SERBIA

TOWARD A MORE EFFECTIVE, EFFICIENT, EQUITABLE AND RESILIENT HEALTH SYSTEM

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Acknowledgments

Abbreviations and Acronyms

ANC	Antenatal care
DCU	Developmental Counseling Unit
DPS	Data Presentation System
DRGs	Diagnosis-Related Groups
EU	European Union
EU28	Twenty eight member states of the European Union (including the United Kingdom for the reporting period)
GDP	Gross Domestic Product
GP	General Practitioner
HBS	Household Budget Survey
HFA	Health For All
IPH	Institute of Public Health
MICS	Multiple Indicator Cluster Survey
MMR	Measles, mumps and rubella
MRI	Magnetic Resonance Imaging
MOH	Ministry of Health
NCDs	Noncommunicable Diseases
NHA	National Health Account
NHIF	National Health Insurance Fund
NMS13	Thirteen new member states of the European Union
OOP	Out-of-Pocket
PHC	Primary Health Care
PPP	Purchasing Power Parity
SORS	Statistical Office of the Republic of Serbia
STEE7	Seven Small and Transition Economies of Europe
UNICEF	United Nations Children's Fund
WB5	Western Balkans 5 countries
WDI	World Development Indicators
WHO	World Health Organization

EXECUTIVE SUMMARY

The health system in Serbia faces significant challenges arising from a long-term demographic trend and the recent shock caused by the COVID-19 pandemic. Serbia's population is aging at a rapid pace, and the share of the population aged 65 and above almost doubled—from 9.6 percent to 18.7 percent—between 1990 and 2019. This, coupled with high prevalence of unhealthy lifestyle factors, such as smoking, heavy drinking, and high consumption of fatty and sugary diet, has contributed to a rapidly rising burden of noncommunicable diseases (NCDs). Addressing NCDs exerts significant financial pressure on the health system that has been further squeezed after more than two years of dealing with COVID-19. This is all happening in a context where the economic contraction that began in 2020 after the advent of COVID-19 pandemic and compounded with the war in Ukraine has adversely affected the country's capacity to pay for health.

The health system also has a challenge to meet population expectations, which have become more demanding after decades of strong economic growth. Serbia aspires to the development level of the European Union (EU) and its population wants a well-equipped and staffed modern health system, which can deliver high quality care with a short waiting time. People are no longer satisfied only with the services provided in the public sector and they increasingly seek care from private providers, absorbing a significant financial burden themselves while paying for private care. This has exacerbated the pressure on the government to modernize the health system.

The government has shown strong leadership in steering the health system. Over the last two decades, the government has adopted a number of strategy documents to guide future directions of the health sector. Significant progress has been achieved in the areas of infrastructure investment, strengthening primary health care (PHC), and development of eHealth. More recently, the government's response to COVID-19 was fast, determined, and strategic, making Serbia one of the first countries in Europe that successfully secured vaccines for its population.

Nevertheless, stronger stewardship and more strategic measures are required to address the short- and long-term challenges facing the health sector. Serbia's service delivery system still relies significantly on inpatient care and has not kept up with regional trends in developing day hospitalization and integrated care for NCDs. Private, out-of-pocket (OOP) expenditure on health remains persistently high and the government's share of health spending reduced over the last ten years. Progress in provider payment reform remains fragile, and active regulation of the private service provision is lacking.

This report provides an assessment of the health system's performance and helps to identify critical areas for improvement. The report presents an overview of health system outcomes—improved health status, financial protection, and population satisfaction. It analyzes in depth two main health system functions—health financing and service delivery—the setup of which is critical for performance outcomes. Health system performance is assessed in terms of effectiveness, efficiency, equity,

and public health preparedness and resilience. Based on the diagnostics, a set of recommendations is offered to help Serbia advance toward an effective universal coverage health system and achieve better health outcomes for the population.

HEALTH SYSTEM OUTCOMES

Despite improvements over the last decades, Serbia does not compare well with peers and aspirational peers in *health outcomes*. Life expectancy at birth is lower than in several Western Balkan countries. At 12 per 100,000 live births, maternal mortality ratio in 2017 was more than double the EU average. Serbia ranks second highest on mortality per 100,000 population among comparator countries, performing better than only Bulgaria. Subjectively, 16 percent of the population perceived their health as "bad" or "very bad" in 2018, higher than in all comparator countries except Croatia.

The system performs poorly on *financial protection*, relying on OOP payment for 42 percent of total health expenditure. Roughly 86 percent of OOP is spent in the private sector, mostly for pharmaceutical products. Households also incurred OOP for services in the public sector, many of which are included in the social health insurance benefit package, such as preventive care or care received at public general hospitals. Some 4–5 percent of the population suffers from "catastrophic" health expenditure each year (health expenditure that exceeds 25 percent of total household nonfood expenditure), a level that is higher than in all comparator countries except Albania.

***Population satisfaction* with the public health system appears relatively positive although some problems persist.** Satisfaction score with PHC and hospitals averaged at 3.9 and 4.3 out of 5, respectively, over the last five years. A majority of the population thinks that public health services are accessible and affordable. However, the population has complaints about waiting time, conditions of the facility, patient communication, privacy in public services, and the practice of bribery and corruption.

KEY HEALTH SYSTEM FUNCTIONS

Serbia's health *financing* is based on a universal social health insurance system and health spending accounts for an appreciable 8.4 percent of gross domestic product (GDP). The benefit package is generous, covering a wide set of preventive, diagnostic, curative (outpatient and inpatient) and pharmaceutical services, as well as rehabilitation and sick leave. However, long-term trend shows a decline in the government's health spending, from 6.2 percent of GDP during 2008–2010 to 5.1 percent in 2018. At the same time, private expenditure stayed at 3.7–4.1 percent of GDP. The health system relies heavily on OOP, which makes Serbia an outlier when compared with peers and aspirational peers. Public spending is skewed toward hospitals at the expense of ambulatory care, with 62 percent allocated to hospitals and 22 percent to PHC. The corresponding figures are 41 versus 23 percent in Slovenia, and 37 versus 29 percent in Bosnia and Herzegovina.

Despite a widespread and well-organized *service delivery* system, critical inputs such as health workforce and infrastructure are behind aspirational peers. Serbia is below the EU average on both physicians and nurses per 100,000 population, and the gap is particularly large for specialized categories, such as surgeons and dentists. On infrastructure, although the number of beds per population is comparable with

the average among 13 new member states of the EU (NMS13) and the Small and Transition Economies of Europe (STEE7), there is room for improvement when it comes to new models of care, such as day surgery.

Over the last decade, Serbia has witnessed growing private sector provision of health services. Between 2010 and 2020, the number of establishments registered for specialist services increased nearly 12-fold, from 91 to 1,074, and the number of private dental practices increased by nearly 44 percent, from 2,125 to 3,053. Private providers are a popular choice among the population due to their convenience and seemingly better facilities. However, except for a small number of selected services, private services are not contracted by the National Health Insurance Fund (NHIF) for the public benefit package, limiting the government's ability to regulate the private sector or helping to reduce OOP spending on private services.

HEALTH SYSTEM PERFORMANCE

Despite the availability of universal social health insurance, a comprehensive health network, and relatively generous benefit package, Serbia has not achieved universal coverage in its true meaning. Universal coverage implies that services are not only physically accessible, but also of high quality and effectiveness, not imposing a financial burden on the population, not leaving certain population groups behind, and at the same time being delivered in an efficient and sustainable manner. In this regard, the system's performance shows weaknesses in a number of areas as highlighted below:

Effective coverage **for both adult and child conditions falls short, particularly in view of the heavy burden of NCDs.** As of 2018, only nine percent of women aged 50–69 reported having had a bilateral mammography within the preceding two years, compared with 51 percent average among the NMS13. Serbia's cancer death rate in 2017 was 310 per 100,000 population, highest among comparator countries with similar incidence level, reflecting weaknesses in treatment and case management. In general, 407 per 100,000 deaths from different causes in 2017 could have been averted with better prevention and treatment. Coverage of life-saving services for children, such as immunization, is decreasing, with only three out of 25 districts reaching 95 percent coverage of measles, mumps and rubella (MMR) vaccine in 2020. Although well planned, preventive services for children, such as routine immunization and development screening, need significant improvement for the most vulnerable population. COVID-19 has further highlighted the need to address mental health issues affecting children, youth, and families.

On *efficiency*, **the system predominantly relies on the costly hospital sector and inpatient care.** Unlike many countries in the region which have been implementing reforms to downsize hospitals, the number of curative care beds per population in Serbia slightly increased over the last 20 years, from 4.5 to 4.7 beds per 1,000 population. Serbia has exceptionally high length of hospital stay (8.9 days in 2018, compared to less than 6 days average for NMS13) and low bed occupancy (65 percent in 2018, compared to 70 percent average for NMS13). The number of hospital discharges continued to rise between 2015 and 2019, and so did the C-section rate, which topped at 37 percent in 2019 and is significantly higher than the medically appropriate level. The adoption and provision of day surgeries, which could deliver services at lower cost while offering quality and convenience for the patients, only recently picked up. Generally, there is a large variation at the local level hospitals in productivity, suggesting that there is potential for efficiency improvement.

On *equity*, **although there is no clear evidence of rich-poor gaps in utilization of basic services, wide differences exist among districts in health resources (physicians, beds) and outcomes (low**

birth weight, infant mortality). Furthermore, despite efforts over the last five years to narrow the gap between Roma and general population, the former still experiences poorer access to basic services such as antenatal care and child vaccination.

Similar to the situation in other countries, the recent shock caused by the COVID-19 pandemic revealed weaknesses regarding *resilience* **of the health system in Serbia.** Even with a comprehensive PHC network and a favorable coverage of general practitioners (GPs) and pediatricians, Serbia has not been able to maintain essential health services at the same level as before COVID-19. The drop in volume of services ranges between 28 percent for general medicine to 65 percent for child dentistry, comparing Quarter 2 of 2020 with the corresponding quarter in 2019. Although the volume of services bounced back almost to the 2019 level in the last quarter of 2020 for general medicine, for other services such as gynecology, pediatric care, and child dentistry, evidence of foregone care remains strong.

RECOMMENDATIONS

Notwithstanding many positive aspects, there remains ample scope to improve the performance of the health system in Serbia. Following are key recommendations for the way forward:

- **Develop comprehensive and overarching strategies to tackle NCDs more effectively.** Measures to carry out include expanding health promotion and communication to tackle risk factors and encourage healthy lifestyle; adopting and enforcing regulatory measures to reduce smoking, including passive smoking, and heavy consumption of alcohol and unhealthy diet; educating the public on the importance of seeking preventive care regularly; strengthening the role of PHC in prevention, early detection, and management of NCDs; and piloting innovative service delivery models and provider payment mechanisms to encourage effective and efficient management of NCDs.

- **Increase focus on child development, nutrition, and mental health.** Special attention should be given to health issues for which effective treatment requires close collaboration with other sectors, particularly social and education, and increased focus on behavioral, social, environmental, and economic determinants of health — for example, care for children and adults with disabilities, violence prevention and response, substance use, and mental health. At the same time, it is important to strengthen the effectiveness of national immunization program, which has recently faced significant challenges in its implementation.

- **Focus on effectiveness of care and not only physical and financial access.** Important measures to consider include optimizing care provision through implementation of clinical pathways, digitalization of the health system to enable full application of electronic medical records, and strengthening systems for monitoring and reporting performance data, including quality indicators.

- **Reform the service delivery network to rely less on inpatient care and more on PHC and new models of care.** Optimization of the network of health care facilities should be continued to better respond to the needs of the population. It should also include better collaboration and coordination between different levels of care that leads to more services being provided on an outpatient basis

and at the primary level. Introduction of novel models of care, like telemedicine, mobile technologies, and integrated care should also be enabled with the aim to improve overall quality and timeliness of the services provided. Health workforce management and strategy should be improved to better address regional imbalances and deficits in staffing as well as exits to the private sector and emigration of health professionals.

- **Reform financial mechanisms and incentives to support more efficient and effective use of available resources.** This would require continuation and completion of ongoing reforms in health financing, particularly in provider payment systems. At the PHC level, some measures could include increasing the relative size of the performance-based payment component (the variable part of individual salaries). At the secondary and tertiary level, increase of the variable part of the hospital budget that would depend on performance based on Diagnosis-Related Groups should be considered, as well as reform of provider payment system for hospital services that are not acute hospital stays. Furthermore, a performance-based system applied to hospital staff should be considered.

- **Strengthen interventions to reduce pharmaceutical spending, especially for outpatient drugs.** It is prudent to gain deeper and more granular understanding of the reasons behind stubbornly high OOP payment and its financial implications for different population groups. Such knowledge will inform public education on rational use of drugs, insurance contracting and benefit package revision, in addition to other measures to regulate doctor prescription practice.

- **Strengthen stewardship over the entire health care sector by introducing integrated oversight over both public and private health care sectors.** The first step would be to review and clarify roles and accountabilities for the Ministry of Health (MOH), Institute of Public Health, and NHIF on stewardship of public and private systems, and carefully start developing options for their closer relationship and integration to explore synergies and improve effectiveness of resources used. Strengthened stewardship and better coordination between public and private health sector, ultimately resulting in well prepared contracting with private providers, could help lessen OOP by the population for accessing private services and minimize potential for service duplication, at the same time giving authorities better control over quality in the private sector.

- **Continue to pay special attention to the Roma population and other disadvantaged groups.** Clear decisions are needed with regard to prioritization of provisions for the most vulnerable populations as part of the PHC services. This also includes areas of the country with lower health outcomes, where measures could be considered that would include increased funding for staff—potentially through higher coefficients in the capitation formula—implementation support for service and quality improvements, and enhanced performance monitoring.

- **Enhance decision making with usage of improved data available.** Institutionalization of health technology assessment methodology in providing inputs related to investment and reimbursement decisions provides a good example and opportunity. Health authorities and public finance management decision makers should consider incorporating elements of program-based budgeting and expenditure tagging. Moreover, the overall quality and timely production of data on budgeting and expenditure in health should be improved to allow for better performance monitoring, improving efficiencies, and ensuring overall effectiveness.

BACKGROUND

The health system in Serbia faces significant challenges arising from a long-term demographic trend and recent shock caused by the COVID-19 pandemic. Serbia's population is ageing and shrinking. Between 1990 and 2019, the share of population aged 65 and above almost doubled from 9.6 percent to 18.7 percent, and total population size reduced from 7.6 million to 6.9 million. At the same time, certain lifestyle factors such as smoking, heavy drinking, and consumption of fatty and sugary diet have become more popular, all contributing to a rapidly rising burden of noncommunicable diseases (NCDs) in the general population and among children (World Bank 2022a). In 2018, the main causes of death were circulatory diseases and cancer (Eurostat), while obesity and mental health issues were on the rise among children. The cost of addressing NCDs exerts significant financial pressure on the health system, which is further squeezed after more than two years of dealing with COVID-19. This is all happening in a context where the country's capacity to pay for health was already adversely affected by economic contraction experienced in the year 2020 (International Monetary Fund 2021), and the global economy is faced with a significant risk of stagflation after the onset of the war in Ukraine (World Bank 2022b).

The health system also has a challenge to meet population expectations, which have become more demanding after decades of strong economic growth. Serbia aspires to the development level of the European Union (EU), and its population wants a modern, well-equipped and staffed health system, which can deliver high quality care with a short waiting time. People are no longer satisfied only with the services provided in the public sector and they increasingly seek care from the private providers for both inpatient and outpatient services, absorbing a significant financial burden themselves while paying for private care.

There are many positive features in the setup of the health system which help Serbia cope with the challenges caused by the demographic and epidemiologic transition, as well as the more recent shock caused by COVID-19. Serbia has a widespread service delivery network which has remained stable. Health financing is based on universal social health insurance, which provides free access to most services in the public sector for virtually the whole population. The insurance benefit package is managed by a single purchaser, the National Health Insurance Fund (NHIF), which helps to ensure cross-subsidies among population groups and avoid fragmentation in the insurance market. The primary health care (PHC) system is relatively strong and can easily be accessed by all population groups.

