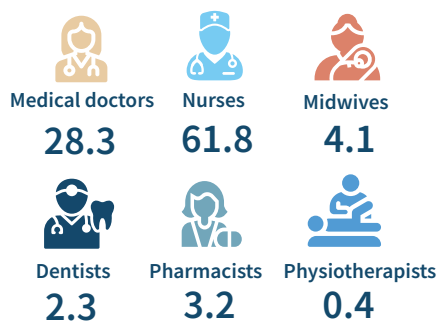
Health workforce density per 10 000 population



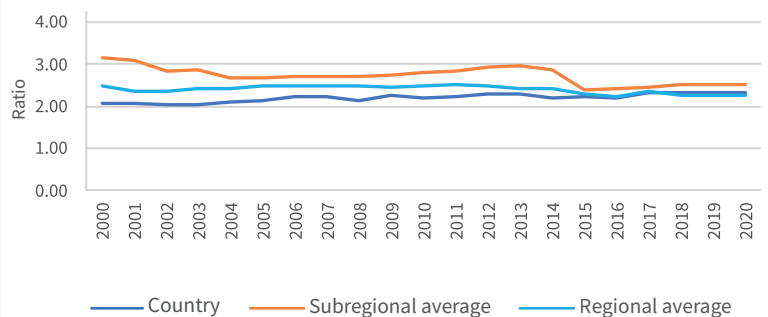
Health workforce trends (total number)



Composition by six professional categories covered in the report, percentage (latest year)



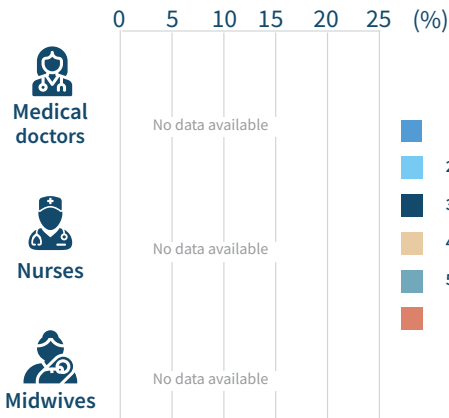
Ratio of nurses and midwives to medical doctors



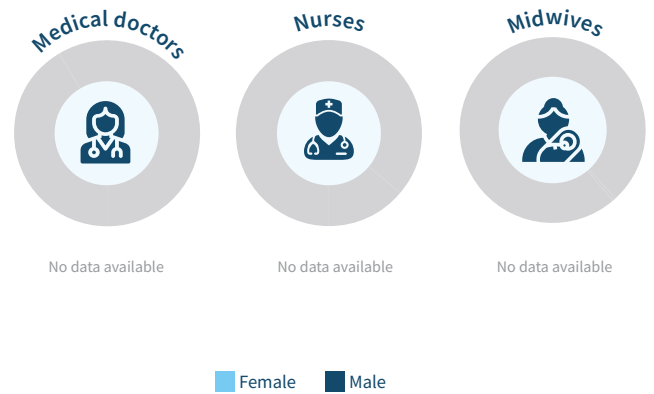
Health workforce availability



Health workforce distribution by age group, percentage

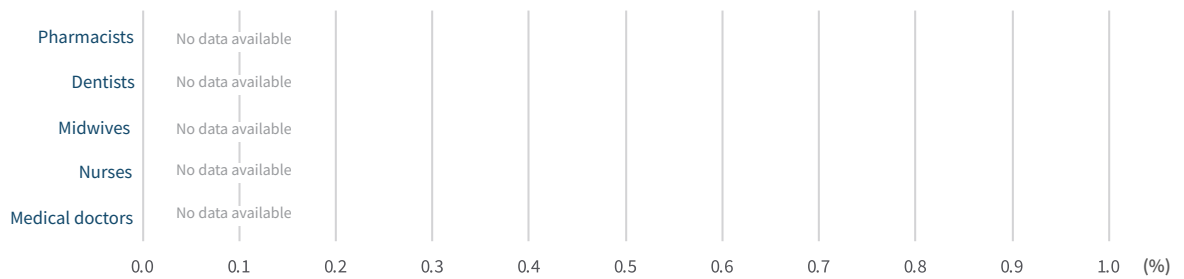


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2020)

7909

Nurses (2020)

6662

Midwives (2020)

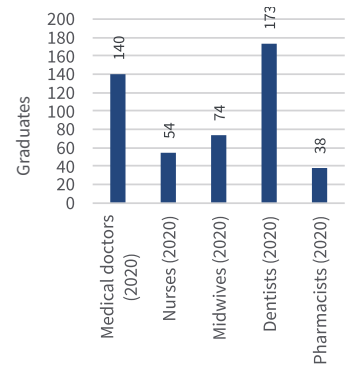
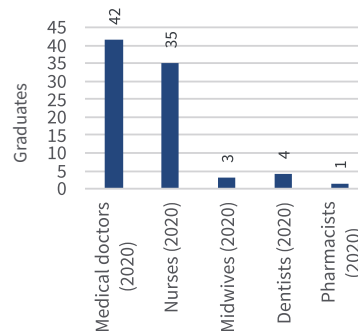
605

Dentists (2020)

791

Pharmacists (2020)

242



Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE



Health workforce domestic and international supply



Kyrgyzstan

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
6 424 874

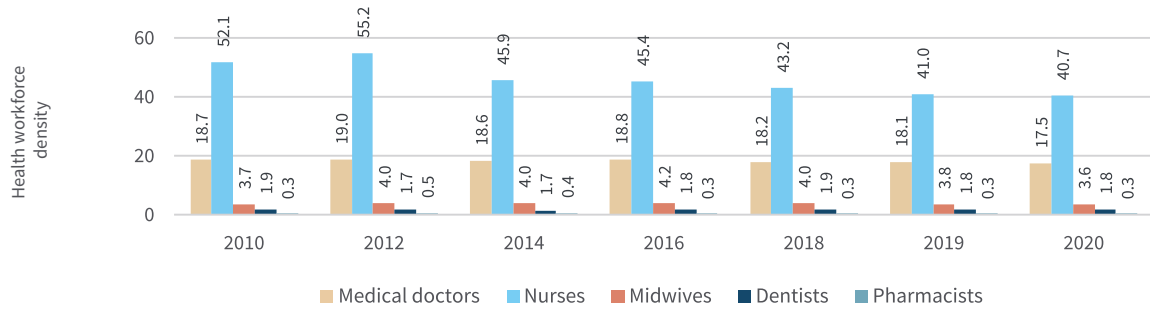
LIFE EXPECTANCY AT BIRTH (YEARS)
69.6

MEDIAN AGE (YEARS)
23.6

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
61.8

UHC SERVICE COVERAGE INDEX
70

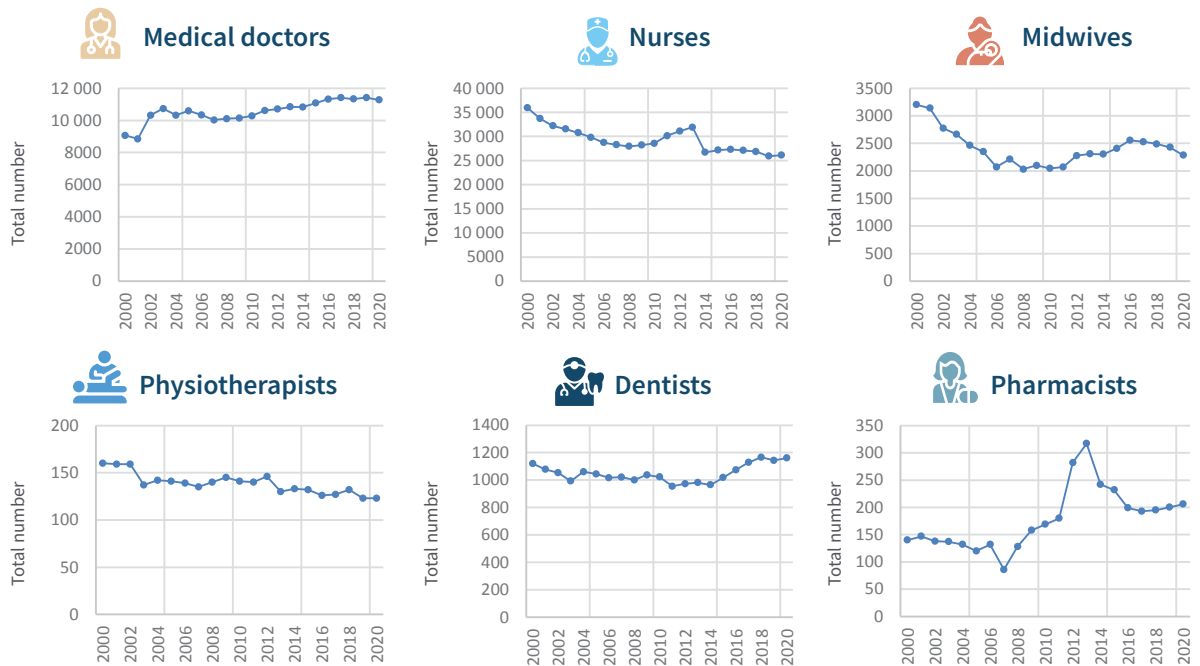
Health workforce density per 10 000 population



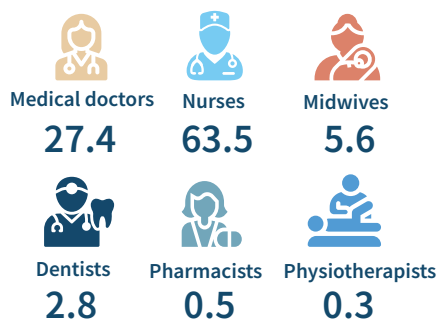
Health workforce availability



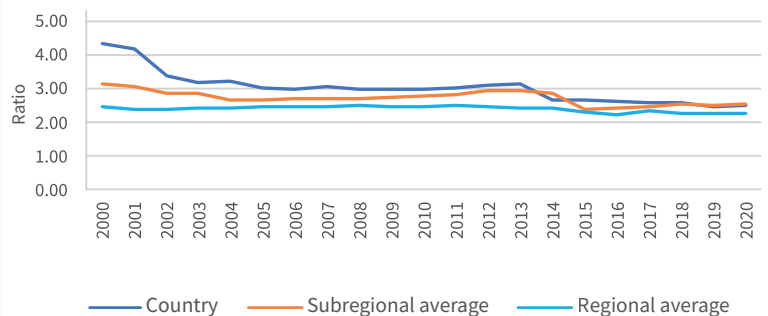
Health workforce trends (total number)



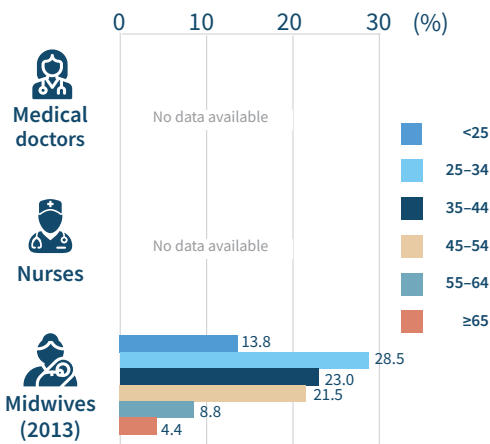
Composition by six professional categories covered in the report, percentage (latest year)



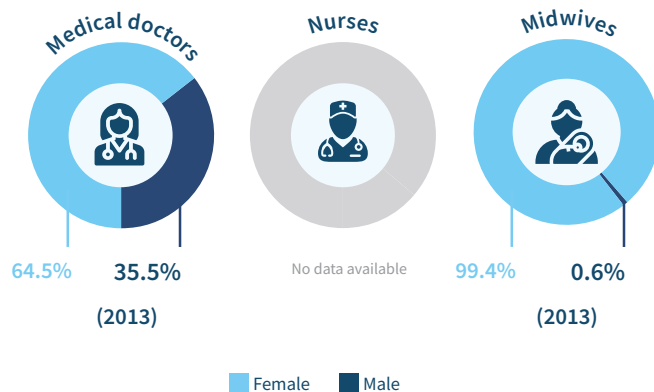
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

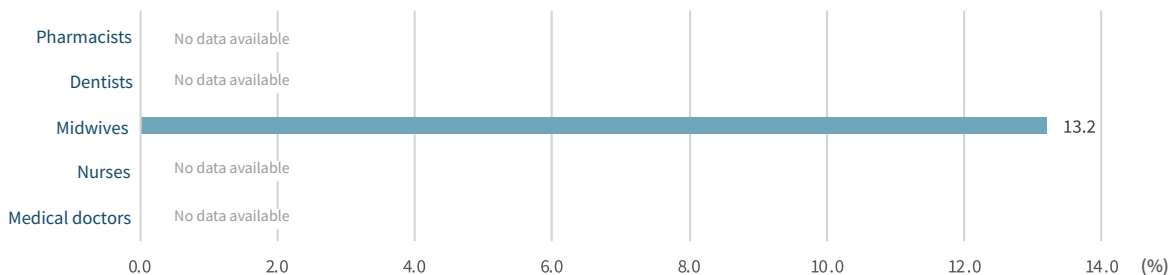


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

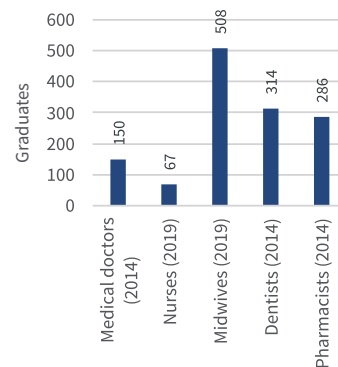
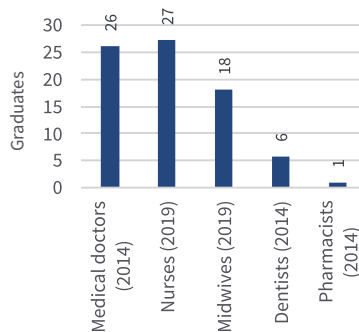
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2014)	1687
Nurses (2019)	1753
Midwives (2019)	1162
Dentists (2014)	364
Pharmacists (2014)	59



Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE



Latvia

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
1 897 052

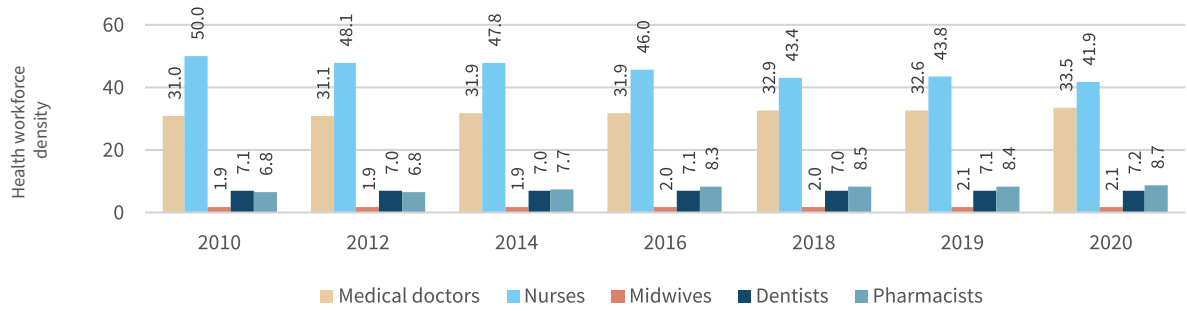
LIFE EXPECTANCY AT BIRTH (YEARS)
75.5

MEDIAN AGE (YEARS)
43.4

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
77.5

UHC SERVICE COVERAGE INDEX
72

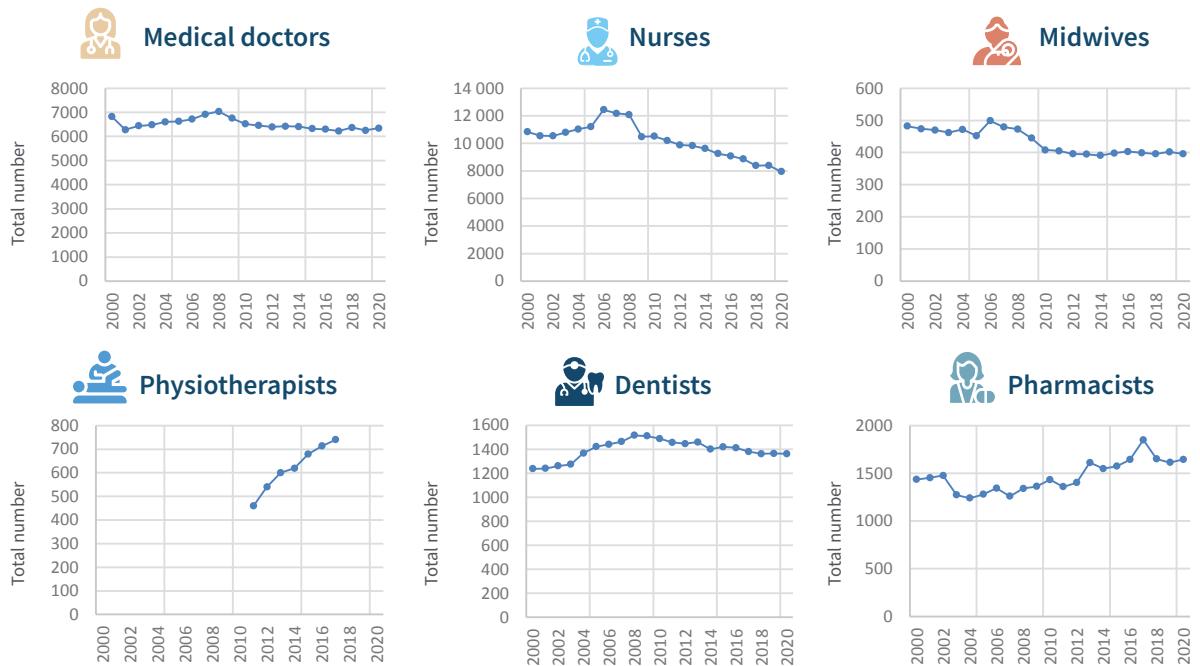
Health workforce density per 10 000 population



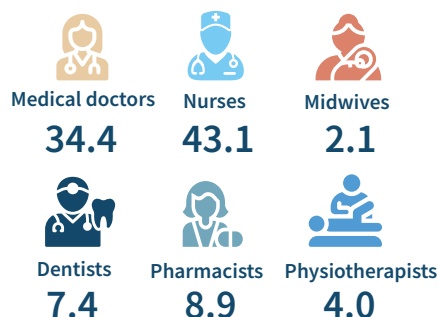
Health workforce availability



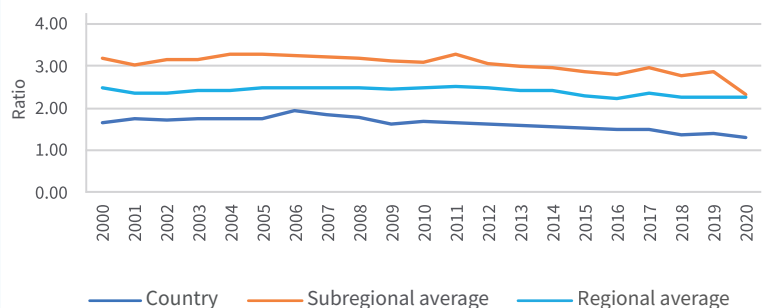
Health workforce trends (total number)



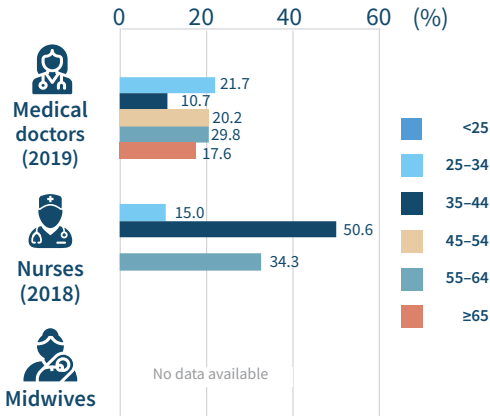
Composition by six professional categories covered in the report, percentage (latest year)



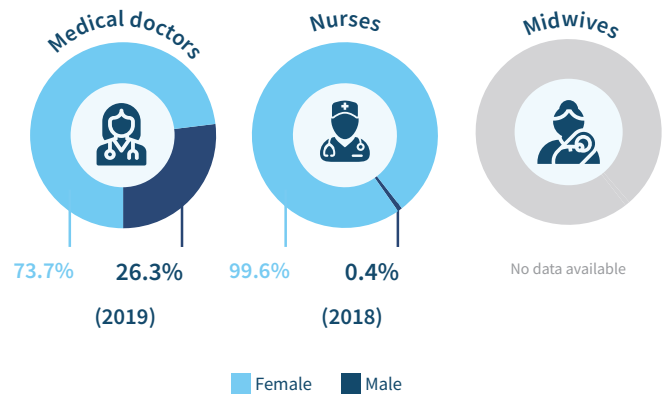
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

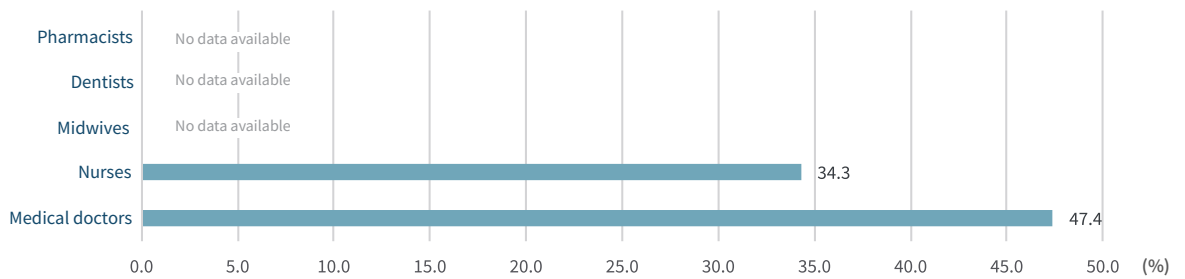


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

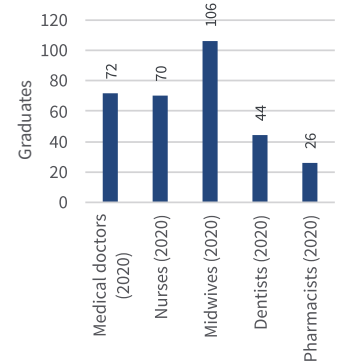
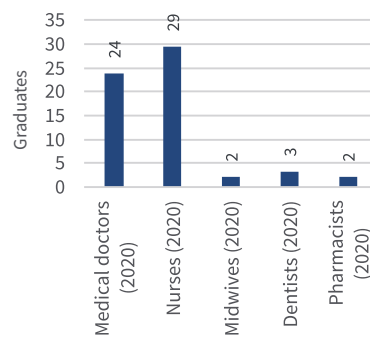
Professions

Annual graduates (total number)

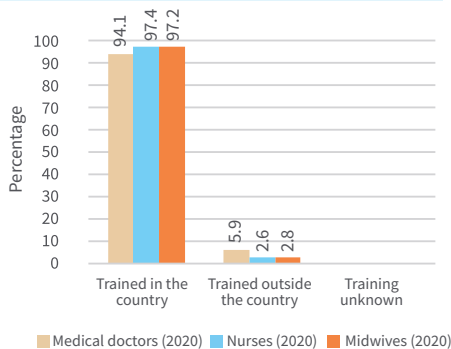
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2020)	454
Nurses (2020)	557
Midwives (2020)	42
Dentists (2020)	60
Pharmacists (2020)	43



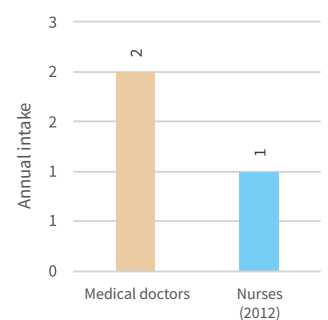
Country of training, percentage



Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries





Lithuania

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
2 820 267

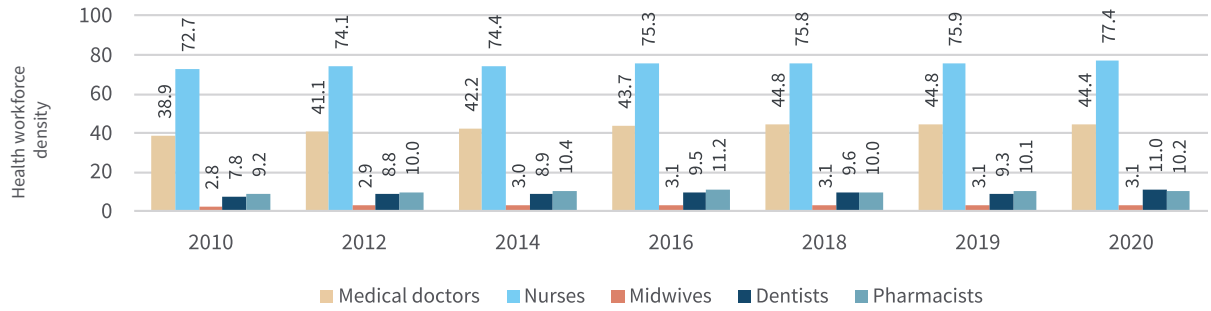
LIFE EXPECTANCY AT BIRTH (YEARS)
75.1

MEDIAN AGE (YEARS)
43.5

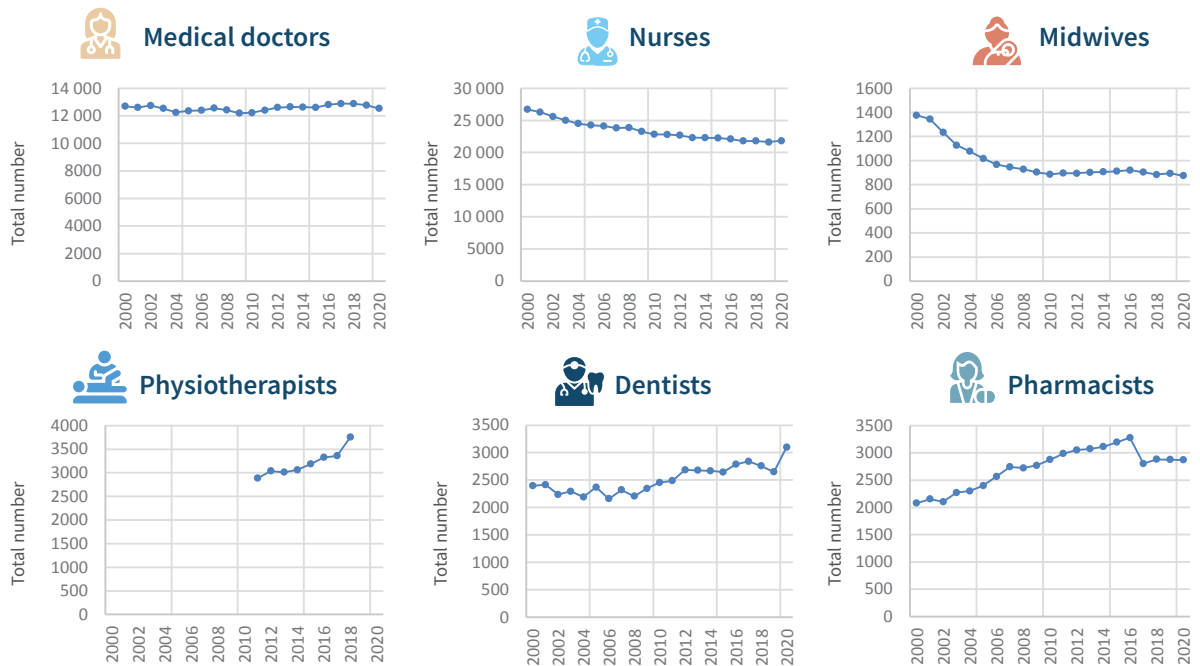
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
124.9

UHC SERVICE COVERAGE INDEX
70

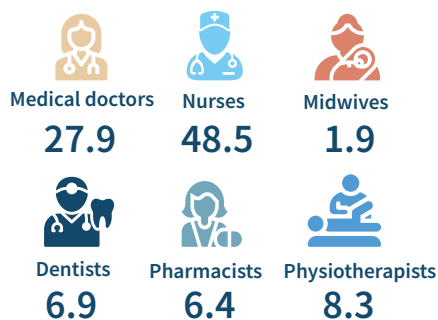
Health workforce density per 10 000 population



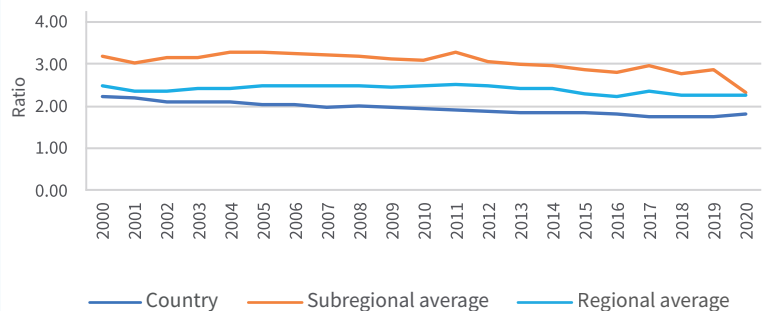
Health workforce trends (total number)



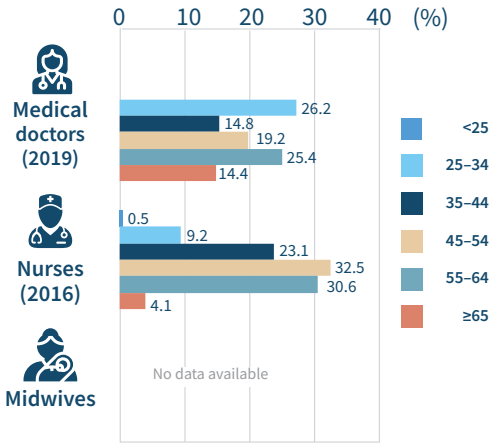
Composition by six professional categories covered in the report, percentage (latest year)



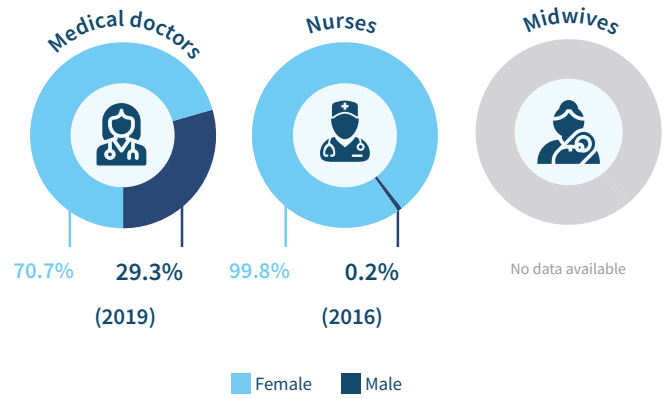
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

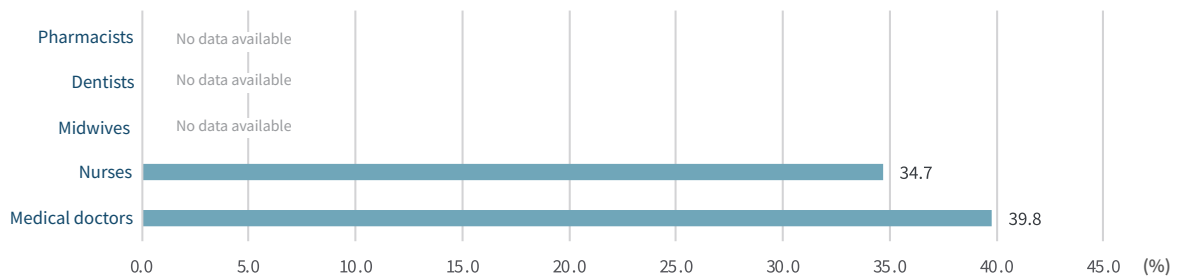


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



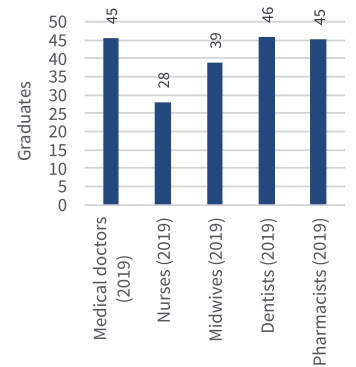
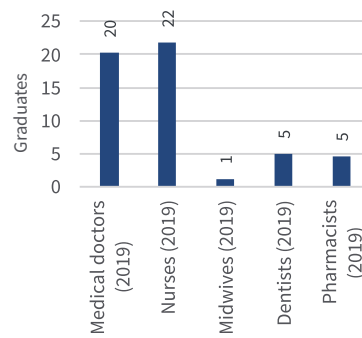
Professions

Annual graduates (total number)

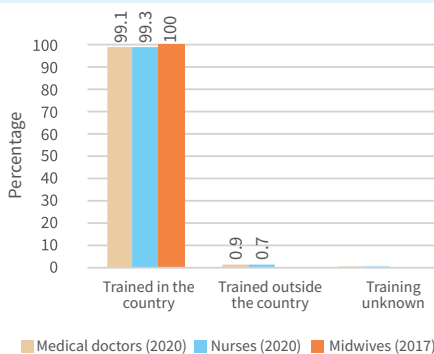
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

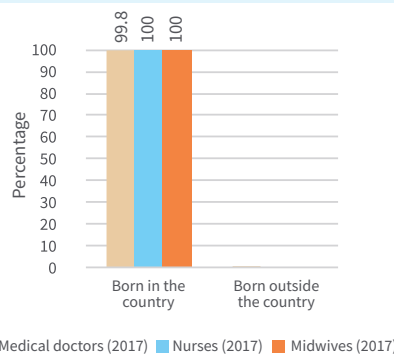
Medical doctors (2019)	570
Nurses (2019)	614
Midwives (2019)	34
Dentists (2019)	142
Pharmacists (2019)	130



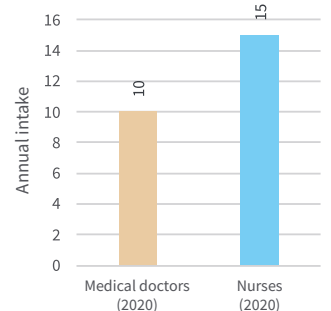
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Luxembourg

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

630 399

LIFE EXPECTANCY AT BIRTH (YEARS)

81.4

MEDIAN AGE (YEARS)

38.6

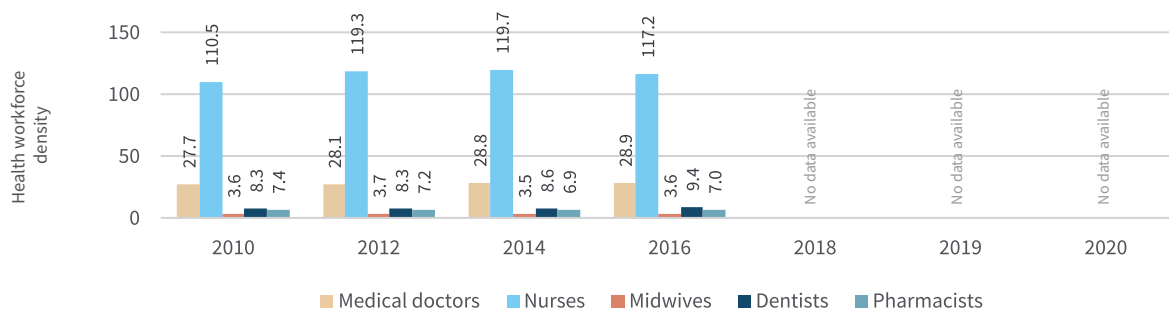
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

