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National Development Strategy Croatia 2030 Policy Note:

Health Sector

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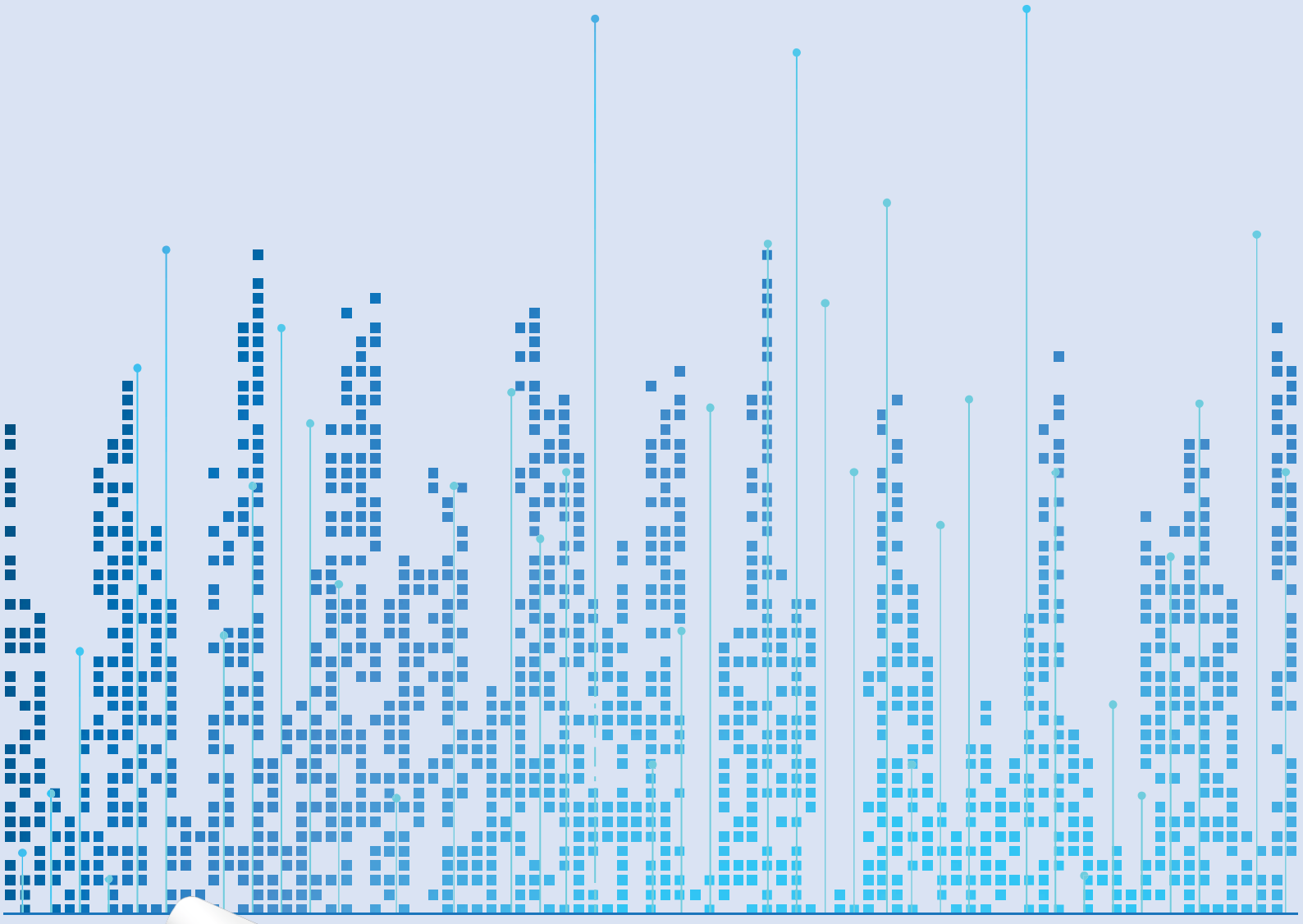

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Note

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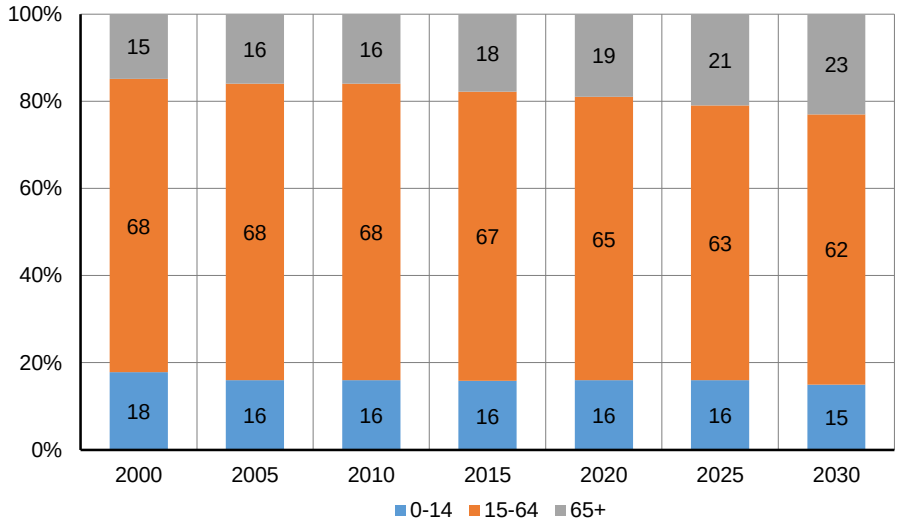
1. **Worldwide, health systems face many challenges to improving population health and meeting evolving patient expectations.** The key challenges that middle- and high-income countries have been facing over the past couple decades can largely be grouped into those related to rising health care costs, ensuring universal, timely and equitable access, improving quality of care and adjusting service delivery systems to emerging challenges. Changes in demography and disease patterns, the state of the economy and advances in medical technology have played a critical role in shaping these challenges. The first section of the policy note will give a brief overview of the main issues in containing costs, improving access and quality of care. Best practices in how the Organization for Economic Co-operation and Development (OECD) and European Union (EU) countries are attempting to address these challenges will also be highlighted. The following sections will review the Croatian health system from the fiscal sustainability, service delivery and quality care perspectives using existing data, exploring challenges and opportunities. The last four sections will provide context specific policy recommendations, highlight cross-cutting issues and outline implementation roadmap for the policy recommendations and potential flagship projects to address key health system challenges.

1 Overview of the global trends and societal challenges (including best practices)

1.1 Changes in demography and disease patterns

2. **Notable improvements in life expectancy and increases in the share of elderly among total population have been observed globally over the past few decades.** Global average life expectancy at birth has increased from 66.5 years in 2000 to 72 years in 2016[1], while in EU countries, it has increased from 77.7 in 2002 to 81 in 2016[2]. With higher life expectancy, it is estimated that the number of people over 65 years of age will increase from 8.5 percent to approximately 12 percent of global population and from 18 percent to approximately 23 percent of EU population by 2030 [3] (Figure 1). These demographic changes lay out a different landscape for health care delivery systems to operate in - where reduced demand for pediatric care and communicable diseases is happening in the backdrop of the increasing prevalence of non-communicable diseases (NCD) and high demand for chronic and long-term care.

Figure 1. Share of population age group, EU countries



Source: United Nations

3. **The increasing prevalence of unhealthy diets and sedentary lifestyles are contributing to a rapid increase of NCD risk factors among populations.** Worldwide, obesity nearly tripled since the 1970s.

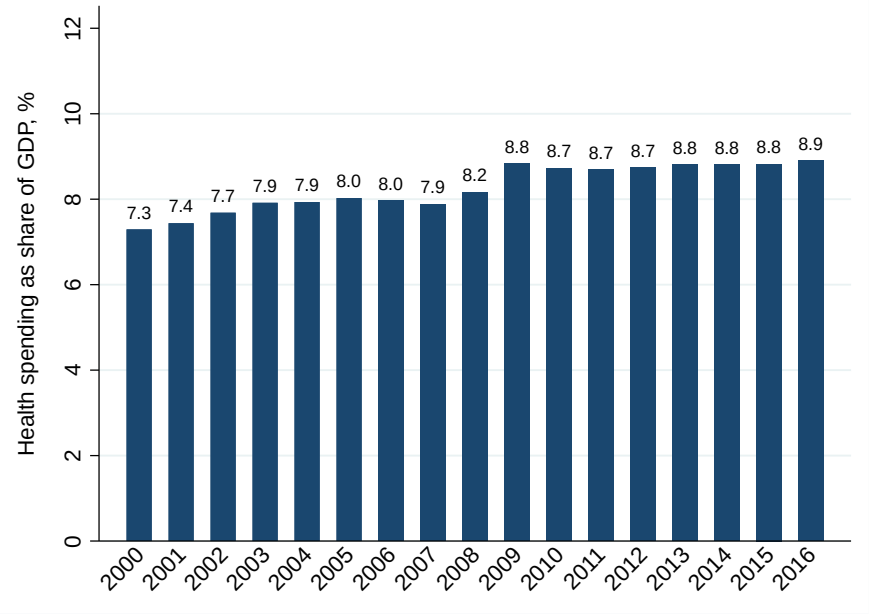
[1] Global Health Observatory data repository, WHO
[2] Eurostat
[3] U.S. Census Bureau, International Population Reports, P95/16-1, An Aging World: 2015, U.S. Government Publishing Office, Washington, DC, 2016

In OECD countries, one in two adults and one in six children are reportedly overweight or obese[4]. As a consequence, the prevalence of NCDs is also increasing at a fast pace. For example, the prevalence of diabetes in WHO European countries is projected to increase from 66 million in 2016 to 81 million in 2045[5]. The incidence of colon, breast and liver cancers, is also on the rise in many European countries[6].

1.2 Rising health care costs

4. **Rising health care costs are a major challenge for most EU and OECD health systems.** In the past two decades, health spending has been increasing, with an average annual growth of 3-4 percent. The healthcare expenditure growth has consistently outperformed economic growth, leading to increasing concerns over the fiscal sustainability of health systems. For example, health spending in OECD and EU countries increased by almost 1.6 times in the last two decades, while the economy only increased by 1.3 times over the same period (see Figure 3). Without proactive actions, healthcare costs are projected to continue to consume an increasingly larger share of income.[7]

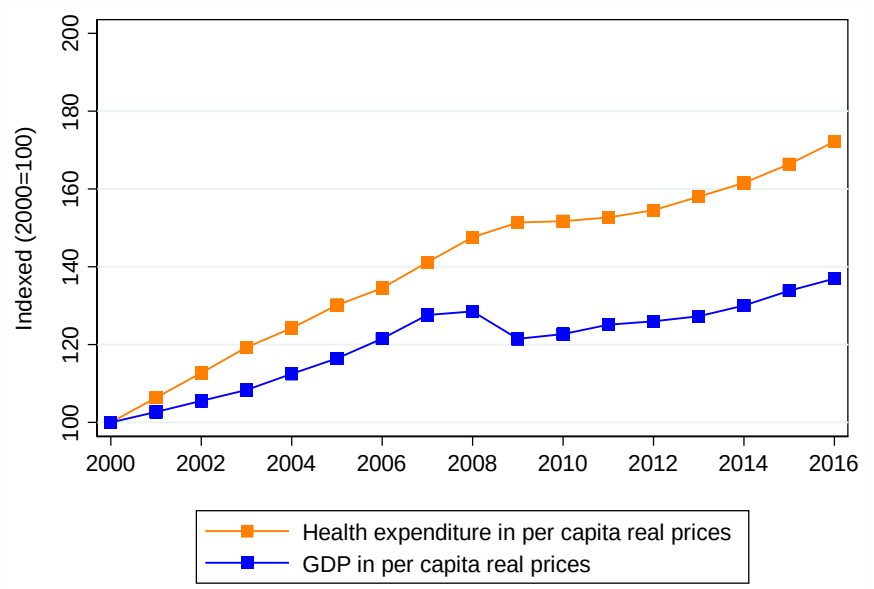
Figure 2. Health spending as share of GDP, OECD and EU countries, 2016



Source: WHO-GHED

[4] Obesity update, OECD 2017
[5] IDF Diabetes Atlas, 8th edition, 2017
[6] Torre, L. A., Siegel, R. L., Ward, E. M., & Jemal, A. (2016). Global cancer incidence and mortality rates and trends—an update. *Cancer Epidemiology and Prevention Biomarkers*, *25*(1), 16-27.
[7] OECD (2015), *Fiscal Sustainability of Health Systems: Bridging Health and Finance Perspectives*, OECD Publishing, Paris

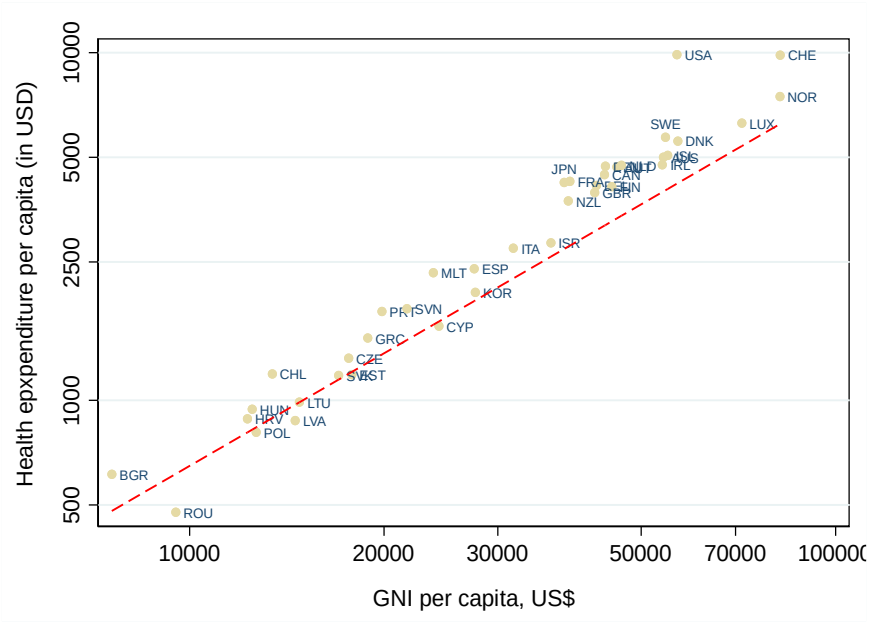
Figure 3. Health spending and GDP (indexed), OECD and EU countries, 2016



Source: WHO-GHED**There is a large variation in how much OECD and EU countries spend on health.** The United States and Switzerland have the highest health spending per capita (about USD 10,000 per capita), while countries like Hungary, Romania, and Lithuania spend less than USD 1,000 per capita. High-income OECD and EU countries, on average, have a larger share of health spending relative to gross domestic product (GDP) than middle-income OECD or EU countries (see Figure 4). Although on average, health spending as a share of GDP has been increasing over the past two decades, several countries reported a decline in health expenditures following targeted policies to slow the growth of health spending.

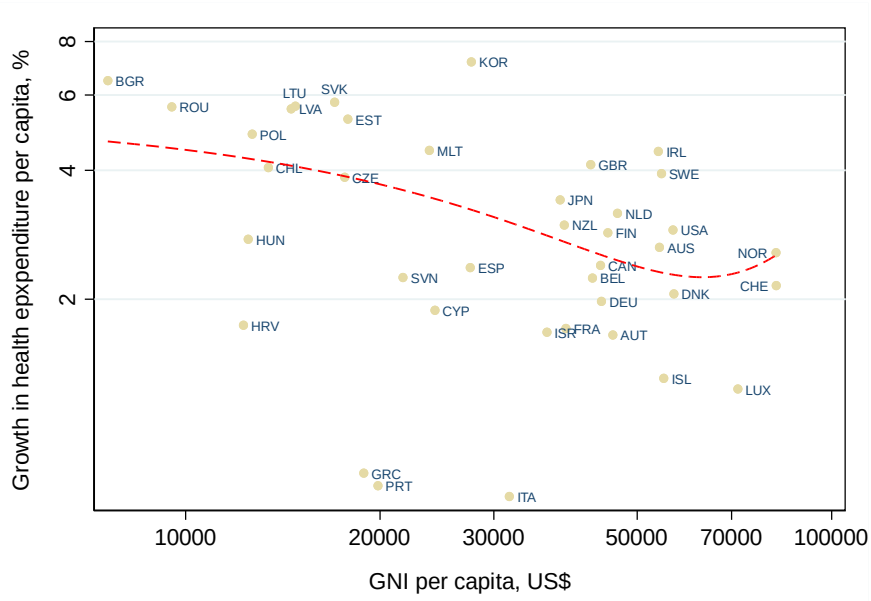
5. **The level of health spending growth varies among OECD and EU countries.** From 2000 to 2016, average annual growth in health spending for OECD and EU countries ranged from 7percent to less than 1percent, with countries with lower income reporting higher growth rates compared to higher income countries (see Figure 5). For example, several countries with relatively low health spending, such as Slovakia, Lithuania, Latvia, Estonia, and Poland, registered a growth of more than 5 percent in health spending. This can be attributed, in part, to specific policies that were implanted with the aim of improving access and increasing health spending to levels comparable with those of other OECD countries. On the other hand, many high-income OECD countries registered relatively lower health spending growth: for instance, Italy, Portugal, and France reported a growth of less than 1percent.

Figure 4. Health spending vs income, OECD and EU countries, 2016



Source: WHO-GHED[8]

Figure 5. Growth in health spending vs income, OECD and EU countries, 2016



Source: WHO-GHED

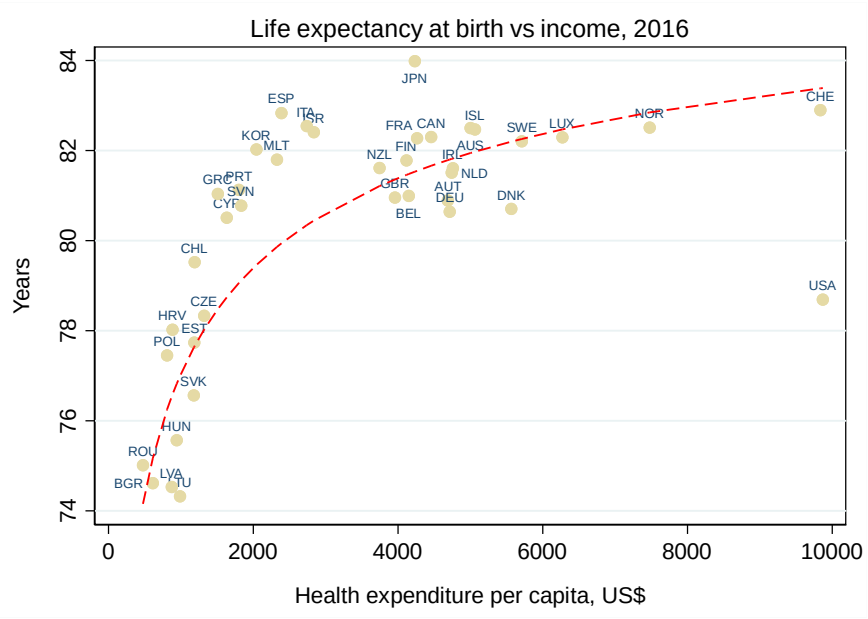
6. **Aggregately, growth was reported across all health expenditure lines in OECD and EU countries in the period from 2012 to 2016.** Long-term and outpatient care spending increased approximately 3 percent per year and pharmaceutical and inpatient care spending by 1-2 percent per year. At 10 percent annual growth, Latvia and Estonia experienced the highest increase in pharmaceutical expenditures, among the countries in the region. In general, out of total health expenditures, 60 percent of health spending was on curative and rehabilitative services, 20 percent on medical goods (mostly drugs), 13

[8] WHO Global Health Expenditure Database

percent on long-term care spending and less than 10 percent on collective services (i.e., public heath, governance and administration). Also, Western European countries have a lower share of pharmaceutical spending (approximately 15 percent) compared to countries in Eastern Europe (25 to 30 percent).

7. **Higher spending does not always lead to better health outcomes.** The positive relationship between health spending and life expectancy is only true up to a certain level of health spending. Above 3,000 USD per capita, the relationship between health spending and increasing life years begins to diminish (see Figure 6). However, the evidence on the relationship between health expenditures and other 'softer' types of health outcomes, such as quality of life or patient experiences, is limited.

Figure 6. Public spending on health vs. life expectancy, 2016



Source: WHO-GHED and World Bank-WDI

8. **Three broad determinants of rising health spending in developed countries can be identified: demography, income, and residual**. However, the precise effects that each of these determinants have on health spending growth still remain unsettled in the literature[9]. Multiple studies suggest a negligible effect of aging on health spending growth. Income growth and residuals are shown to be the major drivers of growth. The residuals include advances in technology, medical inflation, and health policies for the expansion of benefits or coverage.

