

REPUBLIC
OF SERBIA

Synthesis Report

DELIVERING HEALTH SERVICES EFFICIENTLY FOR SERBIANS



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SERVICES EFFICIENTLY
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ABBREVIATIONS AND ACRONYMS

| | |
|--------------|---|
| AMI | Acute Myocardial Infarction |
| CROSO | Central Registry |
| COPD | Chronic Obstructive Pulmonary Disease |
| DRG | Diagnosis-Related Group |
| DZ | Dom Zdravlja (primary health care center) |
| GNI | Gross National Income |
| HIF | Health Insurance Fund |
| INN | International Nonproprietary Name |
| IPH | Institute of Public Health |
| NCD | Noncommunicable Disease |
| MoH | Ministry of Health |
| OOP | Out of pocket |
| PHC | Primary Health Care |
| PPP | Purchasing Power Parity |
| SILC | Statistics on Income and Living Conditions (a survey) |
| STA | Tax Administration |
| WHO | World Health Organization |



EXECUTIVE SUMMARY

This review aims to provide evidence-based policy options to improve the performance of the Serbian health care system.

The current rise of noncommunicable diseases (NCDs) and rapid aging in Serbia will put significant budgetary pressures on the health care system and, in the absence of structural reforms, will lead to increasing costs. According to the latest estimates, about 17 percent of the population in Serbia is over 65 years old, compared with 11 percent two decades ago. This proportion is expected to reach 25 percent in 2050. Meeting these rising demands in a limited fiscal space and a relatively costly public delivery system requires the government to enhance efficiency in public spending and service provision while ensuring access to quality health care.

Overall, achievements in the health sector have been mixed. Serbia has achieved significant health gains in terms of life expectancy and basic health indicators, but these are still far below the European Union (EU) average, and marked differences are apparent across the country's districts and population groups, such as the Roma. In particular, despite good coverage of maternal and child health services, the maternal mortality ratio of 17 per 100,000 live births is higher in Serbia than in comparators: the EU with 8 per 100,000 and the Western Balkans with 15. In addition, Serbia is seeing an increase in chronic diseases such as diabetes and hypertension, resulting in a growing demand for better integrated health care. Preventive services are limited while tobacco use, poor diet, physical inactivity, and alcoholism, the most common modifiable risk factors for NCDs, are already high and are increasing. Finally, evidence exists that the system's responsiveness and quality of care could be improved, as waiting lists are long relative to regional standards and the number of unnecessary and/or inappropriate services is high.

Serbia's health care system is relatively costly. The total health expenditure as a share of gross domestic product (GDP) gradually increased from 6.5 percent in the mid-1990s to around 10 percent in 2007. Since then it has been relatively stable. Now at 10.4 percent, the expenditure is much higher than in comparator countries, particularly countries with similar income per capita and population size: for example, 5.7 percent in Belarus, 7.4 percent in Georgia, and 8.4 percent in Bulgaria. Starting in 2000, public health spending in particular grew from 4.3 percent of GDP to 6.1 percent in 2007, and it has been stable since then (between 6.0 and 6.5 percent of GDP). This is higher than in all regional comparators except Slovenia, including countries with comparable income per capita and population size (for example, Belarus, Bulgaria, and Georgia).

Despite high public health expenditure, private health expenditure—primarily out-of-pocket (OOP) payments—is unexpectedly high. OOP payments represent more than one-

third of total health expenditures, growing from 23.8 percent in 2002 to 36.6 percent in 2014. High and growing OOP payments pose a barrier to access to health services and reflect inefficiencies in the public sector. The largest driver of OOP health care costs is medications, at 58 percent of households' private health expenditures. In addition, public sector inefficiencies—for example, waiting lists, human resource imbalances, and poor integration between private and public providers—may lead to high OOP payments in the private sector and often to duplication of services between the public and private sectors.

Enhancing efficiency in health care is needed to ensure financial sustainability, reduce wasteful spending, and ensure value for public spending. Efficiency improvements in the health sector, even slight changes, can yield considerable savings that could fund other priorities. A cross-country comparison of the association between life expectancy and health spending suggests that Serbia's health care is relatively inefficient: addressing these efficiency issues provides scope for substantial gains.

This health care system review also carried out a productivity analysis of health care providers in the public sector.¹ The findings show that both outpatient and inpatient health facilities vary greatly in terms of productivity and that room exists for efficiency gains.² There were 139 public primary health care (PHC) facilities included in the analysis. The gaps in cost per visit and visits per staff between the least productive and the most productive groups of facilities were wide, indicating an opportunity for optimization and cost savings. There is also large variation in productivity within and across types of hospitals. More productive hospitals also have better quality indicators and other outcomes. On average, the most productive hospitals had a higher occupancy rate, less staff per bed, and a shorter length of stay. The productive group also had lower acute myocardial infarction and stroke readmission rates and lower C-section rates.

Key Challenges

Health Financing

There are duplications of activities and inefficiencies related health financing. As mentioned in the functional review of the Pension Fund of Serbia, social contributions are managed and

¹ Productivity identifies the maximum number of outputs that can be produced with a fixed number of inputs, usually capital and labor. Productivity can be useful in identifying areas where more value for money can be achieved through a series of policies, such as improving incentives for health workers, better management, and/or adequate use of technology.

² This partial approach measured outputs such as outpatient consultations and hospital discharges relative to inputs—the financial and human resources needed to produce them. A caveat of this approach is that it does not measure the impact on health outcomes and does not control for case-mix or severity.

individual records are maintained across different agencies, including Serbia's Health Insurance Fund (HIF) (World Bank 2017b).

In addition, the HIF—the country's main health-financing agent—is under financial pressure. This stems in part from a reduction in the contribution rate for compulsory health insurance, from 20.2 percent in 1994–96 to 10.3 percent in 2014. Meanwhile, the benefits package was expanded, which contributed to an accumulation of arrears and lengthening waiting lists. Moreover, health care goods and services delivered in public facilities are included in the HIF's benefits package, while health care goods and services delivered by private providers are mostly not covered. While the government is rightly cautious with health care services delivered by private providers due to the needs to control public spending, there is a need to look at the actual costs of these services and consider contracting private providers for services they can provide more efficiently than their public counterparts.

Finally, the provider payment system for both primary and hospital care remains input-based, with limited incentives for quality or efficiency. Under the current system, the HIF primarily processes claims and controls expenditures rather than focusing on strategic purchasing of services. The rigidities of an input-based system prevent the HIF from linking contract payment with output or performance. The HIF also does not use currently available resources effectively. For instance, it collects significant data from public health institutions, but the information is not used adequately to analyze health provider performance or efficiency.

Service Delivery

Serbia's health care system faces several constraints to delivering timely, quality health services in an efficient manner, due to challenges in the organization of services, including distribution, coordination, and integration.

There is a need to rationalize the public health care service network. A large share of public health expenditure is allocated to the hospital sector (44 percent), but there is evidence that hospitals' infrastructure and staff are not always optimally occupied. This leads to an average length of stay (10 days) higher than in all other comparator countries except Belarus, and a low bed occupancy rate (68.3 percent).

In addition, the integration of health care services is limited. The Serbian public health network remains focused on curative rather than preventive care. Moreover, a large majority of the preventive services provided and covered by the benefit package concentrates on children, with very limited services for adults with NCDs such as cancer or heart disease. In addition, the health care structure and organization involves unnecessary consultations, because public institutions do not recognize services delivered by private physicians. There are also unnecessary hospitalizations for conditions that primary care providers in outpatient settings can manage successfully, such as asthma or chronic obstructive pulmonary disease.

Finally, the number of ambulatory procedures, which allow for efficiency gains while ensuring quality care, have grown slowly in Serbian public health care facilities.

Resource Management: Human Resources and Pharmaceuticals

The review identified several factors that could contribute to a more efficient use of human resources, particularly in terms of strategic planning and management. The system faces the following challenges: (i) fragmented governance and short-term needs supersede regular planning, so that health facilities cannot carry out strategic planning of their health personnel; (ii) normative standards and HR plans are not flexible enough to adapt to labor market dynamics; (iii) regular monitoring of personnel migratory and public-private flows is lacking, as is coordination of and matching the training of doctors and nurses with health care needs; and (iv) current Ministry of Health (MoH) HR regulations do not promote strategic decision making at the health facility level. Most salaries are not linked to performance—only a small share is output based—and contractual arrangements impose significant constraints and costs to laying off permanent staff, resulting in long trials and costly severance packages.

Serbia is facing a sharp increase in pharmaceutical spending, in both the public and private health sectors. This creates opportunities to reduce wasteful spending and excess cost. The share of pharmaceuticals in total health expenditure is high compared to regional standards and the EU average of 16.6 percent. It increased from 22.1 percent in 2002 to 33.9 percent in 2015 (IPH 2017), while the EU share has been decreasing since 2003.³ Several factors have contributed to the rising costs: (i) the pharmaceutical market remains dominated by brand drugs, which significantly hinders competition; (ii) current reimbursement policies incentivize pharmacists to deliver higher-cost medicines; (iii) inadequate controls lead to overprescription of drugs—the average annual number of prescription drugs per insured person in Serbia was between 12 and 14 during 2011–13 (World Bank 2015b), which is about twice the average observed in EU countries; and (iv) Serbia is facing an increasing use of high-cost, patented medicines in hospitals.

Stewardship

The stewardship and governance of the Serbian health system needs to evolve toward integrated oversight of a modern and pluralistic health system, with more autonomy and accountability for public providers and greater use of timely information to steer the system and monitor facility performance. Network planning and regulation of the public and private health sectors are currently fragmented and need to shift toward a pluralistic system of service delivery and performance financing. Public hospitals and PHC facilities are constrained by overly rigid regulation and norms-based systems for planning budgets, staffing, and health

³ The latest estimates for the EU are for 2011, when the share of pharmaceuticals in total health expenditure in Serbia was 31.3 percent (WHO 2017).

services. Inadequate accountability and capacity of health facility boards and management persist. Finally, local governments have been slow to take financial and oversight responsibility for primary care services, despite the decentralization that occurred a decade ago. Consequences have included inadequate planning and oversight of services; inadequate capital investment and maintenance, resulting in deterioration of some facilities; and inadequate financial oversight and accountability.

Policy Recommendations

These findings suggest the need to strengthen the HIF's role and capabilities as a strategic purchaser. The planned shift toward strategic purchasing of health services based on performance and quality—including performance-based capitation for primary care and case-based payments for hospitals—will require significant shifts in the internal organization and capacities of the HIF. They involve reducing HIF staff involved in routine claims processing and enrollment verification; strengthening staffing and capacity for strategic purchasing, information communication technologies (ICT), and efficiency monitoring; and developing health technology assessment capacities to align the country's benefits package with actual resources.

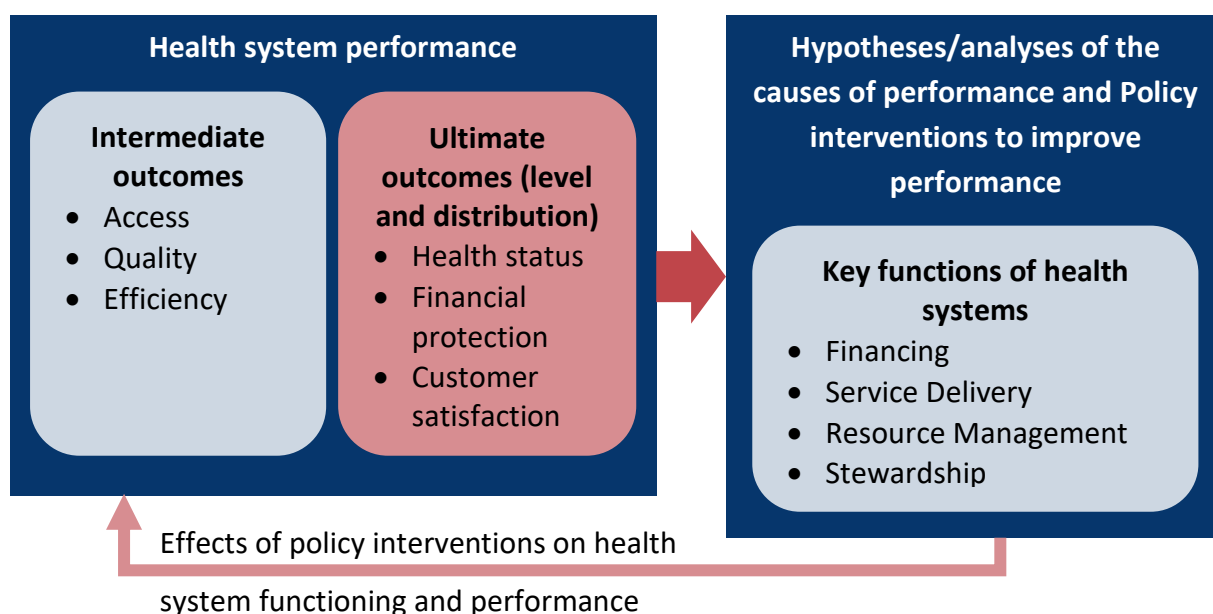
It is also important to enhance MoH's strategic planning and oversight mechanisms by strengthening integrated ICT systems. This requires putting the emphasis on timely use of information for stewardship and management decision making; reviewing and clarifying roles and accountabilities among MoH, the Institute of Public Health, and HIF vis-à-vis the stewardship; and defining accountabilities and strategies to strengthen the oversight of health service quality.

The concluding section of this review includes specific policy recommendations in the short-, medium-, and long-term across each key function in the health sector for the government's consideration.

INTRODUCTION

This report is part of a broader strategic and functional review of Serbia's central public administration undertaken with the World Bank's and the European Union's (EU's) support. The overall purpose of the health functional review (HFR) is to identify strengths and weaknesses in the current performance of the Serbian health system and propose recommendations for overcoming the shortcomings and optimizing resource utilization while minimizing disruptions in service delivery. The review's findings and associated recommendations aim to motivate discussions between the Ministry of Health (MoH), the Health Insurance Fund (HIF), and other governmental agencies, facility managers, providers, and patients regarding the reforms.

Figure 1. Theoretical Framework Used for This Functional Review



Source: Adapted from Berman and Bitran 2011

The HFR follows the theoretical framework first presented in the World Health Report 2000, endorsed in 2007 by the World Bank Health Nutrition and Population Strategy (World Bank 2007, 168), that encompasses four key functions of a health care system: health financing, service delivery, resource management, and stewardship. Figure 1 depicts the overall approach of the HFR. The dimensions depicted provide guidance and the structure for a range of additional descriptors that can help define a health care system's design and provide the context for performance assessment. The HFR is based on a review of policy and technical documents; a quantitative analysis focused on estimating the productivity of health facilities

(primary health care – PHC – and hospitals), based on data provided by the HIF and Institute of Public Health (IPH); a detailed analysis of staffing patterns and costs, with a focus on nonmedical staff; and a qualitative study based on field visits and key informant interviews conducted in 38 facilities targeting population needs, recent trends in human resources structure, and financial management of health facilities.

The report is structured as follows. The first section briefly describes the health system context factors influencing its performance. The second section analyses and benchmarks key health system outcomes in Serbia against other countries in the region. The third section looks at each of the core functions in health systems (health financing, service delivery, resource management and stewardship) and highlights key challenges Serbia faces in these areas before proposing short-, mid-, and long-term recommendations in the closing section.



CHAPTER 1. HEALTH SYSTEM CONTEXT

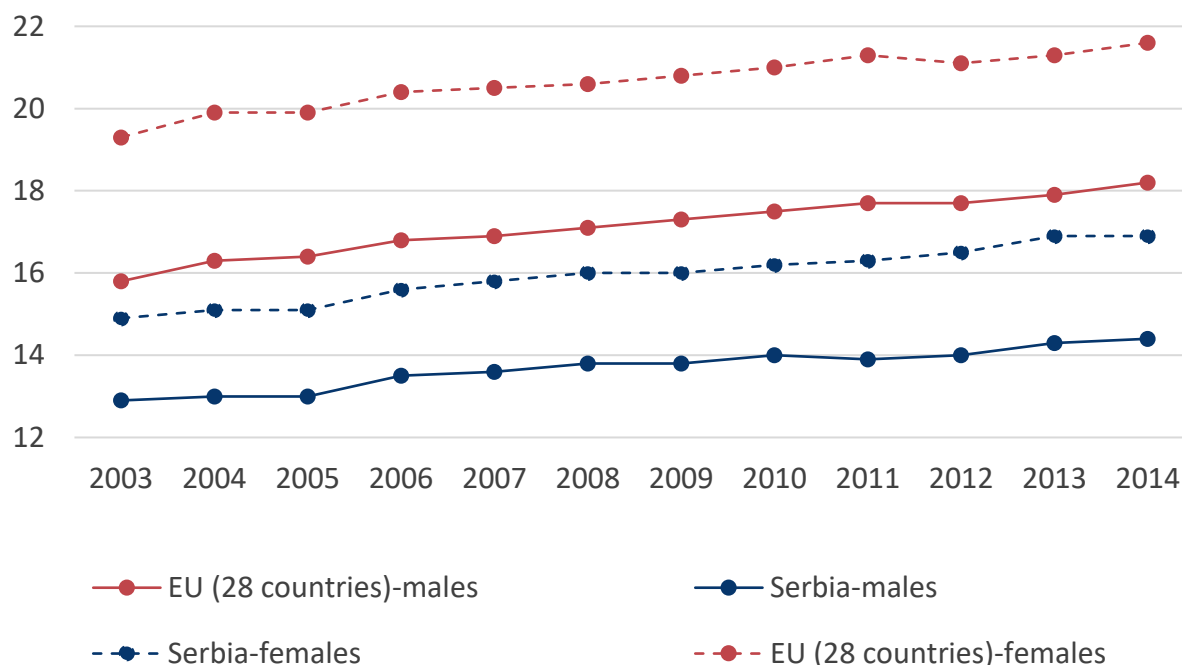
Serbia is experiencing a demographic and epidemiologic transition. Its population is aging and, according to the latest estimates, about 17 percent of the population was over 65 years old in 2015, as opposed to 11 percent two decades ago. This proportion will reach 31 percent in 2100 (Eurostat 2017). Moreover, most of the Serbian population (56 percent) now lives in urban areas (World Bank 2017). The combination of these transitions contributed to lifestyle changes and the decreased share of communicable diseases and maternal, prenatal and nutrition conditions in the burden of diseases. The 10 top causes of disability-adjusted life years are now exclusively noncommunicable diseases and injuries. This transition involves increasing demands for health care services and, in the absence of structural reforms to adapt the health system, increasing costs. In addition, the rural population is shrinking and increasingly elderly, which creates further challenges for the organization of health services.

The extent to which ageing will affect economic growth in Serbia will depend on the policies in place to adjust pension burdens and policies and to ensure a healthy ageing of the population. The primary cause of decrease in population growth in Serbia is lower fertility rates; old-age mortality has not declined as much as expected. While life expectancy at 65 has increased in the past 25 years in Serbia, it has fallen behind other countries in the region and average EU levels (figure 2), especially for men, suggesting that more can be done to ensure a healthier older-age population and lengthy health spans.

Serbia's economy is slowly recovering from the 2009 and postcrisis economic downturn and has benefited from a stable political environment and progress in implementing fiscal and structural reforms. In 2014 and 2015, the country experienced negative and moderate growth rates (-1.8 percent and 0.8 percent, respectively). Real economic growth rate in the last quarters of 2016 was 2.5 percent, just slightly below the projected country annual rate (2.7 percent). Growth for 2017 is projected to be 3 percent (FMI 2016). Private investment, net exports, and consumption supported this trend. Moreover, since 2014 Serbia has had a government with a solid majority in parliament, enabling it to initiate and implement the deep reforms necessary to create a competitive economy and raise the income of the bottom 40

percent of the population. In addition, Serbia started the process of negotiating for EU membership in 2014, creating a further impetus for reform and opportunities to attract investment.

Figure 2. Life Expectancy at 65 (2003–14)



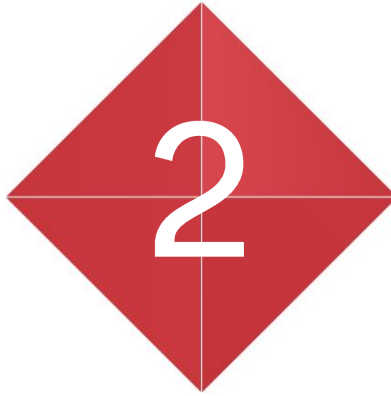
Source: Eurostat

Macroeconomic constraints required fiscal adjustments that affected the health sector, but the combination of the demographic and epidemiologic transition requires further structural reforms in the health sector to increase efficiency while improving quality. In response to a growing fiscal crisis, in 2014, the government implemented cost-containment measures affecting all government services, including the health sector. These measures were agreed to as conditions for International Monetary Fund (IMF) support and include wage-bill ceilings for public sector, a 20 percent reduction in wages for public sector employers, and strict limits on the recruitment of new staff. The government, with World Bank support, targeted these expenditures and staffing reductions, to minimize negative impact on services, while identifying priorities to improve efficiency and quality in the medium term. The government of Serbia is now looking for further cost control measures and efficiency gains, which should now focus on structural reforms in the health sector as well as the education, social protection, and labor sectors.

Serbia's health care system, based on a government-mandated health insurance (Bismarck model), has reached widespread coverage, supported by an extensive publicly owned health facilities network. However, it faces important challenges in terms of quality of care, efficiency, and financial protection and sustainability. Public health expenditure, which accounts for 58 percent of total health expenditures, has been declining over time, as has the

share of governmental expenditure allocated to health, indicating an increased reliance on a regressive source of financing—private expenditure, typically out-of-pocket (OOP) payments for pharmaceuticals and laboratory tests (IPH 2017).⁴

⁴ National data and international data sometimes differ slightly because of methodological differences. We usually use national data—we use international data while looking at benchmarks though for comparability purposes.



CHAPTER 2. HEALTH SYSTEM OUTCOMES COMPARED TO OTHER EUROPEAN COUNTRIES

This section presents an international comparison—benchmarking—of Serbia’s health system performance in terms of health status, quality of care, and financial risk protection. The comparison identifies areas of the health care system that are performing above or below expectations in relation to other countries in the region.

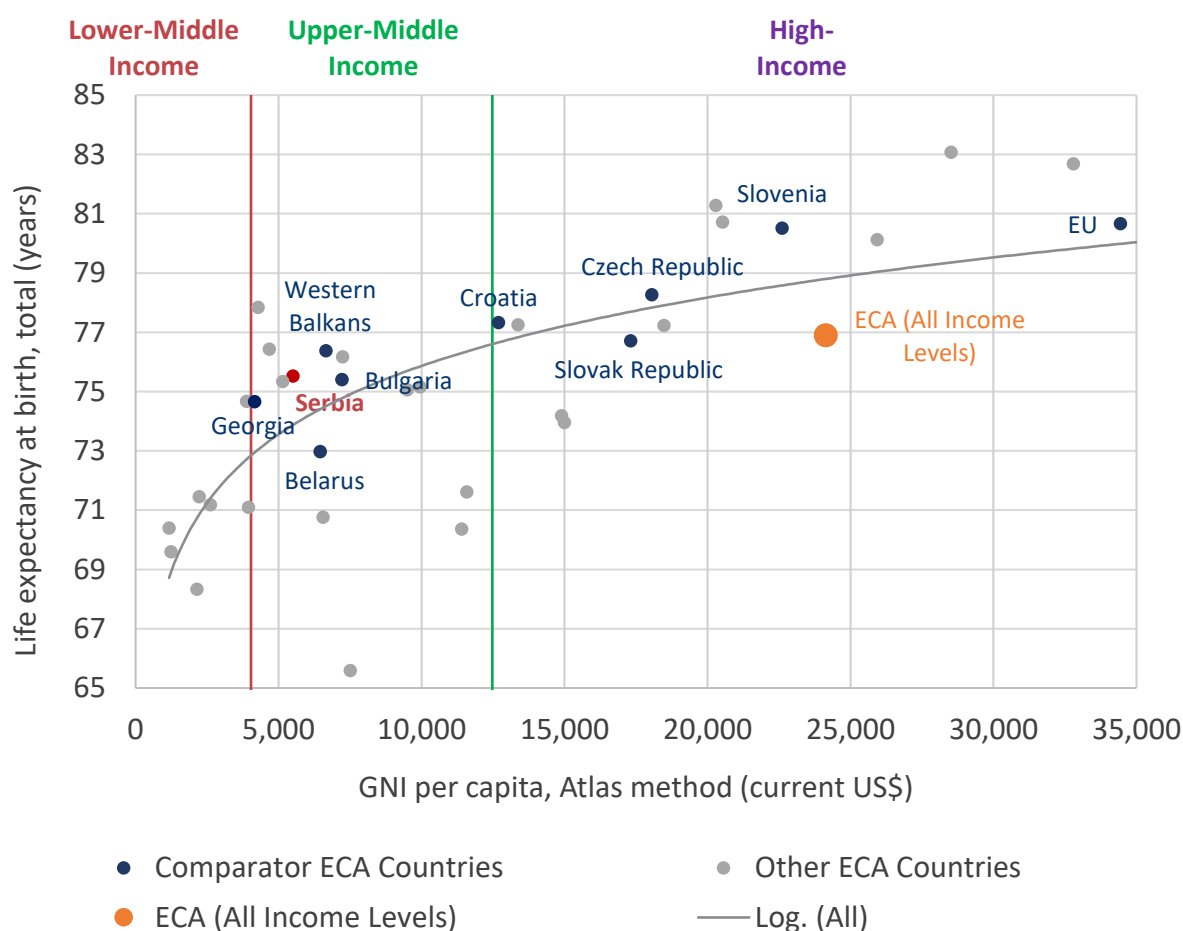
Health Status

Overall, Serbia has achieved significant health gains in terms of life expectancy and basic health indicators, but these are still far below the EU average, and marked by regional disparities. Life expectancy at birth (75.5 in 2015) is slightly higher than would be predicted based on per capita income average (figure 3). This is lower than the average life expectancy in EU and Western Balkans, where the gross national income (GNI) per capita is higher, but it is higher than life expectancy in countries of the region that are comparable in terms of income per capita and/or population size, namely, Belarus, Bulgaria, and Georgia. However, marked differences exist across Serbian districts; life expectancies range from 72.5 years in Severno Banatski to 76.3 in Belgrade. Neonatal, infant, and under-five mortality rates are also similar in Serbia (4.2, 5.9, and 6.7, respectively, per 1,000 live births) and the Western Balkans but higher than in EU (2.2, 3.7, and 4.4) (figure 20 in appendix A).