150.7

UHC SERVICE COVERAGE INDEX

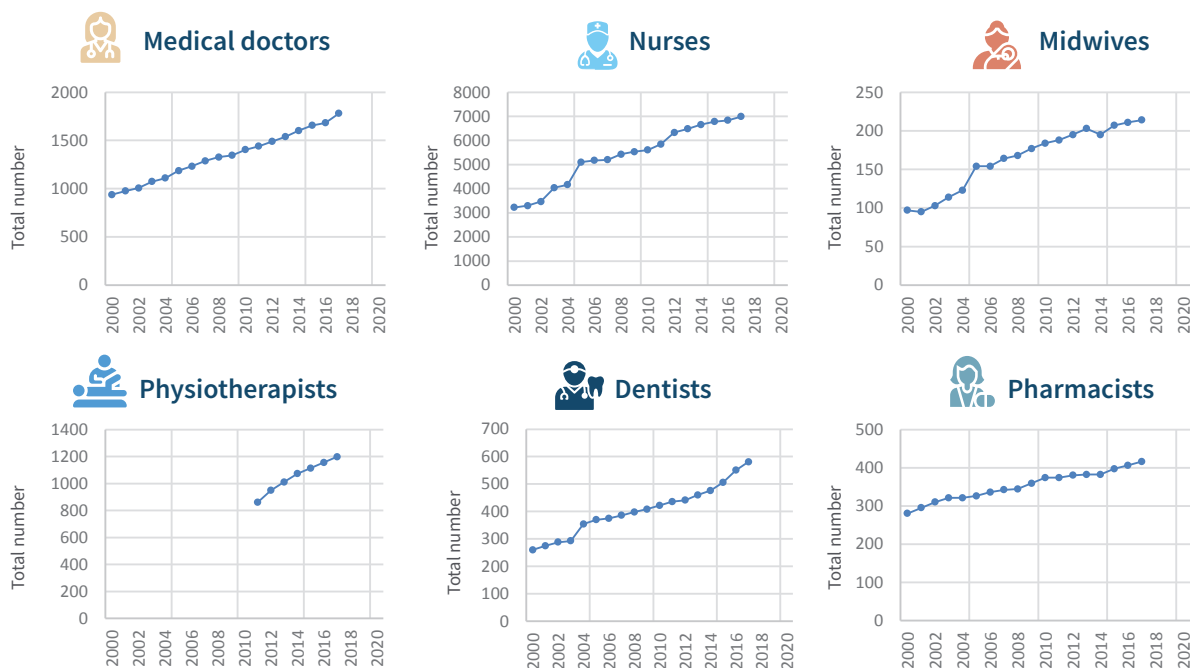
86

Health workforce density per 10 000 population

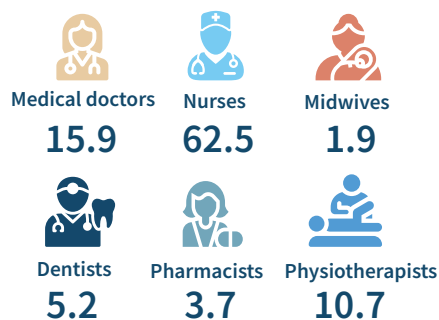


Health workforce availability

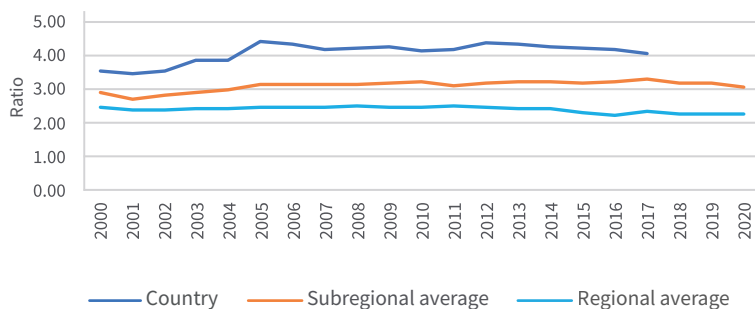
Health workforce trends (total number)



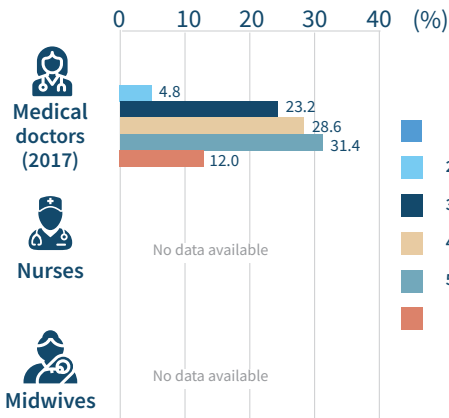
Composition by six professional categories covered in the report, percentage (latest year)



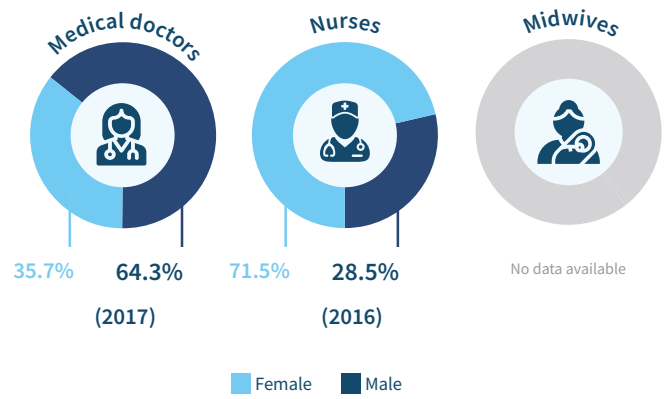
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

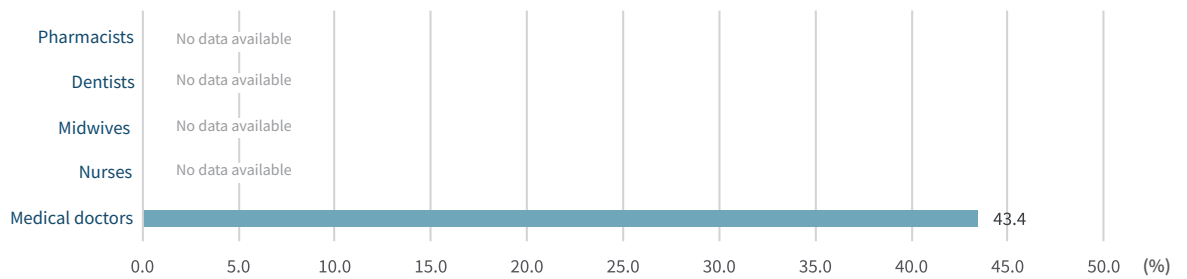


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

Professions	Annual graduates (total number)	Graduates per year per 100 000 population	Graduates per year per 1000 practitioners
Medical doctors	No data available		
Nurses (2019)	66	10	9
Midwives (2019)	5	1	23
Dentists	No data available		
Pharmacists	No data available		

Country of training, percentage

NO DATA AVAILABLE

Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries

NO DATA AVAILABLE



Malta

Human resources for health profile

See pages 82–83 for data sources and technical notes



515 358



83.4



39.0



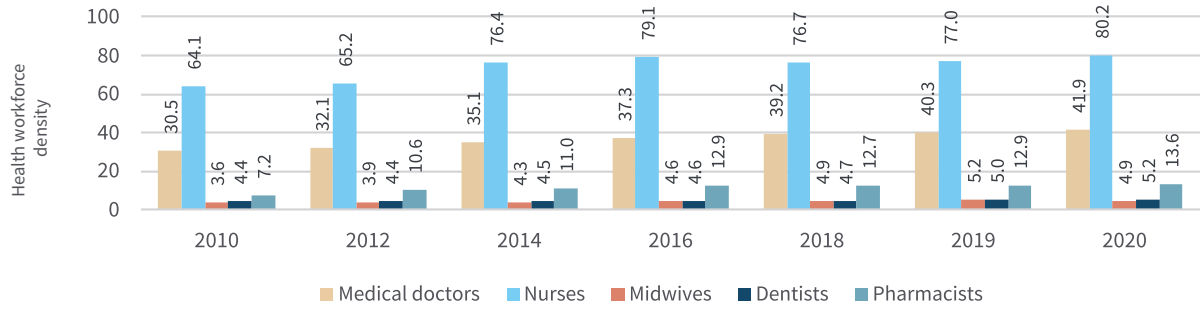
127.0



81

Country at a glance

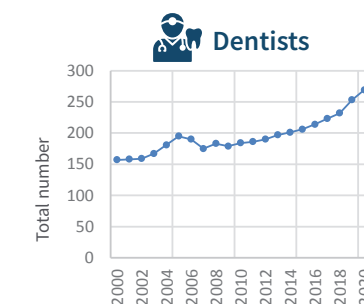
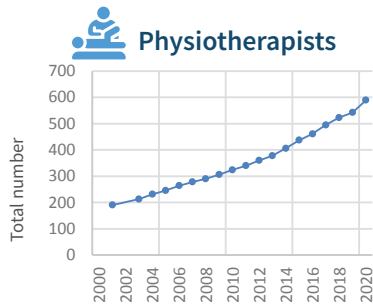
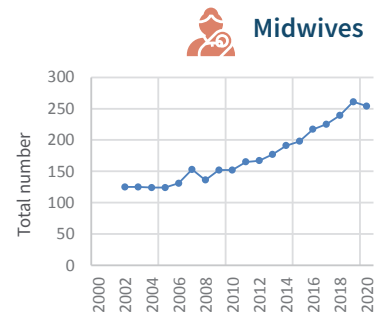
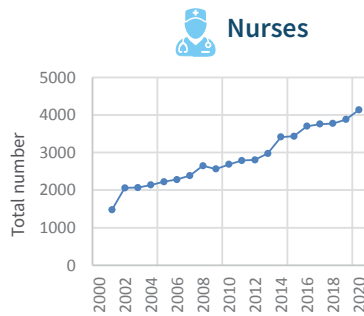
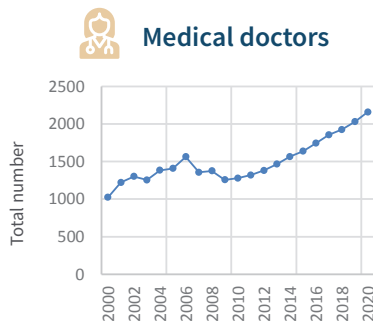
Health workforce density per 10 000 population



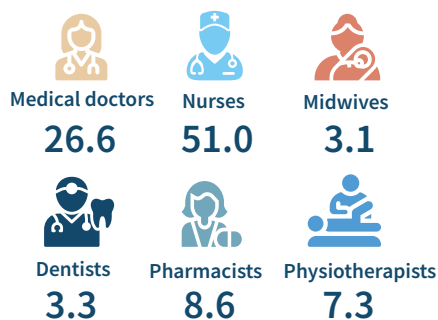
Health workforce availability



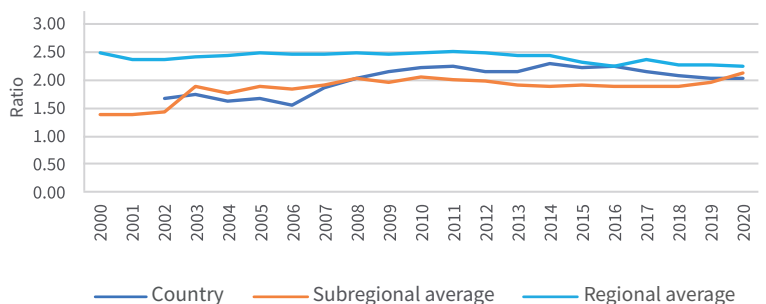
Health workforce trends (total number)



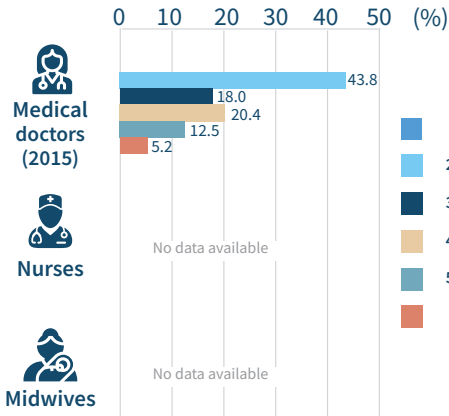
Composition by six professional categories covered in the report, percentage (latest year)



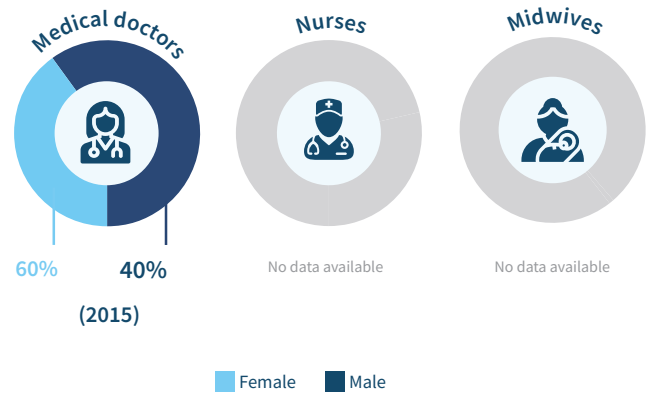
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

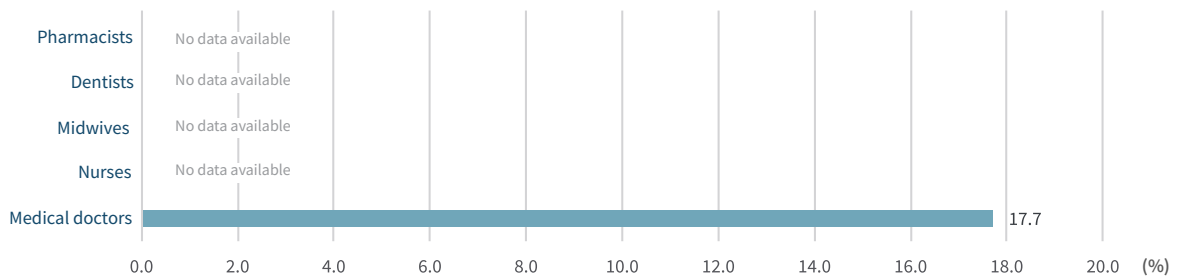


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



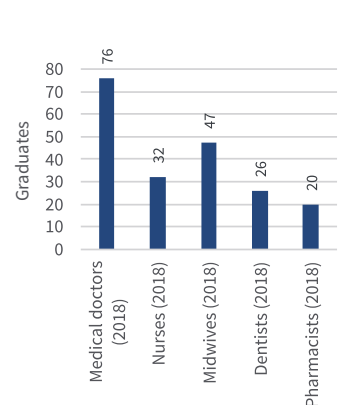
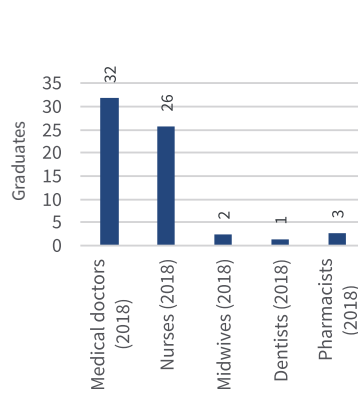
Professions

Annual graduates (total number)

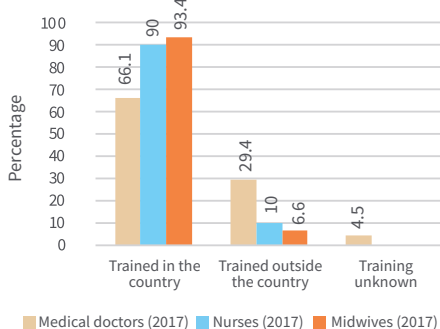
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

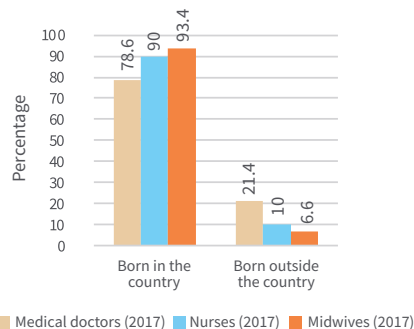
Medical doctors (2018)	164
Nurses (2018)	132
Midwives (2018)	12
Dentists (2018)	7
Pharmacists (2018)	14



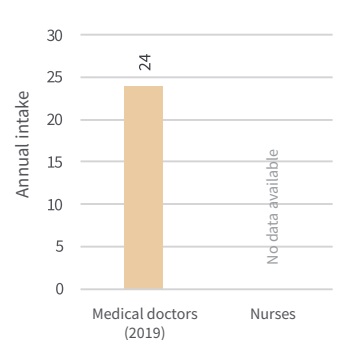
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply

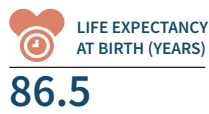


Monaco

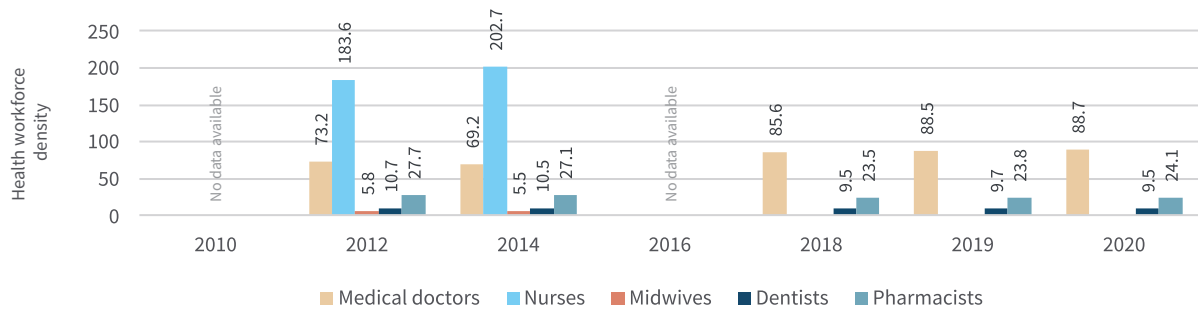
Human resources for health profile

See pages 82–83 for data sources and technical notes

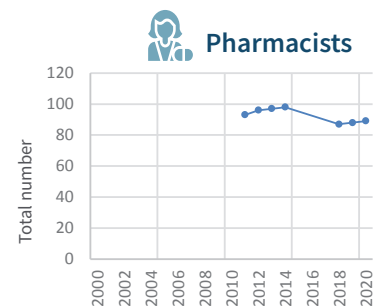
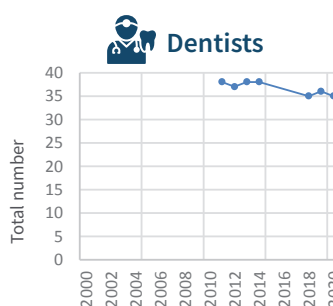
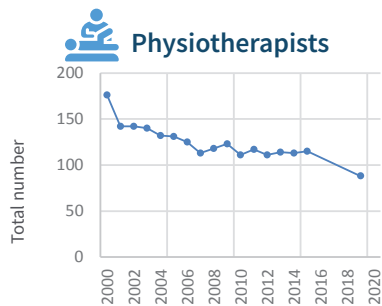
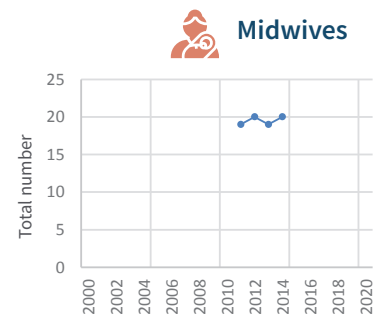
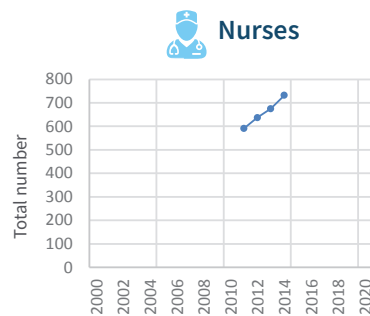
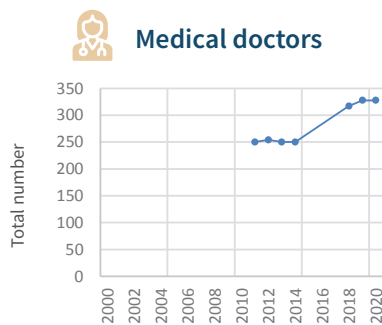
Country at a glance



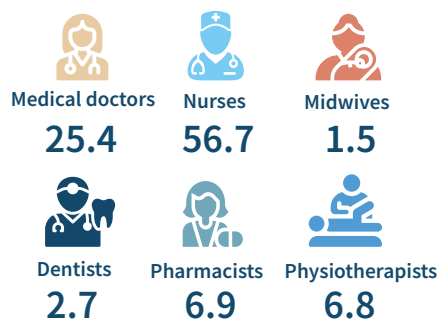
Health workforce density per 10 000 population



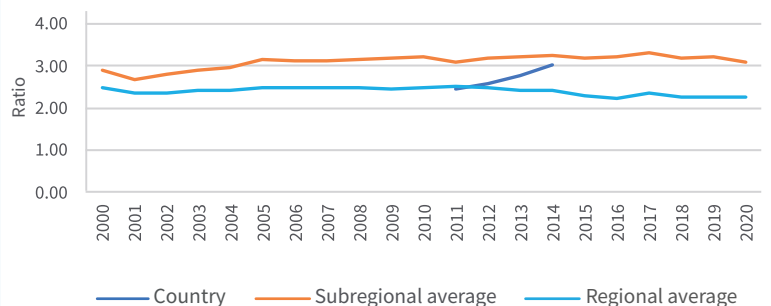
Health workforce trends (total number)



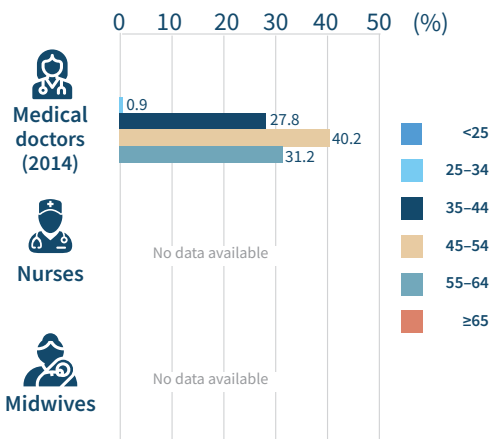
Composition by six professional categories covered in the report, percentage (latest year)



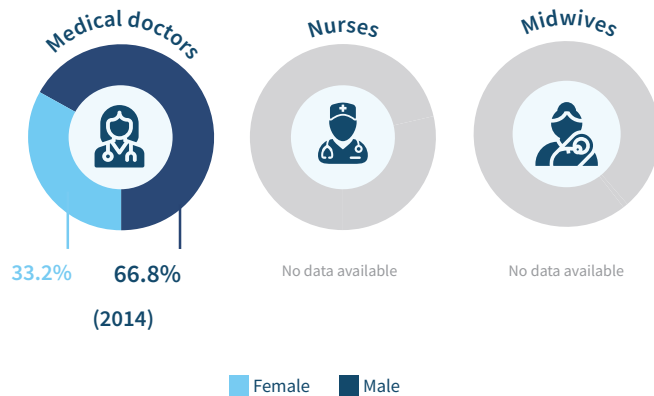
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

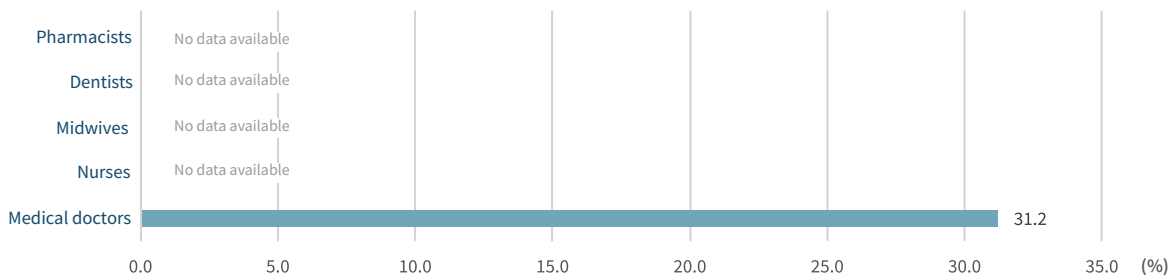


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

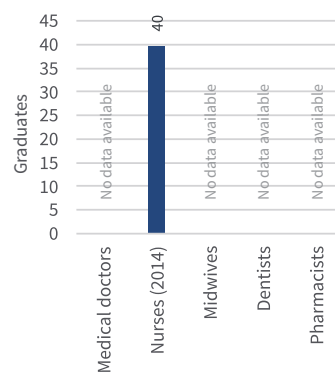
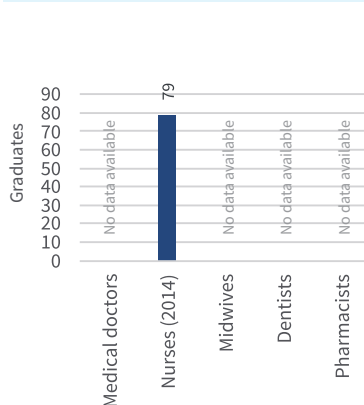
Professions

Annual graduates (total number)

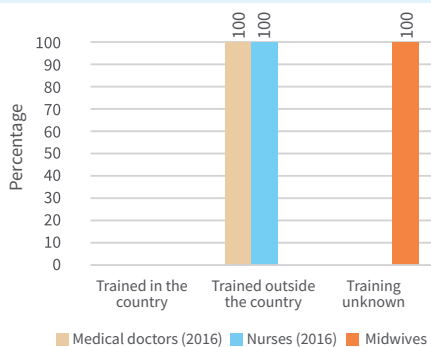
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors	No data available
Nurses (2014)	29
Midwives	No data available
Dentists	No data available
Pharmacists	No data available



Country of training, percentage



Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries

NO DATA AVAILABLE



Montenegro

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
629 048

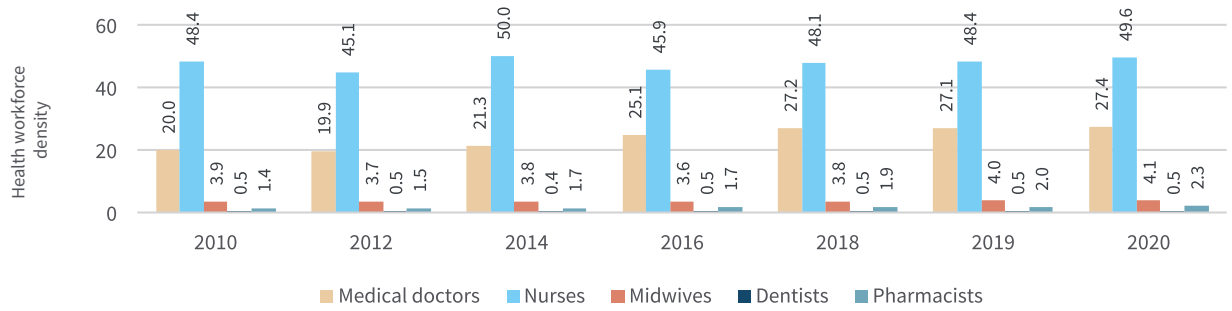
LIFE EXPECTANCY AT BIRTH (YEARS)
76.3

MEDIAN AGE (YEARS)
37.9

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
81.0

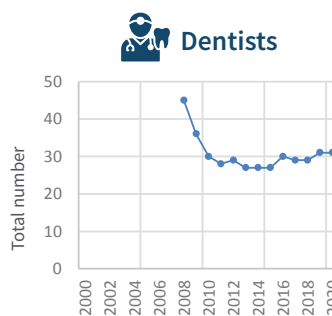
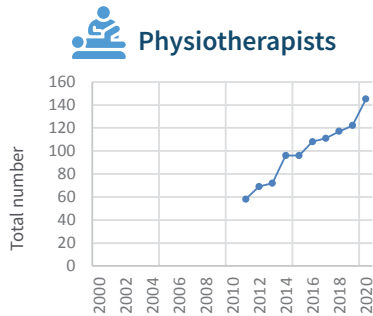
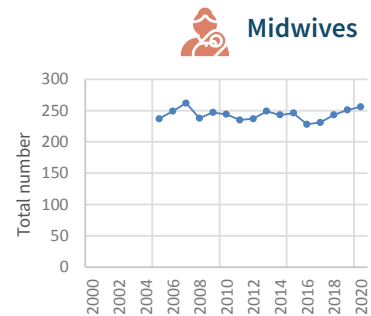
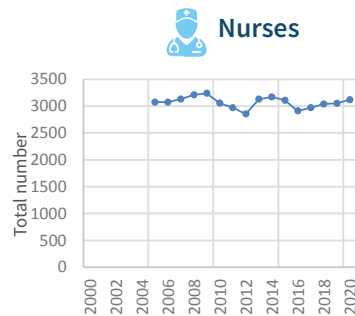
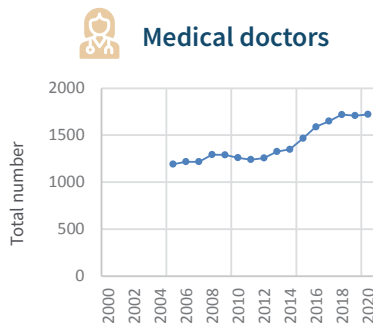
UHC SERVICE COVERAGE INDEX
67

Health workforce density per 10 000 population

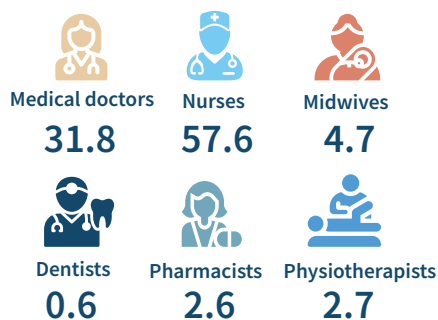


Health workforce availability

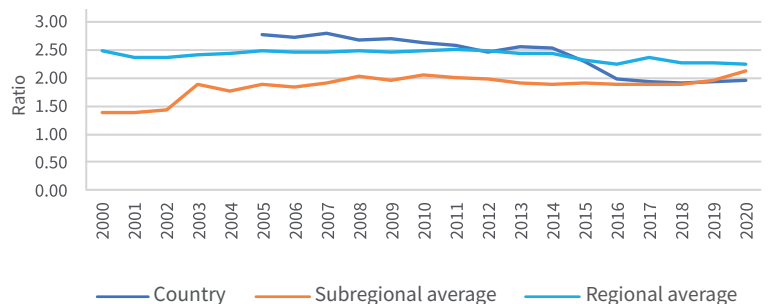
Health workforce trends (total number)



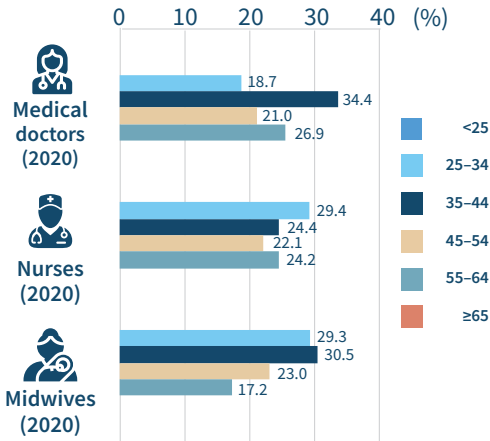
Composition by six professional categories covered in the report, percentage (latest year)



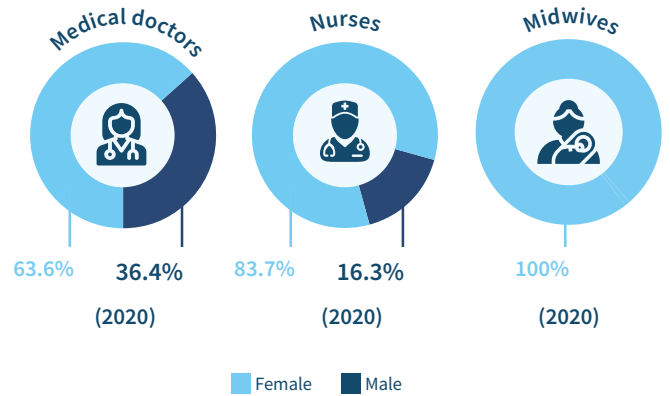
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

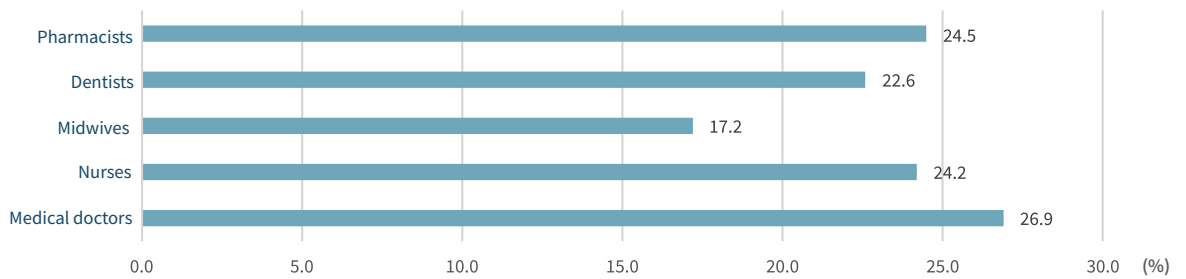


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



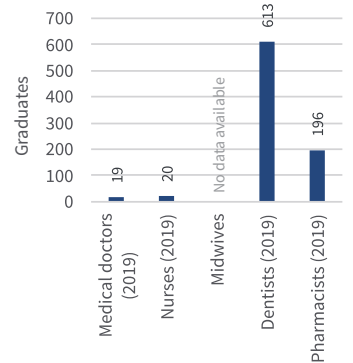
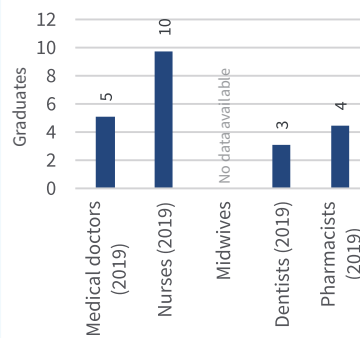
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2019)	32
Nurses (2019)	61
Midwives	No data available
Dentists (2019)	19
Pharmacists (2019)	28



Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE



Health workforce domestic and international supply



Netherlands

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
17 434 557

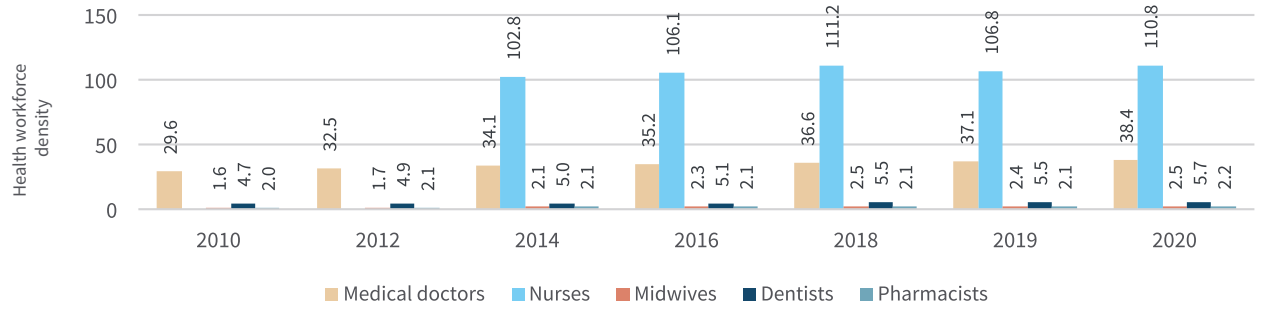
LIFE EXPECTANCY AT BIRTH (YEARS)
81.6

MEDIAN AGE (YEARS)
41.7

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
151.7

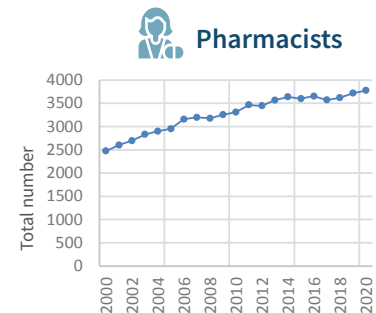
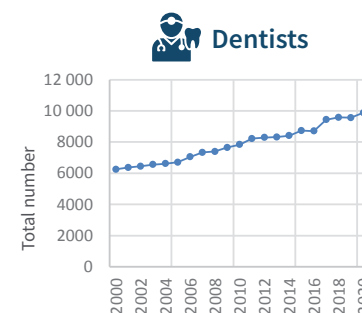
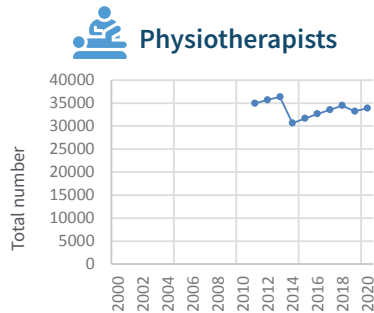
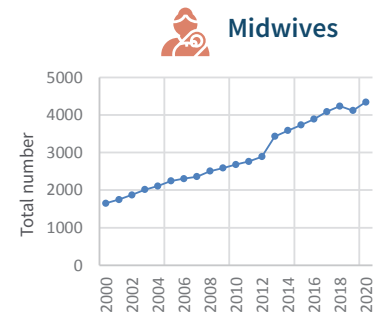
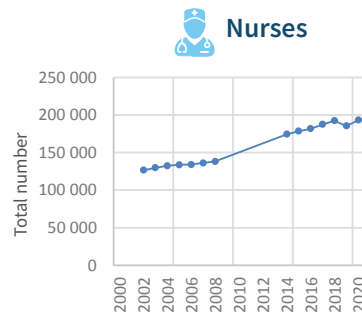
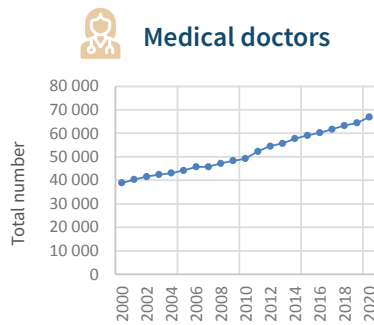
UHC SERVICE COVERAGE INDEX
86

