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North Macedonia

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a partnership hosted by WHO

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Health Systems in Action (HSiA) Insights

North Macedonia

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Editorial Team

This edition of the Health Systems in Action Insight for North Macedonia was written by Bernd Rechel, Simona Atanasova and Neda Milevska-Kostova

The Health Systems in Action series

The Health Systems in Action Insights series supports Member States in the WHO European Region that are not in the European Union. The Insights for each country are intended to:

- provide core information and data on health systems succinctly and accessibly;
- outline the country health system context in which WHO Europe's Programme of Work is set;
- flag key concerns, progress and challenges; and
- build a baseline for comparisons, so that Member States can see how their health systems develop over time and in relation to other countries.

The series is co-produced by the WHO Regional Office for Europe and the European Observatory on Health Systems and Policies. It draws on the knowledge and understanding of the WHO Country Offices and of the Division of Country Health Policies and Systems (CPS), the WHO Barcelona Office for Health Systems Financing and other WHO/Europe technical programmes; as well as the Health Systems in Transition series and the work of the European Observatory on Health Systems and Policies.

The Insights follow a common template that provides detailed guidance and allows comparison across countries. The series is publicly available on the websites of the WHO Regional Office for Europe and the European Observatory on Health Systems and Policies (eurohealthobservatory.who.int).

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HEALTH SYSTEMS IN ACTION INSIGHTS: NORTH MACEDONIA

Key points

- North Macedonia's health system provides a relatively comprehensive basic benefits package, with more than 90% of the population covered under the social health insurance scheme.
- Public spending on health increased in response to the COVID-19 pandemic, but remains comparatively low. There is a continued strong reliance on out-of-pocket (OOP) payments which accounted for 41.7% of health spending in 2021, one of the highest shares in south-eastern Europe.
- Most primary care services are free at the point of delivery but certain health services, in particular outpatient specialist visits, prescribed outpatient medicines and inpatient care, require user charges.
- Catastrophic health spending remains a problem, particularly for poorer households, and is largely driven by OOP payments for outpatient medicines.
- Unmet needs for medical care due to financial reasons have declined over the last decade but remain relatively high among people on low incomes.
- The information system *Moj Termin* (My Appointment) has greatly improved scheduling and waiting times for clinical appointments and diagnostic tests. Its effectiveness could be further expanded in primary care by using it for scheduling appointments and allowing primary care nurses access.
- The COVID-19 pandemic has severely impacted life expectancy in North Macedonia, which in 2021 fell back almost to its 2000 level.
- Childhood immunization rates were falling even prior to the COVID-19 pandemic and declined further in 2020 and 2021.
- Maternal and infant health improved markedly in recent years, but the quality of prenatal and perinatal health service delivery remains a concern.
- The country faces a high burden of noncommunicable diseases (NCDs), but mortality from stroke and ischaemic heart disease has decreased in recent years.
- The population is at risk from high blood pressure, unhealthy diets (including high salt intake), smoking, high blood sugar and, to a lesser extent, alcohol consumption. North Macedonia has one of the highest smoking rates worldwide. Increasing overweight and obesity among adults and adolescents, as well as respiratory ill-health and death due to air pollution, are other major public health concerns.
- The health workforce has increased in the last decade, but faces pressures of outmigration and ageing.

1 ORGANIZING THE HEALTH SYSTEM

North Macedonia has a centralized health system with a single public payer

North Macedonia's health system is largely financed through a social health insurance scheme operated by a single-payer Health Insurance Fund (HIF) that acts as the main purchaser of publicly funded health services. The social health insurance scheme is funded through contributions and government budget transfers pooled by the HIF. The Ministry of Health has a central role in the decision-making process in most health-related activities, whereas the Ministry of Finance determines the budget for the HIF and the Ministry of Health. All major decisions on the health system are made by the government and the Ministry of Health, without much input from the country's municipalities. The most important reforms in the last 15 years were the establishment of the Health Network in 2012 for strategic planning of resources and the deployment of the health information system called *Moj Termin* (My Appointment) **(see Section 3)**. Both public and private facilities are part of the Health Network (a network of certified providers defined to ensure geographical access to health) and contracted by the HIF. Following up on earlier attempts to reform primary care, in February 2019 the Ministry of Health launched a new national reform of primary health care (PHC) in line with the Astana Declaration, with the aim to introduce a new PHC model of integrated and patient-centred care to make further progress towards universal health coverage (UHC). However, implementation so far has been patchy **(see Box 1)**. The country has introduced public participation in various health policy-making processes, such as in the recently established annual National Health Forums, and in the development of the Health 2020 Strategy and the National Health Strategy 2021–2030 – all aimed at defining the strategic objectives for health and wellbeing in North Macedonia (Milevska-Kostova et al., 2024).

More than 90% of the population have access to a broad benefits package, but co-payments can be substantial

In 2009, changes to the Health Insurance Law designated all residents (with identification documents) eligible for public insurance coverage, which has increased population coverage of the social health insurance system (Milevska-Kostova et al., 2024). In a nationally representative survey conducted in November 2022, 96.0% of respondents reported having health insurance from the HIF. People less likely to be covered by the social health insurance system were farmers, unemployed people and people who have private health insurance (Koller et al., 2024).

The HIF provides a broad basic benefits package that covers emergency care, primary and secondary outpatient care, inpatient care, and preventive and rehabilitation services of providers contracted by the HIF. In addition, the HIF covers dental and mental health care services, medical devices, prescribed medicines and compensation for sick and maternity leave. Almost all primary care services are free of charge but certain health services, in particular outpatient specialist visits, prescribed outpatient medicines and inpatient care, require user charges (co-payments) up to a maximum of 20% of the price (50% for medical products). Overall, co-payments are capped at €100 per service and there is an annual income-related cap on co-payments and exemptions for children and vulnerable groups of the population. However, these protection mechanisms do not apply to co-payments for outpatient medicines and medical products and there are no exemptions from co-payments for outpatient medicines and medical products for low-income households. Furthermore, take-up of the caps on co-payments is very low, potentially because of administrative barriers.

About 54% of the HIF's revenues in 2021 came from health insurance contributions for salaries, complemented by a contribution from the National Pension Fund for pensioners (22%), contributions from other agencies on behalf of specific groups (12%), revenues from user charges (1%), transfers from the central budget (1%) and other revenues (1%). In comparison to some other Eastern European countries (for example, Bulgaria, Czechia, Poland and Romania), government budget transfers to the social health insurance scheme are relatively small (WHO, 2021).

Most providers of PHC are private

PHC is mainly provided by general practitioners and family doctors, gynaecologists, paediatricians and dentists, who work in private, predominantly solo, practices. They refer patients to higher levels of care using the health information system *Moj Termin* **(see Box 2 in Section 3)**. Patients can switch up to twice per year the primary care provider with whom they are registered. Doctors are required to work in a team with a nurse. However, the high administrative workload falls on the shoulders of these nurses, who typically provide mostly administrative support. Private doctors may also practise in rented office space in 34 publicly owned health centres.

Primary prevention services are performed by public health physicians and "patronage nurses" (community nurses and midwives) and costs for this are covered by the HIF and the Ministry of Health. They provide occupational health services, and preventive and health promotion services such as vaccination, regardless of the health insurance status of clients. Patronage nurses perform home visits, provide care for newborns and their families, and also have a role in care for older people in some areas.

Secondary outpatient care specialists are mainly public employees receiving a salary, although some are private and have individual contracts with the HIF. Specialists work in health centres, outpatient clinics or hospitals. There are general hospitals in all major towns and three specialized hospitals in the major cities, but all tertiary health care services are provided solely in the capital city Skopje. Most hospitals are in public ownership, but the share of private hospitals has increased, accounting for 4.6% of all hospital beds in 2021 (Eurostat, 2024).

2 FINANCING AND ENSURING FINANCIAL PROTECTION

Health spending as a percentage of GDP has declined in recent years

Health spending is relatively low in comparison to European Union (EU) and south-eastern European countries, both per capita and as a percentage of gross domestic product (GDP). Spending on health as a percentage of GDP decreased from 8.9% in 2000 to 7.3% in 2019, but increased again to 8.5% in 2021, similar to the increase seen in many other European countries owing to the response to the COVID-19 pandemic. Health spending per capita in North Macedonia (adjusted for purchasing power) amounted to US$ 1535 in 2021, which was below the South-Eastern Europe Health Network (SEEHN) average (US$ 2062), but close to the average of upper middle-income countries (UMICs) in the WHO European Region (US$ 1646) **(Fig. 1)**.

Public spending on health is among the lowest in south-eastern Europe

Although more than half (54.5%) of health spending in 2021 came from public sources, public spending in per capita terms was comparatively low. In 2021, North Macedonia's public spending on health was 836 US$ PPP per capita, the third lowest in south-eastern Europe (1 955 US$ PPP) after Albania (449 US$ PPP) and the Republic of Moldova (787 US$ PPP).

Public spending on health as a share of GDP decreased from 5% in 2003 to just 3.8% in 2018, but has since increased to 4.6% in 2021, similar to increases seen during the COVID-19 pandemic in other European countries. North Macedonia's share in 2021 was above the average of UMICs in the WHO European Region, but below the south-eastern European average **(Fig. 2)**. In terms of the share of government spending devoted to health, North Macedonia stood at 13.0% in 2021, which was below the EU average of 15.0%.

OOP payments represent over 40% of total health spending

Despite increases in public spending on health, OOP spending accounted for 41.7% of health spending in 2021, which was far above the average of SEEHN countries (34.6%) and EU countries (18.7%) and slightly above the average of UMICs (39.8%). OOP spending mainly consists of co-payments for services covered by health insurance and direct payments for over-the-counter medicines and health services that are not covered (most commonly services of private providers). Informal payments, which are common in south-eastern Europe, are most widespread in gynaecological care at primary care level and constitute an important portion of OOP spending, but one that is difficult to quantify. High levels

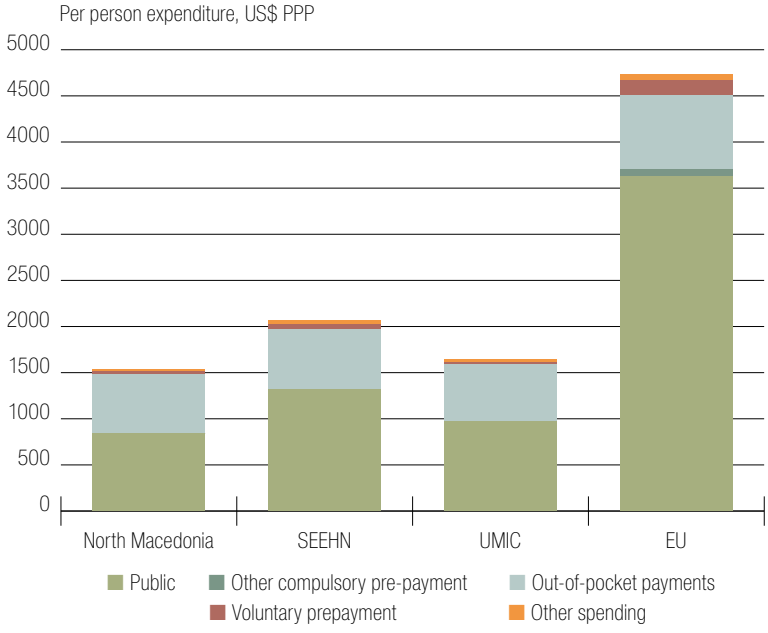
Box 1

A new PHC model is being envisaged

The current PHC model, predominantly characterized by solo private practices and fragmentation, is not considered to meet people's health needs. Based on a community-oriented care model, the PHC reform aims to establish multidisciplinary primary care teams with nurses and midwives in central roles, integrating primary care with other services (for example, public health, secondary and tertiary care, and social care), and strengthening the accountability of providers, contributing to improving performance and quality of care. This new model centres on meeting the health needs of families and communities (WHO Regional Office for Europe, 2019). While progress on establishing group practices has so far been limited, and overall implementation has also been limited, some improvements to PHC have been made. These include the training of health workers, the development of clinical guidelines and new patient pathways, the extension of the scope of practice of primary care (for example, for the management of NCDs without specialist referral), and the digitalization of health services (Milevska-Kostova et al., 2024).