Despite good coverage of maternal and child health services, however, maternal mortality remains high. The maternal mortality ratio in Serbia (17 per 100,000 live births) is higher than in comparator countries (Belarus, Bulgaria, Slovakia, and Slovenia) and particularly higher than the EU (8) and the Western Balkans (15) (figure 21 in appendix A). The leading causes of maternal death are hemorrhage, eclampsia, embolism, and sepsis (Petronijevic, Vrzic-Petronijevic, Ivanovic, Krstic, and Bratic 2013). Coverage of preventive maternal and child services is satisfactory (for example, skilled birth attendance and prenatal care coverage are

almost universal) and child immunization rates for polio, diphtheria, and tetanus (95 percent of infants) are on par with regional comparators and higher than in the Western Balkans (86 percent), Georgia (89 percent for polio and 94 percent for diphtheria and tetanus), and Bulgaria (91 percent) (figure 22 in appendix A). Under-5 mortality reflects both socioeconomic progress as well as improvements in vaccination and care for children, while low rates of neonatal mortality suggests progress in quality of care for newborns. The relatively high rates of maternal mortality suggest shortcomings in quality of maternal care, however, since most maternal deaths should be preventable.

Figure 3. Life Expectancy at Birth and GNI per Capita, Europe and Central Asia, 2015



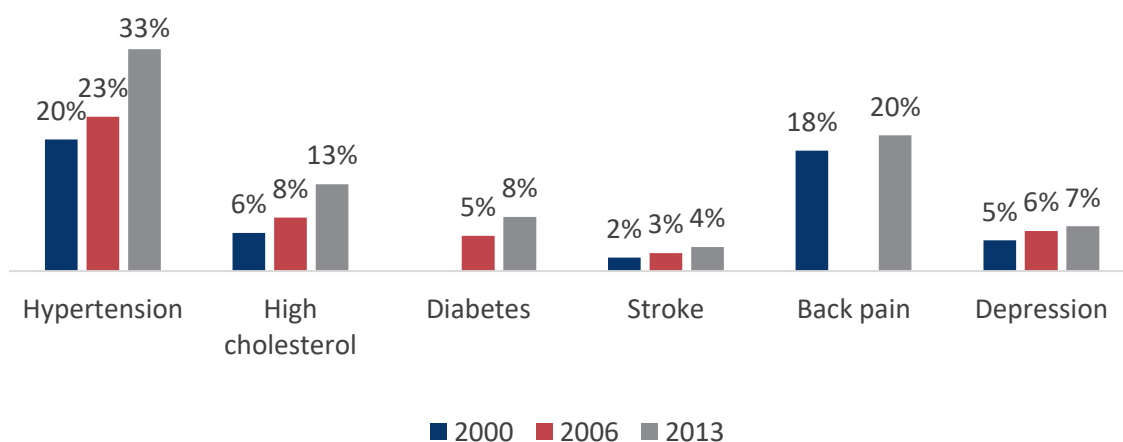
Source: Source: World Bank 2017

In addition, health coverage and outcomes are significantly worse for some marginalized populations, such as Roma, who have lower rates of immunization and higher rates of mortality and malnutrition than the general population. The bottom economic 40 percent of the population, particularly the Roma, have worse health and nutrition outcomes than others in the country. For example, Statistics on Income and Living Conditions (SILC) data for 2013 show that among adults in the bottom 40 percent, 25 percent report being in poor health, but among the wealthiest quintile, only 12 percent do so. Although infant mortality

rates are relatively low for the overall population, they are twice as high for Roma (13 deaths per 1,000 live births). The higher incidence of chronic malnutrition (stunting) among Roma children, despite recent improvements, has serious implications for their cognitive development and lifelong earning potential. Government programs such as the Roma health facilitators initiative, which has reached 140,000 Roma since it began in 2006, have helped improve access to health services for Roma, but gaps remain. The percentage of women aged 20–24 who have had at least one live birth before age 18 is 1 percent for Serbia and 38 percent for Roma settlements, which is likely to have implications for Roma women’s education and labor market participation. Serbia’s total fertility rate is 1.6 births per woman but 3.1 among the Roma (World Bank 2015a).

On the other hand, Serbia is seeing an increase in chronic diseases, which results in a growing demand for specialized health care and broader preventive services. It is estimated that more than half of the deaths in Serbia are due to heart diseases and one-fifth are due to cancer (IPH 2016a). Diabetes is the fourth cause of death, and the mortality rate due to diabetes mellitus has increased from 34.3 in 2006 to 42.7 per 100,000 population in 2015 (IPH 2016a). The prevalence of diabetes in Serbia has increased from 5 percent in 2006 to 8.6 percent in 2013 and is among the highest in the region (figure 4 and figure 23 in appendix A). The prevalence of cardiovascular diseases is persistently high, far above the EU average, and has increased over time according to the data from the National Health Surveys (figure 4 and figure 5). The prevalence of cerebrovascular diseases is also high relative to regional comparators, including countries that are similar in terms of income per capita and population size, namely, Belarus, Bulgaria, and Georgia, as well as the Western Balkans. In turn, this has led to a 34 percent increase in the number of hospitalizations due to circulatory diseases (1,455 per 100,000 in 2000 to 2,198 per 100,000 in 2012).

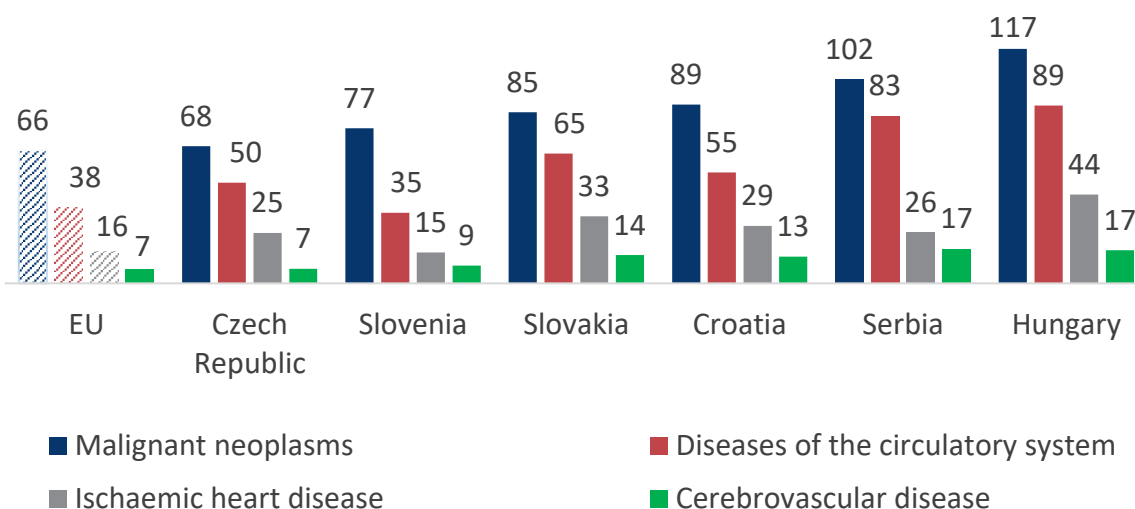
Figure 4. Increasing Prevalence of Selected Noncommunicable Disease(NCDs) and Risk Factors in Serbia, 2000–13



Source: IPH 2014

Similarly, the incidence and mortality of certain cancers are significantly higher in Serbia than in comparators, and preventive screening rates are low. Both the incidence and the mortality of lung cancer among men—99.2 and 88.4, respectively, per 100,000—are the highest among regional comparators. The incidence of breast cancer (92 per 100,000 women) is also among the highest—only Czech Republic has a higher rate—and no comparator has a higher mortality rate (31.5). Similarly, the incidence and mortality rates of cervical cancer in Serbia, respectively 28 and 10.3 per 100,000 women, are high—only Bulgaria has a slightly higher incidence rate and no comparator has a higher mortality rate (figure 24, figure 25, and figure 26 in appendix A). On the other hand, preventive screenings for breast cancer and cervical cancer, at 7.6 of women aged 20–69 and 9.3 percent of women aged 50–69, respectively, is low among comparator countries (figure 27 in appendix A). These outcomes strongly suggest shortcomings in PHC and prevention programs. For example, most cervical cancer can be prevented by early screening and treatment, and cardiovascular disease prevalence can be reduced by effective PHC and healthy lifestyle programs.

Figure 5. Prevalence of Chronic Conditions (among 0-64, per 100,000), 2014, Serbia and Comparators



Source: WHO 2017. Data is from 2014 except Slovenia (2009)

Consistently with these trends, tobacco use, poor diet, physical inactivity and alcohol consumption, the most common modifiable risk factors for Noncommunicable Diseases (NCDs), are very high and increasing. For instance, the prevalence of overweight among adults in Serbia (54.5 percent in 2014) is similar to the average for the Western Balkans and Georgia and lower than the prevalence in other comparator countries. However, this prevalence is increasing rapidly (more than 2 percentage points between 2010 and 2014). Smoking prevalence among males (45.5 percent) is also high relative to regional comparators, and smoking prevalence among females (39.8 percent) is by far the highest. Finally, among comparators, only Belarus and the Czech Republic have higher alcohol consumption averages than Serbia, where the annual alcohol consumption per capita among adults amounts to 12.9

liters of pure alcohol (figure 28, figure 29, and figure 30 in appendix A). Reduction in smoking, obesity, and alcohol use requires a combination of strong PHC—including doctors taking time to discuss lifestyle issues with patients—as well as multisectoral efforts to reduce smoking and promote healthy lifestyles.

Patient Satisfaction

Patient satisfaction varies by type of service in Serbia, according to the IPH annual survey on patient and provider satisfaction, which collects general information on patient's perception of service (IPH 2016b). The average grade of satisfaction given by users of PHC services in the Republic Serbia for 2015 is 3.96 (on a scale of 1–5, with 5 being very satisfied). This increased by 0.06 compared to the 2014 results. PHC services in Belgrade receive the highest satisfaction score among users of PHC centers, whereas services in Vojvodina receive the lowest. In terms of inpatient care, every category of service (admission, treatment, diagnostic, and nursing) received grades above 4 points. The survey does not collect information on waiting lists for ophthalmology procedures or orthopedics. In addition, several surveys report widespread perceptions of corruption in the health sector. For example, a survey conducted in 2013 showed that 71 percent of interviewees perceived corruption in the health care system and 48 percent of the cases of direct corruption in the three months preceding the survey were related to the health care system—gifts and bribes to doctors and medical staff (UNDP Serbia 2013).

Financial Risk Protection

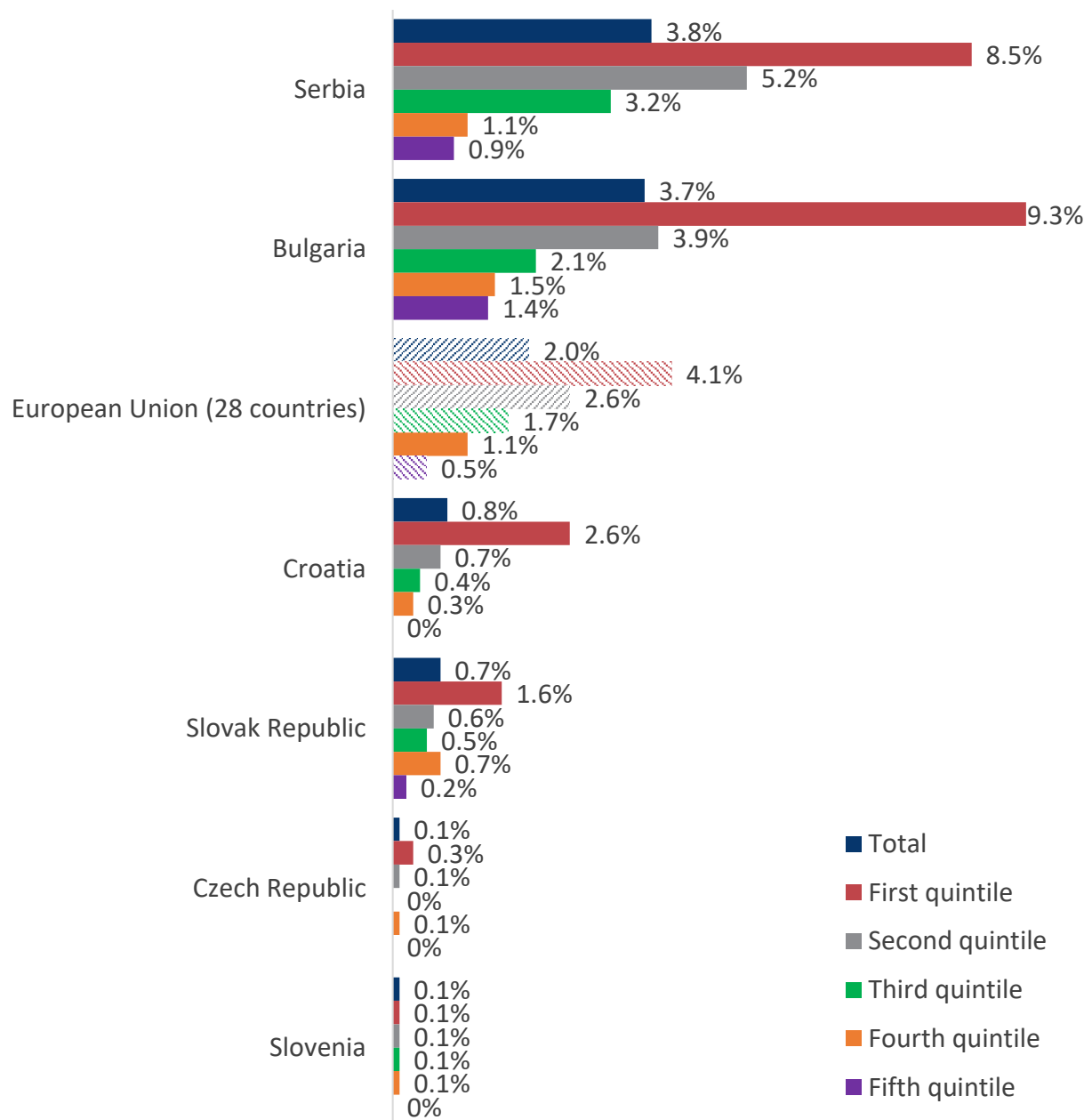
A health care system should protect people against the adverse financial consequences of paying for care. So-called financial risk protection is a key element of universal health coverage. Such protection is key to ensuring access to affordable health services. In addition to unmet health care needs, the lack of financial risk protection can lead to catastrophic payments and impoverishment.

Financial barriers to accessing basic health services in Serbia remain important, especially among the poorest segments of the population. The proportion of households reporting unmet medical care need for financial reasons (3.8 percent) is high compared to regional standards and 1.9 times higher than the EU average. This share among the poorest quintile is 9.4 times higher than in the richest one (figure 6).⁵ Overall, unmet medical care needs for several reasons—including financial, geographical, and time constraints—are higher in Serbia,

⁵ Unmet needs can happen even in countries where all the population is covered by social health insurance, e.g. if individuals need—but cannot afford—to use private providers due to waiting lists, drug shortages and other implicit rationing impacts in the public health care sector.

where 14.6 percent of the population foregoes medical care, than in any comparator country. The frequency of unmet needs decreases as household income increases. The 2013 SILC survey found that 20 percent Serbians did not report having health insurance coverage—which likely contributes to unmet need and lack of financial risk protection.

Figure 6. Unmet Needs for Medical Care because the Cost Was Too High (% of population), by Income Quintile, Selected Countries, 2015



Source: Eurostat

The incidence of catastrophic payments remains relatively low, but their incidence is higher on average among poor and elderly households. In 2010, less than 5 percent of households spent 10 percent or more of their budget on out-of-pocket spending for health, and less than

1 percent spent 25 percent or more.⁶ However, the incidence of catastrophic payments was three times as high among the poorest quintile. Not surprisingly, the elderly were more exposed to catastrophic payments, and nearly 25 percent of single persons over 65 years experienced catastrophic payments, mostly due to payments for medicines (World Bank 2015b).

According to the latest estimates, the effect of OOP spending on poverty increased after the 2008 crisis. According to the results of the 2010 Household Budget Survey, the poverty rate increased from 6.9 percent to 8.0 percent because of OOP spending, using a poverty line of \$4 per capita per day, which represented a relative change of 16 percent (World Bank 2015b).

Quality of Care

Quality of care is another key component in attaining better health outcomes. Although information on clinical processes in Serbia is limited, there is evidence of practices related to NCD management that have led to premature mortality, waiting lists, questionable clinical appropriateness of admissions and/or unnecessary care that affects timely access to necessary health care.

Poor Management of NCDs

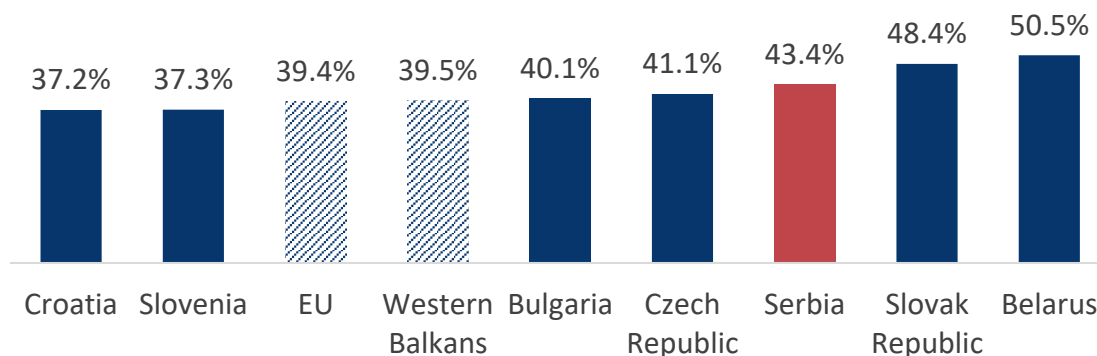
Glycemic control is an important part of the comprehensive management of diabetes, and HbA1c testing is a well-established strategy to monitor glycemic control in patients with diabetes. In Serbia, the latest report on quality of care reveals that 58 percent of patients with diabetes do not get regular HbA1c testing, with marked variation across districts, ranging from 16.2–80.6 percent (IPH 2016b).⁷ However, there is no indicator measuring glycemic control (for example, an HbA1c test measuring greater than 9 percent). Identifying HbA1c values greater than an acceptable clinical threshold allows a health facility or provider the opportunity to focus on those patients who are in poor control and at highest risk. Similarly, blood pressure control can reduce the number of strokes and the incidence of

⁶ If health care expenses are large relative to the resources available to a household, a disruption to living standards may be considered catastrophic. Here, we look at the 10 percent and 25 percent of total spending thresholds. Households can encounter catastrophic payments despite health insurance coverage, e.g. if they need to use private providers due to waiting lists, drug shortages and other implicit rationing impacts in the public health care sector.

⁷ The National Quality of Care Program ("Official Gazette of RS," no. 49/10) was adopted in June 2010 and produces an annual series of quality of care indicators (primarily process indicators) based on information submitted by health facilities and institutions. The Institute of Public Health of Serbia analyses the information and prepares the report. It also compiles methodological guidelines for health care institutions and reporting procedures on indicators of health care quality. Data completeness and quality of the information submitted by the facilities vary by indicator.

coronary heart disease. In Serbia, over 47 percent of diagnosed hypertensive patients remain uncontrolled (IPH 2016a).

Figure 7. NCD Deaths under Age 70 (% of all NCD deaths)



Source: WHO

Mortality rates from acute myocardial infarction (AMI) and stroke are outcomes related to quality of care. Unfortunately, there is no information on 30-day, age-standardized AMI and stroke mortality rates in public reports, although they are standard indicators for quality of care. However, according to the World Health Organization (WHO), the rate of premature deaths under 70 years (43.4 percent) due to NCDs are higher in Serbia than in the Western Balkans and EU average (figure 7).

Waiting List

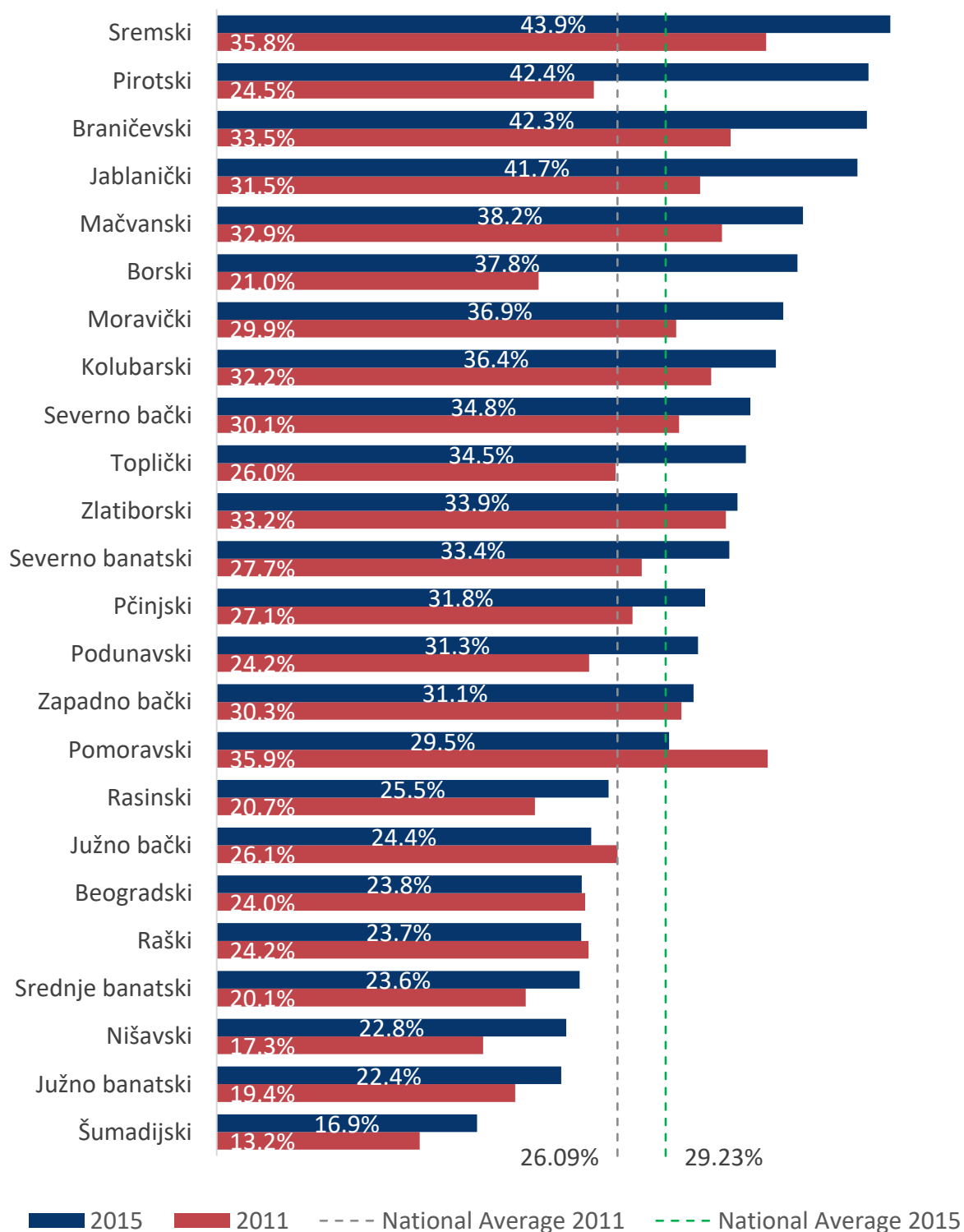
Waiting times for cataract surgery and hip replacement in Serbia, which are monitored by the HIF, are long. The average waiting time for cataract surgery is 637 days, versus a 115-day average among Organisation for Economic Cooperation and Development (OECD) countries. According to HIF, 9.6 percent of the surgeries that were performed in 2016 were contracted to the private sector. It is expected that this share will increase to 17 percent in 2017. Similarly, the waiting list for hip replacement is 587 days, versus the 169-day average in OECD countries (OECD Health Statistics). By March 2017, a total of 9,756 insured persons were on the waiting list, although only 8,512 surgeries are planned. The HIF does not have yet agreements with the private sector to provide these services.

Clinical Appropriateness of Admissions and/or Unnecessary Care

High rates of cesarean sections (C-sections) indicate challenges with inappropriate admissions and unnecessary care. The C-sections are contraindicated in low-risk women, but their rate in Serbia is high and increased from 26.1 percent in 2011 to 29.2 in 2015. At 292.3 per 1,000 births, the C-section rate is higher than the EU average (221 per 1,000 births) and about twice WHO's recommended level of 15 percent. There are marked variation across

districts, ranging from 17 percent in Sumadijski to 44 percent in Sremski, where just one hospital provided C-sections during the period. Only 9 out of 24 districts have C-sections rates below the average (29.2).

Figure 8. C-section Rate by Districts (Percent of total births), Serbia, 2001 and 2015



Source: IPH

In Belgrade, where one-third of annual births take place, 24 percent of births were delivered via C-section, a level below the national average. Belgrade's rate remained constant between 2011 and 2015, in contrast to some districts where the C-section rates almost doubled, such as Borski and Pirotski (figure 8). Although Serbia has developed indicators to measure service quality, systems are not yet in place to assess and routinely monitor the clinical appropriateness of care and unnecessary admissions—which has consequences both for the cost of health services and for patient safety.

There is an excess of preventable hospitalizations of conditions that could have been managed successfully by primary care providers in outpatient settings. These are preventable hospitalizations due to worsening chronic conditions such as diabetes or chronic obstructive pulmonary disease (COPD) or other conditions such as asthma that were not managed adequately. Although not all hospitalizations due to these conditions are preventable, a share of them are avoidable. Because hospitalization tends to be more expensive than outpatient or primary care, these services also indicate a dimension of inefficiency. In 2016, according to HIF data, inpatient admissions for asthma, COPD, and diabetes accounted for 4.2 percent of all admissions countrywide.