Health workforce density per 10 000 population

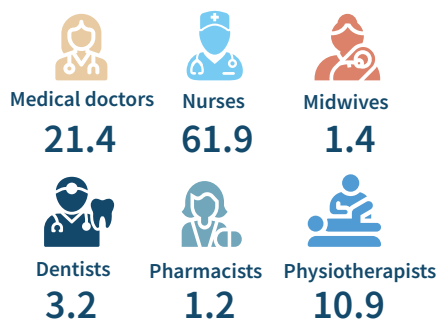


Health workforce availability

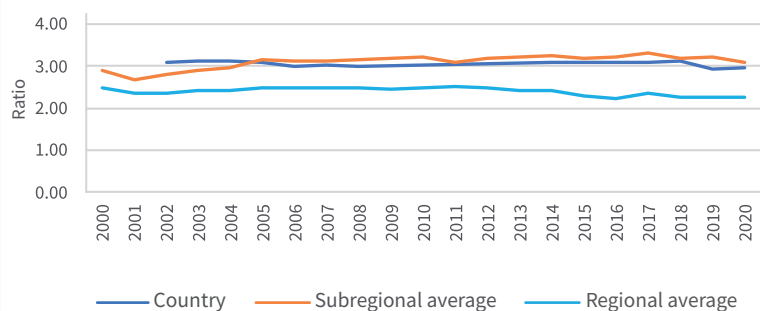
Health workforce trends (total number)



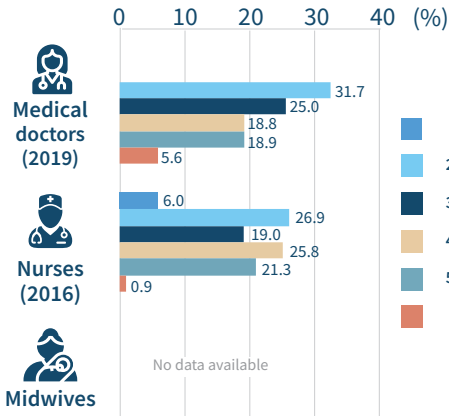
Composition by six professional categories covered in the report, percentage (latest year)



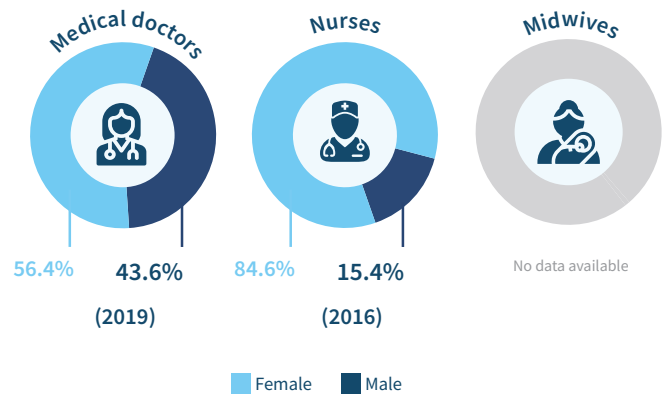
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

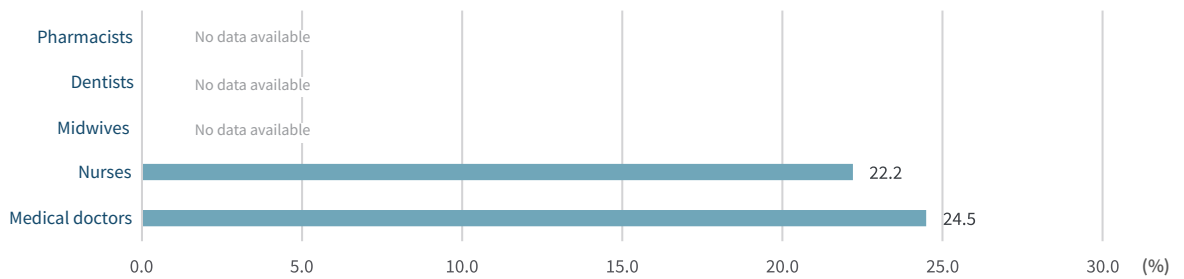


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



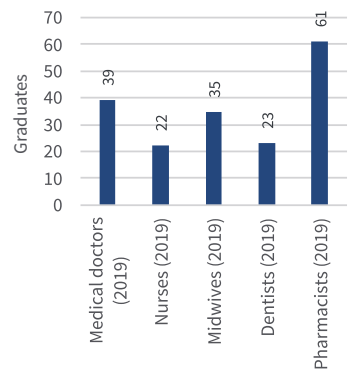
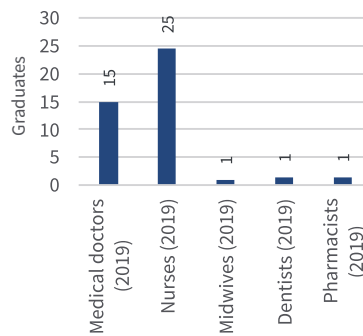
Professions

Annual graduates (total number)

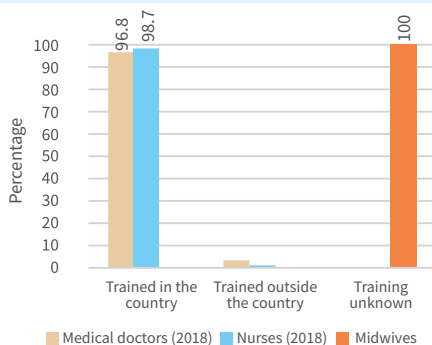
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2019)	2620
Nurses (2019)	4290
Midwives (2019)	150
Dentists (2019)	230
Pharmacists (2019)	230



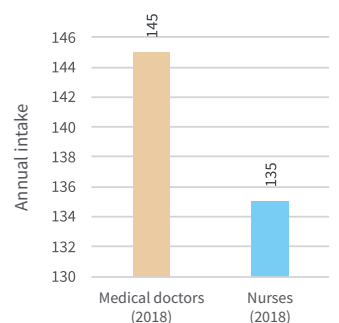
Country of training, percentage



Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries



Health workforce domestic and international supply



North Macedonia

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

2 111 072

LIFE EXPECTANCY AT BIRTH (YEARS)

75.2

MEDIAN AGE (YEARS)

38.0

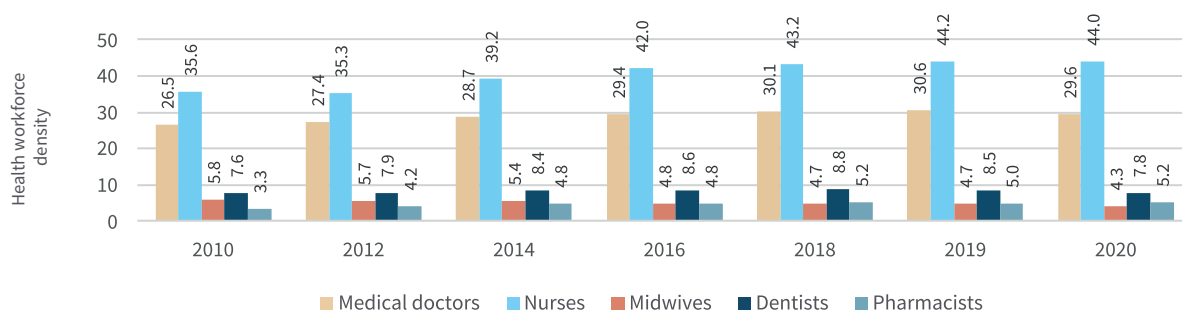
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

78.0

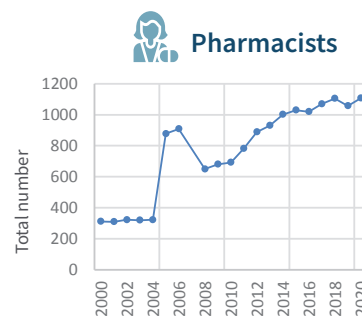
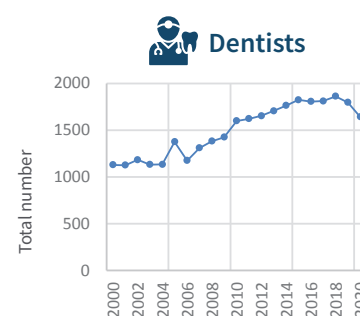
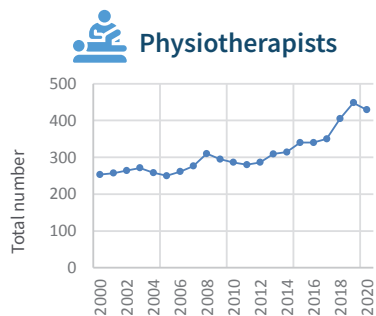
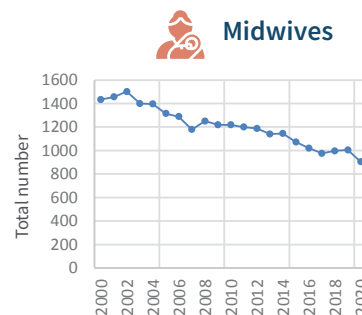
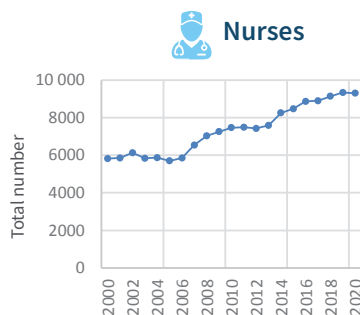
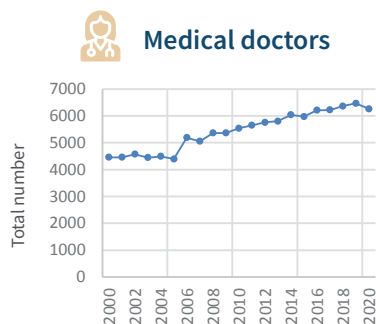
UHC SERVICE COVERAGE INDEX

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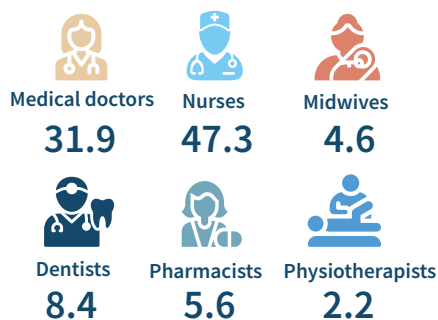
Health workforce density per 10 000 population



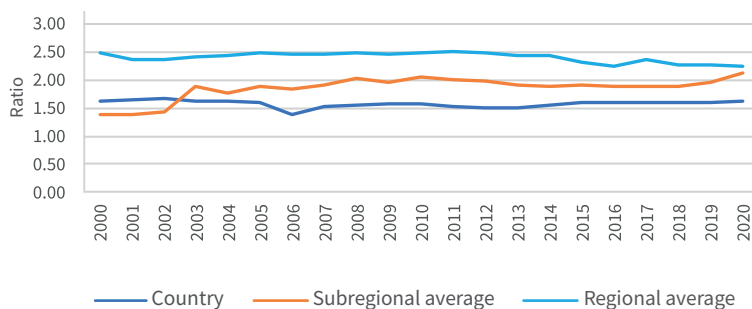
Health workforce trends (total number)



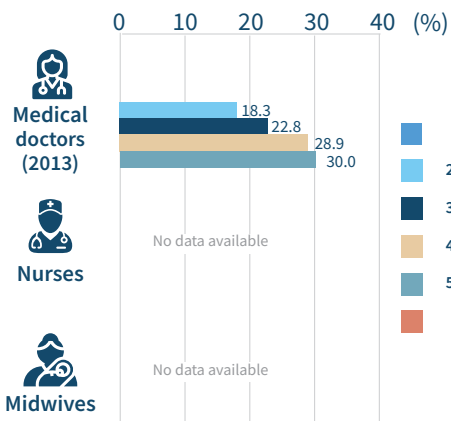
Composition by six professional categories covered in the report, percentage (latest year)



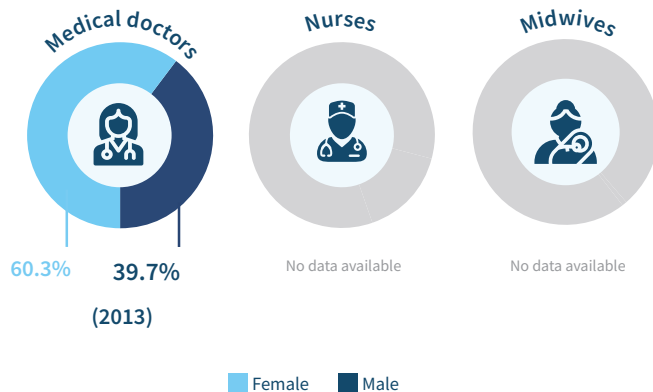
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

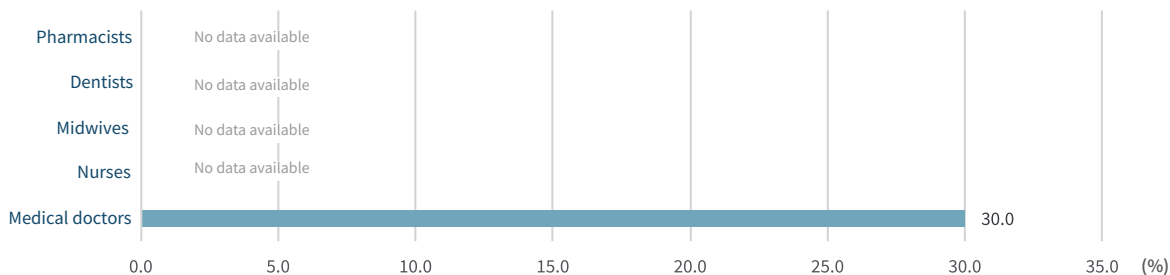


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2012)

261

Nurses (2010)

203

Midwives (2012)

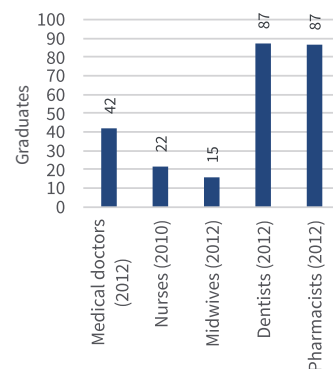
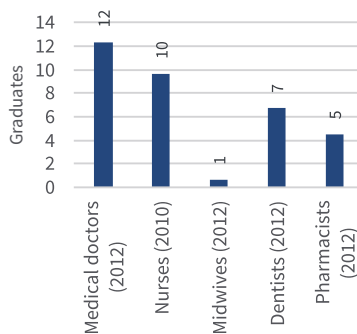
14

Dentists (2012)

143

Pharmacists (2012)

96



Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE



Health workforce domestic and international supply



Norway

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
5 379 839

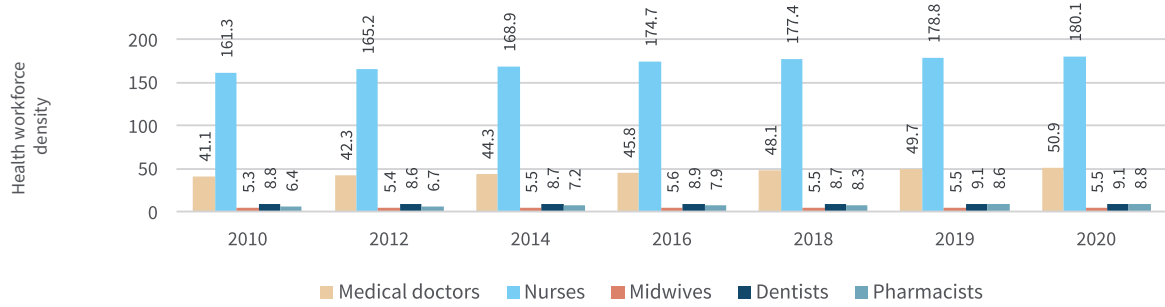
LIFE EXPECTANCY AT BIRTH (YEARS)
83.2

MEDIAN AGE (YEARS)
39.0

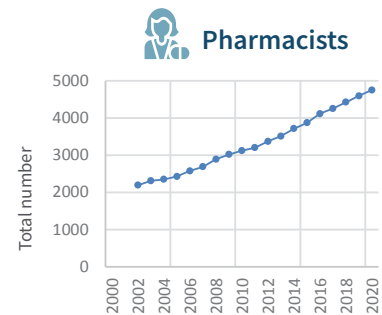
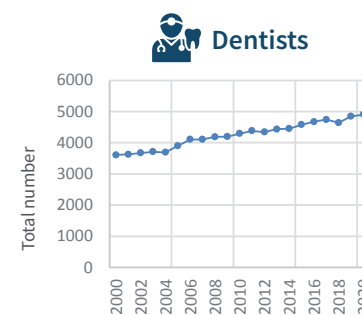
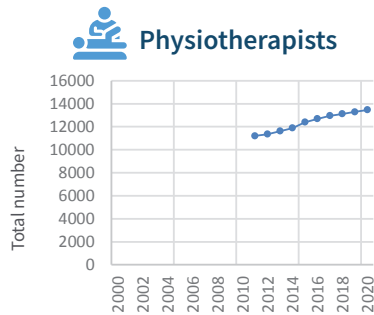
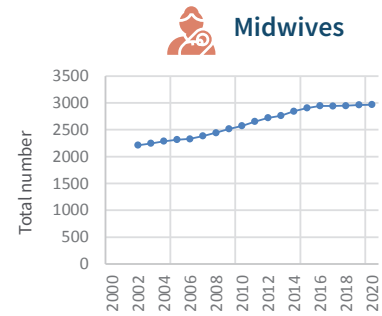
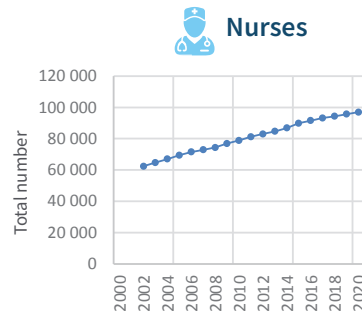
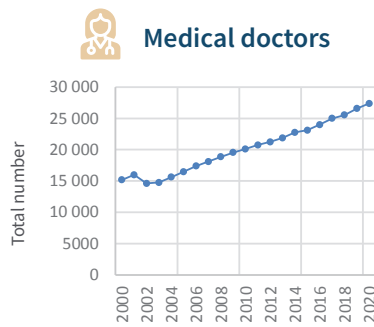
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
236.5

UHC SERVICE COVERAGE INDEX
86

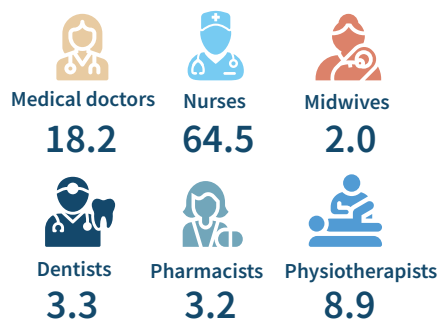
Health workforce density per 10 000 population



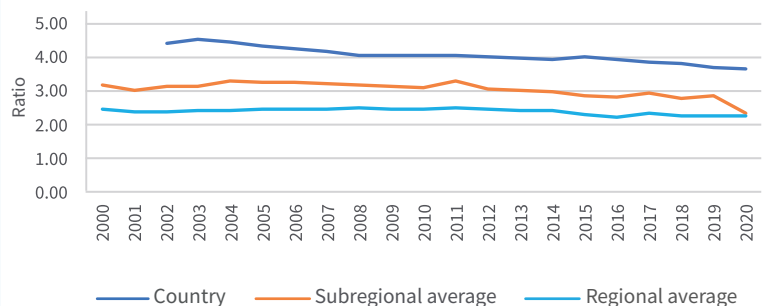
Health workforce trends (total number)



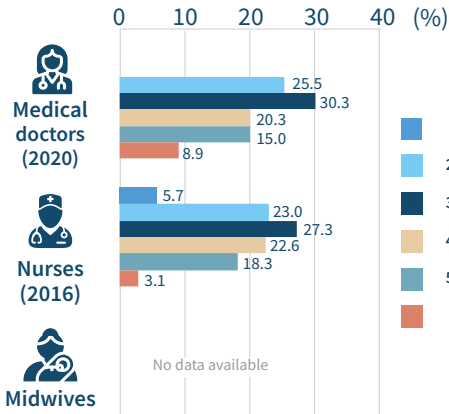
Composition by six professional categories covered in the report, percentage (latest year)



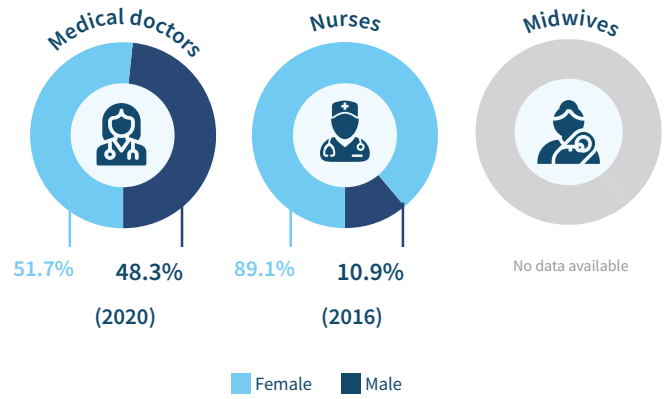
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

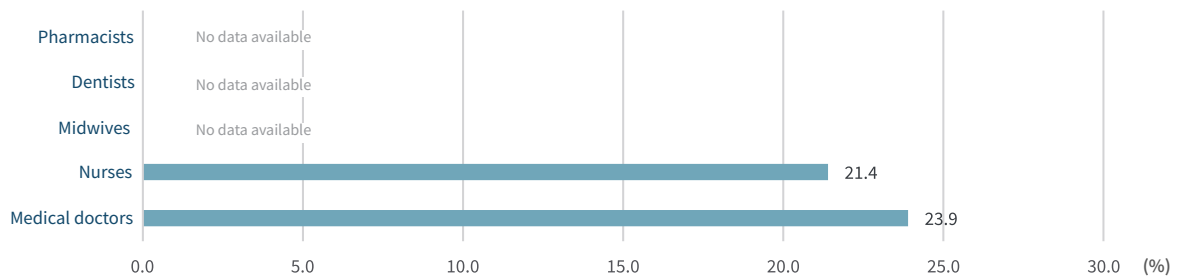


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



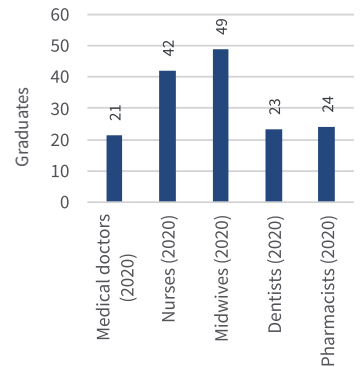
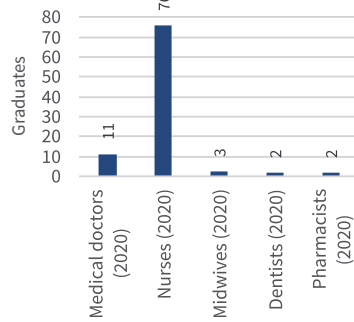
Professions

Annual graduates (total number)

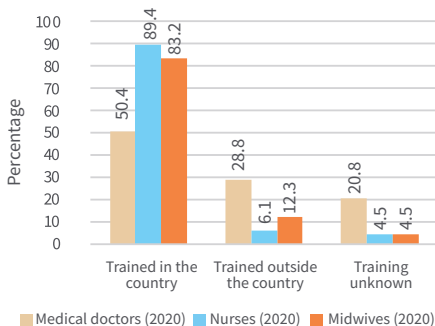
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

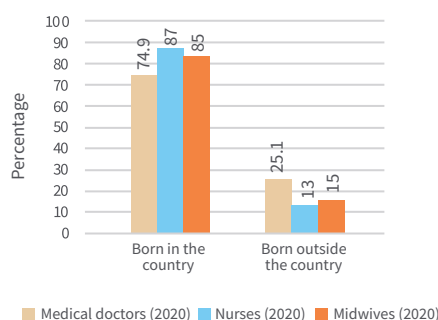
Medical doctors (2020)	587
Nurses (2020)	4069
Midwives (2020)	145
Dentists (2020)	114
Pharmacists (2020)	115



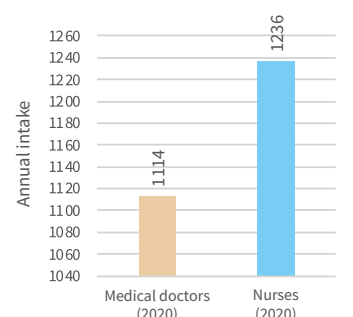
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Poland

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

38 428 366

LIFE EXPECTANCY AT BIRTH (YEARS)

76.9

MEDIAN AGE (YEARS)

40.5

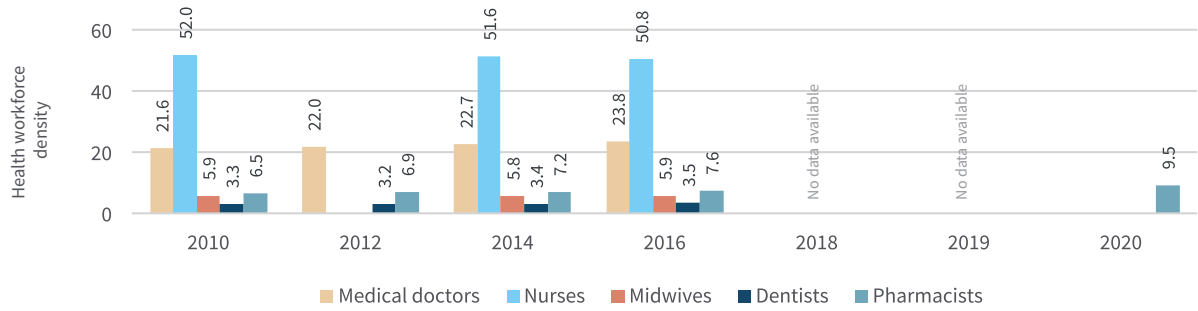
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

79.6

UHC SERVICE COVERAGE INDEX

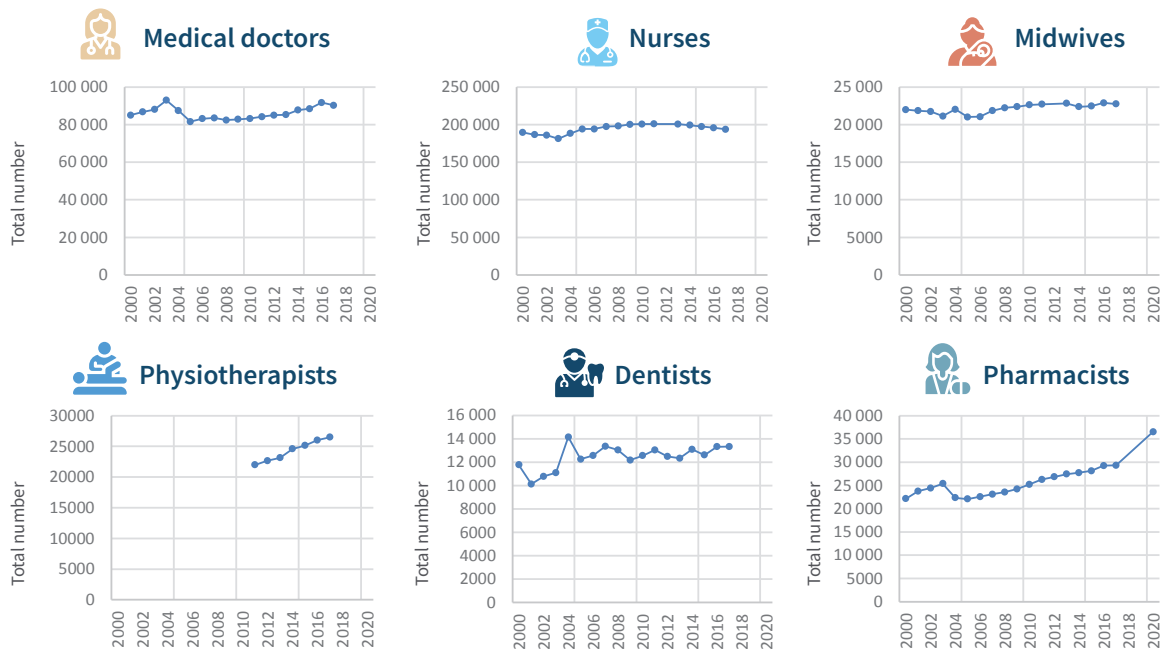
74

Health workforce density per 10 000 population

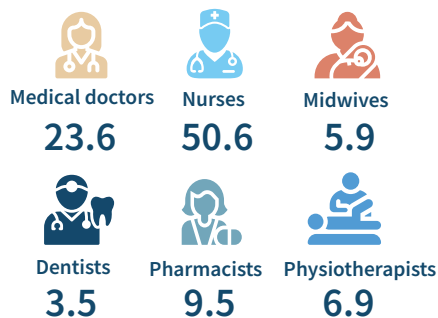


Health workforce availability

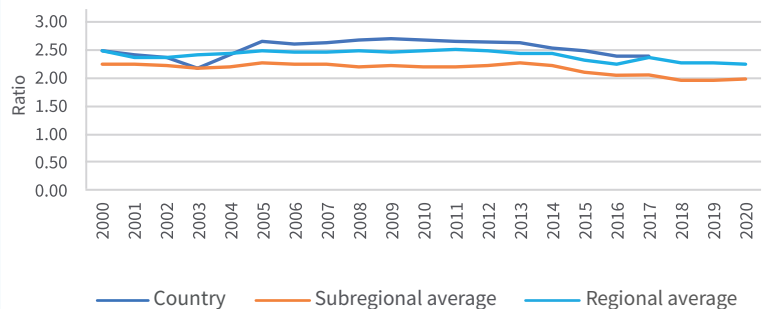
Health workforce trends (total number)



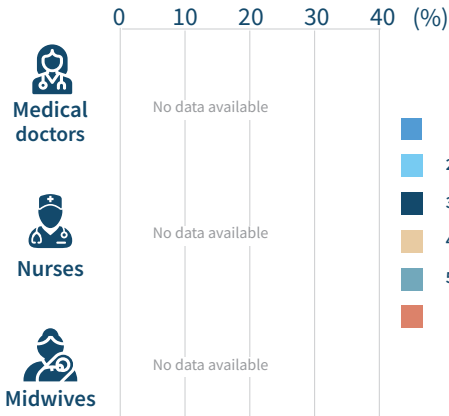
Composition by six professional categories covered in the report, percentage (latest year)



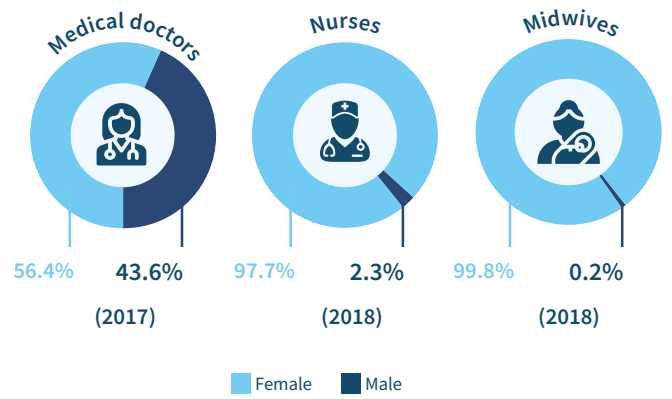
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

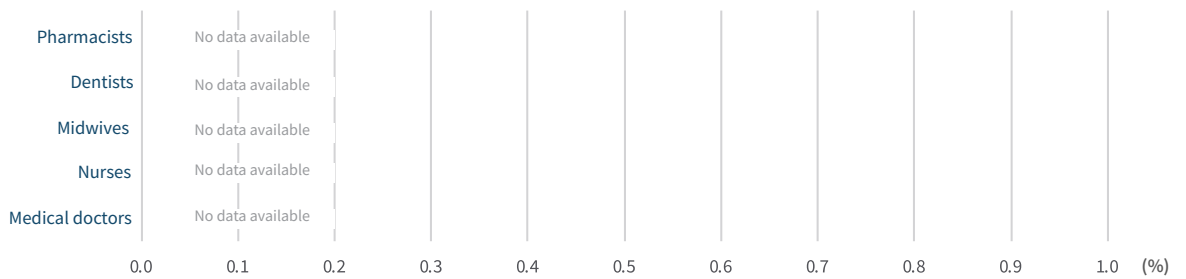


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



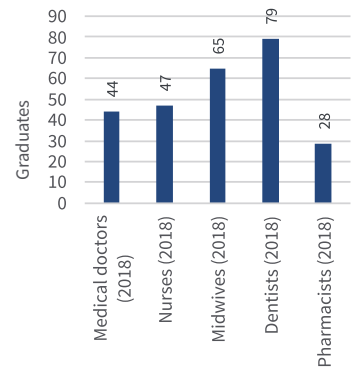
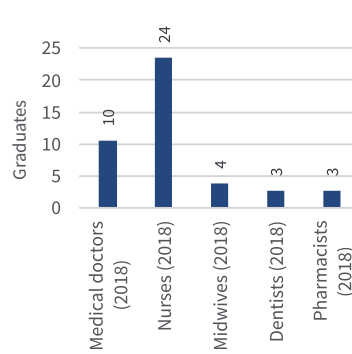
Professions

Annual graduates (total number)

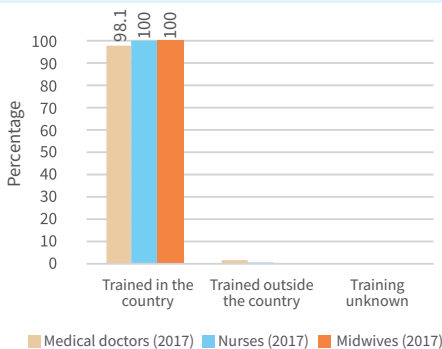
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2018)	4006
Nurses (2018)	9070
Midwives (2018)	1471
Dentists (2018)	1058
Pharmacists (2018)	1039



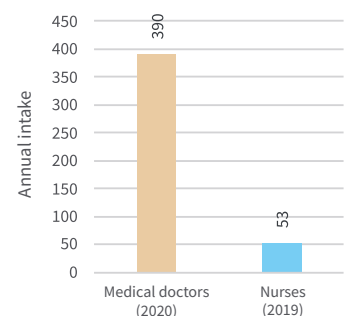
Country of training, percentage



Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries



Health workforce domestic and international supply



Portugal

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

10 298 192

LIFE EXPECTANCY AT BIRTH (YEARS)

81.1

MEDIAN AGE (YEARS)

44.7

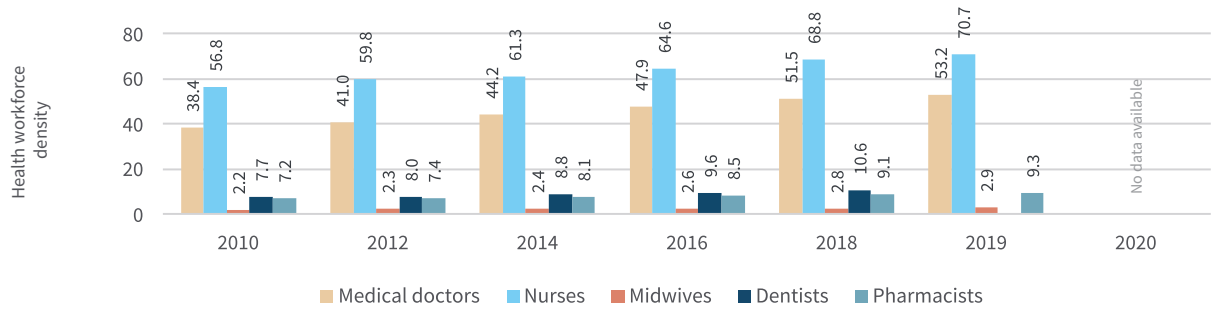
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