Fig.1

North Macedonia spends less on health per capita than SEEHN countries overall

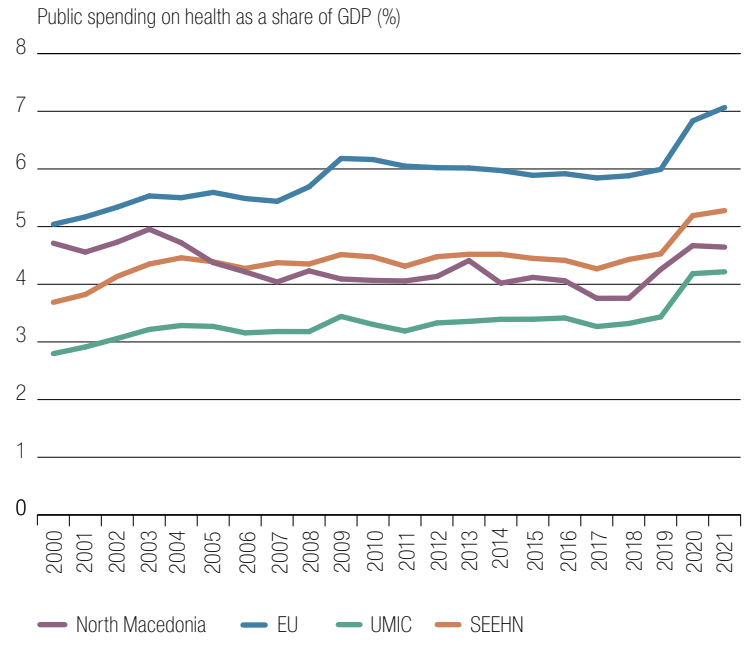


Source: WHO, 2024a.

Notes: 2021 data. Public refers to transfers from government budgets and social health insurance contributions. Other compulsory pre-payment refers to premiums for mandatory health insurance schemes in Belgium, Finland, France, Germany, the Netherlands (Kingdom of the) and Switzerland. Other spending includes external funding and some other marginal spending. PPP: purchasing power parity. The South-Eastern Europe Health Network (SEEHN) includes Albania, Bosnia and Herzegovina, Bulgaria, Israel, Montenegro, North Macedonia, the Republic of Moldova, Romania and Serbia.

Fig.2

Public spending on health as a share of GDP increased substantially during the COVID-19 pandemic

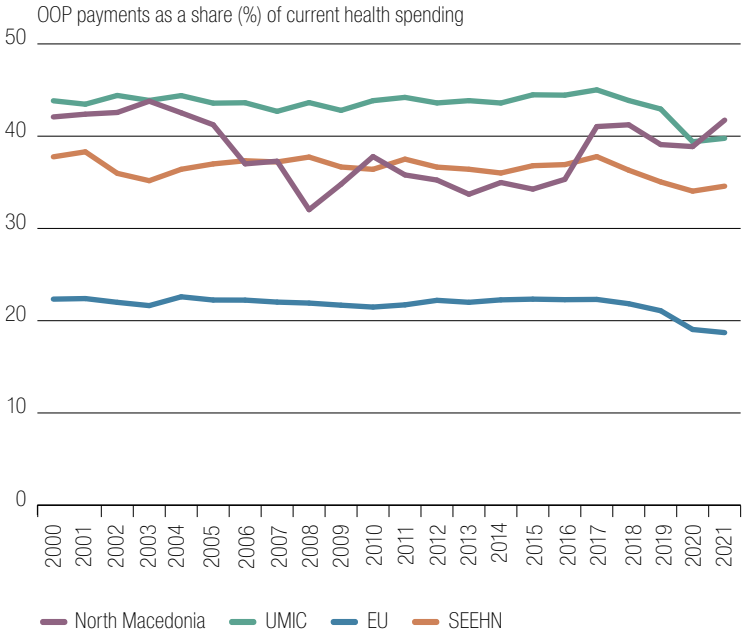


Source: WHO, 2024a.

Notes: The South-Eastern Europe Health Network (SEEHN) includes Albania, Bosnia and Herzegovina, Bulgaria, Israel, Montenegro, North Macedonia, the Republic of Moldova, Romania and Serbia.

Fig.3

OOP spending as a share of health spending is more than twice the EU average



Source: WHO, 2024a.

Note: The South-Eastern Europe Health Network (SEEHN) includes Albania, Bosnia and Herzegovina, Bulgaria, Israel, Montenegro, North Macedonia, the Republic of Moldova, Romania and Serbia.

of OOP spending make low-income population groups less likely to receive the health services they need.

Voluntary health insurance was purchased by only 0.6% of the population in 2018 and most of these contracts were for supplementary voluntary health insurance, mainly covering services provided by private hospitals (Dimkovski & Mosca, 2021). However, the importance of voluntary health insurance has grown since then and it accounted for 2.7% of health spending in 2021 (WHO, 2024a).

Unmet needs for medical examination due to cost have decreased but remain high among people on lower incomes

Self-reported unmet needs for medical examination due to cost decreased from 10.1% in 2010 to 1.1% of the population in 2020, with reductions across all income groups, though inequities remain. Reasons for the overall reduction in unmet needs may be the introduction of an annual income-related cap on co-payments and exemptions from co-payments for some people in vulnerable situations since 2010, as well as improved living standards and greater accessibility of services. However, unmet needs among those in the lowest income quintile stood at 3.1% in 2020 compared to 0.2% in the highest income group. Compared with other European countries, the share of people in North Macedonia who reported unmet needs for medical examination due to cost is close to that of Italy and the EU average, whereas the gap between income groups is above the EU average but smaller than in Portugal, France or Iceland **(Fig. 4)**.

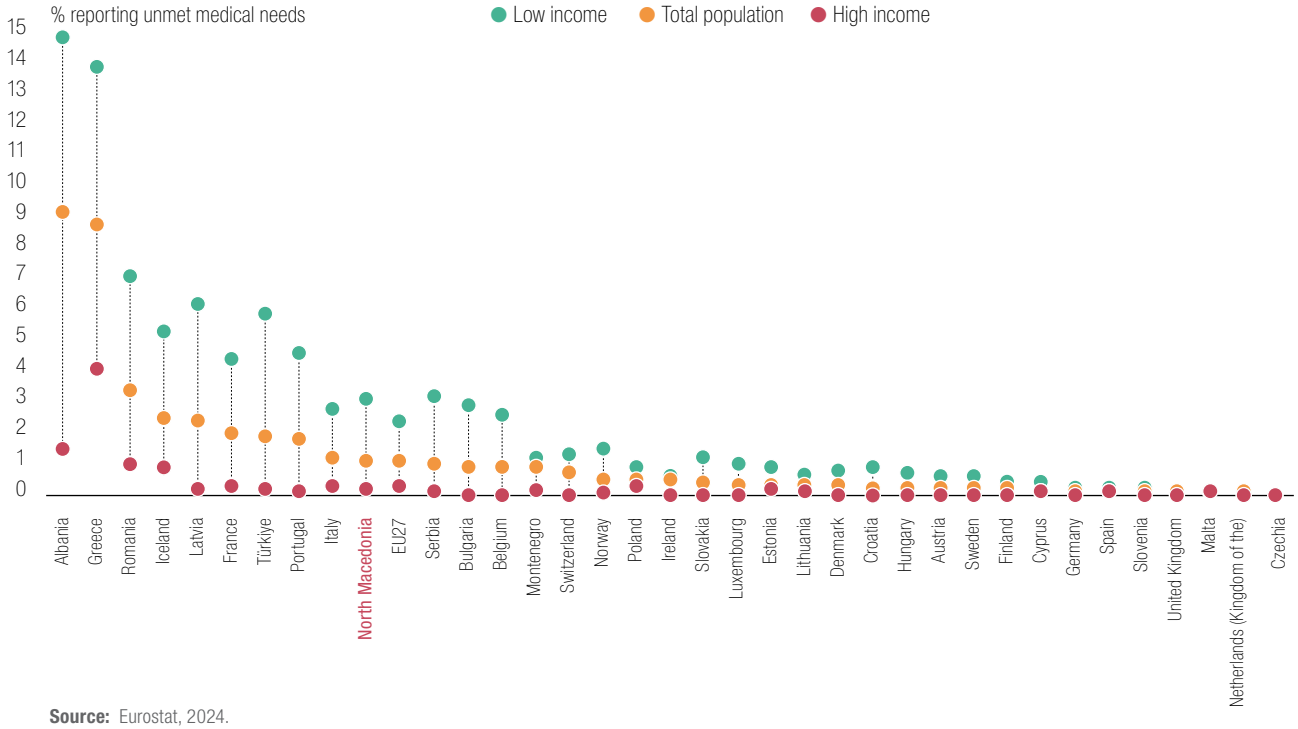
The high level of OOP spending and inequities in unmet needs for health care due to cost suggest a negatively reinforcing relationship between income insecurity and poor health. Despite recent positive economic trends, unemployment remains high and labour force participation is especially low for women, people younger than 25 years and people older than 55 years. For example, 18.1% of people between 15 and 24 years were not in employment, education or training, compared with 10.1% in the EU (Atanasova & Shriwise, 2021). Poverty rates continue to be consistently higher in rural than in urban areas, with important regional and ethnic differences (World Bank, 2019). These inequities have a direct impact on access to health care for these groups of people (WHO Regional Office for Europe, 2021).