9. **Aging and changes in disease patterns have been shown to have a limited effect on health expenditure growth.** The ageing population is often cited as one of the key drivers of rising health spending. The elderly people are more at risk for chronic illnesses, which are costly conditions to manage. However, empirical studies suggest that the impact of ageing on health spending is not as large as expected. On aggregate, approximately 10 percent of spending growth in OECD countries can be attributed

[9] de la Maisonneuve, Christine and Oliveira Martins, Joaquim, A Projection Method for Public Health and Long-Term Care Expenditures (July 9, 2013). OECD Economics Department Working Paper No. 1048, 2013. Available at SSRN: https://ssrn.com/abstract=2291541 or http://dx.doi.org/10.2139/ssrn.2291541

to demographic changes[1011]. Country level data from France and the United States has also confirmed that ageing explains only a small part of the rise in health spending[1213]. Changes in disease patterns are also frequently cited as key factors driving growth. A transition from acute infectious diseases to chronic NCDs may require continuous and costlier treatments, and thus fiscally strain health systems. However, when controlling for demographic effects, the number of services, and treatment practices, the overall effect of the transition to NCDs on spending growth is minimal[10].

10. **The demand for healthcare is expected to increase with income, which is likely to lead to higher aggregate health spending.** Up to 40 percent of growth in health spending in OECD countries can be attributed to income growth[1011]. However, the precise impact of income on health spending is difficult to estimate because of the variability of elasticity estimates, methodological approaches, assumptions made and country contexts.[14]

11. **Multiple studies suggest that a primary determinant of spending growth is the development, adoption, and diffusion of new health technology**[15]. It has been estimated that 25 to 50 percent of the growth in health spending can be attributed to advances in technology, of which substantial parts can be attributed to outpatient services and pharmaceutical products[1116]. Various measures and health technology assessment (HTA) tools are used to control the adoption and diffusion of technologies in order to slow spending growth[1718]. For example, policy approaches used to restrain pharmaceutical spending growth include strict criteria for benefit and cost of covered medical technologies, careful review of medication performance, and engaging with other countries and organizations in negotiating procurement[19]. Countries such as Australia, England, and South Korea use an incremental cost effectiveness ratio (ICER) to assess coverage of a pharmaceutical based on its therapeutic benefit per unit cost[20]. Effectiveness thresholds are rarely used in isolation to determine pharmaceutical coverage, as societal considerations need to also be taken into account[21]. Therefore, the use of cost-effectiveness thresholds in different countries has shown mixed evidence. An example of cooperated negotiation includes the

[10] de la Maisonneuve and Martin (2013)
[11] Smith S, Newhouse JP, Freeland MS. Income, insurance, and technology: why does health spending outpace economic growth? Health Aff (Millwood) 2009; 28: 1276–84.
[12] Dormont B Grignon M, and Huber H. Health expenditure growth: reassessing the threat of ageing. Health Economics, Wiley, 2006, 15 (9), pp.947-963.
[13] Dieleman JL, Baral R, Birger M, et al. US Spending on Personal Health Care and Public Health, 1996-2013. JAMA. 2016;316(24):2627–2646
[14] Newhouse JP. "Medical Care Costs: How Much Welfare Loss?" Journal of Economic Perspectives, vol. 6, no. 3, Summer 1992.
[15] Chernew ME, Newhouse JP. Health Care Spending and Growth. Oxford: Elsevier B V, 2012.
[16] Bundorf KM, Royalty A, Baker LC. Health care cost growth among the privately insured. Health Aff. 2009;28(5):1294–304.
[17] Kristensen FB, Husereau D, Huić M, et. al., A. Identifying the Need for Good Practices in Health Technology Assessment: Summary of the ISPOR HTA Council Working Group Report on Good Practices in HTA. Value Health. 2019 Jan;22(1):13-20.
[18] Garrido MV, Kristensen FB, Nielsen CP, Busse R. Health Technology Assessment and health policy-making in Europe. Current status, challenges and potential. Observatory Studies Series No14, World Health Organization 2008
[19] OECD, Pharmaceutical Innovation and Access to Medicines, 2018, https://doi.org/10.1787/9789264307391-en.
[20] V Paris and A Belloni, "Value in Pharmaceutical Pricing," OECD Health Working Papers, July 11, 2013, https://doi.org/10.1787/5k43jc9v6knx-en.
[21] Paris and Belloni, "Value in Pharmaceutical Pricing."

BeNeLuxA coalition in Europe that engages in joint price negotiations[22]. The impact of joint negotiations on pharmaceutical spending growth remains to be seen.

12. **Some government policies and priorities may lead to increases in health spending.** The expansion of benefits packages and health insurance are noted as important drivers of health spending in literature[23]. Health insurance or benefits expansion increases health spending in two ways: (a) health insurance changes the practice style among health providers, and (b) it has spill-over effects, meaning changes in the insurance status for one group of patients could influence treatment of other patients.

Box 1. Selected cost containment practices

Controlling pharmaceutical spending

In OECD countries, pharmaceutical spending accounts for about 20 percent of total spending. A significant portion of pharmaceutical spending can be saved by tackling the overpricing, oversupply, and overprescription of brand name drugs (OECD, 2017).

P4P for generics (France)

In 2009, the Public Health Insurance Fund introduced the Contract for Improving Individual Practices (CAPI in French) Program. The goal of the CAPI was to give financial incentives for improving the quality of care assessed by the achievement of 16 indicators covering the following areas: prevention and screening of chronic illness, chronic disease follow-up, and prescription of generics. Five of the 16 indicators are related to the prescription of generics: the proportion of generics for antibiotics, the proportion of generics for proton-pump inhibitors, the proprtion of generics for hypertension, the propotion of generics for antidepression, and the propotion of generics for ACE inhibitors. Partcipating GPs can receive an annual bonus of 5,000 Euros on top of their fee-for-service remuneration. Like most pay-for-performance schemes, the effectiveness of CAPI remains controversial.

Source: Olivier, Saint-Lary, and Sicsic, Jonathan, (2015), Impact of a pay for performance programme on French GPs' consultation length, *Health Policy*, 119, issue 4, p. 417-426.

Cooperation procurement (Norway)

The Norwegian Drug Procurement Cooperation (LIS) is responsible for developing guidelines, specifications, purchase and delivery agreements for pharmaceutical manufacturers in cooperation with 80 government hospitals (Mack, 2015). The Norwegian authorities pay the drugs in bulk on behalf of hospitals. LIS purchased all kinds of pharmaceutical products, including high-cost oncology drugs, hepatitis C drugs, growth hormones, and immunostimulants. Norway, on average, has the lowest pharmaceutical spending among OECD countries. The prices of drugs in the country is 30 percent lower compared to the list prices in neighboring countries.

[22] European Public Health Alliance, "BENELUXA: First Results of Multi-Country Cooperation on Medicine Price Negotiations," September 2017

[23] Finkelstein A. "The Aggregate Effects of Health Insurance: Evidence from the Introduction of Medicare." Quarterly Journal of Economics, vol. CXXII, no. 1, February 2007.

Box 2. Changes in provider payments

Changes in provider payments
Global budget quality contract (MA, USA)

Under a global budgeting system, hospitals receive annual lump-sum payments to cover all spending instead of being reimbursed for each individual service. In the United States, the State of Massachusetts was the first to adopt payment reforms; the Blue Cross Blie Shield (BCBS) of Massachusetts implemented the Alternative Quality Contract (AQC), which pays providers a risk-adjusted global budget. By 2012, about 85percent of the physicians in the BCBS network had entered the AQC. The AQC is a "two-sided contract" where the savings are shared if spending is below budget and the risks are shared if spending exceeds the budget. Impact evaluation studies suggest that the Massachusetts AQC led to lower spending growth and generally greater quality improvements. A global budget with quality incentives may encourage changes in practice patterns that help reduce spending and improve quality.

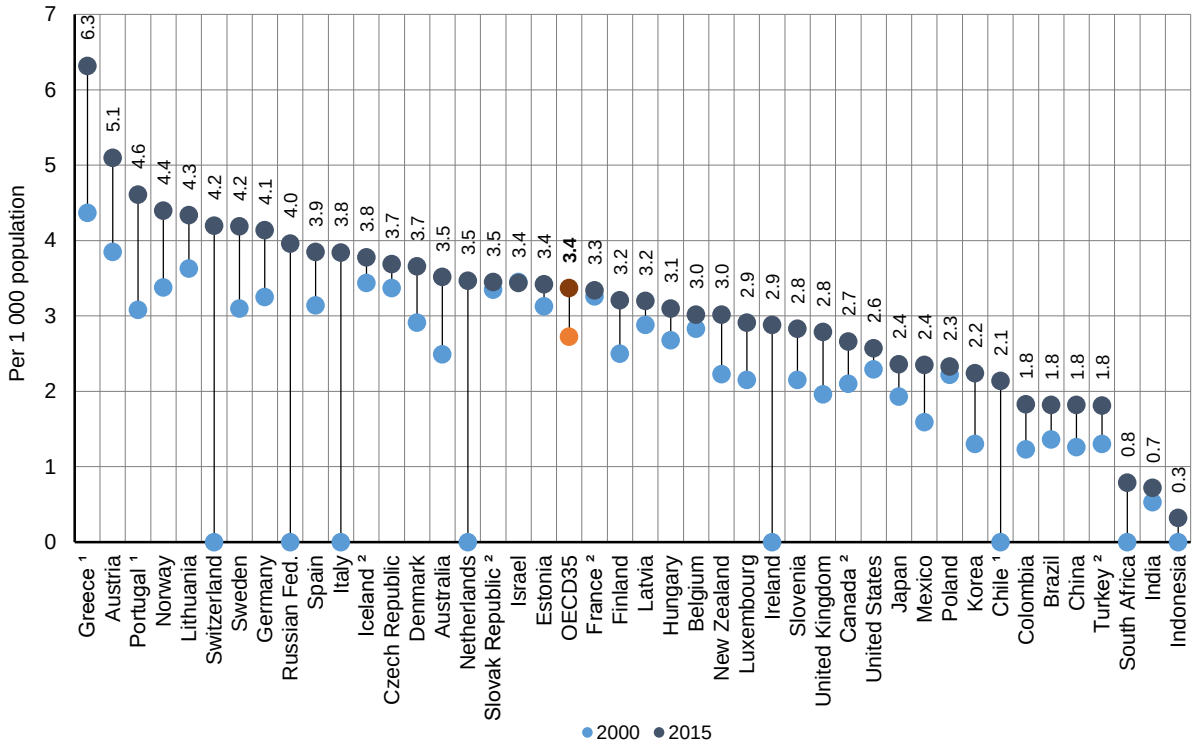
Source: Z. Song, S. Rose, D. G. Safran et al., "Changes in Health Care Spending and Quality Four Years into Global Payment," *New England Journal of Medicine,* published online Oct. 30, 2014

1.3 Challenges in improving access to care

13. **Although there have been significant achievements in the provision of universal healthcare coverage in EU countries, many challenges in improving access to care (such as shortages of healthcare workforce, access to long-term care and timeliness of care) still remain.** Despite over time the number of health professionals has grown (Figure 7 and Figure 8), workforce shortages persist in most health systems. Workforce projections in OECD countries predict a shortage of 400,000 doctors and 2.5 million nurses[24]. The likely causes of health worker shortages include the changing landscape of care delivery, lower enrollment in or graduation rates from medical training and low staff retention rates[25]. Shortages are frequently pronounced in primary care and rural areas (Figure 9)[26].

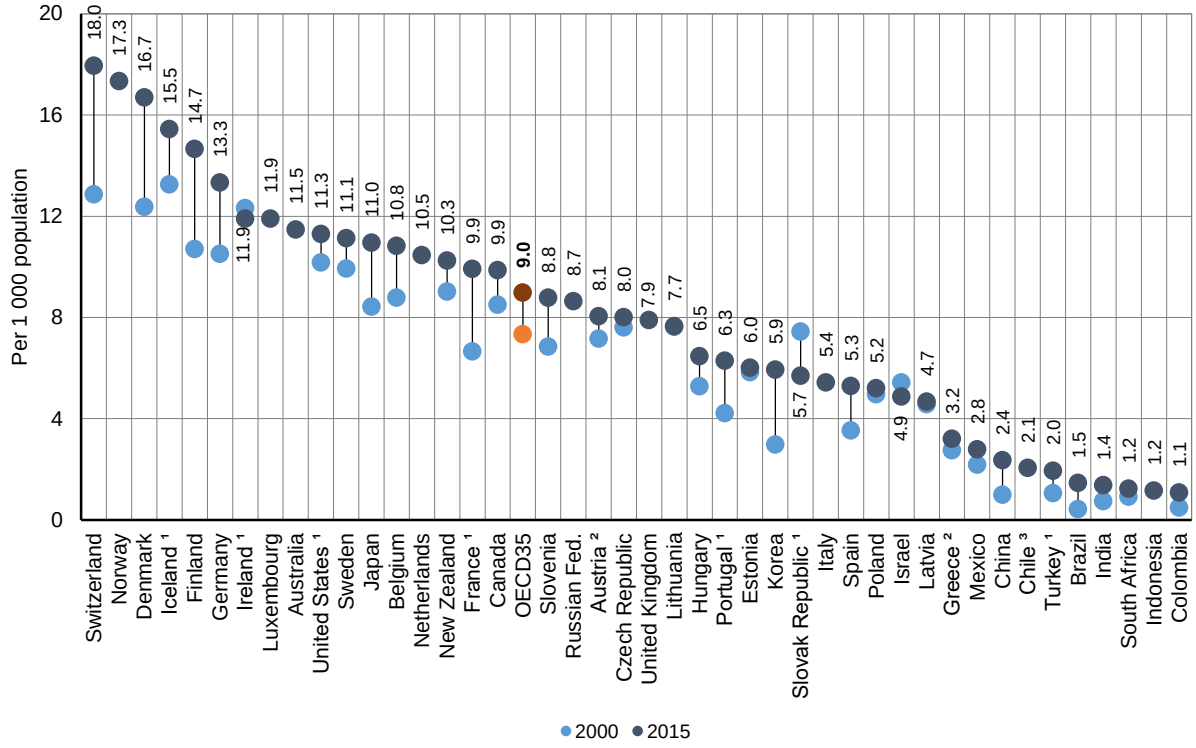
[24] Richard M. Scheffler and Daniel R. Arnold, "Projecting Shortages and Surpluses of Doctors and Nurses in the OECD: What Looms Ahead," *Health Economics, Policy and Law* 14, no. 2 (April 2019): 274–90, https://doi.org/10.1017/S174413311700055X.
[25] Scheffler and Arnold.
[26] Expert Panel on Effective Ways of Investing in Health, "Access to Health Services in the European Union," accessed March 16, 2019

Figure 7. Practicing doctors per 1,000 population, 2000 and 2015 (or nearest year)



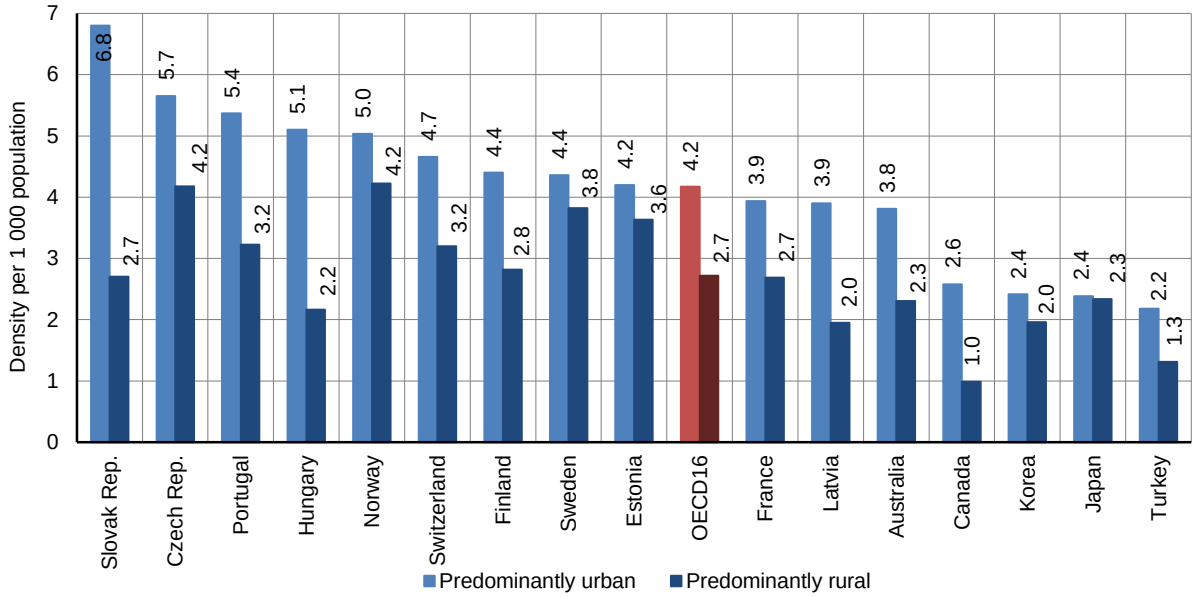
Source: Health at a Glance 2017

Figure 8. Practicing nurses per 1,000 population, 2000 and 2015 (or nearest year)



Source: Health at a Glance 2017

Figure 9. Physician density, rural vs urban areas, 2015 (or nearest year)

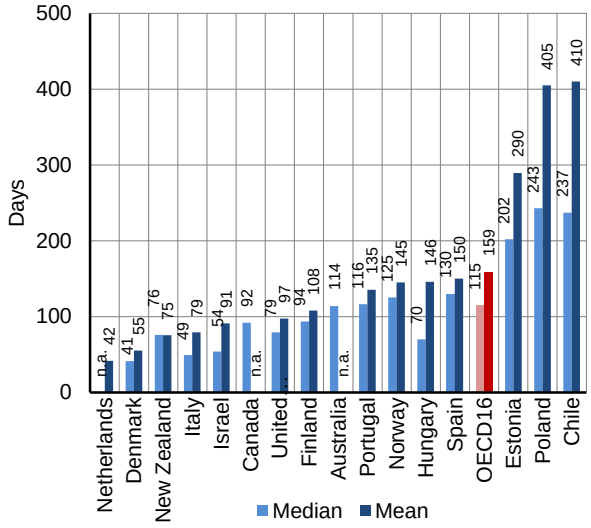


Source: Health at a Glance 2017[27]

14. **Issues in the timeliness of routine and specialized care are persistent in many EU and OECD countries.** For instance, for elective procedures such as hip replacement surgery or cataract surgery, waiting lists are notoriously long and it can take months or even over a year for the patient to be operated (Figure 10 and Figure 11)[28]. Limited or inconvenient hours for primary care can lead to higher non-emergent care volumes in emergency services[29].

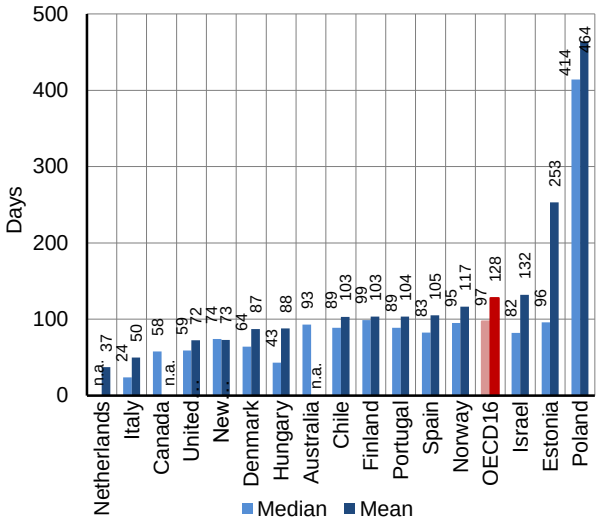
[27] "Health at a Glance 2017 - OECD Indicators - En - OECD," accessed March 16, 2019, http://www.oecd.org/health/health-systems/health-at-a-glance-19991312.htm.
[28] L Siciliani and M Borowitz, "Waiting Time Policies in the Health Sector: What Works?," OECD Health Policy Studies (Paris, 2013), https://doi.org/10.1787/9789264179080-en; Luigi Siciliani, Valerie Moran, and Michael Borowitz, "Measuring and Comparing Health Care Waiting Times in OECD Countries," *Health Policy* 118, no. 3 (December 1, 2014): 292–303, https://doi.org/10.1016/j.healthpol.2014.08.011.
[29] Marleen Smits et al., "The Development and Performance of After-Hours Primary Care in the Netherlands: A Narrative Review," *Annals of Internal Medicine* 166, no. 10 (May 16, 2017): 737–42, https://doi.org/10.7326/M16-2776.