126.8

UHC SERVICE COVERAGE INDEX

84

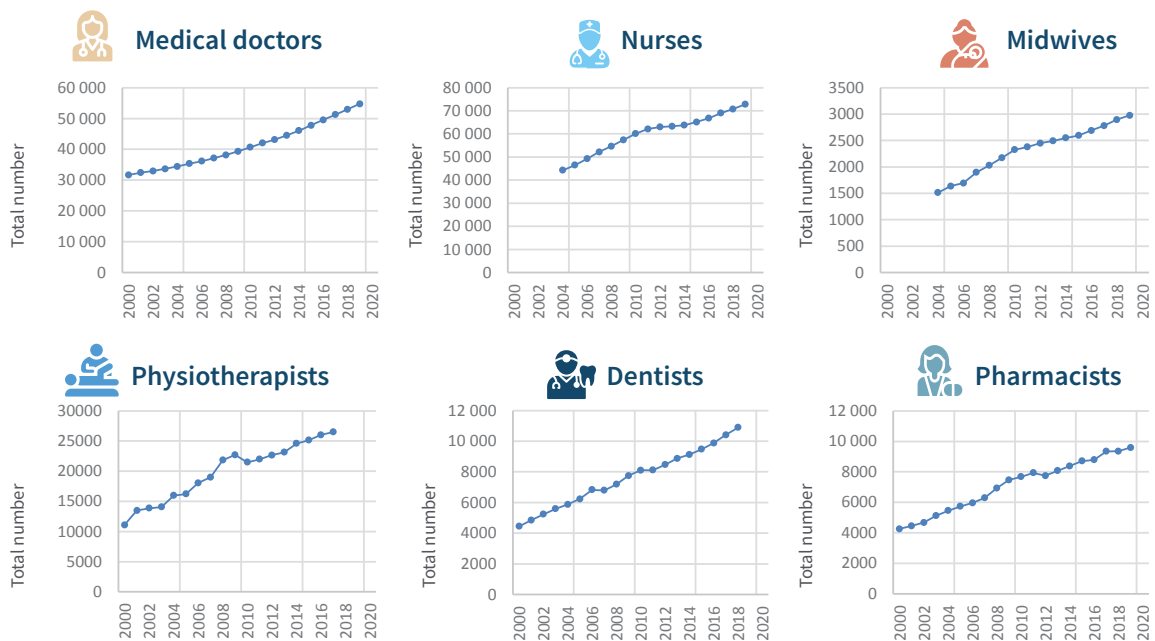
Health workforce density per 10 000 population



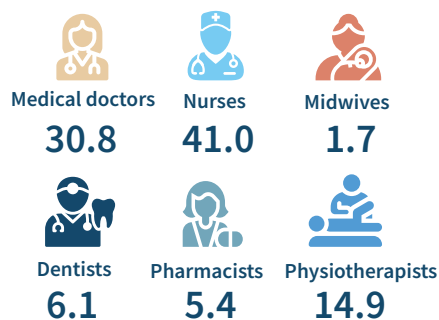
Health workforce availability



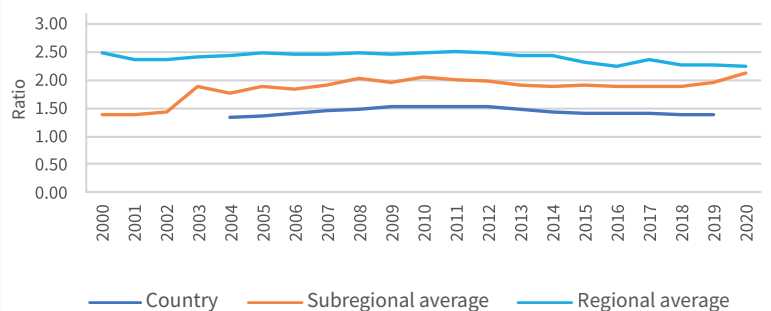
Health workforce trends (total number)



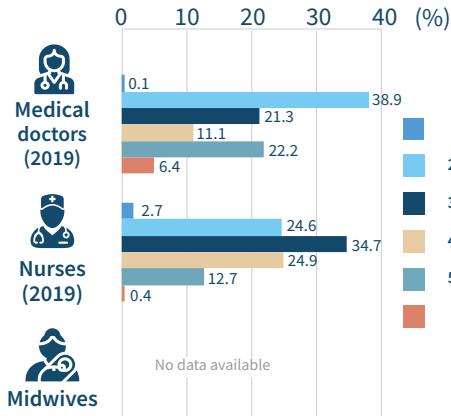
Composition by six professional categories covered in the report, percentage (latest year)



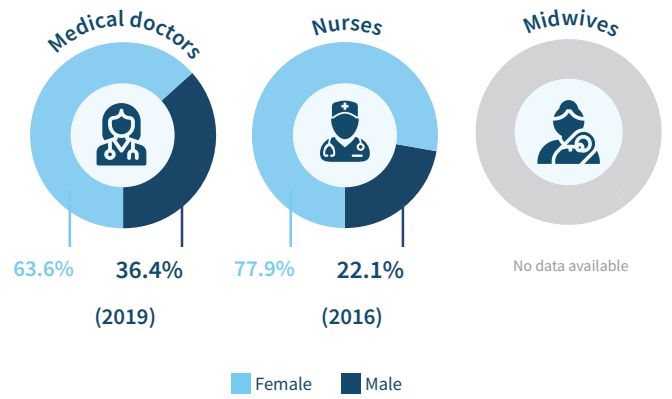
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

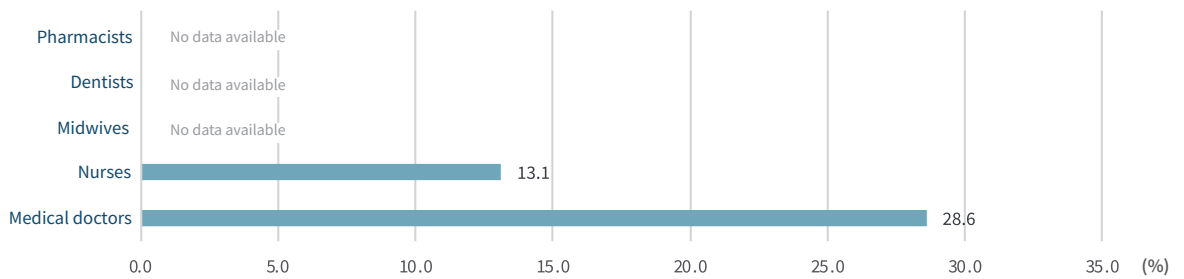


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

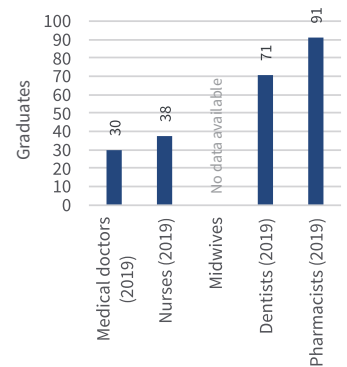
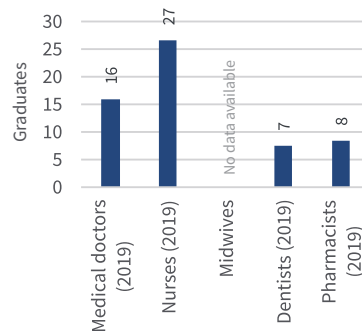
Professions

Annual graduates (total number)

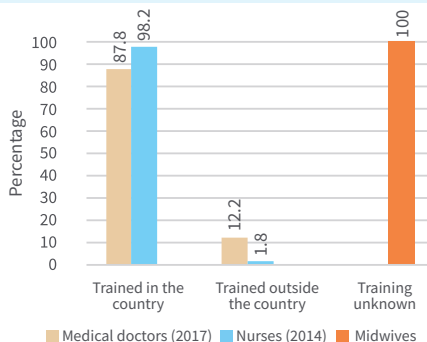
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

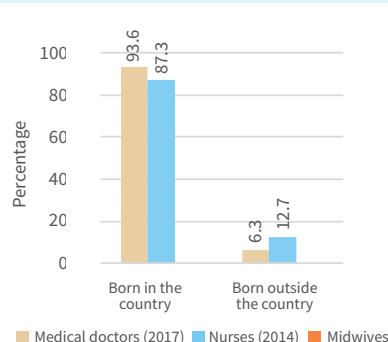
Medical doctors (2019)	1629
Nurses (2019)	2732
Midwives	No data available
Dentists (2019)	769
Pharmacists (2019)	871



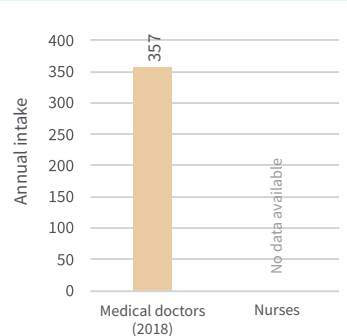
Country of training, percentage



Country of birth, percentage



Annual intake from other countries





Republic of Moldova

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

3 084 847

LIFE EXPECTANCY AT BIRTH (YEARS)

70.2

MEDIAN AGE (YEARS)

35.8

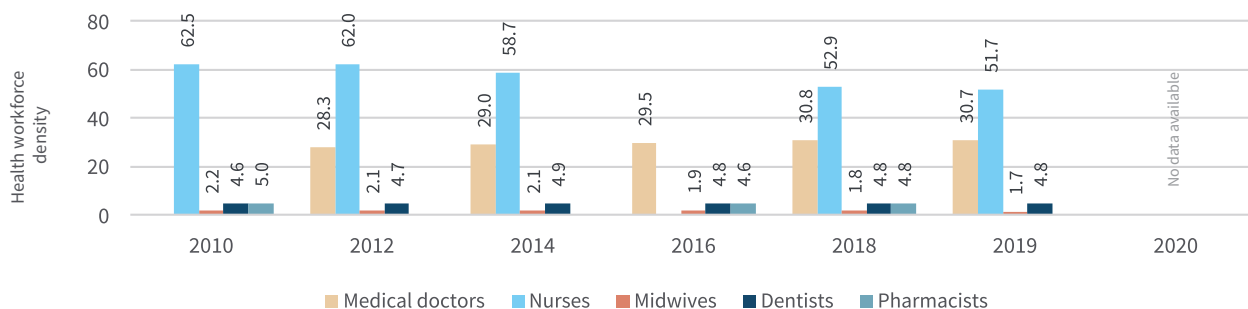
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

84.0

UHC SERVICE COVERAGE INDEX

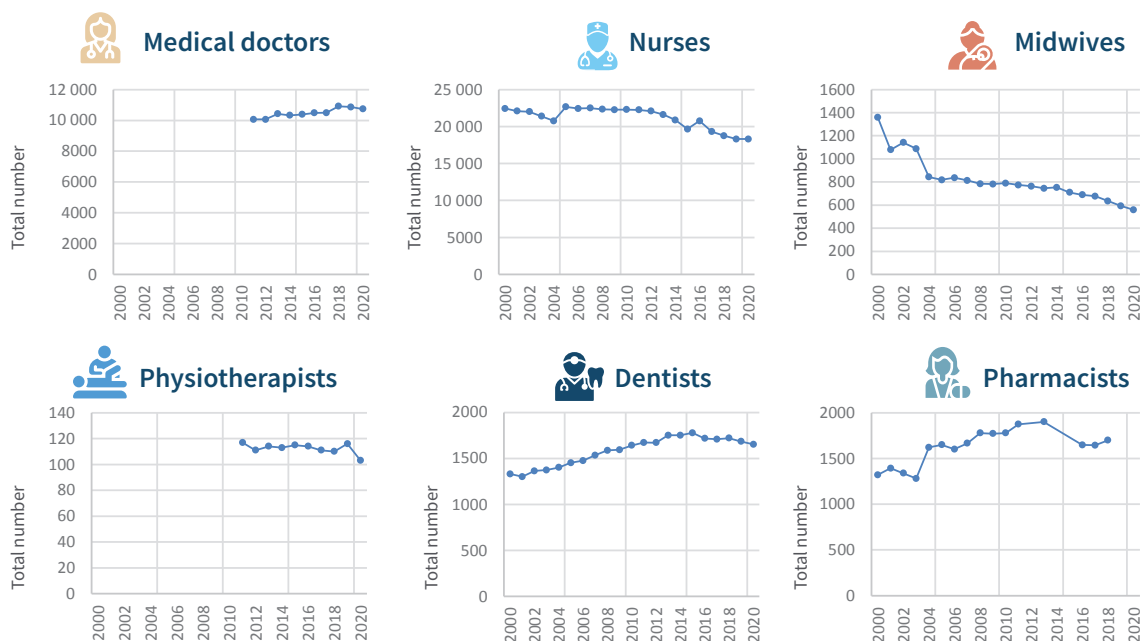
67

Health workforce density per 10 000 population

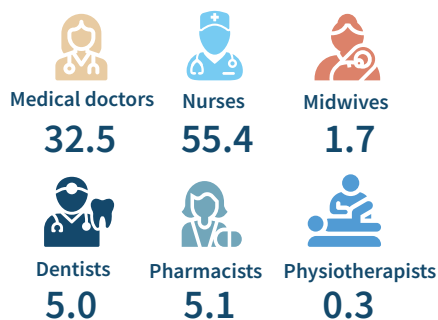


Health workforce availability

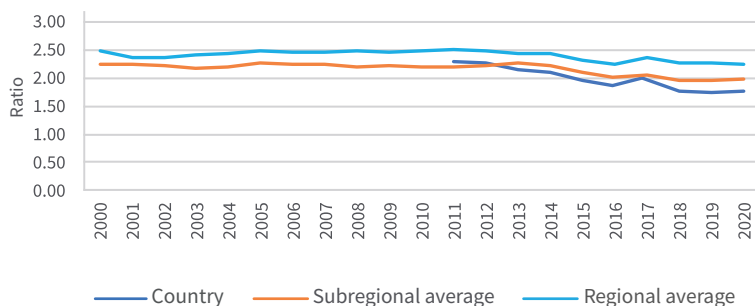
Health workforce trends (total number)



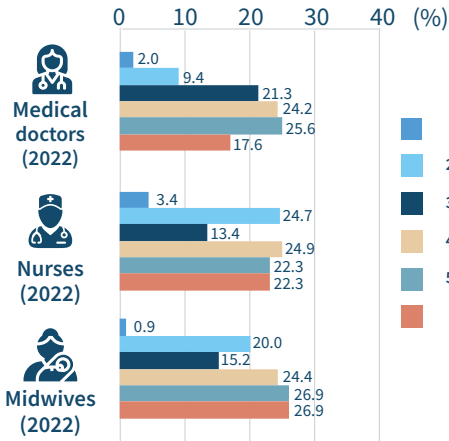
Composition by six professional categories covered in the report, percentage (latest year)



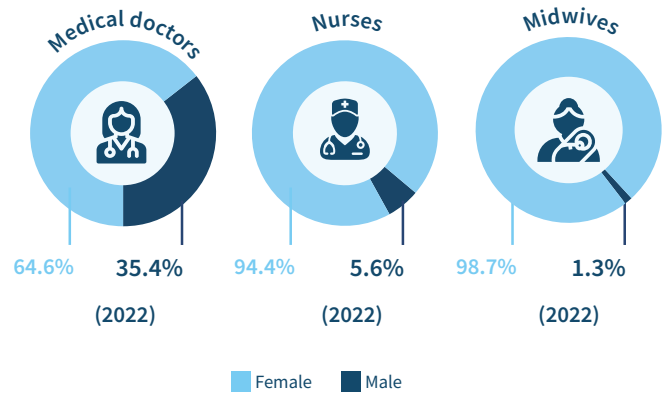
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

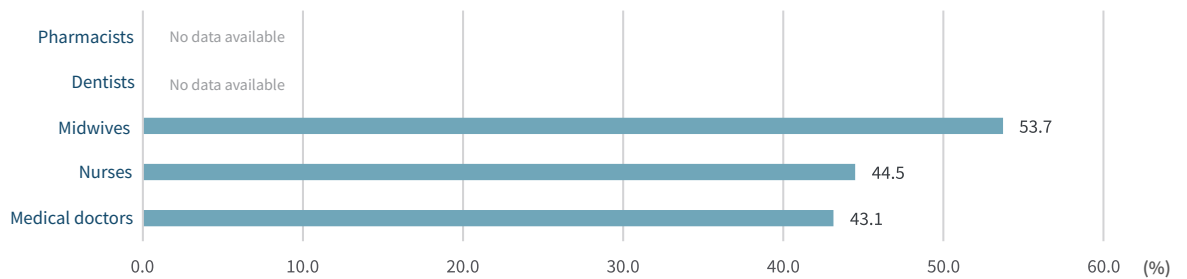


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

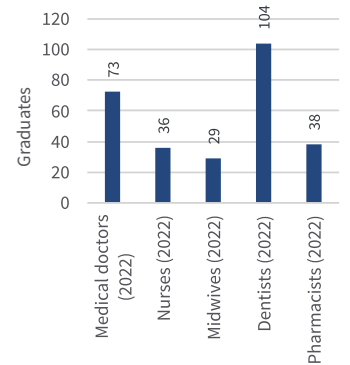
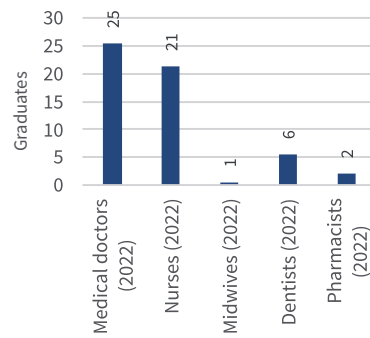
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2022)	783
Nurses (2022)	655
Midwives (2022)	16
Dentists (2022)	172
Pharmacists (2022)	65

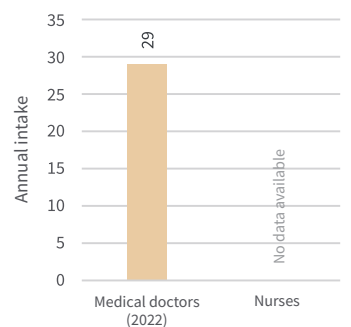
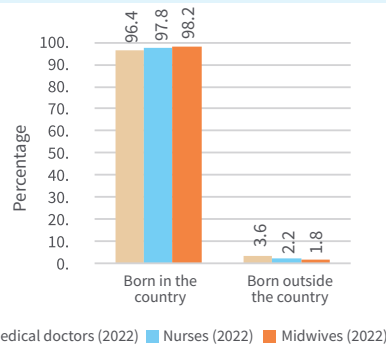


Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE





Romania

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

19 442 038

LIFE EXPECTANCY AT BIRTH (YEARS)

75.3

MEDIAN AGE (YEARS)

41.6

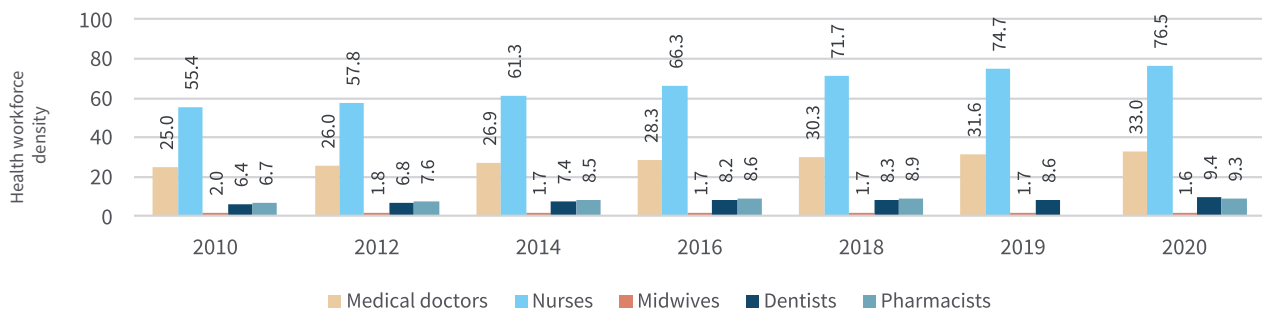
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

111.1

UHC SERVICE COVERAGE INDEX

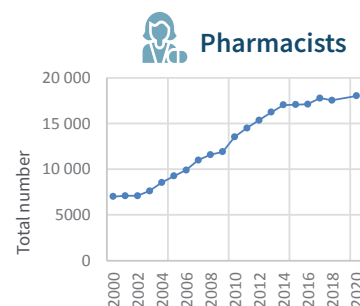
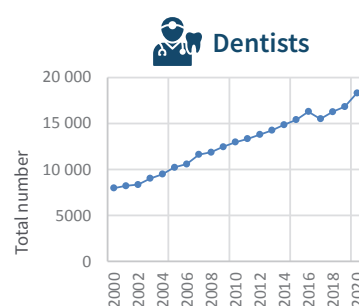
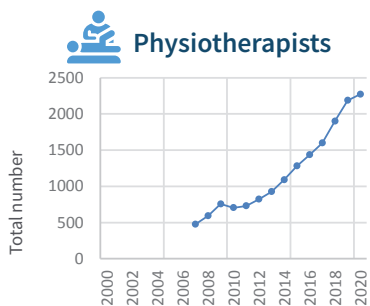
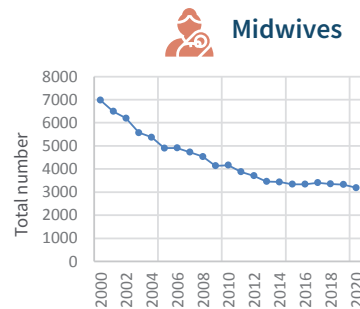
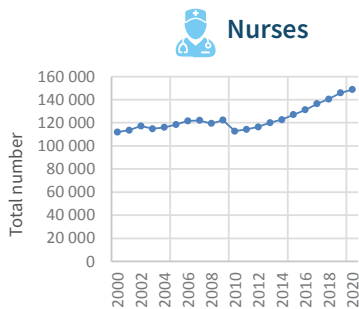
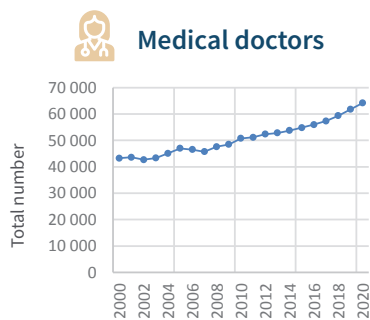
71

Health workforce density per 10 000 population

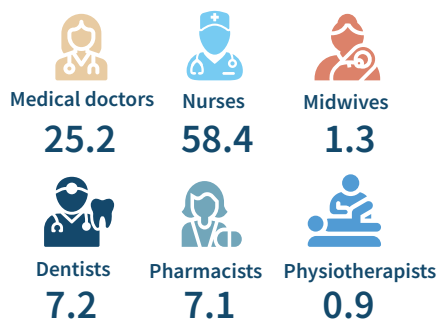


Health workforce availability

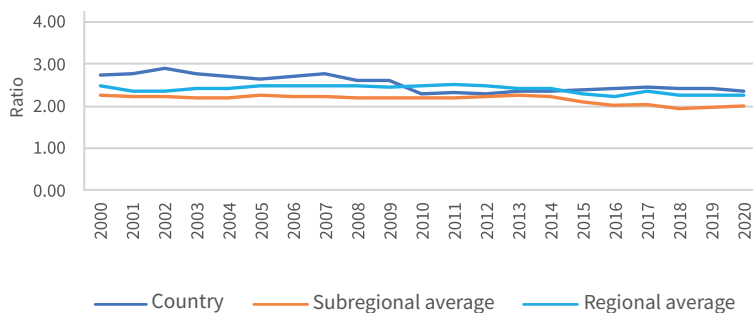
Health workforce trends (total number)



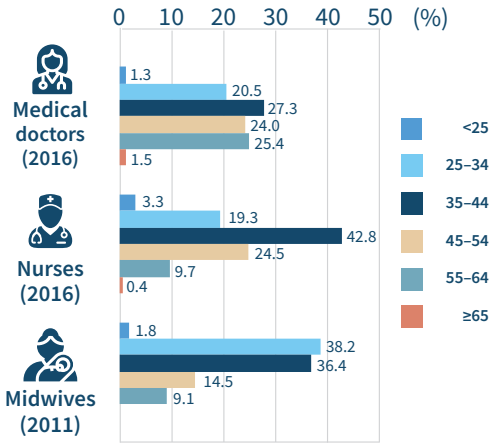
Composition by six professional categories covered in the report, percentage (latest year)



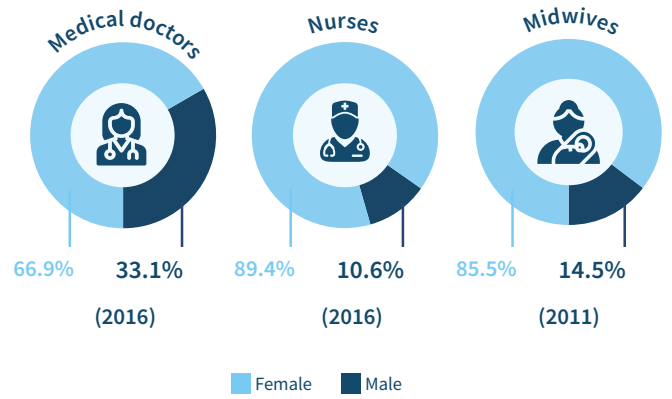
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

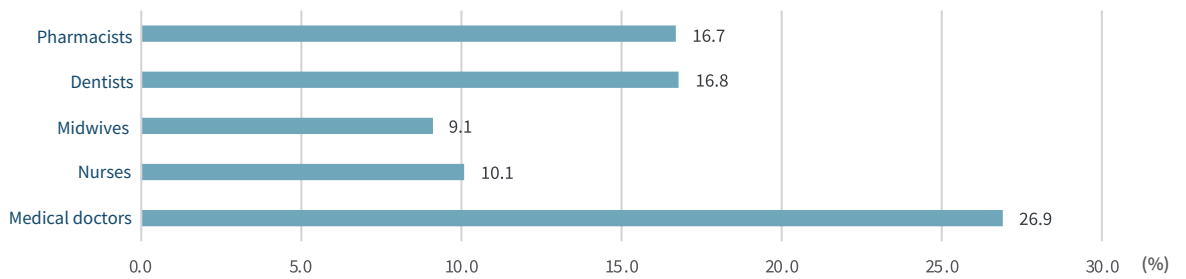


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



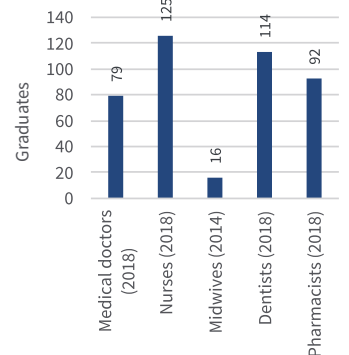
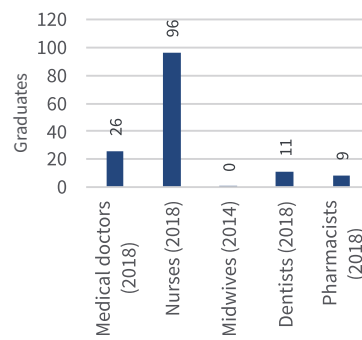
Professions

Annual graduates (total number)

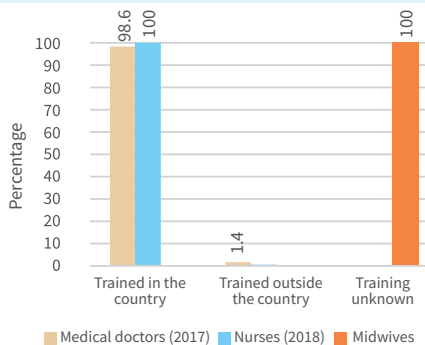
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

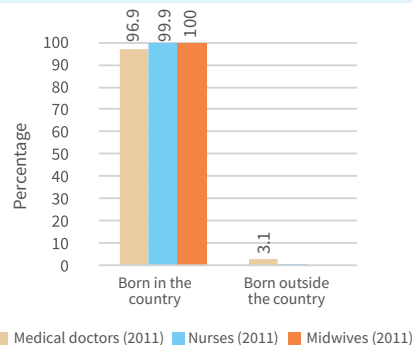
Medical doctors (2018)	5076
Nurses (2018)	18 664
Midwives (2014)	50
Dentists (2018)	2077
Pharmacists (2018)	1662



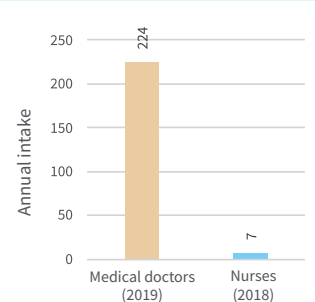
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply



Russian Federation

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

145 617 329

LIFE EXPECTANCY AT BIRTH (YEARS)

71.3

MEDIAN AGE (YEARS)

38.6

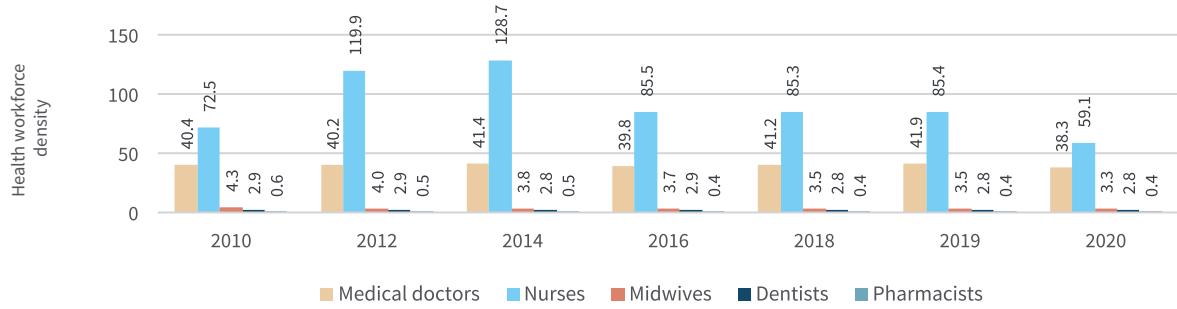
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

100.7

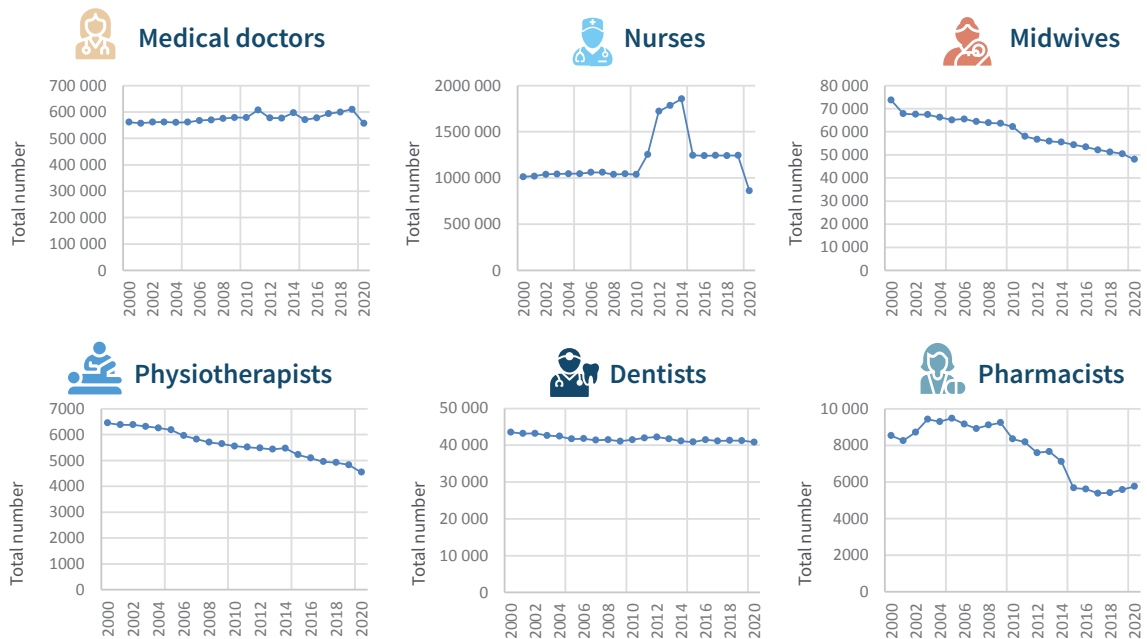
UHC SERVICE COVERAGE INDEX

75

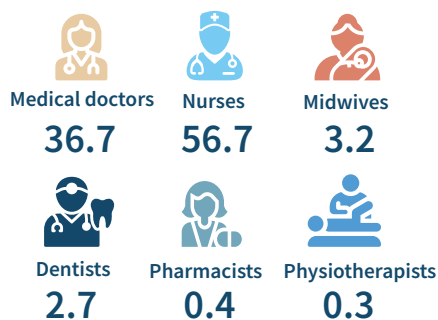
Health workforce density per 10 000 population



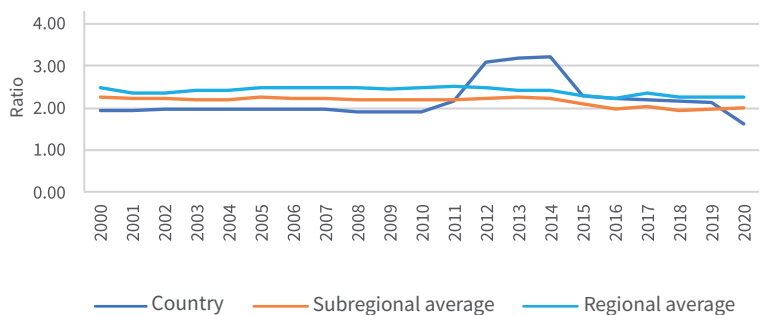
Health workforce trends (total number)



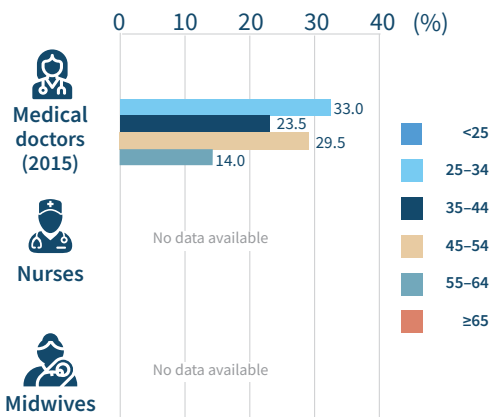
Composition by six professional categories covered in the report, percentage (latest year)



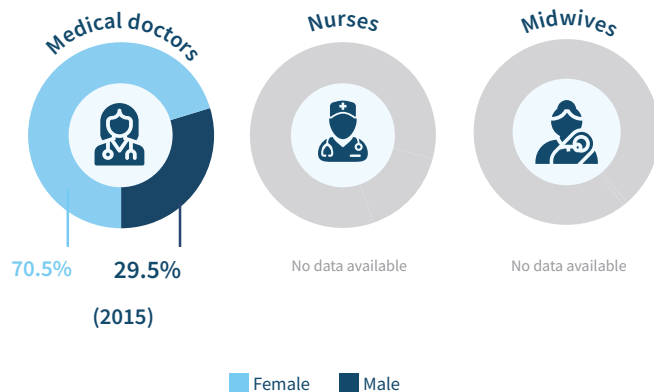
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

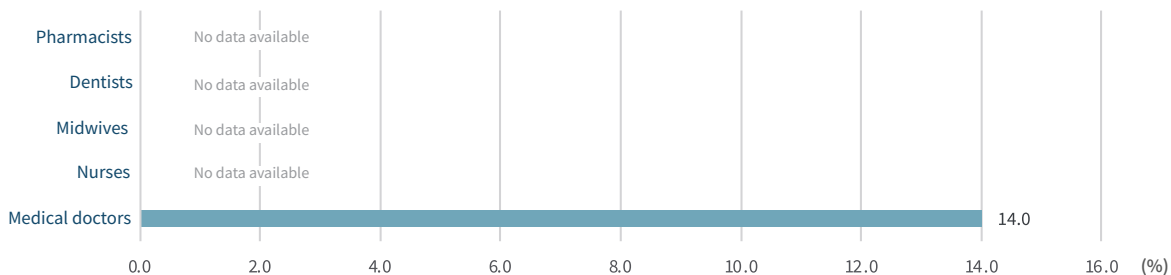


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

Professions	Annual graduates (total number)	Graduates per year per 100 000 population	Graduates per year per 1000 practitioners
Medical doctors (2004)	15 410	11	28
Nurses	No data available	No data available	No data available
Midwives (2004)	2326	2	48
Dentists (2004)	2567	2	63
Pharmacists (2004)	2657	2	462