High OOP payments lead to catastrophic health spending, particularly for poor households

Although access and financial protection have improved in recent years, catastrophic health spending remains a problem, particularly for poorer households, and is largely driven by OOP payments for outpatient medicines (Dimkovski & Mosca, 2021). In 2018, about 7% of households experienced catastrophic spending **(Fig. 5)**.

Fig.4

Those on low incomes are more likely to report unmet needs due to cost but income inequalities are smaller than in some EU countries



Source: Eurostat, 2024.

Notes: Data refer to 2022, except Albania and Türkiye – 2021, North Macedonia – 2020, and Iceland and the United Kingdom – 2018. Data refer to unmet needs for a medical examination or treatment due to costs among people aged 16 years and over. High-income refers to people in the richest income quintile. Low-income refers to people in the poorest income quintile. Caution is required in comparing the data across countries as there are some variations in the survey instrument used.

This is below catastrophic spending levels in other countries in the WHO European Region and lower than expected in view of the significant reliance on OOP payments (WHO Regional Office for Europe, 2023).

Pharmaceuticals, inpatient care and outpatient care account for a quarter each of health spending

In terms of health spending by function, pharmaceuticals accounted for 24.6% of current health expenditure in 2021, followed by inpatient care (24.5%) and outpatient care (24.1%). Public health services accounted for 4.4%, long-term care for 0.1% and administrative expenditures for 1.3% of current health expenditure, while other services (such as day care, rehabilitative care, ancillary services and medical goods other than pharmaceuticals) and uncategorized spending accounted for 21% (Milevska-Kostova et al., 2024).

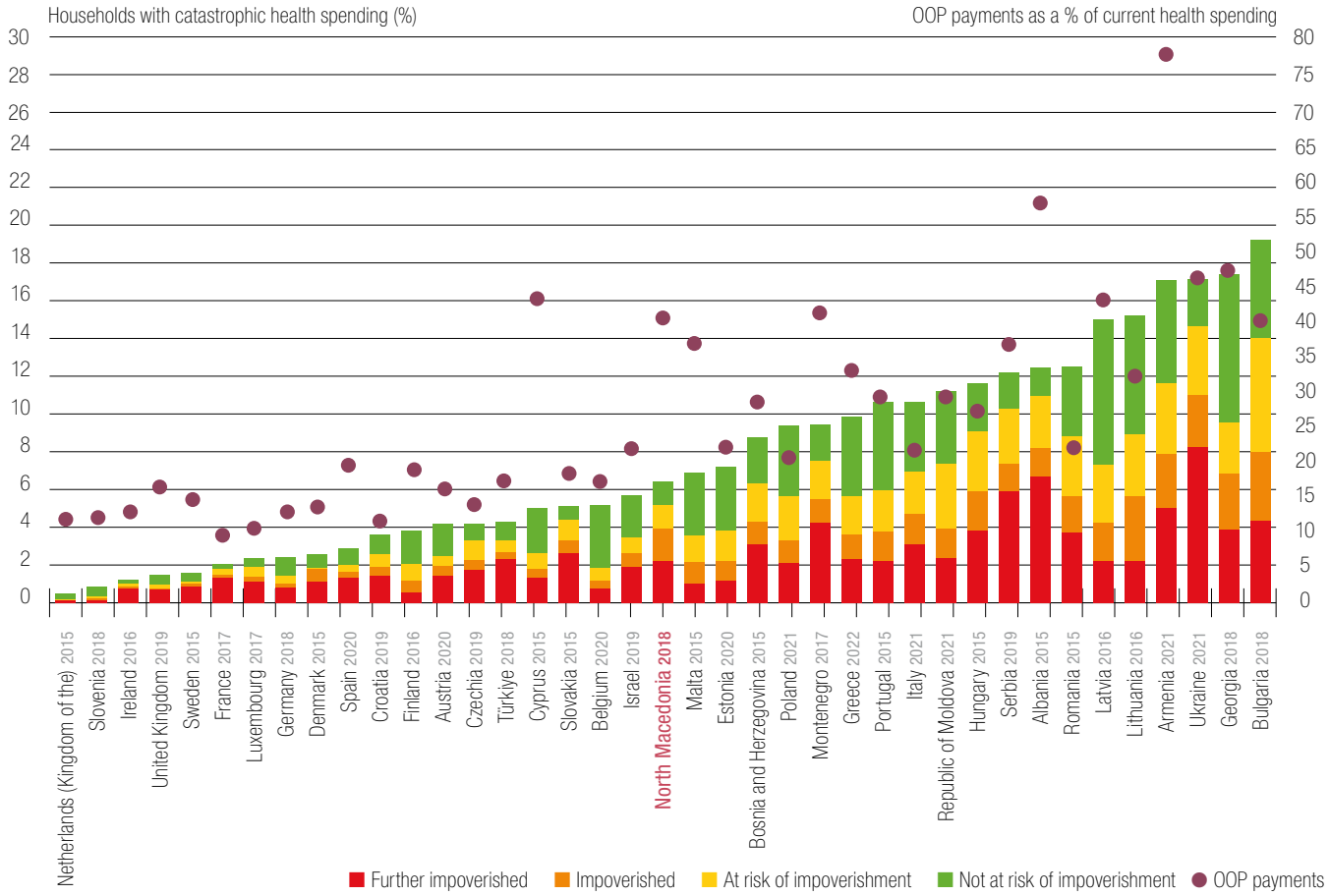
3 GENERATING RESOURCES, PROVIDING SERVICES AND ENSURING ACCESS

The number of hospital beds has declined, but bed occupancy rates are still very low

The network of secondary and tertiary care providers is well developed but there is large variation in the utilization of capacities across similarly classified hospitals. The number of hospital beds decreased from 503 per 100 000 population in 2000 to 419 in 2019, and increased slightly to 422 per 100 000 population in 2020, the first year of the COVID-19 pandemic. This rate was well below the averages in the EU, the WHO European Region and south-eastern European countries **(Fig. 6)**. Despite the decrease of beds, hospitals in North Macedonia operate at far from full capacity. The average bed occupancy rate stood at 47.4% in 2022, which is among the lowest rates in Europe (Milevska-Kostova et al., 2024). This indicates scope for efficiency gains through,

Fig.5

Share of households with catastrophic health spending by risk of impoverishment and OOP payments as a share of current spending on health



Source: WHO Regional Office for Europe, 2024b.

Notes: The data on OOP payments are for the same year as the data on catastrophic health spending (except for Greece, where data on OOP spending are from 2021). A household is impoverished if its total spending falls below the poverty line after OOP payments; further impoverished if its total spending is below the poverty line before OOP payments; and at risk of impoverishment if its total spending after OOP payments comes within 120% of the poverty line. The poverty line used here is a relative line reflecting basic needs (food, housing, utilities).

for example, rationalization of hospital services, integration of stand-alone specialized hospitals into general hospitals, and improved provision of outpatient or day-case hospital services. Moreover, the distribution of hospital beds is unequal across the country, with more than half of all hospital beds located in the capital Skopje. The current hospital sector does not ensure risk-appropriate provision of care, which leads to inefficient utilization of resources and unfavourable health care outcomes. Since the introduction of the diagnosis-related groups (DRGs) reimbursement system in 2009, hospitals have been paid by a combination of DRGs and global budgets. Still, the provider payment system requires further refinement.

Primary care is still underdeveloped, leading to high referral and avoidable hospital admission rates

Primary care providers are well distributed across the country. They were privatized as a result of the PHC reform in 2004–2007, but the resulting diversified provider market led ultimately to the creation of the Health Network in 2012. The Health Network aims to create a geographically well distributed network of certified public and private health care providers at all levels, including primary care (general practitioners, family physicians, dentists and gynaecologists) contracted by the HIF and providing services under the social health insurance system. The Ministry of Health determines the number of contracts with the HIF in the Health Network, which also includes the 34 public health centres **(see Section 1)**.

Despite the vision to establish a new PHC model with multidisciplinary and integrated teams **(see Box 1)**, there continues to be limited progress in developing policies related to group practices, larger teams or multidisciplinary work. Another challenge is the limited scope of practice of physicians and nurses. Primary care physicians are not able to prescribe certain medicines (for example, insulin) or to order specific diagnostic tests (for example, endoscopies, magnetic resonance imaging or computerized tomography scans)

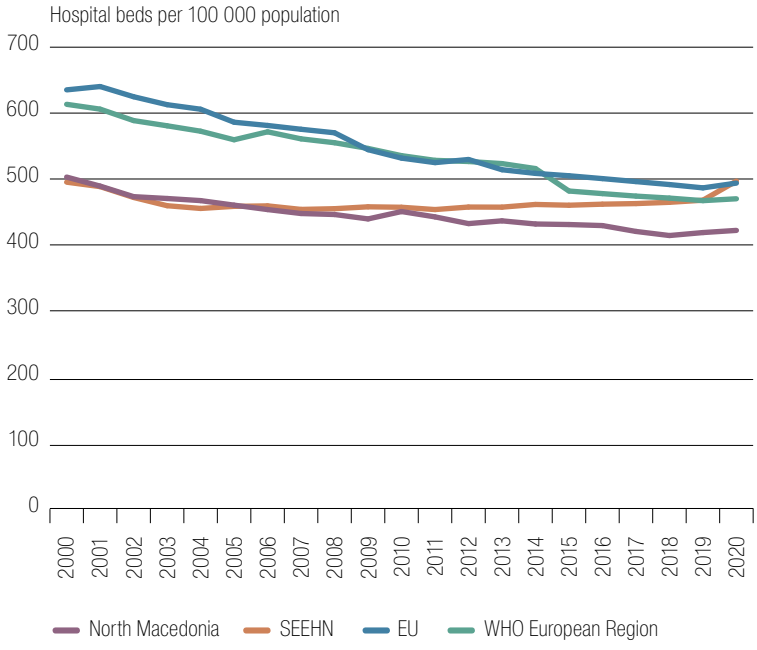
and until recently needed to refer patients with other chronic diseases and multimorbidities to specialists for prescriptions. Nurses also have a limited scope of practice and typically perform mostly administrative tasks.

Major progress has been achieved in setting up a national e-health system

North Macedonia has set up a nationwide e-health system, originally designed to facilitate making appointments in the hospital sector, called *Moj Termin* (My Appointment), which has been expanded to cover various services across public and private institutions **(Box 2)**. The cloud-based system is managed centrally and has several modules that can be integrated with one another and with other health care applications. These modules include a digital scheduling system, an electronic health record, e-referrals, the ordering of laboratory and imaging services, and e-prescriptions. Since its implementation, significant reductions in waiting times for diagnostic imaging and clinical appointments have been recorded, demonstrating the importance of strategic planning for e-health. Despite these successes, there are still legal and operational barriers hindering further uptake of the system, such as integration of diagnostic images and access to the system for certain health care providers.