Figure 10. Hip replacement waiting times, averages, 2015



Source: Health at a Glance 2017.

Figure 11. Cataract surgery waiting times, averages, 2015

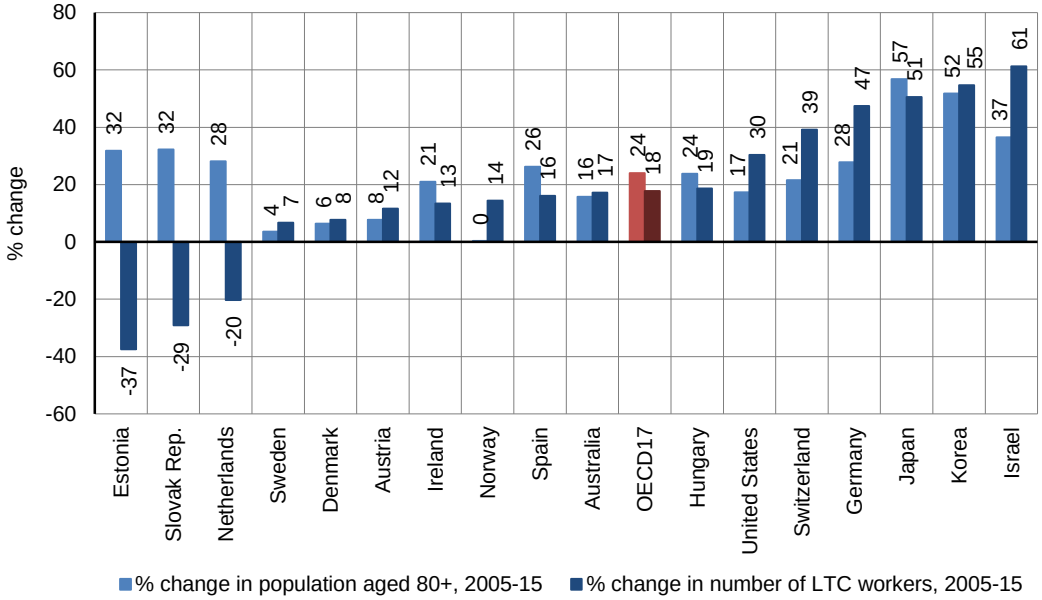


Source: Health at a Glance 2017.

15. **Given the demographic trends, demand for long term care (LTC) in many EU countries is increasing**. The shortage of beds is frequently coupled with a shortage of caregivers[30]. Figure 12 shows that, while some countries have taken steps to increase the number of care workers, in select others the number of caregivers has actually decreased.

[30] OECD, "Long-Term Care: Growing Sector, Multifaceted Systems," in *Help Wanted?*, by Francesca Colombo et al. (OECD, 2011), 37–60, https://doi.org/10.1787/9789264097759-6-en.

Figure 12. Long term care workers and population aged 80 and over, 2005 and 2015 (or nearest year)



Source: Health at a Glance 2017

16. **Common approaches used to address health worker shortages in OECD countries include expanding nursing roles, working with foreign-trained professionals, and changing recruitment and pay policies**. Many OECD countries, for instance, are changing nursing roles to include duties that were traditionally physicians' (task shifting) or taking on responsibilities that were previously not within the nursing scope, such as case management (task supplementation)[31]. While some countries tap into international medical graduates to fill the gap in lower resourced areas[32], others relax medical school enrollment policies or increase remuneration in an effort to increase the supply of workforce[33]. A summary of systematic reviews on the effect of expanded nursing roles in primary care shows that nurses can achieve the same, if not better, outcomes than physicians for selected services and that costs are comparable or lower[34]. Using foreign medical professionals has also proved successful as a short-term solution to supplement understaffed areas[35]. Given physician and nurse trainings are a multi-year process, the impact of increased medical school enrollment over the long term remains to be seen[36].

17. **Countries use various tools and interventions to address geographic imbalances in healthcare access, such as telemedicine, service networks, and staff incentives to work in rural and remote**

31 Claudia B. Maier, Linda H. Aiken, and Reinhard Busse, "Nurses in Advanced Roles in Primary Care," November 20, 2017, https://doi.org/10.1787/a8756593-en.
32 Ono, Schoenstein, and Buchan, "Geographic Imbalances in Doctor Supply and Policy Responses."
33 Tomoko Ono, Gaétan Lafortune, and Michael Schoenstein, "Health Workforce Planning in OECD Countries," June 26, 2013
34 Maier, Aiken, and Busse, "Nurses in Advanced Roles in Primary Care."
35 Ono, Lafortune, and Schoenstein, "Health Workforce Planning in OECD Countries."
36 Maier, Aiken, and Busse, "Nurses in Advanced Roles in Primary Care."

areas[37]. Remote monitoring, particularly for chronic diseases, has been piloted in the UK, Germany, Italy, and Spain[38]. When rural health centers are rare or unequipped for particular health needs, some policies have focused on strengthening transfer networks to different points of care. To address staff shortages in rural areas, Canada and Australia have created medical training and pay incentive programs to encourage health workers to practice in rural health centers. The impacts of these various approaches are still being evaluated. For telemedicine, a review of 58 systematic reviews showed that overall, it improved patient outcomes in quality of life, mortality and hospital admissions[39]. Training and pay incentives to attract physicians to rural areas have been successful in some contexts; however, the evidence of the retention of physicians in these rural areas over the long-term is not conclusive[40].

18. **Policy responses to long waiting times in Europe include setting benchmarks with financial conditions, engaging with private providers, and influencing demand for procedures**[41]. In many OECD countries, maximum waiting times have been established but the enforcement and consequences of exceeding those times varies. Some countries have also chosen to engage with private providers to provide services, or even to send patients abroad. Attempts have also been made to influence the demand for procedures and prioritize patients by implementing stricter criteria for certain procedures[35]. Setting maximum wait times with sanctions has been shown to be effective in reducing wait times, according to a study on waiting time policies in OECD countries. In England and Finland, maximum wait times were implemented along with sanctions if targets were not met. In England, administrators lost their positions if wait times exceeded targets and in Finland, financial penalties were levied. Both countries have seen dramatic decreases in wait times longer than six months[35]. Other policies, such as subsidizing non-publicly provided procedures or narrowing the criteria for placement on the waiting list, have had mixed results.

19. **Efforts to address LTC challenges include increasing LTC funding, prioritizing home care over residential care, and increasing the professionalization of home carers**[42]. Whereas some countries have a long tradition of residential care, it is considered more expensive than at-home care and recommended to be reserved for those with complex care needs[43]. Policies have been implemented in some EU countries to incentivize transitions away from residential care to home care. Given the shortage of LTC workers and cost of professional care, informal workers are often filling the role of home carers. To ensure quality care in this less regulated space, some countries have created subsidized training programs for home carers to obtain the adequate skill levels. A strong trend is notable in EU countries, as more of them move towards the privatization and marketisation of long-term care, in an effort to supplement public sector services[43].

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[37] Bernd Rechel et al., "Hospitals in Rural or Remote Areas: An Exploratory Review of Policies in 8 High-Income Countries," *Health Policy* 120, no. 7 (July 1, 2016)

[38] Katherine Rojahn et al., "Remote Monitoring of Chronic Diseases: A Landscape Assessment of Policies in Four European Countries," *PLOS ONE* 11, no. 5 (May 19, 2016)

[39] Annette M. Totten et al., *Telehealth: Mapping the Evidence for Patient Outcomes from Systematic Reviews*, AHRQ Comparative Effectiveness Technical Briefs (Rockville (MD): Agency for Healthcare Research and Quality

[40] Tomoko Ono, Michael Schoenstein, and James Buchan, "Geographic Imbalances in Doctor Supply and Policy Responses," April 3, 2014, https://doi.org/10.1787/5jz5sq5ls1wl-en.

[41] Siciliani and Borowitz, "Waiting Time Policies in the Health Sector: What Works?"

[42] S Spasova et al., "Challenges in Long-Term Care in Europe. A Study of National Policies" (Brussels: European Commission, n.d.).

Box 3. Expansion of Nurse Practitioner and Physician Assistant Authorities in the Netherlands

Expansion of Nurse Practitioner and Physician Assistant Authorities in the Netherlands[43]

In the Netherlands, a 2012 amendment granted nurse practitioners (NP) and physician assistants (PA) full practice authority (FPA), which removed restrictions on performing select procedures and prescribing prescription-only medicines. Two years post-amendment, 83.5percent of NPs and 86.3percent of PAs gained full practice authority after completing a series of key steps, such as making individual agreements with physicians, making group agreements with pharmacists, arranging access to patient information, and training. The results showed that NPs and PAs performed more reserved procedures than before and did so more autonomously. The time that was previously spent on NPs and PAs requesting authorization to conduct procedures also decreased, freeing up time for increased patient care and increased access to care.

Box 4. Implementing Maximum Waiting Times and Penalties in Finland

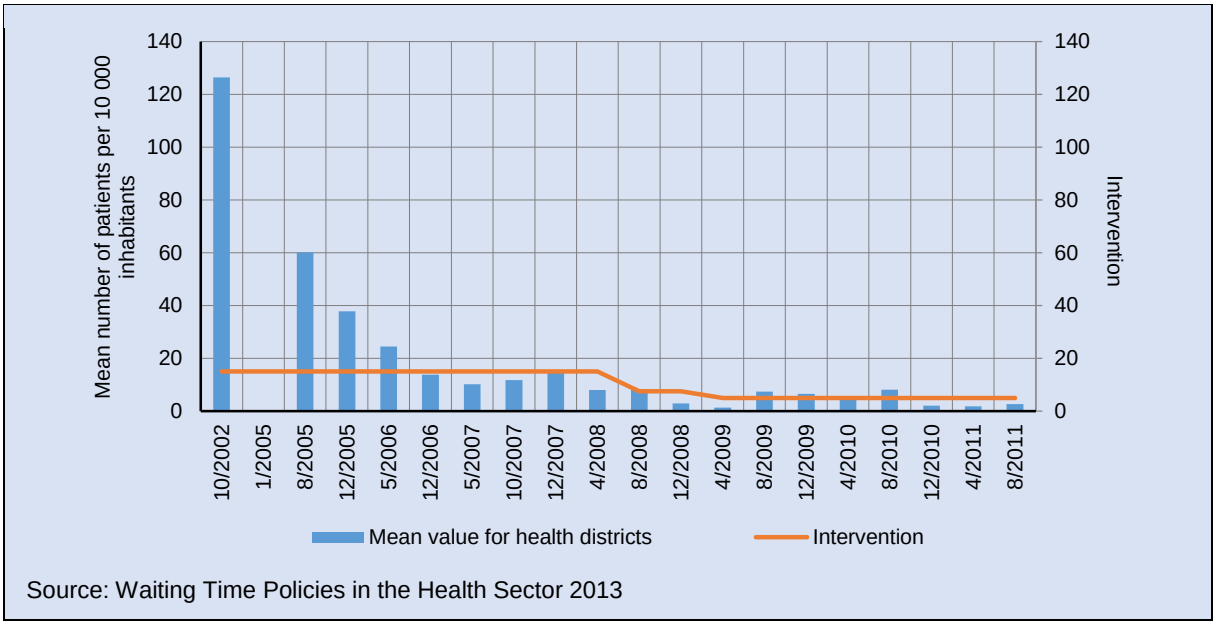
Implementing Maximum Waiting Times and Penalties in Finland[44]

In Finland, the Health Care Guarantee was created in 2005 and revised in 2011 to establish clear guidelines on timely access to care. Thresholds were defined to establish maximum waiting times for care, including the time to follow up on a referral (three weeks) and time to receive a procedure (three months with an additional three-month extension for oral health care or specialized care). Hospital districts were, at first, allowed a rate of 15 patients per 10,000 inhabitants who waited longer than six months for care. This threshold was revised down to 7.5 in 10,000 in 2008, 5 per 10,000 in 2009, and 4 per 10,000 in 2012 (Figure 13).

When hospitals exceeded the thresholds, orders of improvement were issued to hospital districts, accompanied by a warning of fines. Waiting lists decreased considerably after the issuing of fines, and as of 2013, no fines have actually been levied. The number of patients who waited longer than six months for care dropped from a peak of 9,691 in January 2007 to 745 in April 2009. A similar approach is used to enforce the three-week maximum for referral appointments; under a threat of a fine of 2 million Euros in 2010, two hospital districts were able to show significant improvements and reduced their violations of the three-week mark to about 2percent of cases.

Figure 13. Number of patients waiting longer than 180 days for specialist care per 10 000 inhabitants October 2002 to April 2011

[43] Daisy P. De Bruijn-Geraets et al., "National Mixed Methods Evaluation of the Effects of Removing Legal Barriers to Full Practice Authority of Dutch Nurse Practitioners and Physician Assistants," *BMJ Open* 8, no. 6 (June 1, 2018)
[44] Siciliani and Borowitz, "Waiting Time Policies in the Health Sector: What Works?"



Source: Waiting Time Policies in the Health Sector 2013

1.4 A lack of comprehensive national quality improvement frameworks

20. **Access to care is not sufficient to improve health outcomes - the quality of care provided is also essential.** Medical errors, for instance, are reported to be one of the leading causes of death[45]. The economics of the right care are also substantial; inappropriate care, for example, is believed to account for up to 1/3 of health care costs, and medical errors are estimated to cost about one trillion dollars in the US alone[46].

21. **Overall, there is scant evidence showing that the provision of high-quality care in one area (i.e. diabetes, primary care) leads to improvements in the quality of care provided in other areas (i.e. hypertension, hospital care); hence,** there has been a global shift from stand-alone quality improvement initiatives to building a learning health system and a quality improvement culture. The quality improvement culture is believed to facilitate the transfer of quality improvement principles and advances from measured and monitored areas to other non-measured and non-monitored areas.

22. **Building comprehensive national quality improvement frameworks is essential to establishing a sustainable quality improvement culture.** There are several foundational blocks, that are essential to building a national quality improvement framework, that countries are advised to focus on[47]:

a) Developing a national quality care policy and strategy to identify priorities, goals and outline roadmaps;

b) Establish a national governance system for quality;

c) Establish and/or strengthen information systems to enable and ensure continuous measurement of quality; and,

[45] Makary, M.A. and M. Daniel, *Medical error—the third leading cause of death in the US.* BMJ, 2016. **353**.;
[46] Slawomirski, L., A. Auraaen, and N.S. Klazinga, *The economics of patient safety*. 2017.
[47] *Handbook for national quality policy and strategy: a practical approach for developing policy and strategy to improve quality of care*. 2018, World Health Organization.

d) Implement system-wide quality improvement interventions.

23. **National quality strategies and policies are important tools to facilitate concerted quality improvement efforts within health systems.** They often lay the ground for effective quality governance by designating governance structures, outlining monitoring and reporting frameworks, setting priorities and goals, and providing roadmaps to guide future efforts. Several OECD and EU countries have explicitly formulated visions and strategies in policy documents. For example, Scotland has developed within its 2020 Vision the Healthcare Quality Strategy for NHS Scotland and accompanying Route Map, which outline priority areas for the health system to focus on, such as effective, safe and patient-centered care. The measures are identified to monitor progress in selected areas. In the US, the National Strategy for Quality Improvement in Health Care sets out the directions for the quality improvement system by laying out key principles, six priorities and nine levers.

24. **Reliable and valid measures are essential to understanding the state of the quality of healthcare and guiding improvement efforts at both national and provider levels.** The development of valid, reliable and actionable quality indicators is a complex, resource-intensive process[48][49]. A large number of quality measures have already been developed over the past few decades and are available for use internationally. For instance, the Centers for Medicare and Medicaid Services database has over 2,000 indicators listed. Therefore, only a few high-income OECD countries heavily invest in the development of new measures, while many others focus on building national capacities and structures to routinely identify and implement quality indicators.

25. **Continuous quality measurement and monitoring are essential to sustainable quality improvement systems.** Health information systems are increasingly used to ensure continuous data collection and reporting and are often applied to automatically collect, analyze and report quality data from existing electronic medical records or administrative data systems. Denmark and England provide good examples of how health information systems are becoming tailored to quality needs. For example, hospitals in England collect over 300 indicators on quality and performance. In the US, electronic clinical quality measures (eCQM) are increasingly promoted for a wider implementation to increase automated quality data collection and reporting while shifting away from chart abstractions and manual reporting. The burden of data collection, however, is becoming a concern because, given the wide range of interests and priorities, data collection and reporting can quickly become a resource-intensive onerous exercise.

26. **Measuring quality is not sufficient to improve quality – quality improvement interventions are needed.** Many national level improvement interventions used in OECD and EU countries relate to standardization and involve professional licensing, accreditation of health facilities, regulation of market access to medications and devices and development of clinical guidelines. Other types of interventions used are public reporting, benchmarking and feedback on quality as well as pay-per-performance schemes. Quality improvement is a rapidly evolving area and therefore, despite the wide use, evidence on the effectiveness of many interventions is either still lacking or inconclusive. The following gives a brief upshot of key relevant trends in the quality improvement area:

a) Continuing professional development (CPD), which widely used in OECD and EU countries, is key to keeping providers up to date with recent advances and developments in their respective fields and to delivering high quality care. Nowadays, rather than stand-alone physician-driven professional development frameworks, a more formalized CPD framework with minimum requirements (hours, content etc.) and a link to licensing and revalidation is encouraged. The UK, the US and

[48] Campbell, S., et al., *Research methods used in developing and applying quality indicators in primary care.* Qual Saf Health Care, 2002. **11**(4): p. 358-364.
[49] *Quality Indicator Measure Development, Implementation, Maintenance, and Retirement*. 2011, AHRQ Quality Indicators.

Australia provide some good examples on how to formalize the CPD and licensing procedures; in these countries, all physicians should meet CPD requirements to maintain their license to practice.

b) Accreditation processes for health facilities aim to improve quality through assessment against established standards. The research findings show that accreditation may improve quality of care and the impact may vary depending on context and the tools/methods used. Three approaches to accreditation are observed in OECD countries, ranging from a basic one-time external assessment (Czech Republic, Italy, Norway) to a more advanced comprehensive continuous assessment involving a combination of an external assessment, an internal quality improvement cycle and incentives (England, Denmark, Australia)[50]. The importance of properly selecting measures cannot be stressed enough, as robust evidence on the development, implementation and impact of standards is very limited to date[51]. Accreditation processes, initially designed exclusively for hospitals, are now moving beyond their initial scope and are being introduced to standardize processes and structures in other areas of care. For example, the Joint Commission in the US is also involved in the accreditation of ambulatory care, laboratories and pharmacies, while England expanded the process to primary and community care facilities.

c) Pay per performance is widely used to incentivize quality improvements in many OECD countries such as England, the USA and France. The data on the sustainable effectiveness of the intervention, however, is inconclusive. Some of the current thinking supports the use of pay-per-performance initiatives when the payments are not overly high, combined with other non-financial interventions and applied to moving targets/indicators.

d) Public reporting of quality measures and benchmarking are widely used to influence provider behavior in select OECD countries (England, Germany and the USA). Although evidence on how public reporting influences patient decision making and choice is limited, the lower performing providers are shown to improve on the reported measures. The rankings and benchmarks also create an impetus to share experiences and learn from high performers.

e) Patient experience measures are increasingly used to drive patient centered improvements in healthcare systems. Patient experience measures elicit feedback on specific areas of care that have been shown to be of value to patients, such as care communication with a provider, wait times, and care coordination. As such, they are an integral part of quality reporting in hospitals in many health systems such as in the UK, Netherlands, Norway, and USA. In the US, patient experience measures are now covering ambulatory care, nursing homes, and specific services such as cancer and mental health care.

[50] OECD, *Caring for Quality in Health*. 2017.
[51] Greenfield, D., et al., *The standard of healthcare accreditation standards: a review of empirical research underpinning their development and impact.* BMC health services research, 2012. **12**(1): p. 329.

Box 5. Quality care improvement in primary care, England

Quality care improvement in primary care, England

England's Quality and Outcomes Framework (QOF) program is one of the largest programs worldwide embedding evidence-based measures for secondary prevention in chronic disease management in primary care. The program gives GPs a financial incentive to provide evidence-based care for a wide range of chronic conditions, including diabetes. The QOF employs process measures (monitoring, prescribing and counselling), intermediate clinical outcomes (glycated hemoglobin, cholesterol and blood pressure), and patient-reported indicators (patient experience with care) to evaluate overall performance. Evidence shows that such financial incentives have been effective in improving the quality of diabetes care in the country[52].