Since 2004, the government of Serbia has undertaken multiple important health reforms. Between 2004 and 2012, reforms aimed to strengthen preventive care, computerize health facilities, and improve health financing and quality of care. From 2012, reforms have focused on infrastructure, equipment, and development and integration of health information systems. Construction of the

new building of University Clinical Center Niš as well as construction and reconstruction of a number of hospitals and other health facilities have been completed. Additionally, works on some facilities, such as new buildings for the University Clinical Center of Serbia and the University Children's Hospital in Belgrade, are progressing well. Primary health care payment started incorporating a mixed capitation component from 2014 and Diagnosis-Related Groups (DRGs)-based payment for hospitals started rolling out in 2019. The e-Health portal, part of the wider e-Government initiative, is being constantly developed. Currently, the e-Health has enabled a unified information system which supports electronic prescriptions and electronic medical records among others. Legal basis for reforms was strengthened with the adoption of several major laws in recent years, including the Public Health Law (2016), the Health Care Law (2019), and the Health Insurance Law (2019). The Health Care Law returned the responsibility for managing PHC facilities from local self-governments to the national government and kept budget subsidies to the NHIF to cover individuals not paying mandatory social contributions — the unemployed, social assistance recipients, refugees, etc.

Most recently, the Serbian government's response to COVID-19 was fast, determined, and strategic. Non-pharmaceutical measures were introduced from the onset, and additional staff and supplies were mobilized quickly to respond to the surge demand for treatment of COVID-19 related conditions. The government proactively reached out to vaccine manufacturers very early on and adopted a portfolio approach to ensure timely availability of vaccines for the population. As a result, Serbia surpassed most European countries in the speed of COVID-19 vaccination when vaccine first became available, with more than 12 percent of the of the population having received at least one dose of vaccine by February 17, 2021, compared to the 3.6 percent average among the EU at the same time (Ritchie et al. 2021).

Despite many positive features, the Serbian health care system faces chronic issues, which limit the country's capacity to respond effectively to the structural problems and to maintain resilience to COVID-19 shock. For many years, Serbia has not been able to reform the hospital sector, and the system is overburdened with an excessive number of beds that are underutilized. Serbia is also slow in adopting new models of care, such as day surgery, which could help to improve efficiency and patient experience. At the same time, the use of cost-effective preventive care is limited. Health spending relies significantly on private, out-of-pocket (OOP) payment and imposes a major financial burden to households. Despite efforts to improve services for the disadvantaged population, inequities remain in access to care and health outcomes. The health care system has not been successful in dealing with issues for which there is a significant influence of behavioral, social, and economic determinants, and for which close collaboration is required with social welfare, education, and other systems.

This report provides an assessment of the health system performance and helps identify critical areas for improvements. It builds on the 2017 Functional Review conducted by the World Bank (World Bank 2017) and it complements several recent studies, most notably the 2019 Health System Review published by the European Observatory on Health Systems and Policies (Bjegovic-Mikanovic et al. 2019). The Health System Review provides many details on the history and setup of the health system that are not repeated in this report. Despite adopting a similar health system framework as in the 2017 Functional Review, the current report focuses more on a deep assessment of the system's performance rather than a description of the functions. An aspect of resilience is added based on the experience of COVID-19 to draw lessons for future shocks.

The rest of this report is structured as follows: Section 2 introduces the analytical framework and data used for the analysis. Section 3 presents a brief overview of the health system's outcomes — health status, financial protection, and population satisfaction. Section 4 describes main features of the two critical health system's functions — financing and service delivery — the performance of which can have a direct impact on a health system's outcomes. This is followed by an assessment in Section 5 of the system's performance in terms of coverage, efficiency, equity, and public health preparedness and resilience. Recommendations are provided on the way forward to address issues identified in the report.

2

ANALYTICAL FRAMEWORK AND DATA

The analytical framework for this report is based on several popular frameworks for health system assessment, including the Harvard "control knobs" (Roberts et al. 2004), the 2010 World Health Organization (WHO) report (WHO 2010), and the more recent health system assessment framework proposed by the WHO (Papanicolas et al. 2022). The desired outcomes of a health system include not only improving population health status, but also providing protection against financial risks associated with health care and ensuring overall satisfaction of the population with the system. Although these outcomes can be affected by many factors beyond the control of the health sector, a health system's immediate performance measures — access, quality, efficiency, equity — have a direct influence on the outcomes. An additional dimension, preparedness and resilience, is discussed briefly based on the recent experience with COVID-19. The performance of the system, in turn, is the function of its setup.[1] This report focuses on financing and service delivery, while issues of governance and stewardship, although not explicitly addressed, will be examined in a cross-cutting manner to the extent possible. The analytical approach of the report is depicted in Figure 2.1 below.

FIGURE 2.1 Analytical framework

Key system functions	Intermediate performance measures	Health system outcomes
Health financing	Effective coverage	Population health status
Service delivery	Efficiency	Financial protection
	Equity	Population satisfaction
	Public health preparedness and resilience	
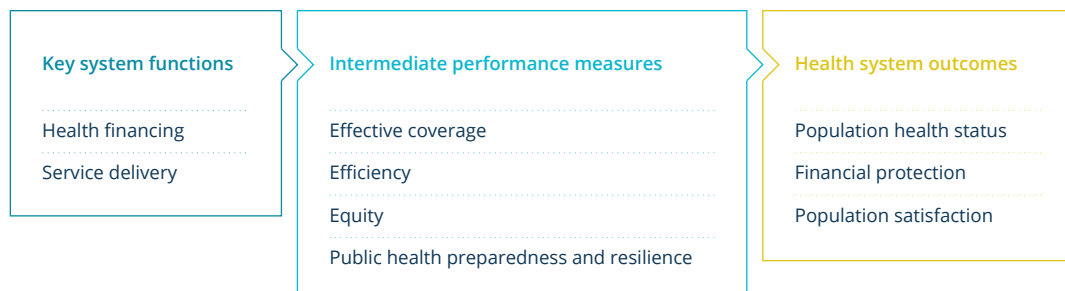
Source: Authors, based on Roberts et al. (2004), WHO (2010), Papanicolas et al. (2022).

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1. Key functions according to the WHO framework include financing, service delivery, resource management, and stewardship; some of these are termed "control knobs" in the Harvard model.

The term "effective coverage" is a deviation from "access" used in the earlier frameworks. It must be noted that access and availability of services are necessary, but in themselves are not sufficient conditions for service utilization. Furthermore, even if the population makes use of services, poor quality services may not result in effective gains in health outcomes. Effective coverage introduces a dimension of quality of care to the measurement of intervention coverage. Many definitions and methodological approaches to measuring effective coverage have been developed.[2] This report treats effective coverage as a combination of coverage, quality, and effectiveness of care.

The analysis is based on secondary data and relies significantly on benchmarking to assess Serbia's performance vis-à-vis comparators. For international benchmarking, key data sources include the European Health for All (HFA),[3] WDI ,[4] Eurostat,[5] the Data Presentation System (DPS) database[6] of the Serbia Institute of Public Health (IPH), and other topic-specific databases such as Global Cancer Observatory[7]. In accordance with the recent Serbia Strategic Country Diagnostic (World Bank 2020a), Serbia is compared to peers and aspirational peers — four other countries in the Western Balkans (WB5),[8] EU member states, including the United Kingdom for the reporting period (EU28), 13 new member states of the EU (NMS13),[9] and the Seven Small Transition Economies of Europe (STEE7).[10] For internal benchmarking and Serbia's specific information, key data come from the DPS and the National Health Accounts (NHA)[11] hosted by the IPH. Other main data sources include the NHIF-published capitation database,[12] and the 2019 Multiple Indicator Cluster Survey (MICS 2019),[13] conducted by the Statistical Office of the Republic of Serbia (SORS), and UNICEF (SORS and UNICEF, 2020).

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2. For example, one popular definition proposed by the WHO and UNICEF Effective Coverage Think Tank Group was "the proportion of a population in need of a service that resulted in a positive health outcome from the service" (Marsh et al. 2020).

3. European Health for All (database), WHO Regional Office for Europe, Copenhagen, Denmark, (accessed November 2020). https://gateway.euro.who.int/en/datasets/european-health-for-all-database/.

4. World Development Indicators (database), Washington, DC: World Bank, (accessed November 2020). https://databank.worldbank.org/source/world-development-indicators.

5. Eurostat — Health Statistics (database), Eurostat — statistical office of the European Union, Luxembourg (accessed November 2020 – May 2021). https://ec.europa.eu/eurostat/web/health/data/database.

6. Data Presentation System for Health Indicators (database), Institute of Public Health (IPH) of Serbia, Belgrade, Serbia (accessed November 2020). https://www.batut.org.rs/download/health_indicators_en_2020.html.

7. Global Cancer Observatory (database), International Agency for Research on Cancer (IORC), Lyon, France (accessed November 2020), https://gco.iarc.fr/projects#database.

8. The WB5 countries are Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia.

9. The NMS13 countries are: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovak Republic, and Slovenia.

10. The STEE7 countries are Bulgaria, Croatia, Estonia, Latvia, Lithuania, Slovak Republic and Slovenia.

11. National Health Accounts (NHA) Statistics (set of tables), Institute of Public Health (IPH) of Serbia, Belgrade, Serbia (accessed November 2020). https://www.batut.org.rs/index.php?category_id=50.

12. Capitation Statistics (set of tables), Republic Fund for Health Insurance, Belgrade, Serbia (accessed January 2021), http://rfzo.rs/index.php/davaocizdrusluga/kapitacija-actual-16.

13. MICS 6 Multiple Indicator Cluster Survey for 2019 | UNICEF. The research was conducted by the Statistical Office of the Republic of Serbia in 2019, with the technical and financial support of UNICEF, the European Union, UNFPA and the Government of the Republic of Serbia.

The analysis is constrained by the lack of some important Serbia specific data, in particular data from the IPH and NHIF. Unfortunately, data collection and analysis for the report took place during the peak of the COVID-19 outbreak when both IPH and NHIF were heavily consumed with the national efforts to combat COVID-19. As a result, the report relies mostly on publicly available data, limiting the authors' ability to analyze in-depth certain important topics such as quality of care and effects of provider payment reforms in PHC and hospitals.
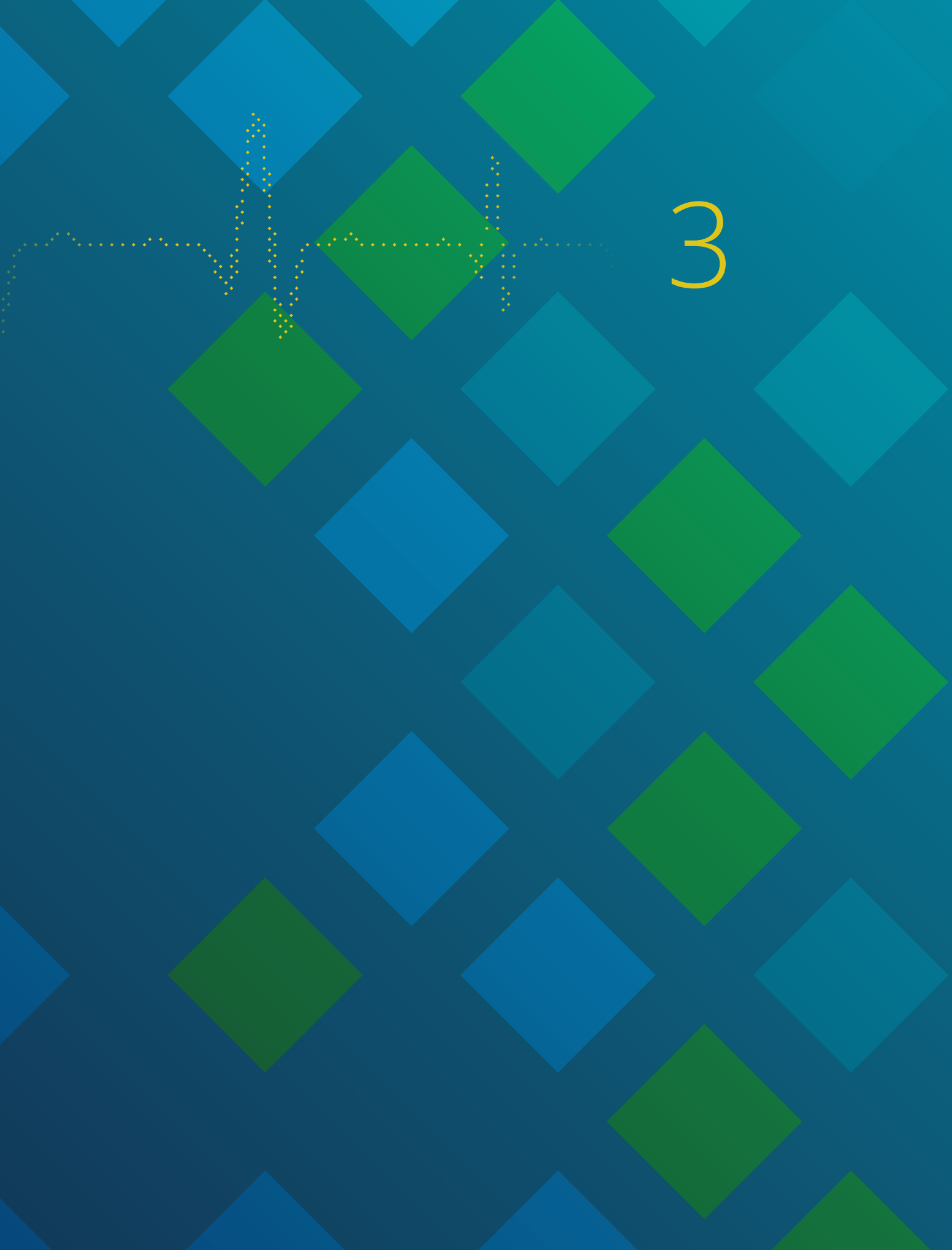
3

HEALTH SYSTEM OUTCOMES

HEALTH STATUS

The health of Serbia's population has been improving over the last two decades, with life expectancy at birth having increased from 71.6 in 2000 to 75.9 in 2018, and infant mortality rate decreased from 6.6 to 4.8 per 1,000 live births during the same period (World Bank 2022a). Serbia is at the expected level for life expectancy given its income, yet it compares unfavorably with the average among peers and aspirational peers. For example, in 2018 the average life expectancy at birth was 80 years among EU28, 76.1 years in Montenegro, 77.1 years in Croatia, and 78.5 years in Albania, compared to 75.9 in Serbia (Figure 3.1).

FIGURE 3.1 Level of economic development and life expectancy (2018)
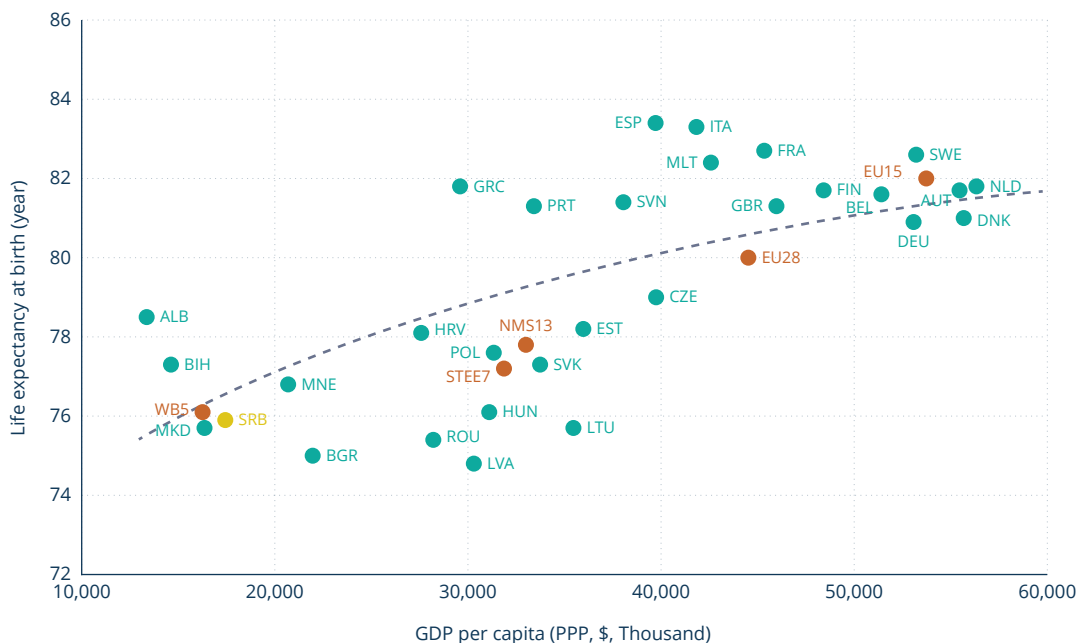
Source: WDI.