Country of training, percentage

NO DATA AVAILABLE

Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries

NO DATA AVAILABLE



San Marino

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION
34 007

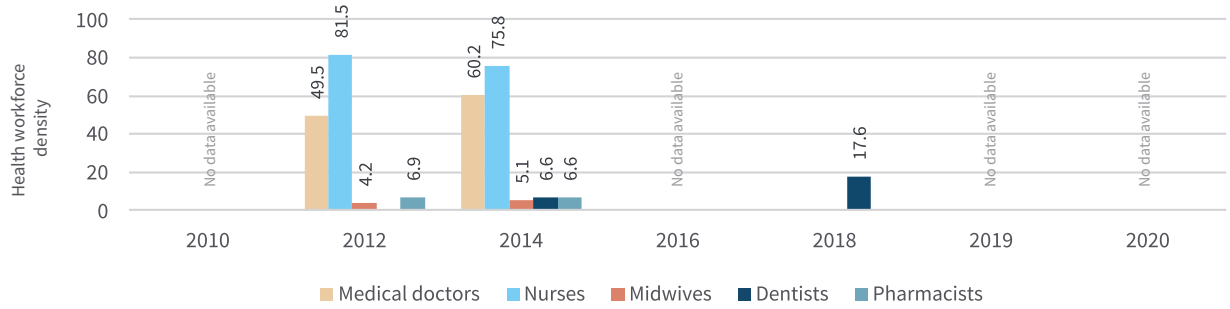
LIFE EXPECTANCY AT BIRTH (YEARS)
79.6

MEDIAN AGE (YEARS)
45.7

DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION
141.1

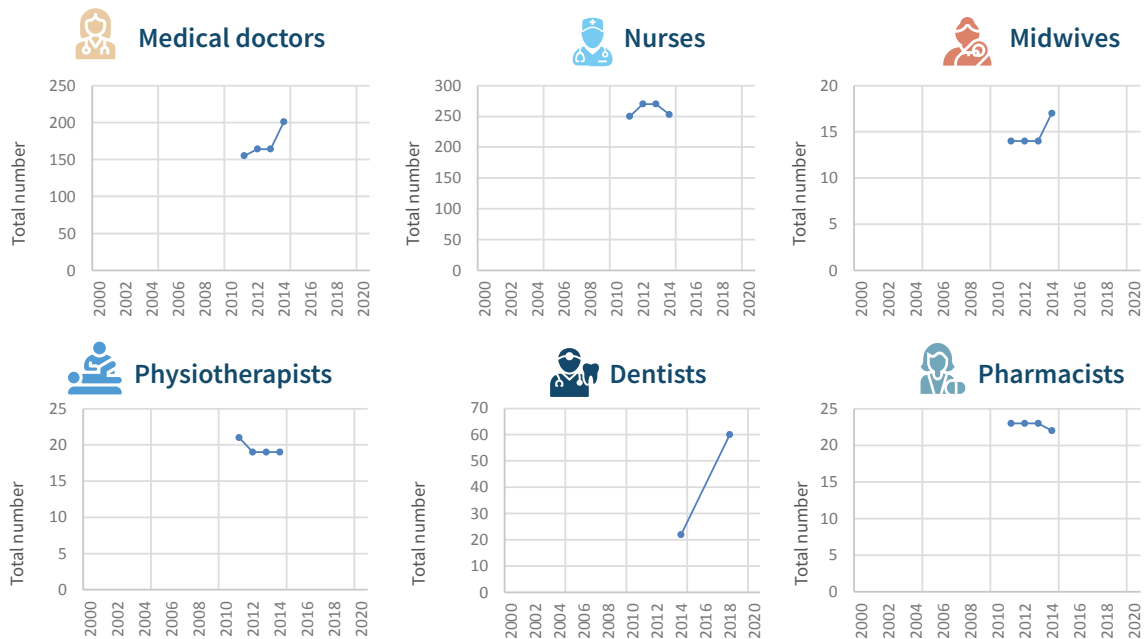
UHC SERVICE COVERAGE INDEX
82

Health workforce density per 10 000 population

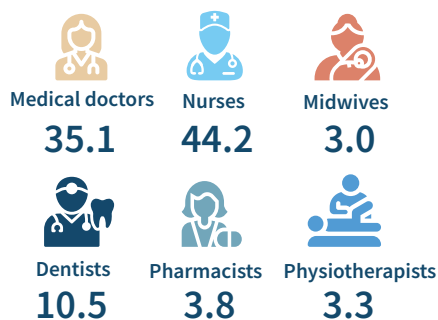


Health workforce availability

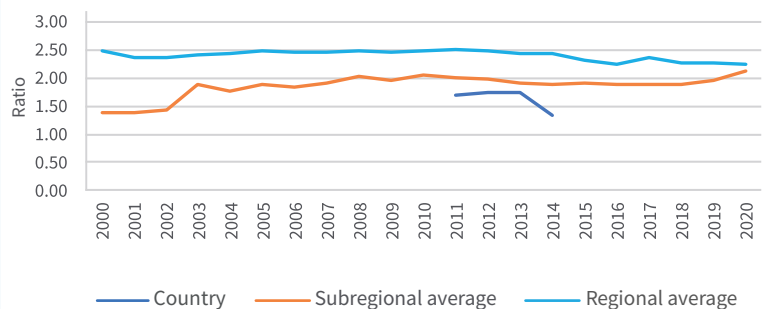
Health workforce trends (total number)



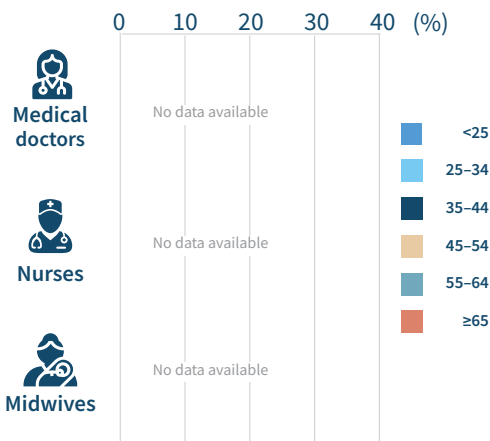
Composition by six professional categories covered in the report, percentage (latest year)



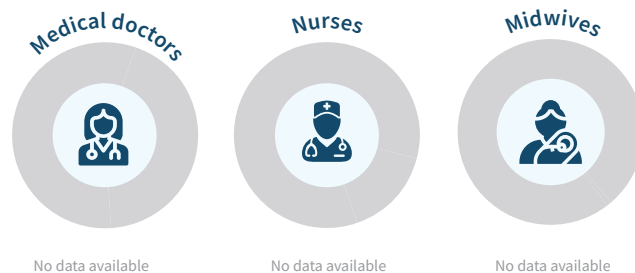
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

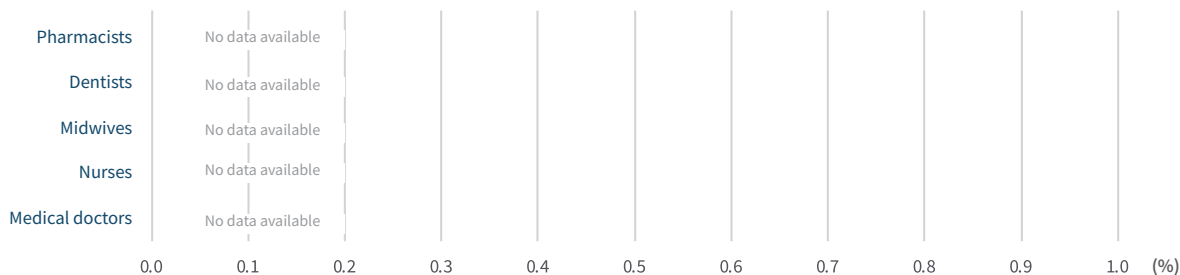


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

Professions	Annual graduates (total number)	Graduates per year per 100 000 population	Graduates per year per 1000 practitioners
Medical doctors	No data available		
Nurses	No data available		
Midwives	No data available	No data available	No data available
Dentists	No data available		
Pharmacists	No data available		

Country of training, percentage	Country of birth, percentage	Annual intake from other countries
NO DATA AVAILABLE	NO DATA AVAILABLE	NO DATA AVAILABLE



Serbia

Human resources for health profile

See pages 82–83 for data sources and technical notes



Country at a glance



7 358 005



75.4



42.8

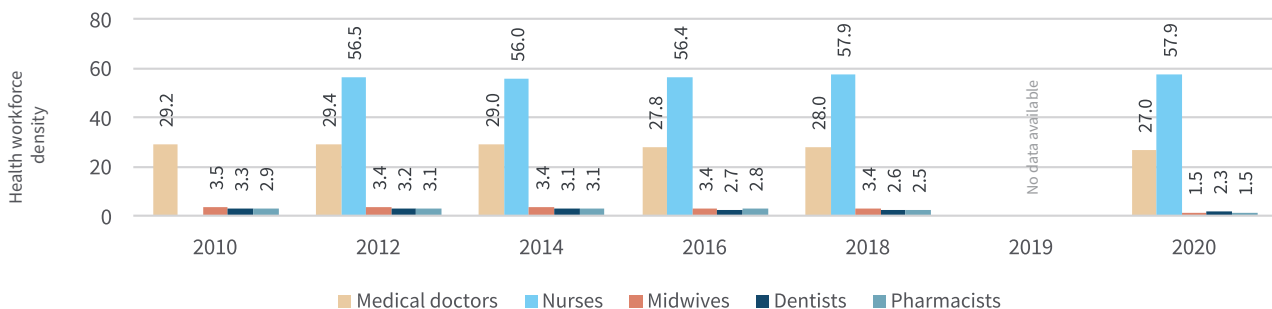


86.3



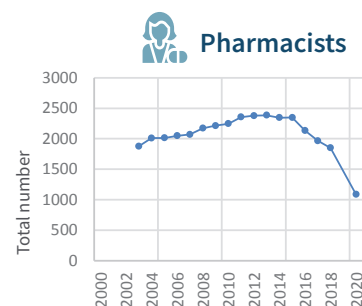
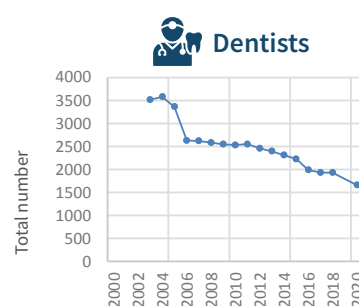
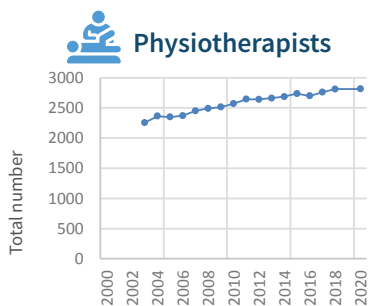
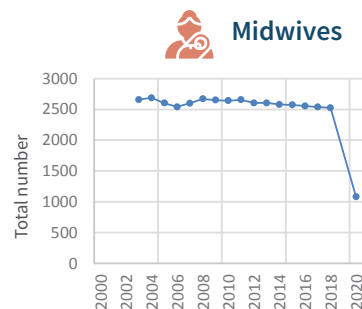
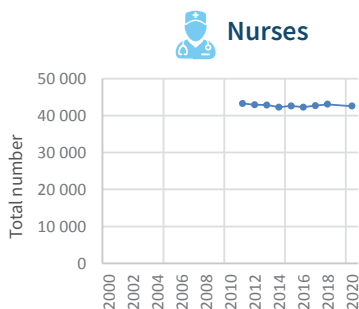
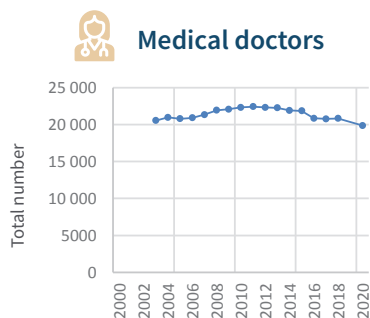
71

Health workforce density per 10 000 population

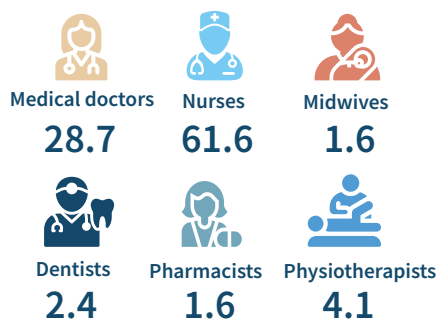


Health workforce availability

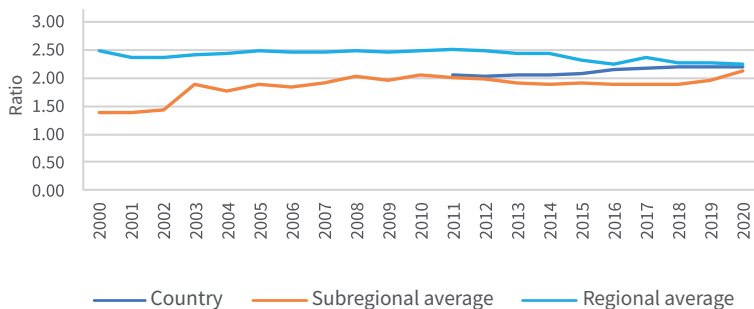
Health workforce trends (total number)



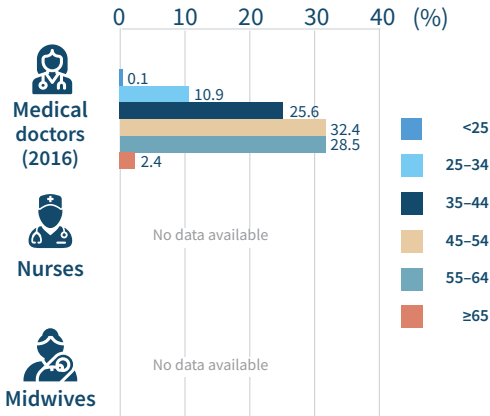
Composition by six professional categories covered in the report, percentage (latest year)



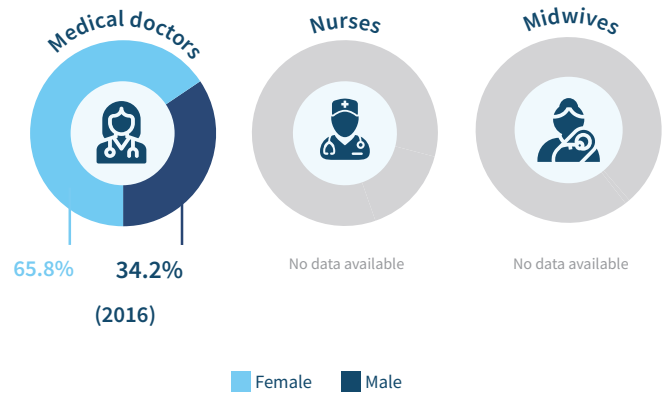
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

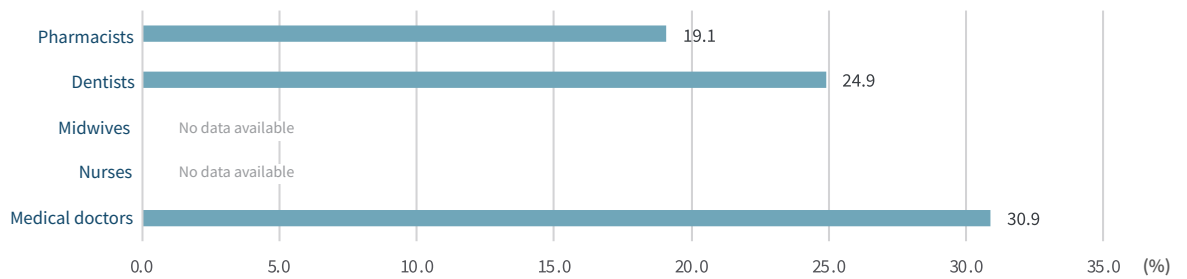


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



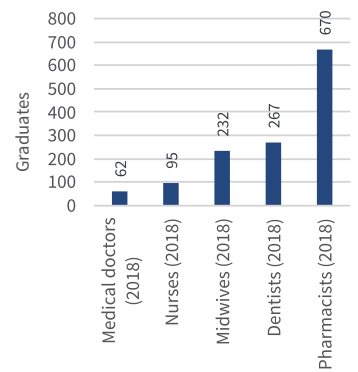
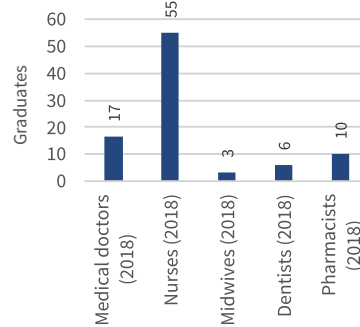
Professions

Annual graduates (total number)

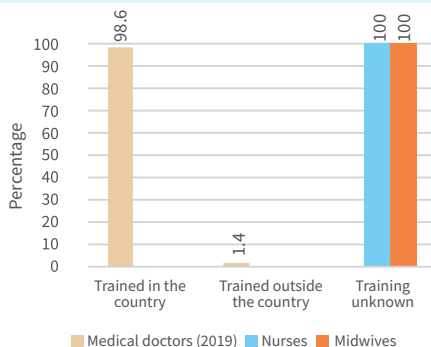
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2018)	1231
Nurses (2018)	4057
Midwives (2018)	251
Dentists (2018)	443
Pharmacists (2018)	729



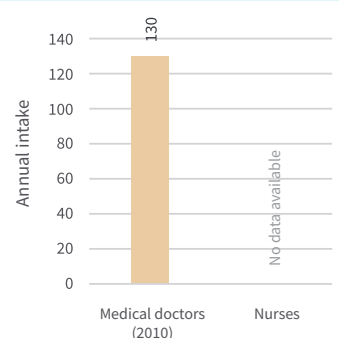
Country of training, percentage



Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries



Health workforce domestic and international supply



Slovakia

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

5 456 681

LIFE EXPECTANCY AT BIRTH (YEARS)

77.0

MEDIAN AGE (YEARS)

40.2

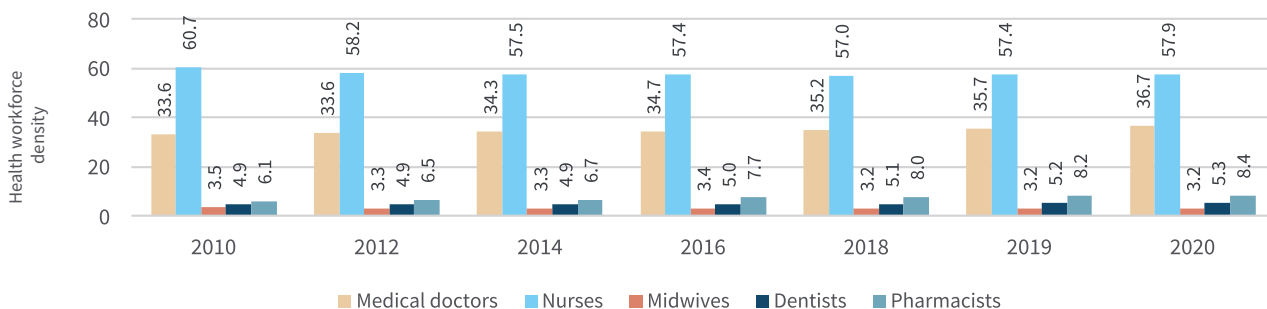
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

97.9

UHC SERVICE COVERAGE INDEX

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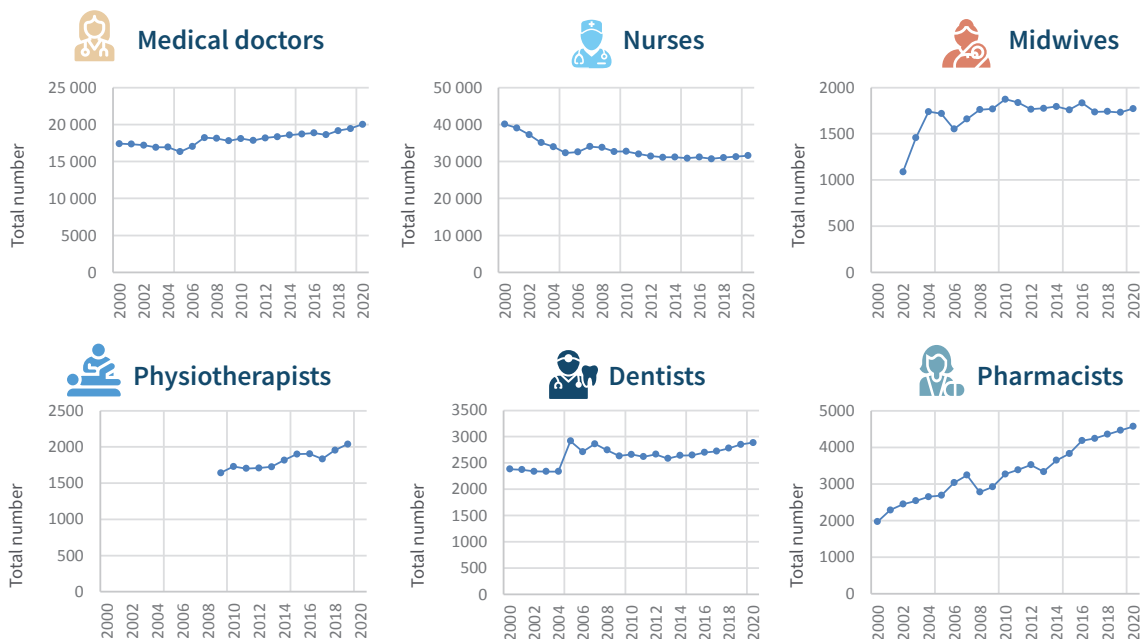
Health workforce density per 10 000 population



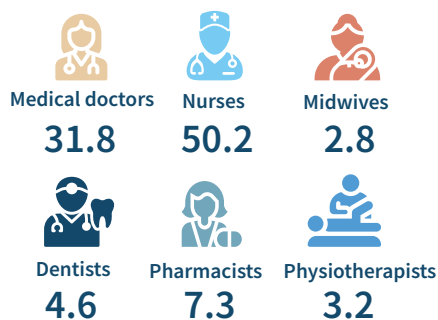
Health workforce availability



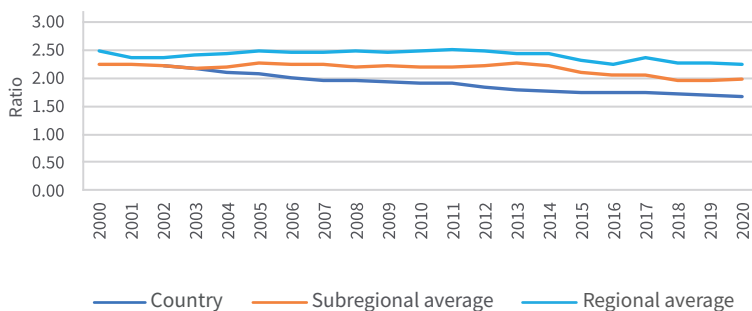
Health workforce trends (total number)



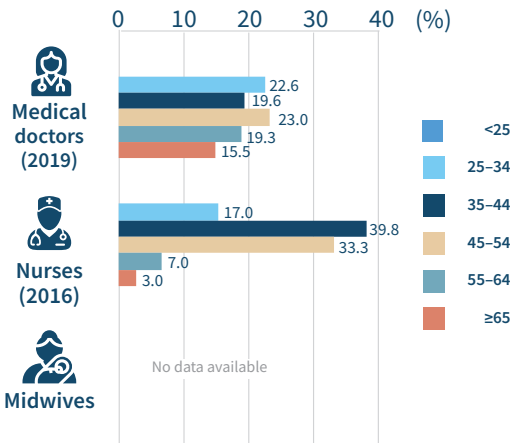
Composition by six professional categories covered in the report, percentage (latest year)



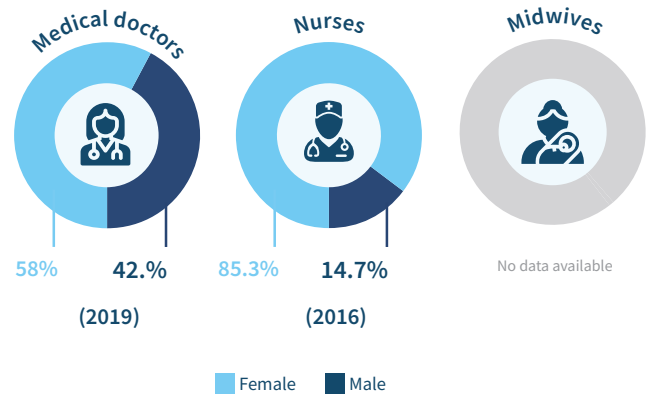
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

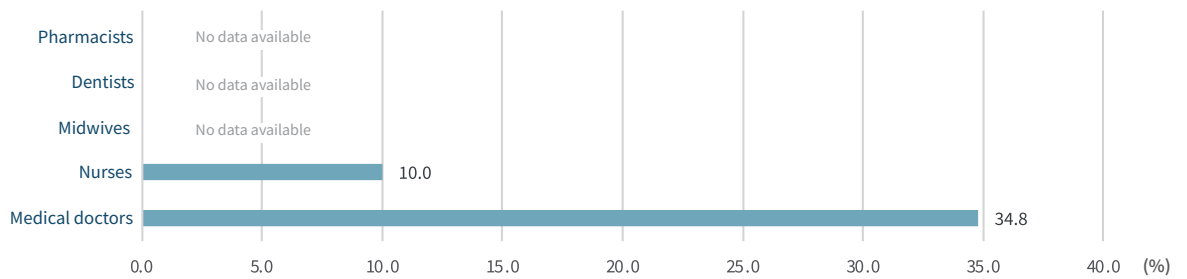


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



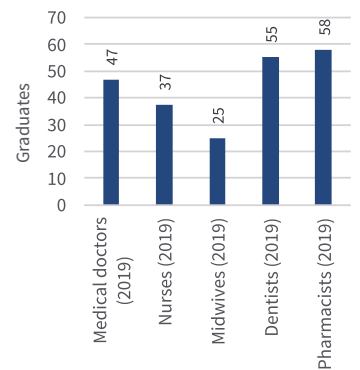
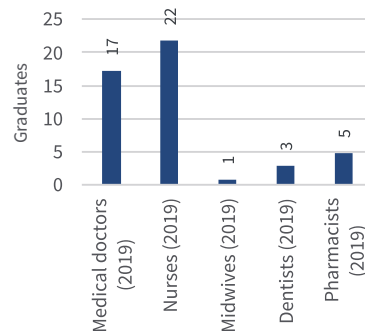
Professions

Annual graduates (total number)

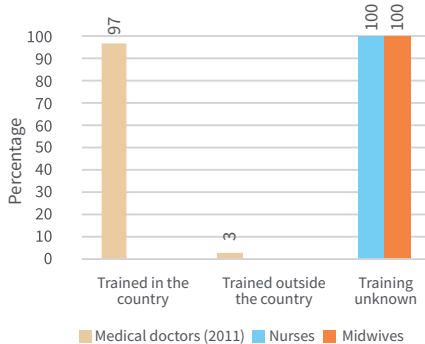
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2019)	938
Nurses (2019)	1185
Midwives (2019)	44
Dentists (2019)	160
Pharmacists (2019)	264



Country of training, percentage



Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries

NO DATA AVAILABLE



Health workforce domestic and international supply



Slovenia

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

2 117 641

LIFE EXPECTANCY AT BIRTH (YEARS)

80.4

MEDIAN AGE (YEARS)

42.9

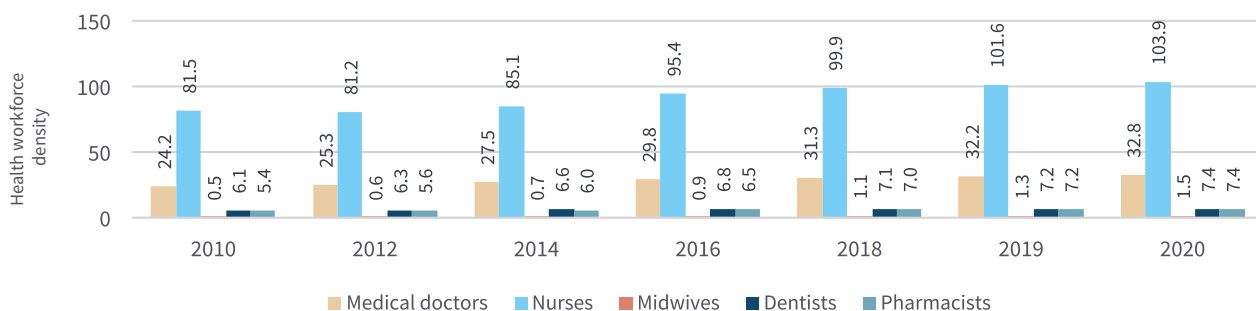
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

138.1

UHC SERVICE COVERAGE INDEX

80

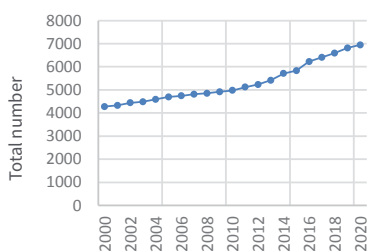
Health workforce density per 10 000 population



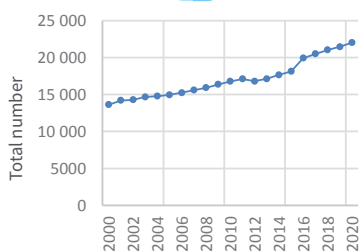
Health workforce availability

Health workforce trends (total number)

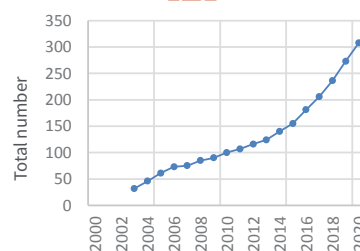
Medical doctors



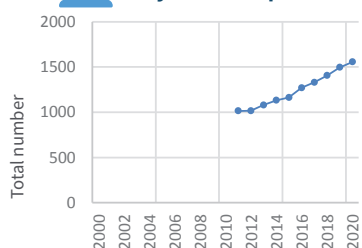
Nurses



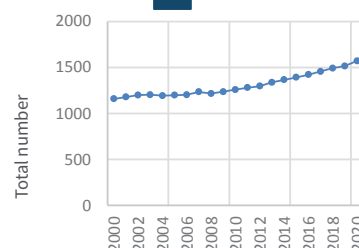
Midwives



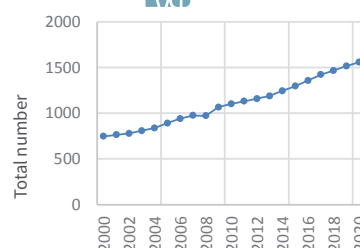
Physiotherapists



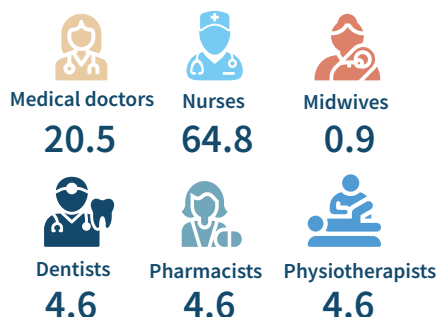
Dentists



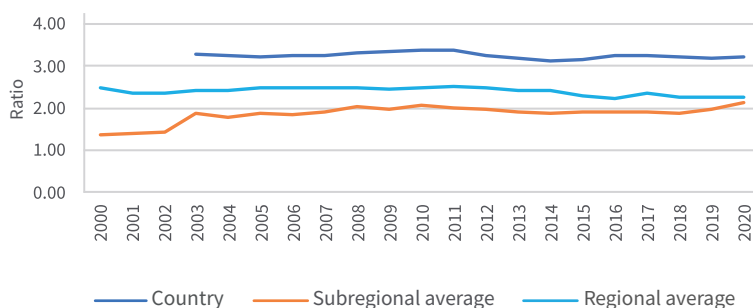
Pharmacists



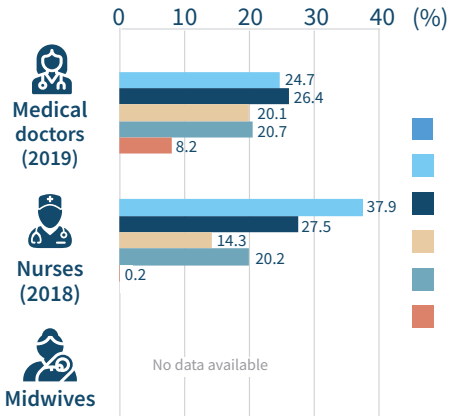
Composition by six professional categories covered in the report, percentage (latest year)



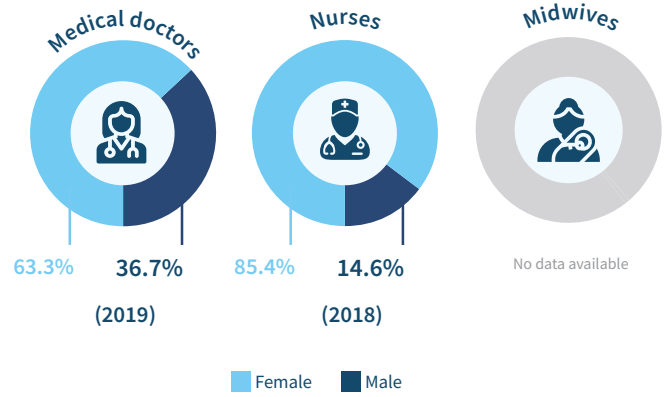
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

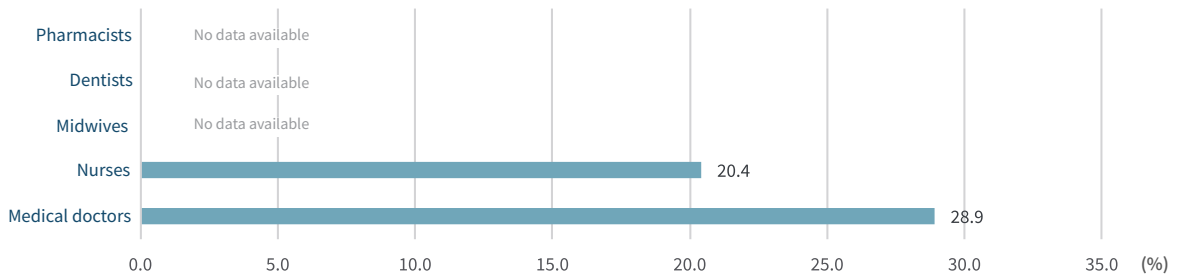


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



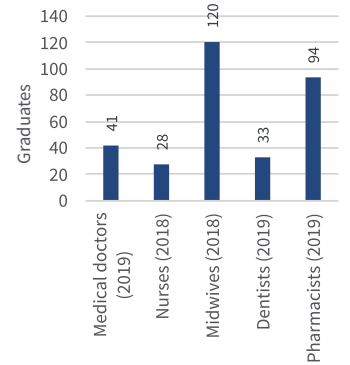
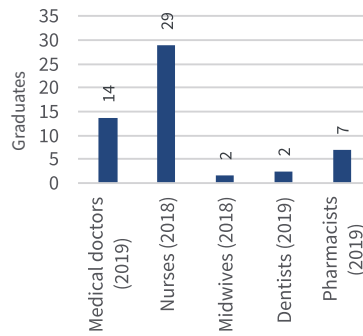
Professions

Annual graduates (total number)

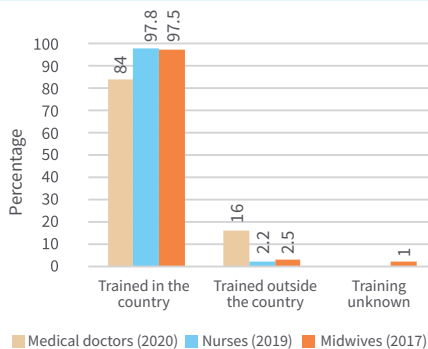
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