[52] Latham, L.P. and E.G. Marshall, *Performance-Based Financial Incentives for Diabetes Care: An Effective Strategy?* Canadian Journal of Diabetes, 2015

2 Overview of developments in Croatia

27. **The section will review key health system indicators in order to identify health sector gaps and challenges in Croatia.** The performance of the health system will be evaluated in relation to three key health system domains: health care costs, access/equity and quality. Where possible, Croatia will be benchmarked against other EU countries. Eurostat is the main data source used for benchmarking. Other data sources such as Croatia Public Health Institute Yearbooks, Croatia Health Insurance Fund (HZZO) annual reports, arrears data provided Ministry of Finance and publications and qualitative data gained through site visits and interactions with health workers and leadership teams are also used to inform the analysis.

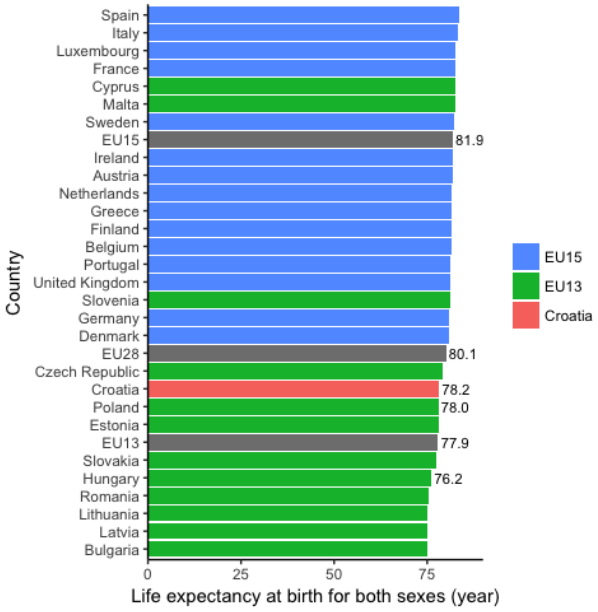
28. **The section is divided into five sub-sections.** In the first subsection, population health outcomes (such as life expectancy and quality of life) and the leading causes of premature mortality and disability will be reviewed. The second sub-section will review health financing, including health sector expenditures and expenditures by levels and types of care. The third sub-section will evaluate the availability of key structures and processes (potential access) such as insurance coverage (financial access), distance to health facilities (geographic access), access to medicines, and availability of human resources and hospital beds. The next section will focus on realized access (service utilization) at three distinct levels of care: primary, hospital and emergency care. In the final sub-section, the quality of primary and hospital care will be evaluated using both global and disease-specific indicators.

2.1 Health care needs and health care outcomes

29. **Life expectancy at birth in Croatia has improved over time, standing at 78.2 in 2016.** Croatia ranks as the fifth highest among the EU13, but behind all EU15 countries. Life expectancy is almost four years lower than that of the EU15 average (81.9), and slightly above the EU13 average (77.9) (Figure 14).

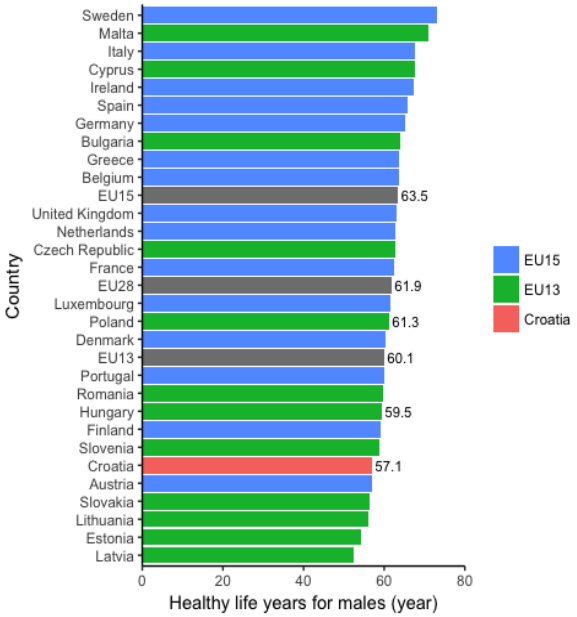
30. **When considering healthy life years, however, Croatia performs significantly below both EU15 and EU13 averages.** Health life years in Croatia are three years lower than the EU13 average for both females and males, 4.5 years lower than the EU15 average for males, and 6.4 years lower for females. Poland and Bulgaria, countries with income levels that are similar to or lower than Croatia, are shown to have longer health life years (Figure 15).

Figure 14. Life expectancy at birth, 2016



Source: Eurostat.

Figure 15. Healthy life years (male), 2016[53]

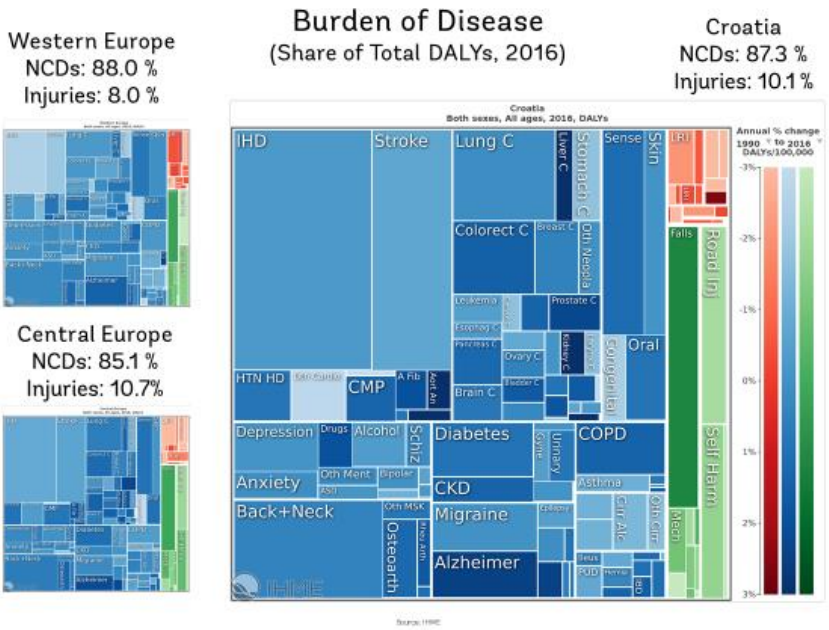


Source: Eurostat.

31. **Noncommunicable diseases, as in many countries in Europe, are the main contributors to both premature mortality and disability adjusted life years (DALY) in Croatia.** Estimates from the Institute from Health Metrics and Evaluation (IHME) show that NCDs make up nine out of the ten leading causes of premature mortality and eight out of the ten leading causes of disability (Figure 16).

[53] Only a graph for males is shown in the main text considering the space limit. Graphs for females show similar patterns.

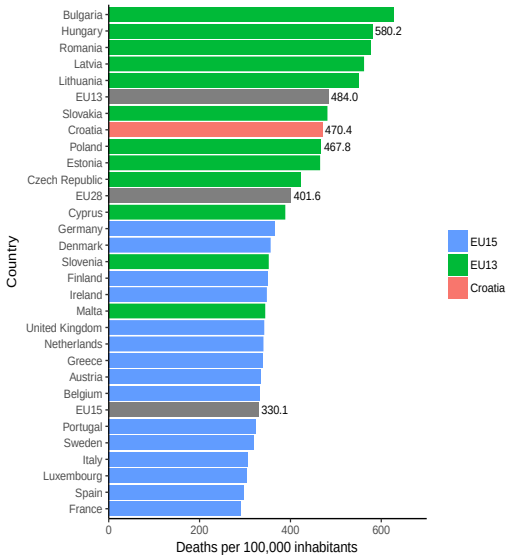
Figure 16. Burden of Disease, Croatia vs. Western and Central Europe



Source: IHME

32. **Overall mortality from NCDs in Croatia, at 470 per 100 000 population, is higher than in the EU 15 countries and slightly lower than the EU 13 average** (Figure 17). There are, however, several diseases for which mortality rates are among the highest in Europe. The standardized cancer mortality rate, for example, is the second highest among all EU countries, and is one-third higher than the EU15 average. Over the past decade, a relatively limited reduction in cancer mortality can be observed in Croatia, while much larger reductions are noted in other EU countries. See Figure 18 and Figure 19.

Figure 17. NCD death rate for both sexes, 2016



Source: WHO.

Figure 18. Cancer mortality rate, 2016 (or most recent year)

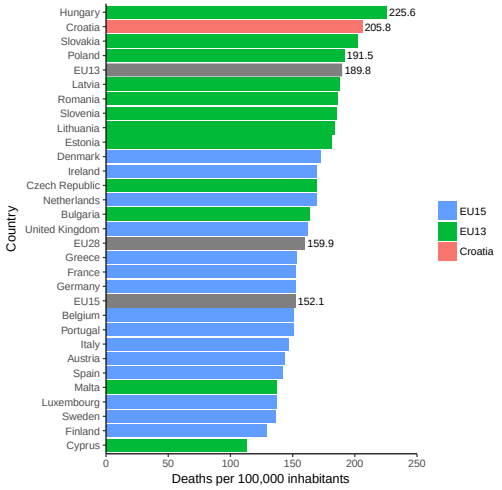
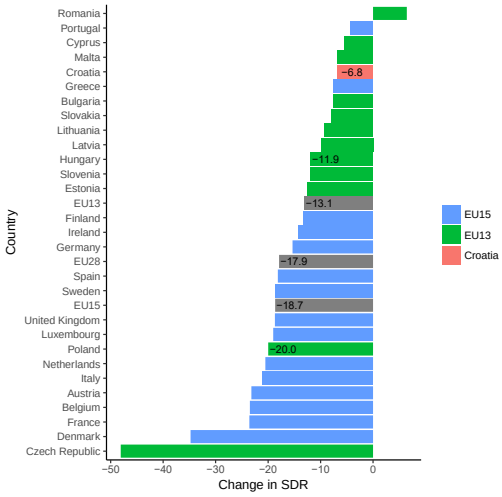


Figure 19. Change in cancer mortality rate, 2005-2016 (or most recent year)



Note: For figure 5, data in 2016 is used for Austria, Cyprus, Czech Republic, Croatia, Hungary, Lithuania, Netherlands, and Romania; data in 2013 is used for Ireland; data in 2014 is used for Bulgaria, Slovakia, Finland, France, and Portugal; data in 2015 is used for the rest of the countries (including EU13, 15, 28 averages). For Figure 6, data in 2004 is used for Portugal to calculate the difference.

Source: European mortality database by WHO, https://gateway.euro.who.int/en/datasets/european-mortality-database/

33. **Modifiable risk factors play an important role in the development and evolution of NCDs.** Approximately 60percent of the population in Croatia is overweight or obese. Although the prevalence of overweight or obesity in Croatia is similar to that in many other EU countries, the rate is still alarmingly high and will have significant impact on health outcomes. Overweightness and obesity prevalence among children ages 7-9 in Croatia is of particular concern. It is the fifth highest among countries in the European Region of the World Health Organization (among the countries for which data is available). See Figure 20 and Figure 21.

Figure 20. Overweight and obesity prevalence in EU-28 countries for population 18 years old and older

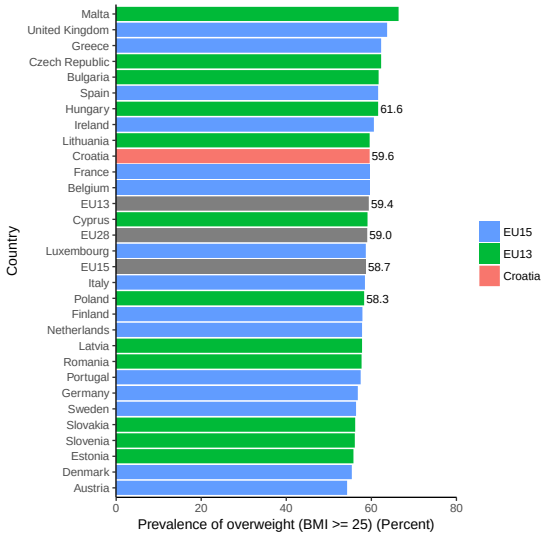
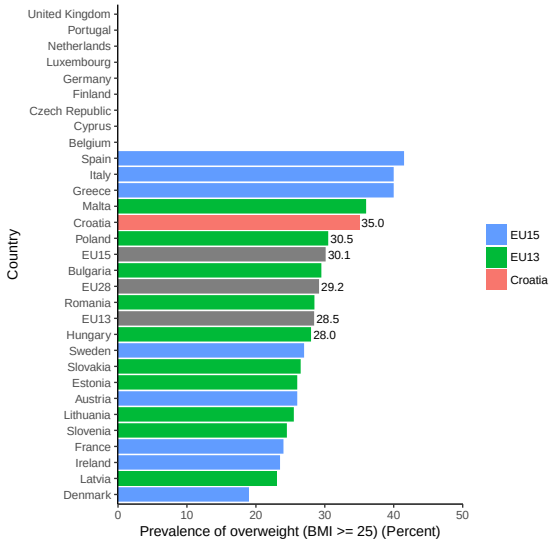
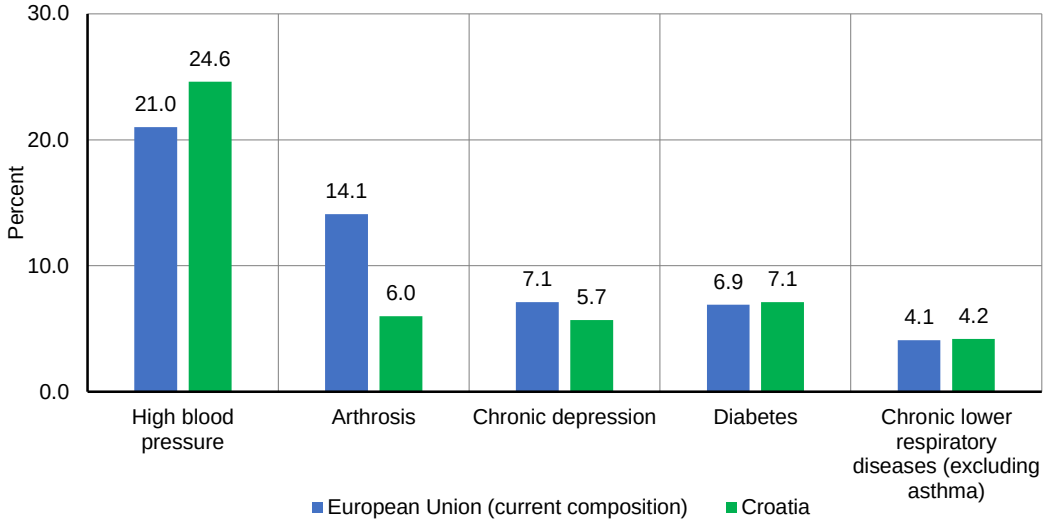


Figure 21. Overweight and obesity prevalence, 7-9 year old children, 2015-2017



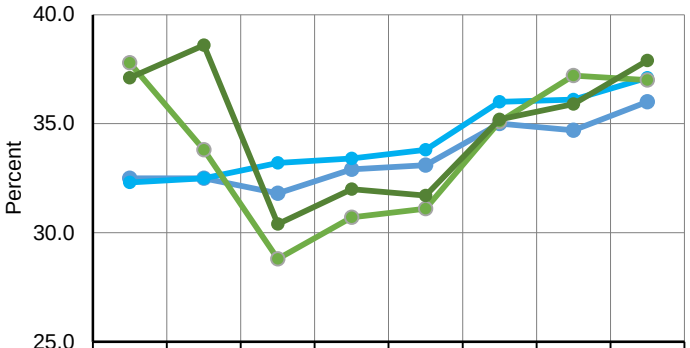
34. **The prevalence of self-reported NCDs is largely comparable to those reported in EU countries, apart from a few exceptions (i.e. arthrosis).** The prevalence of arthrosis is reported to be less than half the rate reported in other EU countries (Figure 22). However, the prevalence of NCDs is on the rise, with an increase of approximately 25-30percent between 2012 and 2017, which is reflective of the trends observed in other EU countries (Figure 23)

Figure 22. Self-reported chronic diseases, Croatia and EU in 2014



Source: Eurostat

Figure 23. Chronic health problem by urbanization for population 16 years and over

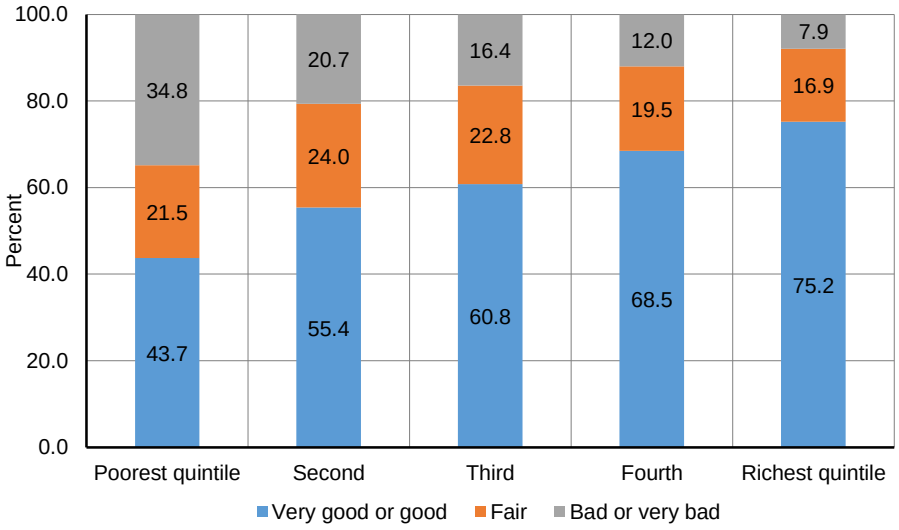


	2010	2011	2012	2013	2014	2015	2016	2017
Cities - EU	32.5	32.5	31.8	32.9	33.1	35.0	34.7	36.0
Rural areas - EU	32.3	32.5	33.2	33.4	33.8	36.0	36.1	37.1
Cities - Croatia	37.8	33.8	28.8	30.7	31.1	35.1	37.2	37.0
Rural areas - Croatia	37.1	38.6	30.4	32.0	31.7	35.2	35.9	37.9

Source: Eurostat

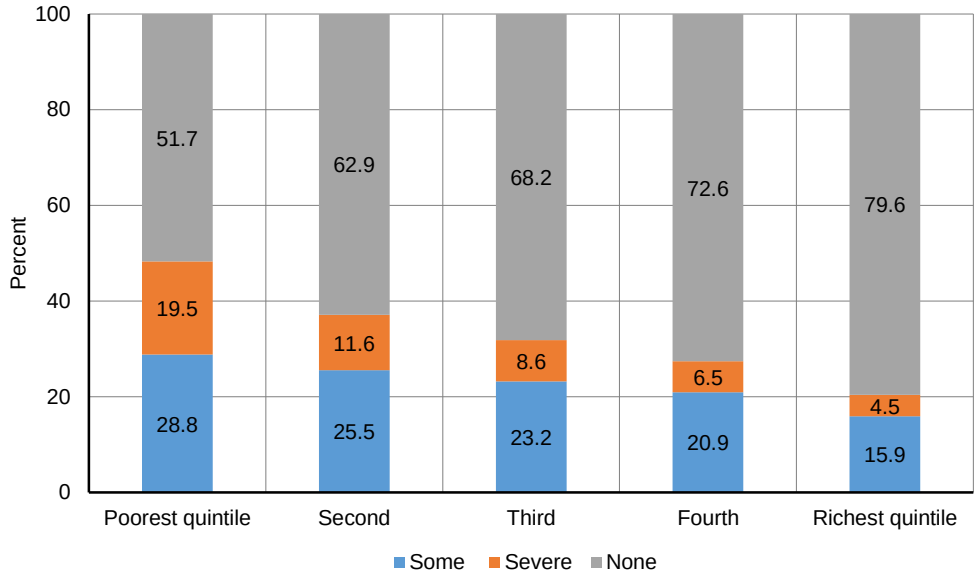
35. **The available data shows a positive correlation between self-reported health status and income in Croatia.** About eight percent of people in the richest quantile reported bad or very bad health, while among the poorest quantile about one third reported bad or very bad health (Figure 24). Figure 25 shows that the richest quintile is also less likely than the poorest quintile, to report long-standing limitations in usual activities due to health problems (20.4percent vs. 48.3percent respectively).