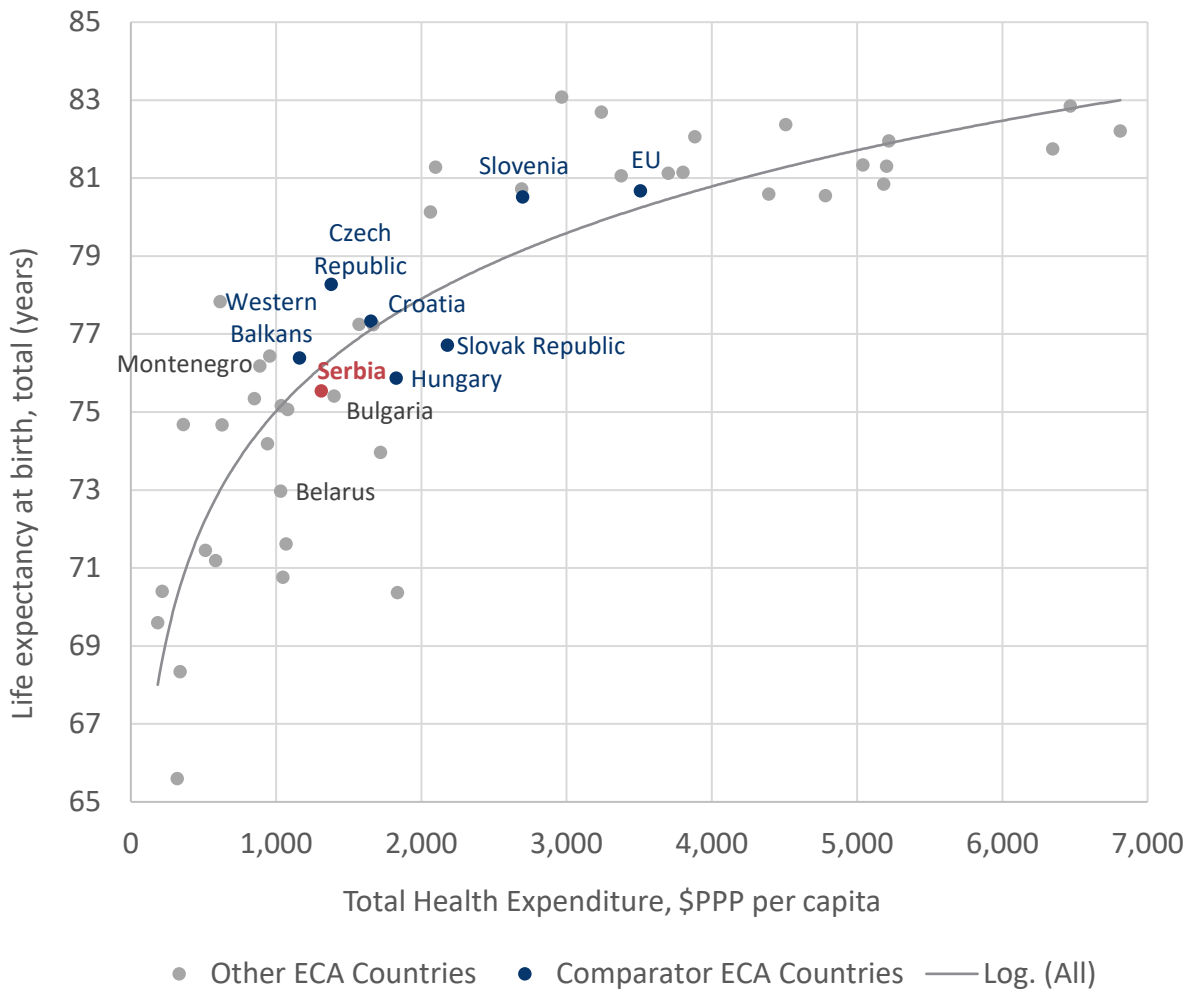


CHAPTER 3. SERBIA'S HEALTH CARE EFFICIENCY

Serbia's health care system, like other publicly funded systems in Europe, aims to reduce wasteful spending, enhance efficiency, ensure financial sustainability, and ensure that all the potential benefits are being secured from the health services. Efficiency improvements in the health sector, even minor changes, can yield considerable savings of resources. This can allow a country to channel funding to other urgent priorities. Efficiency involves ensuring that the available resources produce the best possible health outcomes and, at the same time, that those outcomes (for example, life expectancy and mortality) are produced at the least possible cost.

A cross-country comparison of the relationship between life expectancy and health spending suggest that Serbia' health care is relatively inefficient, indicating there is scope for substantial gains. One way to measure the efficiency of health care is to show the relationship between the attainment of a health outcome measure (for example, life expectancy) in relation to a key input (for example, health expenditure per capita). Figure 9 suggests that although Serbia is spending more on health per person than the Western Balkans average (US\$ 1,660 and 1,312, respectively in purchasing power parity), countries in the Western Balkans are more efficient, attaining better results at a lower cost (life expectancy of 76.4 years versus Serbia's 75.5). A cross-country OECD study on health system efficiency found that, on average, enhancing efficiency could raise life expectancy at birth by more than two years while holding health care spending steady, compared to a 10 percent increase in health care spending that would increase life expectancy by only three to four months (OECD 2010).

Figure 9. Life Expectancy and Health Expenditure per Capita, 2014, Europe and Central Asia



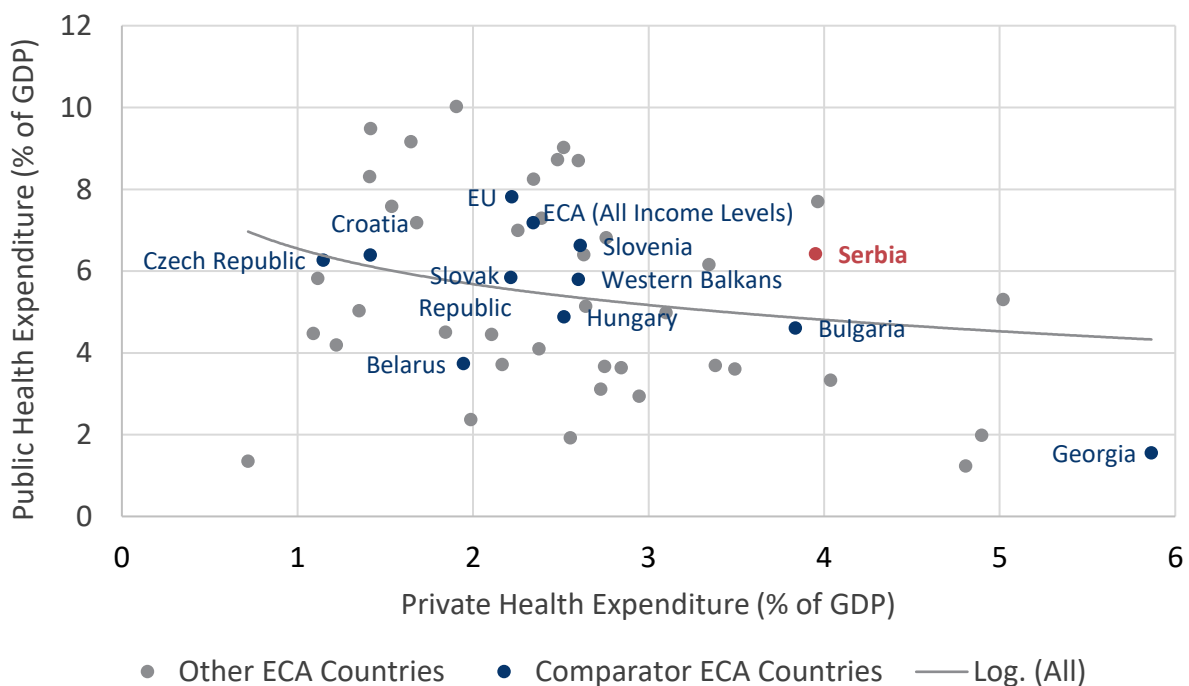
Source: World Bank 2017

Efficiency of Health Spending

Consistently, compared to other countries in the region, Serbia’s health care system is costly and increasingly reliant on OOP payments. Total health expenditure as a share of gross domestic product (GDP) gradually increased from 6.5 percent in the mid-1990s to around 10 percent in 2007. Since then, it has been relatively stable. Now at 10.4 percent of GDP, it is much higher than in regional comparator countries, particularly in countries with similar income per capita and population size: 5.7 percent of GDP in Belarus, 7.4 percent in Georgia, and 8.4 percent in Bulgaria (World Bank 2017). Despite high public health expenditure, private health expenditure—typically OOP payments—is unexpectedly high. Starting in 2000, public health spending grew from 4.3 percent of GDP to 6.1 percent in 2007, and it has been stable since then (between 6.0 and 6.5 percent of GDP). This is higher than in all regional comparators except Slovenia, including countries with comparable income per capita and

population size (for example, Belarus, Bulgaria, and Georgia).⁸ In parallel, private health expenditure, mostly in the form of OOP payments (96 percent), grew from 2.3 percent of GDP in 2002 to 3.9 in 2007. It has been stable since then. Only in Georgia—where public health expenditure is very low—does private health expenditure represent a higher share of GDP. OOP payments represent more than one-third of Serbia’s total health expenditure, growing from 23.8 percent in 2002 to 36.6 percent in 2014. Among comparator countries, only Georgia (58.6 percent) and Bulgaria (44.2 percent) have greater OOP shares (figure 10 and figure 33 in appendix A).⁹

Figure 10. Public Health Expenditure and Private Health Expenditure as a Share of GDP, Europe and Central Asia, 2014



Source: World Bank 2017

High and growing out-of-pocket payments pose a barrier to accessing health services and reflects inefficiencies in the public sector. Although OOP payments are concentrated in the middle and higher income groups in Serbia, the impact of private spending affects mostly the poor and the elderly, who may delay treatment or prefer self-medication. The largest driver of out-of-pocket health care costs is medications (58 percent). In addition, public sector inefficiencies (for example, waiting lists, human resources imbalances, and poor integration between private and public providers) under the current system may lead to

⁸ In 2014, public spending on health accounted for 13.9 percent of the general budget—a share that has remained constant over the past 10 years, but that is relatively higher than the regional average (13.6 percent).

⁹ These results somewhat differ from the National Health Accounts. International databases were favored in this section, as they allow for international comparisons.

high OOP payments in the private sector, and often to duplication of services between the public and private sectors.

Key drivers of public spending are pharmaceuticals and personnel, particularly salaries. More than half (55.5 percent) of public health spending is allocated to pay for wages and salaries of public health providers (WHO 2017). The share of public spending on personnel in Serbia seems particularly high compared to the WHO Europe region average of 42.3, although comparison across countries varies to the extent to which health care is provided by the public sector (WHO 2006).¹⁰ Most the medical staff in Serbia is publicly contracted. Despite the greater share of budget allocated to staffing, however, territorial and skills imbalances persist in the country; surpluses and unemployment in cities coexist with shortages in other areas. These trends have led to significant inefficiencies in the system. A second key driver of public health spending is pharmaceuticals. Serbia is facing a sharp increase in both public and private spending on drugs, which suggests that there are opportunities to reduce wasteful spending and excess cost. The share of pharmaceuticals in total health expenditure is high compared to regional standards—the EU average is 16.6—and has increased from 22.1 percent in 2004 to 33.9 percent in 2015, while the EU share has been decreasing since 2003 (IPH 2017 and WHO 2017).¹¹

Along with focusing on cutting waste in the form of excess costs, enhancing the allocation of public spending toward high-value items can help health care sustainability. The first of this potential spending reallocation is moving from curative and inpatient to preventive and primary care. In 2015, 28.3 percent of total health spending in Serbia was allocated to inpatient care; in particular, 44.9 percent of public spending on health was allocated to inpatient care (IPH 2017). On the other hand, the share of prevention and public health services represented 6.4 percent of total health spending. Preventive visits for the elderly and screenings for breast cancer and cervical cancer are low, as mentioned previously.

Productivity Analysis of the Public Health Network

A productivity analysis of public health providers was conducted. This partial approach measures outputs such as outpatient consultations and hospital discharges relative to inputs, that is, the financial and human resources needed to produce them. More specifically, it is a way to compare actual inputs, and intermediate outputs produced, against an optimal production frontier. It can then offer diagnostic information, but it cannot be used to benchmark specific health providers because it does not measure the impact on health

¹⁰ WHO reports that the share of general government expenditure devoted to human resources was available for 64 countries over various years (266 observations).

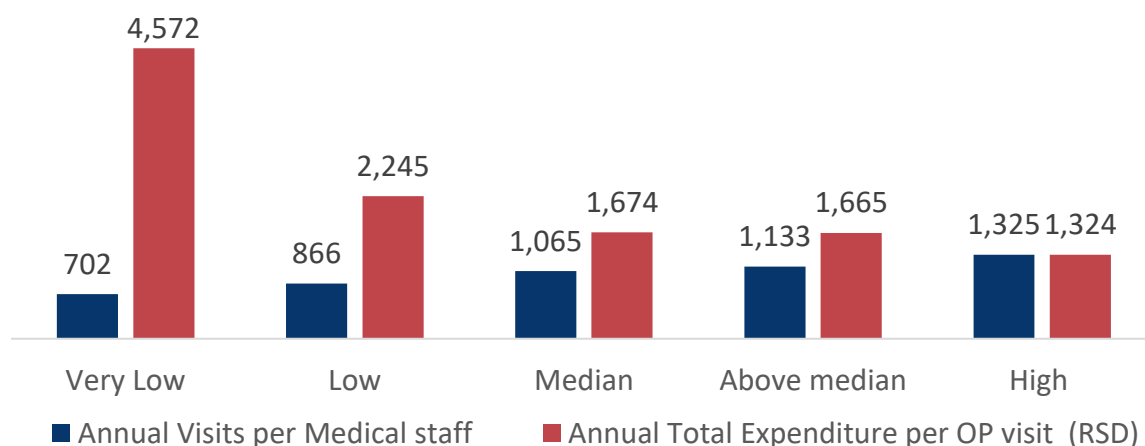
¹¹ The latest estimates for the EU are for 2011. In that year, the share of pharmaceuticals in total health expenditure in Serbia was 31.3 percent (IPH 2017 and WHO 2017).

outcomes and does not control for case-mix, or severity of cases, which can affect the extent to which resources are used.¹²

This section presents the key findings of the productivity analysis conducted for public PHC facilities and hospitals. The analysis uses a stochastic frontier approach to indicate the distance between current production and a frontier production encompassing descriptive analysis and productivity estimates of key output performance measures, such as annual outpatient visits provided in PHC centers (Dom Zdravljas) and specialized PHC centers (Zavods), as well as annual hospital discharges from secondary and tertiary care hospitals. Appendix C contains the data, methodology, and overall results.¹³

Health facilities (outpatient and inpatient) vary greatly in terms of productivity, and there is room for efficiency gains. The mean productivity scores across primary health care facilities was 64 out of 100 (14–95) with a median of 67, which indicates a low level of productivity. The gap in cost per visit between the least efficient and the most efficient groups of facilities (SRD 1,324 to SRD 4,572) indicating a large area for optimization (figure 11). Similarly, the number of visits per staff indicates a twofold difference between the bottom and the top productivity groups (700 to 1,300 visits per year).

Figure 11. Number of Visits per Medical Staff and Total Expenditure by Visit, by Productivity Quintiles



Source: IPH and HIF

Hospital care productivity also varied greatly across and within type of hospital. The mean productivity scores over the analyzed period was 55.6 out of 100 (7.5–96.7) with a median of

¹² Productivity identifies the maximum number of outputs that can be produced with a fixed number of inputs, usually capital and labor. Productivity measures can be useful to identify areas where more value for money can be achieved through a series of policies such as improving incentives for health workers, practicing better management, and/or making better use of technology.

¹³ The stochastic frontier approach can distinguish deviations from production function due to inefficiency and random error.

53.1, which indicates a low level of productivity. Productivity scores vary and need to be interpreted by hospital type (table 1), as some of the variation is driven by the type of services these hospitals provide. For example, the lowest productivity score among tertiary care institutes is associated with the Neonatology Institute, which generally serves premature births that require lengthy stays and expensive treatments. General hospitals that on average had 20 and 30 discharges per medical staff, and which do not differ greatly in the type of services provided, show a great variation in both expenditures per discharge and productivity score 50.2 (34.9–82.4).

Table 1. Outcomes and Productivity Scores, by Types of Hospital, Serbia, 2011–13

| Type | Discharges (1000) | Discharges per medical staff | Cost per discharge | Productivity score |
|------------------------|-------------------|------------------------------|--------------------|--------------------|
| Institutes | 484.3 | 22.3 | 184.3 | 52.9 (7.5–96.7) |
| Clinic hospital center | 525.9 | 32.5 | 68.3 | 69.1 (51–96.6) |
| Clinic center | 1256.1 | 26.9 | 101.0 | 58.1 (64.3–76.1) |
| Clinic | 182.1 | 40.3 | 59.5 | 82.9 (76.1–89.6) |
| General Hospital | 1325.9 | 25.3 | 72.8 | 50.2 (34.9–82.4) |
| Special Institute | 148.2 | 27.3 | 115.4 | 57.2 (8.8–95.8) |

Source: IPH and HIF

Hospital productivity is associated with higher quality of care indicators. On average, the high productivity group have a higher occupancy rate (80.9 percent versus 65.3 percent for the lowest quintile); a lower number of staff per bed (1.1 versus 1.5 for the lowest quintile); and a lower length of stay (6.2 days versus 21.6). In addition, this group also has lower AMI and stroke readmission rates and lower C-section rates.

The identification of specific practices or factors influencing productivity is beyond the scope of this quantitative analysis. However, further investigation could be conducted in the following areas: economies of scale, home visits for elderly care, and other, commonly unobservable factors such as health facility management and regional health networks. In terms of size, both very small, and very large primary health care facilities appear to be less efficient than medium size facilities. Similarly, the results indicate that PHC facilities in Belgrade, which tend to be larger and more concentrated, are significantly less likely to be highly productive. However, smaller size is also positively associated with being in the bottom 20 percent in terms of productivity, suggesting that these small facilities may be understaffed or working with a suboptimal number of staff.



CHAPTER 4. HEALTH SYSTEM FUNCTIONS

This section reviews institutional arrangements and main challenges for each key function in the health sector—namely, health financing, service delivery, resource management, and stewardship. It assesses the extent to which these functions influence current health system outcomes. It then suggests areas for improvement in the short and medium terms.

Health Financing

Overview

Serbia's health care is based on a social health insurance system, supported by a comprehensive public health facility network. The health system is financed in its majority (58 percent) by either social contributions or budget transfers. The HIF is the main financing agent, as it represents 54 percent of total health expenditure and 94 percent of public health expenditure (figure 12).¹⁴ The HIF raises funds through health insurance contributions from individual salaries (10.3 percent of the gross salary) shared equally between employer and employee. Contributions are collected from employees, farmers, and self-employed persons. The tax administration infrastructure within the Ministry of Finance collects health insurance contributions from the gross salary of the employees, together with all other contributions and taxes. Funds are transferred to the HIF.

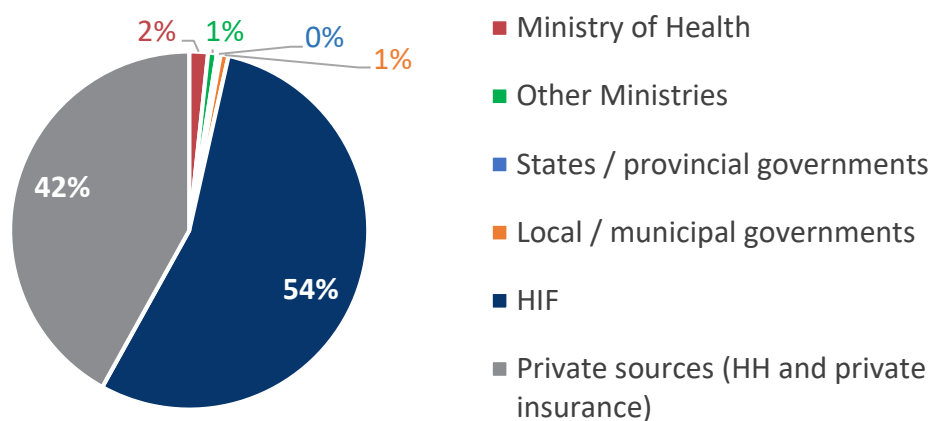
Mandatory insurance coverage is then provided to salaried and self-employed workers (including farmers), pensioners, and the unemployed who receive compensation, as well as their dependents (spouse, children, and parents). Workers, pensioners, and unemployed receiving compensation pay contributions to the HIF.¹⁵ In addition, the government subsidizes

¹⁴ As previously mentioned, national data and international data sometimes differ slightly because of methodological differences.

¹⁵ Workers pay contributions through their employer while pensioners and the unemployed who receive compensation contribute through other social security funds.

the contributions of vulnerable groups that are mentioned in the Law on Health Insurance.¹⁶ According to the latest SILC survey, more than 80 percent of respondents declared that they owned a valid insurance card.

Figure 12. Composition of Serbia’s Health Expenditure, 2015



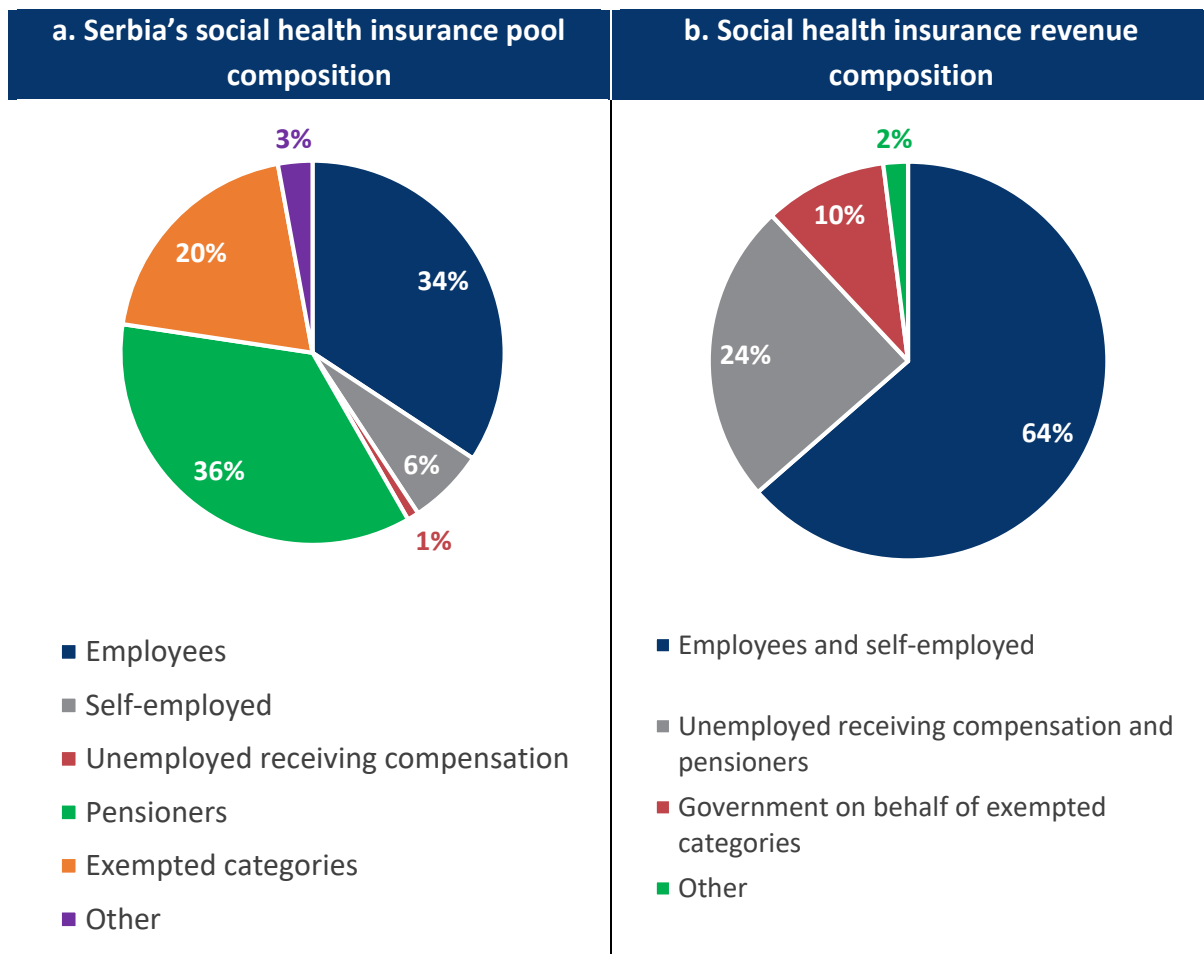
Source: IPH 2017

A decreasing minority of the insured population finances the majority of HIF revenues.

Contributions from employed workers represent 64 percent of the HIF’s revenue but only 40 percent of the insured population—these categories represented 70 percent of the HIF’s resources and 49 percent of the insured population in 2013. Contributions from other social security funds represent 24 percent of the HIF’s revenue, while pensioners and the unemployed who receive compensation represent 37 percent of the insured—they represented 25 percent of the HIF’s resources and 29 percent of the insured in 2013. Finally, the general budget represents 10 percent of the HIF’s revenue, while the exempted categories represent 20 percent of the insured population—they represented 0 percent of the HIF’s resources and 20 percent of the insured in 2013 (figure 13).

¹⁶ Article 22 of the Law on Health Insurance dated 2007 and article 16 of the Law on Health Insurance under public review in April 2017. While some categories that are exempted from premium contributions are specifically focused on the poor—for example, unemployed or single parents with children under 7 years old whose income is below the poverty line—most of the categories do not necessarily comprise poor people: for example, children up to 18 years and students under 27, women during pregnancy and 12 months after delivery, the elderly over 65 years old, and the disabled. While a politically sensitive matter, it would be important to consider replacing existing exempted categories of the Health Insurance Law with “poor and/or vulnerable individuals” as a stand-alone category rather than targeting categories that are not necessarily associated with low incomes and applying a poverty filter to a selected number of categories. The current system may result in the exclusion of poor or vulnerable households that belong to none of the predetermined categories (errors of exclusion) and the inclusion of individuals who can actually afford to contribute to the social insurance scheme (errors of inclusion). In addition, it is important to regularly monitor the exemption program beneficiaries’ income through regular household surveys (for example, annual household budget surveys) and subsequently improve the efficiency of the targeting system to ensure that the program is both equitable and sustainable.