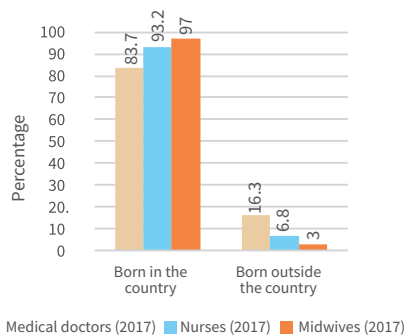
Medical doctors (2019)	288
Nurses (2018)	611
Midwives (2018)	37
Dentists (2019)	52
Pharmacists (2019)	146



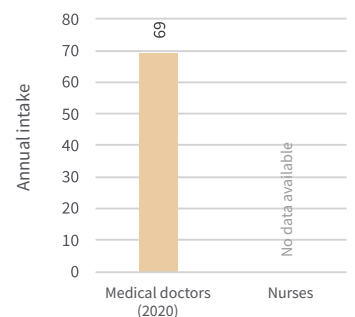
Country of training, percentage



Country of birth, percentage



Annual intake from other countries



Health workforce domestic and international supply





Spain

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

47 363 807

LIFE EXPECTANCY AT BIRTH (YEARS)

82.3

MEDIAN AGE (YEARS)

43.5

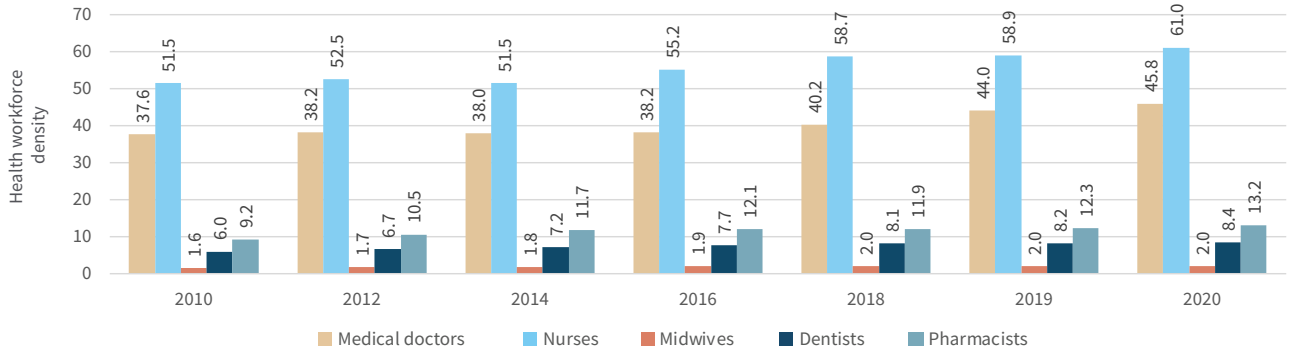
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

108.8

UHC SERVICE COVERAGE INDEX

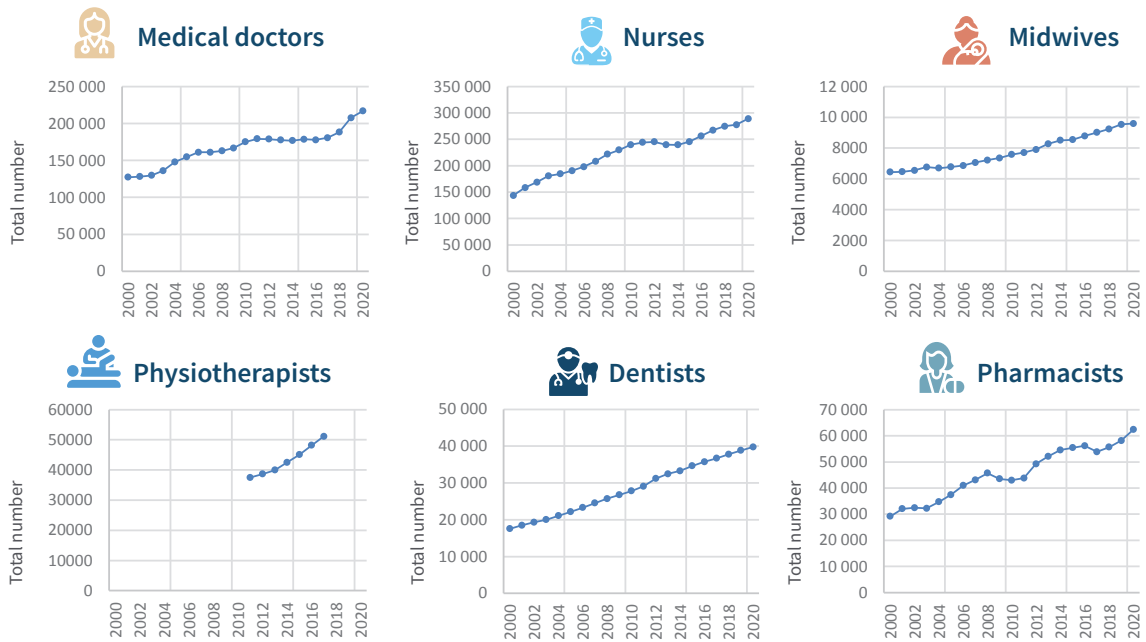
86

Health workforce density per 10 000 population

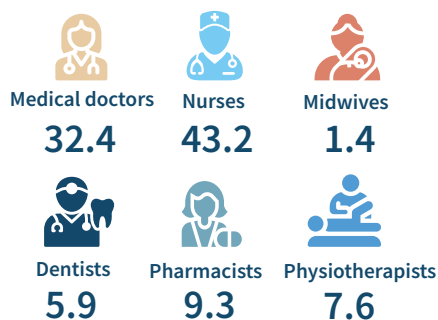


Health workforce availability

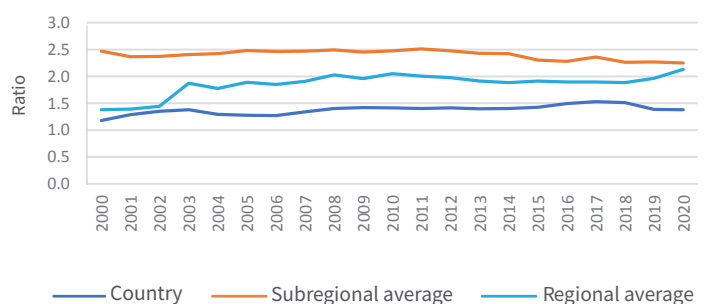
Health workforce trends (total number)



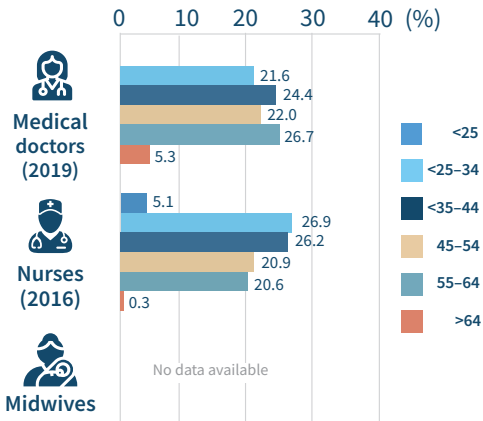
Composition by six professional categories covered in the report, percentage (latest year)



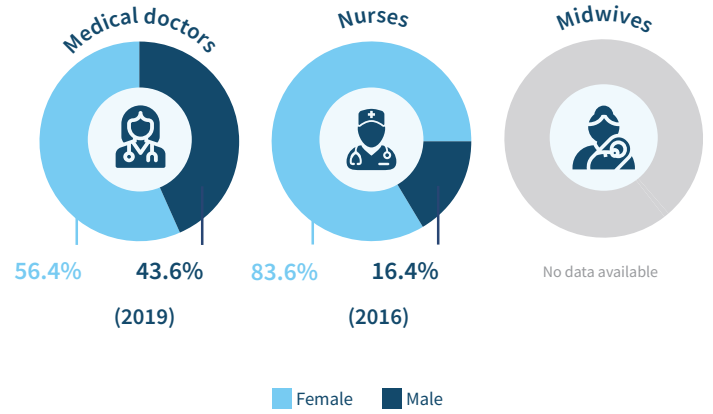
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

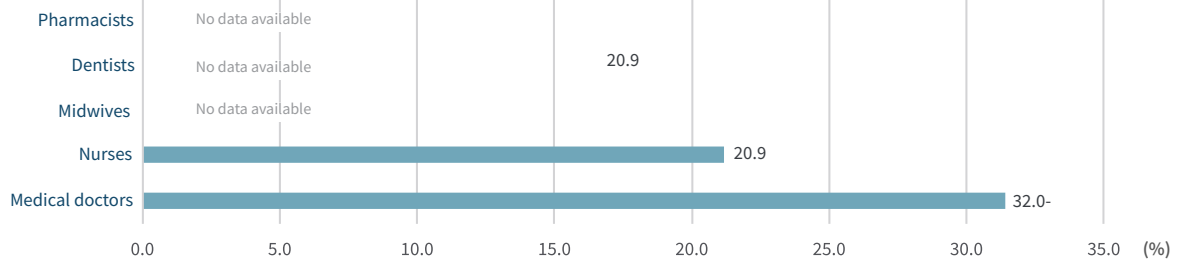


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged 55+



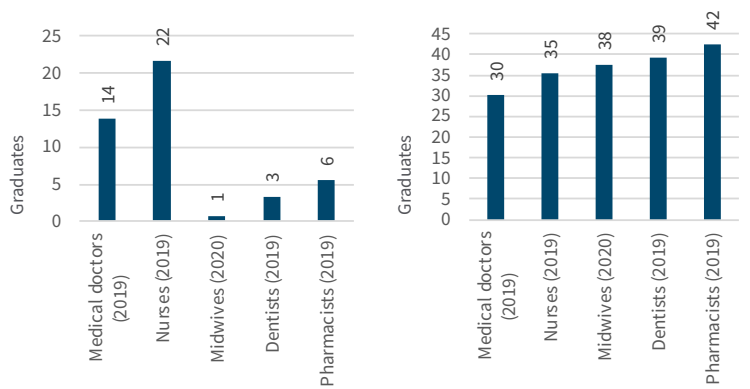
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

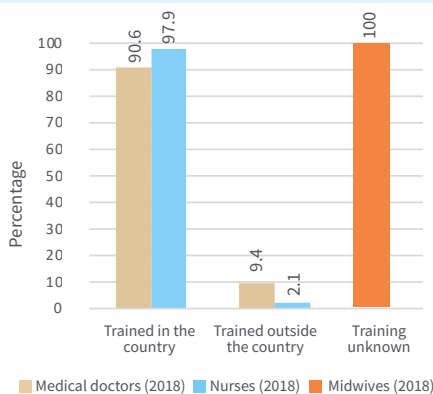
Medical doctors (2019)	6574
Nurses (2019)	10 250
Midwives (2020)	360
Dentists (2019)	1565
Pharmacists (2019)	2645



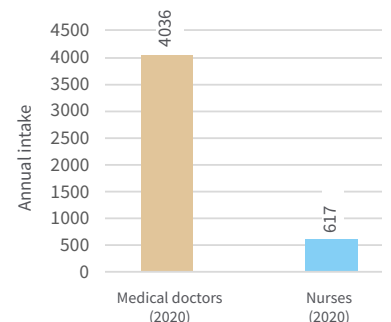
Country of training, percentage

Country of birth, percentage

Annual intake from other countries (total number)



NO DATA AVAILABLE



Health workforce domestic and international supply



Sweden

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

10 368 969

LIFE EXPECTANCY AT BIRTH (YEARS)

82.4

MEDIAN AGE (YEARS)

39.5

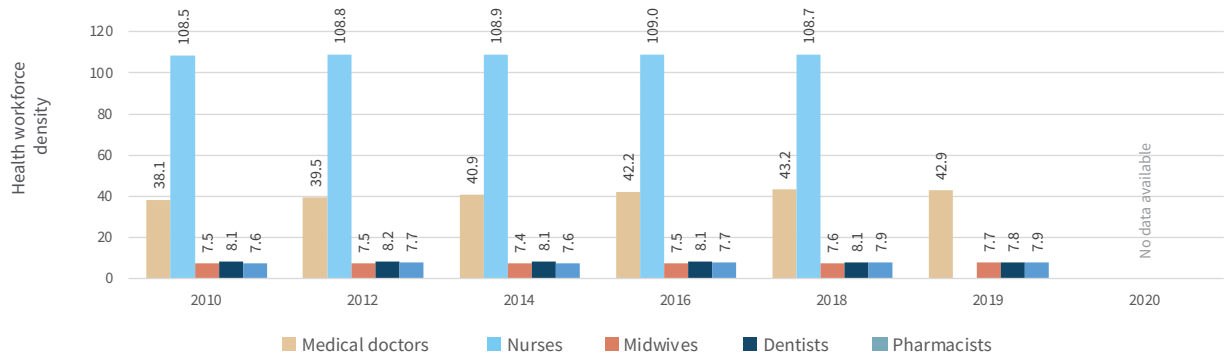
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

159.3

UHC SERVICE COVERAGE INDEX

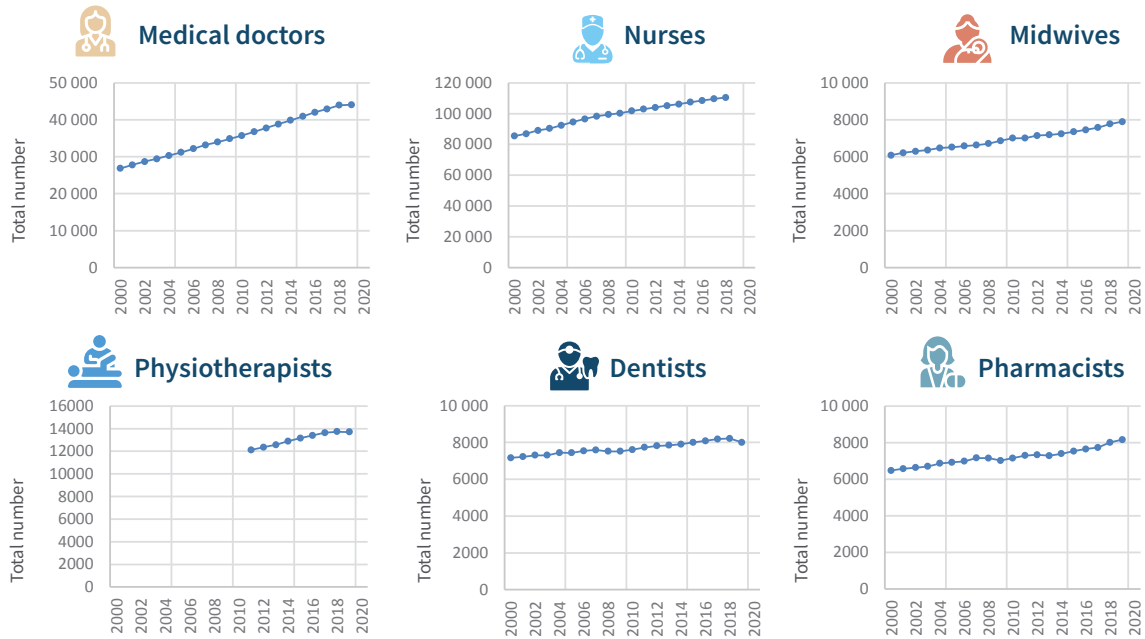
87

Health workforce density per 10 000 population

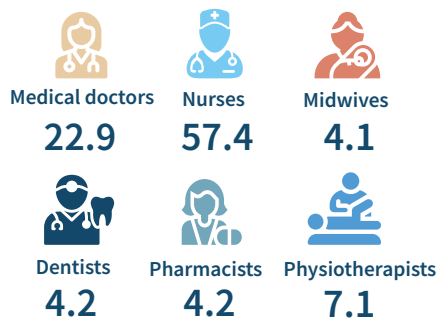


Health workforce availability

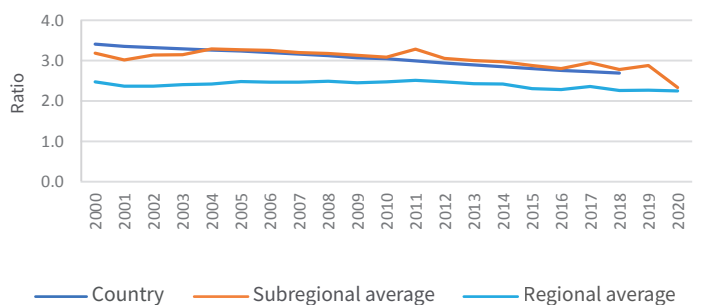
Health workforce trends (total number)



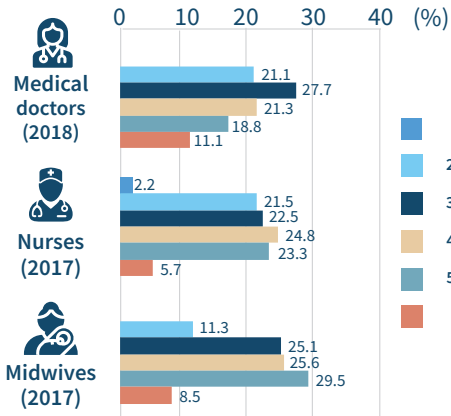
Composition by six professional categories covered in the report, percentage (latest year)



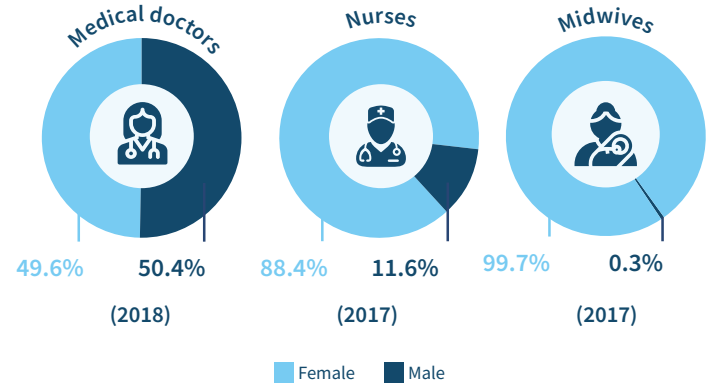
Ratio of nurses and midwives to medical doctors



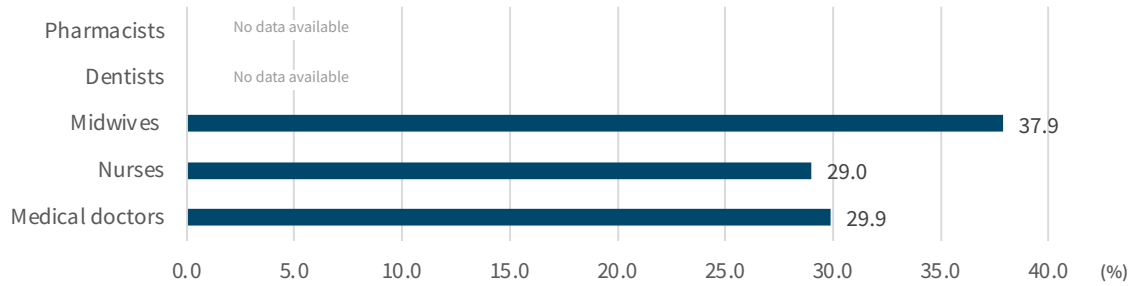
Health workforce distribution by age group, percentage



Health workforce distribution by sex, percentage



Percentage of workforce aged >55



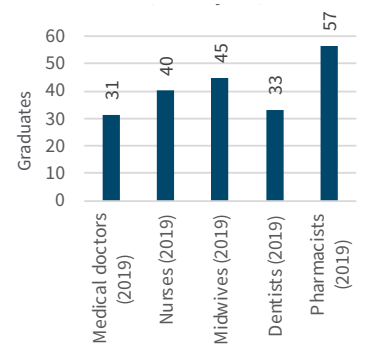
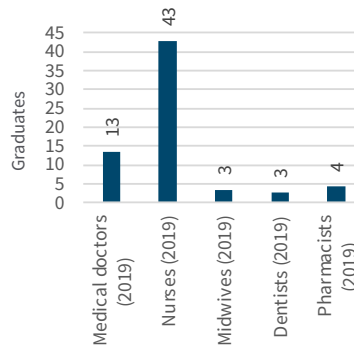
Professions

Annual graduates (total number)

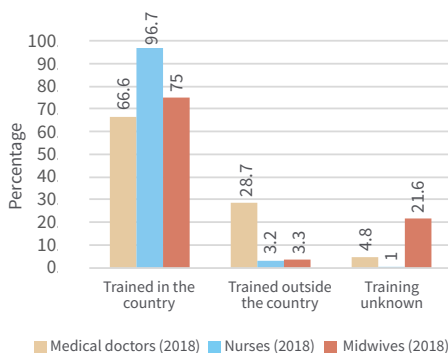
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

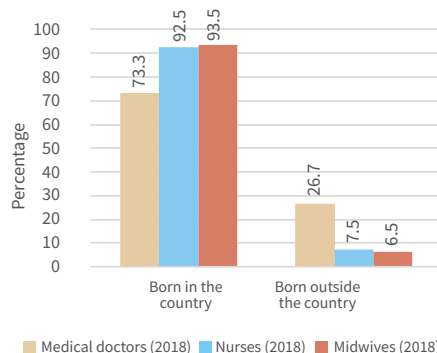
Medical doctors (2019)	1385
Nurses (2019)	4443
Midwives (2019)	354
Dentists (2019)	266
Pharmacists (2019)	462



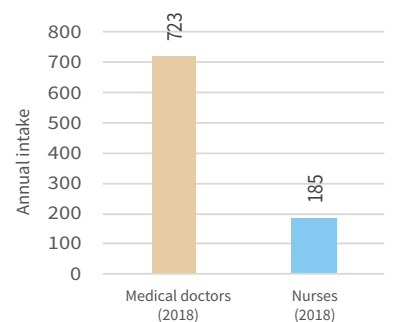
Country of training, percentage



Country of birth, percentage



Annual intake from other countries





Switzerland

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

8 638 613

LIFE EXPECTANCY AT BIRTH (YEARS)

83.1

MEDIAN AGE (YEARS)

41.7

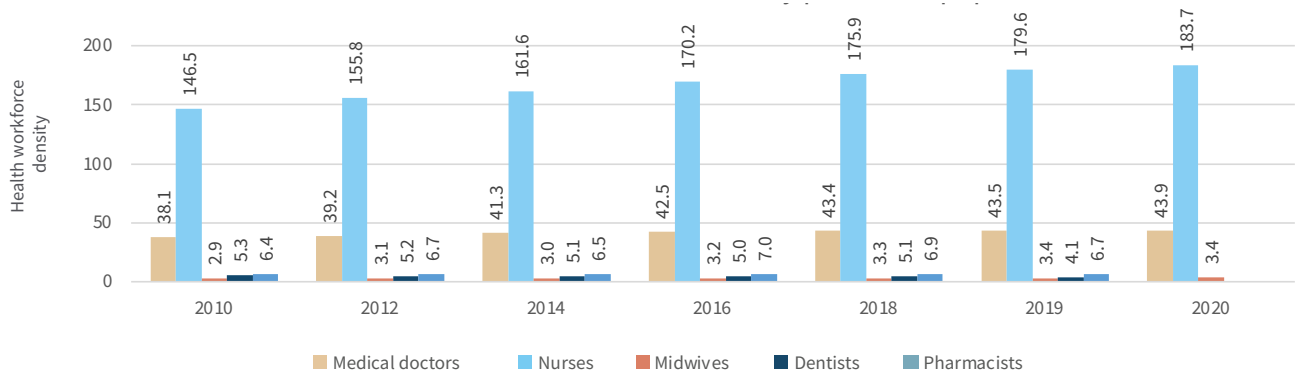
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

231.0

UHC SERVICE COVERAGE INDEX

87

Health workforce density per 10 000 population

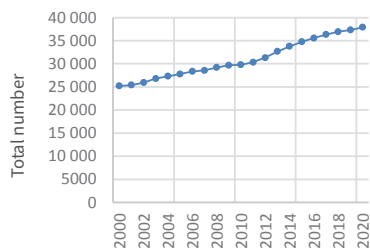


Health workforce availability

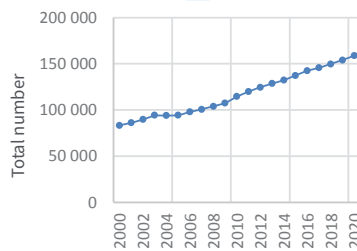


Health workforce trends (total number)

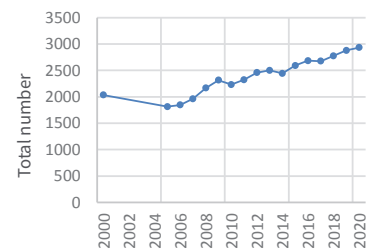
Medical doctors



Nurses



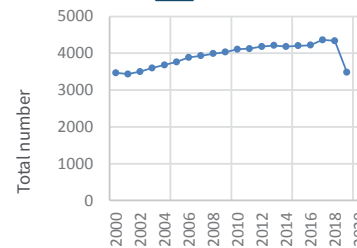
Midwives



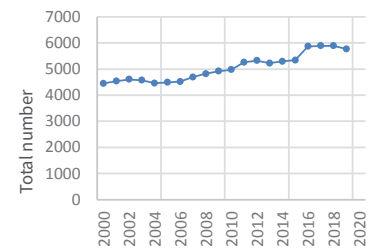
Physiotherapists

NO DATA AVAILABLE

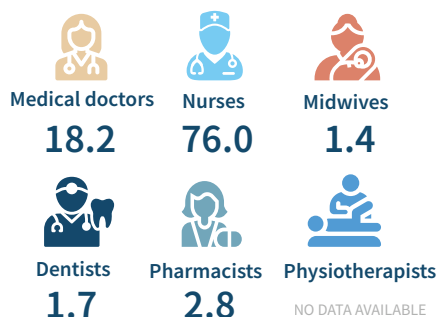
Dentists



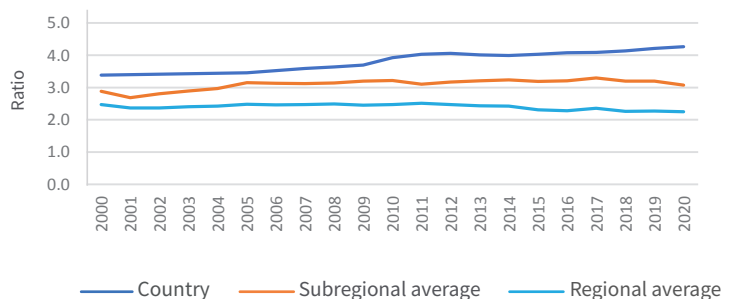
Pharmacists



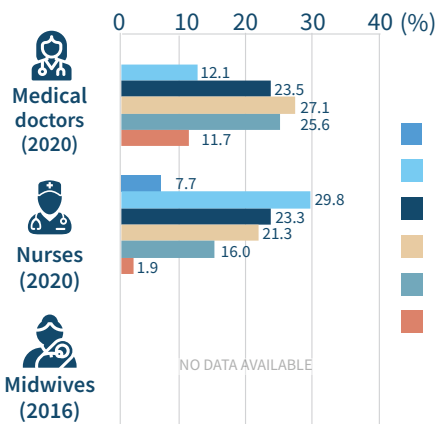
Composition by six professional categories covered in the report, percentage (latest year)



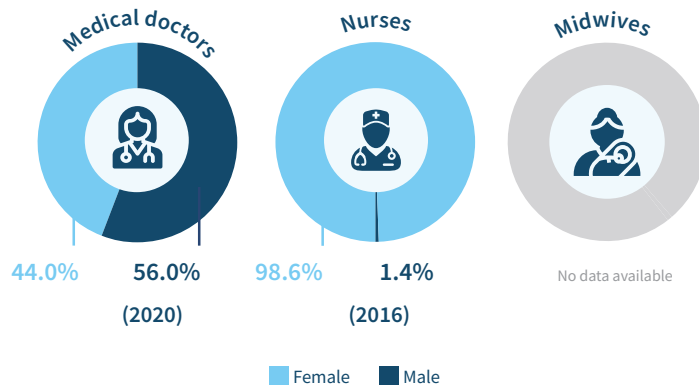
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

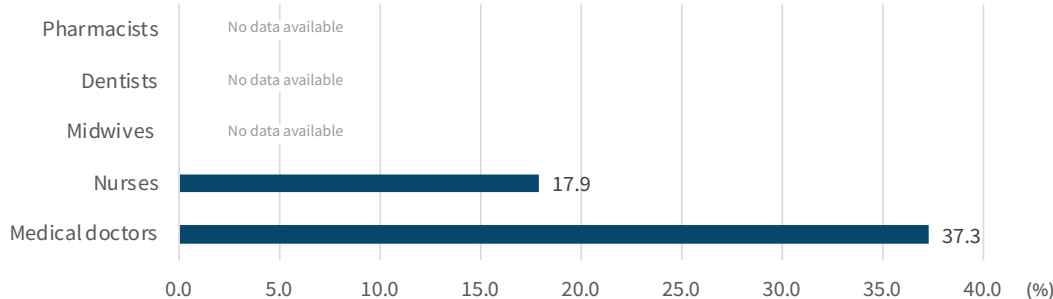


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



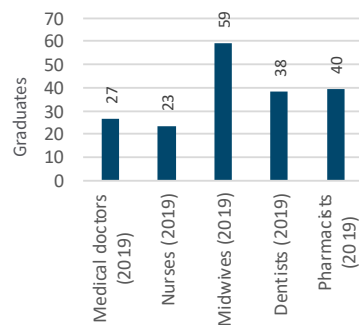
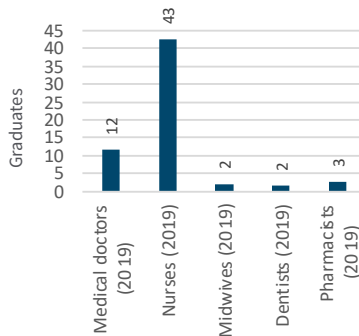
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

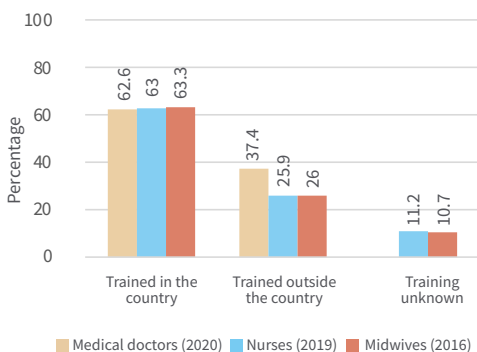
Medical doctors (2019)	1017
Nurses (2019)	3682
Midwives (2019)	173
Dentists (2019)	133
Pharmacists (2019)	228



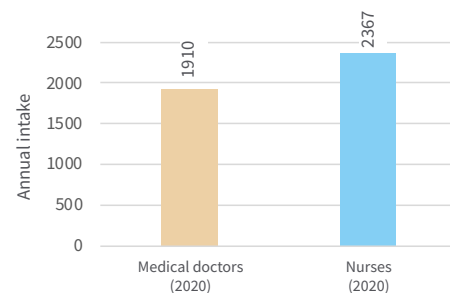
Country of training, percentage

Country of birth, percentage

Annual intake from other countries



NO DATA AVAILABLE



Health workforce domestic and international supply



Tajikistan

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country
at a glance

POPULATION

9 543 207

LIFE EXPECTANCY
AT BIRTH (YEARS)

68.0

MEDIAN AGE
(YEARS)

21.3

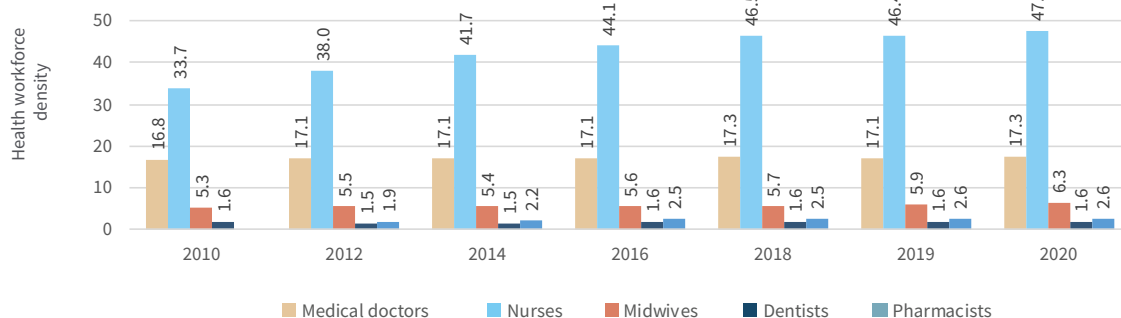
DOCTORS, NURSES
AND MIDWIVES PER
10 000 POPULATION

71.0

UHC SERVICE
COVERAGE INDEX

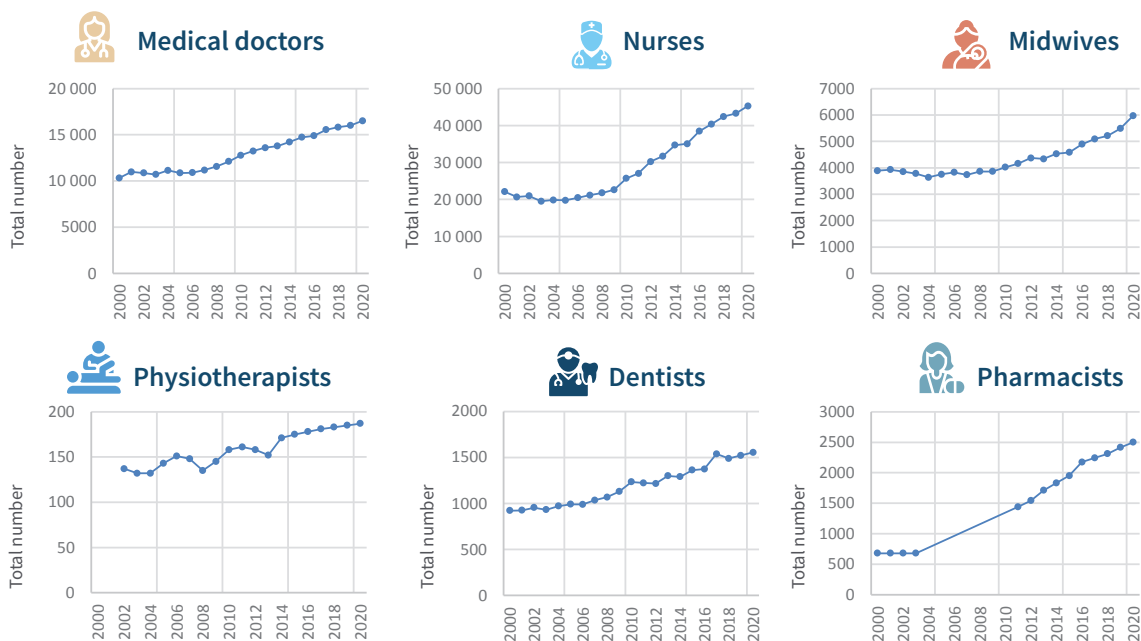
66

Health workforce density per 10 000 population

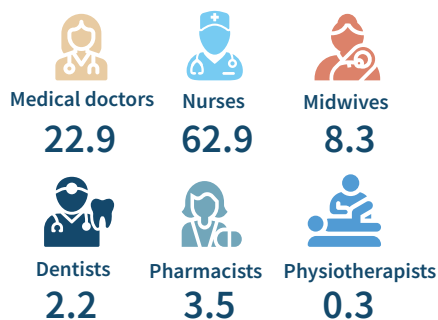


Health
workforce
availability

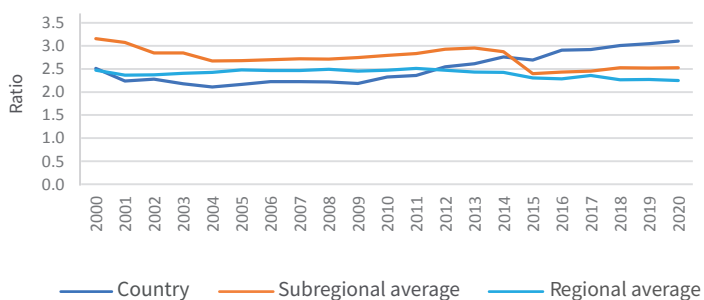
Health workforce trends (total number)