Figure 24. Perceived health status by income for population 16 years and over, Croatia 2017



Source: Eurostat

Figure 25. Perceived activity limitations due to health by income for population 16 years and over, Croatia 2017



Source: Eurostat

36. **In conclusion, although the estimated life expectancy for Croatia is at about the same level as that reported in other EU 13 countries, it is still 3.7 years below the average for EU 15 countries.** The gap becomes even more telling when the quality of life is factored in; healthy life expectancy estimates put Croatia far below the averages for both the EU13 and EU 15 countries. It should be noted, however, that many determinants of life expectancy and healthy life expectancy lie outside of the health system. As in other countries of the EU, NCDs are the main driving force behind high premature mortality and disability. High burden NCDs, (such as cancer, cardiovascular diseases) with relatively high mortality rates and modest improvements over the past decade, are likely the best targets for future health system efforts. Focused interventions should extend to capture modifiable risks such as obesity and smoking and, in particular, low income groups, who report disproportionately higher levels of poor health status.

2.2 Health spending

2.2.1 Overall health spending

37. **Per capita health spending increased since 2002 and leveled in 2008 (**Figure 26**).** As a result, the change in per capita health spending reported for the period between 2005 and 2016 is below the EU 13 and EU 15 averages (Figure 27). The per capita total health expenditure (PPP adjusted), which in 2016 amounted to USD 1,272, is the third lowest among EU countries; it is about 40 percent of the EU15 average and 85 percent of the EU13 average (Figure 29). Total health expenditure in Croatia as a share of GDP was 7.2 percent in 2016, between the EU15 (of 9.5 percent) and EU 13 (of 7 percent) averages (Figure 28).

Figure 26. Per capita health expenditure over time

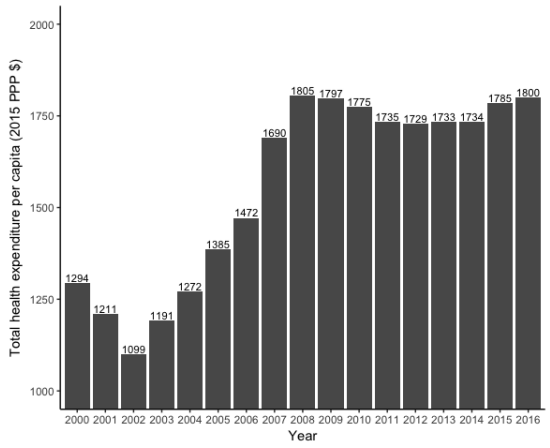
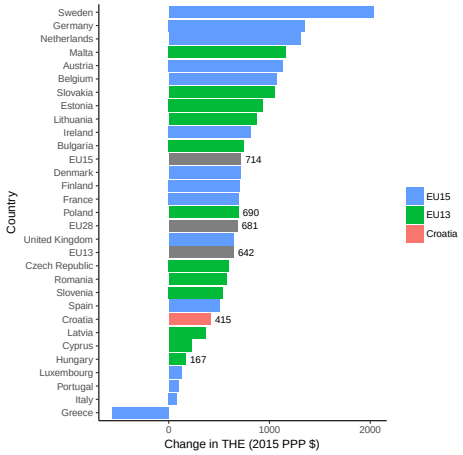


Figure 27. Change in per capita expenditure 2005-2016



Source: IHME. Source: IHME.

Figure 28. Health expenditure as a share of GDP, 2016

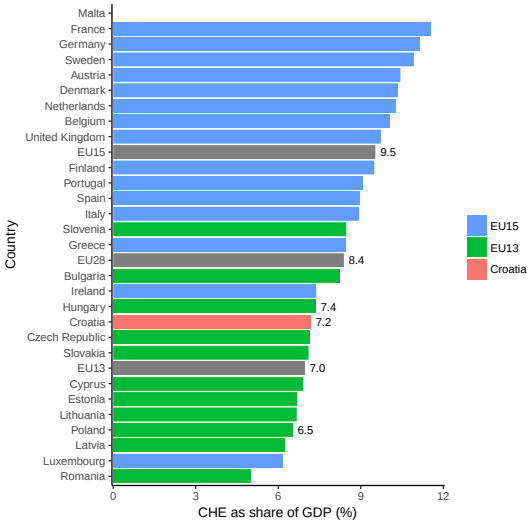
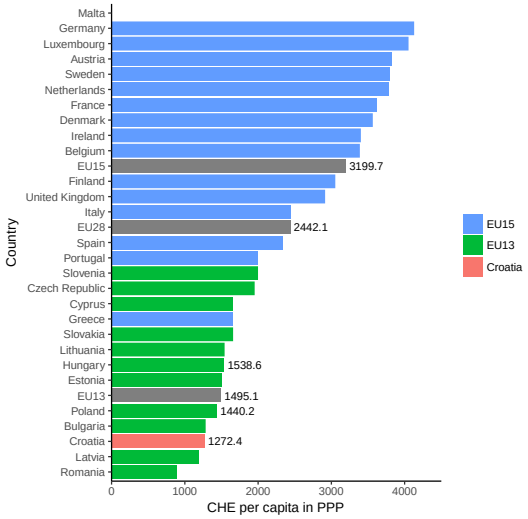


Figure 29. Per capita health expenditure, 2016



Source: Eurostat.

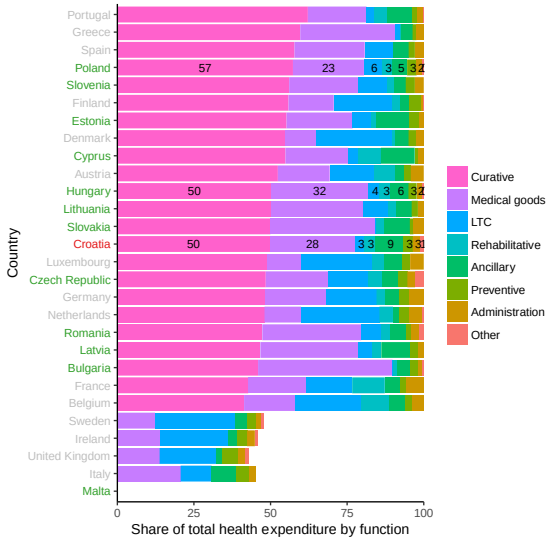
Source: Eurostat.

2.2.2 Health expenditure by type of care

38. **Approximately 80 percent of total health expenditure is spent on curative care (50 percent) and medical goods (28 percent)** (see Figure 30). The spending on curative care has been gradually increasing between 2005 and 2016 (Figure 31). Relative to other EU countries, Croatia spends less on primary care (at less than 20percent, it ranks the seventh lowest) and more on hospital care (at 42 percent, it ranks as the fourth highest), and very little on long-term care (at less than one percent, it ranks as the

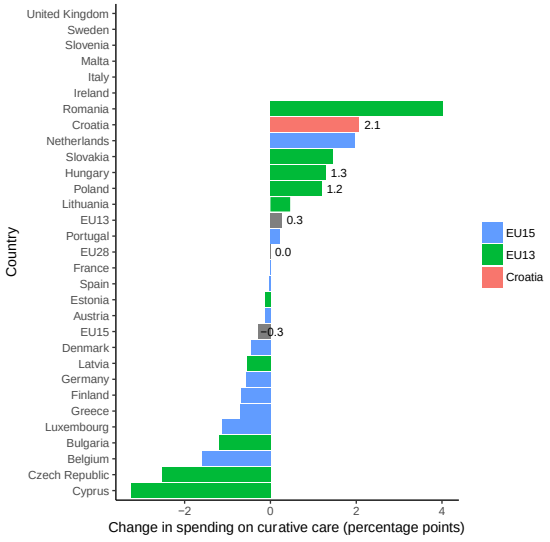
second lowest). Preventive activities are being financed at the level of 9 percent, which is quite high compared to the OECD average of 3percent.

Figure 30. Health expenditure by function, 2016



Source: Eurostat.

Figure 31. Change in share of curative care, 2013-2016



Source: Eurostat.

2.2.3 HZZO and health institutions' financial performance

39. **HZZO has been operating a total revenue of 21-24 billion kunas.** Since its exit from the State budget in 2015, mandatory health insurance contributions have been its main source of revenue (approximately 80 percent). HZZO usually spends 90percent of all its revenues on health expenditure, and the remaining amount on benefits and administrative costs, with the administrative costs accounting for less than 3percent of total revenues.

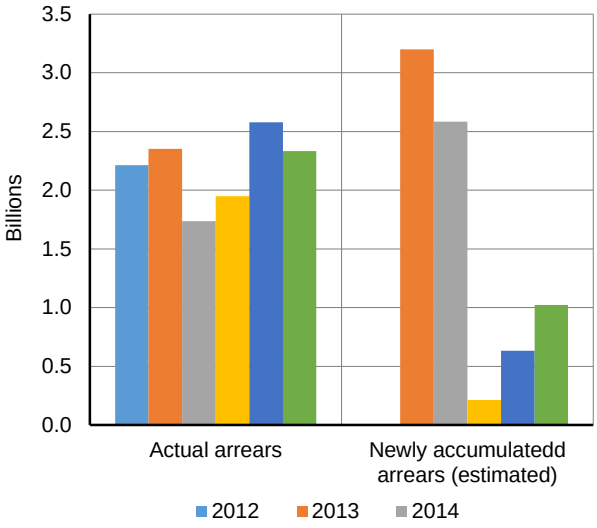
40. **Despite numerous financial rehabilitations, hospital arrears still continue to be a major challenge in Croatia.** In 2015, newly-accumulated arrears[54] reached a minimum for Croatia as a result of both revenue increase and some cost containment measures taken up by HZZO and MOH; however, the effect was not a lasting one. The newly accumulated arrears have increased approximately five-fold between 2015 and 2017 (Figure 32). Hospital arrears present a substantial financial pressure on the system, accounting for about 10 percent of total HZZO revenue and over 20 percent in selected years (if additional resources allocated to pay off arrears are factored in) (Figure 33). The following are key features of hospital arrears:

- Tertiary hospitals are responsible for a substantial share of arrears and their share has been increasing (see Figure 36).

[54] Newly-accumulated arrears are estimated as the current year's arrears minus last year's arrears plus financial rehabilitation received in the current year.

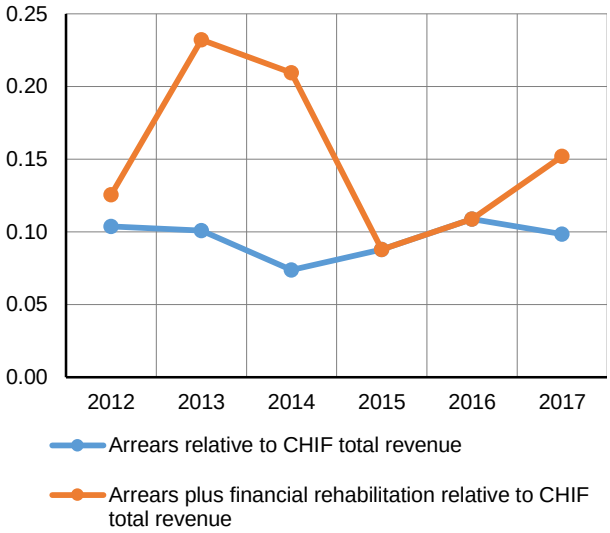
- Almost all hospital arrears are for drugs and medical supplies because hospitals have limited flexibility with deferring other payments, such as salaries. Drugs and medical supplies account for over one third of hospital expenditures (see Figure 37).
- Although it is normal for most hospitals to operate with a debt to suppliers, their performance in managing debt varies enormously. Among all public hospitals, the ratio of hospital liabilities to its revenue cap from HZZO varies from 4 percent to 229 percent. Within hospital liabilities, the ratio of arrears to liabilities varies from 0 to 82 percent (See Figure 34 and Figure 35). Further work to understand the drivers of such wide variation in hospitals' capacity for financial management is certainly warranted.

Figure 32. Hospital arrears, 2012-2017



Source: arrear data from Ministry of Finance and financial rehabilitation data from Croatia Association of Health Employers.

Figure 33. Arrears relative to HZZO revenue



Source: arrear data from Ministry of Finance and financial rehabilitation data from Croatia Association of Health Employers.

Figure 34. Ratio of liability to hospital revenue cap by hospital, 2017

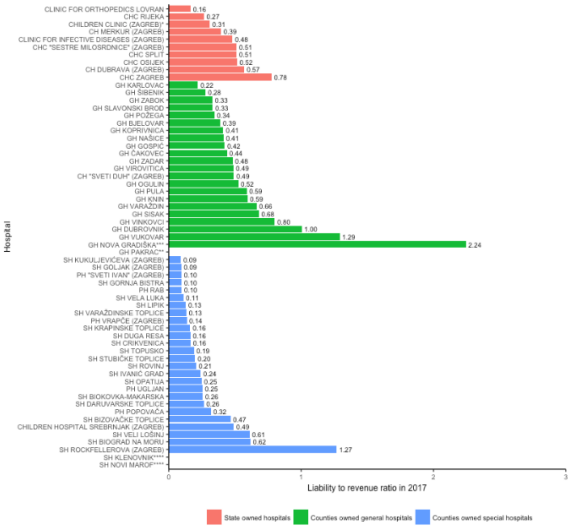
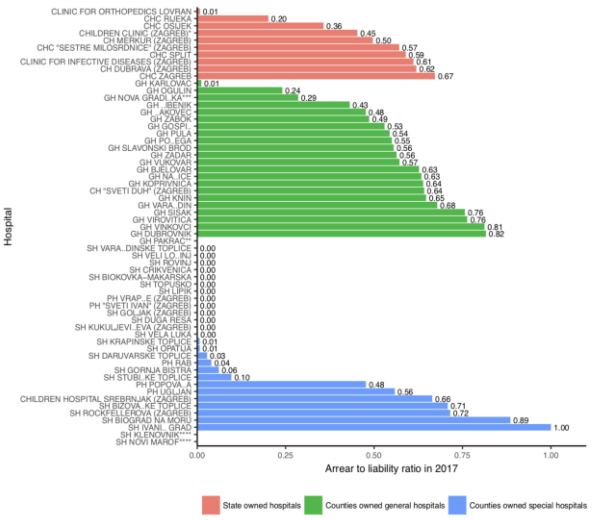
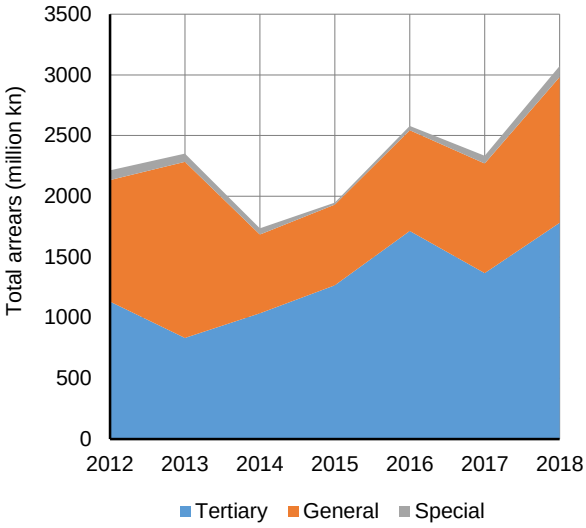


Figure 35. Ratio of arrears to liability, 2017



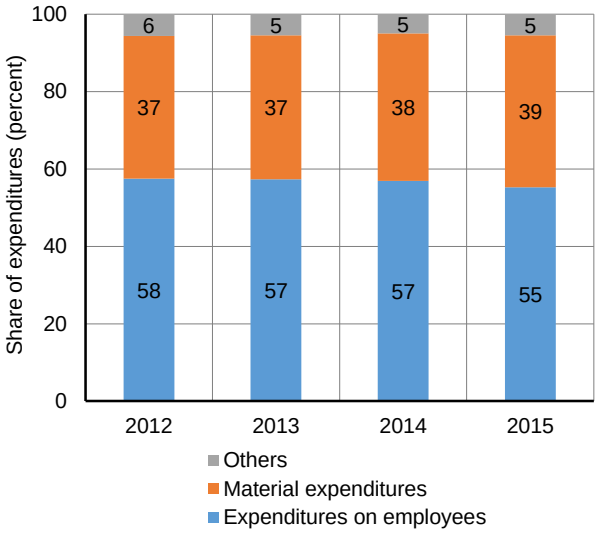
Source: Liability data is from Ministry of Finance, and revenue cap data is from HZZO. Source: Ministry of Finance.

Figure 36. Total arrears by hospital type, 2012-2018.



Source: HZZO

Figure 37. Composition of total hospital expenditures, 2012-2015



Source: HZZO reports in 2012, 2013, 2014, and 2015

41. **Health spending in Croatia has not seen substantial increases in per capita expenditures over the past decade (since 2008), while the main cost drivers (such as advances in medical technologies, technology diffusion and population aging) continue to exert pressure on resources.** In the backdrop of increasing NCDs, hospital care still accounts for the largest share of resources in the country and ranks as the fourth highest in the EU in terms of hospitals' share in overall health expenditures. The relatively low share of spending in primary and long-term care may partly explain the higher hospital

expenditures, as hospitals could be in some form or other (i.e. longer stays, higher readmissions) compensating for limited access to long-terms care or issues in primary care. Given that four fifths of arrears are for medications and medical supplies, further work may be required to better understand the underlying reasons and balance the available resources and care needs. For instance, it is noted that the prices charged for medical devices and drugs are typically inflated to account for expected delays in payments that may be further straining the system.

2.3 Access to health care

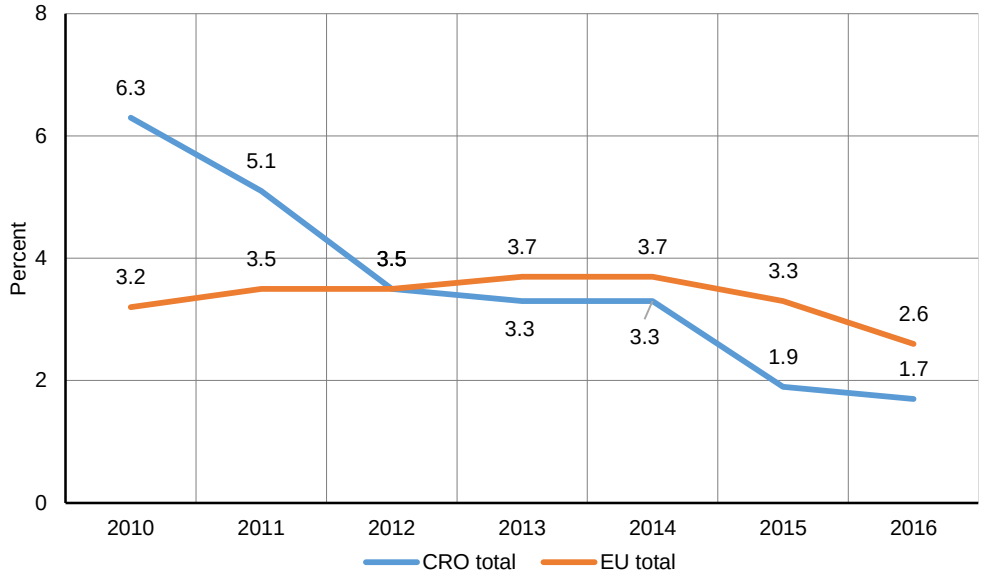
2.3.1 Financial access

42. **Mandatory health insurance in Croatia covers almost the entire Croatian population (99.7 percent in 2012) and offers a generous benefits package.** Modest co-payments are levied on all services (Annex 1), but with a 2,000 kuna cap for each episode of treatment. Only around 14 percent of the population is subject to user charges by being either not exempted or not covered under complementary health insurance. However, the majority of the population must pay out-of-pocket if they choose to buy medications from the non-priority list (List B). List A, the priority list, is very expansive, with approximately 3,700 medications from almost all medication groups included.

43. **Out-of-pocket payments (OOP) for health account for approximately 15 percent of total health expenditures and are at the low end of an OOP continuum among EU countries.** Out of pocket payments for health care as a share of household consumption, at slightly less than 3 percent (2014), are also below the share reported in most comparator EU countries. OOP is even lower (around 2 percent) among the bottom 40 percent population suggesting that the worst off are relatively better protected. The OOP among the bottom 40 has been on a steady decline since 2010. These figures demonstrate the success of HZZO in ensuring financial protection for Croatia's citizens. For more information see Annex 1.

44. **Unmet medical need due to the high cost of care in Croatia is relatively low and has been on the decline over the past few years.** In 2016, 1.7 percent of the Croatian population reported unmet medical need, a substantial decrease from 2010 (6.3 percent). Starting from 2013, reported unmet need has been below the EU average (Figure 38). Again, these figures are a testament to the success of the HZZO in ensuring access to care whilst protecting against financial risk.