While Serbia has achieved some improvements in key mortality indicators, the results are not as impressive as in other countries. Especially, mortality in young children has not caught up with aspirational peers. In 2019, the infant mortality rate was 4.6 per 1,000 live births, which was significantly higher than the EU28 rate of 3.2 per 1,000 live births (see Figure 3.2 below). The situation is similar for under-five mortality. Main causes of child death are linked to the perinatal period, with preterm birth and congenital anomalies among the most common. Furthermore, the maternal mortality ratio, at 12 per 100,000 live births, is higher than the WB5 average of 9.5 per 100,000 live births (Figure 3.3). The main causes of maternal death are hemorrhage, eclampsia, embolism, and sepsis (Petronijevic et al. 2013). Coverage of preventive maternal services is satisfactory and skilled birth attendance is almost universal, indicating that the relatively high rates of maternal death and stillbirth are related to poor quality of maternal health services.

FIGURE 3.2 Infant mortality rate, per 1,000 live births (2019)
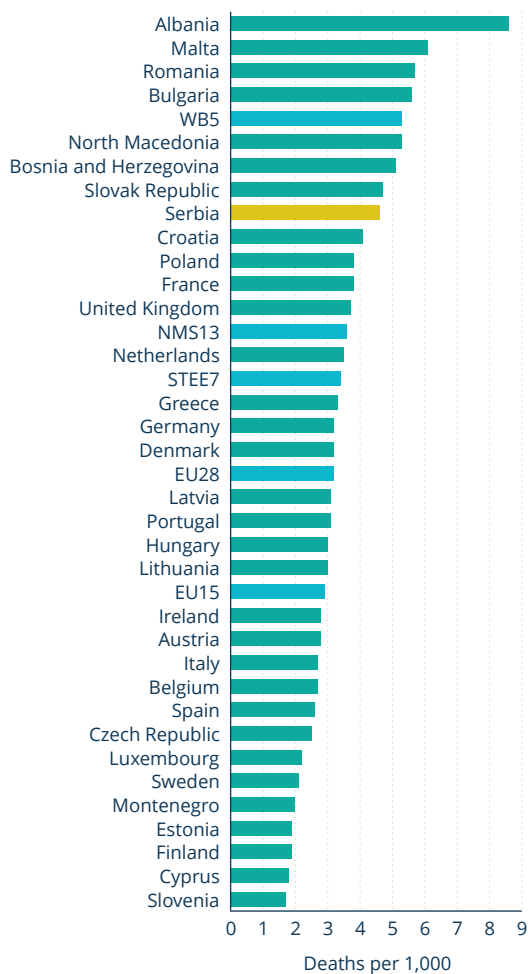
Deaths per 1,000

Source: WDI.

FIGURE 3.3 Maternal mortality ratio, per 100,000 live births (2017)
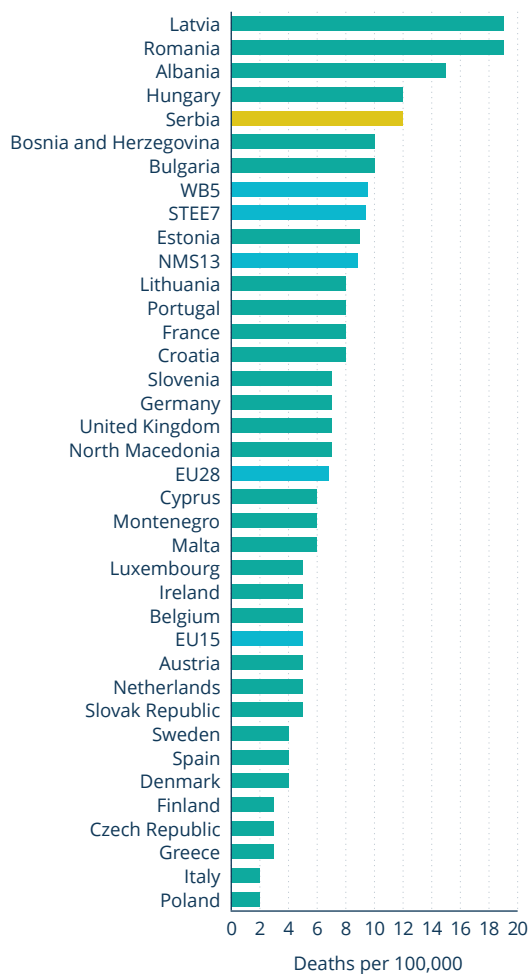
Deaths per 100,000

Source: HFA.

The heavy burden of NCDs is demonstrated in the main causes of death being ischemic coronary diseases, cerebrovascular diseases, and cancer. Cancer incidence in Serbia has been on the rise, from 355 cases per 100,000 population in 1999 to 568 cases per 100,000 population in 2017, the highest increase compared to other Balkan countries. Mortality per population is the second highest among comparators, and more than 73 percent of all deaths are attributable to cancer and cardiovascular diseases, as presented below in Figure 3.4.

FIGURE 3.4 Mortality rate per 100,000 by key causes (2018)

Source: Eurostat.

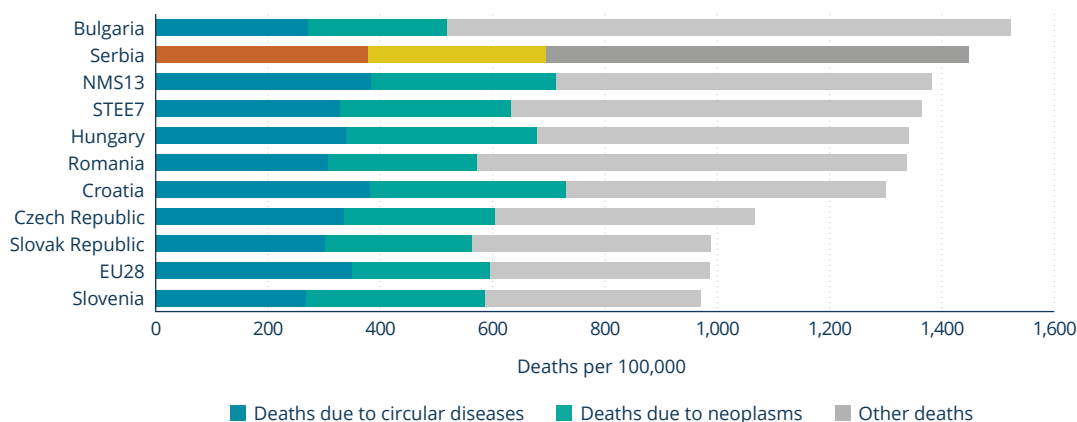**NCDs are on the rise not only among the general population but also among children.** Child obesity has been increasing over the years, and developmental and mental health issues in adolescents are becoming more common. The percentage of children aged 7–14 who are obese increased from 2.6 percent in 2006 to 4.9 percent in 2013, reaching 10.5 percent in 2019. In 2019, one in five children aged 5–6 was obese (IPH and SORS 2021). Exclusive breastfeeding, one of the preventive measures for obesity, is still low (24 percent), although increased from 2014 (13 percent). Stunting, as an indicator of chronic malnutrition in children, remains high among Roma at 17 percent (SORS and UNICEF 2020). A study on child development revealed that five percent of young children (0–6 years of age) show some developmental delays or disability and additional 8–12 percent have developmental risks (Videnovic, Stepanovic, and Lozanovic 2021). The number of children hospitalized for mental health has been increasing (Pejovic-Milovancevic et al. 2018). Estimates show that over 60 percent of adolescents feel irritable or in bad mood, and almost 30 percent have difficulty falling asleep (IPH 2018). Out of 100 adults, at least 20 have experienced repeatedly some forms of adverse childhood experiences—for example, violence, abuse, and mental health problems in the family—which consequently increased health problems such as physical or mental illness, and psychological problems in adulthood (UNICEF 2019). The COVID-19 pandemic has further adversely affected mental health of children, families, and the population in general.

Unhealthy lifestyle represents an important risk factor contributing to the burden of NCDs. According to the 2019 National Health Survey, 27 percent of all population smoked every day, of those 60 percent were heavy smokers (consuming at least 20 cigarettes a day). Furthermore, almost half of the population (48.9 percent) reported being exposed to indoor tobacco smoke on a daily basis, and almost the

same percentage of non-smokers was concerned that exposure to tobacco smoke impacted their health (49.1 percent). Nearly one in five (18.7 percent) of youth aged 15 – 24 reported consuming sugar sweetened beverages daily in 2019. The same age group reported binge drinking (defined as drinking more than six alcohol drinks on one occasion) at least once a month (SORS and IPH 2021).

Subjectively, Serbians do not appear to be satisfied with their own health relative to other countries. As shown in Figure 3.5, 16 percent of the population perceived their health status as bad or very bad in 2018, compared with the average of 11 percent among WB5 and 9 percent among EU28. It should be noted, however, that this is a subjective measure and the low rating may be due to the population's high expectation.

FIGURE 3.5 Percentage of population perceiving their health as "bad" or "very bad" (2015 and 2018)
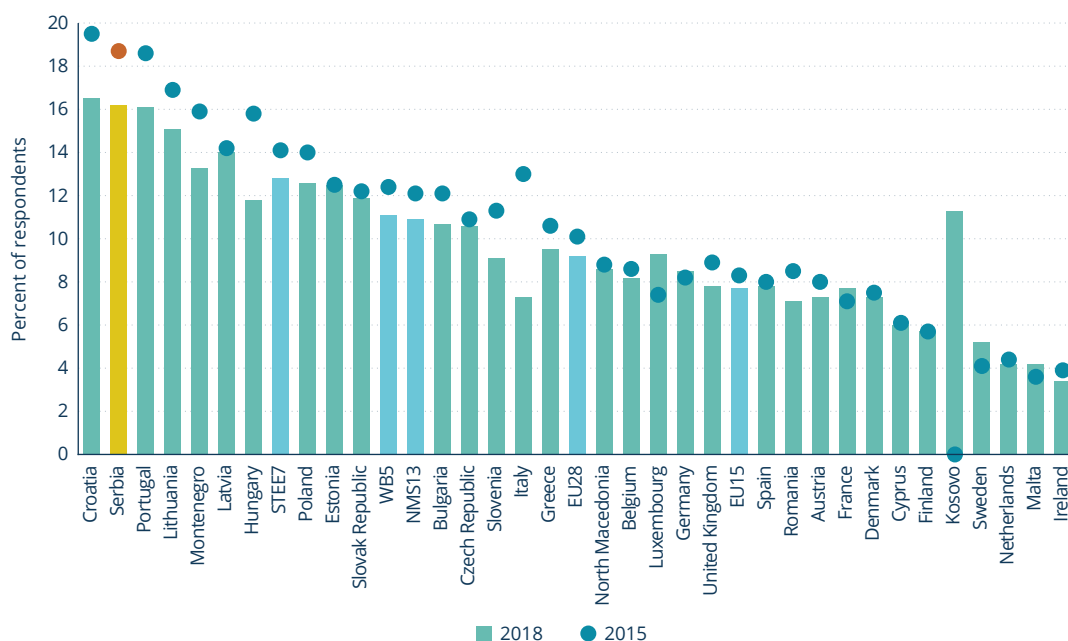
Source: Eurostat.

FINANCIAL PROTECTION

Financial protection is key for protecting the population against the adverse financial consequences of paying for care and ensuring access to affordable health care services. Data from the Functional Review Report show that in 2015, 3.8 percent of households reported unmet medical care need for financial reasons, which is high compared to regional standards and 1.9 times higher than the EU average (World Bank, 2017). Furthermore, a remarkable 42 percent of total health expenditure in the country comes from private OOP payment, which places Serbia among the top three countries in the region (Figure 3.6). Households incurred OOP not only for private services, but also for services listed in the benefit package to be offered for free by the NHIF such as preventive care.

FIGURE 3.6 OOP expenditure versus general government health expenditure, percent (2017)
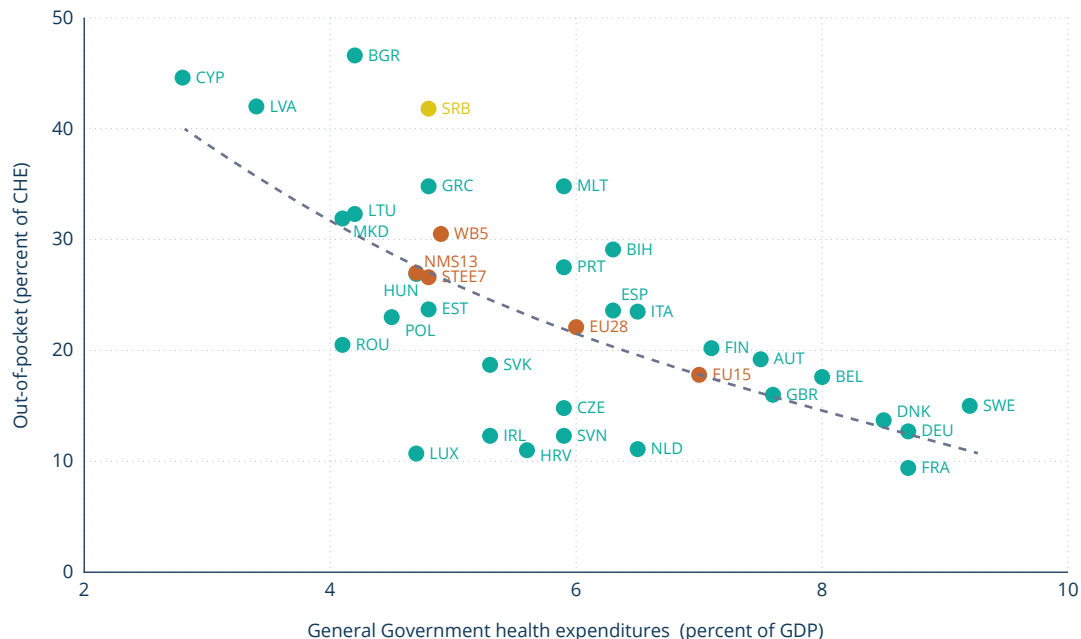
Source: WDI.

There are indications that the high OOP expenditure imposes a financial hardship on some population groups, although it is not possible to obtain a precise and granular picture of what constitutes OOP payment with existing data. Roughly 86 percent of OOP is spent in the private sector, mostly for pharmaceutical products but also for dental care and private labs. Some of such spending is on supplements and non-prescription drugs. However, for chronic patients who have needs for permanent therapy, as well as for the retired and families with young children who are more prone to various infections, expenses for medicines and private labs are reported to be especially burdensome (Ipsos 2021a).

Health spending as a percentage of total household expenditure or nonfood expenditure has been relatively stable. Between 2014 and 2019, health spending constituted 6.6 percent of total household spending and 4.3 percent of total nonfood spending (Figure 3.7).

FIGURE 3.7 Household health spending over time

— health spending as % of total non-food household spending

— health spending as % of total household spending
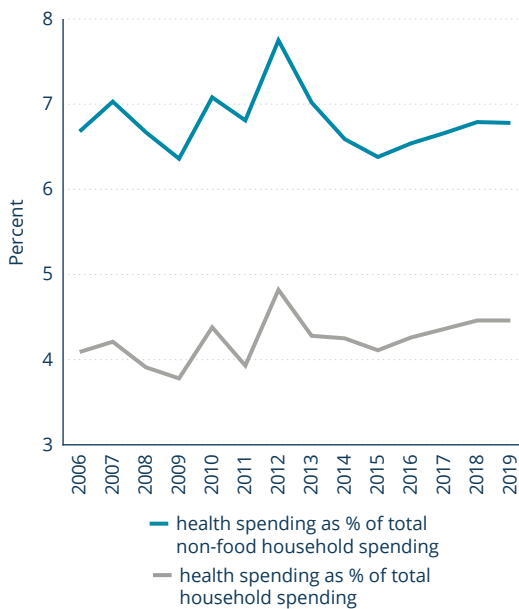
Source: Household Budget Survey (HBS); SORS.