Fig.6

North Macedonia has a comparatively low rate of hospital beds per population



Source: WHO, 2024b.

Note: The South-Eastern Europe Health Network (SEEHN) includes Albania, Bosnia and Herzegovina, Bulgaria, Israel, Montenegro, North Macedonia, the Republic of Moldova, Romania and Serbia.

Box 2

The e-health system is fulfilling an increasing number of functions

The Government of North Macedonia has put major efforts into the development of the national system for electronic health records, *Moj Termin* (My Appointment). The system is now available to all providers in the public and private sector. Its use is mandatory and includes the issuing and recording of referrals, prescriptions and sick leaves.

A telemedicine platform and digital vaccination records were added to *Moj Termin* to ensure maintenance of essential health services during the COVID-19 pandemic. *Moj Termin* also aggregates data on individual medical reports (for communicable and noncommunicable diseases) and supports the creation of digital health registers. The system is supporting an integrated real-time module for early detection of clusters and outbreaks of communicable diseases.

As a centralized e-health system, *Moj Termin* provides a large collection of data from more than 70 sources, including primary care doctors, health centres, hospitals, institutes, clinics and pharmacies. The data constitute an important source of information with a summary of daily activity of providers and providers' capacities.

The system also contains a health workforce module, which includes data on health institutions and individual workers' personal details, education, work experience and professional registration. These data allow for detailed reports and individual tracking through registration numbers. However, the system holds fewer data on the private sector's health workforce unless the entity is contracted by the HIF, and the nurse count may be inaccurate due to the lack of unique professional identifiers. Additionally, both public and private institutions may not update the data regularly, leading to concerns about the accuracy and completeness of the health workforce information provided by *Moj Termin*.

E-health interventions have also played a crucial role in the country's emergency response to the COVID-19 pandemic. Based on existing infrastructure, telephone consultations for primary care, e-prescriptions for patients with chronic diseases, telemedicine for consultations and a digital roster for health workers were implemented and strengthened. These e-health interventions improved access to essential health services, especially for vulnerable and underserved groups, such as rural communities, migrant groups, older people, people living with disabilities, and refugees. Additionally, an e-module for immunization was implemented, enabling better monitoring of routine vaccination services, enhancing immunization coverage and paving the way for the COVID-19 vaccination rollout (WHO, 2021).

Numbers of health professionals have increased but human resources in health remain scarce

There continues to be a persistent lack of physicians and nurses (Fig. 7). The number of physicians increased slightly in the last decade, from 265 per 100 000 population in 2010 to 296 per 100 000 population in 2020, but this was far below the EU average of 412 per 100 000 population. The number of nurses increased from 356 per 100 000 population in 2010 to 440 in 2020, but this was barely more than half the EU average of 838. Almost 70% of employees in the health sector are publicly employed, with nearly all (97.7%) having regular contracts with social security rights (WHO Regional Office for Europe, 2020).

The low numbers of nurses in North Macedonia might be partly related to their outmigration and their weak professional position. Curricula for nurse training are not unified and there are no requirements for continuing medical education due to lack of an accreditation, licensing and relicensing system. As a result, competencies and the scope of practice remain undefined and completed specializations are not rewarded with higher remuneration. This situation reinforces the restricted, non-autonomous practice of nurses and midwives, especially in primary care, and impedes the development of specialist or advanced practice roles (Groenewegen, Bryar & Sanchez Martinez, 2019).

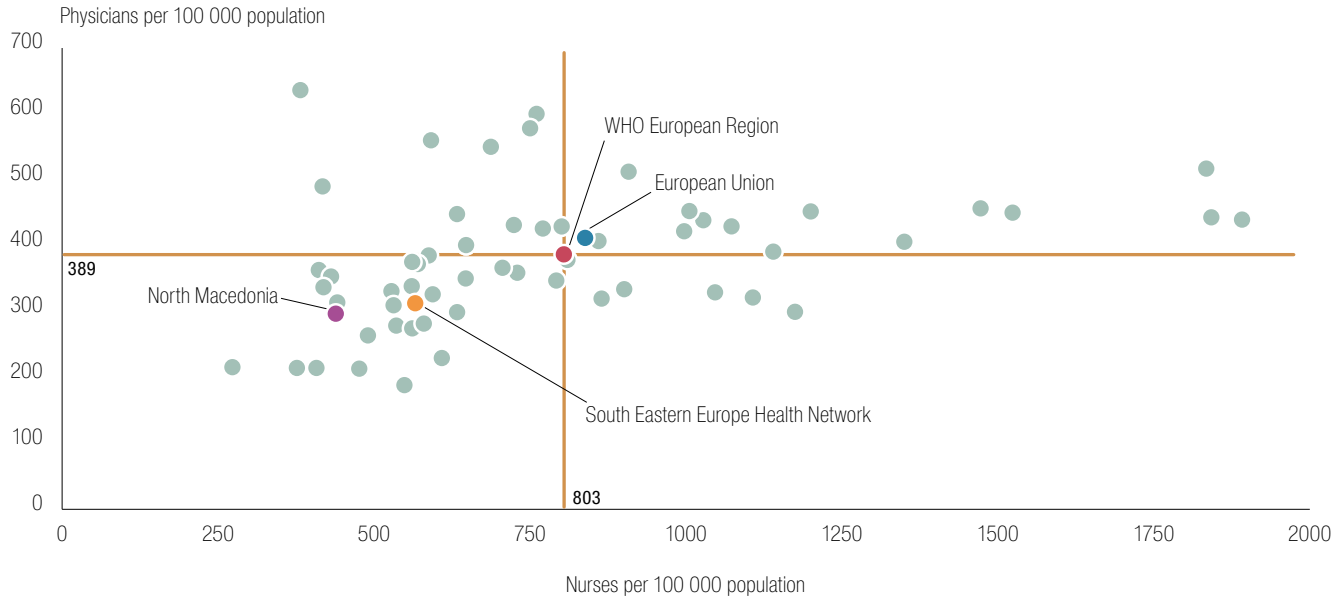
Immunization rates for children have seen dramatic declines

As in other countries in Europe, the density of health professionals is higher in urban than in rural or suburban areas. Likewise, the distribution of primary care practices varies widely across regions, which constitutes challenges for equal access to care. Preventive health services are usually provided in the 34 health centres. Immunization teams, consisting of a medical doctor and a nurse, immunize infants, children and adolescents in the health centres' immunization units and dispersed immunization points, as well as through mobile units operating in hard-to-reach areas and in immunization pockets, such as in Roma communities.

Historically, the immunization coverage in the country has been high. However, immunization rates of infants receiving the first dose against measles decreased alarmingly even prior to the COVID-19 pandemic, from 96% in 2013 to 75% in 2019 (compared with an average of 96% in the WHO European Region). In the aftermath of a measles epidemic in the country in 2018–2019 (with 64.2 cases per 100 000 population in 2019), the government, assisted by WHO, quickly put in place catch-up vaccination campaigns and renewed its efforts to eliminate measles. Since April 2019, vaccination against measles has become compulsory for enrolment in kindergarten and early learning centres. Despite these measures, the immunization rate of infants receiving the first dose against measles decreased even further, to 63% in 2020, with an increase to 70% in 2021 and 71% in 2022. The share of children receiving the second measles dose decreased to a low of 68% in

Fig.7

The rates of health workers in North Macedonia are below international averages



Source: WHO, 2024c.

Notes: Densities were multiplied by 10 to calculate the density per 100 000 population. Averages are based on latest available years. The South-Eastern Europe Health Network (SEEHN) includes Albania, Bosnia and Herzegovina, Bulgaria, Israel, Montenegro, North Macedonia, the Republic of Moldova, Romania and Serbia.

2020, but has since increased to 89% in 2022. While there is much scope for further progress toward the WHO vaccination target of 95%, fortunately no measles cases were recorded in North Macedonia in 2020–2022.

Improving mother and child health is a strategic priority for the government **(see Section 4)**. In addition to gynaecologists, who are responsible for perinatal care services, community nurses within health centres carry out visits to mothers and infants in the postnatal period. In 2020, the Perinatal Care Master Plan 2020–2030 for improved health of mothers and newborns was launched to accelerate progress towards achieving the Sustainable Development Goals. The Master Plan focuses on four key strategic areas: services delivery (which includes regionalization and service reorganization by levels of care); infrastructure, equipment, human resources, transport and referral system; quality of care; and health information systems (Ministry of Health, 2020).

HIV prevalence is low, but access to diagnosis and treatment could be improved

Between 1987 and 2023, North Macedonia registered a total of 636 new HIV cases and 127 HIV-associated deaths. However, two thirds of new HIV infections (355) occurred between 2013 and 2022. In 2023, almost all new cases (50) were diagnosed in men (46), with the majority of infections (74%) being among 20–39-year-olds and attributable to transmission among men who have sex with men (60%).

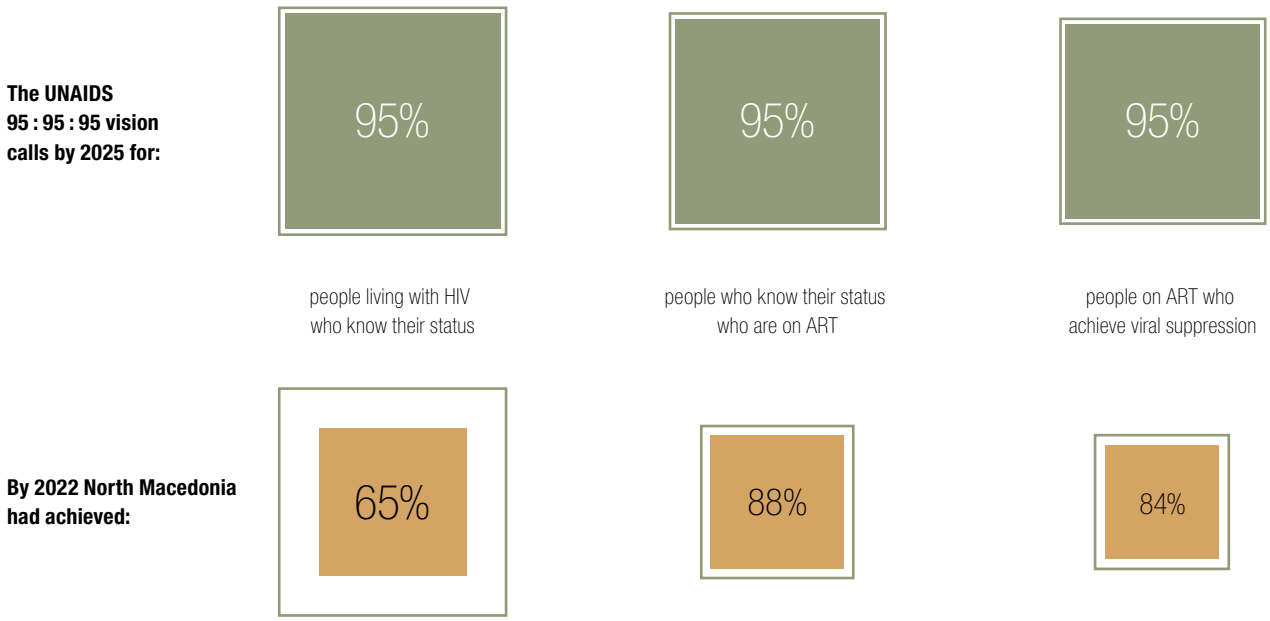
North Macedonia still falls short of global UNAIDS 95:95:95 targets. In 2019, 65% of people estimated to be living with HIV knew their status, 87.8% of those diagnosed received antiretroviral therapy (ART) and 84% of those on treatment had a suppressed viral load **(Fig. 8)**. Health centres play a key role in HIV prevention activities, providing information on sexual and reproductive health, conducting educational workshops and offering free and confidential tests for HIV and sexually transmitted diseases. With the end of funding from the Global Fund in 2018, the government assumed the responsibility for financing the HIV programme through a social contracting mechanism of civil society organizations providing these activities. Moreover, the government introduced new preventive measures for men who have sex with men and provides ART free of charge.