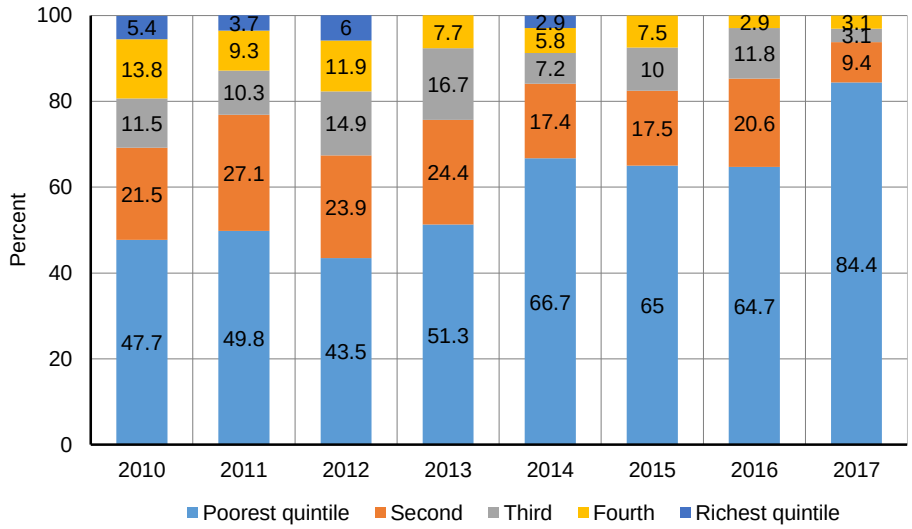
Figure 38. Percentage of the population reporting self-perceived unmet medical need in Croatia and the EU, 2010-2016



Source: Eurostat.

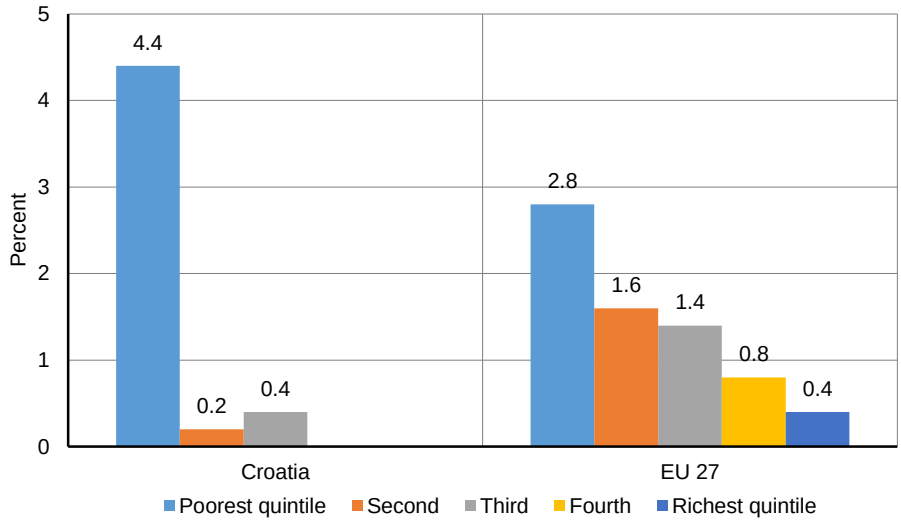
45. **The decline in self-reported unmet need due to the high cost of care observed over the past few years, however, has not been reflected evenly across all income groups.** In 2010, about half of all unmet need was among the poorest quantile. In 2017, the poorest accounted for almost 85percent of unmet need. (Figure 39). A similar pattern holds among the senior group (Figure 40).

Figure 39. Self-reported unmet need due to high care cost by income for population 16 years and over, Croatia 2010 - 2017



Source: Eurostat.

Figure 40. Self-reported unmet need for 65 and older due to high cost of care by income, Croatia and EU 27, 2017

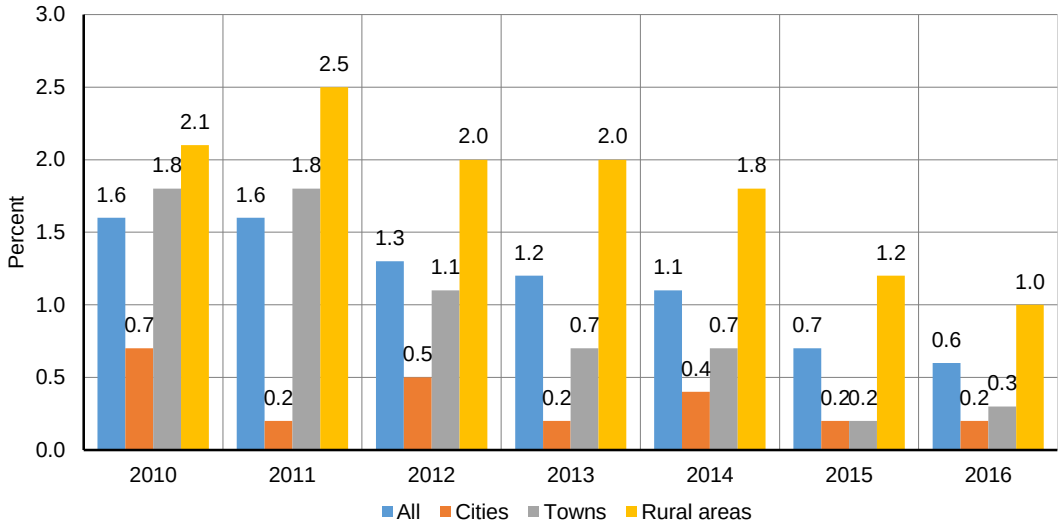


Source: Eurostat.

2.3.2 Distance to health facility

46. **In Croatia, distance to provider is not considered a major access barrier.** In 2010, 1.5 percent of the population reported unmet medical needs due to the long distance to provider; the rural areas, expectedly, reported the highest unmet need. From 2010 to 2016, the reported unmet need declined by almost two thirds. (Figure 41).

Figure 41. Share of the population with unmet medical need due to distance from healthcare provider in Croatia, by degree of urbanization, 2010-2016



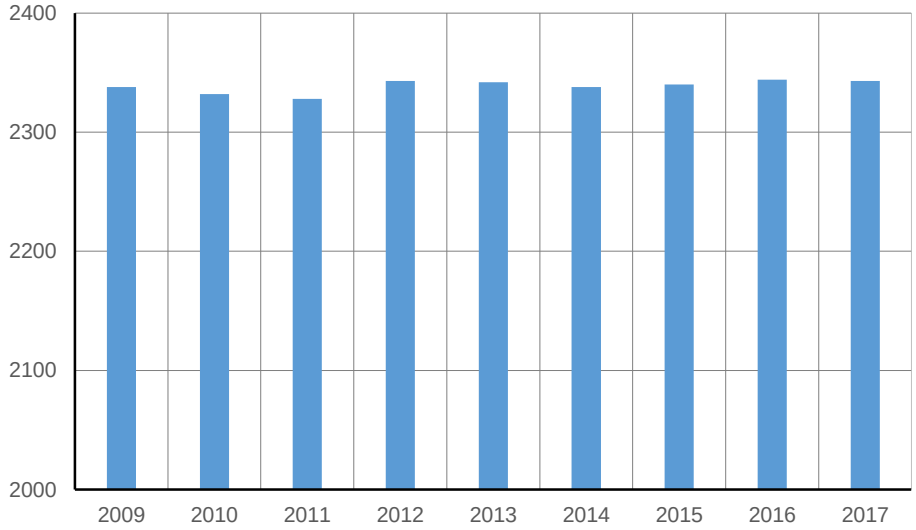
Source: Eurostat EU-SILC data.

2.3.3 Availability of health professionals (selected)

47. **Croatia has fewer doctors and nurses than comparator countries, with large differences in the rates of general practitioners (GP) and nurses between Croatia and EU 15 countries**. In 2016, the

number of GP/family medicine specialists (FM) and nurses in Croatia per 100 000 population represented two-thirds of the rates for the EU 15 average (Figure 43, Figure 44). Nevertheless, the number of both general practitioners/family doctors (GP/FM)[55] and specialists[56] has been relatively stable over the past few years. In 2017, a total of 2,596 medical teams worked in 2,604 locations (whereof 2,593 were full-time, and 11 were part-time units). Of the 2,596 medical doctors (MD), 1,524 were specialists in diverse fields (1,110 in general/family medicine, 284 in pediatrics, 55 occupational medicine, 47 school medicine and 28 other specialists). Given the trend in physician and nurse numbers over the past decade in Croatia, the differences between the EU 15 countries and Croatia in physician and nurse rates per 100,000 population with are expected to remain.

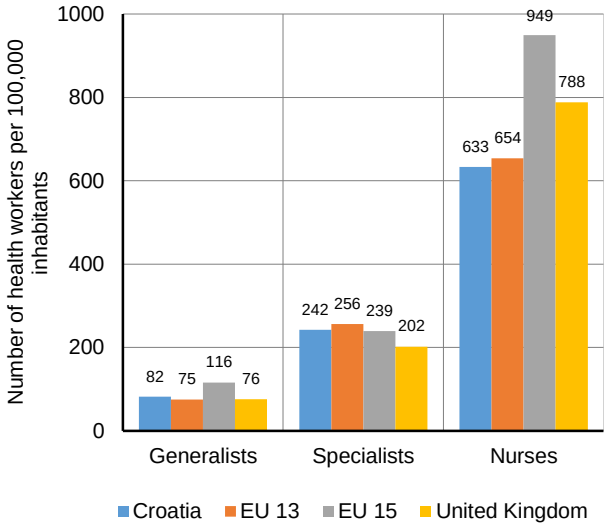
Figure 42. Number of GPs/FM medical doctors, 2009-2017



Source: Croatian Health Insurance Fund Annual Reports.

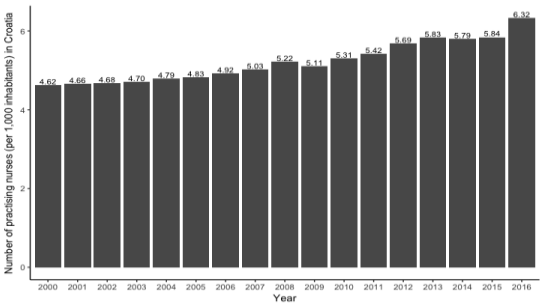
[55] General practitioners here include family medicine specialists.
[56] Specialists here do not include medicine specialists, but do include specialty trainees.

Figure 43. Health workers availability, 2016



Source: Eurostat

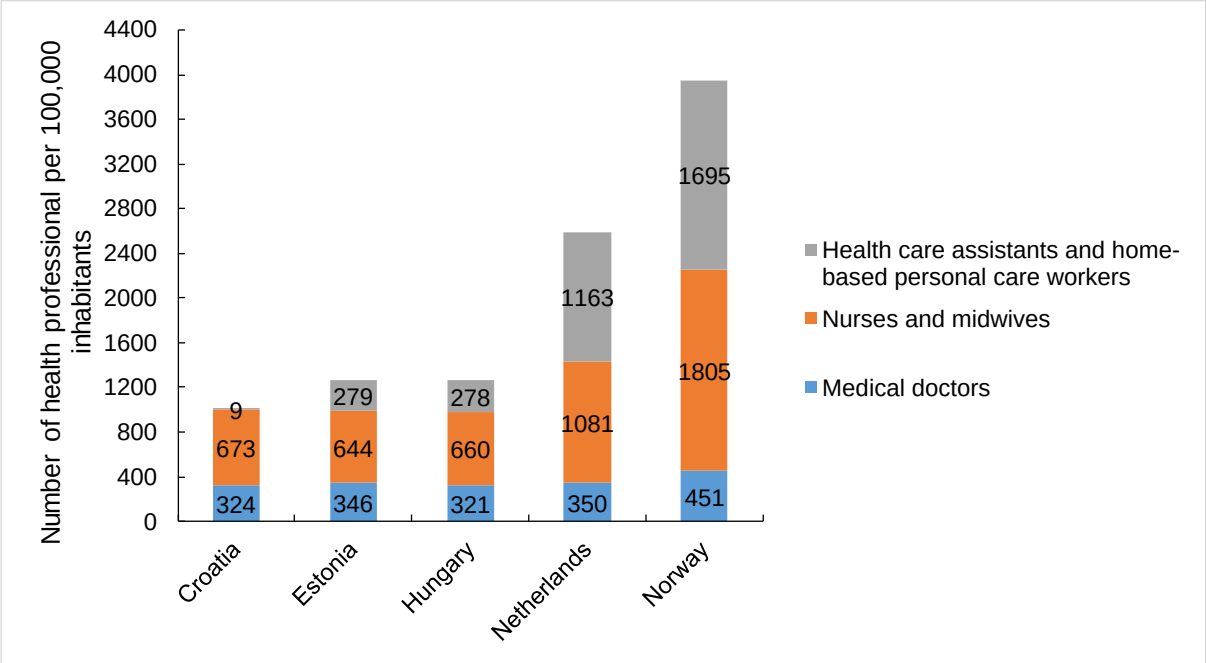
Figure 44. Density of nurses, 2000-2016



Source: Eurostat

48. **A composition of health workforce might provide an insight as to how health systems could be adapting to the changes in demography and disease patterns.** For example, Norway and Netherlands, high performing countries in terms of health outcomes, have expanded the roles for nursing and ancillary staff in care delivery (Figure 45).

Figure 45. Health care personnel per 100, 000 inhabitants, 2016

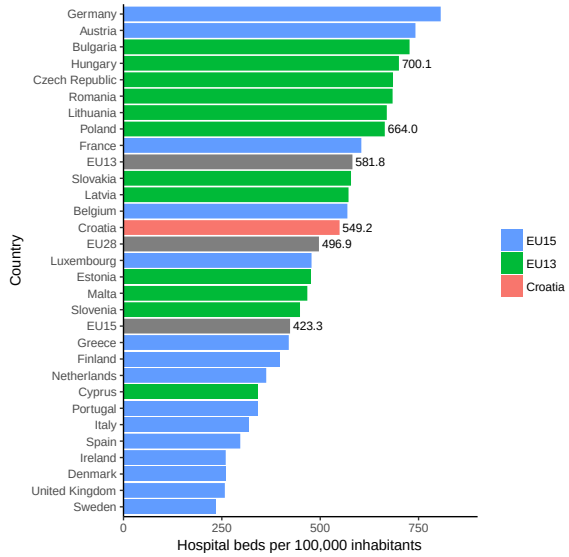


Source: Eurostat

2.3.4 Availability of hospital beds

49. **In contrast to low workforce numbers, in 2016, Croatia had 30 percent more hospitals beds than the EU 15 average.** Over the past decade, almost all EU countries have reduced their hospital bed capacities. In Croatia, however, hospital bed capacity in 2016 was at about the same level as it was ten years ago (see Figure 46, Figure 47, and Figure 48). The share of tertiary beds in the overall hospital bed capacity has been gradually increasing, accounting for approximately 40 percent in 2016. Tertiary facilities also employ over half of all hospital physicians. See Figure 49 and Figure 50.

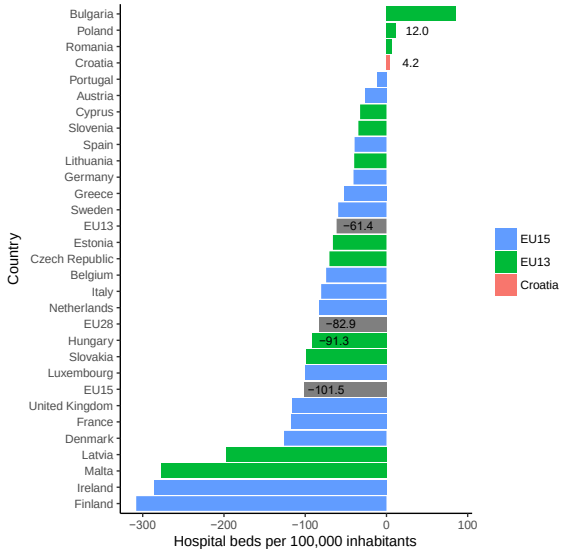
Figure 46. Number of beds per 100,000 inhabitants, 2016



Note: Data in 2015 (instead of 2016) is used for Italy.

Source: Eurostat.

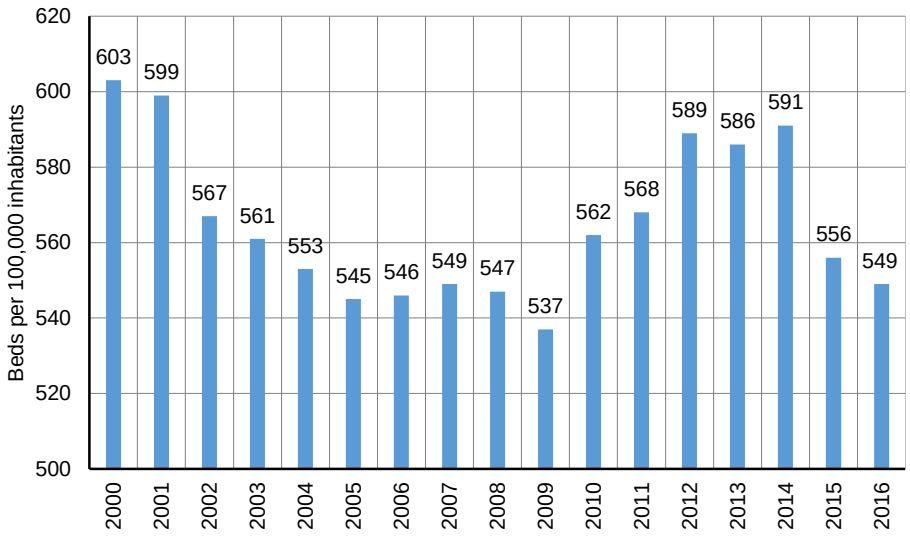
Figure 47. Change in number of beds per 100,000 inhabitants, 2005-2016



Note: Data in 2015 (instead of 2016) is used for Italy.

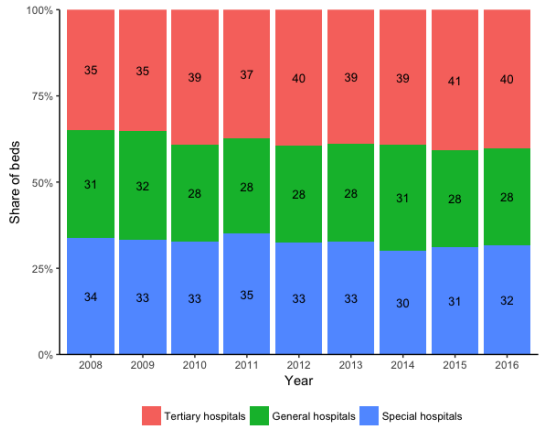
Source: Eurostat.

Figure 48. Number of hospital beds for Croatia, 2000-2016



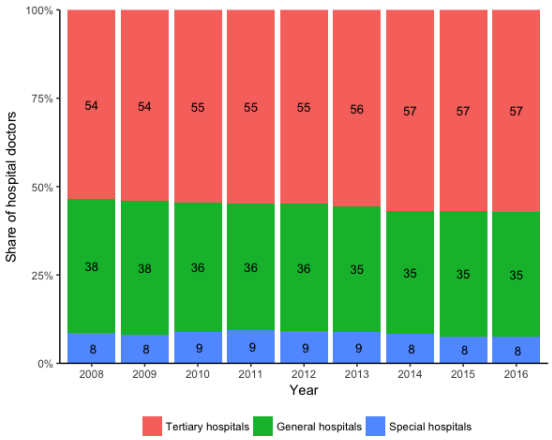
Source: Eurostat.

Figure 49. Share of beds by level of care, 2008-2016



Source: Croatia Public Health Institute Yearbooks.

Figure 50. Share of doctors by level of care, 2008-2016



Source: Croatia Public Health Institute Yearbooks.

2.3.5 Access to medicines

50. **Per capita spending on pharmaceuticals and other medical non-durable goods. as a share of per capita health expenditures, is at 25 percent, which is relatively high compared to that of the EU 15 countries.** Spending on expensive medications more than doubled between 2013 and 2018, increasing from slightly over 600 million kunas (Kn) to 1.35 billion Kn respectively. The drug benefits package covers many new expensive medications. For example, from the 68 new oncology medications approved for use in 2011-2016[57], 38 are currently covered by the drug benefits package.

51. **In sum, Croatia provides very high levels of access to care with almost universal health coverage of the population, low levels of out-of-pocket payments and unmet need.** Low income groups still seem to be disproportionately affected, with the poorest groups, for example, accounting for the majority of self-reported unmet need due to the high cost of care. However, more work is needed to understand where the unmet needs stem from, given the country's universal coverage and low OOPs. On health workforce, Croatia performs at a similar level to other EU 13 countries but lags the EU 15 average in the number of primary care physicians and nurses. Hospital bed capacity is slightly below the EU 13 average, but still much higher than the EU 15 average. However, in evaluating access indicators, it is important not to take each indicator in isolation, but rather consider them as a part of a whole system and review from the perspective of the health system objectives .