However, some 4 – 5 percent of the population suffers from "catastrophic" health expenditure each year (health expenditure that exceeds 25 percent of total nonfood expenditure). This level is second highest among all comparator countries, only after Albania (Figure 3.8).

FIGURE 3.8 Percentage of households experiencing catastrophic health expenditure (latest year available)

Sources: HBS 2019 (Serbia); World Bank Health Equity and Financial Protection Indicators (other countries).

PATIENT SATISFACTION

Available evidence shows that population satisfaction with the health system has been improving. Information on patient satisfaction with public health providers, collected at the poin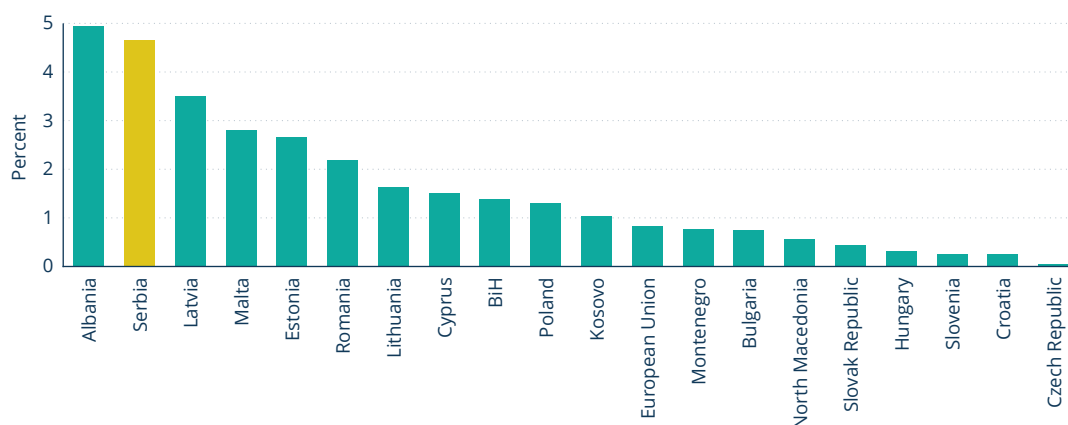t of service, has been consistently positive. On a scale from 1 to 5, with 5 being most satisfied, the average score of the last five years among patients visiting PHC and hospital was 3.9 and 4.3 respectively (IPH 2019). This is corroborated by a recent population phone survey, which revealed that a majority of the population thinks public health services are accessible in terms of geographical location (82 percent of citizens) and price or copay (77 percent). Furthermore, four out of ten citizens believe that the quality of healthcare in the public health system has improved over the past five years.

Overall perception of government's management of the health sector is positive, although some problems persist. The same survey revealed that three out of five citizens believe that the government has been managing the health sector well during the last five years (Ipsos 2021a, 2021b). However, majority of respondents believe that the government should invest more funds in local health care institutions, especially for modern equipment, facilities, information system, and human resource, and to reduce the waiting list and improve availability of covered medicines. The population also has complaints about patient communication and privacy in the public services, and the practice of bribery and corruption (Ipsos 2021a, 2021b).
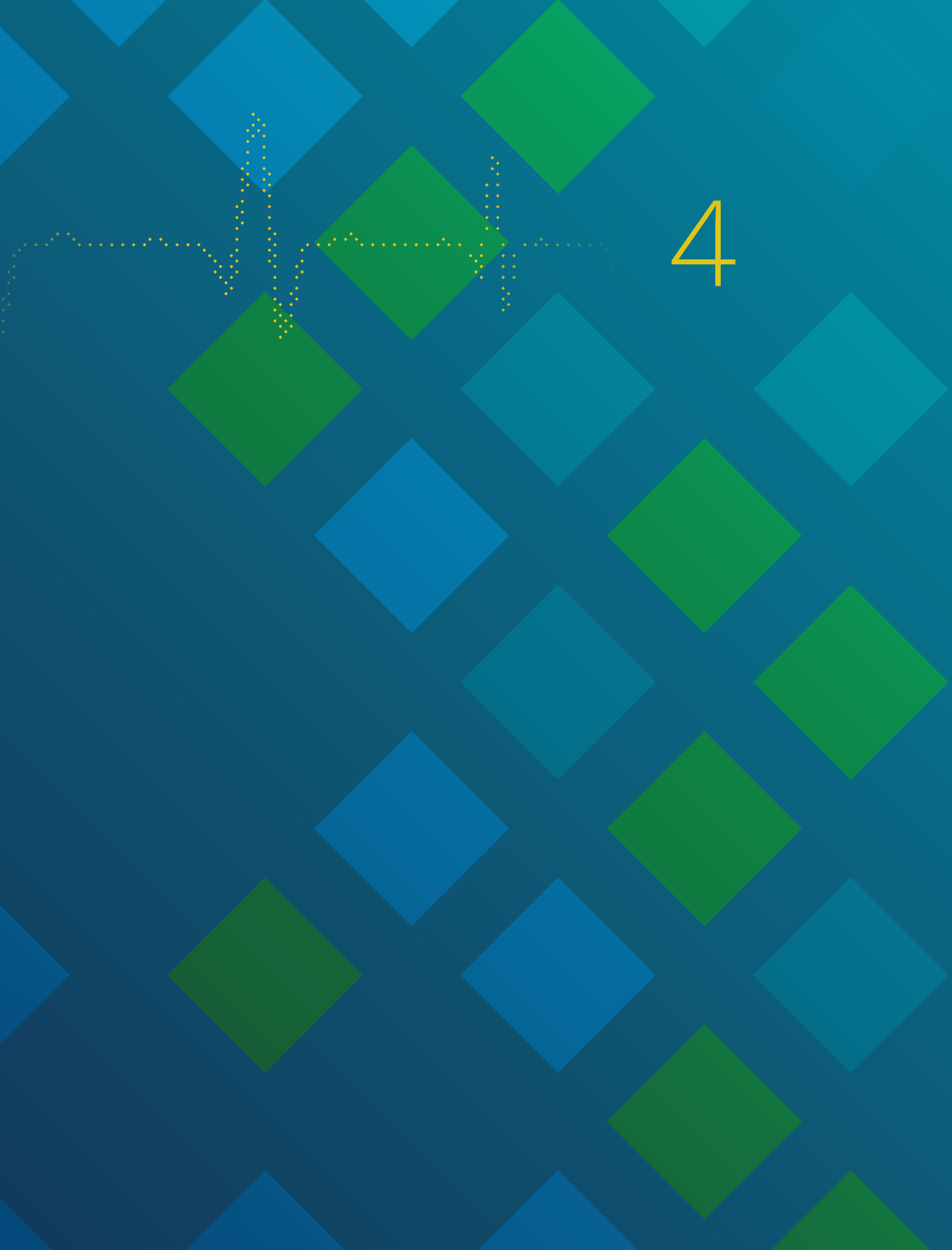
4

MAIN HEALTH SYSTEM FUNCTIONS

HEALTH FINANCING

Serbia's health financing model is based on compulsory social health insurance, and the main source of financing constitutes contributions at the level of 10.3 percent of gross salary. Public health system in Serbia is financed mainly through compulsory health insurance contributions — 94 percent of the total revenue for health from public sources — and general taxation. Almost the entire population is covered by public health insurance. The main purchaser of public health services, the NHIF, has existed under its current name since 2011, although public social or health insurance system has a long tradition dating back since before the Second World War. Payment of health services are determined by a contract between the NHIF and health care providers, mostly public ones. Private health care provision is financed almost exclusively by OOP payment.

Reforms have been initiated in provider payment systems and pharmaceutical procurement. There have been some recent significant adjustments to the input-based historical budgeting, which remains a dominant provider payment method in public facilities. In the hospital sector, after a prolonged preparatory period that was also characterized with inconsistent support to this reform, in 2019, payment based on DRGs was introduced for acute inpatient care. According to this method, 95 percent of the hospital budget follows the "old" (historical input-based budgeting) system, while the remaining five percent (the variable part) depends on hospital performance determined by DRGs and, to the lesser extent, against certain quality and efficiency indicators. In PHC, the performance-based variable part of the staff salary (eight percent maximum) was introduced in 2014 and revised in 2019. The variable part is based on a formula combining risk-adjusted capitation and staff performance against indicators relating to preventive service provision and management of NCDs, among others. In the pharmaceutical sector, nationwide centralized procurement of medicines and other medical material started in 2013, which gained a 27 percent reduction in the price of drugs in the first year (World Bank 2014). Currently, the centralized procurement system includes most pharmaceuticals and medical devices financed by the NHIF.

The NHIF covers a wide range of services through a benefit package, which includes preventive, diagnostic, curative (outpatient and inpatient), pharmaceutical services, rehabilitation, and sick leave. The Health Insurance Law explicitly states the services that are not covered by the NHIF; these include cosmetic services, esthetic surgeries, or medical examinations for driving license test or for professional

purposes. The positive drug list is rather comprehensive and includes drugs for all major NCDs. Similar to other services, copayment for most drugs on the drug list is very low (approximately €0.40), and certain categories of population are exempted from copayment—children, students, women during pregnancy and after birth, war invalids, and disabled persons. The NHIF covers only pharmaceuticals prescribed by physicians working in the public health system. Physicians in the private sector can prescribe drugs, but those are paid fully by the patient.

Health spending per capita in 2017 was low in absolute value, at US$1,382, compared with averages among the EU28 (US$3,564), NMS13 (US$2,231), and STEE7 (US$2,082). As a share of GDP, Serbia's spending on health is on the same level or higher than peers and aspirational peers. It is 8.4 percent in Serbia, compared to an average of 8.3 percent for the EU28, 7 percent for the NMS13 and STEE7, and 7.5 percent for the WB5 (Figure 4.1).

FIGURE 4.1 Current health expenditure in PPP per capita and as percentage of GDP (2017)
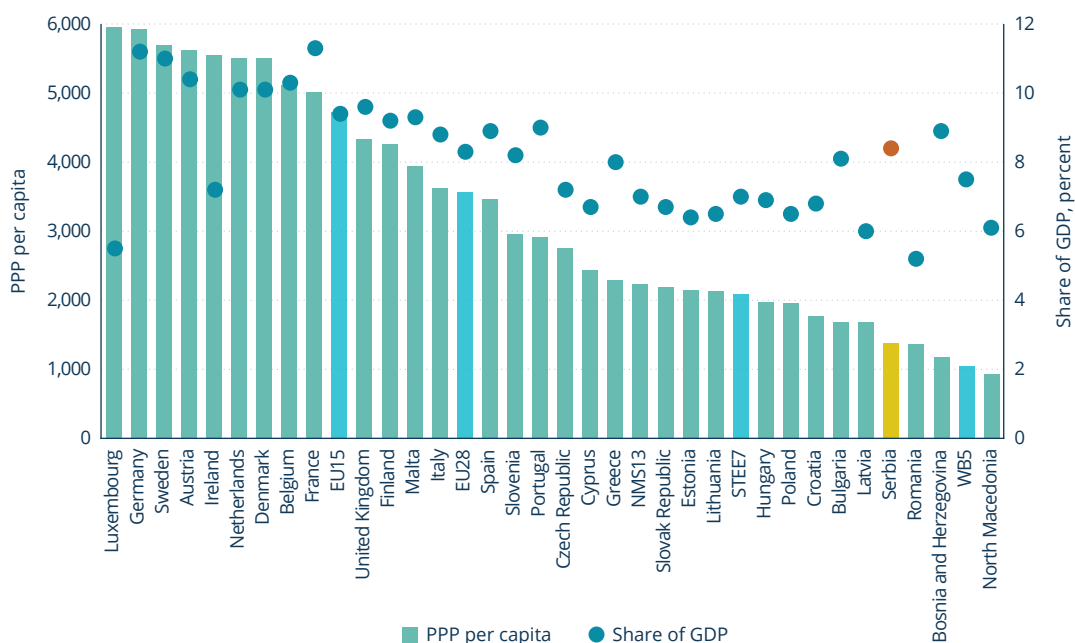
Note: PPP is Purchasing Power Parity.
Source: WDI.

Data going back to 1995 reveal that government expenditure on health as a percentage of GDP fluctuated but generally was on a decline, while private expenditure increased substantially (Figure 4.2). The highest point of government expenditure was around 1999 – 2001, constituting 7.5 percent of GDP. This dropped significantly to 5.7 – 6.2 percent in the subsequent years and further to 5.1 percent in 2018, the last year for which data are available. At the same time, private expenditure increased from 1.8 percent of GDP in 1995 to 3.4 percent in 2018. Because coverage of private voluntary health insurance is negligible, virtually all private expenditure comes from OOP payment from households.

FIGURE 4.2 Public and private health spending as a share of GDP over time
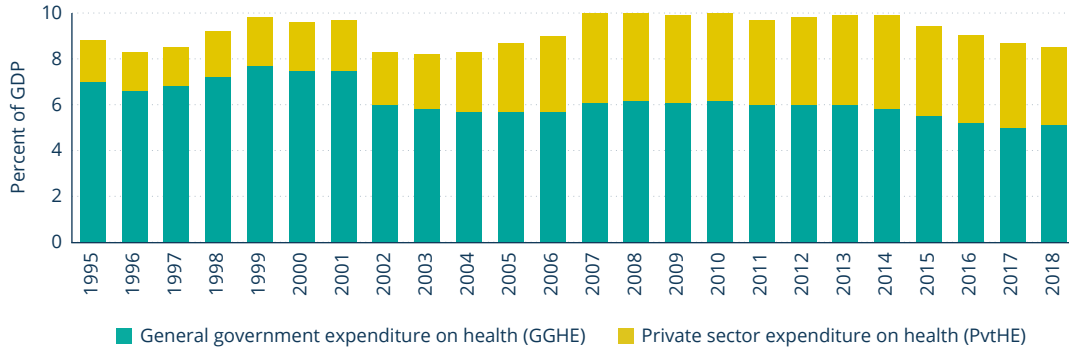
Source: IPH NHA

There is a stark difference in the composition of public versus private spending on health. On average, about 56 percent of public funds is spent on hospitals, 20 percent on ambulatory care, 18 percent on pharmaceuticals, and around 6 percent on other items (Figure 4.3). On the other hand, approximately 86 percent of OOP is spent in the private sector, mostly on pharmaceutical products. Households also face OOP for services in the public sector, of which many such as ambulatory care and general hospital services should be free (Figure 4.4). These financing patterns have remained relatively stable over time.

FIGURE 4.3 Composition of public spending (2018)
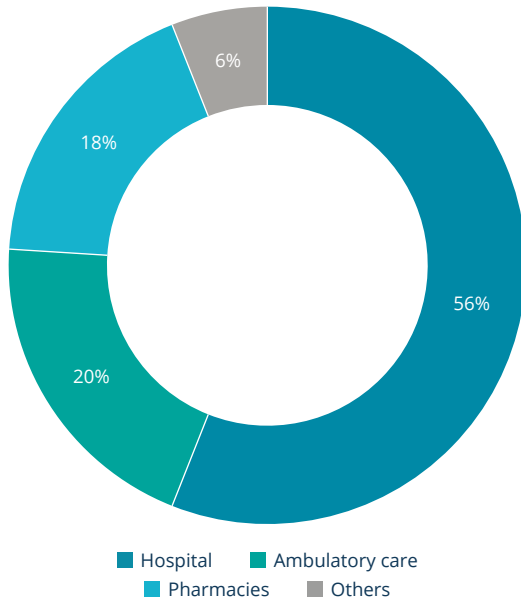
Note: Public spending includes spending by NHIF and other public sources.

Source: IPH NHA.