Access to effective treatment for tuberculosis (TB) is higher than in many other European countries

The number of new TB cases declined in North Macedonia from 31.6 per 100 000 population in 2000 to 6.8 in 2021, which was slightly below the EU average of 7.2 and far below the average of the WHO European Region of 17.9 in the same year. The latest internationally available data on effective treatment coverage for TB relate to 2017. According to these estimates, North Macedonia achieved a proportion of detected and successfully treated TB cases of 70.4%, higher than the averages in the EU (59.2%) and the WHO European Region (63.7%) **(Fig. 9)**.

Fig.8

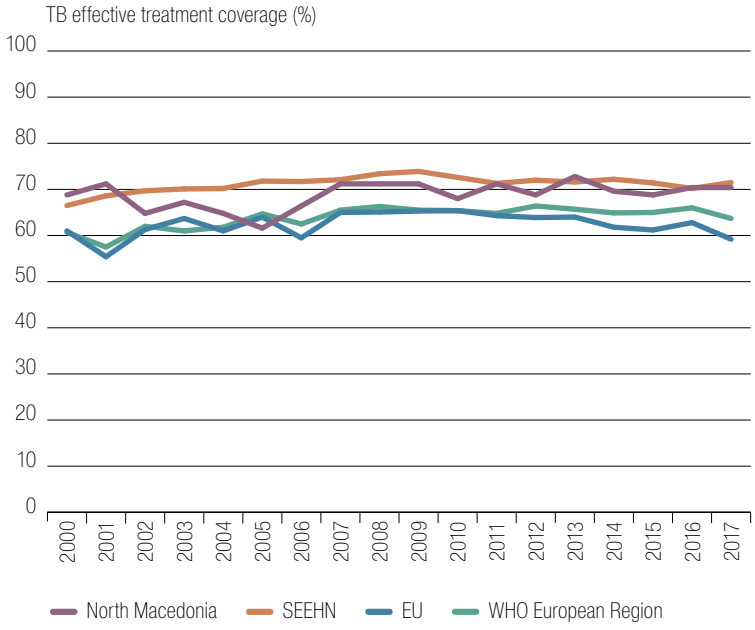
North Macedonia falls short of global HIV/AIDS targets



Source: godishen-izveshtaj, 2019.

Fig.9

North Macedonia achieves good coverage for the effective treatment of TB

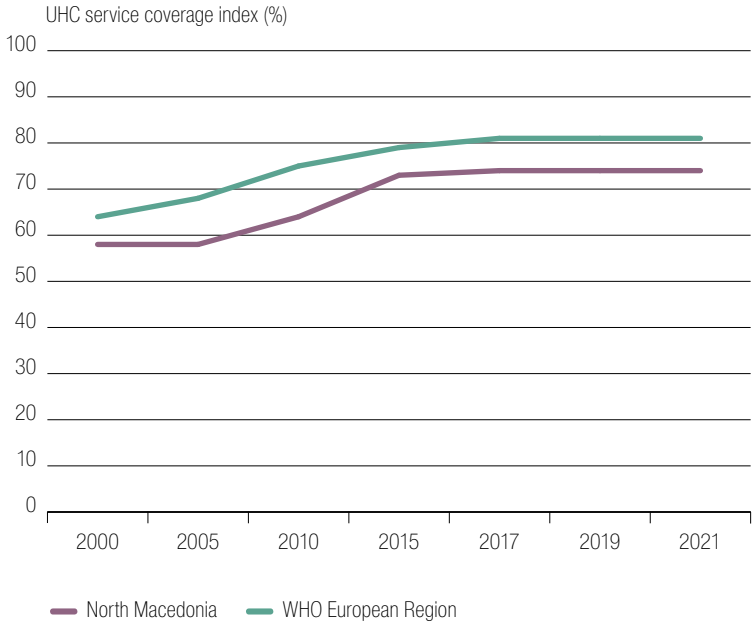


Source: WHO, 2024b.

Note: Proportion of TB cases detected and successfully treated (estimate).

Fig.10

Access to essential services lags behind the average of the WHO European Region



Source: WHO, 2024b.

Note: UHC service coverage index, defined as the average estimated coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health; infectious diseases; NCDs; and service capacity and access; among the general and the most disadvantaged populations.

Access to essential health services has improved, but progress has stalled

The UHC service coverage index (a global indicator that monitors progress towards Sustainable Development Goal 3 target 3.8.1 on coverage of essential health services) increased in North Macedonia from 57 (out of 100) in 2000 to 74 in 2021, although this still fell short of the average of 81 in the WHO European Region and progress in access has stalled since 2015 **(Fig. 10)**.

The improvements in terms of access to essential services are partly due to the declining incidence and prevalence of infectious diseases such as TB and HIV/AIDS **(see Box 3)**. However, prevention of NCDs and cancer is still underdeveloped **(see Section 4)**.

4 IMPROVING THE HEALTH OF THE POPULATION

Life expectancy in North Macedonia declined by 3.4 years during the COVID-19 pandemic

Life expectancy at birth for both sexes increased fairly continuously in North Macedonia over the two decades prior to the COVID-19 pandemic, from 73.0 years in 2000 to 76.6 years in 2019. The direct and indirect consequences of the COVID-19 pandemic resulted in a major drop in life expectancy, to 74.4 years in 2020 and 73.2 years in 2021 **(Fig. 11)**. Post-pandemic life expectancy data for the country are not yet internationally available.

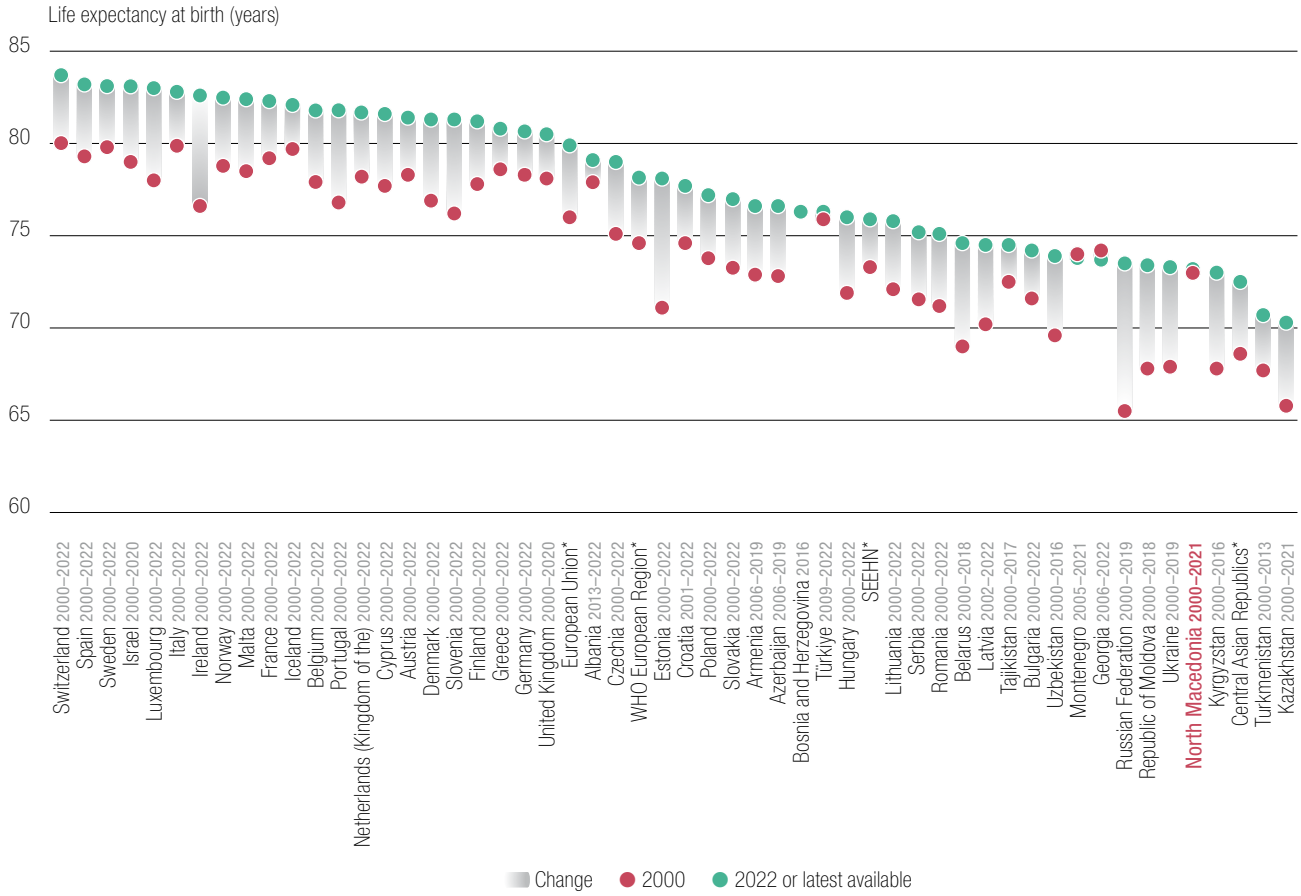
The decline in female life expectancy at birth between 2019 and 2021, from 78.6 years to 75.5 years (a decline of 3.1 years), was less pronounced than the decline in male life expectancy at birth over the same period, from 74.7 years in 2019 to 71.1 years in 2021 (a decline of 3.6 years). Females could expect to live 4.4 years longer than males in 2021, a gender gap that was smaller than in the EU in the same year (5.7 years).