Figure 13. Serbia's Social Health Insurance Contributions and Distribution (2015)



Source: IPH 2017

Main Challenges

The social contribution collection function and the maintenance of individual social security records works poorly in Serbia today. In theory, the HIF should perform fewer functions related to contribution monitoring or the maintenance of individual records, as these functions should be largely performed by the Central Registry (CROSO) or the Tax Administration (STA). The actual situation is different from what was envisioned when the CROSO was established, with duplication of activities and inefficiencies that could be avoided if all registration-related activities were done by employers, individuals, or institutions directly through the CROSO web portal.¹⁷

The revisions of the benefits package are disconnected from the available resources. The contribution rate for compulsory health insurance has gradually declined from 20.2 percent

¹⁷ For further information about the CROSO, see the *Analysis of the Staffing and Expenditures of the Pension Fund of Serbia (PIO)* that was prepared by the World Bank and that is also part of the multisector functional review supported by the World Bank and the European Union (World Bank 2017b).

in 1994–96 to 16.2 percent in 1996–2001, 11.9 percent in 2001–4, 12.3 percent in 2004, and 10.3 percent in 2014. In parallel, the benefits package was expanded, which contributed to implicit rationing and, in particular, the accumulation of arrears and the extension of waiting lists.¹⁸

Most health care goods and services delivered in public facilities are included in the HIF’s benefits package, while health care goods and services delivered by private providers are mostly not covered. Public health care institutions receive predetermined line-itemized monthly payments from the HIF that are based on historical expenditures and deliver health care services that are available to the insured, who contribute copayments.¹⁹ By contrast, health services delivered by private providers are mostly covered by patients’ out-of-pocket payments and, marginally, private insurance companies’ reimbursements.²⁰ The only health care services that the HIF purchases in the private sector are cataract surgery, in vitro fertilization, hyperbaric oxygen therapy, and dialysis services.²¹ A preliminary cost study was recently conducted, and it suggests that health care services delivered in private facilities are much more expensive than the same services delivered in public facilities.²² While the government is rightly cautious vis-à-vis health care providers due to the needs to control public spending on health, it could be recommendable to conduct more exhaustive cost studies and consider contracting private providers for services they can provide more efficiently than their public counterparts.

The public provider payment system for both primary and hospital care remains input based, with limited incentives for quality or efficiency. Provider payment reforms have been on the policy agenda in Serbia for over a decade, but with limited progress. The government successfully introduced modest performance-based payments for primary care “chosen” doctors, in which their salary varied by plus or minus 4 percent based on progress toward key indicators on service volume and coverage. While this was a major reform with respect to introducing performance pay for public servants, Serbia still has not introduced a true capitation payment system adjusted by performance for primary care, based on the principle of the “money follows the patient.” The vast majority of transfers to public primary care centers are based on line-item budgets, which provides little flexibility or incentives for managers to rationalize staffing, service provision, or improve quality. Similarly, while the

¹⁸ Arrears—both at the HIF’s level and at the facility level—were cleared in 2013, but health facilities have continued accumulating arrears since then.

¹⁹ Public providers also deliver health care services to the uninsured, who contribute higher fees as the providers are not compensated by the HIF for services delivered to this category of patients.

²⁰ These financing agents represent 0.4 percent of total health expenditures.

²¹ Regarding health goods, the HIF has been purchasing drugs in private pharmacies as well since 2013. Prior to the reform, only drugs delivered in public pharmacies were covered by the HIF—drugs delivered in private pharmacies were covered by OOP payments.

²² In 2015, a cost study on a selected number of services was conducted, which showed that, at the PHC level, direct costs per service are on average 3.07 times higher in private health care institutions compared to public ones, and at the secondary and tertiary level of care, direct costs per service are on average 1.86 higher in public institutions (Ernst and Young 2015).

MoH and the HIF have taken important steps toward introducing output-based payments for acute care at hospitals, based on diagnostic-related groups (DRGs), these payment reforms have not been implemented, and hospitals are still paid on line-item budgets.

The HIF is primarily playing a claims-processing and expenditure-control function and the need to shift toward performance financing will require realignment of functions and strengthening of the HIF capacities. Under the current input-based financing system, the HIF is functioning more as a claims-processing agency rather than a strategic purchaser of services. The HIF collects significant data from public health institutions, but this information is not yet being adequately used to analyze service efficiency. The planned shift toward strategic purchasing of health services based on performance and quality—including performance-based capitation for primary care and case-based payments for hospitals—will require significant shifts in the internal organization and capacities of the HIF. The HIF will need to invest in business intelligence software to make better use of existing claims data and establish systems to shift toward performance payments, including DRG coding, and key indicators on quality. While this functional review did not undertake a detailed analysis of HIF staffing patterns, a substantial portion of staff are currently allocated to verification of health insurance (a function that should be taken over by CRSOSO) and to processing invoices. Staff skills and profiles will need to shift in response to performance payments, with fewer staff allocated to claims processing and budget accountability and more allocated to contracting, information and communication technology, and performance monitoring and verification. For example, DRG payment systems require strong capacity for technical audits of DRG coding to avoid “upcoding” and gaming of the payment system.

Service Delivery

Overview

In Serbia, health care service delivery relies on public and private providers. Tertiary hospitals, which in principle ensure more sophisticated health care than secondary hospitals and include medical schools, are in the main cities of the country and belong to the public sector. By contrast, primary and secondary levels of care belong to both the private and the public sector.

The number of outpatient health care services per capita and per year is relatively high, while the number of hospital discharges is relatively low. The number of outpatient visits per capita and per year increased gradually during the second half of the first decade of the 2000s (from 6.9 in 2006), and then stabilized. Now at 7.8, the number of outpatient visits per capita and per year in Serbia is exceeded only in the Czech Republic (11.1), the Slovak Republic (11.3), and Belarus (12.1). By contrast, in Serbia, the number of inpatient care discharges per 100 people gradually decreased, from 15.8 in 2010 to 14 in 2014, which is lower than in

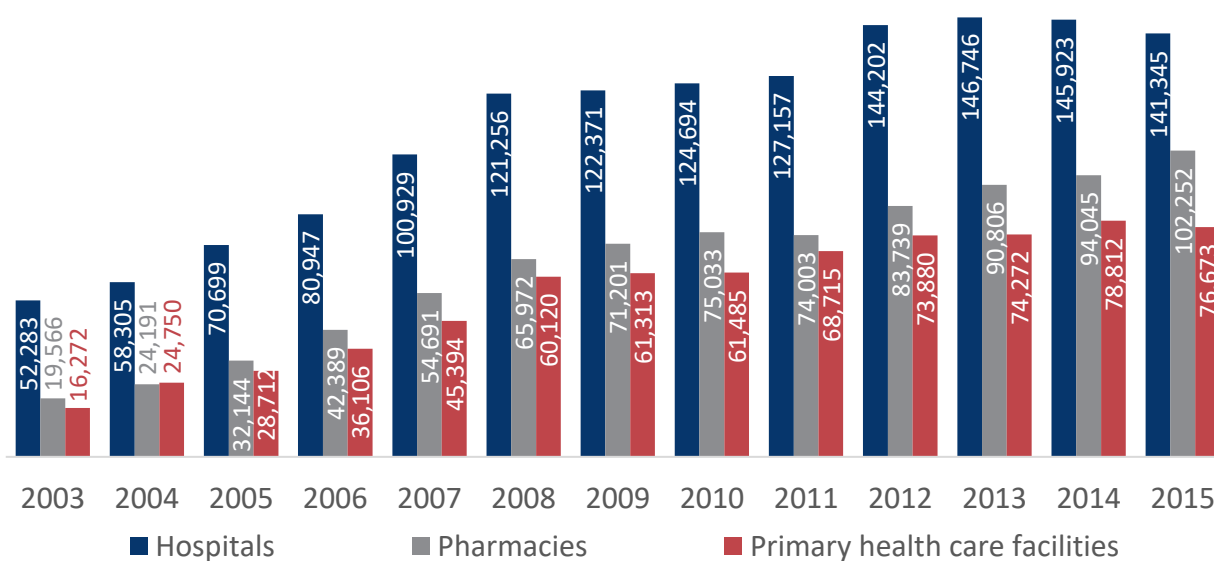
comparator countries except Georgia and comparable to the average for the Western Balkans (figure 31 and figure 32 in appendix A).

The number of beds in Serbia is reasonable compared to regional standards, however, the share of nursing and elderly care beds remains low. The total number of nursing and elderly care beds and acute care beds per 100,000 people in Serbia (828) is between the numbers for the two most similar comparator countries (Bulgaria at 637 and Belarus at 1,073). The share of nursing and elderly care beds is higher in Serbia (33 percent) than in these countries, where the population is also aging. It remains low with regard to the growing needs for nursing an elderly care beds, however—on average, the proportion of nursing and elderly care beds in the EU is 59 percent (figure 34 in appendix B).

Main Challenges

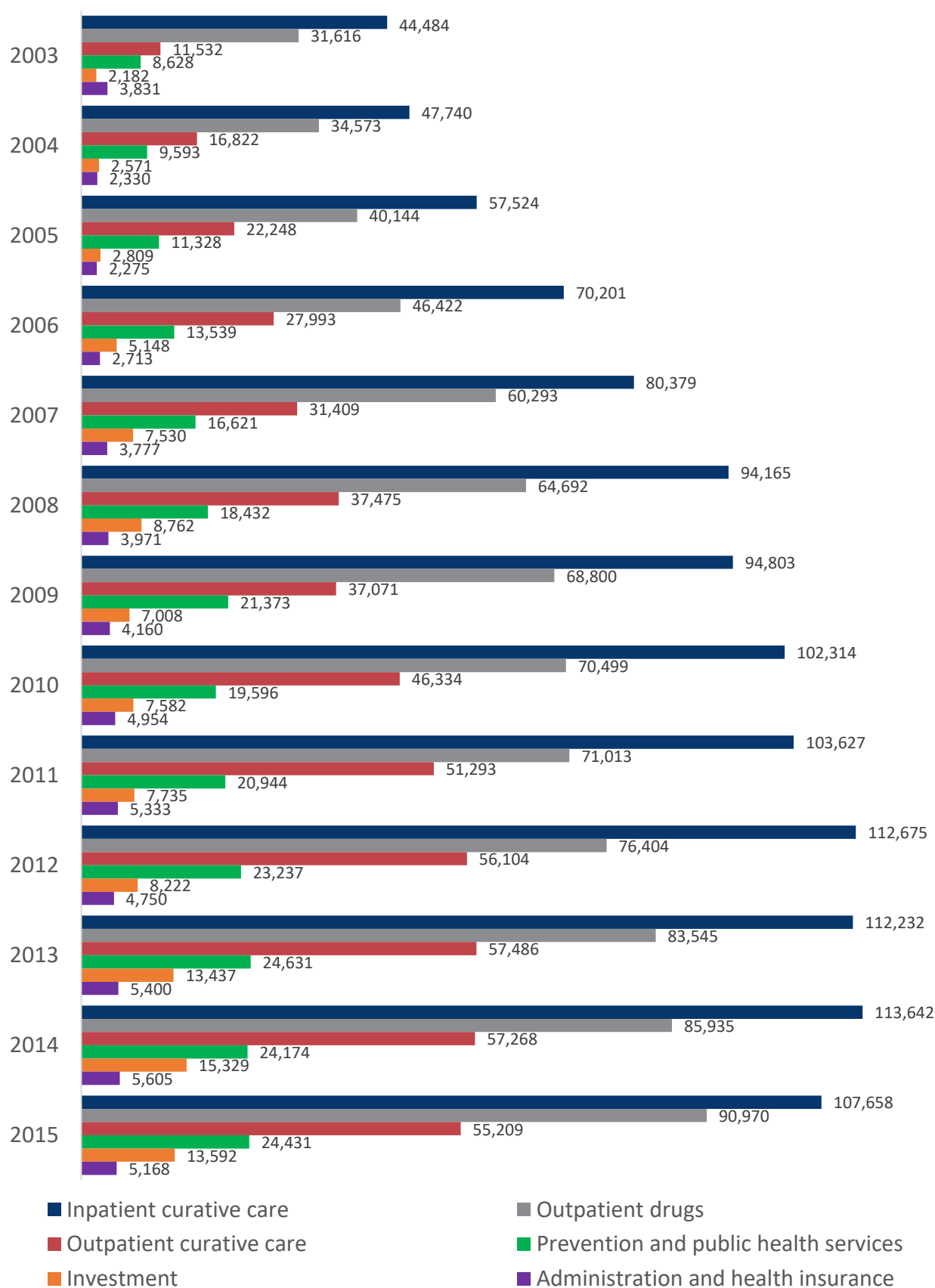
The Serbian health care system remains focused on curative and hospital care. The increasing burden of NCDs requires the development of preventive care and PHC, which can deliver the more efficient health care services that NCDs require. The share of PHC increased from 18.5 percent of total health expenditure in 2003 to 23.9 percent in 2015, while the share of hospitals decreased from 59.3 percent to 44.1 percent (figure 14). Similarly, the share of inpatient curative care decreased from 43.5 percent of total health spending in 2003 to 36.2 percent in 2015, while the share of outpatient curative care increased from 11.3 percent to 18.6 percent in 2015. However, the share of prevention and public health services constantly remained around 8.0–8.5 percent over the same period (figure 15).

Figure 14. Distribution of Serbian Health Spending among Providers, 2003–15 (Million SRD)



Source: IPH 2017

Figure 15. Distribution of Serbian Health Spending among Services, 2003–15 (Million SRD)



Source: IPH 2017

Health care supply organization involves unnecessary consultations. In Serbia, services delivered by private physicians are not recognized by public institutions, which leads to the unnecessary replication of health services. For example, patients who consult general practitioners in the private sector also need to consult with public providers, who are the only ones entitled to prepare certificates and references recognized by public administrations. The prescription system also requires unnecessary consultations. In Serbia, only physicians at the primary health care level can prescribe outpatient medicines. Patients who consult specialists at the hospital level receive recommendations that are then reflected in prescriptions at the PHC level.

Unnecessary hospitalizations are also high. Outpatient and day-patient procedures, which allow for efficiency gains while ensuring quality care, have been developing slowly in Serbian public health care facilities. For example, a small proportion of cataract surgeries and tonsillectomies now require admissions as outpatients or day-patients—0.1 percent and 0.2 percent, respectively. These proportions are low relative to comparators (table 2).

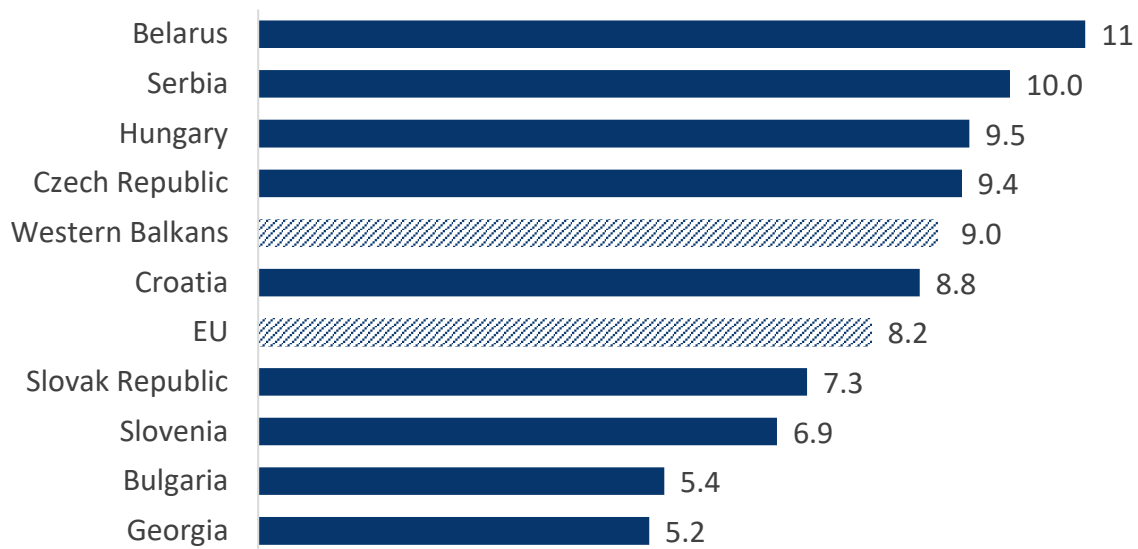
Table 2. Outpatient or Day-Patient Procedures (Share of all Procedures), Selected Countries, 2014

| Country | Cataract | Tonsillectomy |
|-----------------|----------|---------------|
| Bulgaria | 0.0% | 0.0% |
| Czech Republic | 95.2% | NA |
| Croatia | 17.6% | 15.8% |
| Slovenia | 97.6% | 0.0% |
| Slovak Republic | 58.8% | 100.0% |
| Serbia | 0.1% | 0.2% |

Source: Eurostat

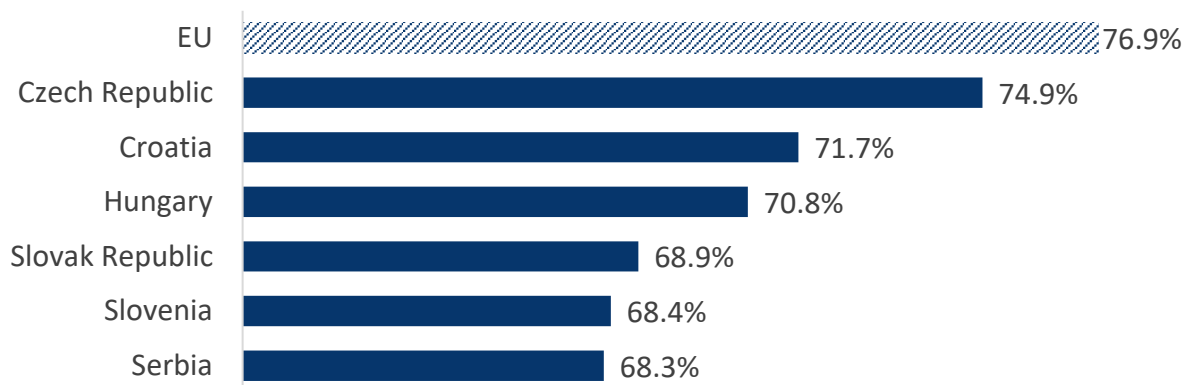
In addition, the average length of stay (ALOS) is high and the bed occupancy rate is low, which suggests that the volume of inputs is disconnected from actual needs. The ALOS in Serbia (10 days) is higher than in all comparator countries except Belarus. In addition, ALOS has increased in Serbia since 2010 (9 days) while it decreased in all comparator countries. Despite this high ALOS, the bed occupancy rate in Serbia (68.3 percent) remains low (figure 16 and figure 17).

Figure 16. Average Length of stay, all hospitals, selected countries, 2014 (in days)



Source: WHO 2017

Figure 17. Bed occupancy rate, acute care hospitals, selected countries, 2014 (in percent)



Source: WHO 2017

Behind some of these results is the fact that, although Serbia has gone through various changes on the configuration of hospital services, the hospital bed distribution has not undergone significant changes. Findings from the Vasiljevic et al. (2014) study of the spatial distribution of hospital beds indicate that the number of state-owned hospitals has remained unchanged, with an uneven territorial bed distribution. In addition, tertiary care in Serbia has remained persistently oversized—the number of hospital beds in tertiary care hospitals in 2012 was twice the norm stated in the Health Service Plan (6,000). A reason is that tertiary hospitals are allowed to provide secondary health care to the local population, so that a significant share of the demand of secondary health care is located in tertiary hospitals. Another contributing factor highlighted in the research is that medical departments are often organized with a small number of beds, which raises the question of whether there is a need for these and what their efficiency is. It is critical to enhance the layout and function of the network of facilities, identifying positive and negative features, and suggesting possible adjustments to the network.

Resource Management: Human Resources

Overview

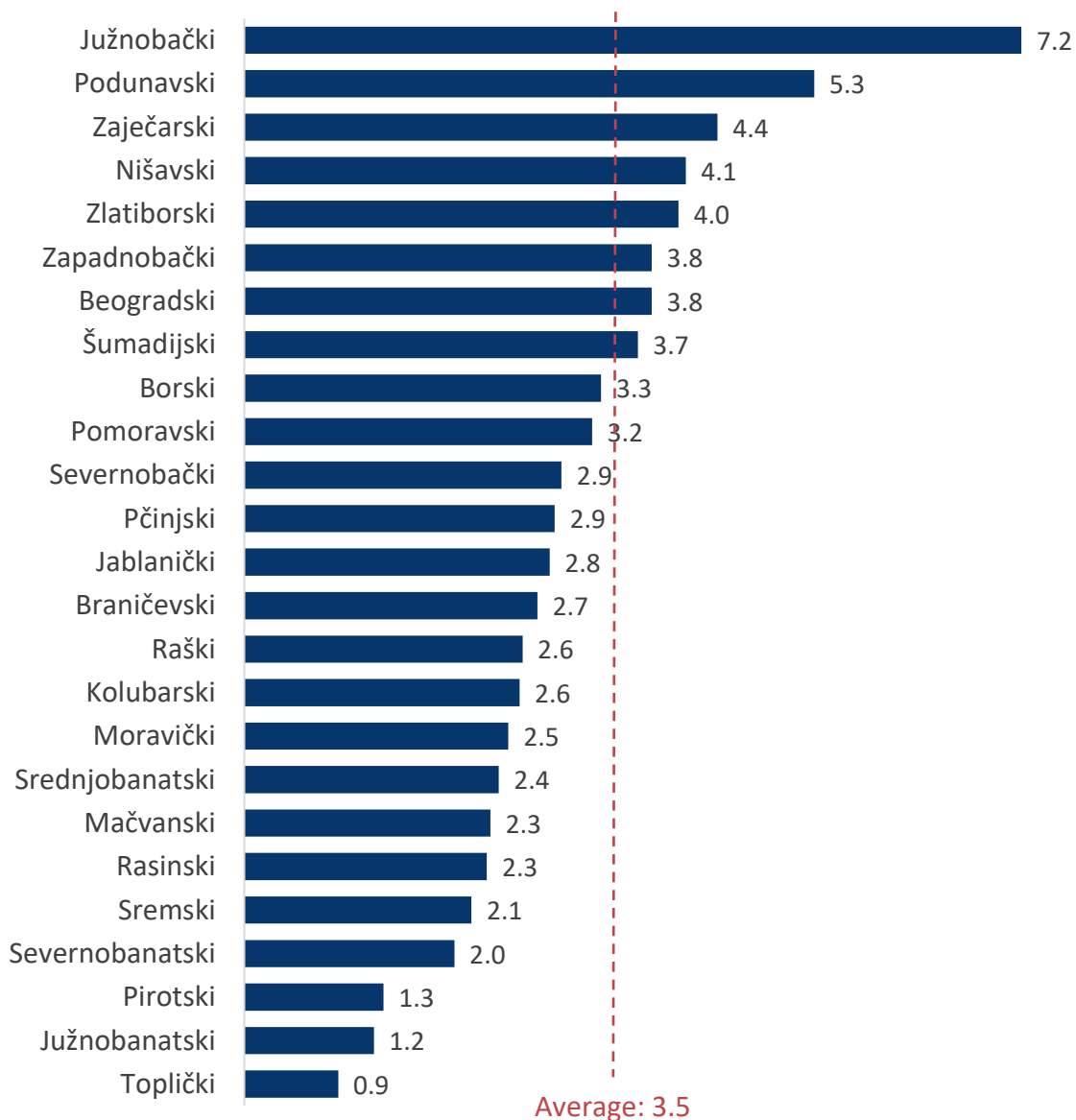
Human resources (HR) are a fundamental input in improving the efficiency of the health sector. As mentioned earlier, expenditures on wages and salaries represent a large share of budgets assigned to the health sector. Personnel spending accounts for 55.5 percent of total health expenditure and 51.9 percent of government health expenditure, higher than other comparable countries in the region (IPH 2017). Despite the greater share of budget allocated to staffing, however, shortages of doctors and nurses persist in some parts of the country, as do imbalances on the distribution of workforce and skill mix. These HR trends in turn have led to significant inefficiencies in the system.

There is no evidence of overstaffing of doctors, and it is possible that the number of nurses in Serbia is suboptimal. The number of physicians and nurses per 1,000 people (3.1 and 6.3, respectively) is lower than the EU average (3.5 and 8.1) but higher than the average in the Western Balkans. However, this figure does not take into account physicians and nurses that belong to the private sector, although the EU and other country figures do. If private doctors were taken into account, the number of practicing physicians in Serbia (3.5 per 1,000 people) would be on par with the EU average (figure 35 and figure 36 in appendix B).²³

The main challenge that Serbia faces in HRs is related to the persistent functional and geographic imbalances in the deployment of health professionals. The availability of doctors in the public network varies greatly among districts. Južnobački has 7.2 per 1,000 people and Toplički 0.9, whereas the weighted national average was 3.5 (figure 18). For nurses, Belgrade had a density of 6.8 per 1,000 people and Toplički has the lowest density (1.9 per 1,000 people), with a national average of 5.7. There has been a general increase in the density of both groups (particularly nurses) between 2003 and 2015, but variations persist. Urban districts with better infrastructures, universities, and specialized medical centers have higher densities, as expected, and 17 districts present densities below the national average for both professional groups. The nurse-to-physician ratio also varies, between 1:3 in Šumadijski and 2:2 in Severnobačanski. In addition, the share of nonmedical staff in the public health care network is 22 percent. The number of nonmedical staff has been considered high but has been declining from 25 percent in 2010 to 22 percent in 2016.

²³ The number of doctors per population is adjusted to include physicians working in the private sector, estimated by the Serbian Medical Chamber to be 15 percent of doctors employed in the public sector. This estimate does not consider dual practice.

Figure 18. Density of Doctors by Serbian District (per 1,000 people), 2016

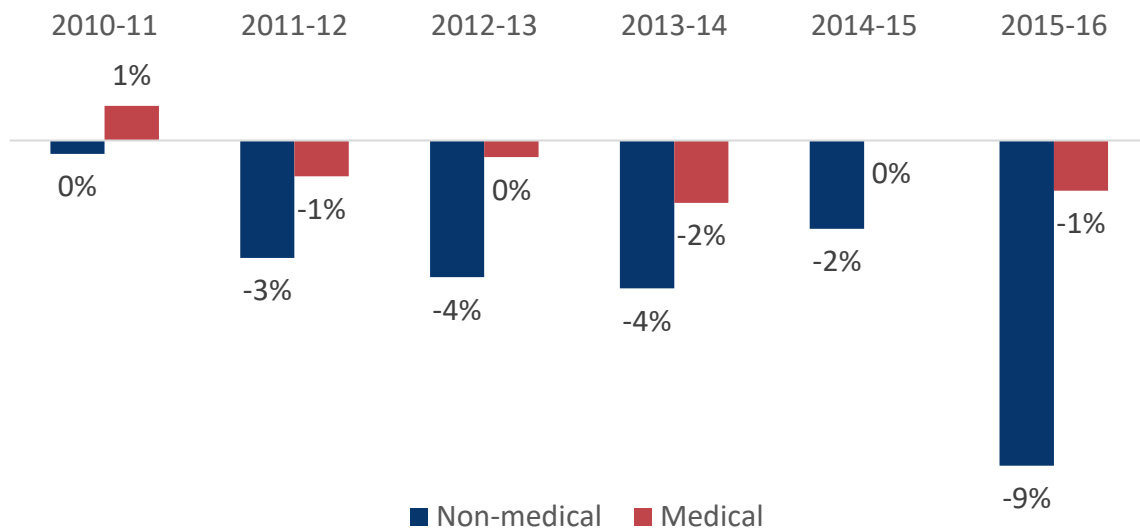


Source: Provided by IPH

Given current efforts to reduce the wage bill in the public sector, the health care system is challenged to ensure availability and adequate distribution of staff at a sustainable cost.