FIGURE 4.4 Composition of private spending (2018)
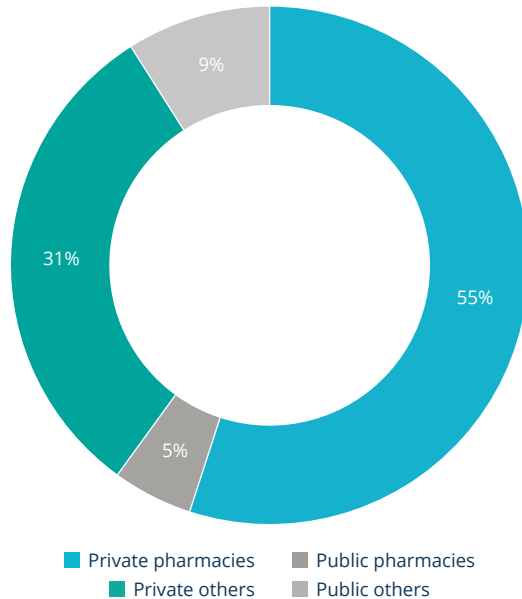
Note: Public spending includes spending by NHIF and other public sources.

Source: IPH NHA.

Data on public health expenditure for specific population groups or health conditions does not exist in easily accessible form. Although there are a number of publicly financed national programs aimed at specific population groups and important public health conditions, such as immunization, screening programs, HIV, tuberculosis, maternal and child health, and early childhood development, it is currently impossible to estimate the health budget devoted to each of these specific categories. As such, there is currently no established mechanism to ensure that public health budgeting for certain priority populations, such as children, is monitored, safeguarded, or promoted.

SERVICE DELIVERY

Serbia has a comprehensive public health care delivery network, consisting of facilities at primary, secondary, and tertiary levels. At the primary level, there are PHC centers, institutes, and pharmacies; the secondary level constitutes general and specialized hospitals; and the tertiary level constitutes clinical-hospital centers, clinics, clinical centers, and institutes. An extended arm of the PHC centers has been counselling services provided by the polyvalent visiting nurses, known as patronage nurses. At the end of 2019, the network consisted of 160 PHC centers, 36 pharmacies, 44 institutes, 41 general hospitals, 34 specialized hospitals, 13 clinics, 20 institutes, four clinical centers, four military health care institutions, and one multi-level health center, for a total of 357 publicly-owned institutions that are funded by the NHIF (Government of Serbia 2019). The network of health care institutions is defined by the Decree on the Health Care Institution Network Plan and can be updated as needed.

The physical availability of the service delivery network is corroborated by a recent population survey, which revealed that 82 percent of the population find public health sector services to be accessible in terms of geographical location and accessible via public transport. Sixty seven percent think that public services are physically accessible for people with special needs, for example, having ramps for wheelchairs (Ipsos 2021b).

Although the network of facilities is large, critical inputs to service delivery including human resources and infrastructure compare unfavorably with aspirational peers. At 297 doctors and 653 nurses per 100,000 population, Serbia is behind the EU average of 405 doctors and 828 nurses per 100,000 population. Comparison with the STEE7 reveals a similar situation (Figure 4.5). Although in 2017 Serbia produced more medical graduates than Germany and the EU28 average, enrollment rates in medical faculties were higher than the staff positions available in the health sector due to hiring freezes, which could have resulted in unemployment (World Bank 2020b).

Broken down by personnel categories, Serbia has significantly less specialists and pharmacists than the STEE7 average while the figures for general practitioners (GPs) and pediatricians are compared more favorably (Figure 4.6). The gap for specialists and surgeons has grown larger over time, suggesting suboptimal adaptation and use of data for human resources planning. The higher number of GPs per population in 2010 could be seen as a positive aspect in Serbia system, yet this dropped from 75 per 100,000 population in 2010 to 69 per 100,000 in 2018, putting Serbia on the same level with the STEE7 average — 70 per 100,000 population. For pediatricians, it is worth noting that the figure incorporates both specialists at the secondary and tertiary levels and pediatricians working as family doctors for children in PHC.

FIGURE 4.5 Nurses and physicians per 100,000 population in comparison (2018)
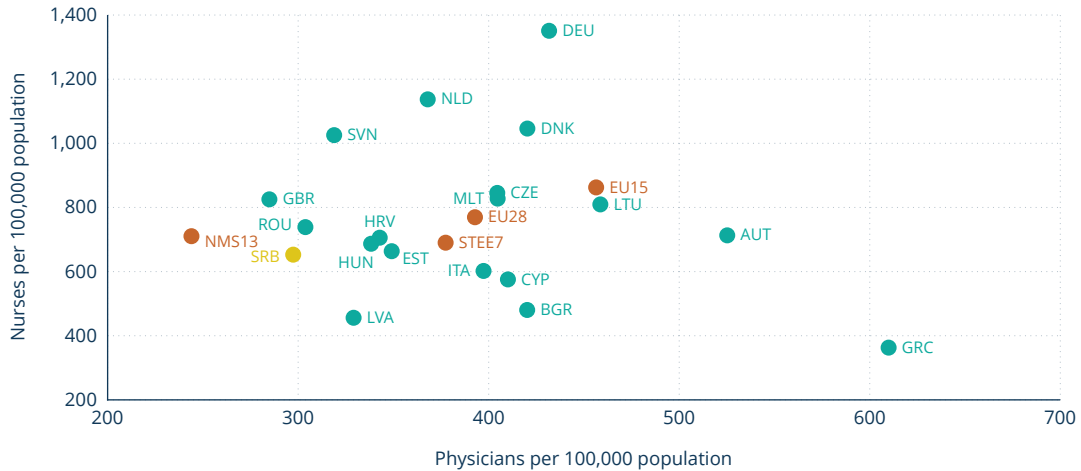
Source: Eurostat.

FIGURE 4.6 Medical personnel by specialization per 100,000 target population (2010 and 2018)
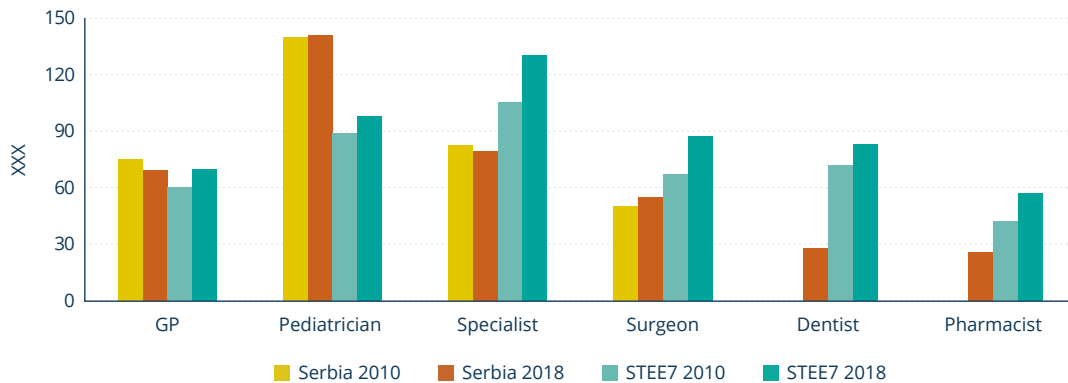
Source: Eurostat

While the number of beds per 100,000 population is about the same as in STEE7 and NMS13 countries, Serbia has significantly more hospital beds than the EU15 countries — 564.3 beds vs. 384.8 beds per 100,000 population in 2018. At the same time, the country lags significantly behind in more sophisticated inputs for service delivery, such as daycare units, operating theatres, and magnetic resonance imaging (MRI) equipment. As presented in Figure 4.7, in 2018, Serbia only had 43.4 daycare units per 100,000 population while STEE7 countries had 58.5, NMS13 had 50.4, and EU15 had 47.0 daycare units. In the same year, Serbia only had 7.7 operating theaters per 100,000 population, compared with STEE7 countries at 11.6, NMS13 countries at 11.2, and EU15 countries having 9.5 per 100,000 population. Additionally, Serbia only had 0.4 MRI units per 100,000 population, which was significantly lower than EU15 countries with 1.9 MRI units, and STEE7 and NMS13 countries having 1.2 and 1.1 MRI units per 100,000 population, respectively.

FIGURE 4.7 Key inputs into service delivery per 100,000 population (2018)

a. Number of beds

b. Number of daycare units

c. Number of operating theatres

d. Number of MRI units
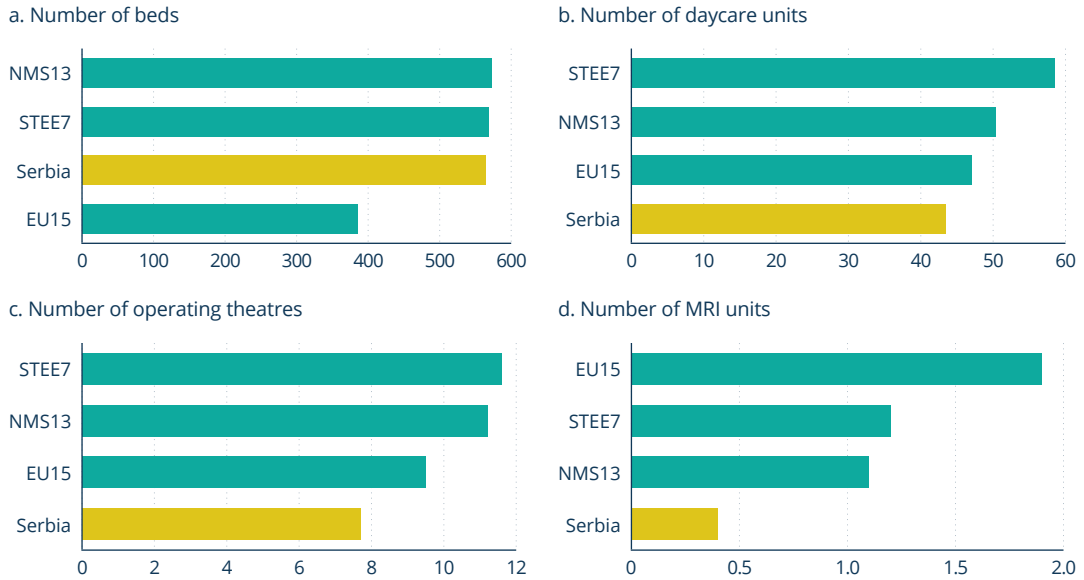
Source: Eurostat.

In addition to the large public facilities network, recent years have witnessed a significant and growing private healthcare sector. The precise magnitude of the private sector is not known but there are several efforts to document it. From October 2020, in accordance with the Health Care Law (2019), the country started to require that all public and private establishments providing health care services register with the Serbian Business Registers Agency.

FIGURE 4.8 Number of registered private establishments over time
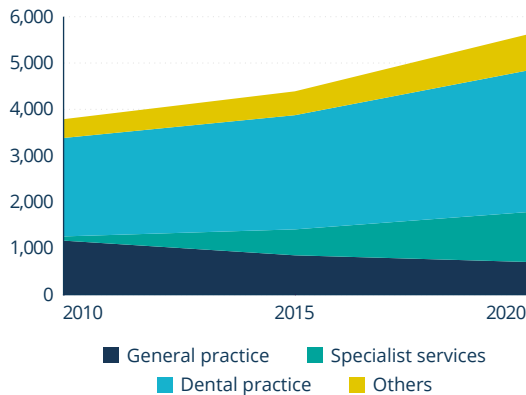
Note: "Others" include hospitals, accommodations with medical care, and other health care.
Source: Serbian Business Registers Agency (2021).

Based on the likely incomplete data from the Serbian Business Registers Agency, there is growth in private medical practices, especially in dental and outpatient specialist care. Between 2010 and 2020, the number of establishments registered for specialist services increased by nearly 12-fold, from 91 to 1,074, and the number of private dental practices increased by nearly 44 percent, from 2,125 to 3,053. The total number of establishments of all types increased by 48 percent (Figure 4.8). It should be noted that the total number of private facilities could be higher than the total number of establishments as some establishments could own a network of facilities.

The private sector gained popularity thanks to some favorable quality features, such as shorter waiting time and better interactions with the

patients, but not necessarily clinical competence of staff (Ipsos 2021b). In many cases, people use private services not because they cannot access them in the public sector or because they have complementary insurance which pays for private services. For example, in a survey of people using private services, 72 percent of respondents attributed the reason to "faster and more comfortable services" and only 10 percent attributed the reason to "services not covered by NHIF" or "not available in public hospitals" (Ipsos 2021b).

Despite the significant and growing role of private providers, the NHIF has not developed a system to contract them for the public-funded benefit package, except for a limited number of services. Those services include pharmaceutical services, cataract surgeries with lens implantation, biomedically assisted fertilization, hyperbaric oxygenation, dialysis, and certain pathohistological and genetic analyses. As a result, Serbians have to pay OOP when seeking care in the private sector even for services that are included in the public benefit package. Empaneling private providers for the public benefit package has the potential to foster NHIF's monitoring of quality in the private sector, reduce duplication of services, strengthen competition, widen choices for the population, and lessen the burden of OOP expenditure. It will, however, require strong stewardship role of the MOH, starting with a clear strategy toward the private sector.

5

HEALTH SYSTEM PERFORMANCE

EFFECTIVE COVERAGE

In general, utilization and coverage of conventional services, such as maternal and child health, are adequate. In 2019, 94 percent of newborns received a Hepatitis B containing vaccine within 24 hours of birth, and 99 percent of surviving infants received the first dose of vaccine for diphtheria, tetanus toxoids, and pertussis. Nearly 97 percent of pregnant women reported having at least four antenatal care (ANC) checkups during the last pregnancy, and 80 percent even had eight or more ANC checkups. In 2019, close to 100 percent of women aged 15–49 years with a live birth in the last two years reported to have had their blood pressure measured, urine sample taken, and blood sample taken at least once as part of ANC for the most recent live birth. Furthermore, 94 percent of new mothers were visited by a patronage nurse during the first week after delivery (SORS and UNICEF 2020). On average, a child aged 0–6 has 12 outpatient contacts per year in 2018.

Closer analysis of the coverage situation reveals that progress is not consistent. Specifically, despite the overall high coverage of child vaccination, the level differs between districts, with some having coverage below 80 percent. Also, even though there was a noticeable increase in the coverage of the measles, mumps, and rubella (MMR) vaccine in 2018 (93.4 percent) following an outbreak in 2017, coverage decreased again in 2019 to 88 percent. In 2019, only 44 percent of children aged 24–35 months received an MMR vaccine in a timely manner (by age 15 months). In 2020, only three districts reached 95 percent coverage by MMR. The role of patronage nurses could be more active in checking on pregnant women, infants and young children, and the elderly, especially in vulnerable families.

Furthermore, the use of general preventive services and the practice of NCD prevention are limited. In the same population-based survey conducted by Ipsos in 2021 (Ipsos 2021b), eight out of 10 respondents reported that they do not utilize opportunities for preventive services provided by the public sector, such as cancer screening, diabetes exam, check of blood pressure, or check for heart or liver disease. In 2018, only 11 percent of the elderly (aged over 65) received a flu vaccine (Figure 5.1). Additionally, only nine percent of women aged 50–69 received a bilateral mammography within the preceding two years (Figure 5.2), compared to an average of 52.3 percent among the STEE7 and 59.3 percent among the EU28. Given that breast cancer is one of the main types of cancer in Serbia, the low use of mammography for early detection of breast cancer is particularly concerning.