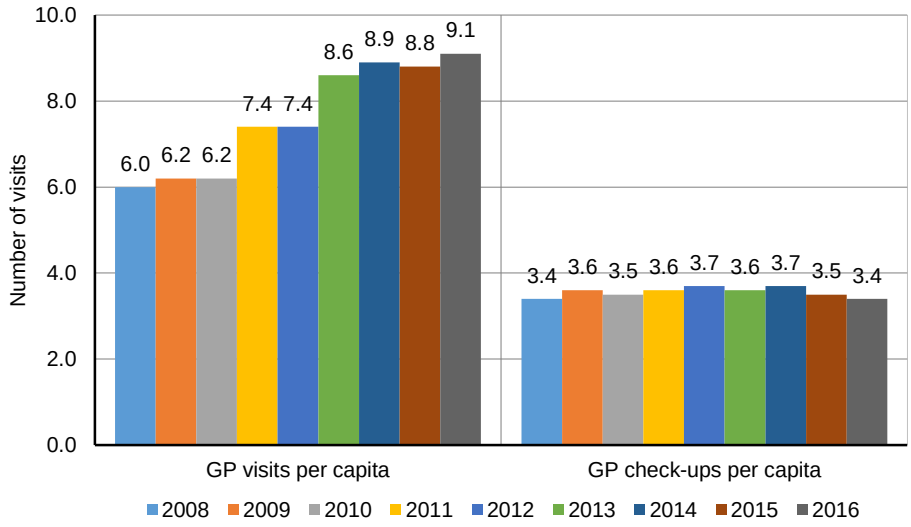
[57] IQVIA Institute. Global Oncology Trends 2017: Advances, Complexity and Cost. June 2017. Available from https://www.iqvia.com/institute/reports/global-oncology-trends-2017-advances-complexity-and-cost

2.4 Utilization of key resources and services

2.4.1 Primary care

52. **There has been a steady increase in the utilization of primary care services provided by GPs in Croatia.** Non-checkup per capita visits, for example, increased by over 50 percent from 2008 to 2016 (Figure 51). It is unclear, however, whether increased contact with primary care has led to improved population health. As will be discussed later, very little is known about the quality of primary care.

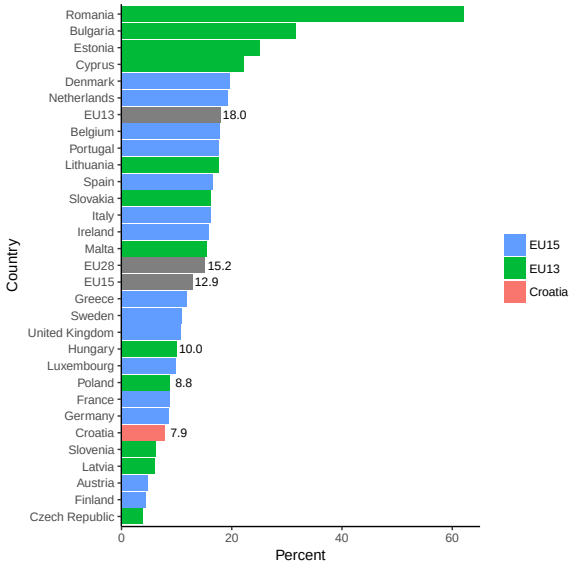
Figure 51. GP visits and check-ups per capita, 2008-2016



Source: Eurostat

53. **Primary care in Croatia performs well in the delivery of key preventive services.** For example, the self-reported rate of not having any cervical cancer screening experience was almost two-thirds of the rate for the EU 15 average in 2014 (Figure 52).

Figure 52. Self-reported never experiencing cervical smear test among women of 24-69 years old, 2014

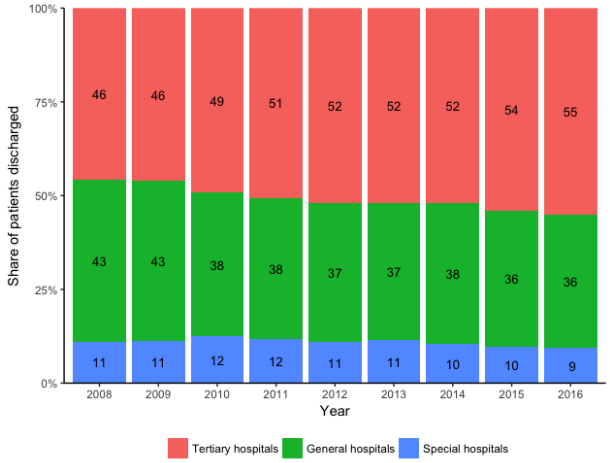


Source: Eurostat.

2.4.2 Inpatient care

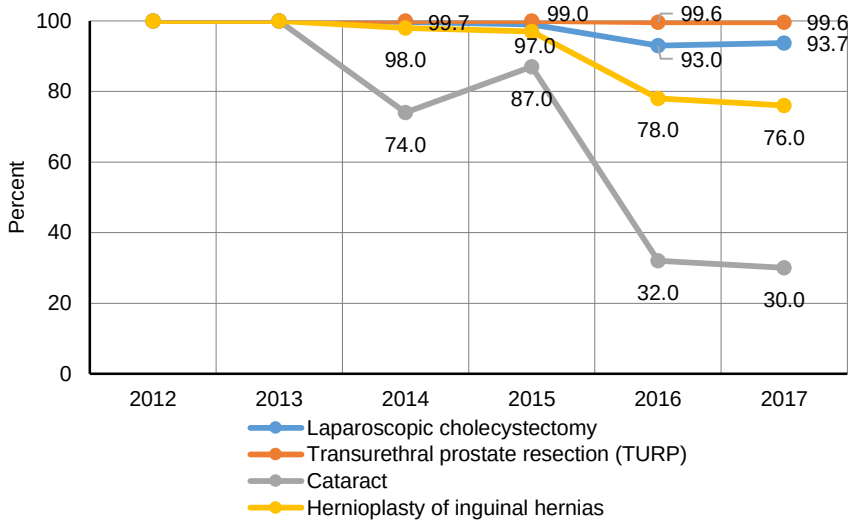
54. **Hospital admissions increased by approximately 10 percent from 2008 to 2016.** Acute hospital admissions account for 90 percent of all admissions. The use of tertiary hospitals (9 percentage point increase) has been increasing, while the shares of both general hospitals and special hospitals are on the decline (Figure 53). There has been a shift in selected procedures (i.e. cataract) from inpatient to outpatient care delivery. For example, 70 percent of cataract surgeries were performed in an outpatient setting in 2017 (compared to zero percent in 2013). However, many other eligible procedures are still predominantly provided in an inpatient setting (Figure 54).

Figure 53. Share of discharged patients by hospital category, 2008-2016



Source: Croatia Public Health Institute Yearbooks.

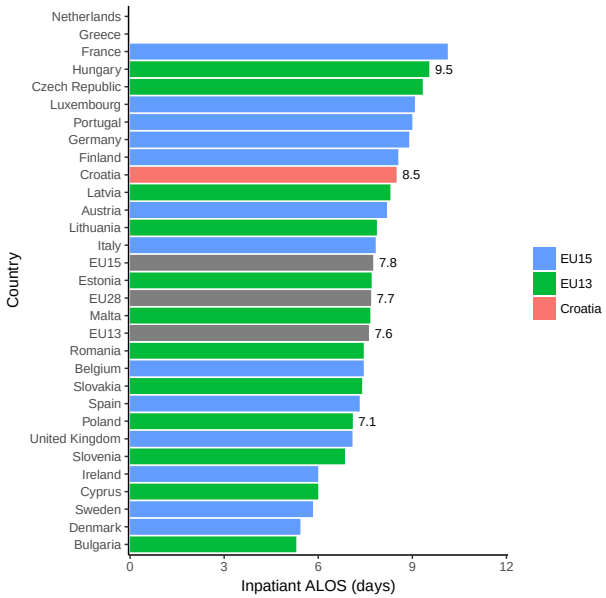
Figure 54. Percent of selected day care eligible operations provided as inpatient



Source: HZZO 2019

55. **Although the average length of stay (ALOS) has been gradually decreasing over the past decade in Croatia, it is still slightly above the EU 13 and EU 15 averages** (Figure 55 and Figure 56). A substantial variation in ALOS levels can be observed across hospitals. For example, ALOS for AMI patients ranges from 5.4 to 12.5 days among the 25 acute-care hospitals reviewed (Figure 57). A similar pattern can be observed for stroke patients, with their ALOS ranging from 7.1 to 14.5 days among the 26 reviewed acute-care hospitals (Figure 58). The case-mix and demographic differences within the patient pools served may account only a part of the variation.

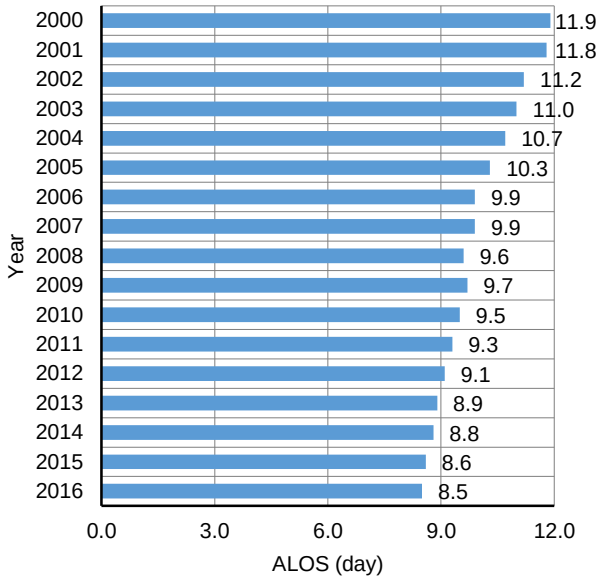
Figure 55. Inpatient ALOS, 2016 or most recent year



Note: Data in 2015 is used for France. Data in 2006 is used for Malta to calculate the difference. Data in early years (around 2005) is not available for Cyprus. Netherlands and Greece don't have available data around 2005 and 2016.

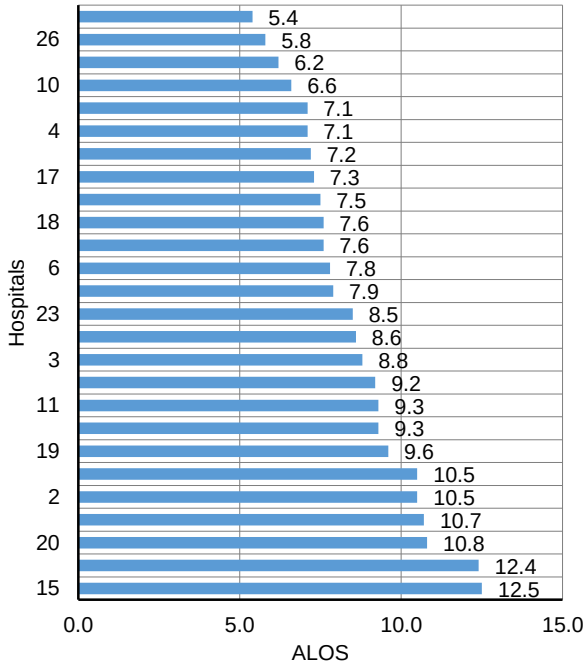
Source: Eurostat.

Figure 56. Inpatient ALOS for Croatia, 2000-2016



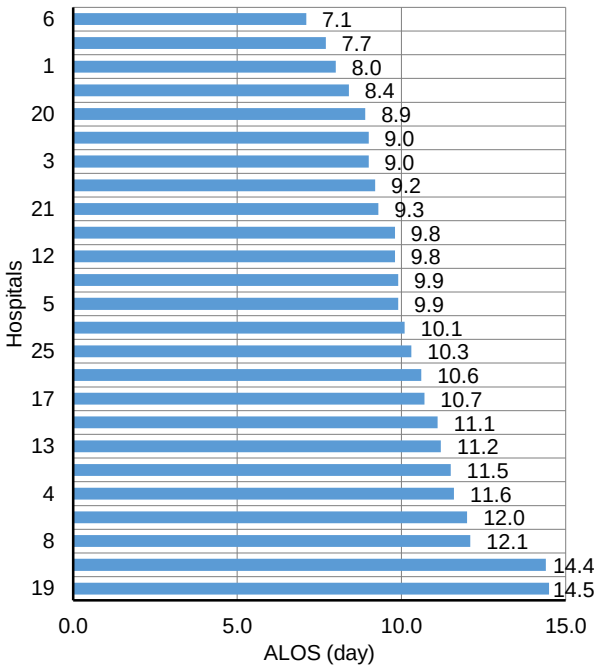
Source: Eurostat.

Figure 57. ALOS for AMI across hospitals, 2016



Source: Croatian Health Insurance Fund.

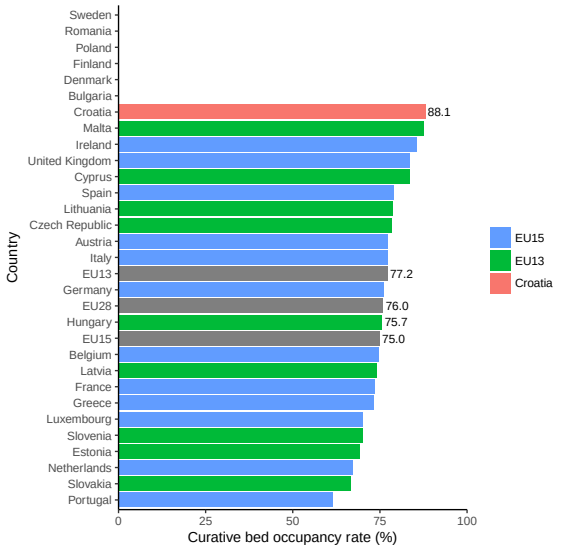
Figure 58. ALOS for stroke across hospitals, 2016



Source: Croatian Health Insurance Fund.

56. **The bed occupancy rate in Croatia was reportedly one of the highest among the EU countries in 2005.** By 2015, approximately a ten-percentage point reduction was observed (Figure 59 and Figure 60). The reduction was noted across all three types of hospitals (Figure 61). The high bed numbers and high occupancy rates may explain the disproportionate level of spending on curative care. This may also imply a room to improve the efficiency and effectiveness of primary and preventive care.

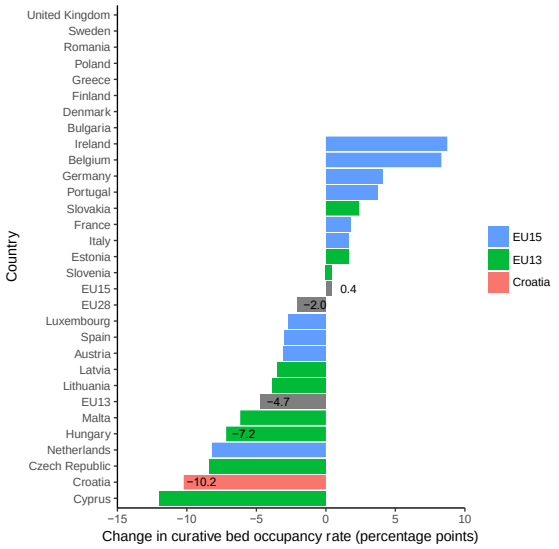
Figure 59. Bed occupancy rate, 2005



Note: Data in 2015 is used for France and Italy to calculate the difference.

Source: Eurostat.

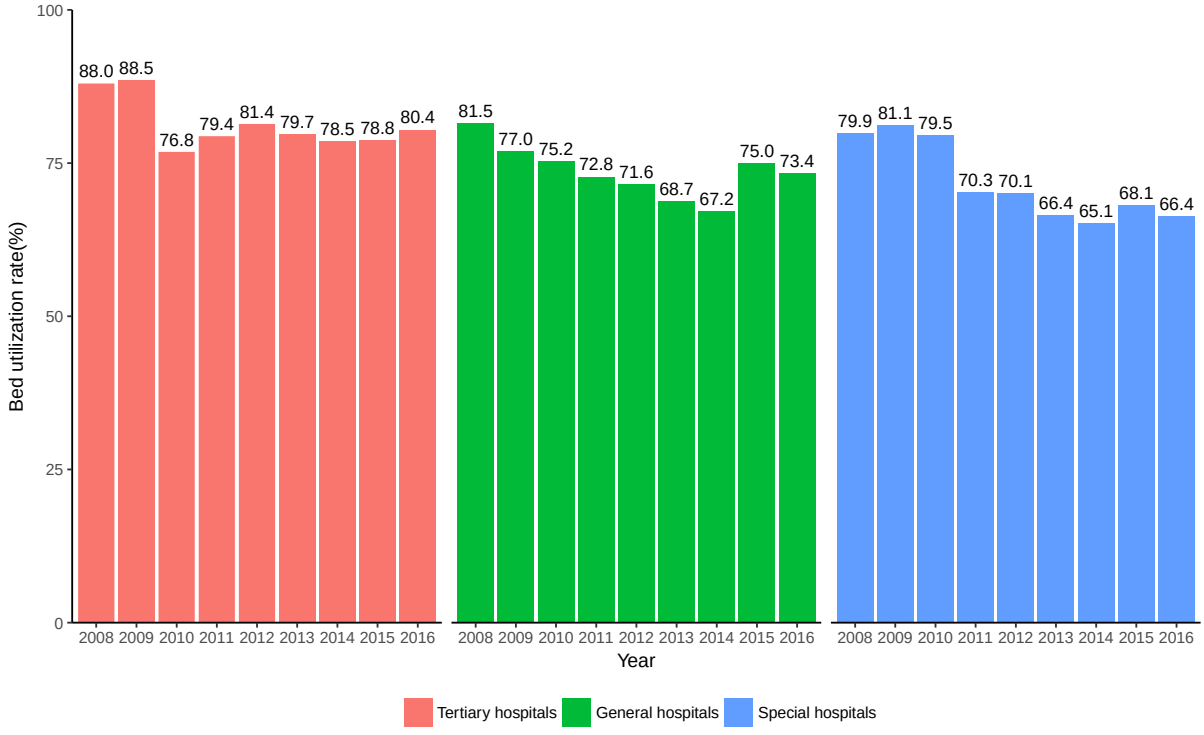
Figure 60. Change in bed occupancy rate 2005-2016 or most recent year



Note: Data in 2015 is used for France and Italy to calculate the difference.

Source: Eurostat.

Figure 61. Bed occupancy rate by category of hospitals, 2008-2016

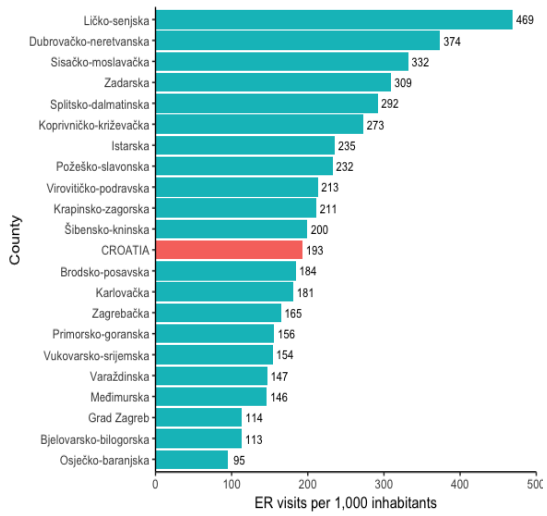


Source: Croatia Public Health Institute Yearbooks.

2.4.3 Emergency services

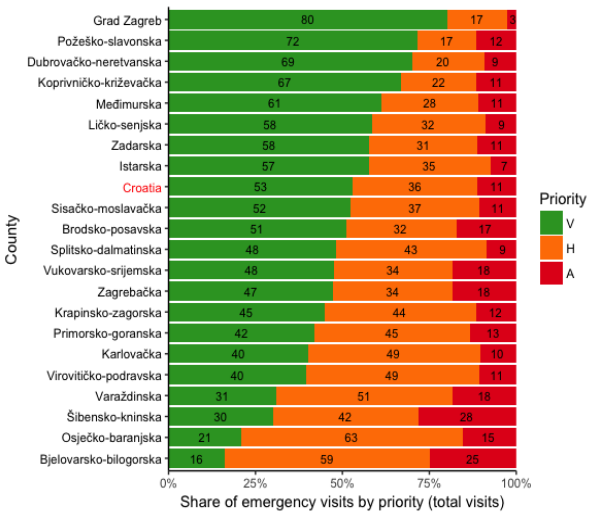
57. **In 2017, there were 193 (per 1,000 peope) emergency service visits in Croatia.** Benchmarking emergency service (ER) utilization rates against other EU countries will be challanging, due to the lack of data availability and differences in countries' definitions of 'emergency care'. However, across counties, substantial variation in utilization rates can be noted: the rates range from 95 to 469 visits per 1,000 people (Figure 62). On average, nationally, over half (52 percent) of emergency service visits are considered as not requiring emergency care ('inappropriate'). Among counties, the share of 'inappropriate' care varies from 16 percent to 80 percent (Figure 63). The counties with high utilization rates seem to also have a larger share of 'inappropriate' care, pointing towards potential areas for targeted improvement. Burns, poisoning, respiratory illnesses, hypertension, and bone and mental disorders account for over half of the cases managed by the pre-hospital EMS (Annex 2).