Since 2010, the health public network has been impacted by a series of measures taken by the government of Serbia to control the size of the overall public-sector wage bill. These measures have included rationalizing the numbers of the public workforce and controlling hiring and wages in the public sector. Specifically, a wage freeze for health personnel has been in place since 2014. In 2015, the MoH set ceilings on the maximum number of staff per health facility and undertook a selective downsizing of nonmedical staff, as suggested by previous analysis of the functional review.

Figure 19. Annual Change in Medical and Nonmedical Staff in the Public Network (% annual change), 2010–16



Source: IPH 2010-16

The size of the workforce employed in the public health care network has gradually declined, especially among the nonmedical staff. Currently, Serbia’s public sector employs about 112,995 staff, including permanent medical staff (doctors, nurses and other medical cadres), and nonmedical staff (technical and administrative) (IPH 2016). Table 3 shows that the number of permanent staff (full time and part time) employed in the public health care network has gradually declined, from 122,695 in 2010 to 112,995 in 2016, a decline of 9,700 (8 percent). As observed in table 3, nonmedical staff, including administrative and technical staff, absorbed a large part of staff cuts, falling by 21 percent (6,512 staff) and accounting for 67 percent of overall health staff cuts in the five-year period. As a result, the share of nonmedical staff has also dropped from 25 to 22 percent, markedly in the past year, at an annual rate of 9 percent (figure 19).

During this period, however, the number of full-time clinical staff also declined by 6 percent (mostly nurses and medical assistants). These cuts, however, appear to have been partially offset by a significant increase in the number of part-time medical staff (a 35 percent increase), so that the number of part-time staff in 2016 is even higher than in 2010. This trend reflects in part the difficulty the health facilities face in filling vacancies from natural attrition or migration. On the other hand, the observable shift from hiring full-time to part-time staff is explained partly by changes to workload and to stringent hiring regulations for full-time, permanent health workers.

The decline in medical staff has not been uniform across the country, creating an imbalance between population needs and supply. The number of doctors in the public sector declined by only 4 percent between 2010 and 2016, but some districts have experienced greater reductions: Moravički, 40 percent, and Nišavski, Rasinski, and Zaječarski about 10–12 percent.

Larger districts, Belgrade and Južnobački, have experienced slight declines (3 percent) or even increases in doctors. Similarly, even though the overall number of nurses has remained stable during the 2010–16 period, in 11 out of 25 districts, the number of general nurses has declined by 1–11 percent, whereas 13 of the 25 districts have seen increases by 1–5 percent. These adjustments are not always aligned with the population's needs. For example, Severnobački, a district with the second lowest life expectancy in the country and with doctors and nurses per population far below the national average, experienced a reduction of 8 percent in the number of nurses and 1 percent in number of doctors.

Table 3. Permanent Staff in the Public Health Care Network, 2010–16

| Year | Full time (1,000) | | | Part time (1,000) | | | All (1,000) | | | % |
|--------------------|-------------------|-------------|--------------|-------------------|-------------|------------|-------------|-------------|--------------|-------------|
| | Medical | Non-medical | Total | Medical | Non-medical | Total | Medical | Non-medical | Total | Non-medical |
| 2010 | 86.4 | 28.1 | 114.4 | 5.0 | 3.2 | 8.3 | 91.4 | 31.3 | 122.7 | 25.5% |
| 2011 | 86.4 | 27.8 | 114.2 | 5.9 | 3.4 | 9.2 | 92.3 | 31.2 | 123.4 | 25.3% |
| 2012 | 86.0 | 27.3 | 113.3 | 5.4 | 2.9 | 8.3 | 91.3 | 30.2 | 121.5 | 24.8% |
| 2013 | 86.4 | 26.7 | 113.1 | 4.6 | 2.4 | 6.9 | 90.9 | 29.1 | 120.0 | 24.2% |
| 2014 | 84.0 | 25.3 | 109.3 | 5.4 | 2.6 | 8.0 | 89.4 | 27.9 | 117.3 | 23.8% |
| 2015 | 83.5 | 24.7 | 108.2 | 5.9 | 2.6 | 8.4 | 89.4 | 27.2 | 116.6 | 23.3% |
| 2016 | 81.4 | 22.4 | 103.8 | 6.8 | 2.4 | 9.2 | 88.2 | 24.8 | 113.0 | 22.0% |
| % change (2010–16) | -6% | -20% | -9% | 35% | -26% | 11% | -4% | -21% | -8% | -14% |

Source: IPH 2010–16. Data at December each year.

Shortages exist in many districts despite a high rate of unemployment among physicians.

Using data from the 2013 official statistics of the National Employment Office database, the unemployed medical doctors represent 7.2 percent of all trained physicians in Serbia. Based on information from the Serbian Chamber of Doctors, there were around 2,699 doctors unemployed or out of the health system at the end of 2016, which is equivalent to more than 10 percent of the total stock in the public network. This is due to the reduced capacity of absorption by public services (Health Grouper 2015), and is accentuated by a recent freeze of hiring. In urban districts, dual practice among physicians and high levels of absenteeism and the resulting low productivity limit accessibility to public services (Santric-Milicevic, Vasic, and Edwards 2015).

In addition, the distribution of human resources is skewed toward hospital and curative care, which indicates low priority given to PHC services and inefficient use of resources. About two-third of doctors and nurses working in the public network do so in secondary and tertiary care hospitals (64 percent), a higher proportion than comparable countries (Bulgaria at 55.9 percent, Slovenia at 56.4 percent, and the EU average at 56.8 percent). The low proportion of doctors and nurses working in PHC facilities indicates a low priority given to PHC services and a possible efficiency problem. Similarly, the higher ratio of nurses-to-doctor in inpatient care services relative to PHC services (3:2 versus 4:1) indicates an imbalance in the distribution of resources.

Two main issues exacerbate the maldistribution of HRs, especially in primary health care: migration and the ageing of the workforce. Natural attrition due to retirement or voluntarily movement produce a growing number of vacancies every year in health facilities. These are difficult to fill, especially at the PHC level and in facilities located in rural areas, where incentives are not in place for retention and attraction of new doctors or nurses. Historically, Serbia has lost physicians to emigration, principally to neighboring Slovenia, Germany, and Switzerland (Jekić et al. 2011). The Serbian Medical Chamber reports that about 1,666 certificates of good standing were delivered between 2015 and 2016. Certificates of good standing confirm that a medical doctor has been effectively and legally practicing for a certain period. However, not all doctors who migrate need such a certificate. A recent survey found that 75 percent of physicians considered emigration as an option. Since most (possible) migrants are young, this adds to the problem of replacement of physicians going into retirement (Santric-Milicevic et al. 2014)

According to the Serbian Medical Chamber’s latest data, 29 percent of doctors (public and private) in Serbia are 50–60 years old, and 20 percent are 60 or older. This trend is even more striking in certain areas of specialization. For instance, it is estimated that one-third of pediatricians is older than 55, and that the number of retired pediatricians exceeds the average retirement levels (Bogdanović et al. 2016).

Main Challenges

Strategic Planning and HRH Management

Several factors contribute to the efficient use of human resources on health. Among them are human resources strategic planning—how the health care system determines staffing production, training, and distribution—and human resource management, including hiring arrangements, setting adequate incentives for better performance, and ensuring good labor conditions. The overall planning, policy development, and management of public health personnel in Serbia relies on various public institutions such as the MoH and the executive governments of Serbia, the province of Vojvodina, the city of Belgrade, and local municipalities. These institutions have the responsibility to ensure adequate geographic distribution of personnel and coverage of the population.

Fragmented governance and short-term needs supersede regular planning, so that health facilities cannot carry out strategic planning of their health personnel. The availability and distribution of human resources in the public network is determined primarily by the MoH, which proposes, regulates, or imposes the number and qualifications of staff. Its strategic tools are normative standards, professional training plans, and annual HR plans (table 4). These regulations, however, are not framed into a longer-term HR development strategy. The last HR strategy applied to the period 2010–14. As a result, short-term needs take precedence. For instance, the temporary measure on limiting the number of civil servants in the country had taken precedence over MoH HR regulations. Thus, it is critical that the MoH develops the capacity for strategic planning and an HR strategy is prepared with a long-term vision that can be monitored and evaluated (Santric Milicevic, Vasic, and Edwards 2015).

In addition, normative standards and HR plans are not flexible enough to adapt to labor market dynamics. Normative standards are not updated regularly, given that structural variables such as population and age structure do not change substantially over time. However, the labor market in Serbia is quite dynamic, with natural attrition (retirement) and frequent migrations. The monitoring of the workforce numbers and composition in public facilities has improved with the creation of a centralized HR database managed by the IPH. Unfortunately, regular monitoring on migratory and public-private flows by health facilities is lacking (Jekić et al. 2011). Based on the functional review’s qualitative study, the total number of employees in almost all health care facilities visited was less than envisaged under the HR plan, due to the natural attrition of staff and other reasons, but also because the permission for their replacement is not received on time. On the other hand, the standards are not always aligned with the HR plan guidelines or the maximum standards. The number of staff estimated in the need assessment is usually higher than both the HR plan and the maximum number determined. As a result, these standards lose applicability.²⁴

Table 4. Strategic Tools for HR Planning

| Regulation | Description |
|---|--|
| Normative standards (Normativi)²⁵ | The number of staff and composition are based on demographics and each catchment area’s characteristics, such as the population size, percentage of population older than 65, and rural-urban mix. The standards are established every five years. |

²⁴ The qualitative study report is summarized in Appendix

²⁵ From the rulebook of detailed conditions for performing health care activities in health care institutions and other forms of health care services. Official Gazette, Republic of Serbia 43/2006, 112/2009, 50/2010, 79/2011, 10/2012; 119/2012; 22/2013 (Pravilnik o bližim uslovima za obavljanje zdravstvene delatnosti u zdravstvenim ustanovama i u drugim oblicima zdravstvene službe. Službeni glasnik Republike Srbije), http://paragraf.rs/propisi/pravilnik_o_blizim_uslovima_za_obavljanje_zdravstvene_delatnosti_u_zdravstvenim_ustanovama_i_drugim_oblicima_zdravstvene_sluzbe.html, accessed November 20, 2016.

| Regulation | Description |
|---|--|
| Human resource plan (Kadrovski plan)²⁶ | In addition to the normative standards, the structure of health personnel in the public sector is laid out in an annual HR plan. HR plans are informed by the database of human-resources provision in health care institutions, which is maintained and processed by the Republic Institute of Public Health. The HR plan also serves as a basis for the contracts between health care institutions and the HIF. The HR plan could be subject to change within one budget year as it is envisaged in the law. |
| Decision of maximum number of staff 2015 (Odluka o maksimalnom broju zaposlenih na neodređeno vreme u javnim ustanovama) | This regulation establishes the maximum number of permanent employees in the public health facilities network. It was established in 2015 and can differ from the figures established in the assessment need and the HR plan. |

The production of health workers is misaligned with future needs. Another issue regarding strategic planning is the lack of information or tools to coordinate the training of doctors and nurses with the needs for health care, leading to high rates of unemployment and emigration. Serbia has adopted an approach to limit the number of specialists through advanced training arrangements among health facilities, trainees, and universities. To apply for professional training, the applicant is required to be employed full time in a medical institution and receive the approval of the IPH (Stosic and Karanovic 2014).²⁷ In addition, the HR plans usually do not integrate supply and demand forecasts, in part due to the lack of the availability of reliable and valid information for examining supply and use of health personnel across sectors.

Current MoH HR regulations do not promote strategic decision making at the health-facility level. Under the current approach, health facilities have very little scope to manage their own staff and ensure an adequate and efficient composition of staff. Changes to the current staff structure (renewing or filling vacancies due to natural attrition) requires the approval of the MoH. Thus, facilities have resorted instead to using temporary staff (paid by the facility's own funds) and part-time staff to cover some of their unmet need and increased workload. According to Serbian law, however, temporarily employed staff can work in a health care institution for a maximum of two years.²⁸ Managers interviewed in the HFR qualitative study emphasized that this practice is extremely inefficient. During these two years, new,

²⁶ For a particular health care institution, announced and approved by MoH.

²⁷ For the laws, see *Official Gazette, Republic of Serbia*, 43/06, 112/09, 50/10, 79/11, 10/12 dr. regulation 119/12, dr. regulation 22/13.

²⁸ Labor Law (article 37) (*Zakon o radu, član 37*), *Official Gazette, Republic of Serbia*, 24/2005, 61/2005, 54/2009, 32/2013, and 75/2014, http://www.paragraf.rs/propisi/zakon_o_radu.html.

temporarily employed workers (both medical and nonmedical) gain significant working experience and develop specific skills in health care or administration. Thus, turnover and retraining is needed every two years.

There are few mechanisms for staff monitoring quality and performance. A key function of HR managers is to monitor performance of health staff. In Serbia, however, most of salaries are not linked to performance (only a small share is output based), and contractual arrangements impose significant constraints and costs to laying off permanent staff resulting in long trials and costly severance packages. In addition, there are no systematic approaches to benchmark HR performance. For instance, there are no (1) external comparisons with other similar organizations, (2) internal comparisons with the previous performance of the organization, or (3) comparisons with some predetermined standard (Diallo et al. 2003).

Resource Management: Pharmaceuticals

Overview

Pharmaceuticals represent a high share of total health expenditure and public health expenditure. The share of pharmaceuticals in total health expenditure increased from 22.1 percent in 2002 to 33.9 percent in 2015 (IPH 2017). This is high compared to regional standards: the EU average, which has been decreasing since 2003, is 16.6 percent, according to the latest estimates.²⁹ The share of pharmaceuticals in the public envelop, which has also tended to increase since the mid-2000s, amounted to 18.2 percent in 2015 (IPH 2017). This is also high relative to regional standards: the EU average is 12.3 percent according to the latest estimates (World Bank 2015b).

Main Challenges

Since 2013, the government has achieved savings through centralized procurement. Before the centralization of public procurement, the HIF paid public facilities a lump sum based on the estimated average price of drugs consumed, and facilities were purchasing drugs directly from wholesalers or manufacturers. Serbia has over 300 drug wholesalers, compared to 5–10 in more efficient markets, and these wholesalers were competing for business by offering facilities “rebates” of up to 30 percent of the estimated price. Amendments to the Law on Health Insurance in 2013 introduced centralized public procurement with framework contracts for hospital drugs, which eliminated rebates and resulted in costs savings of over € 25 million. Through amendment to the Decree on centralized public procurement (2014), centralized procurement was then rolled out to outpatient drugs, delivered by public

²⁹ The latest estimates for the EU are 2011. That year, the share of pharmaceuticals in total health expenditure in Serbia was 31.3 percent (WHO 2017).

pharmacies (List A and A1). The price achieved on public procurement determines the budget allocated to public facilities as well as the reimbursement price for private pharmacies contracted by the HIF for the delivery of prescription drugs.

However, the pharmaceutical market remains dominated by brand drugs. Procurement of pharmaceuticals is based on brand name for outpatient drugs, which significantly hinders competition. According to international best practice, procurement of drugs should be based on international nonproprietary names (INNs), or generic name. This principle is applicable to the purchase of drugs that are available from multiple sources as well as the procurement of innovative/patented drugs. In addition, doctors use brand names for their prescriptions, and sector regulations do not allow pharmacists to substitute an equivalent drug with the same generic name. Finally, reimbursement policies incentivize pharmacists to deliver higher-cost medicines, as they receive a 12 percent margin from the HIF. Shifting to flat fees would involve regressive margins.

In addition, controls on prescriptions are inadequate. The average annual number of prescription drugs per insured person in Serbia was between 12 and 14 during 2011–13 according to the HIF. This is about twice the average observed in EU countries (World Bank 2015b). It suggests important inefficiencies driven by overprescription of drugs, especially antibiotics. Rationalization of prescriptions requires the establishment of a prescription monitoring system at the HIF—which involves changes in its mandate—as well as control measures, for example, feedback to and training of prescribers that appear as outliers.

Table 5. Pharmaceutical Expenditure for the Top Five Patented Medicines, Serbia, 2011–13

| International nonproprietary name | Brand | 2011 (SRD, 000s) | 2012 (SRD, 000s) | 2013 (SRD, 000s) | Change 2011–13 |
|-----------------------------------|-----------|------------------|------------------|------------------|----------------|
| Trastuzumab | HERCEPTIN | 1,088,245 | 1,321,476 | 1,382,100 | 27.0% |
| Capecitabine | XELODA | 109,539 | 160,057 | 183,150 | 67.2% |
| Cetuximab | ERBITUX | 131,530 | 138,863 | 182,032 | 38.4% |
| Infliximab | REMICADE | 105,631 | 100,432 | 168,423 | 59.4% |

Source: Provided by HIF.

Finally, Serbia is facing an increasing use of high-cost, patented innovative medicines in hospitals. The share of new high-cost patented innovative medicines on the drug list is growing. Due to the high price and increasing volume of these products, total expenditures are significantly increasing (table 5). In addition to the recent design and implementation of price-volume agreements aiming at risk sharing with suppliers, there is a need to develop health technology assessments to ensure that only cost-effective products are added to the

list of drugs that are covered by public spending and to achieve further decreases in the total costs of these drugs.

Stewardship

Overview

The section reviews the regulation and governance of the health system in Serbia from two perspectives: (1) the overall stewardship and regulation of the health system and (2) governance of service delivery and health institutions.

The stewardship and governance of the Serbia health system need to move toward the integrated oversight of a modern and pluralistic health system, with more autonomy and accountability for public providers and greater use of timely information to steer the system and monitor facility performance. The MoH has primary responsibility for health system stewardship, but there are overlaps with other institutions and agencies, and some key health system stewardship functions are underdeveloped.

The MoH is the main steward of the health system, and is responsible for health policy, planning and oversight, public health programs, and investments. Its mandate is regulated by the Law on Ministries and the Health Care Law, and responsibilities include stewardship and oversight for mandatory and voluntary health insurance: definition of the health services benefit package, organization of health services provision, international cooperation, health and sanitary inspection, maintenance of health records, and the regulation of the manufacturing and distribution of medicines. The MoH has a total of about 400 employees organized into sections: organization of health services; health insurance; public health and programmatic health care; drugs and medical materials and devices; and inspection. There is also the MoH Secretariat. About half of employees work in inspections. Most other units have 3–14 staff members.

The Serbian Health Council serves as the core advisory body to the MoH for long-term strategy and planning. The 15 members of the Health Council are appointed by the National Assembly, based on nominations by the government. Its mandate includes monitoring the health care and health insurance systems, aligning with EU and international standards, suggesting measures for preservation and improvement of health care and health protection, and evaluating and proposing improvements to programs of medical education. The administrative work of the council is done by the MoH (Health Care Law, article 155).

The national IPH and the 23 regional Institutes of Public Health have a wide range of activities and mandates, including for health system monitoring, planning, and budgeting. The national IPH (Batut) is organized into seven departments with 194 staff. It includes the

Center for Prevention and Control of Diseases; Center for Health Promotion; Center for Hygiene and Human Ecology; Center for Informatics and Biostatistics; Center for Microbiology; Center for Analysis, Planning, and Health Care Organization; and a service for legal, administrative, and technical support. Batut receives core funding from the state budget, from the HIF for providing specific services, and project financing. The 23 regional IPHs (one per county) are largely independent from Batut and receive a substantial portion of their funding from the HIF. Under the Health Care Law, they have a wide range of responsibilities, including analyzing population health and risks; assessing the efficiency and quality of the health system; planning for human resources and health services; promoting public health and research; and supporting development of health information systems. The responsibilities for planning and defining norms are in part a holdover from the socialist era.

The HIF is under the oversight of the MoH, and is responsible for pooling and purchasing, with some responsibilities for financial oversight of health institutions financed by the HIF. The HIF is the only insurer for mandatory health insurance, with 31 branch offices and subbranches. While the HIF has responsibility for financial oversight of the services it finances, health facilities do not systematically report to the HIF or any other institution on other sources of financing or expenditures or liabilities.

Several agencies also play stewardship roles but with some overlaps or gaps, particularly for quality assurance. The Agency for Quality and Accreditation has authority for accreditation of health facilities, but this remains an optional process. In addition, the agency has limited core budget and staff to carry out its responsibilities.

The MoH appoints hospital managers and boards and is the owner (“founder”) of most public hospitals, while local governments are “founders” of PHC centers. The MoH has retained ownership responsibility of hospitals, with hospital directors and managing boards appointed by the minister of health. PHC centers were decentralized to local governments with the 2005 Health Care Law, and as such local governments are responsible for appointing directors and have formal responsibility for performance of the health center.

Main Challenges

Network planning and regulation of the public and private health sectors are currently fragmented and need to be updated to move toward a pluralistic system of service delivery and performance financing. While the Health Care Law and the Health Insurance Law both recognize the role of the public and private sectors, in practice these are managed as parallel systems. The MoH and IPH are responsible for planning of the public health network. The MoH is also responsible for granting licenses to private facilities and private practices, with Medical Chambers responsible for granting licenses to public and private doctors. As noted earlier, the public health network, including hospitals, still has not been rationalized and rightsized. Decisions regarding granting of licenses for private providers are not coordinated

strategically with decisions on the public-sector health network, and referrals made by private doctors are not recognized in the public system.

Health information systems are still not fully integrated, and available information is not being adequately used to steer the health system and to improve efficiency and quality of care. The MoH has placed a high priority on putting in place an integrated health information system, but the system is not yet fully operational. The challenge is not simply one of ICT, however. Accountabilities for collection and analysis of information remain fragmented, and available information is not being used to strategically steer the system. The national and regional IPHs have primary responsibility for collecting and analyzing health system data, including for quality, but these reports are typically completed a year late. Facility managers send data to their regional IPHs but receive limited feedback or analysis. The HIF has enormous data on service costs and provision, and has started collecting DRG and cost information, but these data are not being used to analyze facility efficiency. Systems for quality assurance and reporting are particularly fragmented—IPH has formal responsibility for monitoring quality indicators, but this information is not yet comprehensive or timely enough to be used either as part of quality assurance processes or quality-adjusted payment by the HIF. The Agency for Quality has a limited mandate for quality other than voluntary accreditation, and while there has been some progress in developing clinical protocols and clinical pathways, there is no mechanism in place to enforce or monitor implementation of these quality improvement tools. Finally, the MoH does not currently have a unit or staff person responsible for policy oversight of health information—for example, to guide overall HMIS development, ensure consistent data and nomenclature standards, ensure interoperability of systems, and so forth.

Public hospitals and PHC facilities are constrained by overly rigid regulations and norm-based systems for planning budgets, staffing, and health services. Interviews with managers of hospitals and primary health centers confirms that the current system of health service regulation and financing provides limited discretion and flexibility for health facility managers to improve efficiency and quality and to adapt services to the needs of their population. Not only are there no positive incentives for good management, but good managers are effectively “punished” for making good management decisions—for example, facilities that install energy efficient windows cannot use energy savings for other priorities: their budgets will be cut the next year. Planning norms do not provide room for managers to adapt their services—for example, allowing increased nursing staff for outreach in rural areas with a high percentage of elderly.

There is inadequate accountability and capacity of health facility boards and management. Excessive rigidity in ex ante controls is mirrored by a lack of accountability for outcomes—either in terms of financial performance or efficiency of public facilities or in terms of health or service outcomes. Political factors continue to predominate in the appointment of facility managers—a situation that may not change in the short term. The lack of clearly defined

performance criteria, along with clearly defined rewards and sanctions for both managers and founders, exacerbates the problems of political influence.

PHC centers were decentralized a decade earlier, but local governments have been slow to take financial and oversight responsibility for PHC services. The 2005 Health Care Law decentralized ownership of PHC facilities to local government, along with ownership of municipal pharmacies. Local governments were made responsible for appointing directors and management boards, financing capital investments and maintenance, and providing complementary financing. There is a broad consensus that this decentralization was undertaken without adequate preparation for local governments. Consequences have included politicization of director appointment and staff recruitment (which contributed to earlier overstaffing on nonmedical staff); inadequate planning and oversight of services; inadequate capital investment and maintenance, resulting in deterioration of some facilities; and inadequate financial oversight and accountability. The situation varies among municipalities. While some have argued for recentralizing oversight of PHC facilities to the MoH, this risks diverting limited MoH staffing and capacity into oversight of local service delivery rather than playing its primary role as overall steward of the health system. An alternative approach would be to invest in improving awareness and capacity of local governments to play an oversight role; strengthening the legal accountability; and exploring options for hybrid governance arrangements that might integrate service delivery and oversight among several municipalities (particularly in rural areas).



CHAPTER 5. POLICY RECOMMENDATIONS

Policy recommendations are summarized in table 6.