FIGURE 5.1 Flu vaccine coverage among population aged 65 and over, (2018)
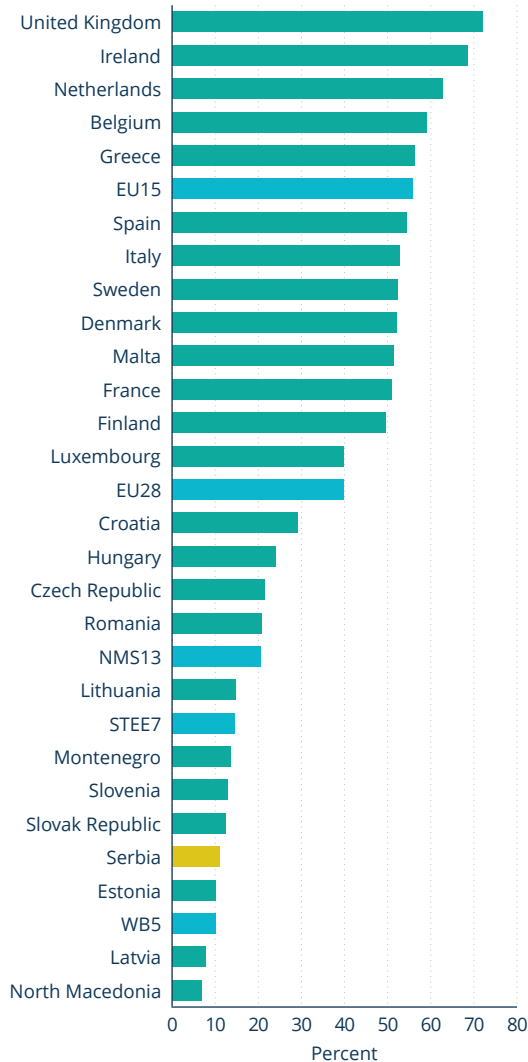
Source: Eurostat.

FIGURE 5.2 Women aged 50 – 69 having received a bilateral mammography within the past two years, (2018)
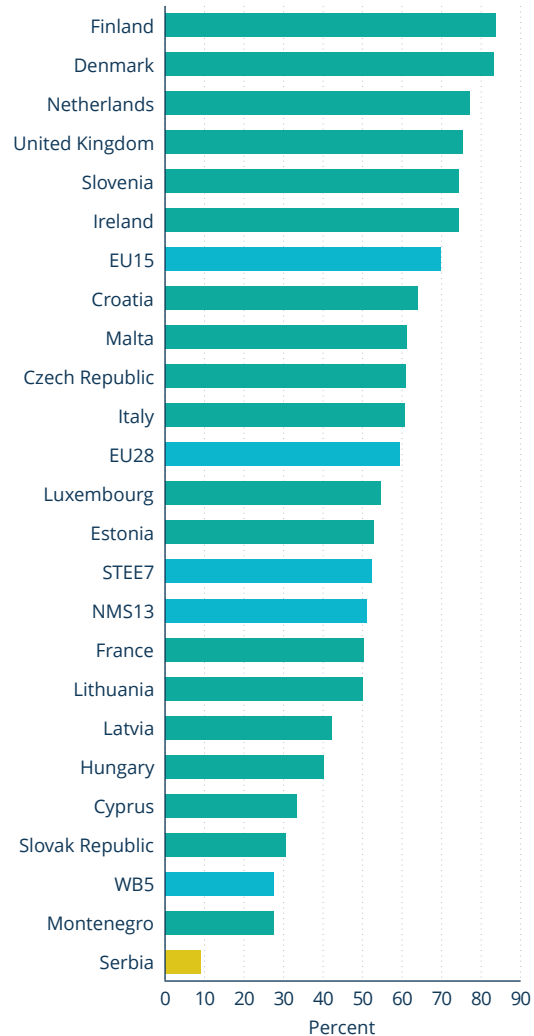
Source: Eurostat.

Death from cancer is particularly high, as a consequence of limited prevention but also short-comings in treatment and management of cancer cases. In 2017, Serbia recorded an incidence rate of 568 and a death rate of 303 per 100,000 population. In comparison, the incidence among the EU28 countries is higher (668 per 100,000 population), but death rate is significantly lower (267 per 100,000 population), as shown below in Figure 5.3. For roughly the same incidence rate, countries like Austria, Bulgaria, Latvia, and Lithuania recorded significantly lower death rates. At the same time, countries having a similar death rate from cancer as Serbia, for example, Croatia, Germany, Italy, and the United Kingdom have higher incidence of cancer.

FIGURE 5.3 Cancer incidence and death rate per 100,000 population (2017)
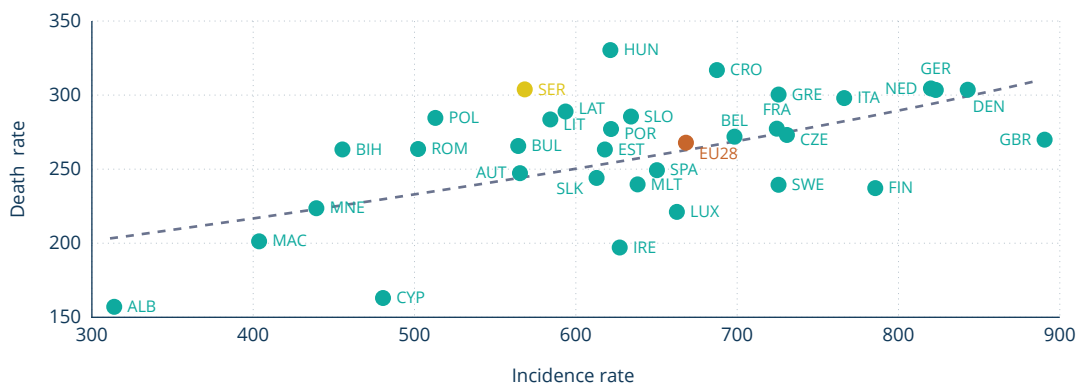
Source: The Global Cancer Observatory.

Mental health is a significant health issue, but it has not been prioritized in health system reforms. Although there is capacity for inpatient treatment of citizens, mental health community services—for example, psychiatric specialist-consultative services at PHC—are insufficient for adults and children. Also, there are limitations with human resources. For example, there were only 47 specialists for child and adolescent psychiatry in 2019, or 1 per 40,000 children, which adversely affects the quality of therapeutic care. An analysis done by the IPH in 2017 indicates that although developmental counselling units (DCUs) exist in some PHC centers to support children with disabilities, accessibility and quality across Serbia is uneven. According to the estimates of PHCs with DCUs, 12.5 percent of children were detected with developmental risks and disabilities. Estimates among PHCs that do not have DCUs are much lower (seven percent), suggesting that children with developmental risks and disabilities from areas without such units are not being identified or reached by adequate support services. A similar situation exists with youth counselling services.

The combination of shortcomings in prevention and care is reflected in amendable mortality, with 407 deaths per 100,000 population in 2017, which could have been avoided. This is an improvement when compared with 2011, when 437 deaths per 100,000 could have been avoided. Although Serbia compares favorably with new member states such as Bulgaria, Romania, and Slovakia, ample scope exists for improvement in health outcomes for the Serbian population (Figure 5.4).

**FIGURE 5.4** Amendable mortality rate per 100,000 population (2011 and 2017)
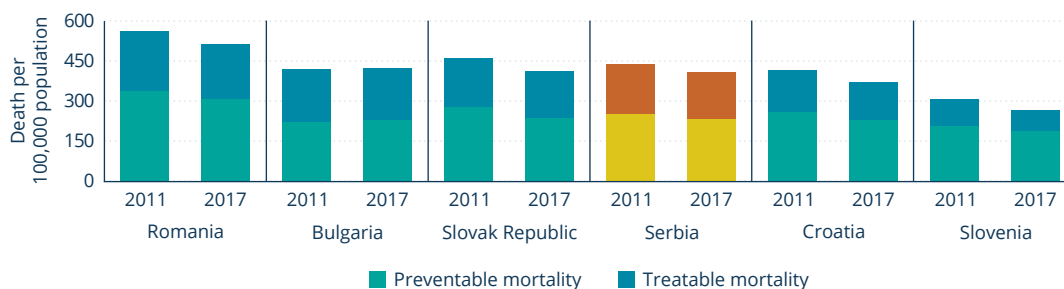
Source: Eurostat.

EFFICIENCY

With the caveat that life expectancy depends on many factors, some outside the health sector, the "value for money" in health spending in Serbia is rather low when it comes to this ultimate health outcome. In 2017, 8.4 percent of GDP was spent on health, and life expectancy was 75.5 years. By comparison, STEE7 and NMS13 countries spent seven percent of GDP on health and reached a life expectancy level of 77 years and 77.7 years, respectively. At the same time, the EU28 countries spent roughly the same share of GDP on health, but obtained a significantly higher life expectancy of 79.9 years (Figure 5.5).

FIGURE 5.5 Current health expenditures and life expectancy (2017)
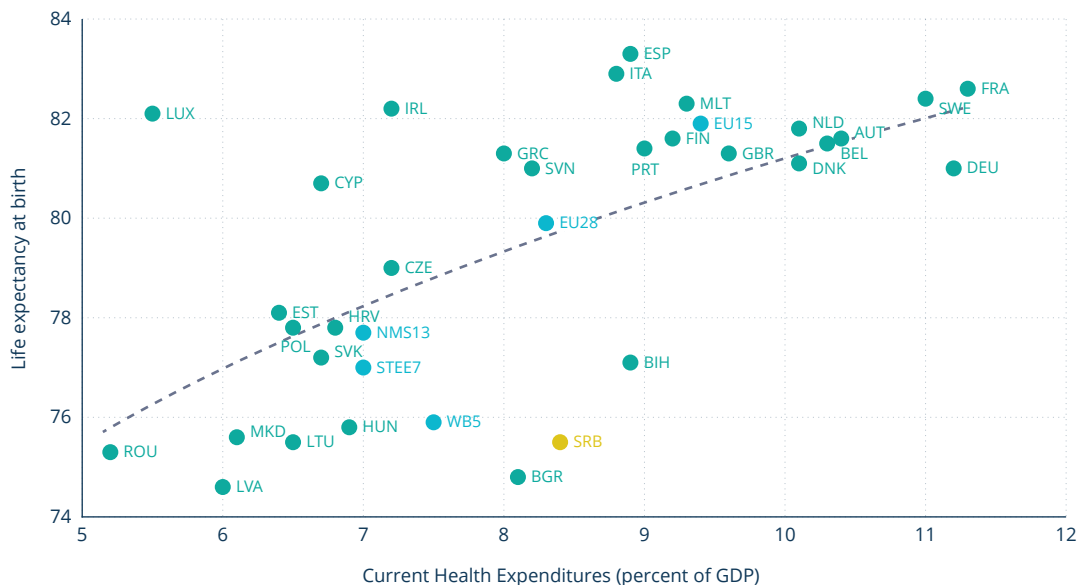
Source: WDI.

While the general trend among countries in the region is to move services from hospitals to PHC, Serbia seems to go in the opposite direction, with number of hospital admissions per 100 population having increased from 18.4 in 2015 to 21.1 in 2019 (IPH DPS). As shown below in Figure 5.6, compared to its peers, Serbia has the highest share of public expenditure on hospitals. While Serbia spends 62 percent of public expenditure on hospitals, Croatia spends 47 percent, and Slovakia 34 percent of public expenditure on hospitals. Furthermore, exceptionally high length of stay and low bed occupancy indicate technical inefficiencies in the hospital sector. Between 2010 and 2019, the average length of inpatient stay varied between 8.2 and 9.1 days, and the number of curative beds per 1,000 population increased from 4.5 beds in 2010 to 4.7 beds in 2018. In 2018, the average length of stay for inpatients was 8.9 days in Serbia, 6.3 days in the STEE7 countries, 5.9 days in the NMS13 countries, and 6.2 days in the EU28 countries. Specifically for curative care, in the same year, the occupancy rate was about 65 percent in Serbia, 72 percent in the STEE7 countries, 73 percent in the EU28, and about 70 percent in the NMS13 countries, making Serbia a clear outliner (Figure 5.7).

FIGURE 5.6 Public expenditure on hospitals and ambulatory care, percent of total (2018)

FIGURE 5.7 Curative care length of stay and bed occupancy rate (2018)
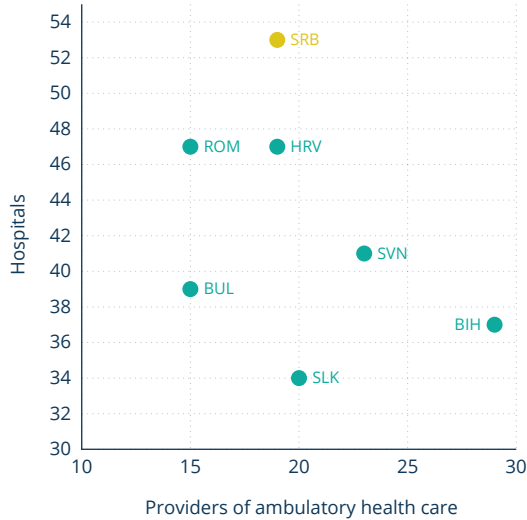
Source: Eurostat; IPH NHA (Serbia).
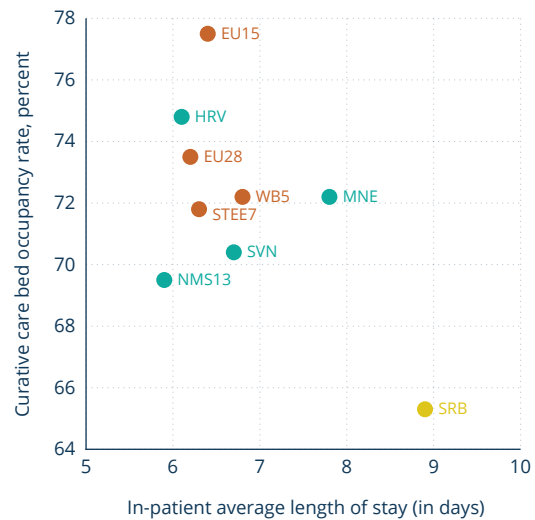
Source: Eurostat.

The cesarean section rate is also on the rise and substantially higher than what is considered medically necessary (WHO 2014).[14] Between 2010 and 2018, the cesarian section rate increased from 23.9 to 33.8 percent (Figure 5.8), and the increasing trend continued in 2019. Beyond medical necessity, C-section also tends to be positively associated with the living standards. However, in this case, the rate in Serbia is substantially higher than the average among aspirational comparators — the EU and STEE7. This suggests the potential role of other factors, such as financial incentives or care standards.

FIGURE 5.8 C-section rate, percent (2010 and 2018)
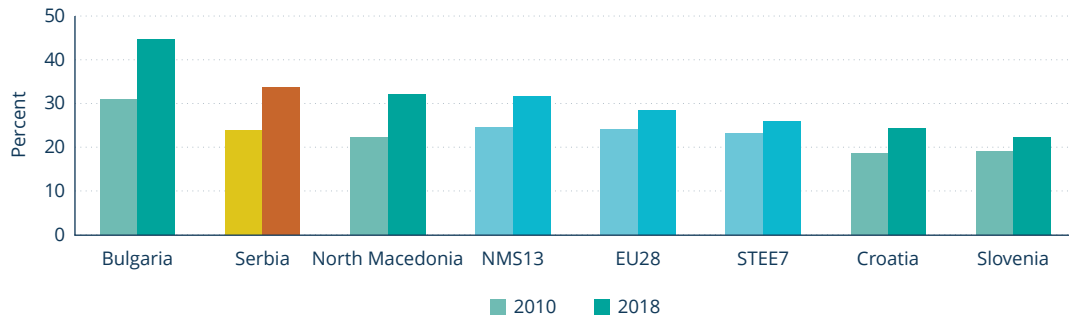
Source: Eurostat.

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14. Based on the WHO systematic review, increases in cesarean section rates up to 10 – 15 percent at the population level are associated with decreases in maternal, neonatal, and infant mortality. Above this level, increasing the rate of cesarean section is no longer associated with reduced mortality.

FIGURE 5.9 Cataract surgery by type, per 100,000 population (2018)

Source: Eurostat.

FIGURE 5.10 Bed occupancy rate in public and private hospitals, percent (2017)

Source: IPH DPS.