North Macedonia has been hit severely by COVID-19

The COVID-19 pandemic had a major direct and indirect impact on population health in North Macedonia. The rate of excess deaths associated with the COVID-19 pandemic per 100 000 population (including deaths attributable directly to COVID-19 as well as deaths indirectly associated with COVID-19 through its impact on the health system and society) was 315 in 2020 and 499 in 2021, far exceeding the averages in the WHO European Region (137 in 2020 and 207 in

Fig.11

Life expectancy in North Macedonia in 2021 had fallen back almost to its 2000 level



Sources: Eurostat, 2024, for EU/EEA countries, Albania, Montenegro, North Macedonia, Serbia, Armenia, Azerbaijan, Georgia and Türkiye; WHO Regional Office for Europe, 2024a, for all others.

Notes: * averages are based on years with data available. The South-Eastern Europe Health Network (SEEHN) includes Albania, Bosnia and Herzegovina, Bulgaria, Israel, Montenegro, North Macedonia, the Republic of Moldova, Romania and Serbia.

2021) **(Fig. 12)**. The cumulative total of COVID-19 deaths reported to WHO per 100 000 population stood at 479 as of 1 June 2024, the sixth highest number worldwide, with Slovenia (480) ranking fifth and Bosnia and Herzegovina (500) ranking fourth.

COVID-19 reinforced pre-existing health inequalities

By June 2024, 81.8% of all COVID-19 deaths occurred in people with at least one chronic condition. People aged 30–39 years had the highest incidence (26 292 per 100 000 people), but mortality was highest among people above 60, accounting for 83.9% of COVID-19 deaths. While men and women had similar rates of infection, men accounted for 59.5% of COVID-19 deaths. Furthermore, sub-national trends in health inequalities also emerged. For example, in the Polog and north-western regions, the COVID-19 incidence was low but case fatality was high compared with national averages, suggesting that COVID-19 exacerbated existing health inequalities.

Box 3

North Macedonia is on the path towards ending TB by 2030

TB prevalence declined from 18.7 per 100 000 population in 2010 to 9.6 in 2019. Cooperation with the Global Fund to fight AIDS, Malaria and Tuberculosis was crucial for the stabilization of the epidemiological situation. Since 2017, the government of North Macedonia has been implementing the Strategy for Tuberculosis Prevention and Control, which includes early detection, as well as proper and timely treatment for every patient.

Fig.12

Excess mortality associated with COVID-19 was very high in North Macedonia

Source: WHO, 2023.

Note: Excess mortality from all causes of death, defined as the difference between the total number of deaths and the number that would have been expected in the absence of a crisis (for example, the COVID-19 pandemic). This difference is assumed to include deaths attributable directly to COVID-19 as well as deaths indirectly associated with COVID-19 through impacts on health systems and society.

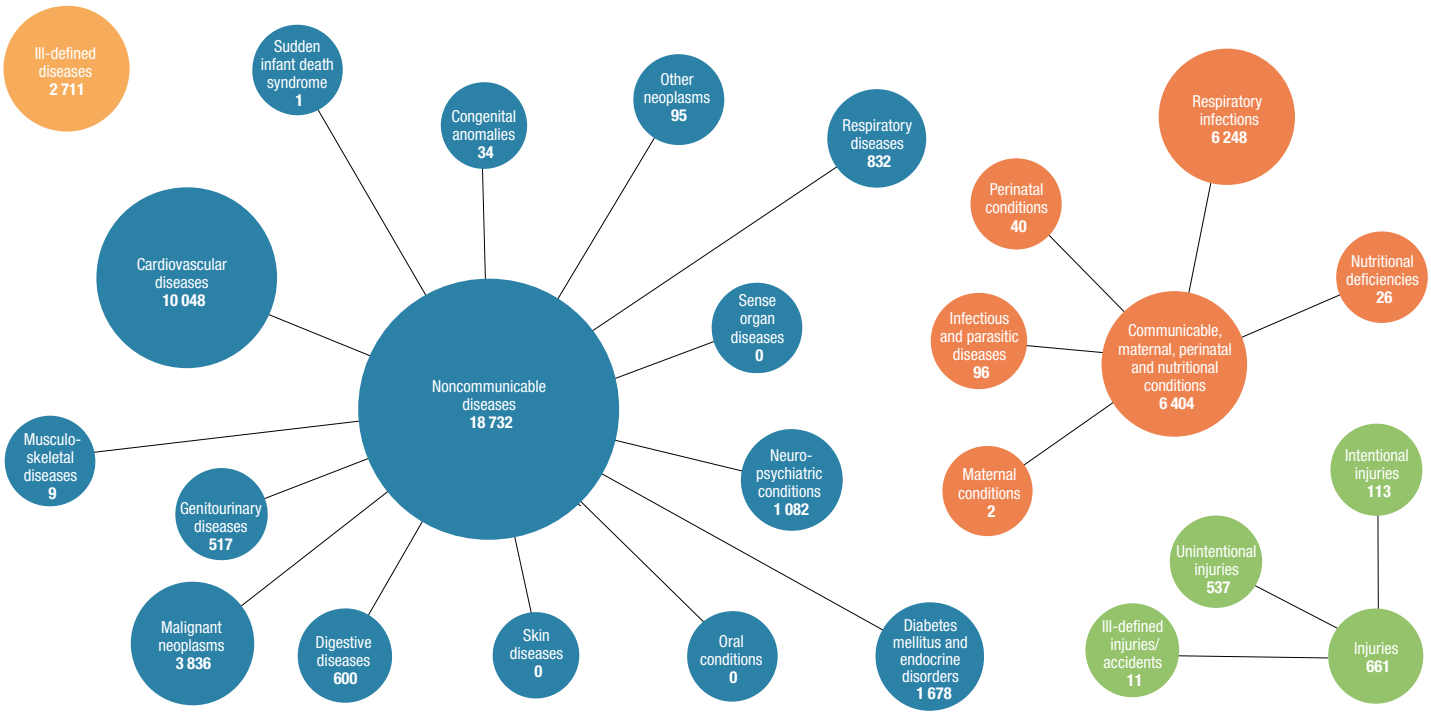
Major progress has been achieved in improving mother and child health

North Macedonia has undertaken sustained efforts to improve mother and child health, and infant and maternal mortality rates have declined markedly. United Nations estimates of maternal mortality indicate a decline from 12.3 deaths per 100 000 live births in 2000 to 3.0 in 2020, despite this being the first year of the COVID-19 pandemic. The rate in North Macedonia was far below the averages of the WHO European Region (12.6 per 100 000 live births in 2020) and the EU (6.4).

WHO estimates of infant mortality rates indicate a decline from 14.3 deaths per 1000 live births in 2000 to 4.6 in 2021. This was below the average for the WHO European Region in the same year (6.3), but above the EU average (3.2). The number of perinatal deaths, stillbirths and deaths in the first week of life decreased continuously over the past three decades, indicating improvements in the quality of care. After an upsurge of neonatal mortality in 2015, swift action was taken by the Ministry of Health with technical support from WHO, the United Nations Population Fund (UNFPA) and UNICEF, resulting in the national Safe Motherhood Committee, the Perinatal Mortality Audit Working Group and the Perinatal Care Master Plan 2020–2030 **(see Section 3)**.

Fig.13

There were large numbers of deaths due to respiratory infections during the COVID-19 pandemic



Source: WHO, 2024d.

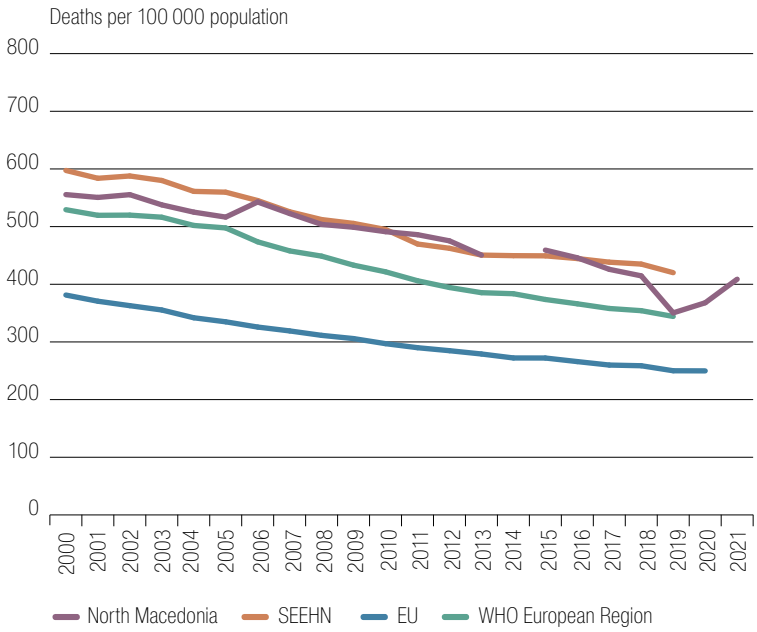
Note: Overview of the distribution of causes of total deaths grouped by category. Data refer to 2021.

Progress is being made in addressing a high burden of NCDs but prevention is still underdeveloped

Due to the COVID-19 pandemic, respiratory infections were the category of causes of death accounting for the second largest absolute number of deaths in North Macedonia in 2021, after cardiovascular diseases, with cancer accounting for the third largest number of deaths (Fig. 13). It can be assumed that NCDs (including cardiovascular diseases and cancer) will again predominate in the years after the pandemic. Age-standardized death rates for cardiovascular diseases have decreased in the last two decades, with a decline in deaths from ischaemic heart disease from 112 per 100 000 population in 2000 to 37 in 2021 and a decline in deaths from stroke from 201 per 100 000 population in 2000 to 91 in 2021. However, these rates were still far higher than in the EU (60 deaths from ischaemic heart disease per 100 000 population and 36 deaths from stroke per 100 000 population in 2020). Age-standardized rates for diabetes have increased in North Macedonia from 31 deaths per 100 000 population in 2000 to 59 in 2021, far above the EU average of 12 in 2020. This trend suggests that there is much scope for strengthening preventive interventions and chronic disease management.