Table 6. Policy Recommendations Matrix

| HEALTH FINANCING | |
|------------------------------------|---|
| Challenge | <ul style="list-style-type: none"> • Maintenance of the enrolment database and verification of enrollee benefits by more than one institution (CROSO, STA, and HIF) • Input-based provider payment system for both primary and hospital care facilities • Revisions of the benefits package disconnected from the available resources |
| Short term reforms | <ul style="list-style-type: none"> • Strengthen the central registry (CROSO) and ensure information flow between CROSO, STA, and HIF. • Introduce performance-based capitation financing for primary care. • Complete DRG costing process and undertake analysis of data on quality. • Strengthen systems for monitoring and reporting on performance data, including quality indicators. |
| Medium to long term reforms | <ul style="list-style-type: none"> • Develop the central registry and transfer responsibilities. • Reduce the number of HIF staff involved in routine claims processing and enrollment verification; strengthen HIF staffing and capacity for strategic purchasing, use of ICT, and efficiency monitoring. • Phase in financing of acute care in hospitals based on DRGs, adjusted for quality, with incentives for outpatient surgery and care. • Develop health technology assessment capacities of the HIF and align the benefits package with actual resources. |

| SERVICE DELIVERY | |
|--------------------------------------|---|
| Challenge | <ul style="list-style-type: none"> • Focus of the health care system on curative and hospital care • Unnecessary consultations • Unnecessary hospitalizations |
| Short term reforms | <ul style="list-style-type: none"> • Prepare a hospital rationalization and restructuring plan. • Introduce recognition of certificates and references that are delivered by private providers. |
| Medium to long term reforms | <ul style="list-style-type: none"> • Implement a hospital rationalization and restructuring plan. • Develop an e-prescriptions system. • Further develop clinical protocols and payment systems to promote outpatient care. • Expand contracting of private providers for specific services when it is cost-efficient. |
| RESOURCE MANAGEMENT: HUMAN RESOURCES | |
| Challenge | <ul style="list-style-type: none"> • Persistent geographic and skills imbalances in the distribution of human resources • Fragmented governance • Short-term needs superseding regular planning • Lack of decision making at the health facility level in current MoH HR regulations • Limited mechanisms for monitoring staff quality and performance |
| Short term reforms | <ul style="list-style-type: none"> • Carry out an HR assessment focused on (i) policy, regulation, and planning; (ii) management and performance improvement; and (iii) monitoring and evaluation. • Rationalize regulations. • Create a coordination mechanism for decision making in matters relating to HR. |
| Medium to long term reforms | <ul style="list-style-type: none"> • Strengthen the HR policy development and research capacity at MoH level and beyond (Professional Chambers, Institutes of Public Health). • Build the database to keep track of essential information on numbers of practicing professionals, employment status, productivity levels, mobility flows, and so forth. • Develop an effective health care workforce planning model. • Expose students to underserved areas, and develop packages of financial incentives and professional/personal support measures. • Review scopes of practice (particularly for nurses). |

RESOURCE MANAGEMENT: PHARMACEUTICALS

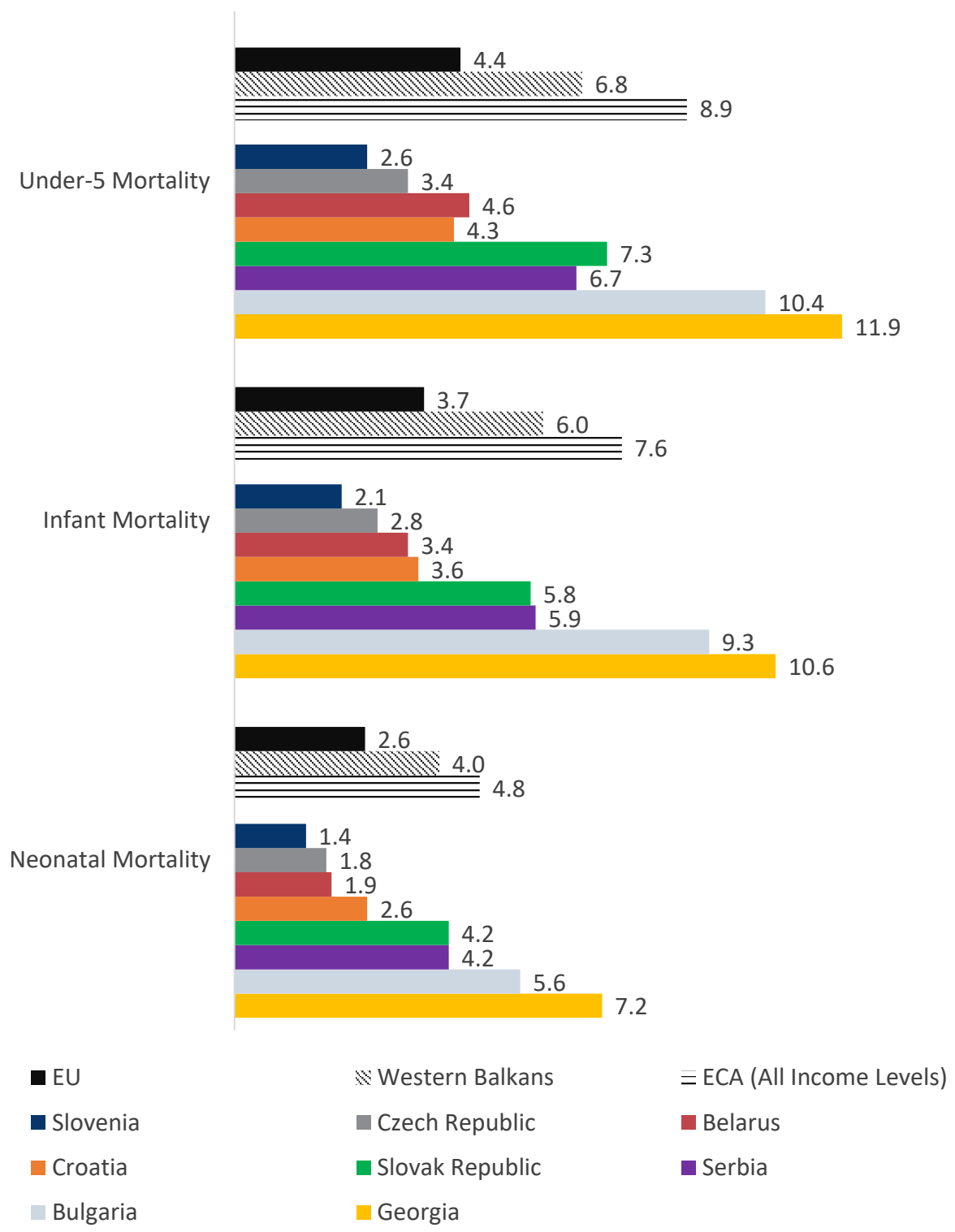
| | |
|------------------------------------|--|
| Challenge | <ul style="list-style-type: none"> • Procurement and prescription of off-patent drugs based on brand names for outpatient drugs delivered in pharmacies • Inadequate controls on outpatient prescription drugs • Increasing use of high-cost, patented innovative medicines |
| Short term reforms | <ul style="list-style-type: none"> • Introduce procurement based on INNs and mandate prescriptions by INN. • Introduce generic substitution by pharmacists. • Replace wholesale and retail margins with flat dispensing fees. • Develop innovative procurement methods for high-cost drugs (managed entry agreements). |
| Medium to long term reforms | <ul style="list-style-type: none"> • Develop monitoring and control of prescribers. • Strengthen capacity for health technology assessment, particularly for new medicines on the reimbursement list. |

STEWARDSHIP AND GOVERNANCE

| | |
|------------------------------------|---|
| Challenge | <ul style="list-style-type: none"> • Lack of integrated oversight of public and private health care providers • Overlaps and gaps in responsibilities for health system planning, with too much emphasis on ex ante norms and not enough on ex post accountability • Lack of utilization of information to steer the health system • Inadequate definition of oversight and accountability of health services |
| Short term reforms | <ul style="list-style-type: none"> • Strengthen integrated ICT systems with emphasis on the timely use of information for stewardship and management decision making. • Review and clarify roles and accountabilities among MoH, IPH, and HIF on stewardship of public and private systems. • Define accountabilities and strategy to strengthen oversight of health service quality. |
| Medium to long term reforms | <ul style="list-style-type: none"> • Streamline current IPH roles in norm setting and budgeting, with a shift toward core functions of a modern public health institute. • Build capacity of MoH for integrated regulation and oversight of the public and private sectors. • |

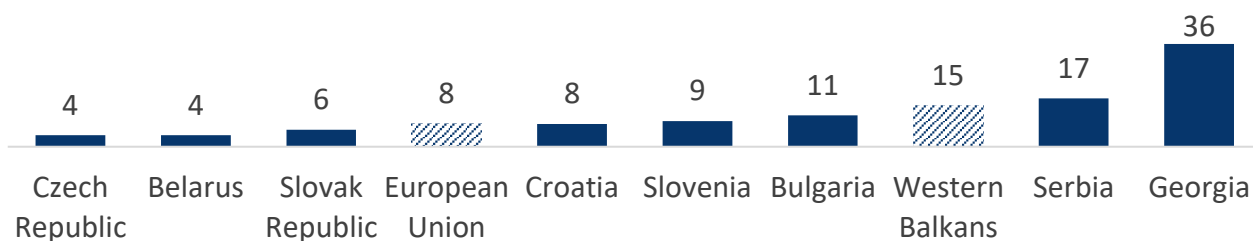
APPENDIX A: HEALTH OUTCOMES

Figure 20. Neonatal, Infant, and Under-Five Mortality Rate (per 1,000), Selected Countries, 2015



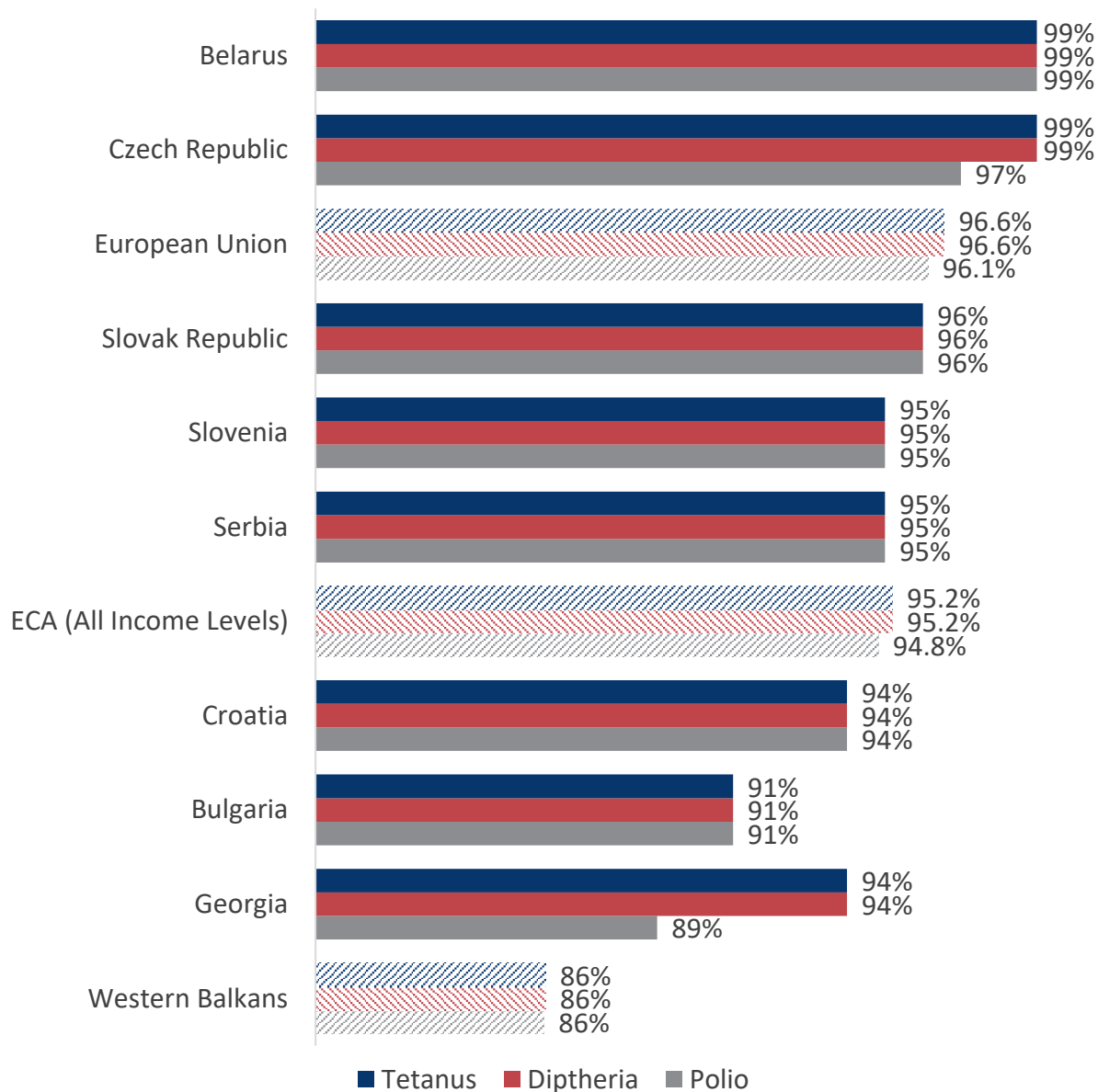
Source: World Bank 2017

Figure 21. Maternal Mortality Ratio (Modeled Estimate, per 100,000 live births), Selected Countries, 2015



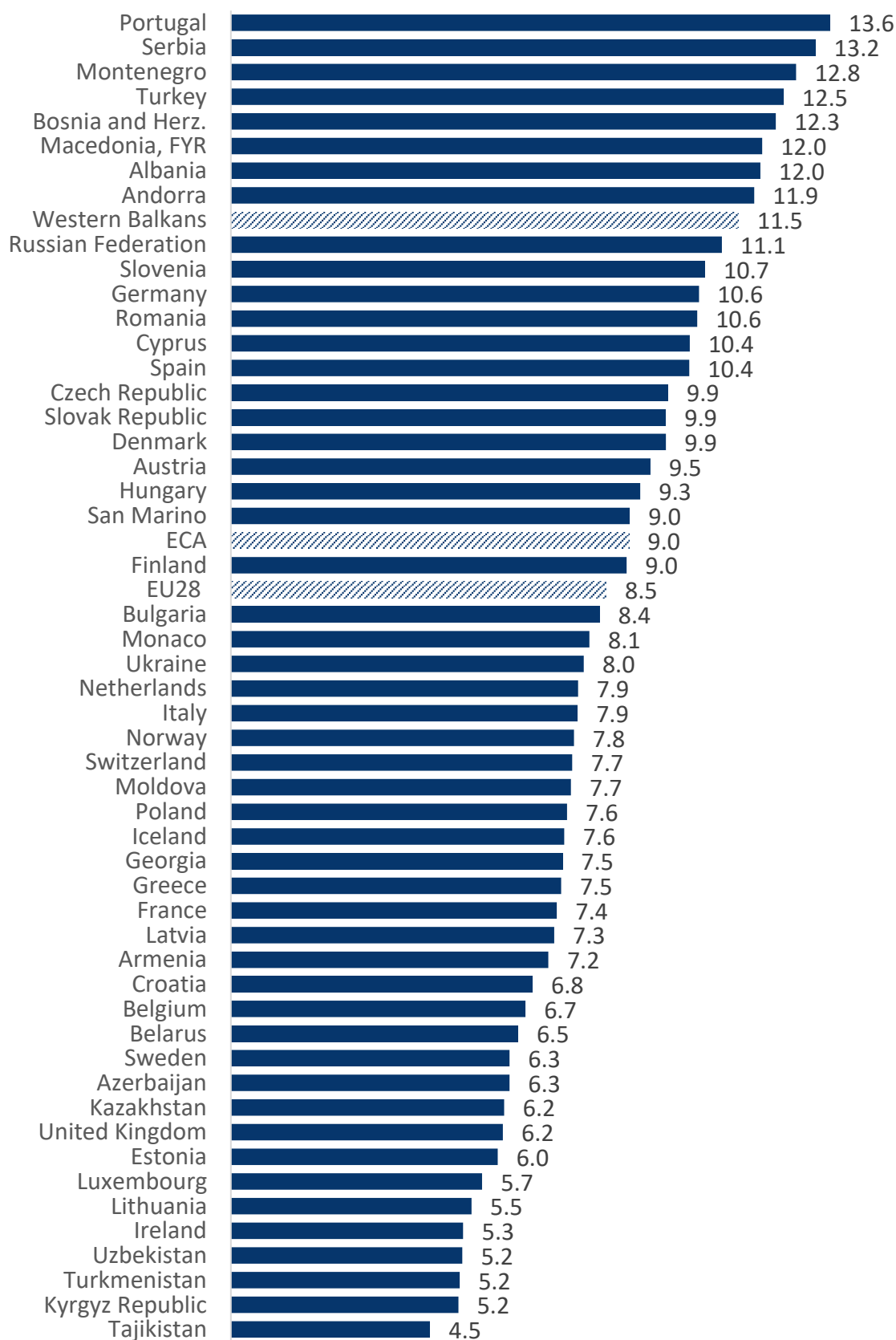
Source: World Bank 2017

Figure 22. Child Immunization Rates (% of infants), 2015



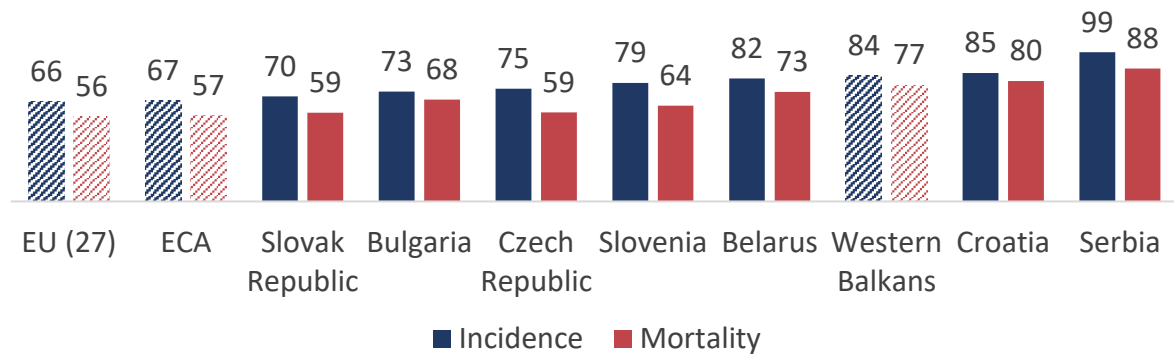
Source: World Bank 2017

Figure 23. Diabetes, National Prevalence, Europe and Central Asia (%), 2015



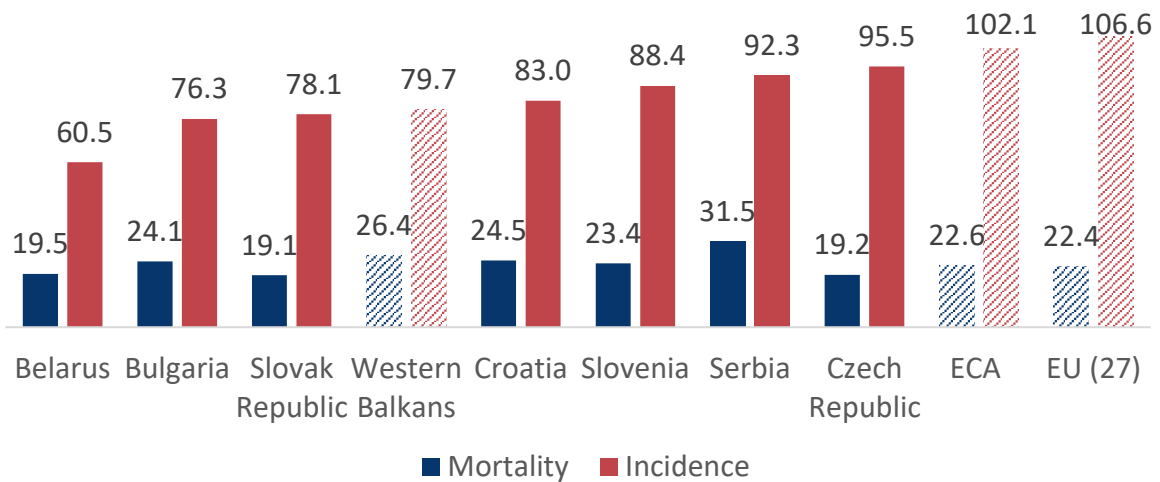
Source: International Diabetes Federation 2017

Figure 24. Incidence and Mortality of Lung Cancer among Men (per 100,000), Selected Countries, 2012



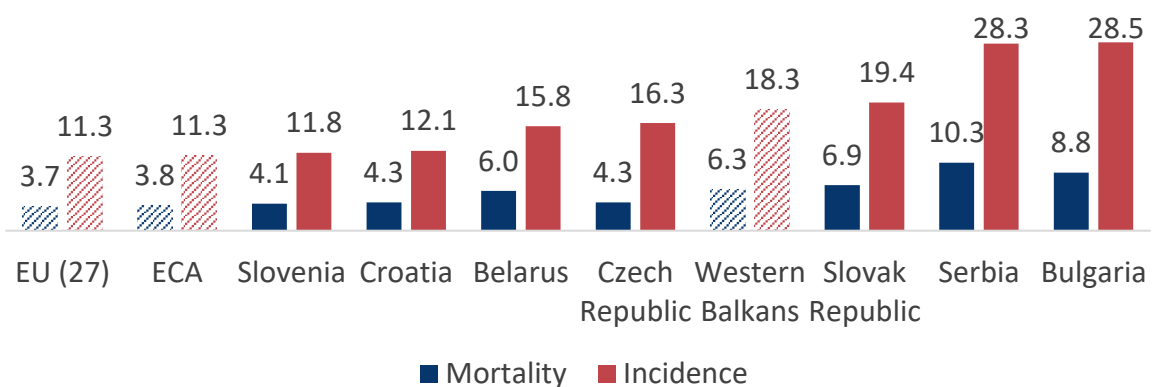
Source: European Cancer Observatory (EUCAN)

Figure 25. Incidence and Mortality of Breast Cancer (rate per 100,000), Selected Countries, 2012



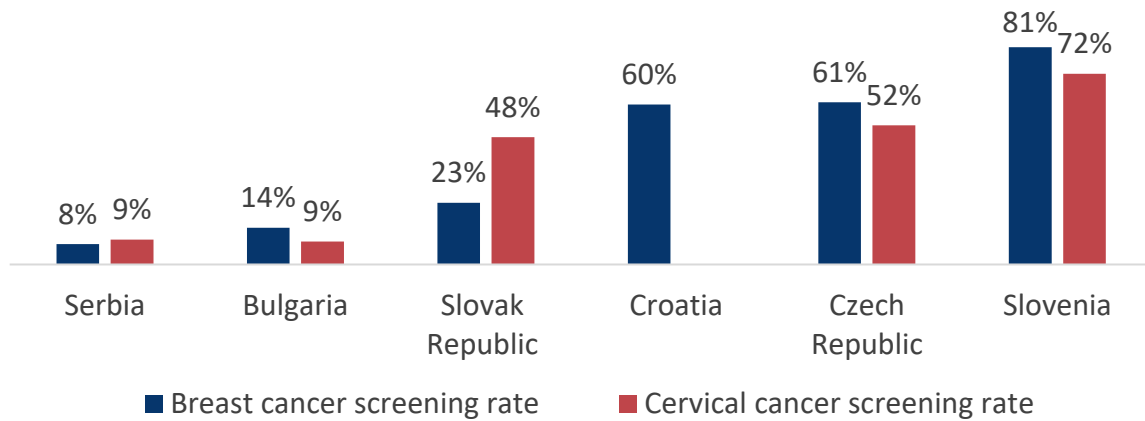
Source: EUCAN

Figure 26. Incidence and Mortality of Cervical Cancer (rate per 100,000), Selected Countries, 2012



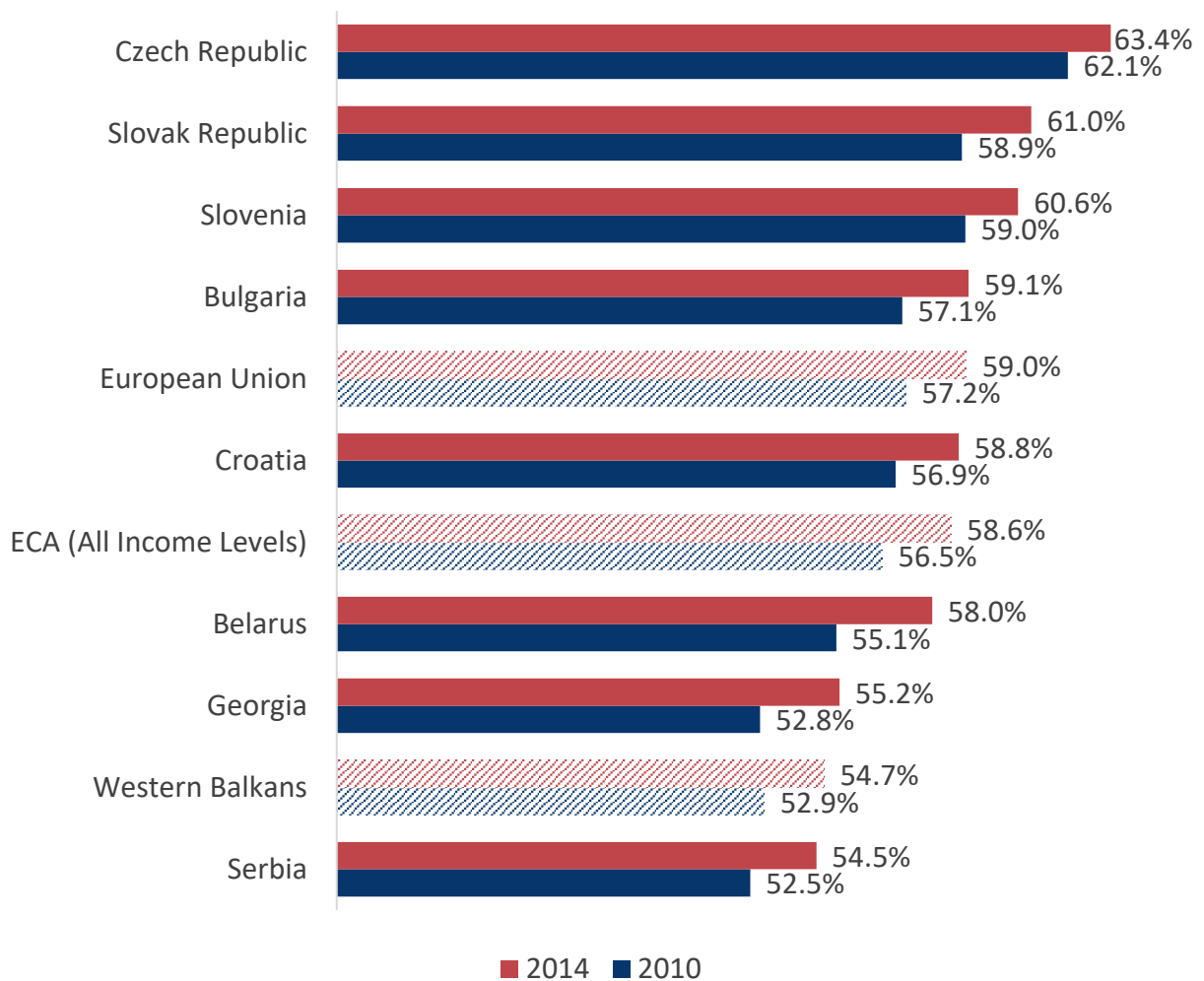
Source: EUCAN

Figure 27. Preventive Screening Rates, Breast and Cervical Cancer (% of target population, women aged 20-69 for breast cancer and 50-69 for cervical cancer)