Serbia is behind in the development of day hospitalization, a model of care that has long become popular in many modernized health systems due to its attractiveness in delivering good quality services with relatively low cost (National Health Service 2004; Fulton and Kim 2013). As shown in Figure 5.9, not only has Serbia a 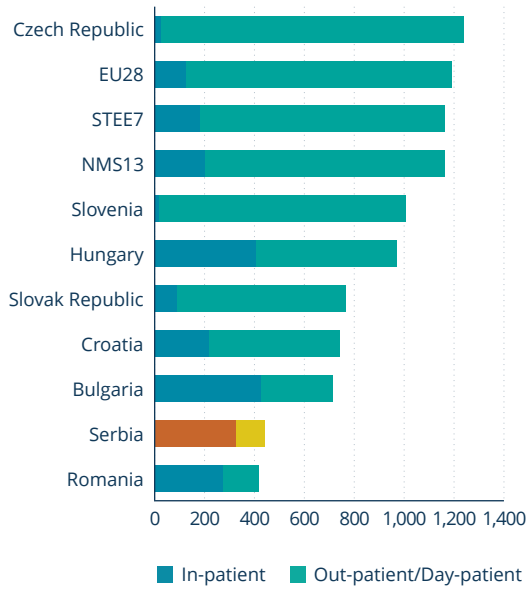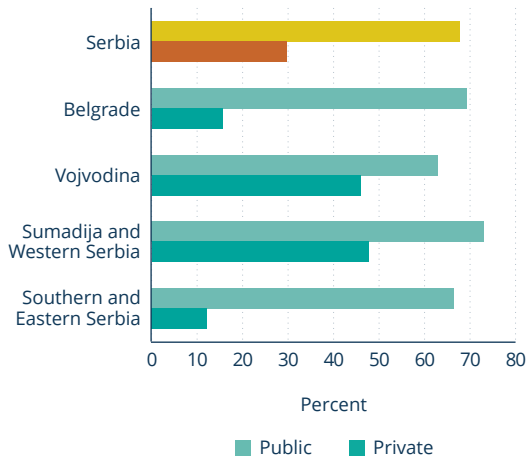low number of cataract surgeries per 100,000 population compared to peers, but the share of those surgeries conducted in an outpatient or daycare setting is rather small, at 26 percent. The corresponding share is almost 100 percent in Czech Republic and Slovenia, 89 percent for the EU28, 84 percent for the STEE7, and 83 percent for the NMS13. For tonsillectomy, another typical candidate of day surgery, Serbia just barely started offering the service (data not shown).

While the private sector generally has an edge over the public sector on efficiency, available data do not support this story. Rather, as shown below in Figure 5.10, bed occupancy rate, one of the key indicators of efficiency, is significantly lower in private hospitals compared to public ones, although the latter already have a low bed occupancy. The average for Serbia was 30 percent in 2018, ranging from 12 percent in Southern and Eastern Serbia to 48 percent in Sumadija and Western Serbia. The average bed occupancy among private hospitals in Belgrade that year was less than 16 percent. Given that private hospitals cannot incur losses to continue in business, the low level of occupancy could mean very high charges to patients.

Inefficiency might also exist in the large difference in the operation across hospitals, revealing potential for optimization. For example, in 2018 the average length of stay in acute care hospitals ranged from 9.2 days in the district of West Bačka to 4.4 days in the district of North Banat, as presented below in Figure 5.11 The average for Serbia was 6.1 days.

Improving and digitalizing health information system would bring efficiency gains. There remains persisting duplication of services between public and private settings as well as within the public sector at different levels of care. The Government of Serbia and the MOH are currently modernizing

the health information system through digitalization. Digitalization of health information system, including individual medical records, will ultimately enable that a medical record follows the patient and that it is easily and timely available (in digitalized form) wherever necessary, for example to the specific health care provider whether private or public. That will introduce additional savings to the patient, health care providers and the system in general.

FIGURE 5.11 Length of stay and occupancy rate in acute care hospitals (2018)
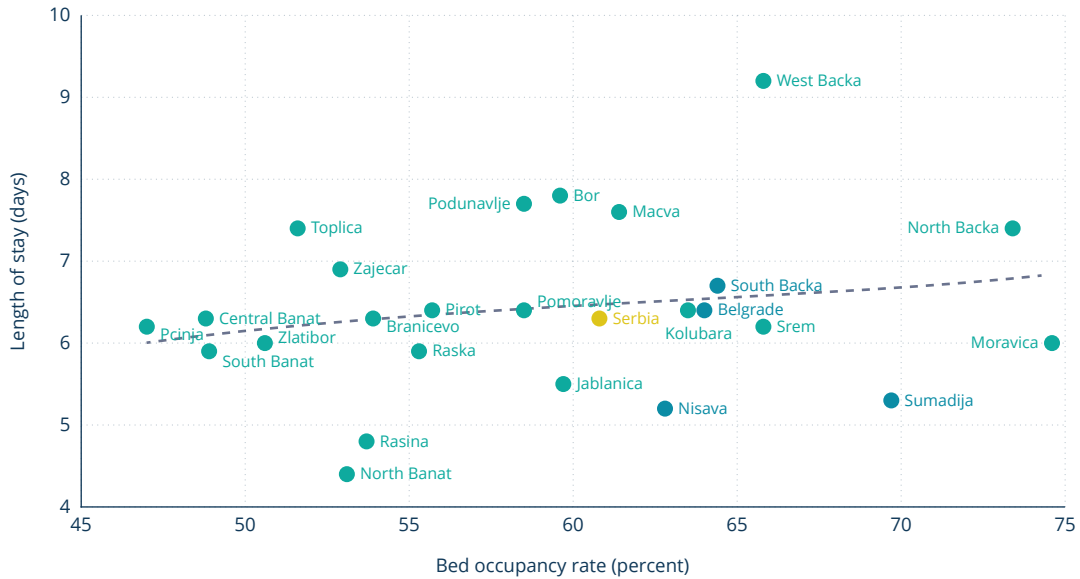
Source: IPH DPS.

EQUITY

Equity analysis across geographical locations and socio-economic groups reveals certain improvements over time, yet critical gaps remain that warrant more proactive measures. In terms of health resources (key inputs to service delivery), across regions in Serbia, the distribution of physicians per 100,000 population in 2006 was highly uneven, ranging from 223 in Sumadija and Western Serbia region to 355 physicians serving 100,000 population in Belgrade, a difference of nearly 60 percent. Leaving aside Belgrade which has a high concentration of specialty and high level hospitals, the gap remains large across regions although it narrowed slightly in a welcome direction between 2006 and 2018 (Figure 5.12).

FIGURE 5.12 Number of physicians per 100,000 population by region, 2006 and 2018
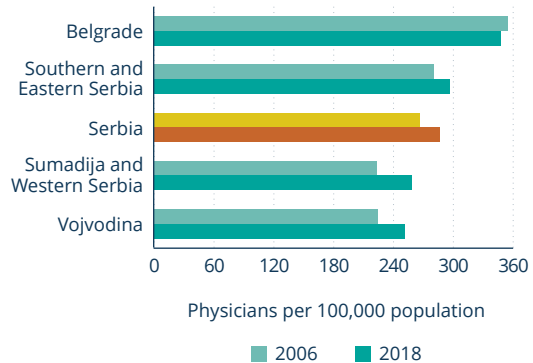
Source: IPH DPS.

It is not conclusive that the varying concentration of physicians across districts is strongly related to district level income, proxied by gross value added per capita. As shown below in Figure 5.13, besides Belgrade and districts that house a referral hospital (clinical center or university hospital), the number of physicians serving 100,000 population does not vary by district level income. The variation among districts in the number of curative care beds serving the population follows a similar pattern. Although there is a norm for number of staff, which is based on number and type of beds, with the latter being governed by population size, the system is outdated and likely not reflecting the differential change in the demographic and migration patterns among districts. The situation again points to the lack of regular update and use of data in health planning.

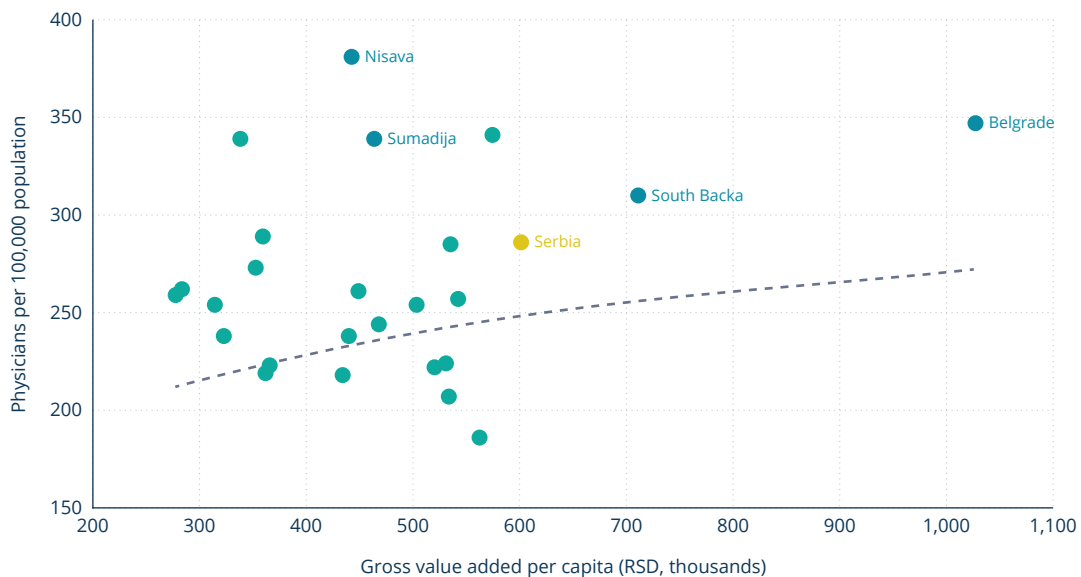**FIGURE 5.13** Level of economic development and number of physicians by districts (2018)

Source: IPH DPS; SORS.

Similar to health resources, there exists a vast variation among districts in health outcomes. For example, the proportion of newborns with low birth weight is twice as high in Pcinja compared with Moravica district in 2018 (Figure 5.14). A stark difference is similarly observed in other key health indicators, such as infant mortality (Figure 5.15).

Across income groups, the difference with regards to utilization of maternal and child health services is not clear cut. On the one hand, the prenatal care utilization pattern reveals a disadvantage of the poorest income quintile compared to the rest of the population, with 84 percent of women in the lowest quintile reported having at least four ANC visits in 2019, versus nearly 100 percent of women in other quintiles. On the other hand, the percentage of children aged 24–35 months who received full vaccination basic antigens in 2019 is higher in the poorest quintile (82 percent) than in the richest quintile (74 percent) (SORS and UNICEF 2020). These patterns suggest that when it comes to basic services, the bottleneck may not be solely physical or financial access, but other factors, such as vaccine hesitancy among higher income groups.

FIGURE 5.14 Low birth weight variation across districts, percent (2018)

District	
Pcinja	
Zajecar	
Macva	
Bor	
North Backa	
Pirot	
South Banat	
Raska	
Branicevo	
West Backa	
Belgrade	
Serbia	
North Banat	
Pomoravlje	
Srem	
Central Banat	
South Backa	
Toplica	
Rasina	
Jablanica	
Nisava	
Podunavlje	
Zlatibor	
Sumadija	
Kolubara	
Moravica	
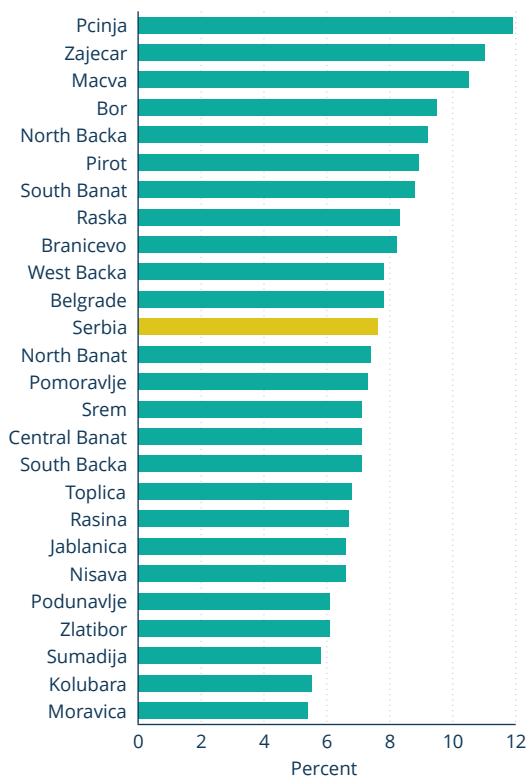
Source: IPH DPS.

FIGURE 5.15 Average Infant Mortality Rate per 1000 live births (2016 – 2018)
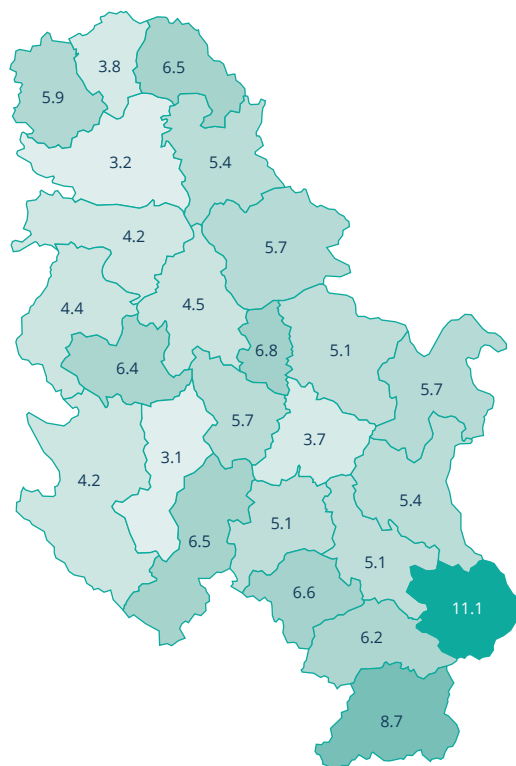
Source: IPH DPS.

Examining the pattern of catastrophic expenditure — health expenditure larger than 25 percent of total nonfood expenditure — among quintiles over time confirms that the poor are most likely to suffer from the financial burden of care, although the situation was better in 2019, the latest year for which data are available (Figure 5.16). In 2010, 6.8 percent of households in the poorest quintile experienced catastrophic health payment, compared to some 5.4 – 5.8 percent among other quintiles. The rates dropped in 2019, and the gap between the poorest and other quintiles became smaller.

The population living in Roma settlements experiences more limited access to basic health services resulting in worse health outcomes. For example, in 2019, only 20 percent of women in

FIGURE 5.16 Households experiencing catastrophic health expenditure over time by quintile
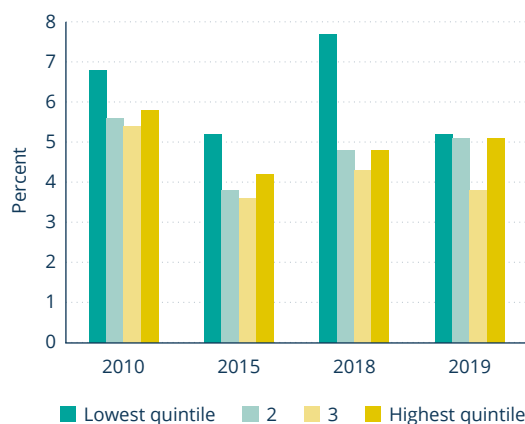
Source: HBS various years.

Roma settlements who were married or lived in a union had ever had a consultation on the use of any birth control method, compared with the national average of 54 percent. Likewise, among women from Roma settlements, the total induced abortion rate[15] during the last five years was 164 per 100,000 of women of reproductive age, compared to 27 per 100,000 of women of reproductive age in Serbia as a whole. Coverage of full ANC checkup was 97 percent among general population versus 83 percent in Roma settlements in 2019 — see Figure 5.17 below. Furthermore, while on the national level 24 percent of children aged 0 – 5 months were exclusively breastfed, this percentage is markedly lower for children from Roma settlements, at eight percent. In the same vein, as presented in Figure 5.18, while the percentage of Roma children aged 24 – 35 months who had received full immunization increased from 44 to 63 percent between 2014 and 2019, Roma continue to lag behind the national average of 80 percent. Similar differences are observed in other health indicators such as child malnourishment and overweight.