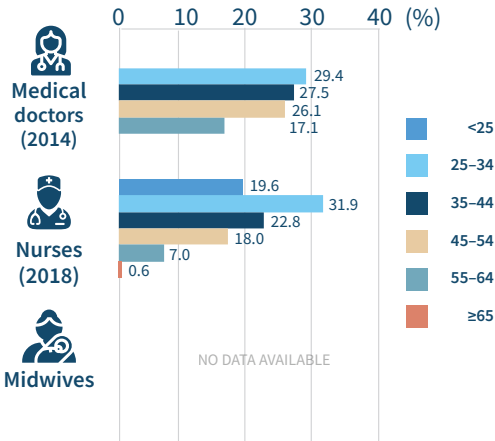
Composition by six professional categories covered in the report, percentage (latest year)



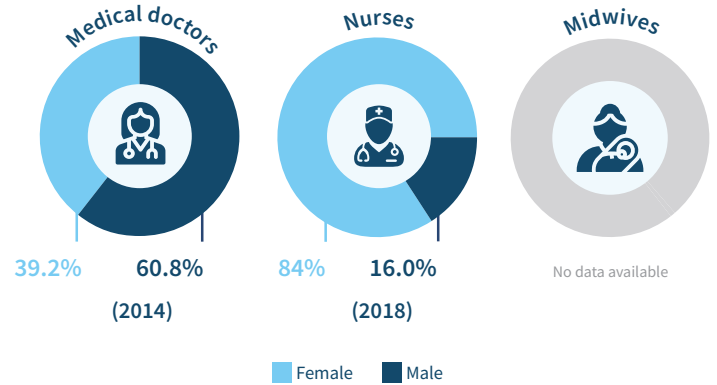
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

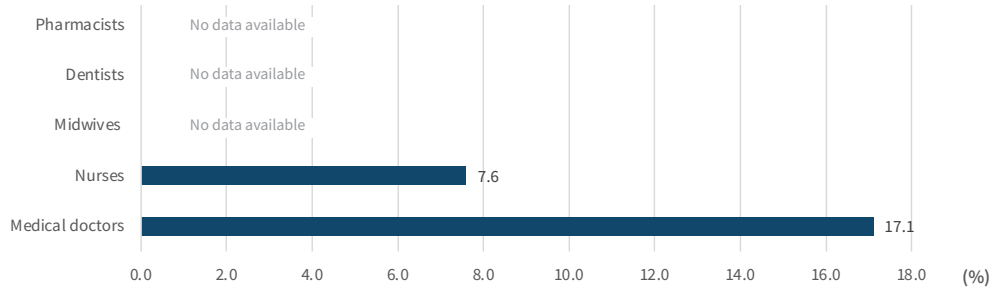


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



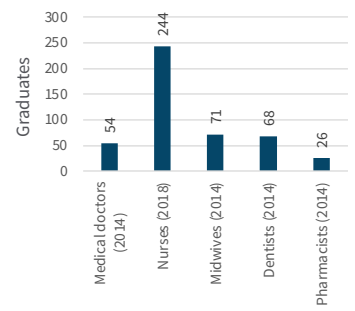
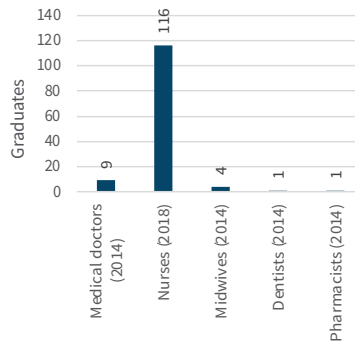
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2014)	893
Nurses (2018)	11 056
Midwives (2014)	422
Dentists (2014)	105
Pharmacists (2014)	66



Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE

Health workforce domestic and international supply



Türkiye

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

84 135 428

LIFE EXPECTANCY AT BIRTH (YEARS)

75.9

MEDIAN AGE (YEARS)

30.6

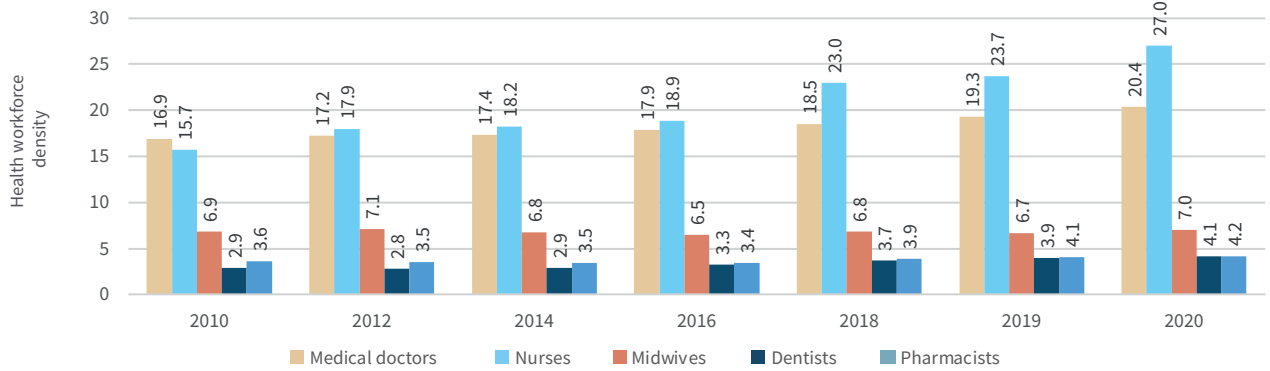
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

54.4

UHC SERVICE COVERAGE INDEX

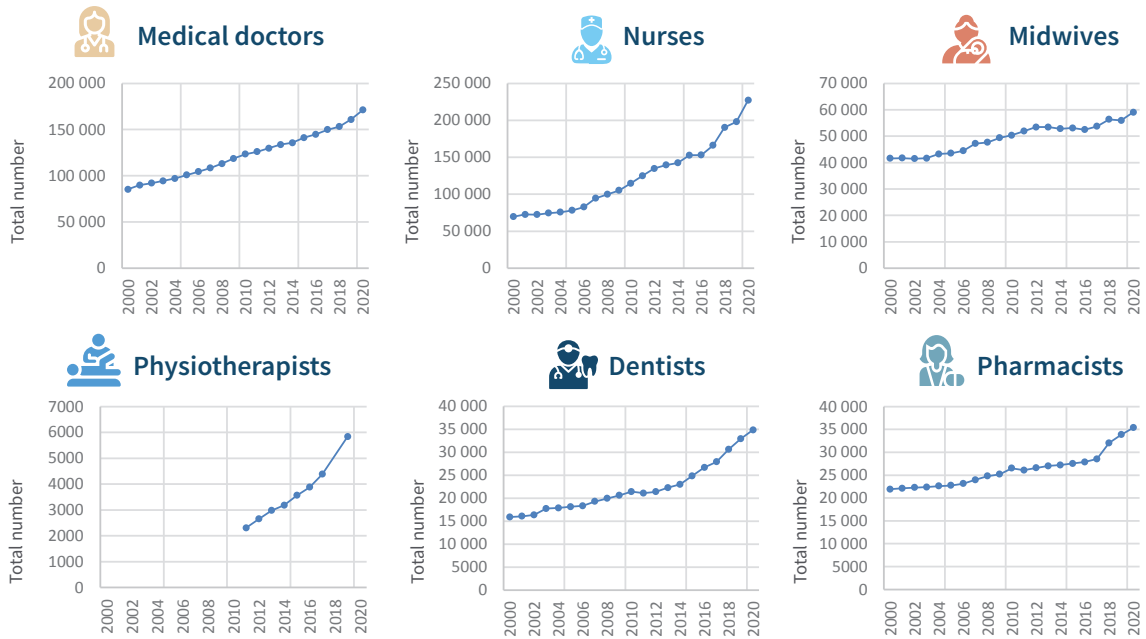
79

Health workforce density per 10 000 population

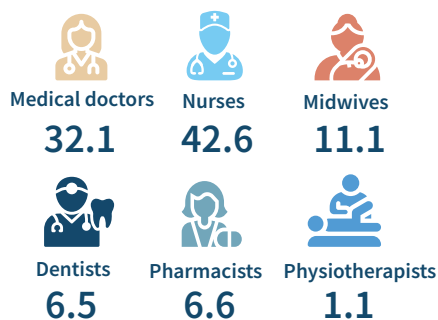


Health workforce availability

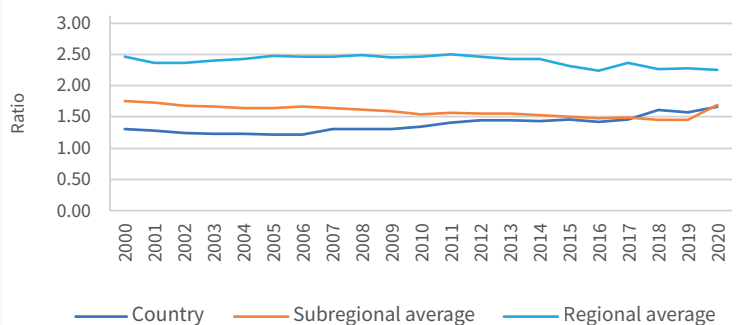
Health workforce trends (total number)



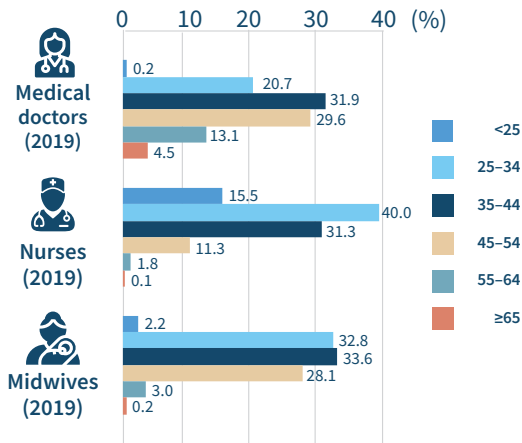
Composition by six professional categories covered in the report, percentage (latest year)



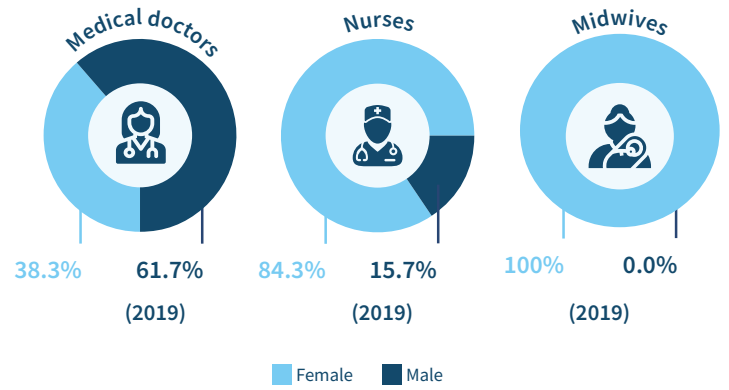
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

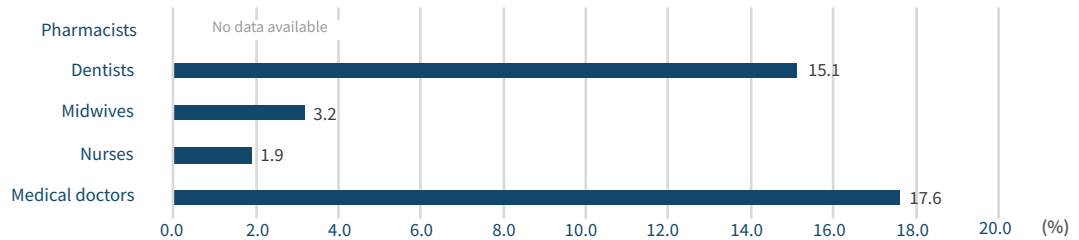


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



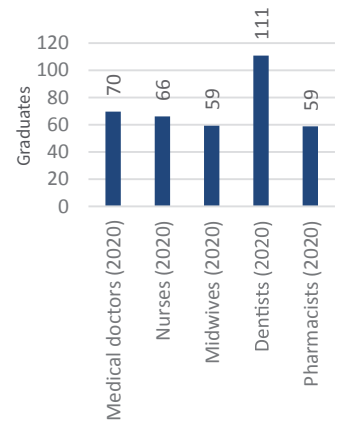
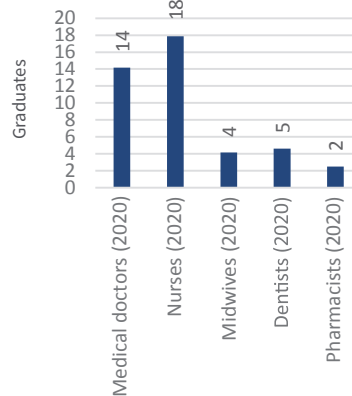
Professions

Annual graduates (total number)

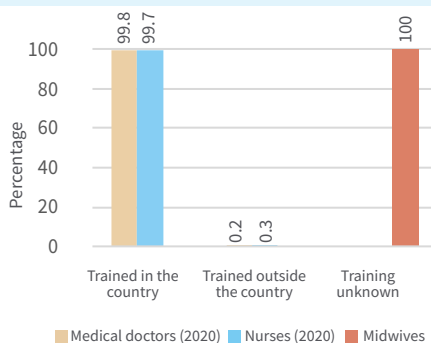
Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2020)	11 909
Nurses (2020)	15 041
Midwives (2020)	3 499
Dentists (2020)	3 859
Pharmacists (2020)	2 082



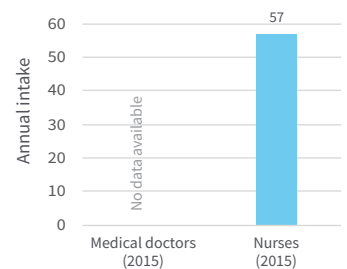
Country of training, percentage



Country of birth, percentage

NO DATA AVAILABLE

Annual intake from other countries



Health workforce domestic and international supply



Turkmenistan

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

6 250 438

LIFE EXPECTANCY AT BIRTH (YEARS)

68.7

MEDIAN AGE (YEARS)

25.6

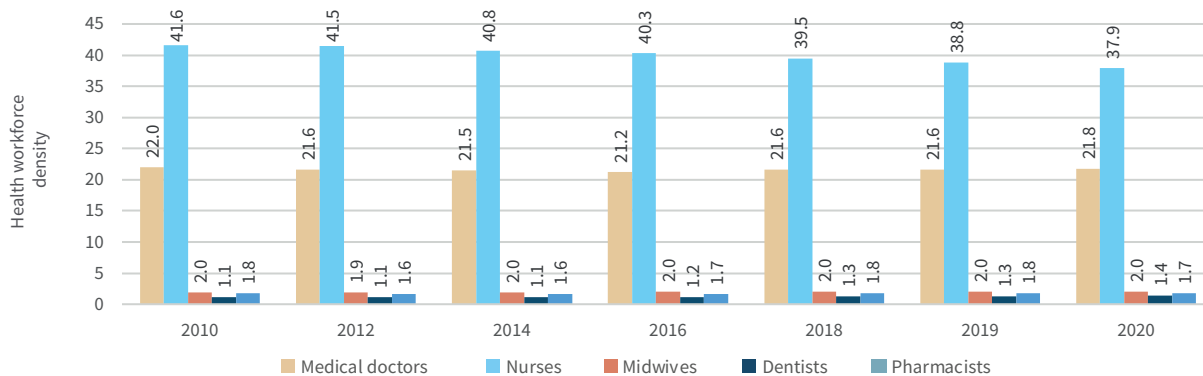
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

61.7

UHC SERVICE COVERAGE INDEX

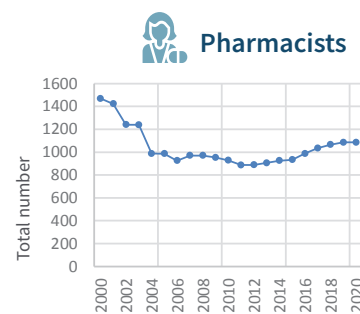
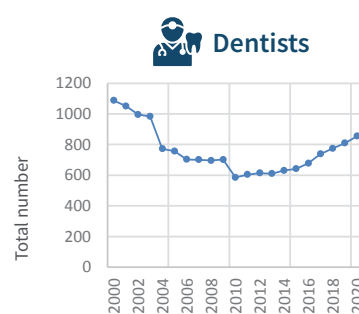
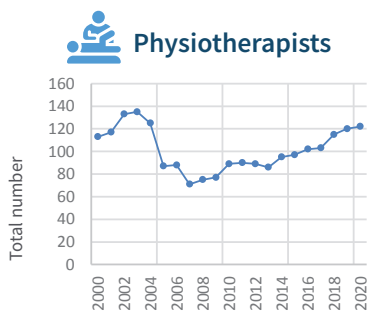
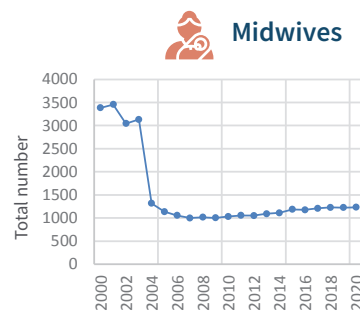
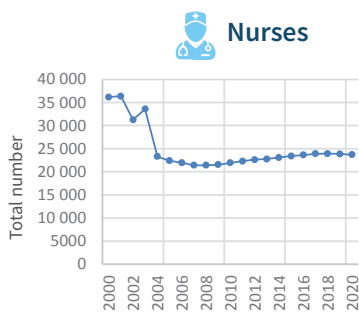
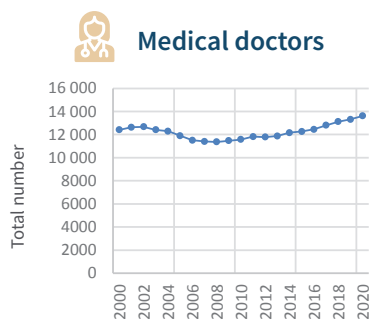
73

Health workforce density per 10 000 population

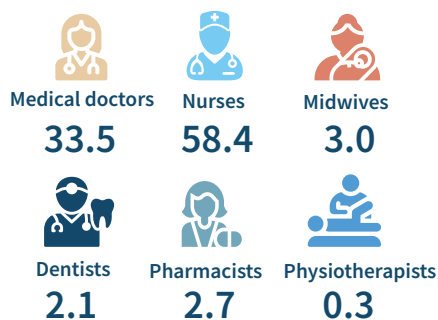


Health workforce availability

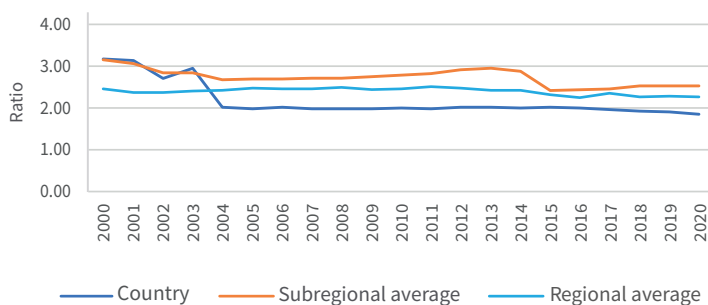
Health workforce trends (total number)



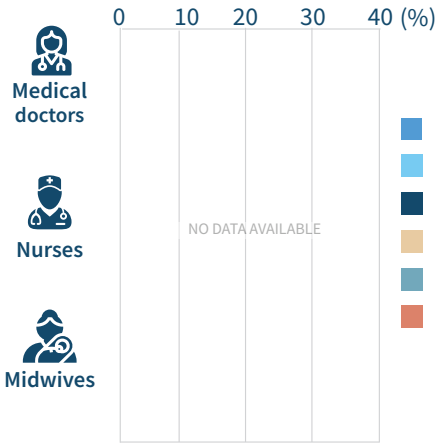
Composition by six professional categories covered in the report, percentage (latest year)



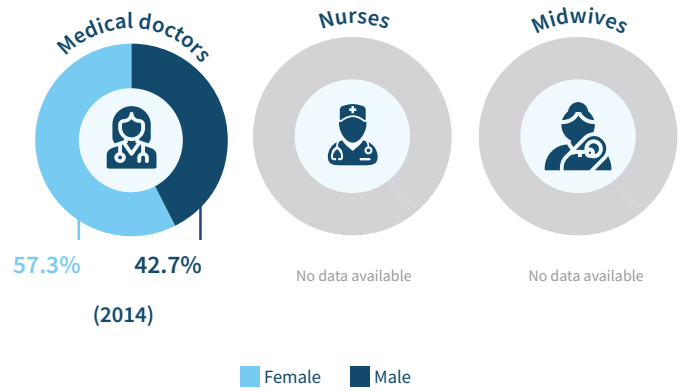
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

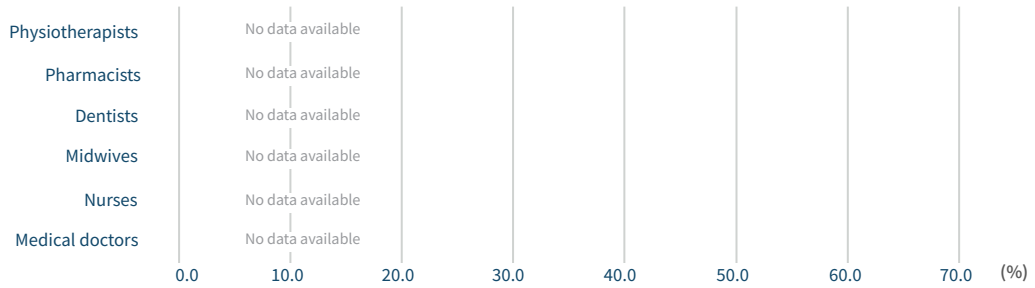


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



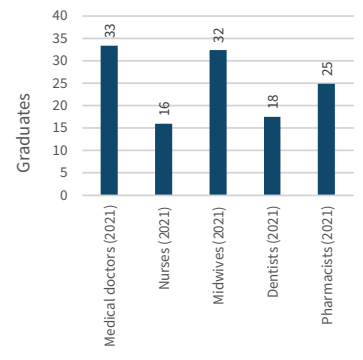
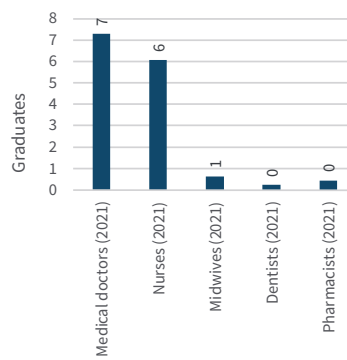
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2021)	455
Nurses (2021)	378
Midwives (2021)	40
Dentists (2021)	15
Pharmacists (2021)	27



Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE



Health workforce domestic and international supply



Ukraine

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

43 909 666

LIFE EXPECTANCY AT BIRTH (YEARS)

72.6

MEDIAN AGE (YEARS)

40.5

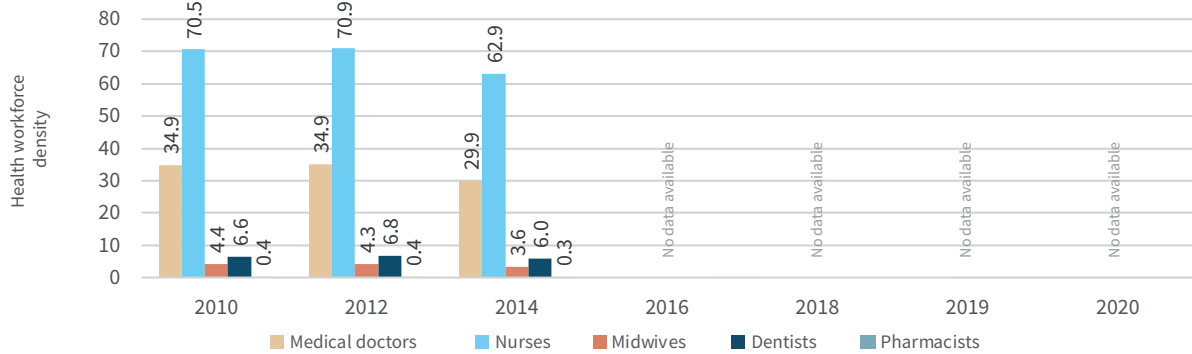
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

96.5

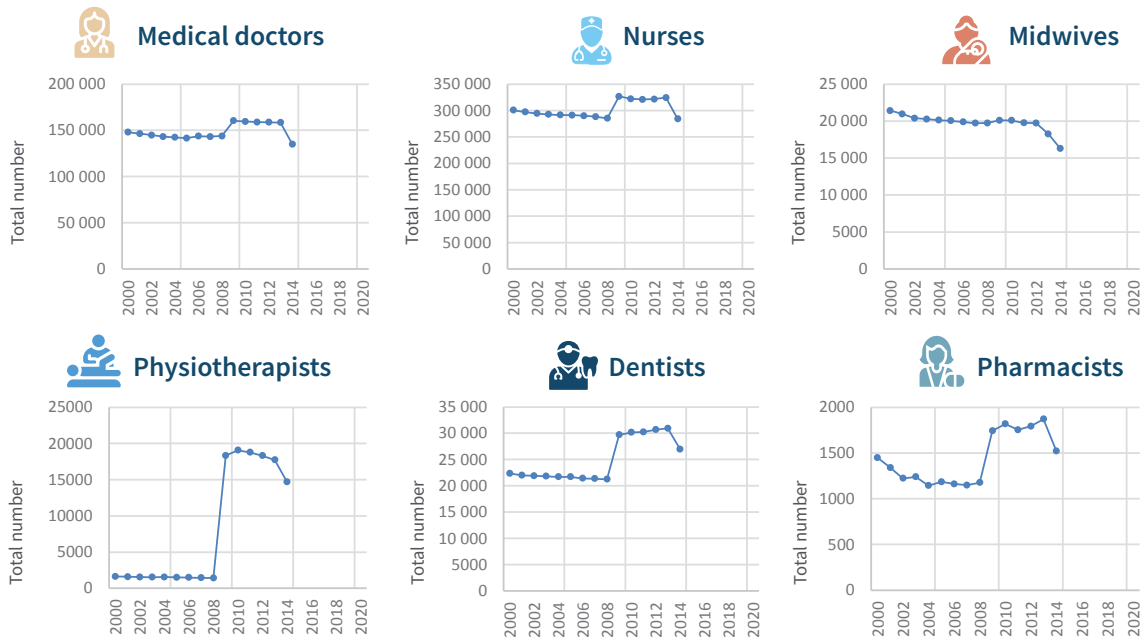
UHC SERVICE COVERAGE INDEX

73

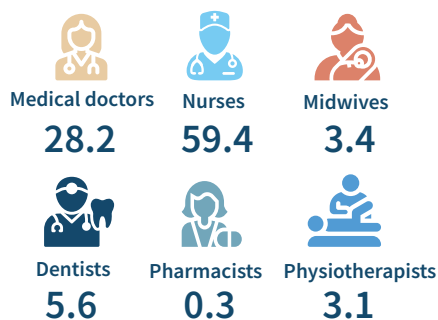
Health workforce density per 10 000 population



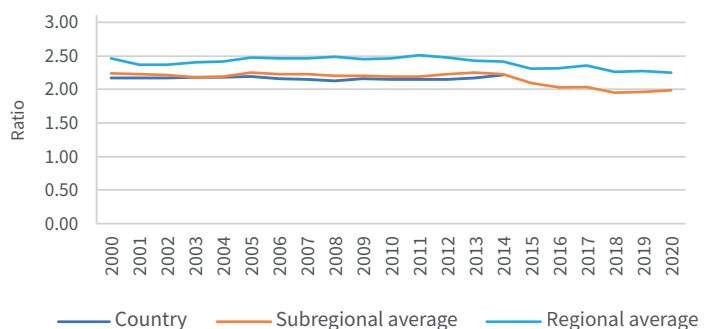
Health workforce trends (total number)



Composition by six professional categories covered in the report, percentage (latest year)



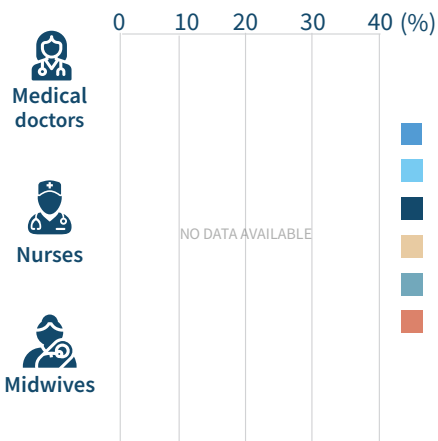
Ratio of nurses and midwives to medical doctors



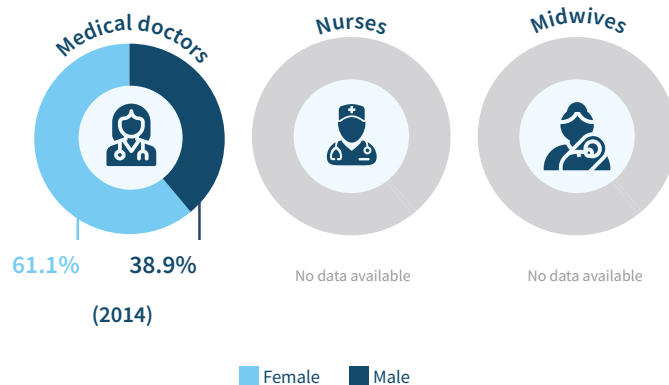
Health workforce availability



Health workforce distribution by age group, percentage

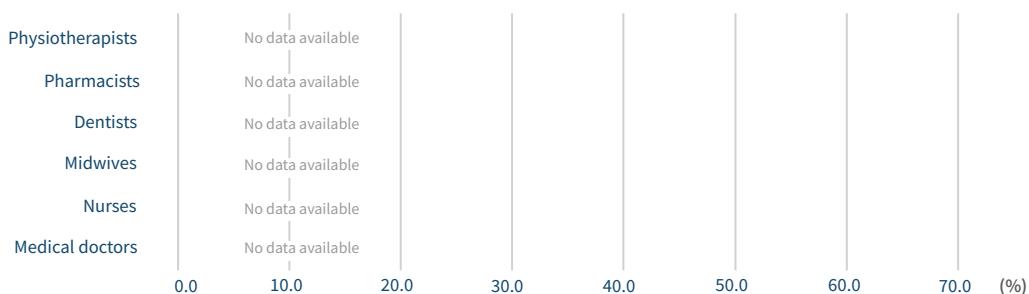


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

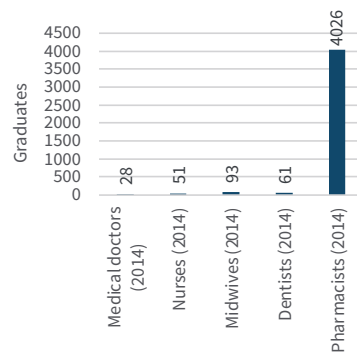
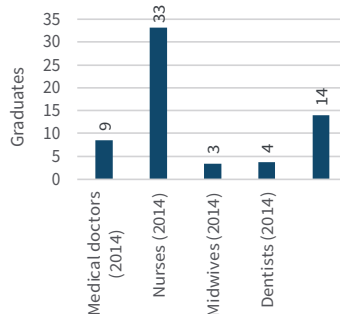
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

Medical doctors (2014)	3787
Nurses (2014)	14 526
Midwives (2014)	1515
Dentists (2014)	1637
Pharmacists (2014)	6124



Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE



United Kingdom

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

67 059 474

LIFE EXPECTANCY AT BIRTH (YEARS)

80.4

MEDIAN AGE (YEARS)

39.5

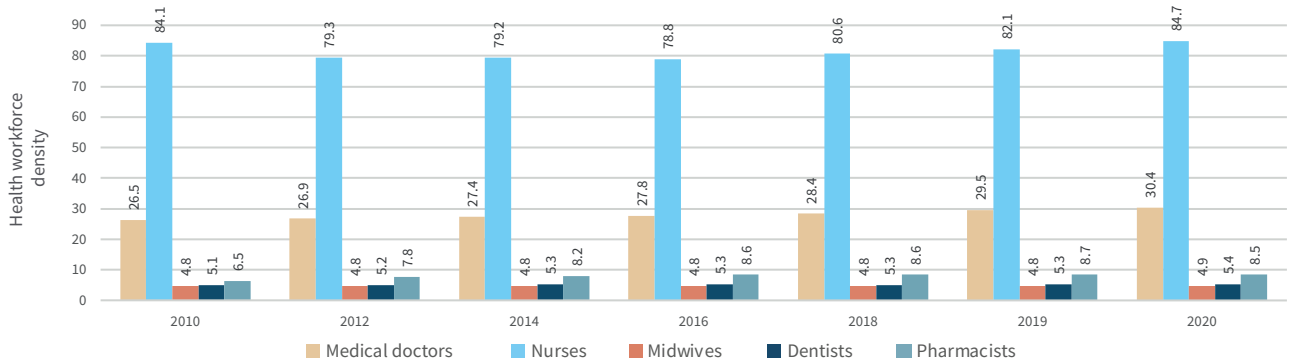
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

120

UHC SERVICE COVERAGE INDEX

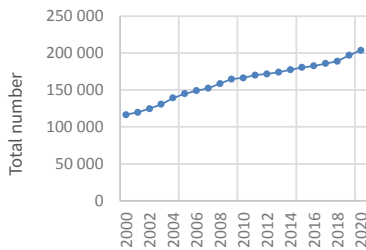
88

Health workforce density per 10 000 population

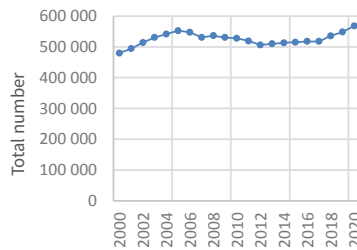


Health workforce trends (total number)

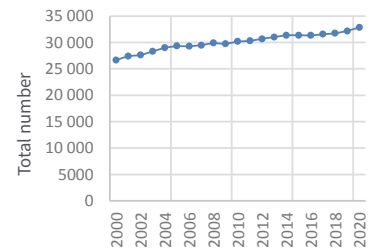
Medical doctors



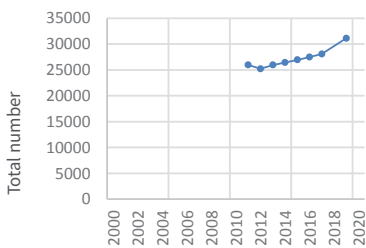
Nurses



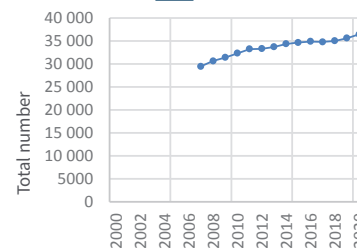
Midwives



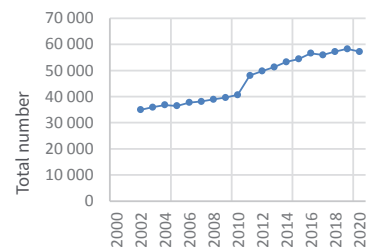
Physiotherapists



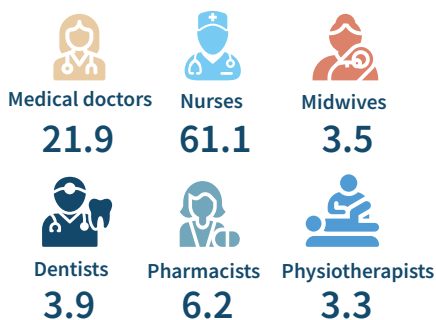
Dentists



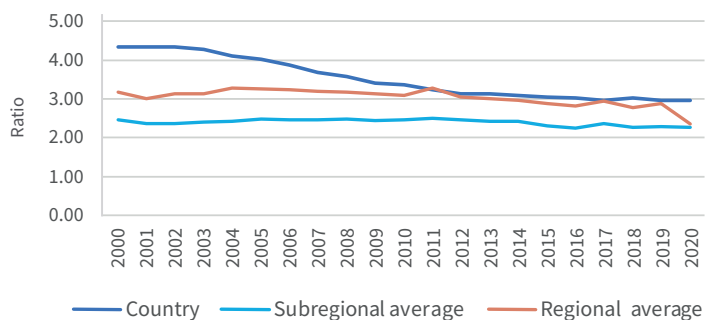
Pharmacists



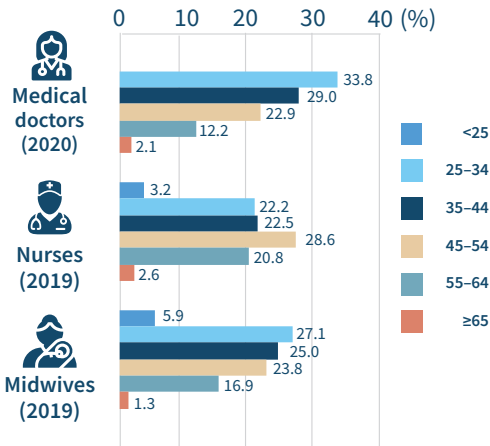
Composition by six professional categories covered in the report, percentage (latest year)