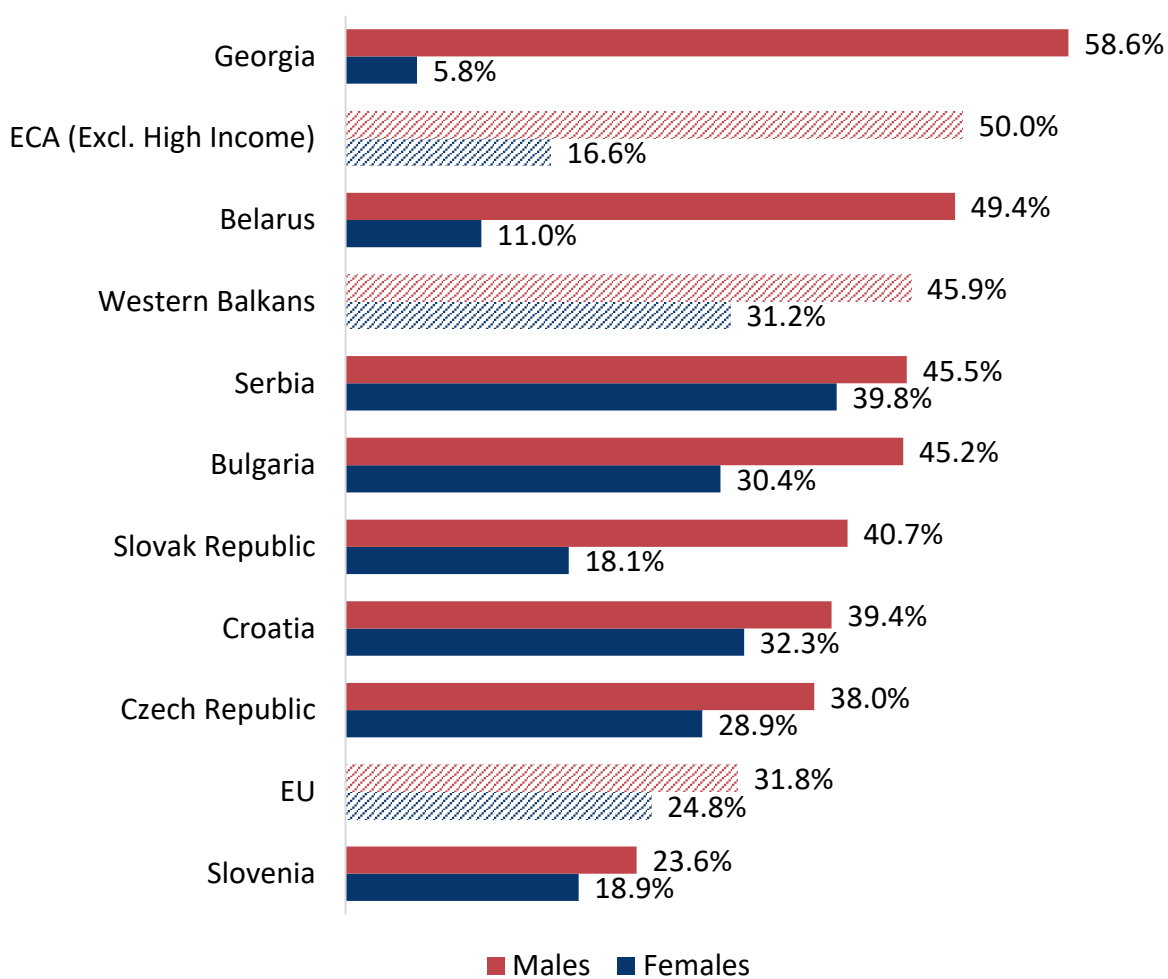
Source: Eurostat

Figure 28. Prevalence of Overweight (% of adults), Selected Countries, 2010 and 2014



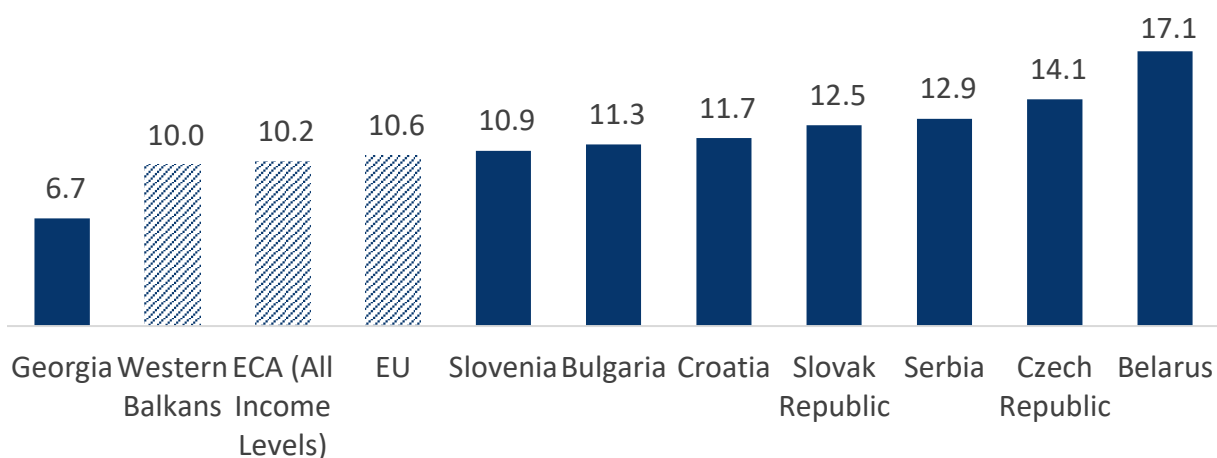
Source: World Bank 2017

Figure 29. Smoking Prevalence (% of adults), Males and Females, 2012



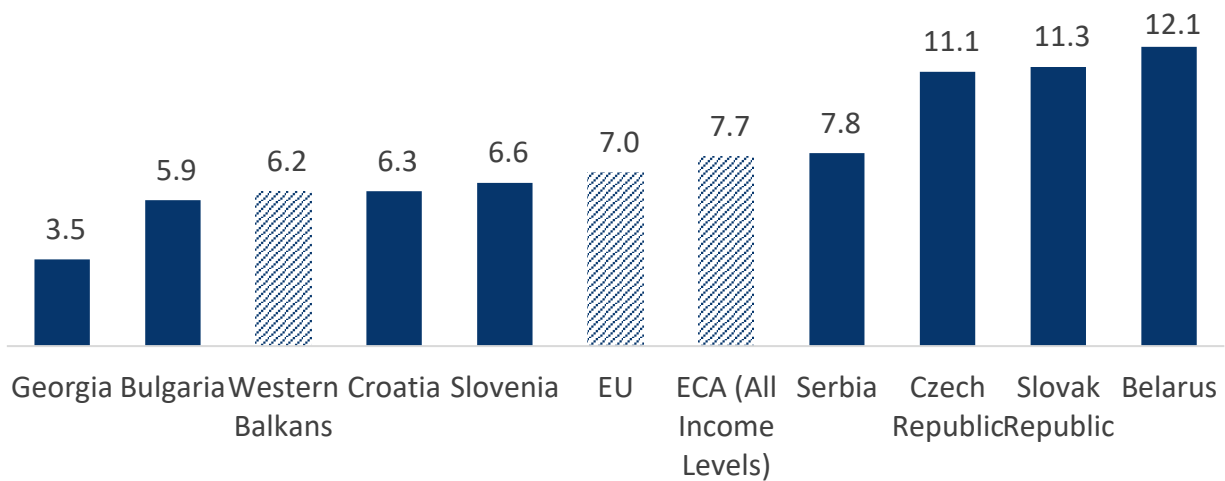
Source: World Bank 2017

Figure 30. Total Alcohol Consumption per Capita (Liters of Pure Alcohol, Projected Estimates, 15+ Years of Age), Selected Countries



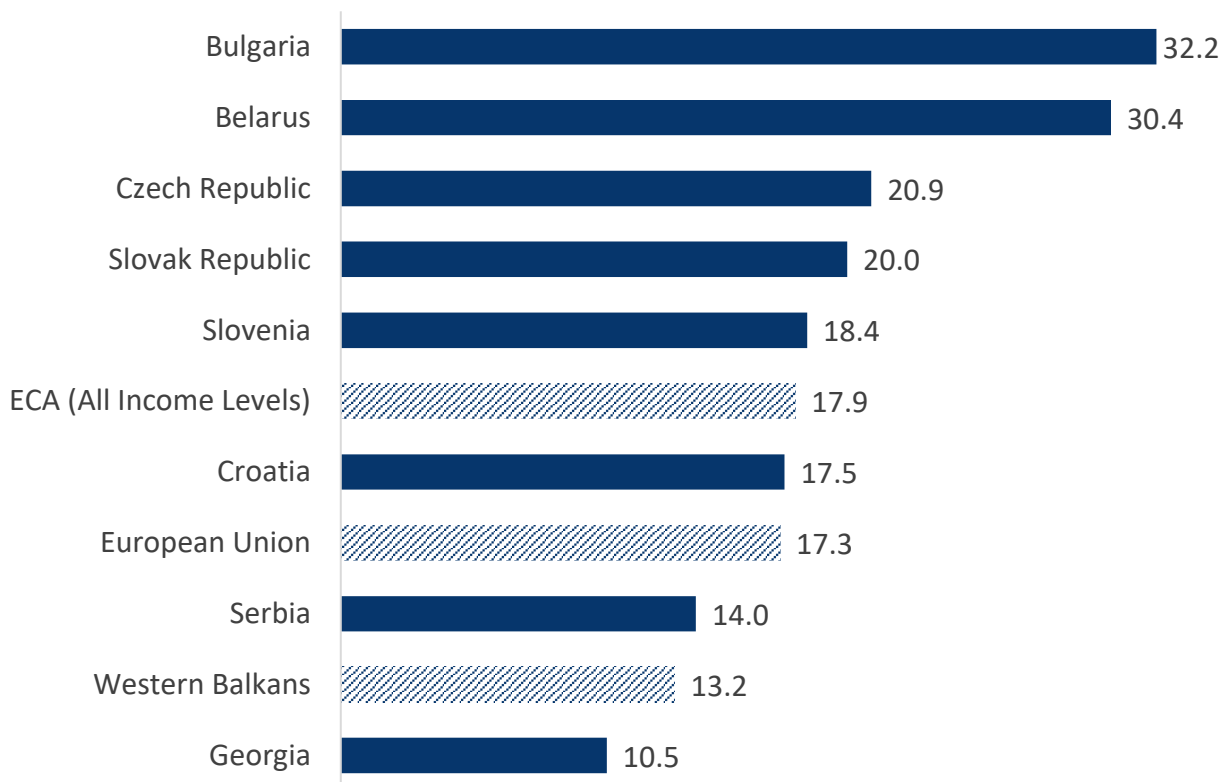
Source: World Bank 2017

Figure 31. Outpatient Contacts (per capita per year), Selected Countries, 2014



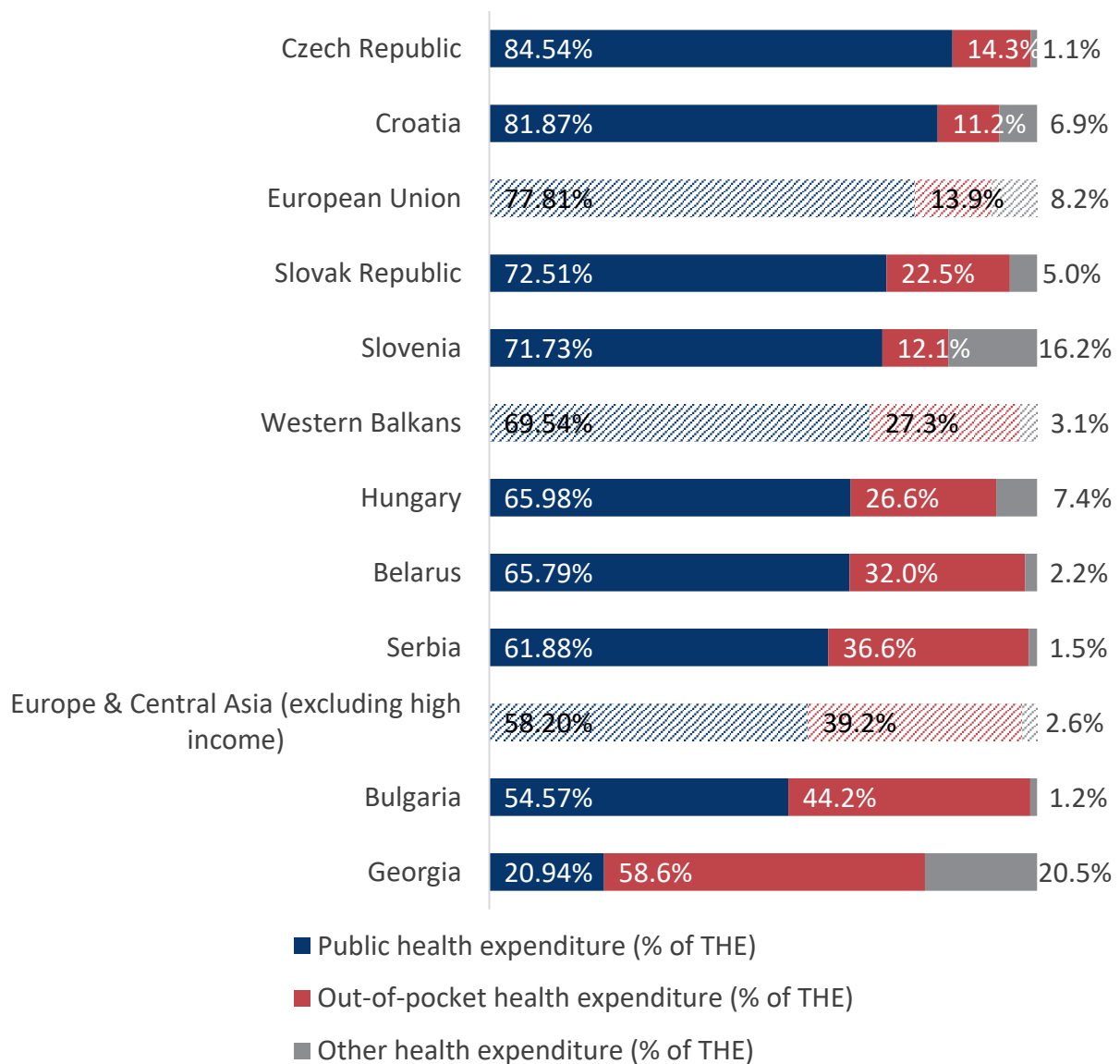
Source: WHO 2017

Figure 32. Inpatient Care Discharges (per 100), Selected Countries, 2014



Source: WHO 2017

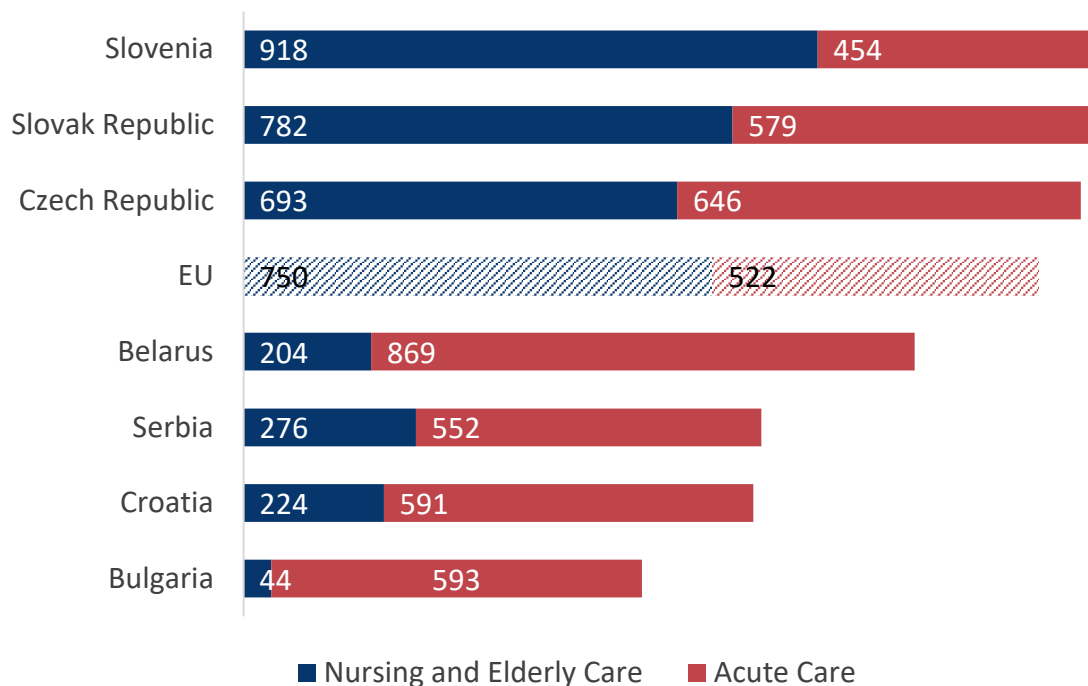
Figure 33. Composition of Total Health Expenditure (THE), Selected Countries, 2014



Source: World Bank 2017

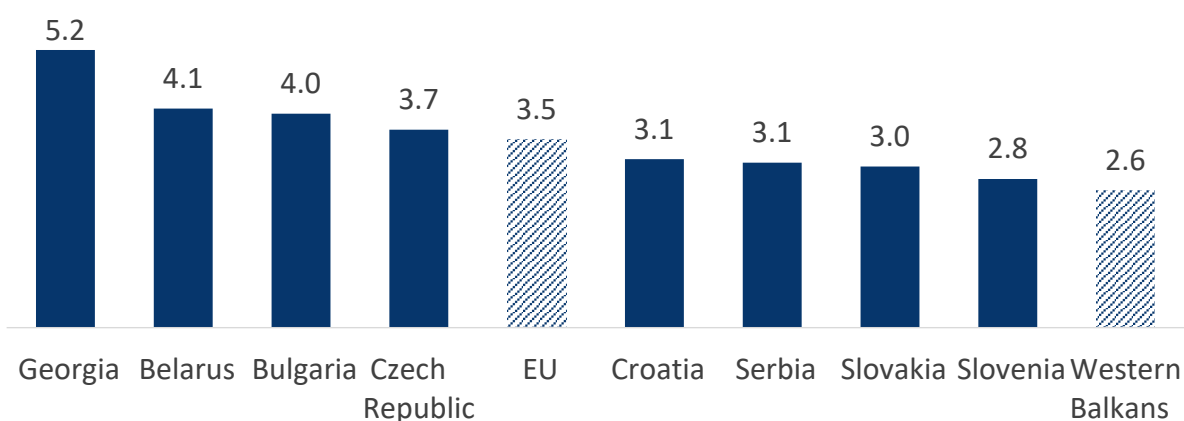
APPENDIX B: INPUTS FOR HEALTH

Figure 34. Hospital Beds per 100,000 People, Selected Countries, 2014



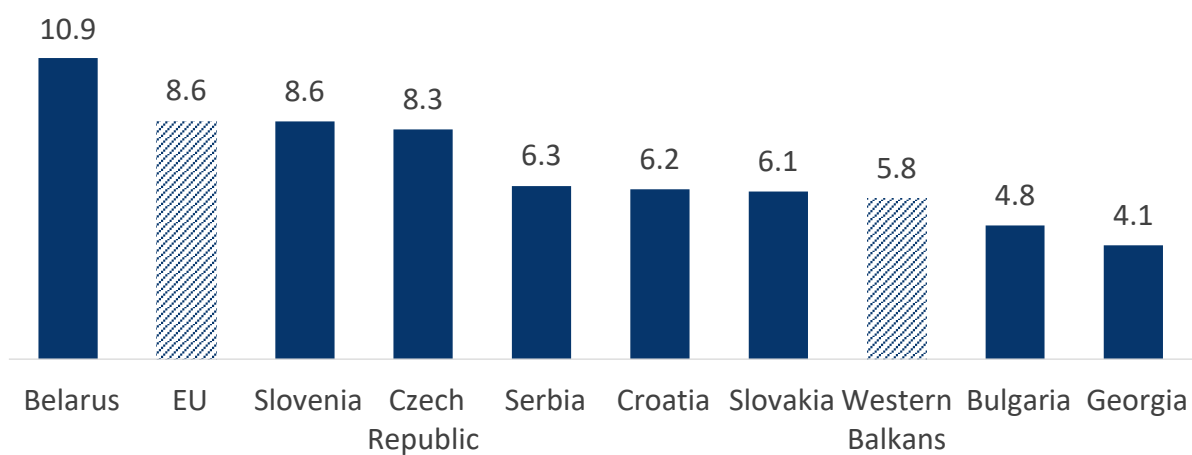
Source: WHO 2017

Figure 35. Physician Distribution (per 1,000 people), Selected Countries, 2014



Source: WHO 2017

Figure 36. Nurse Distribution (per 1,000 people), Selected Countries, 2014



Source: WHO 2017



APPENDIX C: PRODUCTIVITY ANALYSIS OF THE PUBLIC HEALTH NETWORK

This appendix presents the key findings of a productivity analysis conducted in the public health network of Serbia for inpatient and outpatient health services. It includes the following:

1. A descriptive analysis of key performance measures: annual outpatient visits provided in PHC centers (Dom Zdravljas, or DZs) and specialized PHC centers (Zavods) as well as annual hospital discharges from secondary and tertiary care hospitals
2. Estimates of productivity, which measures the relative ability of a health facility to obtain the maximum output from given inputs

The productivity analysis uses a stochastic frontier approach to indicate the distance between current production and a frontier production function—the relationship between inputs and outcomes—and the cost of producing those outcomes.³⁰

Caution is required in interpreting the results, as this analysis is focused exclusively on health facilities' outputs, not on health outcomes. Also, it does not control for quality of care, clinical appropriateness, or case mix. Although we have excluded facilities with specific profiles in terms of services, such as rehabilitation and psychiatric hospitals, comparisons among categories of facilities, especially among hospitals, are more appropriate than across all hospitals.

Primary Health Care

The productivity analysis was conducted in 139 public PHC facilities: 134 DZs and 5 specialized Zavods (for example, PHC centers for students and workers) across 24 districts that reported PHC consultations.³¹ The study uses information on health facilities' expenditures from HIF reports and data on health facilities' activity and stock of human resources collected by IPH between 2011 and 2014. As per the Health Network Plan, every municipality has one DZ, except for three larger cities (Grad Niš, Kragujevac, and Novi Sad) that have more than one PHC center. On average, 19 percent of the population served by

³⁰ The stochastic frontier approach can distinguish deviations from production function due to inefficiency and random error.

³¹ The 18 DZs that are part of health centers (*Zdravstveni centar*) are excluded as it was not possible to distinguish between the costs of the DZ and the cost of the other services that are part of health centers.

these health facilities are 65 and over, and about 60 percent live in nonurban areas.³² Their catchment populations range between 5,000 (DZ Trgovište) and 350,375 people (DZ Novi Sad).

Outputs and Inputs of PHC Facilities

The main output produced in PHC facilities (DZs and Zavods) are outpatient visits.³³ These include PHC outpatient consultations (with general practitioners, gynecologists, and pediatricians) and secondary specialist care consultations (for example, with internal medicine specialists, neurophysiologists, ophthalmologists, otolaryngologists, and psychiatrists). About one-third of facilities in the study provided only primary care visits; the rest provided both primary and secondary care services.

On average, PHC facilities, partly due to the differences in catchment population, vary considerably in size (number of staff) and expenditures. The average number of permanent and temporary staff ranged between 251 and 1,502 personnel per health facility. About 93 percent of the staff had permanent contracts, but the share was as low as 88 percent during the period analyzed. In terms of composition of staff, the average share of medical staff in these facilities was 78 percent (69.3–87.4), with nurses constituting 40 percent of medical staff (22.9–75.7). About 22 percent of the personnel was nonmedical staff (12.7–30.8). Average annual expenditures differ markedly across PHC facilities. Total annual expenditures of per DZ averaged SRD 326 million (6.8–1,868.0) or about US\$ 3 million in 2015. This represents an average per capita expenditure of SRD 9,943, or US\$ 91.4 (SRD 1,290–23,550). For Zavods, total annual expenditures averaged SRD 219 million (46.2–424.2), or about US\$ 1.89 million. In both types of facilities, personnel expenditure accounted for 70 percent of total expenditure (40.1–94.2).

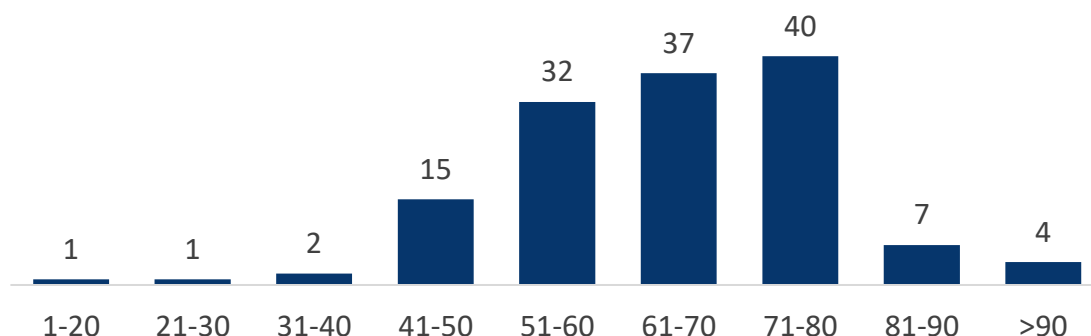
Productivity of PHC Facilities

The findings show that health facilities vary in terms of productivity. The mean productivity score over the analyzed period was 64 (14–95) with a median of 67, which indicates a low level of productivity. Figure 37 shows the distribution of health facilities by productivity scores. About 4 PHC centers (3 percent) have a productivity score that is less than 40 percent; one-third (47 facilities) show a productivity score between 40 and 60 percent; and the vast majority, 55 percent (77 PHCs), has a productivity score between 60 and 80. Just a handful of centers has a productivity score above 80, with 7 facilities having a score between 80 and 90 and only 4 scoring above 90.

³² The estimated overall urbanization rate in Serbia is about 55 percent, but our sample, which excludes some DZs in urban areas, may affect this ratio.

³³ Includes data from 134 DZs and 5 specialized Zavods that reported PHC consultations.

Figure 37. Distribution of PHC Centers by Average Productivity Scores (0-100), 2010-14



As expected, productivity scores reflect trends in two main variables: number of visits per doctor and total expenditure by outpatient visit. The number of outpatient visits per doctor ranges across productivity quintiles from 2,105 at the bottom to 3,236 at the top. Total expenditure by outpatient visit ranges from SRD 4,572.1 to SRD 1,324.2 (figure 38). The gap in cost per visit between the least efficient and the most efficient groups of facilities is significant (SRD 1,324 to SRD 4,572), indicating a large area for improvement. Similarly, the number of visits per staff indicates a twofold difference between the bottom and the top productivity groups (700 to 1,300 visits per year). In addition, the high productivity group received slightly higher overall patient satisfaction than other groups, 4.1 versus 3.9 on a scale of 1 to 5.