Fig.14

Premature mortality from NCDs is declining in North Macedonia

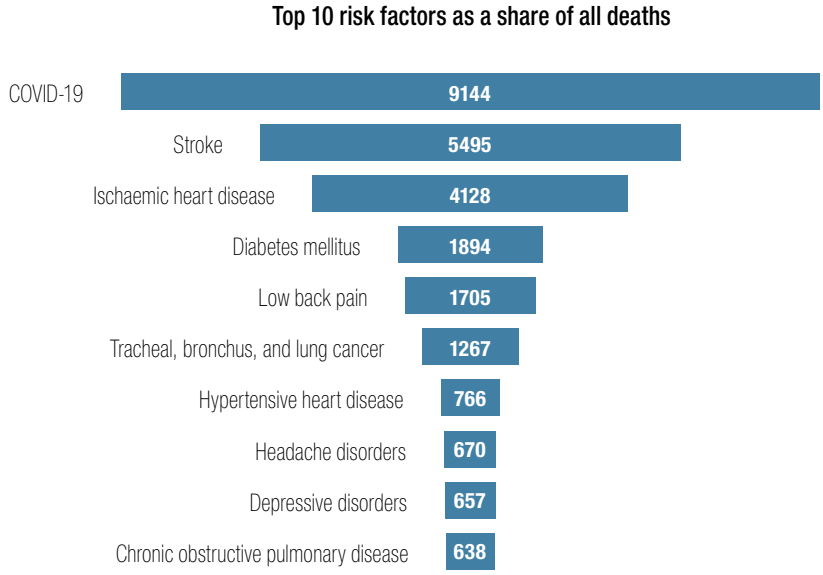


Source: WHO Regional Office for Europe, 2024a.

Note: Premature mortality among those aged 30–69 years from four major NCDS (cardiovascular diseases, cancers, diabetes mellitus and chronic respiratory diseases). The South-Eastern Europe Health Network (SEEHN) includes Albania, Bosnia and Herzegovina, Bulgaria, Israel, Montenegro, North Macedonia, the Republic of Moldova, Romania and Serbia.

Fig.15

COVID-19 dominated the burden of disease in 2021



Source: IHME, 2024.

Note: Top 10 causes of DALYs per 100 000 population for both sexes and all ages. Data refer to 2021.

Box 4

There is scope for further strengthening tobacco control policies

Although North Macedonia ratified the WHO Framework Convention on Tobacco Control (FCTC) in 2006 and instituted in 2010 a general ban on smoking in public places, including restaurants and bars, progress has stagnated in recent years. In early 2018, tobacco control measures deteriorated, as the smoking ban was weakened by allowing smoking in specially designated areas and open-air terraces. At the same time, the government has continued to provide high agricultural subsidies aimed at stimulating tobacco production. In addition, the Ministry of Health failed to enact any policy to promote smoking cessation or provide any programmes or therapy for smoking cessation. Moreover, North Macedonia has lower cigarette prices than other south-eastern European countries (Institute of Economic Sciences in Belgrade, 2019). However, in July 2019, a new law on excise tax was passed, introducing automatic increases in the tax rates for heated tobacco and liquids used in electronic cigarettes as of July 2020.

Premature mortality from four common NCDs (cardiovascular diseases, cancers, diabetes and chronic respiratory diseases) among those aged 30–70 years declined in North Macedonia from 556 per 100 000 population in 2000 to 409 in 2021. However, this was still far above the EU average of 250 in 2020. Premature NCD mortality in North Macedonia is much more common among men (516 per 100 000 population in 2021) than women (306) (WHO Regional Office for Europe, 2024a). This gender gap is likely due to differences in the prevalence of unhealthy behaviours, such as smoking or alcohol consumption.

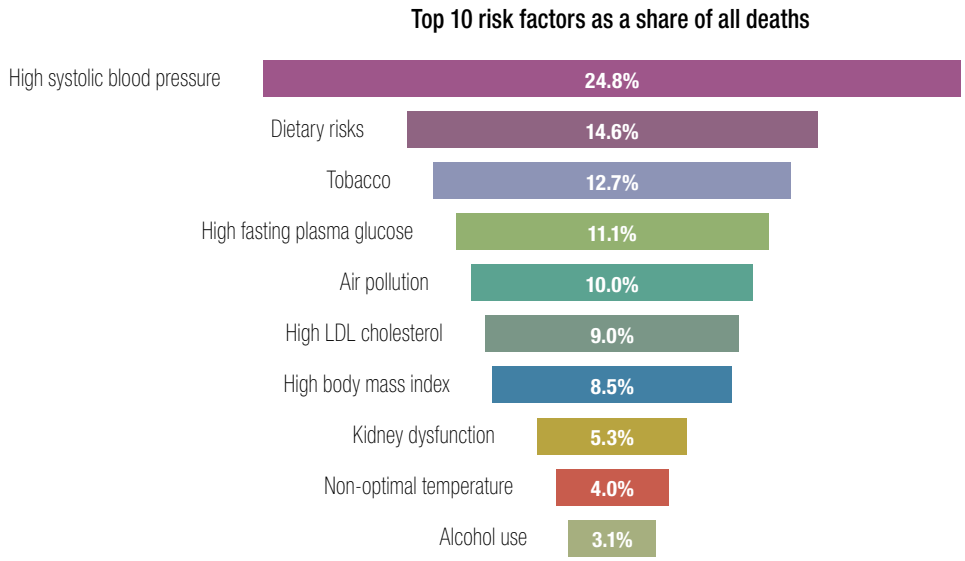
A disability-adjusted life year (DALY) provides an indicator of the burden of disease in a population, as one DALY corresponds to the loss of one year in full health. Estimates of the burden of disease in terms of DALYs for 2021 suggest that COVID-19 accounted for the largest number of DALYs, followed by stroke and ischaemic heart disease, the two leading causes of DALYs in 2019. Diabetes also accounted for a large number of years in full health lost, pointing to deficiencies in preventive and curative interventions.

Smoking and unhealthy diets account for a large share of mortality

Unhealthy behaviours and poorly controlled risk factors are major drivers of mortality in North Macedonia. High blood pressure, unhealthy diets (high consumption of sugar, salt and fat) and smoking are estimated to account for a substantial share of deaths **(Fig. 16)**. High mortality attributable to high blood pressure (estimated to account for 24.8% of deaths in 2021) indicates substantial scope for action in terms of both

Fig.16

High blood pressure, dietary risks and smoking are major risk factors as a share of all deaths



Source: IHME, 2024.

Note: Percentage of all deaths attributable to risk factors. Shares overlap and therefore add up to more than 100%. Data refer to 2021.

behavioural factors and health system performance, including increasing competency and role of primary care in the control and management of chronic conditions.

Internationally comparable data on smoking prevalence in North Macedonia are unavailable. A national study estimated that smoking prevalence in 2017 stood at 35%, with a higher prevalence among males (37%) than females (32%) (Analytica, 2018). This compares with an average in the WHO European Region of 23.7% in 2020 (32.4% among males and 15.8% among females). Smoking prevalence rates in North Macedonia are estimated to have declined in recent years, probably due to a 2010 smoking ban in public places, increased unit prices of cigarettes, and improved education and public awareness about the negative health effects of smoking **(Box 4)**. North Macedonia is one of the few countries in the WHO European Region routinely recording the tobacco use status of patients. However, these data on smoking prevalence are not included in national statistics, forestalling the evaluation of measures undertaken. On a more positive note, alcohol consumption per capita among those aged 15 years and above (3.9 litres per year in 2019) was far below the averages of the WHO European Region and the EU (7.8 and 10.1 litres, respectively, in 2019).

Overweight and obesity rates among adults and children are increasing

Overweight and obesity rates among adults in North Macedonia have increased in the last two decades, although up-to-date information is missing. Almost two thirds (64.9%) of men and more than half of women (51.2%) were overweight in 2016, an increase from 56.3% and 46.7% in 2000, respectively. The prevalence of obesity among men increased from 15.7% in 2000 to 22.6% in 2016, while the prevalence among women increased from 18.4% to 22.1%. Obesity and overweight among 7-year-old school children also increased between 2010 and 2019, especially among girls, where the prevalence of overweight increased from 30.9% to 37.8% (Spiroski et al., 2021).

Air pollution is among the top causes of mortality and morbidity

Particulate air pollution as a risk factor for ill-health constitutes an important public health concern in cities and urban centres in North Macedonia. The country has one of the highest levels of air pollution in Europe, in particular in the capital Skopje (EEA, 2020). In 2021, one in ten deaths (10%) was estimated to be due to air pollution. Prevalence of respiratory conditions (not including infections or pneumonia) is particularly high among children (0–14 years). In 2019, diseases of the respiratory system accounted for 39.8% of morbidity in children. Pre-school age children (0–6 years) in urban settings were twice as likely as those in rural areas to acquire diseases of the respiratory system, due to higher levels of air pollution in urban areas (Institute for Public Health, 2019).

In contrast to the low and declining incidence and number of deaths attributable to TB **(see Section 3)**, the incidence of hepatitis B (8.0 per 100 000 population in 2013) remains many times higher than the EU average (0.7 in 2013). Vaccination is a highly effective preventive intervention and North Macedonia introduced mandatory hepatitis B vaccination for all babies born after November 2004. However, there is scope to expand action, such as through vaccination of adults who are at high risk and through improved infection prevention and control in health care settings.

5 SPOTLIGHT ON HEALTH WORKFORCE TRENDS

The health workforce is increasing, but remains comparatively small

In most European countries with internationally available data, the rates of health workers per population have increased in the last decade. This was also the case in North Macedonia, although on a smaller scale. The density of doctors increased from 276 per 100 000 population in 2013 to 296 in 2020, while the density of nurses increased from 361 in 2013 to 440 in 2020. Recent data on the number of graduating health workers were not internationally available and data on the gender composition of the health workforce in international databases were only available for doctors, suggesting that 60.3% were female in 2013.