FIGURE 5.17 Share of pregnant women having at least four ANC checkups (2019)
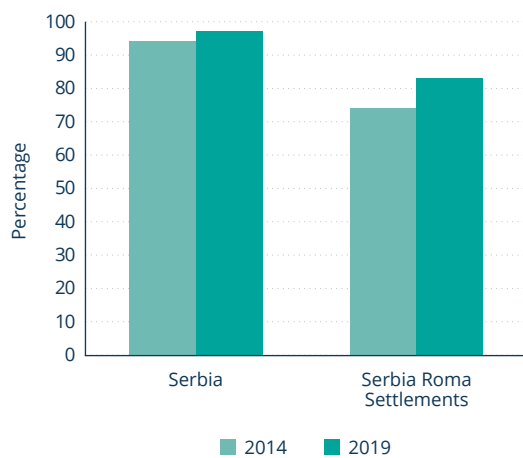
FIGURE 5.18 Share of children aged 24 – 35 months receiving full vaccination (2019)

Source: SORS and UNICEF (2020); MICS.
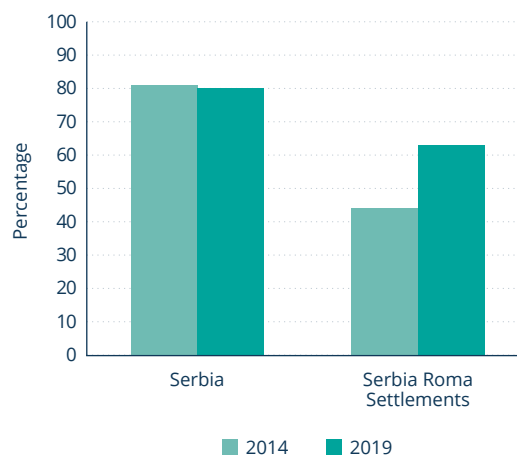
Source: SORS and UNICEF (2020); MICS.

To increase access of Roma to health care, the MOH introduced health mediators as an extended arm of the health system. Their role involves visiting individuals and families from vulnerable groups living in substandard Roma settlements, conducting basic health education, and providing support in exercising rights to health care, health insurance, social protection, and the right to legal personality.[16] By 2020, 85 health mediators had been engaged by the MOH. Their profession has been recognized within the catalogue of professions since 2019. However, their financing from the MOH budget is still project-based, and the recommendation for their institutionalization within the public system is still awaiting final Government decision.

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15. Induced abortions occurring in a lifetime per 1,000 women of reproductive age (15 – 49). The numerator is the total number of abortions (CM28), the denominator is the total number of women aged 15 – 49 years * 1,000.

16. Roma mediators are experts in equal opportunity, who in the course of mediation between Roma communities and various institutions, facilitate the availability of public services — mainly those of education, health care, and the labor market — for the Roma. Source: https://epha.org/intercultural-mediator-on-roma-communities-the-birth-of-a-new-profession/.

PUBLIC HEALTH PREPAREDNESS AND RESILIENCE

Preparedness and resilience is a critical component of a well-functioning health care system.
Health system resilience can be defined as "the capacity of a health system to proactively foresee, absorb, and adapt to shocks and structural changes in a way that allows it to (1) sustain required operations; (2) resume optimal performance as quickly as possible; (3) transform its structure and functions to strengthen the system; and (4) (possibly) reduce its vulnerability to similar shocks and structural changes in the future" (EU Expert Group on Health System Assessment 2020).

Serbia ranked 25 out of the 43 Europe region countries in the 2019 Global Health Security Index,[17]
which assesses countries' capacities as well as the existence of functional, tested, and proven capabilities for stopping outbreaks at the source. Serbia achieved an overall score of 52.3 out of 100 points. With regard to "prevention," Serbia achieved 48.8 points; "detection and reporting," 46.2 points; "rapid response," 55.1 points; "health systems," 56.6 points; "compliance with international norms," 49.7 points; and "risk environment," 59.2 points, placing Serbia right in the middle range among its peers and aspirational peers (Figure 5.19).

FIGURE 5.19 Global health security index scores (2019)
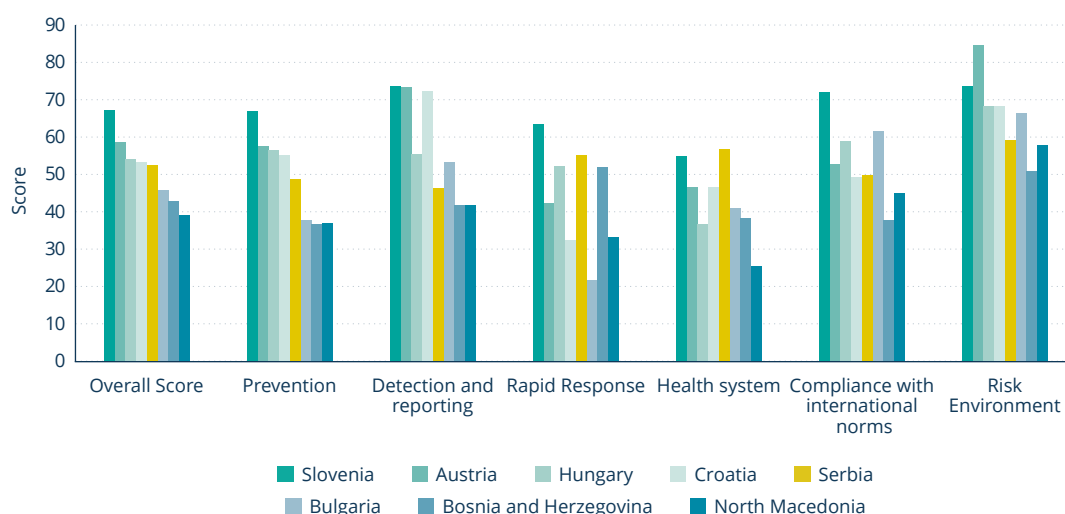
Source: Global Health Security Index.

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17. The Global Health Security (GHS) Index (https://www.ghsindex.org) is the first comprehensive assessment and benchmarking of health security and related capabilities across the 195 countries that make up the States Parties to the International Health Regulations. The 140 GHS questions are organized in six categories: (i) prevention (of the emergence or release of pathogens); (ii) detection and reporting (early detection and reporting for epidemics of potential international concern); (iii) rapid response (to mitigate the spread of diseases); (iv) health system (sufficient and robust health system to treat the sick and protect health workers); (v) compliance with international norms (commitments to improve national capacity, financing plans to address gaps, and adhering to global norms); (vi) risk environment (overall risk environment and country vulnerability to biological threats).

An assessment of the preparedness of the health system and its resilience to shocks such as the COVID-19 crisis showed that the government had an effective response to the pandemic, but there are areas for improvement. The first case of COVID-19 was registered on March 6, 2020. By June 15, 2021, officially 715,147 cases had been registered, with 6,976 fatalities (0.98 percent) in four "waves" or surges of cases with peaks in April, July, and December 2020, and March 2021. Depending on the epidemiological situation, the government introduced non-pharmaceutical measures of varying severity, including a total lockdown in mid-May 2020, to keep the number of daily new cases at a manageable level for the health system. Despite these efforts, during the periods with high numbers of daily new cases, the health system showed signs of serious strain, almost to breaking point. The government adopted various measures to respond to the crisis, including (1) mobilizing existing PHC infrastructure and staff for testing and triage; (2) boosting laboratory capacity for polymerase chain reaction analysis; and (3) repurposing existing hospitals and building new ones to increase inpatient and intensive care capacities for treating COVID-19 patients.

During the COVID-19 crisis, two key challenges of the Serbian health system emerged: (1) lack of capacity of the public health system to identify, isolate, test, and treat all emerging COVID-19 cases, and to trace and quarantine contacts of those infected; and (2) lack of capacity to provide regular health services while at the same time treating COVID-19 patients (United Nations Serbia 2020). As shown in Figure 5.20 below, the COVID-19 crisis caused an immediate reduction in the use of PHC services across all regions, especially Belgrade. Among the four types of services examined the largest decrease was experienced in pediatric care and child dentistry services. In 2020, due to the COVID-19 pandemic, the national MMR1 vaccine coverage decreased to 78 percent (from 88 percent in 2019), with only three districts having coverage above 95 percent while five districts had coverage below 70 percent. The coverage of the second dose MMR was also low, at 84 percent.

FIGURE 5.20 Change in PHC service utilization between 2019 and 2020, per quarter
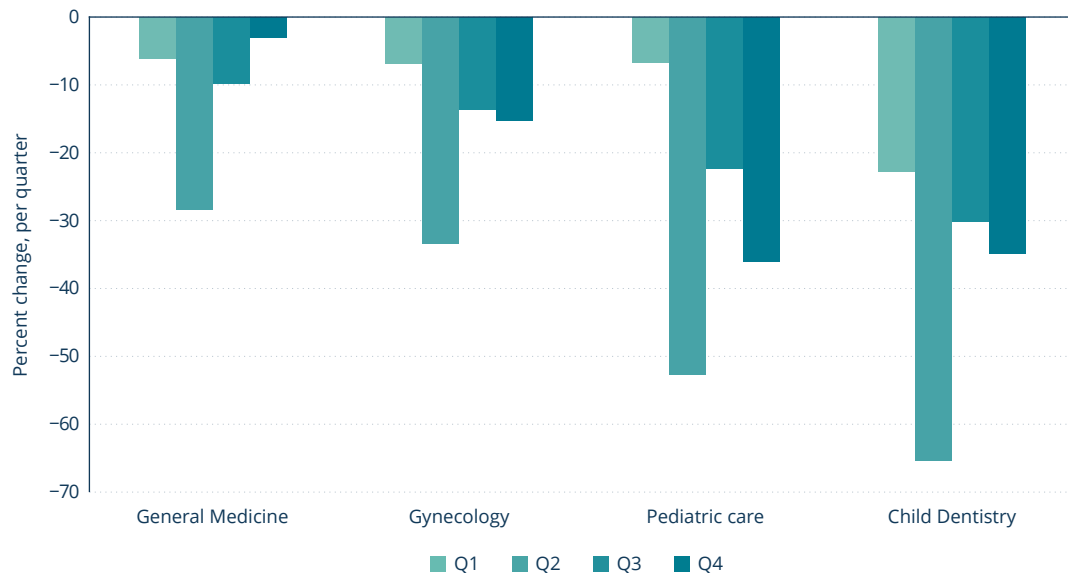
Source: NHIF capitation data.

During the height of the COVID-19 crisis in 2020, nonessential health procedures in public health facilities, including diagnostics or treatment and elective surgeries, were paused and only slowly reintroduced once macro-health conditions improved. As a result, patients had to use private health services, increasing the burden of OOP on households. Data from a survey conducted by the United Nations found the following: (1) almost 27 percent of women and 19.9 percent of men experienced difficulties in accessing health care services during COVID-19; (2) 54 percent of young people had restricted access to health care services; (3) more than 50 percent of the total respondents experienced difficulties in accessing medical supplies such as masks and gloves for personal protection; (4) 23 percent of children needed health care services during the crisis, and approximately 33 percent of these children were not able to receive such services due to either lack of staff at health facilities or parents' reluctance to visit a health facility during the pandemic (United Nations Serbia 2020). Furthermore, even though Serbia has a universal health care system which provides free access to PHC, inequities in the utilization of health care services have widened during the pandemic.

RECOMMENDATIONS

Although the health system in Serbia possesses many positive aspects necessary for providing coverage to the whole population, more targeted and proactive measures are warranted to bring Serbia to the level of countries it aspires to. The current analysis points to a number of shortcomings in the system's performance. The following set of recommendations is therefore offered to inform efforts toward better effective coverage, efficiency, equity, and resilience of the Serbian health system.

- **Develop comprehensive and overarching strategies to more effectively tackle NCDs.** Measures to carry out include expanding health promotion and communication to tackle risk factors and encourage healthy lifestyle; adopting and enforcing regulatory measures to reduce smoking, including passive smoking, and heavy consumption of alcohol and sugar sweetened beverages; educating the public on the importance of seeking preventive care regularly; strengthening the role of PHC in prevention, early detection, and management of NCDs; and piloting innovative service delivery models and provider payment mechanisms to encourage effective and efficient management of NCDs. On the last measure, Serbia could learn from initiatives that have become increasingly popular in the region, such as integrated care and bundled payment. The variable of doctor's salary could also be increased to provide stronger incentives for provision of preventive services and management of NCDs at the PHC level. Serbia has also recently adopted a comprehensive cancer strategy. Going forward, similar strategies for other NCDs are warranted, as well as the successful implementation of the cancer strategy.

- **Increase focus on child development, nutrition and mental health when it comes to children and youth.** Special attention should be given health issues for which effective treatment requires close collaboration with other sectors, particularly social and education, and increased focus on behavioral, social, environmental, and economic determinants of health — for example, care for children and adults with disabilities, violence prevention and response, substance use, and mental health. At the same time, it is important to strengthen the effectiveness of national immunization program, which has recently faced significant challenges in its implementation.

- **Focus on effectiveness of care rather than just physical and financial access.** These measures to consider include optimizing care provision through implementation of clinical pathways; informatization and digitalization of the health system and enabling full application of electronic medical records; and strengthening systems for monitoring and reporting on performance data, including quality indicators. Much has been done in the development of clinical pathways in primary and secondary care, and their integration with the respective facilities information systems. Further work is necessary to strengthen their actual usage in practice and to identify and highlight integration of

corresponding clinical pathways between the different levels of care that would enhance the continuity of care and increase timeliness and efficiency of services provided.

- **Reform the service delivery network to rely less on inpatient care and more on PHC and new models of care.** Optimization of the network of health care facilities should be continued to better respond to the needs of the population. It should include better collaboration and coordination between different levels of care that results in more services being provided on outpatient basis and at the primary level, and timely inpatient services when necessary. Introduction of novel models of care, like telemedicine, mobile technologies, and integrated care should also be tackled with the aim to improve overall quality and timeliness of the services provided. Health workforce management and strategy should be improved to better address regional imbalances and deficits in staffing as well as exits to the private sector and emigration of health professionals.

- **Reform financial mechanisms and incentives to support more efficient and effective use of available resources.** This would require continuation and completion of already started reforms in health financing, particularly in provider payment systems. At the primary care level, some measures could include increasing the size of variable part of individual salaries and widening of the capitation-based financing to other expenses (not only staff salaries). At the secondary and tertiary level, in addition to increasing the variable part of the hospital budget that depends on performance (based on DRGs), reforming the provider payment system for non-acute hospital stays needs to be initiated. Furthermore, a performance-based system applied to hospital staff should be considered.

- **Strengthen interventions to reduce pharmaceutical spending by the public, especially for outpatient drugs.** This should include undertaking studies to understand the reasons behind the stubbornly high OOP level to inform public education, insurance contracting practice, and benefit package. Specifically, it is important to understand if OOP for pharmaceutical spending is on optional food supplements or for NCDs such as hypertension and diabetes. Such knowledge will inform public education on rational use of drugs as well as measures to regulate doctor prescription practice.

- **Strengthen stewardship over the entire health care sector by introducing integrated oversight over public and private health care sectors and providers.** The first step would be to review and clarify roles and accountabilities for MOH, IPH, and NHIF on stewardship of public and private systems. Strengthened stewardship and better coordination between public and private health sector, ultimately resulting in well prepared contracting with private providers, could help lessen OOP by the population, minimize potential for service duplication, at the same time give authorities better control of quality in the private sector.

- **Continue to pay special attention to the Roma population and other disadvantaged groups.** Although the situation improved in the past several years, discrepancies still exist and some groups still do not access basic services such as reproductive health care, immunization, and nutrition support. Clear decisions are needed in regard to increasing provisions or improving prioritization of provisions for the most vulnerable populations as part of the PHC services – for example, patronage service, counselling services, early interventions, community mental health – as well as institutionalization of additional effective approaches, as with health mediators. This also includes areas of the country with lower health outcomes, where measures could be considered that would include increased funding for staff and equipment, with enhanced monitoring and scrutiny of the indicators.

- **Enhance decision making with usage of improved data available.** Institutionalization of health technology assessment methodology in providing inputs related to investment and reimbursement decisions provide good examples and opportunity. Health authorities and public finance management decision makers should consider incorporating elements of program-based budgeting. Moreover, the overall quality and timely production of data on budgeting and expenditure in health should be improved to allow for better performance monitoring, improving efficiencies, and ensuring overall effectiveness.

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