Figure 38. Number of Visits per Medical Staff and Total Expenditure by Visit, by Productivity Quintiles

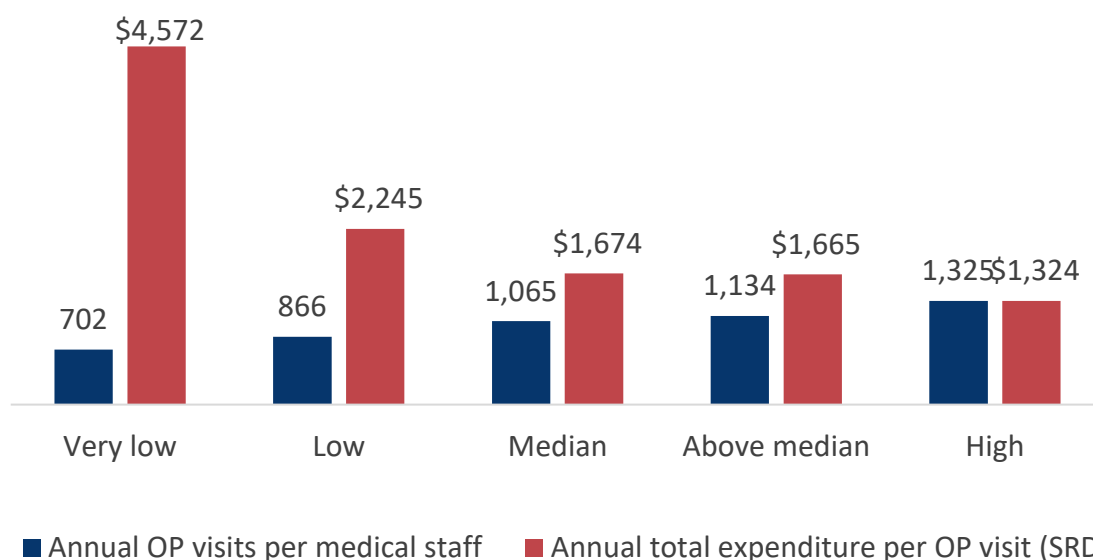


Table 7 summarizes various factors associated with productivity and shows that the high-productivity group has less staff and lower costs relative to facilities with productivity scores close to the median (67.1). Another factor associated with increased productivity is

the share of the catchment population that is older than 65, indicating that PHC facilities with larger numbers of elderly optimize their limited resources. The model findings suggest that the increased demand that comes from the elderly, who are disproportionately heavy users of health services, does not translate into a higher number of staff. These facilities also tend to build a broader network of services, specifically by adding home visits to their services.

Table 7. Characteristics of PHC Facilities by Productivity Quintiles

| | Productivity quintiles | | | | |
|---|------------------------|--------------|-------------|--------------|-------------|
| | Low | Below median | Median | Above median | High |
| Productivity score (minimum-maximum) | (14.9–53.3) | (53.7–61.3) | (61.5–68.5) | (68.6–73.9) | (73.9–94.8) |
| Mean productivity score | 46.6 | 57.3 | 66.0 | 71.3 | 79.4 |
| INPUTS | | | | | |
| Total expenditure per capita (SRD) | 14,815 | 10,970 | 7,942 | 8,469 | 7,562 |
| Outpatient visit per doctor | 2,105 | 2,752 | 3,039 | 3,312 | 3,632 |
| STAFF (SIZE) | | | | | |
| Total number of staff | 219.8 | 179.2 | 334.1 | 283.1 | 237.9 |
| Number of doctors | 58.0 | 46.8 | 88.5 | 88.6 | 67.1 |
| Number of nurses | 82.9 | 69.0 | 122.1 | 122.6 | 95.4 |
| Number of pediatricians | 4.4 | 3.7 | 8.0 | 8.1 | 5.5 |
| OUTPUTS | | | | | |
| Outpatient (GP, Gyn, Ped) visits (1,000 per year) | 124.4 | 122.8 | 269.3 | 293.7 | 257.1 |
| Specialist visits (1,000 per year) | 11.4 | 14.1 | 13.7 | 24.3 | 17.9 |
| Patient satisfaction index (1 to 5) | 3.9 | 3.9 | 4.0 | 3.9 | 4.1 |
| CHARACTERISTICS OF PHC FACILITIES | | | | | |
| Catchment population | 32,068 | 25,564 | 57,043 | 61,877 | 47,875 |
| % population living in rural area | 58.5 | 58.2 | 59.6 | 54.0 | 60.1 |
| % population 65 and over | 18.0 | 18.7 | 18.6 | 18.3 | 20.6 |

The identification of specific practices or factors influencing productivity is beyond the scope of this quantitative analysis. However, areas for further investigation are suggested in the

following sections: economies of scale, demand from elderly population, and other, commonly unobservable factors.

Facility size (number of staff), a critical factor related to economies of scale, does not show a lineal relation with productivity scores. Facilities in the top 20 percent of productivity (scores between 74 and 95) are medium-size facilities (in terms of staff and catchment population). A regression analysis confirms that facility size is correlated negatively with productivity, indicating that relatively larger facilities are significantly less likely to be productive. Similarly, the model indicates that PHC facilities in Belgrade, which tend to be larger and more concentrated, are significantly less likely to be productive. However, smaller size is positively associated with being in the bottom 20 percent in terms of productivity, suggesting that these small facilities may be understaffed or working with a suboptimal number of staff.

Some other factors can affect productivity, but are not observable in this econometric model. Those are related to the management of health facilities, the number of ambulatories per DZ, and how well connected these are with other levels of care, the quality of the infrastructure and maintenance, and the availability of diagnostics and specialized medical equipment. These factors are often related to the relationship between the PHC facility and its founder-supervisor, as well as how the health facility uses its own resources.

Hospitals

The inpatient care productivity analysis was conducted in 57 hospitals.³⁴ The study uses information on health facilities collected between 2010 and 2013. As established in the Health Network Plan, inpatient care is organized in secondary and tertiary care. Secondary care is provided in general hospitals (Opšte Bolnice) and special institutes (Specijalne Bolnice). Tertiary care is provided by clinic hospital centers, clinic centers, clinics, and institutes. Most tertiary care facilities are located either in Belgrade or in Jужnobački and Jужnobanatski within the Autonomous Province of Vojvodina³⁵. The rest of the districts are served by General Hospitals or Special Institutes.

Outputs and Inputs of Hospitals

The productivity study uses hospital discharges as the main output. These measure the number of patients who leave a hospital after receiving care in internal medicine, obstetrics,

³⁴ It excludes rehabilitation hospitals, psychiatric special hospitals, two stomatology clinics, and four institutes (mental health, occupational medicine, military academia, and blood transfusion) and general hospitals that are part of health centers, which have no inpatient care or expenditure information or very different patient profiles from the rest of the inpatient facilities.

³⁵ <https://en.wikipedia.org/wiki/Vojvodina>

emergency, cardiovascular and oncological services, and exclude psychiatric and rehabilitation hospital discharges.³⁶ About half of facilities in the study provided obstetric care, and about half attended cardiovascular events. During the study period, around one-third of discharges occurred in general hospitals (35 percent), another third in four clinic centers (31 percent), whereas just a small share of discharges came from special hospitals or clinics (less than 5 percent).

Hospitals vary considerably in size (number of staff) within and across levels of facilities.

The average number of permanent and temporary staff ranged between 79 in an internal medicine specialized hospital and 8,078 in the major clinic center in Belgrade. Large variations also exist in the number of personnel by type of hospital. In institutes, personnel ranges between 217 and 1,043; in general hospitals, between 103 and 1,303; and in special institutes, between 79 and 405. About 94 percent of the staff had full-time permanent contracts. In terms of composition of staff, the average share of medical staff in these facilities was 73 percent (38–88), whereas 27.1 percent of personnel was nonmedical staff (12.2–62.3), mostly technical staff, at 20.7 percent (5.7–52.1). Administrative staff accounted for 6.4 percent of staff (2.9–16.9).

Total expenditure per facility varies from SRD 244 million (US\$ 2.2 million) in special hospitals to SRD 8,230 million (US\$ 75.6 million) on average among the four clinic centers.

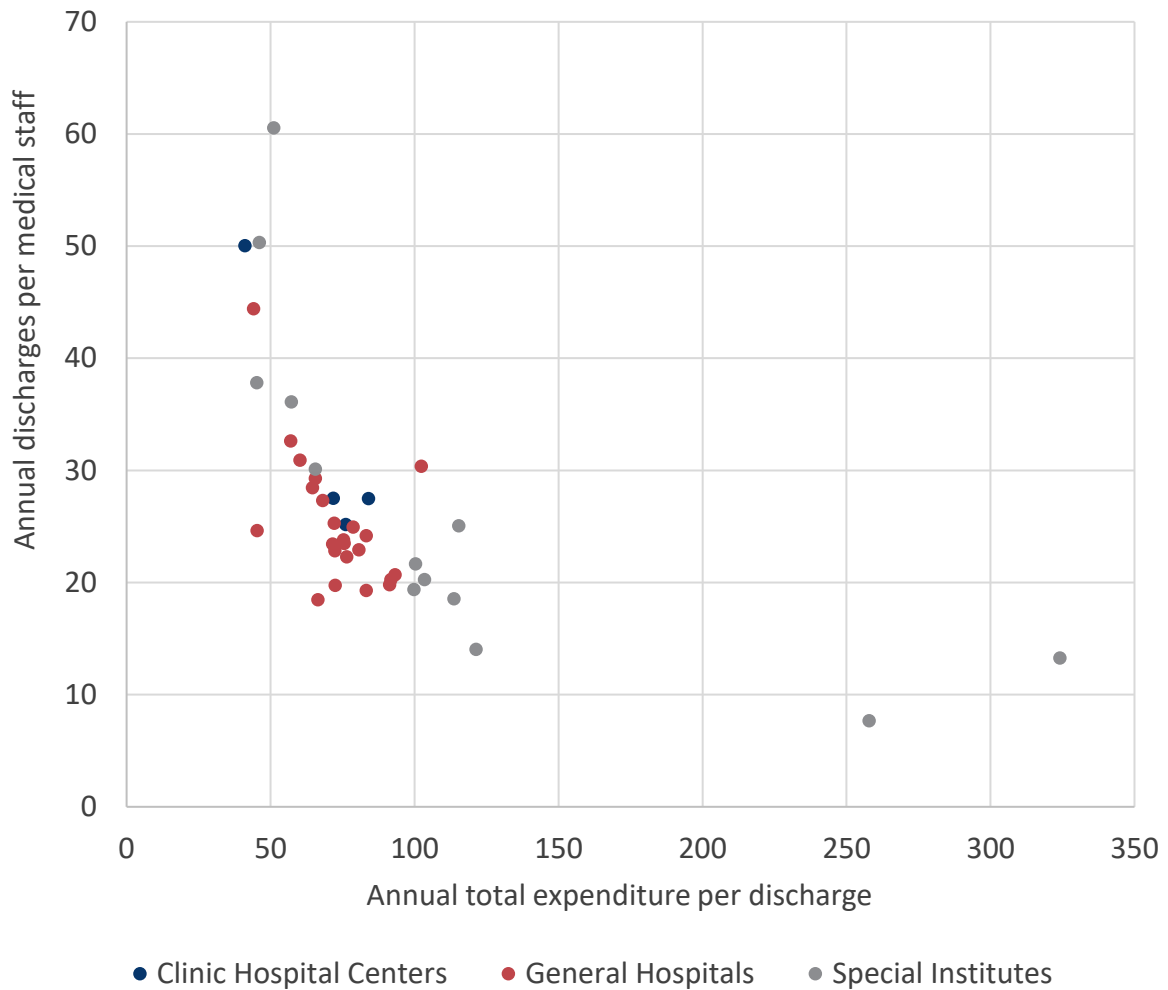
Total annual expenditures of general hospitals averaged SRD 1,120 million (US\$ 10.3 million) in 2015. This represents a per capita expenditure of SRD 6,845 or US\$ 62.9 in 2015. Clinic centers accounted for more than half of public hospital total expenditures included in the study, while producing one-third of annual discharges. This can be explained partially by the mix of patients and the multidisciplinary services these centers usually provide—they usually receive more acute care patients in need of specialized surgeries and procedures.

The main cost driver of hospital spending is personnel expenditure. It accounts for 63 percent of total expenditure, ranging from 43.7 percent in tertiary care institutes to 64.5 percent in general hospitals.

There is a large variation within and across types of hospitals in the number of hospitalizations and their unit costs (figure 39). This is particularly notable for general hospitals and special hospitals. General hospitals, which do not differ greatly in the type of services provided, on average had 20 to 30 discharges per medical staff. However, expenditure per discharge varies in these hospitals between SRD 44.1 and SRD 102. Similarly, several special hospitals reported very low numbers of discharges at a very high cost (bottom right in figure 39), while other special hospitals had a high number of hospitalizations at a low cost (top left).

³⁶ Usually discharges include patients that stay at least one night in the hospital.

Figure 39. Annual Expenditure per Discharge and Discharges per Medical Staff, by Hospitals, Serbia, 2011–13



Productivity of Secondary and Tertiary Institutions

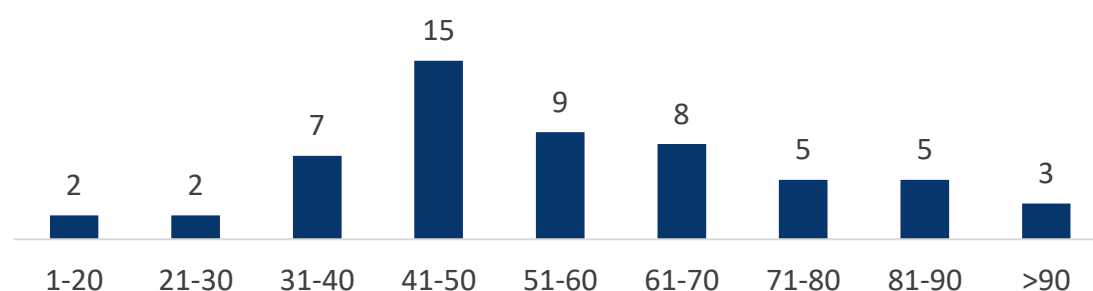
Consistently with the aforementioned differences, the findings of the productivity analysis show that hospitals vary greatly in productivity. The mean productivity score over the analyzed period was 55.6 (7.5–96.7) with a median of 53.1, which indicates a low level of productivity. Productivity scores vary by hospital type (table 8), as some of the variation in productivity score is driven by the type of services these hospitals provide. For example, the lowest productivity score among tertiary care institutes is associated with the Neonatology Institute, which generally attend premature births that require lengthy stays and expensive treatments; on the other hand, the lowest productivity level among special hospitals is associated with a facility specialized in pulmonary disease while these facilities generally do not require lengthy and costly stays. Compared to the other two pulmonary disease special hospitals, this hospital has relatively lower productivity scores (8.8 vs 30.1 and 48.9), but all of them are below the median productivity score.

Table 8. Outcomes and Productivity Scores, by Types of Hospital, Serbia 2011–13

| Type | Discharges (000s) | Discharges per medical staff | Cost per discharge | Average productivity score (and range) |
|------------------------|-------------------|------------------------------|--------------------|--|
| Institutes | 484.3 | 22.3 | 184.3 | 52.9 (7.5–96.7) |
| Clinic hospital center | 525.9 | 32.5 | 68.3 | 69.1 (51–96.6) |
| Clinic center | 1256.1 | 26.9 | 101.0 | 58.1 (64.3–76.1) |
| Clinic | 182.1 | 40.3 | 59.5 | 82.9 (76.1–89.6) |
| General hospital | 1325.9 | 25.3 | 72.8 | 50.2 (34.9–82.4) |
| Special institute | 148.2 | 27.3 | 115.4 | 57.2 (8.8–95.8) |

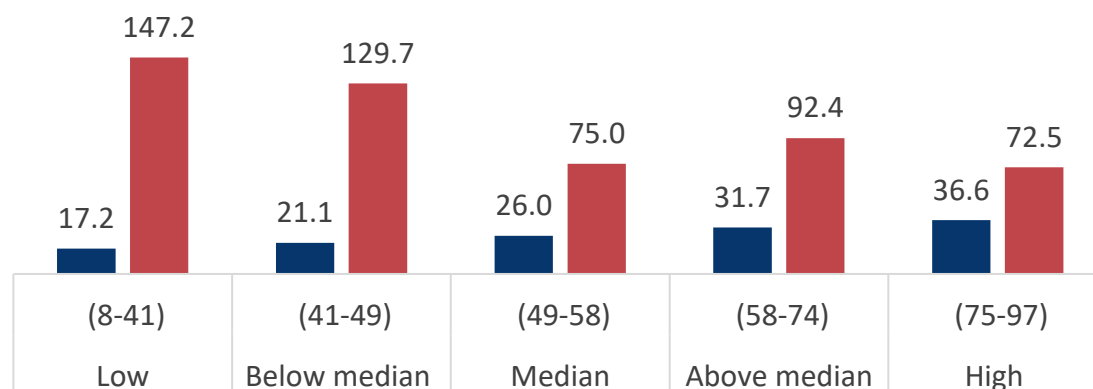
Figure 40 shows the distribution of hospitals by productivity scores. About 11 hospitals (20 percent) have a productivity less than 40 percent; the majority (43 percent, 24 facilities) shows a productivity between 40 percent and 60 percent; 13 centers have a productivity score above 60 but below 80, and only 3 have a productivity score above 90.

Figure 40. Distribution of Hospitals by Average Productivity Scores (0-100), 2010–13



Productivity scores at the hospital level also reflect trends in two main variables: the number of discharges per medical staff and total expenditure by discharge. The number of discharges per medical staff ranges across productivity quintiles from 17.2 on average at the bottom to 36.6 at the top, and total expenditure by discharge ranges from 72.5 to 147.2 (figure 41). The gap in cost per discharge between the most efficient and the least efficient groups of facilities is about twofold (SRD 72.5 versus 147.2), indicating room for optimization. Similarly, the number of discharges per staff indicates about a twofold difference between the bottom and the top productivity groups (17.2 versus 36.6 discharges per year).

Figure 41. Number of Discharges per Medical Staff and Total Expenditure per Discharge by Productivity Quintiles, Serbia, 2011–13



■ Annual Discharges per Medical staff ■ Annual Total Expenditure per discharge (SRD)

Quality and Efficiency in Inpatient Care

In addition, the productivity score is associated with quality indicators and other outcomes.

On average, the high-productivity group has a higher occupancy rate (80.9 percent versus 65.3 percent for the lowest quintile), a higher number of staff per bed (1.1 versus 1.5 for the highest quintile), and a lower length of stay (6.2 days versus 21.6). In addition, this group also has lower AMI and stroke readmission rates and lower C-section rates. More efficient facilities are medium size in terms of number of staff and number of beds. Facilities with a lower number of staff and larger facilities tend to be less efficient. There is no association between patient satisfaction and productivity score (table 9).

Table 9. Characteristics of Hospitals by Productivity Quintiles

| | Average productivity rank, PHC facilities, by facility characteristics, 2010–13 | | | | |
|--|---|--------------|---------|--------------|---------|
| | Low | Below median | Median | Above median | High |
| Productivity score (minimum–maximum) | (8–41) | (41–49) | (49–58) | (58–74) | (75–97) |
| Mean productivity score | 29.9 | 44.2 | 53.0 | 65.3 | 85.9 |
| Annual discharges per medical staff | 17.2 | 21.1 | 26.0 | 31.7 | 36.6 |
| Annual total expenditure per discharge (SRD) | 147.2 | 129.7 | 75.0 | 92.4 | 72.5 |

| | Average productivity rank, PHC facilities, by facility characteristics, 2010–13 | | | | |
|---|---|--------------|-----------|--------------|-----------|
| | Low | Below median | Median | Above median | High |
| INPUTS | | | | | |
| Total expenditure (SRD) | 654,602 | 1,612,383 | 2,675,557 | 1,774,174 | 1,255,120 |
| Number of beds | 296.1 | 480.4 | 765.2 | 489.2 | 309.2 |
| Bed occupancy rate (%) | 65.3 | 69.2 | 67.8 | 81.5 | 80.9 |
| Total number of staff | 469.8 | 997.3 | 1,564.3 | 918.3 | 657.4 |
| Number of staff per bed | 1.1 | 1.5 | 1.4 | 1.4 | 1.5 |
| Share of nonmedical staff | 29.3 | 31.1 | 24.7 | 26.6 | 26.0 |
| OUTPUTS | | | | | |
| Discharges | 6,273 | 15,544 | 29,184 | 20,502 | 19,063 |
| Average length of stay | 21.6 | 8.7 | 7.3 | 9.0 | 6.2 |
| C-section rate (%) | 30.0% | 24.7% | 30.3% | 28.2% | 20.4% |
| 30-day readmission rate – Acute myocardial infarction (%) | 2.8% | 1.2% | 2.1% | 0.3% | 0.7% |
| 30-day readmission rate – stroke (%) | 17.3% | 1.5% | 1.1% | 0.5% | 0.1% |
| Satisfaction | 4.3 | 4.4 | 4.4 | 4.3 | 4.4 |



APPENDIX D: QUALITATIVE ANALYSIS REPORT SUMMARY

Under the review of the health care sector of Serbia, 38 public health facilities of all types were visited and group interviews were conducted with management teams from May to September 2016. The aim of interviews was to get an insight into actual management practices in health facilities and challenges management units face, with a focus on financial and human resources management. The sample of visited facilities was based on geographical (regional) and health care level distribution, and 8 primary healthcare centers (*Dom zdravlja*) were visited, as well as 10 hospitals belonging to the secondary level of health care (six general hospitals and four specialized hospitals), 9 clinics / hospitals / institutions at the tertiary level, 2 specialized ambulatory services, 2 institutes for public health, and 4 pharmacies. Qualitative data collection was based on the guidelines developed and agreed upon by the research team. The focal areas of research included: (1) population needs, (2) human resources structure, and (3) financial matters and organization. The most important findings are presented below.

Regarding population needs and challenges, it was consistently reported that the most important population needs are related to the treatment of an increasing amount of malignant diseases that has been observed in the last 10-15 years, as well as an increase of non-communicable diseases. Healthcare professionals are serving dominantly older populations, and the demand for palliative care and home care has been rising, which is a substantial challenge due to the lack of capacities of health care facilities as well as the rigidity of the system in terms of organizational adjustment. Due to the lack of medical staff and high pressure of patients in need for curative services, it was reported that delivering preventive healthcare services is particularly challenging.

In almost all healthcare institutions, interviewees also reported the insufficient number of healthcare professionals, mainly specialized physicians, and consequently, difficulties to meet populations' needs. The main reasons for the lack of specialists were the natural attrition of the workforce due to retirement, and facilities' inability to replace retired physicians due to restrictions in new hiring in the public sector. In addition, some of the most qualified healthcare professionals (both nurses / technicians and experienced specialist physicians) are leaving their workplace and migrating to western Europe, or the private sector in Serbia, whereas their replacement is, again, constrained. Interviewees also expressed concerns about the lack of qualified specialists on the job market, as specialization and residence in the past was conditioned by previous employment. New employments require the authorization of the Governmental commission for employment in the public healthcare sector, and this procedure can be long and some requests are eventually rejected. Therefore, in some facilities, the number of staff is below the number set in the governmental Decision on the maximal number of permanent employees in the system of state services (Odluka o

maksimalnom broju zaposlenih na neodređeno vreme u javnim ustanovama), the normative standards (Normativi) and the Human Resource Plan (Kadrovski plan) – the qualitative study team noted that there are inconsistencies between these three documents. Overall, interviewees considered that this tight regulation of the number of employees in the health sector leads to understaffing in all categories of workers, and subsequent difficulties in providing healthcare services requested by the population accompanied by exhaustion and dissatisfaction of available workers, as well as frustration from patients. Finally, overall, interviewees considered that the public health care system would be seriously jeopardized and ultimately unable to fulfill its mission unless corrective measures to address the above-mentioned trends were adopted.

Management units of healthcare facilities provided different perspectives when it comes to the outsourcing of functions that are performed by non-medical – typically technical – staff, such as cleaning, cooking, security staff, and no typical pattern could be established. Efficiency gains associated with outsourcing depends on the size and type of facilities and the availability of providers of that particular service in the area, and in many places outsourcing was not considered an option.

An important finding from field visits indicated that management teams in all visited places have very limited autonomy in management of financial resources that are received from the Health Insurance Fund (HIF), which strictly defined for categories of spending. Savings in a certain category of spending is not recognized as responsible management and saved amounts are not available for some other categories. Budgets for the following year are usually rather reduced by the saved amount, and become definitely unavailable. This leads to frustration from management units of healthcare institutions, who do not perceive the HIF as a partner in the process of delivering efficient health care services. While there are no incentives for rational utilization of resources, there are also no penalties for poor planning and mismanagement either, and many health care facilities accumulated arrears.

Arrears in primary health care facilities (PHC) were caused mainly by the reforms conducted in 2005, which included measures related to dental care services. The 2005 Healthcare Law and Health Insurance Law significantly reduced the benefits package related to dental works and dentists' status and payment were revised. However, dentists challenged the reform and the Constitutional Court concurred with their views, leading to a series of trials. PHC facilities subsequently had to reimburse dentists not just for missed salaries – these arrears were lately cleared by the central Government, but also for the trial costs, interest rates, National Bank's provisions, etc. Arrears in small PHCs are also related to high operating costs and deficits of pharmacies in remote areas.

Arrears in general hospitals and clinical centers are due to the higher level of utilization of medical supply (medical material as well as salaries for “non-contracted” health workers by health facilities) and provision of more healthcare services, which are in turn due to increased needs and demands on the one hand, and enlarged capacities on the other hand. These are not recognized by the HIF though, which does not pay facilities beyond the annual ceiling that

was agreed upon at the beginning of the fiscal year. In addition, hospitals provide or pay utilities for other beneficiaries, who typically do not reimburse hospitals.

Finally, out of four pharmacies that were visited, three had significant arrears, while one was solvent, although there are significant threats for their positive financial account in the future due to the recent changes in regulatory framework. In 2013, insured populations could purchase reimbursed drugs in private pharmacies, while public pharmacies still had to comply with public procurement rules, and regulations of private pharmacies were missing, including geographical criteria preventing their concentration in wealthiest areas, while the distribution of public ones, which was regulated, included remote areas. In addition, because of the centralization of drug purchasing, as of 2014, public pharmacies lost the bonuses retailers provided them with when procurement used to be decentralized, which they typically used to hire additional staff. Finally, anecdotes were also collected about irresponsible behaviors from managers of public pharmacies who purchased unjustifiably large amounts of over the counter (OTC) drugs, which were then not sold, resulting in deficits.



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