The ageing of doctors is a concern

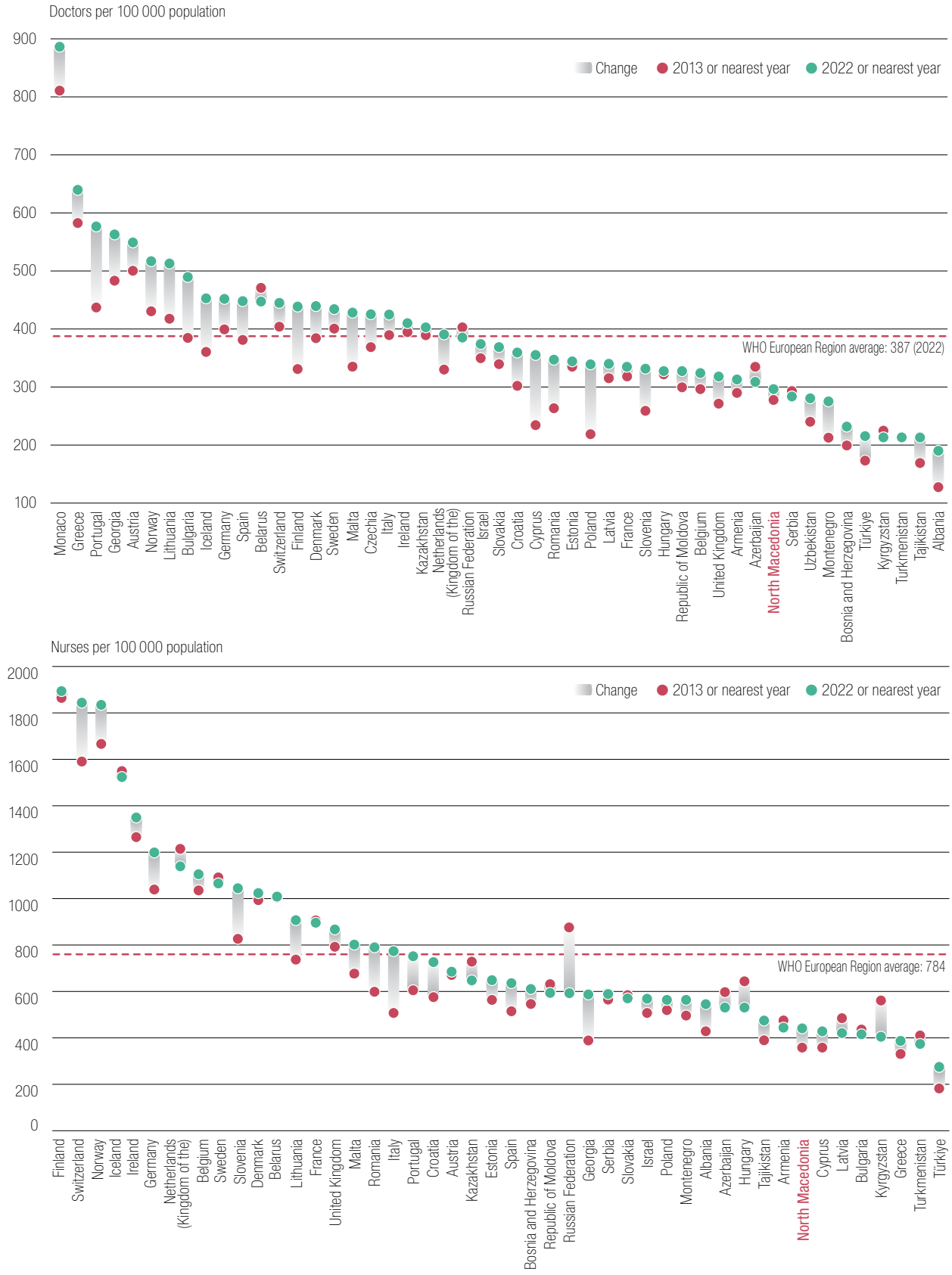
According to WHO's National Health Workforce Accounts database, 30% of doctors in North Macedonia in 2013 (the latest year with internationally available data) were aged 55 years or over, while no data were available on the age composition of the nursing workforce. A more recent assessment of the situation of nurses and midwives in the country noted that the age distribution of nurses is relatively young, with 85% of nurses employed in health care institutions under the age of 55 years (Groenewegen, Bryar & Sanchez Martinez, 2019). These findings correspond with nationally available data that indicate that 15% of doctors and 10% of nurses were aged over 60 years in 2019.

The share of generalist medical practitioners is comparatively high

According to WHO's National Health Workforce Accounts database, 34.8% of doctors in North Macedonia in 2013 (the latest year with internationally available data) were generalist medical practitioners. This was a higher share than in many other European countries. However, there are concerns about the incomplete implementation of the family medicine model in the country and only about one fifth of primary care

Fig.18

Rates of doctors and nurses per 100 000 population were increasing in North Macedonia between 2013 and 2022



Source: WHO, 2024c.

Note: The number of nurses plotted for Austria has to be treated with caution, due to breaks in the time series and switching between "licensed to practise" and "practising" workforce numbers.

doctors were estimated in 2018 to have the specialty of family medicine or paediatrics (Martinez & Sanchez, 2018). In addition, numbers of general practitioners with a HIF contract are decreasing continually (World Bank, 2019). There are no data on the distribution and age structure of secondary specialists, but the specialist-to-population ratio is increasing.

The outmigration of health workers poses major challenges

The migration of health workers results in challenges for sustaining a sufficient health workforce in the country. In 2019, the number of physicians leaving the country (180) was equal to the number of medical students graduating. A major country of destination is Germany since it opened its health labour market for skilled workers from non-EU countries in 2020. Already in 2018, about 470 physicians from North Macedonia lived in Germany and most of them worked in hospitals (World Bank, 2020). The data on the international mobility of nurses are more limited, as there is no regulatory body for registration or licensing of the nursing workforce. It has been estimated, based on the number of recognized diplomas from North Macedonia in German statistics, that about 300 nurses left North Macedonia to work abroad in 2018, but this is likely an underestimate (World Bank, 2020).

6 EUROPEAN PROGRAMME OF WORK (EPW)

Moving towards universal health coverage (UHC)

A concerted focus on accelerating the implementation of the PHC reforms as the cornerstone of UHC has led to the adoption of a comprehensive set of interventions. These include the introduction of clinical guidelines in PHC for various ambulatory care sensitive conditions such as hypertension, diabetes, asthma, chronic obstructive pulmonary disease and hypothyroidism, along with patient pathways, defining task-sharing among health professionals in health teams, and setting standards and indicators for quality and performance monitoring. Changes in the HIF rulebook now empower primary care providers to diagnose, prescribe and manage NCDs without specialist referral, enhancing access to essential health services and alleviating pressure on secondary and tertiary care facilities.

The Ministry of Health, with WHO support, initiated human resources for health planning and management. Initiatives included allocating funds for the newly established geriatrics and palliative care fellowships, introducing a Government Chief Nursing Officer to oversee nursing affairs, and finalizing draft legislation for the regulation of the nursing and midwifery professions. Additionally, stakeholder consultations kickstarted the development of a process for Human Resources for Health planning in the Ministry of Health, aimed at enhancing workforce planning and development. Through collaborative efforts led by WHO and supported by the Ministry of Health and the EU Delegation, a comprehensive assessment unveiled significant barriers to health care access in North Macedonia which initiated a national discussion about addressing disparities and fostering universal health care access across socioeconomic and geographic divides.

Protecting against health emergencies

North Macedonia has made efforts to advance its capacity to respond to health emergencies with the adoption of the National Action Plan for Health Security 2024–2025. Developed collaboratively and based on risk assessments, this plan ensures a coordinated response to health threats. Biosafety and Biosecurity Action Plans have been introduced in 11 public health laboratories to enhance safety, while a comprehensive plan for pandemic prevention, readiness, response and recovery from pandemics caused by respiratory pathogens (PRET) was finalized. Introduction of a Laboratory Information Management System (LIMS) further strengthens disease surveillance.

Promoting health and wellbeing

WHO initiated a joint programme with UNICEF to prioritize Children and Adolescents' Mental Health, culminating in the completion of a national assessment and mapping report on mental health services. This informed the development of a multisectoral strategic plan and included training for 550 PHC professionals and community engagement fora, engaging influential women community leaders to address mental health issues. In parallel, significant strides were made in maternal and child health, with the completion of the Perinatal Mortality Audit (2021–2022) and the revision and adoption of the National Master Plan for Perinatal Care (2026–2030). Additionally, WHO's support in institutionalizing health accounts and conducting economic analysis on tobacco consumption jointly with UNDP supports efforts to enhance health care transparency, governance and tobacco control measures in North Macedonia.

Substantial progress was made in enhancing the skills and knowledge of health care professionals and organizations in vaccine surveillance, vaccine coverage and management, including for COVID-19 vaccines. Two extensive catch-up "Door-to-door" campaigns were carried out to improve access to immunization services and increase overall vaccination coverage. This campaign took place in 40 different municipalities, in mixed urban and rural areas. Over 5000 doses of previously missed routine vaccines, 2630 seasonal flu vaccines and COVID-19 vaccines were administered. To raise awareness and understanding about the importance of immunization more than 14 000 brochures were disseminated to people's homes within communities.

COUNTRY DATA SUMMARY

	North Macedonia	SEEHN	WHO European Region	European Union
Life expectancy at birth, both sexes combined (years)	73.2 [a] (2021)	75.9 [a]	78.2 [a]	79.9 [a]
Estimated maternal mortality per 100 000 live births (2020)	3.0	7.3	12.6	6.4
Estimated infant mortality per 1 000 live births (2021)	4.6	4.6	6.3	3.2
Population size, in millions (2022)	2.0	54.7	929.1	512.7
GDP per capita, PPP$ (2021)	17 918	30 022	38 936	48 615
Poverty rate at national poverty lines, % of population	21.8 [b] (2019)	22.6 (2017)	14.9 (2018)	17.0 (2018)

Sources: WHO Regional Office for Europe, 2024a;

[a] Eurostat, 2024, for EU/EEA countries, Albania, Montenegro, North Macedonia, Serbia, Armenia, Azerbaijan, Georgia and Türkiye; [b] World Bank, 2024.

Note: Note: Life expectancy averages refer to latest available years.

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WHO Regional Office for Europe

WHO is the authority responsible for public health within the United Nations system. The WHO Regional Office for Europe (WHO/Europe) covers 53 countries, from the Atlantic to the Pacific oceans.

To support countries, WHO/Europe seeks to deliver a new vision for health, building a pan-European culture of health, where health and well-being goals guide public and private decision-making, and everyone can make healthy choices. WHO/Europe aims to inspire and support all its Member States to improve the health of their populations at all ages. WHO/Europe does this by providing a roadmap for the Region's future to better health; ensuring health security in the face of emergencies and other threats to health; empowering people and increasing health behaviour insights; supporting health transformation at all levels of health systems; and by leveraging strategic partnerships for better health.

European Programme of Work 'United Action for Better Health in Europe'

The European Programme of Work (EPW) sets out a vision of how the WHO Regional Office for Europe can better support countries in our region in meeting citizens' expectations about health.

The social, political, economic and health landscape in the WHO European Region is changing. United action for better health is the new vision that aims to support countries in these changing times. "United", because partnership is an ethical duty and essential for success, and "action" because countries have stressed their wish to see WHO move from the "what" to the "how", exchanging knowledge to solve real problems. The WHO European Region's solidarity is a precious asset to be nurtured and preserved and, through the EPW, WHO/Europe supports countries as they work together to serve their citizens, learning from their challenges and successes.

The European Observatory on Health Systems and Policies

The European Observatory on Health Systems and Policies supports and promotes evidence-based health policy-making so that countries can take more informed decisions to improve the health of their populations. It brings together a wide range of policy-makers, academics and practitioners, drawing on their knowledge and experience to offer comprehensive and rigorous analysis of health systems in Europe. The Observatory is a partnership hosted by WHO/Europe. Partners include the governments of Austria, Belgium, Finland, Ireland, Norway, Slovenia, Spain, Sweden, Switzerland, the United Kingdom, and the Veneto Region of Italy (with Agenas); the European Commission; the French National Union of Health Insurance Funds (UNCAM), the Health Foundation; the London School of Economics and Political Science (LSE) and the London School of Hygiene & Tropical Medicine (LSHTM). The Observatory is based in Brussels with hubs in London (at LSE and LSHTM) and at the Berlin University of Technology.

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