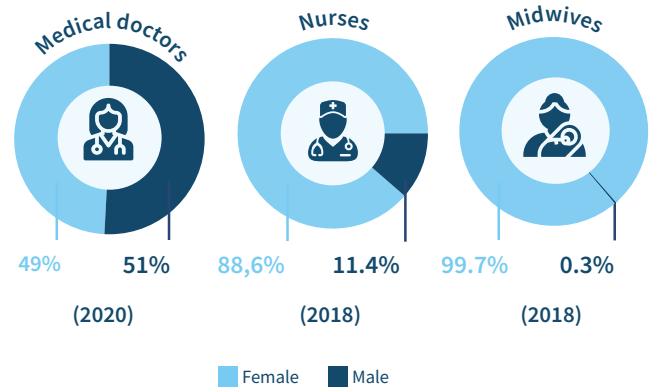
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

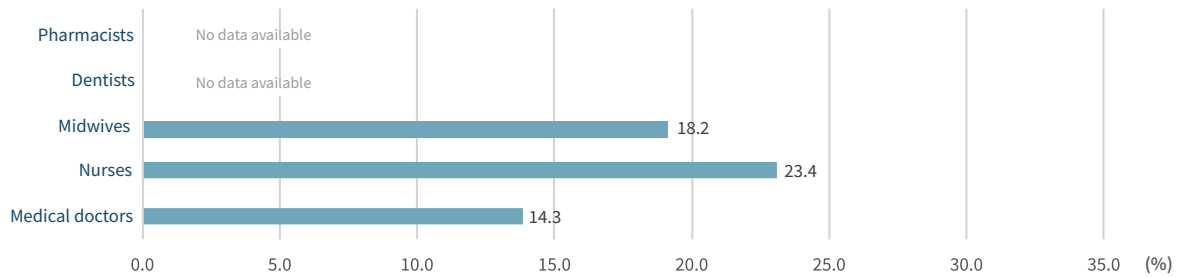


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



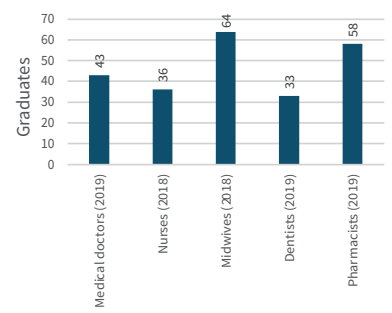
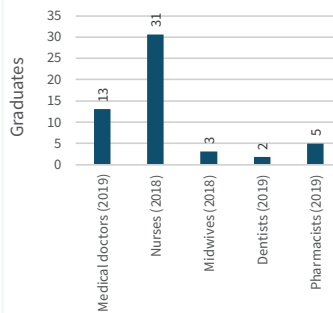
Professions

Annual graduates (total number)

Graduates per year per 100 000 population

Graduates per year per 1000 practitioners

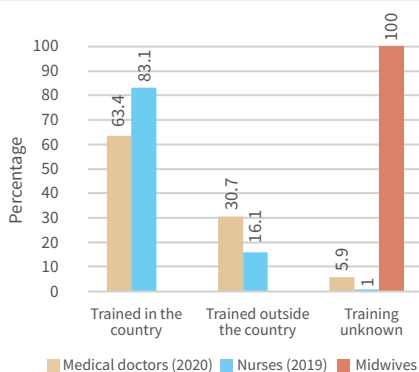
Medical doctors (2019)	8730
Nurses (2018)	20 524
Midwives (2018)	2094
Dentists (2019)	1200
Pharmacists (2019)	3330



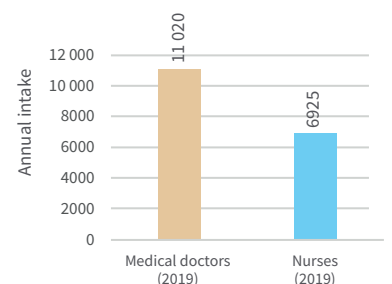
Country of training, percentage

Country of birth, percentage

Annual intake from other countries



NO DATA AVAILABLE



Health workforce domestic and international supply



Uzbekistan

Human resources for health profile

See pages 82–83 for data sources and technical notes

Country at a glance

POPULATION

33 526 656

LIFE EXPECTANCY AT BIRTH (YEARS)

70.3

MEDIAN AGE (YEARS)

26.4

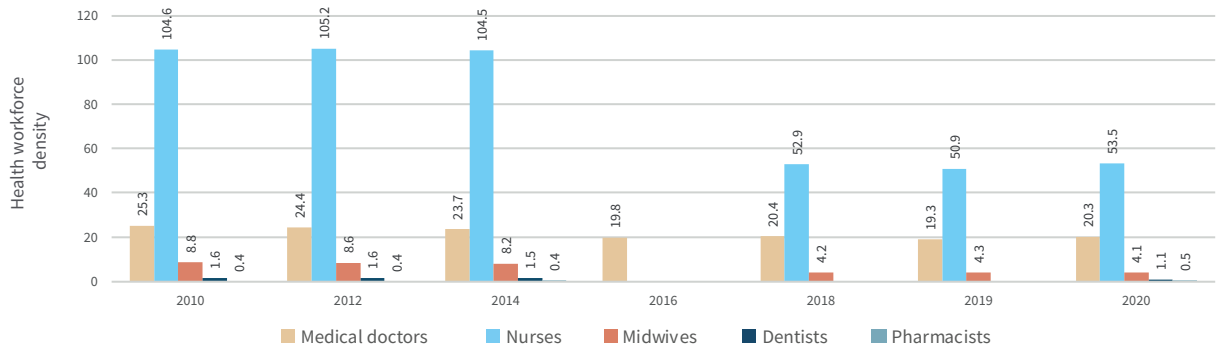
DOCTORS, NURSES AND MIDWIVES PER 10 000 POPULATION

77.9

UHC SERVICE COVERAGE INDEX

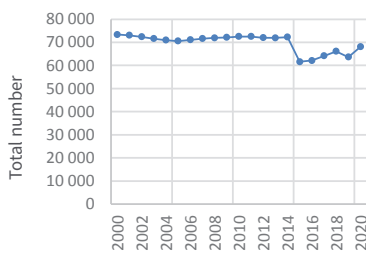
71

Health workforce density per 10 000 population

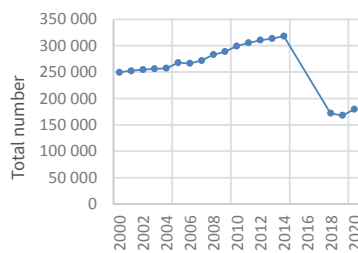


Health workforce trends (total number)

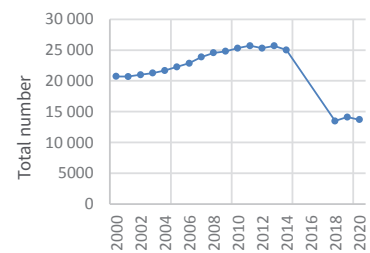
Medical doctors



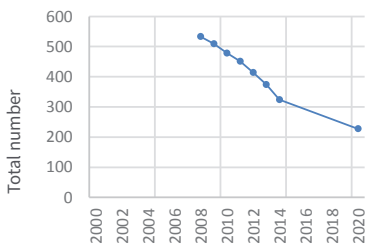
Nurses



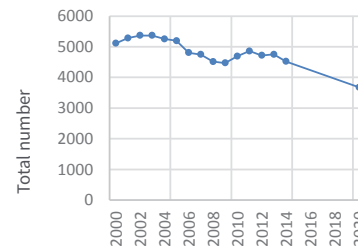
Midwives



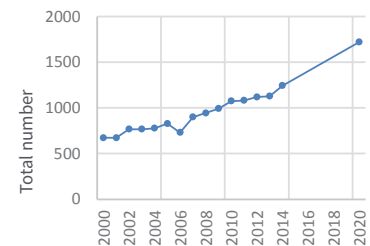
Physiotherapists



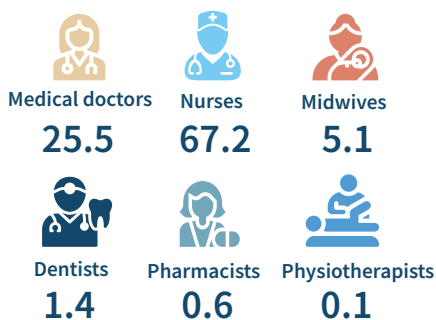
Dentists



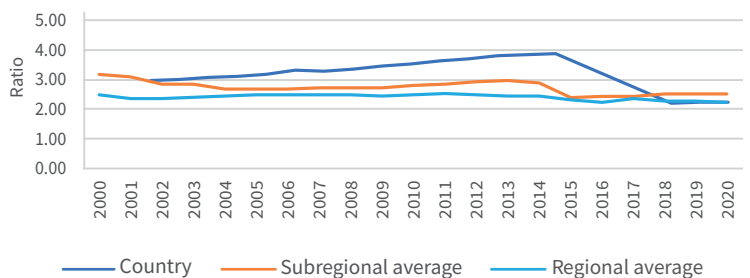
Pharmacists



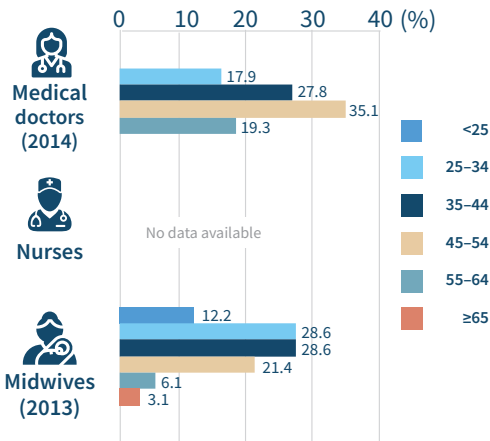
Composition by six professional categories covered in the report, percentage (latest year)



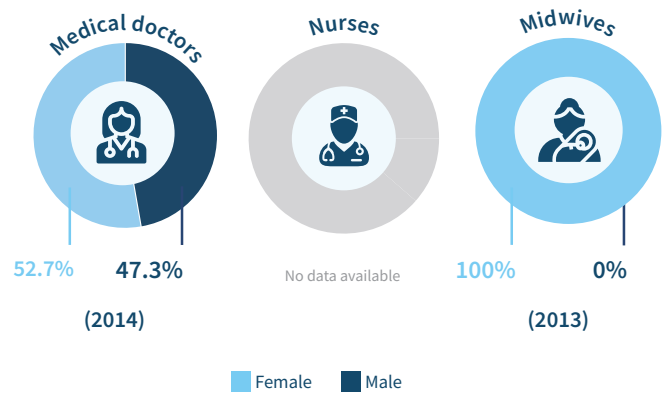
Ratio of nurses and midwives to medical doctors



Health workforce distribution by age group, percentage

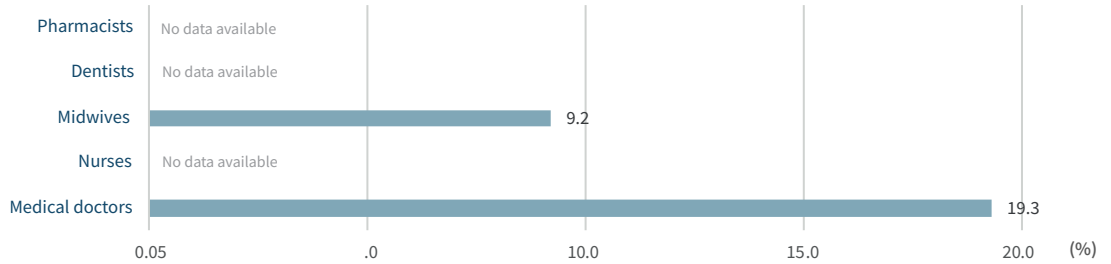


Health workforce distribution by sex, percentage



Health workforce distribution

Percentage of workforce aged >55



Health workforce domestic and international supply

Professions	Annual graduates (total number)	Graduates per year per 100 000 population	Graduates per year per 1000 practitioners
Medical doctors (2014)	3452	10	51
Nurses (2013)	52 602	157	293
Midwives (2005)	2540	8	185
Dentists (2014)	230	1	63
Pharmacists (2014)	117	0	68

Country of training, percentage

Country of birth, percentage

Annual intake from other countries

NO DATA AVAILABLE

NO DATA AVAILABLE

NO DATA AVAILABLE

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.

Member States

Albania	Hungary	Romania
Andorra	Iceland	Russian Federation
Armenia	Ireland	San Marino
Austria	Israel	Serbia
Azerbaijan	Italy	Slovakia
Belarus	Kazakhstan	Slovenia
Belgium	Kyrgyzstan	Spain
Bosnia and Herzegovina	Latvia	Sweden
Bulgaria	Lithuania	Switzerland
Croatia	Luxembourg	Tajikistan
Cyprus	Malta	Türkiye
Czechia	Monaco	Turkmenistan
Denmark	Montenegro	Ukraine
Estonia	Netherlands	United Kingdom
Finland	North Macedonia	Uzbekistan
France	Norway	
Georgia	Poland	
Germany	Portugal	
Greece	Republic of Moldova	

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Tel.: +45 45 33 70 00 Fax: +45 45 33 70 01
Email: eurocontact@who.int
Website: www.who.int/europe



Framework for action on the health and care workforce in the WHO European Region 2023–2030

The WHO Regional Office for Europe report *Health and care workforce in Europe: time to act*, which was launched at the 72nd session of the WHO Regional Committee for Europe, highlighted the challenges faced by the European health and care workforce. Many of these challenges are long-standing, but they were exacerbated by the COVID-19 pandemic. Urgent action is required to retain health and care workers, especially in rural and underserved areas; to protect their mental and physical health and well-being; to enhance their recruitment; to optimize their performance; and to ensure a supply of health and care workers to meet future needs.

The proposed framework for action on the health and care workforce in the WHO European Region 2023–2030 builds on the 2017 action framework and addresses new realities as well as long-standing challenges. Proposed actions support the advancement of the European Programme of Work, 2020–2025, including its flagship initiatives, and items that will be discussed by the Regional Committee at its 73rd session, such as primary health care, emergency preparedness, and refugee and migrant health.

This working document is submitted to the Regional Committee for consideration at its 73rd session, along with a draft resolution.

Contents

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Scope and purpose	3
Pillars of the framework for action 2023–2030	4
Pillar 1. Retain and recruit: address health and care workers’ needs	5
Pillar 2. Build supply: strengthen education and training, skills and competencies	6
Pillar 3. Optimize performance: redefine teams and skill mix; use digital solutions	7
Pillar 4. Plan: implement comprehensive health and care workforce policies; improve data; coordinate multiple stakeholders in line with changing needs	8
Pillar 5. Invest: increase and sustain smarter public investment in the health and care workforce, which contributes to economic growth and societal cohesion	9
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Action by the Regional Committee.....	10
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RATIONALE

1. Health and care workers are the backbone of any health system because timely equity of access to quality health and care services depends on having a fit-for-purpose workforce. Member States in the WHO European Region have long recognized the need for a health and care workforce that is better equipped to deal with changing health needs due to ageing populations, rising levels of chronic disease, changing expectations and new technologies, and increasing health threats associated with climate change and health emergencies. But the actions taken to date have been insufficient.
2. The COVID-19 pandemic exacerbated old challenges, such as uneven distribution, suboptimal skill mix, and shortages of health and care workers. It also made emerging challenges more acute, such as (i) increasing difficulties with retention of health and care workers due to pressures from substantial service backlogs, burnout, stress, and concerns about workplace safety and violence; (ii) the importance of protecting mental and physical health and well-being and strengthening gender equality within the health and care workforce; and (iii) the need to attract young people into the health and care professions given the workforce itself is rapidly ageing. These challenges are detailed in the WHO Regional Office for Europe (WHO/Europe) report *Health and care workforce in Europe: time to act*.¹
3. Although the European Region has the highest density of health and care workers among all the WHO regions and has record absolute numbers of health and care workers, there are critical gaps in health systems' capacity to respond to population needs. In the face of all the challenges mentioned in the paragraphs above, the case for a new approach to health and care workforce policies in the Region is clear.
4. The proposed new framework for action on the health and care workforce in the WHO European Region 2023–2030 is informed by and consistent with current global health workforce strategies and resolutions, including the 2016 Global Strategy on Human Resources for Health: Workforce 2030;² the WHO Global Code of Practice on the International Recruitment of Health Personnel;³ and resolutions WHA74.14 on protecting, safeguarding and investing in the health and care workforce, WHA74.15 on strengthening nursing and midwifery: investments in education, jobs, leadership and service delivery and WHA75.17 on human resources for health. At regional level, *Towards a Sustainable Health Workforce in the WHO European Region: Framework for Action*⁴ is the starting point for the proposed new framework for action.

SCOPE AND PURPOSE

5. The proposed new framework for action has been developed and refined through three technical consultations with Member States and other key stakeholders between February and April 2023, including at the High-level Regional Meeting on Health and Care Workforce, held in Bucharest, Romania, which resulted in the Bucharest Declaration.⁵
6. The framework for action's overall goal is to achieve pandemic recovery, renewed progress on the health-related Sustainable Development Goals (SDGs), and greater capacity to respond to current and future health and care needs as well as during natural and human-induced disasters, in the Region, by investing in and protecting an effective health and care workforce.

¹ See: <https://apps.who.int/iris/handle/10665/362379>.

² See: <https://apps.who.int/iris/handle/10665/250368>.

³ See: <https://www.who.int/publications/i/item/wha68.32>.

⁴ See: <https://apps.who.int/iris/handle/10665/338467>.

⁵ See: <https://apps.who.int/iris/handle/10665/366519>.

7. For this, three specific objectives are proposed:
- to empower health ministers to advocate for the health and care workforce at the national and international levels;
 - to update recommendations to meet the current context based on the best available technical evidence; and
 - to specify how WHO/Europe can support Member States in taking this work forward.
8. Towards a Sustainable Health Workforce in the WHO European Region: Framework for Action,⁶ together with the Toolkit for a sustainable health workforce in the WHO European Region,⁷ had started to contribute to advancing health and care workforce development. The proposed new framework for action puts health and care workers and their needs at the centre of efforts to improve access to quality services. It is designed to address new realities as well as long-standing challenges, to increase concerted action and to be the foundation for targeted country work.

PILLARS OF THE FRAMEWORK FOR ACTION 2023–2030

9. The framework for action has five interrelated pillars (Fig. 1):
- pillar 1: retain and recruit
 - pillar 2: build supply
 - pillar 3: optimize performance
 - pillar 4: plan
 - pillar 5: invest.

Fig. 1. Framework for action on the health and care workforce in the WHO European Region 2023–2030



HCWF: health and care workforce; SDG: sustainable development goal; HRH: human resources for health.

⁶ See: <https://apps.who.int/iris/handle/10665/338467>.

⁷ See: <https://apps.who.int/iris/handle/10665/345687>.

10. Successful implementation will require links with other WHO work, especially that of the Pan-European Mental Health Coalition (to design and implement effective solutions to support the mental health and well-being of health and care workers including in emergencies, in line with WHO European Framework for Action on Mental Health 2021–2025) and the Empowerment through Digital Health flagship initiative (to ensure effective integration of digital health technologies to support the health and care workforce, in line with the Regional Digital Health Action Plan for the WHO European Region 2023–2030). Above all, links with primary care are essential to ensure that the primary care health and care workforce – including in rural and remote areas – is strengthened in ways that enhance the delivery of primary care.

11. Effective implementation will require concerted action by multiple partners across all five pillars. WHO/Europe will capitalize on existing networks of partners, including Member State representatives involved in the framework consultations and the High-Level Regional Meeting in Bucharest, WHO collaborating centres, the WHO/Europe Government Chief Nursing and Midwifery Officers Hub, the Small Countries Initiative Human Resources for Health working group, and multilateral partners such as the Organisation for Economic Co-operation and Development and the European Commission. In addition, at all levels, close collaboration with associations representing health and care workers will be necessary to ensure effective implementation. New collaborations will also be sought with institutions, including at country level, to ensure tailored approaches to implementation.

12. The proposed accountability framework aims to help Member States track progress in implementing actions across the five pillars.

Pillar 1. Retain and recruit: address health and care workers' needs

13. Improved retention of existing health and care workers, and the return of those who have left the professions, will have early benefits for workforce availability and, as a consequence, service delivery and quality. These actions have become more urgent following the pandemic, given that more workers are leaving their jobs due to a continued heavy workload from service backlogs, continued burnout and stress, and the risk of violence. Gender pay gaps, a sense of being undervalued, and a lack of modern management practices are part of the problem. A growing number of Member States are experiencing substantial outmigration of health and care workers, and migration patterns are complex. The recruitment – and return – of health and care workers is being affected by competition from other more attractive occupations. Private sector actors have a variable but significant role in health and care worker employment in the Region. Retention and recruitment in rural and other underserved areas need special attention. Evidence shows that a package of interventions is required to improve retention. The same strategies may have different effects on different age groups, professions, locations and genders, and retention packages need to be tailored accordingly. Recruitment should be merit based and ethical. International recruitment from within and beyond the Region should conform to the WHO Global Code of Practice on the International Recruitment of Health Personnel.

Actions for Member States

- Develop strategies to improve working conditions, including reasonable workload and work–life balance, positive workplace culture, supportive management, career advancement and workplace safety.
- Ensure fair and effective approaches to remuneration for health and care workers.
- Protect the mental and physical health and well-being of health and care workers, including protection against occupational risks, and take actions to reduce stigma associated with mental health challenges.
- Pay attention to gender balance and ensure policies and practices that address gender inequality.
- Implement zero tolerance for abuse and violence.

- Attract young students into the health and care professions.
- Recruit and retain staff in rural and other underserved areas.
- Improve information and understanding of workforce migration patterns.
- Ensure ethical recruitment practices are observed, especially for international recruitment.⁸

Actions for WHO

- Share latest evidence, experience and guidance on the effectiveness of different interventions to improve retention and recruitment of health and care workers throughout their careers and in understaffed occupations.
- Support countries in reviewing current retention and recruitment strategies and in undertaking the policy dialogue required to develop new, evidence-informed strategies where needed, putting increased emphasis on protection of workers' physical and mental health, well-being and safety; policies addressing gender inequality; ethical recruitment; and ways to attract more young people into the health and care professions.
- Support development and monitoring of strategies that include attracting and retaining health and care workers in rural and other underserved areas.
- Help identify where changes are needed in workforce legislation, management or financing.
- Support better data and understanding of health and care worker migration patterns and effective interventions by low- and higher-income countries.

Pillar 2. Build supply: strengthen education and training, skills and competencies

14. Building the supply of health and care workers is a long-term endeavour. Future health and care workers will have different roles and tasks from today. They will need additional competencies, such as the ability to use digital health tools including artificial intelligence, to work in interprofessional teams and to analyse and adopt new evidence. Health and care workers need to acquire new knowledge and skills throughout their careers. New ways of learning exist, including through the use of digital learning tools. New thinking is needed about how to attract students into the health and care professions, as occupational prestige is changing. Private sector actors play a variable but significant role in health and care worker education and training. Greater openness to alternative routes into the health and care professions, including through vocational training, is needed.

Actions for Member States

- Align the education and training of health and care workers with the needs of people and communities, informed by the characteristics of the labour market. Review and update health and care education curricula so they reflect population needs and service requirements, consider creating additional entry points for students into the health and care professions, and strengthen the teaching capacity of health and education institutions.
- Strengthen continuous professional development (CPD) by, for example, adapting CPD standards and approaches; ensure opportunities are available across the health and care workforce.
- Improve opportunities for unskilled health and care workers, in particular, to attain and formalize their skills and competencies during their careers.
- Build digital health competencies into training curricula, and incorporate the use of digital tools into training, to better prepare students for clinical practice.

⁸ In accordance with relevant international instruments such as the *WHO Global Code of Practice on the International Recruitment of Health Personnel*.

Actions for WHO

- Support health and care education and training institutions in reviewing and updating health and care education curricula and programmes; share evidence on more diverse approaches to student selection.
- Support development and strengthening of the regulation and accreditation of health and care education and training institutions and programmes.
- Provide support in improving CPD standards and approaches for the health and care workforce and access to CPD opportunities where appropriate.
- Support the development of guidance and frameworks to equip health and care workers with digital competencies.

Pillar 3. Optimize performance: redefine teams and skill mix; use digital solutions

15. Optimizing the performance of existing health and care workers will have early to medium-term benefits for service quality and efficiency. While many of the actions mentioned under pillars 1 and 2 – such as better working conditions, attention to workers' health and well-being, policies and practices to address gender inequality, and alignment of education and training with changing needs and context – will help improve performance, measures focusing on the way work is organized, the use of digital solutions, and the provision of adequate facilities and equipment also affect performance.

Actions for Member States

- Redefine teams and skill mix: creating multiprofessional teams, implementing task-shifting to free up time for care delivery and to ensure health and care professionals use their knowledge and skills to best effect, and giving teams greater autonomy have all been shown to improve performance.
- Help managers introduce effective management systems to enable and support optimal health and care workforce performance.
- Develop regulatory mechanisms for professional standards that have patient safety and public protection as the priority focus.
- Reconfigure services to be more efficient: for example, new technologies provide opportunities to change the balance between ambulatory and inpatient care.
- Improve interactions with patients by promoting a culture of person-centred care and empowered patients.
- Promote appropriate use of digital solutions by health and care workers and by patients.

Actions for WHO

- Share the latest evidence, experience and guidance on reconfiguring services, using digital health technologies and redefining teams and skill mix in both primary and secondary care, and their effects on optimizing performance.
- Support countries in reviewing service configurations, strengthening management capacities and undertaking the policy dialogue required to develop new, evidence-informed strategies related to optimizing health and care workforce performance where needed.

Pillar 4. Plan: implement comprehensive health and care workforce policies; improve data; coordinate multiple stakeholders in line with changing needs

16. Planning for the health and care workforce is both a technical and political exercise. It requires reliable information on current and future needs and on health system goals and priorities, as well as an understanding of context, including changing models of care, health labour markets, the role of the private sector in education and employment, and the roles of national and local authorities. Such planning should be based on the best available evidence and should take a multiprofessional approach. Leadership capacity is needed to guide and coordinate the many stakeholders involved. Better and more disaggregated data focused on real policy questions, along with trends over time, are essential for good planning. Women perform most of the paid and unpaid health and care work in most countries, and specific actions may be needed to reduce gender pay gaps, value unpaid care work and promote gender balance in decision-making positions and in service delivery. Planning needs to be accompanied by effective regulation, the scope of which may range from health and safety to regulation of educational institutions and professions. The monitoring of plan implementation and the assessment of results are integral parts of any planning cycle so that course corrections can be made where needed.

Actions for Member States

- Plan strategically using the best available evidence, including future projections of health and care workforce needs, and taking account of local context.
- Adopt an intersectoral approach to planning. Beyond health, key ministries are finance and education; others are determined by national arrangements. Engage other key stakeholders including professional associations, patient organizations and private sector actors.
- Strengthen capacity for strategic workforce planning, including through greater human resources for health (HRH) capacity; ensure more equitable representation of women in decision-making positions.
- Regulate health and care education and training institutions, health and care professions, and health and care services; legislate for decent working conditions where needed.
- Strengthen health information systems; optimize use of available research and data to create a picture of the whole health labour market, including private and public sectors.

Actions for WHO

- Support countries in strengthening capacity for health leadership and strategic partnerships when developing national health and care workforce strategies, and other aspects of workforce governance, by providing leadership training through the WHO/Europe Executive Course on Health Workforce Leadership and Management and facilitating action-learning programmes.
- Support countries in strengthening HRH units' strategic planning and management capacities.
- Support countries in implementing effective workforce planning approaches and tools, including conducting health labour market analyses by training a critical mass of analysts.
- Support national policy dialogues on health and care workforce analysis and policy development.
- Share evidence and experience with innovative approaches to the regulation and accreditation of education and training institutions and of health and care professions.
- Support countries in assessing their HRH information systems and developing plans for the systems' improvement. Support the strengthening of data collection and analysis for policy decision-making.

Pillar 5. Invest: increase and sustain smarter public investment in the health and care workforce, which contributes to economic growth and societal cohesion

17. Targeted and smart investment in health and care workers is a productive social and economic investment. The economic argument is sound: the returns on investment in the health and care workforce were estimated to be 9 to 1 by the High-level Commission on Health Employment and Economic Growth in 2016.⁹ Discussions on funding levels and modalities must be part of strategic planning, to decide where investments should be made and what the expected results are. This will help build stronger partnerships and trust with finance ministries and other potential funders. Increasing funding also depends on a country being able to create the fiscal space to spend more.

Actions for Member States

- Update the case for investment in the health and care workforce, and the probable health, social and economic consequences of underinvestment, for dialogue with finance and other critical ministries. This will include evidence on the economic and social contribution of the health and care workforce (and returns on investment), the workforce's fundamental role in ageing societies and in rural development, and the workforce's contribution to the 2030 Agenda for Sustainable Development as a whole.
- Ensure appropriate level of public investment in health and care workforce education, development and protection.
- Make smarter use of funds through innovative health and care workforce policies to increase the workforce's availability, accessibility and productivity. Such policies may include defining new roles; introducing multiprofessional teams and more integrated approaches to working across levels of care; improving digital health skills; introducing more flexible working arrangements; and improving working conditions. Prioritizing investment in the primary health care workforce is the best strategy to improve performance of health services.

Actions for WHO

- Support countries in making the case for the social and economic returns on investment to finance ministries and other potential sources of funds.
- Support countries in making the case to education and labour ministries for increased and targeted investment in the health and care workforce.
- Support the development of comprehensive investment strategies to optimize performance – taking into account levels and modalities of funding.
- Support strengthening of the primary health care workforce.

REPORTING AND ACCOUNTABILITY FRAMEWORK

18. The proposed framework for action is designed to help Member States renew progress on national health goals and strengthen their capacity to respond to health and care needs by investing in and protecting an effective health and care workforce. Results will be judged by improvements in access to quality health and care services. All Member States have their own indicators. Internationally, the UHC [universal health coverage] service coverage index¹⁰ is a composite indicator that is already part of reporting on SDG 3 progress.

⁹ See: <https://apps.who.int/iris/handle/10665/250040>.

¹⁰ See: <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/4834>.

19. There is value in also monitoring progress on this regional framework for action. The indicators need to reflect important concerns. Interpretation may need knowledge of local context as well as time-trend data. Region-wide monitoring should be simple and manageable. Following consultation with Member States and monitoring experts, a two-track approach is proposed.

20. First, a pragmatic track will be implemented, which will begin with a small set of relevant indicators for which definitions and reporting mechanisms already exist, and where at least public sector data are wholly or partly available. WHO's *National health workforce accounts: a handbook* gives the metadata for these indicators. Two reports, *Health and care workforce in Europe: time to act* and *Global strategy on human resources for health: Workforce 2030*, together provide baseline data for most of these indicators, initially for six health professions (medical doctors, nurses, midwives, dentists, physiotherapists and pharmacists). The three-yearly monitoring of progress on implementing the Global Code of Practice on the International Recruitment of Health Personnel provides some migration data.

21. Second, a parallel development track will be initiated. WHO/Europe will establish a working group to guide the development of ways to track progress on critical issues that currently cannot be monitored, for which a small number of additional indicators is desirable, or where the scope of what is monitored needs expanding.

22. For the purposes of monitoring regional progress on this framework for action, two rounds of reporting are proposed, with midterm (2027) and final (2030) progress reports.

23. The Annex provides an overview of the proposed set of 14 indicators, for the majority of which international reporting already exists.¹¹ It also indicates policy issues raised during the consultation process for which monitoring is considered desirable but for which indicators and/or data are not yet widely available. The task of the proposed working group would be to address the monitoring of these issues.

ACTION BY THE REGIONAL COMMITTEE

24. This proposed framework for action is submitted to the WHO Regional Committee for Europe at its 73rd session in 2023, together with a draft resolution.

25. The Regional Committee is further invited to provide guidance on the following questions.

- Which of the pillars and accompanying actions are the main priorities for your country?
- What support can WHO provide in taking these pillars and actions forward?
- What opportunities and limitations do you foresee in implementing the priority actions?

¹¹ The framework indicators will initially cover the six professions for which quality data are available: medical doctors, nurses, midwives, physiotherapists, dentists and pharmacists.

Annex. Accountability framework and proposed indicators

Table A1. Proposed indicators for monitoring the implementation of the framework for action

Initial indicators (for which definitions and data collection strategies exist)	Rationale	Issues for which indicators/data are noted as desirable (but not yet available)
Pillar 1. Retain and recruit		
1. Geographical distribution of health workers: differences in density – urban/rural or by district* 2. Health workforce distribution by age* 3. Health worker ratio female/male* 4. Annual intake of health workers from other countries, disaggregated by occupation and sex†	Indicators 1–3: together, and with trend data, provide a profile of the health workforce and its changes over time in terms of the geographical, age and gender distribution. Indicator 4: metric of migration flows.	<ul style="list-style-type: none"> • Measure of improved retention, such as reduced exit of health and care workers or plans to leave the workforce • Measures of gaps or vacancy rates or of specific occupational losses • Measure of mental health and well-being of health and care workers • Measure of outmigration
Pillar 2. Build supply		
5. Health workforce density, /10,000* population 6. Graduates per year/100,000 population, disaggregated by occupation and sex* 7. Existence of national and/or subnational mechanisms for accreditation of education and training institutions and their programmes*. [‡]	Indicator 5: simple summary measure of health workforce stock and availability. Indicator 6: measure of health worker replenishment pipeline and future female/male ratio. Indicator 7: measure of commitment to quality education and training.	
Pillar 3. Optimize performance		
8. Ratio of nurses and midwives to doctors* 9. Existence of regulatory mechanisms promoting health worker safety and patient safety [‡]	Indicator 8: measure of skill-mix composition, in relation to models of care. Indicator 9: measure of actions being taken to protect health workers and provide decent working conditions.	<ul style="list-style-type: none"> • Health and care workforce distribution between primary care, hospital care and long-term care • Adoption of technological innovation (suggestions: unit exists to support adoption of new technologies; responsiveness of regulatory framework to encourage uptake of new technologies; availability of professionals who can use innovative technologies) • Percentage of time spent on clinical care • Staff/patient ratios as an indicator of care safety and quality

Pillar 4. Plan		
10. Existence of up-to-date national (or subnational) health and care workforce policies and plans	Indicator 10: measure of actions being taken to address future as well as current health workforce needs.	<ul style="list-style-type: none"> • Measure of forecasting capacity
11. Existence of a health workforce unit responsible for developing and monitoring policies and plans for the health workforce*. [‡]	Indicators 11 and 12: measures of strategic policy and planning capacity, including ability to work with multiple partners.	
12. Existence of institutional mechanisms to coordinate an intersectoral health workforce agenda*. [‡]	Indicator 13: measure of capacity to monitor results of health workforce policies.	
13. Existence of a human resources for health information system that can report outputs from education and training institutions and track labour market exits per year*. [‡]		
Pillar 5. Invest		
14. Public expenditure on health workforce as a proportion of total current public health expenditure [§]	Indicator 14: measure of alignment of investment with commitment to health workforce strengthening.	<ul style="list-style-type: none"> • Indicators for investment need, drawing on national health accounts • Some indicators from other pillars (e.g., trends in workforce distribution between primary and hospital care) could provide indirect information on resource allocation

Note: for initial indicators, current definitions and data are only available for health workers, not care workers.

Sources of metadata/data:

* *National Health Workforce Accounts: a handbook*

(<https://apps.who.int/iris/bitstream/handle/10665/259360/9789241513111-eng.pdf>); WHO National Health Workforce Accounts Data Portal: (<https://apps.who.int/nhwportal>).

† Eurostat Health workforce migration data set

(https://ec.europa.eu/eurostat/databrowser/view/hlth_rs_wkmg/default/table?lang=en) and explanatory notes (https://ec.europa.eu/eurostat/cache/metadata/Annexes/hlth_res_esms_an13.pdf).

‡ *Global strategy on human resources for health: Workforce 2030*, Annex 3: Monitoring and accountability framework (<https://www.who.int/publications/i/item/9789241511131>).

§ *A system of health accounts 2011* (<https://www.oecd.org/publications/a-system-of-health-accounts-2011-9789264270985-en.htm>).