Figure 62. Per capita ER visits, 2017



Source: Croatia Public Health Institute Yearbooks.

Figure 63. Share of ER visits by priority, 2017



Source: Croatia Public Health Institute Yearbooks.

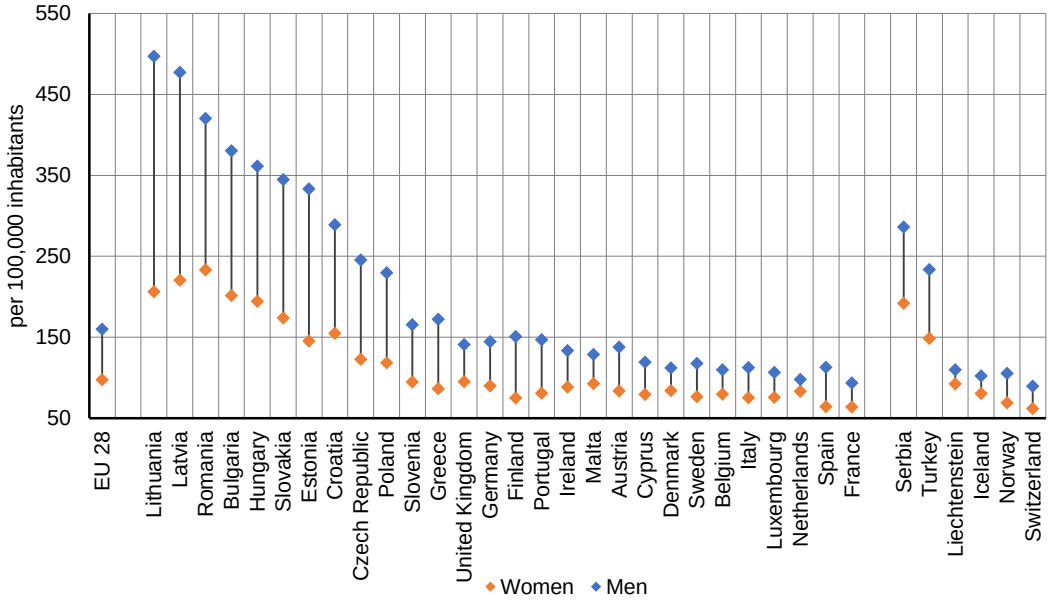
58. **In conclusion, the utilization of primary care services increased approximately by 50 percent over the past few years.** It is unlikely that this 50 percent increase can be attributed entirely to changes in the health status of the population. Given the low levels of reported unmet need, the increase may be physician-induced and/or stem from new, recently introduced financing, reporting or other arrangements. Further work is needed to understand the underlying reasons. Hospital admissions have also increased over the same period, albeit to a smaller degree. Increasingly more services are provided at the tertiary level, while ALOS and bed occupancy are on the decline. Almost half of all emergency services are considered 'inappropriate'. Significant variations exist across hospitals and counties in emergency care visits and ALOS.

2.5 Quality of health care

2.5.1 Health system

59. **The amenable mortality rate for Croatia (216.4 in 2015) is almost twice the average rate for the EU 28 and almost three times the rate for top performing countries** such as Denmark, Norway, and Switzerland, implying there is still lots of room for improving the quality of care delivered. A substantial divide in the rates between women and men is also notable (Figure 64). Although health expenditure levels can be argued to be a key factor when comparing amenable mortality across countries, many other factors also determine the outcome. Spain, for instance, although having about half of the health expenditure as compared to other countries such as Germany and UK, reports a relatively lower amenable mortality.

Figure 64. Amenable mortality rates by sex and by country, 2015



2.5.2 Hospital care

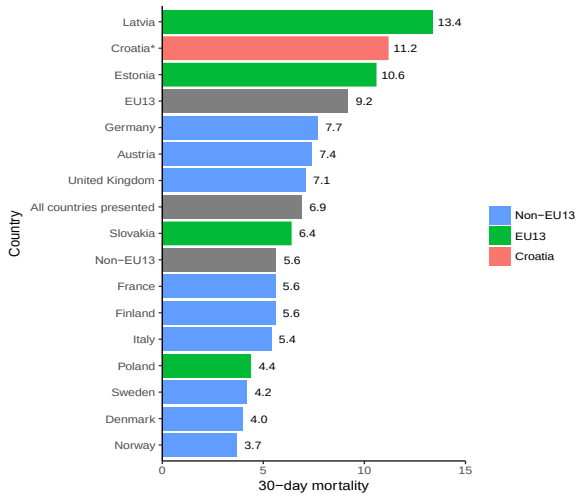
60. Disease-specific outcome indicators suggest a gap in the quality of hospital care in Croatia.

- **The standardized 30-day hospital mortality rate for acute myocardial infarction (AMI):** the rate in Croatia (11.2 in 2016) is several times the rates reported in selected top-performing countries such as Denmark (3.6), Norway (3.8), Sweden (4.2), and Slovenia (5.2) (Figure 65). Of note is that this indicator for Croatia captures only in-hospital mortality within 30 days of admission compared to the in- and outside hospital mortality reflected for comparator OECD countries. This implies that the differences presented in Figure 65 could be bigger. However, due to possible variations in how the data is defined and collected across countries, these findings are only indicative and further analytical work might be needed. Substantial variations across hospitals can also be observed within Croatia (Figure 67).
- **The standardized 30-day hospital mortality rate for stroke:** a similar trend to that of AMI mortality can be observed for stroke mortality in Croatia with the rate being several times higher than that in selected top performing countries such as Denmark, Sweden, and Norway

(Figure 66). The hospital level data also shows significant variation across hospitals (Figure 68).

- **The reported 30-day AMI and stroke hospital re-admission rates in Croatia are surprisingly low** compared to those from selected developed countries. For example, 30-day re-admission rates for stroke in Croatia are about one-eighth of those reported in the US and re-admission rates for AMI are about one-seventh of those reported for the UK[58][59]. These large discrepancies between mortality and re-admission rates are likely reflective of the quality of the re-admissions data and warrant further exploration. The data also illustrates the existing variation across hospitals, with up to eight-fold difference between selected hospitals on a 30-day AMI re-admission rate (Figure 69).

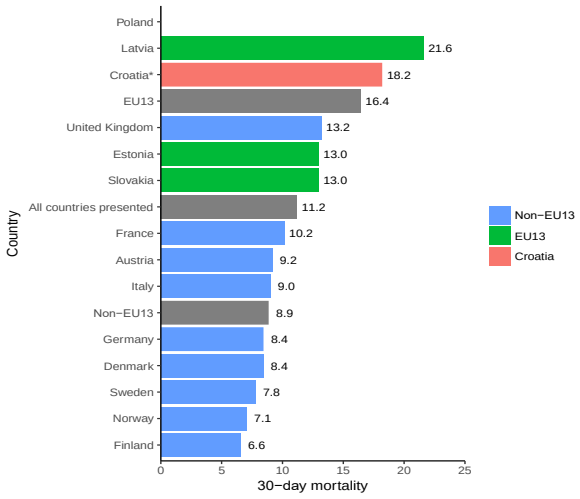
Figure 65. Standardized 30-day hospital AMI mortality in selected countries, 2015



Note: * Data reported for Croatia are collected for national hospital ranking, 2016

Source: OECD

Figure 66. Standardized 30-day hospital stroke mortality in selected countries, 2015

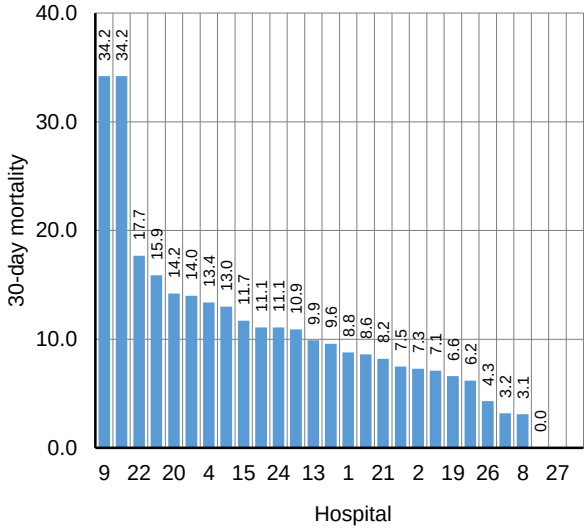


Note: * Data reported for Croatia are collected for national hospital ranking, 2016

Source: OECD

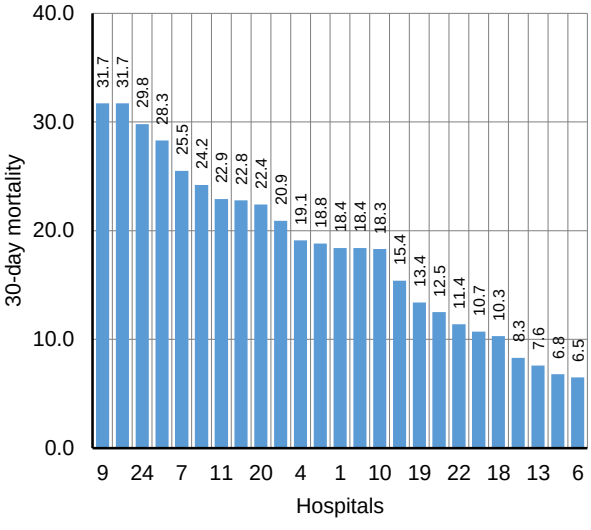
[58] Bambhroliya, A.B., et al., *Estimates and temporal trend for us nationwide 30-day hospital readmission among patients with ischemic and hemorrhagic stroke.* JAMA Network Open, 2018. **1**(4): p. e181190.
[59] Friebel, R., et al., *National trends in emergency readmission rates: a longitudinal analysis of administrative data for England between 2006 and 2016.* BMJ open, 2018. **8**(3): p. e020325.

Figure 67. Standardized 30-day in-hospital mortality for AMI by hospitals



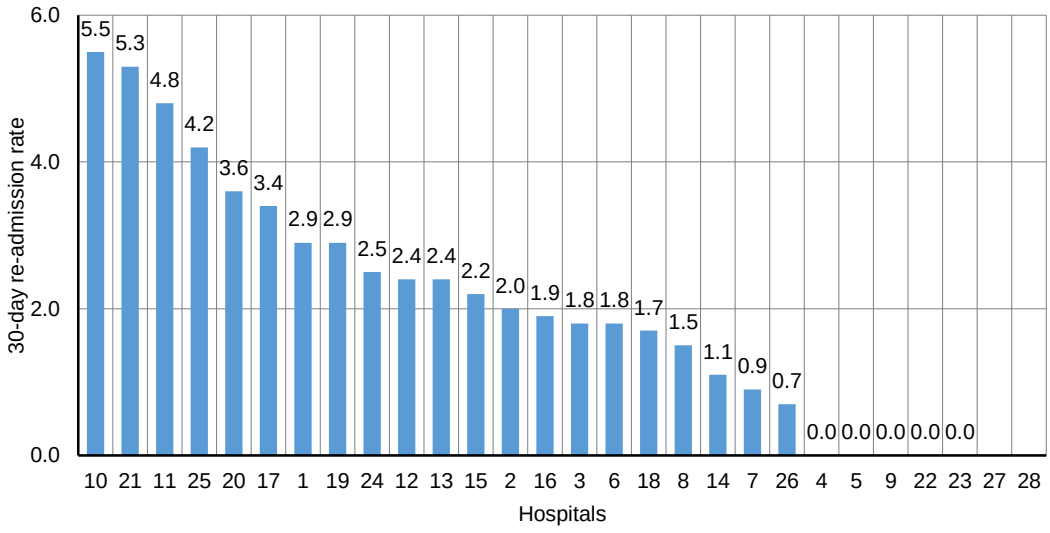
Source: Data collected for national hospital rankings, 2016

Figure 68. Standardized 30-day in-hospital mortality for Stroke by hospitals



Source: Data collected for national hospital rankings, 2016

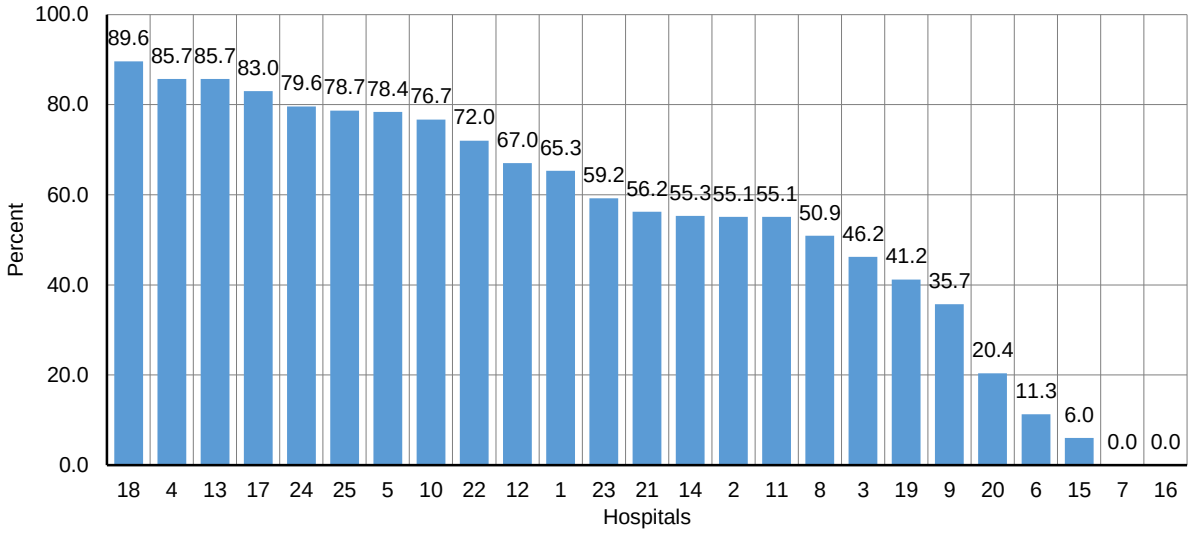
Figure 69. Standardized 30-day re-admission rates for AMI by hospital, Croatia



Source: Croatian Health Insurance Fund

61. **Compliance with evidence-based practices is an important measure of quality.** In Croatia, information on compliance rates is very limited. Available data suggests there exist quality deficiencies in provider compliance with the recommended practices across acute-care hospitals. For patients admitted with a stroke, imaging investigations (computed tomography (CT)/magnetic resonance imaging (MRI)) are recommended in the early stages of admission, so as to ensure diagnostic accuracy and the early initiation of appropriate clinical management. Figure 70 shows a wide variation between hospitals in the rates of early initiation of neuroimaging tests.

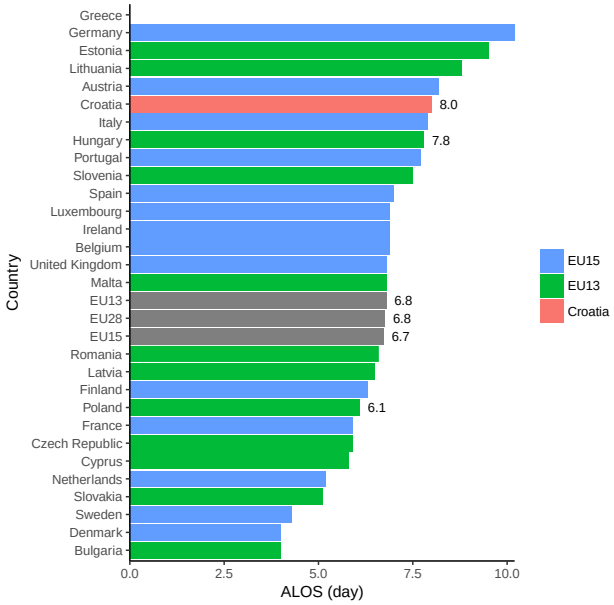
Figure 70. Percentage of patients with stroke with CT/MRI within 3 hours, Croatia



Source: Croatian Health Insurance Fund

62. **Croatia has one of the highest ALOS in the EU** (Figure 55). **The average length of stay can be used as a measure of effectiveness and efficiency of hospital care – with longer stays most likely suggesting ineffective and inefficient care.** Longer hospital stays in Croatia do not seem to lead to higher quality and better outcomes, at least for the conditions for which data is available. The case of AMI is illustrative; both ALOS and the 30-day mortality rate for AMI are at least twice those in selected EU countries, such as Denmark and Sweden (Figure 65 and Figure 71). Figure 57 and Figure 58 suggest there exist significant variations in ALOS among acute-care hospitals with up to a two-fold difference between the hospitals at the higher and lower ends of the continuum.

Figure 71. ALOS for AMI, 2016

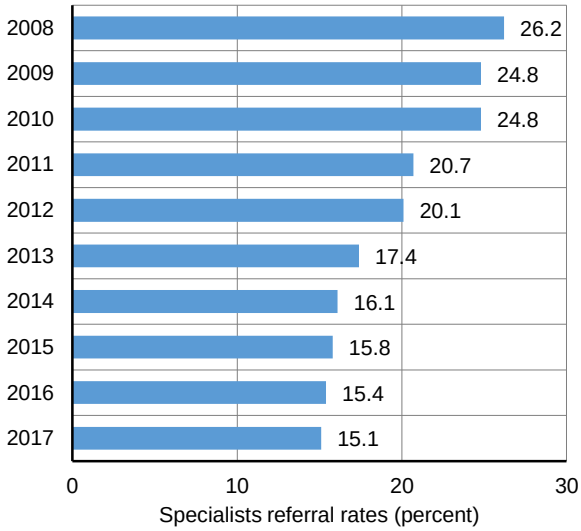


Source: Eurostat

2.5.3 Primary care

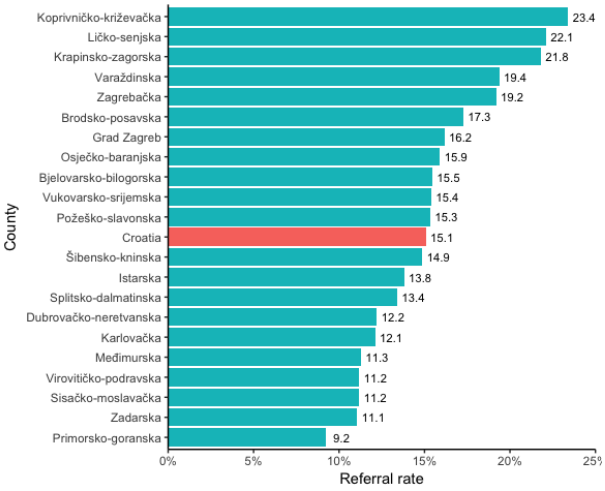
63. **Referral rates for specialist/hospital services, emergency care utilization rates and hospital admission rates for tracer chronic conditions (i.e. asthma, hypertension) are widely used as measures of the effectiveness of primary care**. In general, the referral rates for well performing primary care systems tend to be at 5-10 percent. The UK primary care system is a frequently referenced health system, with the referrals averaging 5 percent. In Croatia, referral rates have declined substantially during the past decade from 26.2 percent in 2008 to 15.1 percent in 2017 (Figure 72). However, there are wide variations across counties, with some counties performing quite well (at 9 percent), while others are performing rather poorly and have high referrals (23.4 percent) (Figure 73). The high utilization of emergency care services for non-emergency conditions further supports likely deficiencies in the quality of primary care or other system level issues such as long waiting times. For example, over half of all emergency visits in Croatia were conducted for non-emergency conditions, with wide variations in values between counties (Figure 63 and Figure 73).

Figure 72. Specialist referral rates, 2008-2017



Source: Croatia Public Health Institute Yearbooks.

Figure 73. Specialist referral rates by county, 2017



Source: Croatia Public Health Institute Yearbooks

64. **There are indications that there are deficiencies in the compliance rates with best practices, although data is very limited.** For example, at least once a year HbA1c testing is considered a best practice in diabetes management. In Croatia, about half of diabetic patients had HbA1c tests performed in 2017[60]. Despite the existence of wealth of patient level data in the system, including data on prescriptions, clinical diagnosis and laboratory test results, many basic quality indicators on compliance rates with evidenced based practices are not easily available for decision and policy making.

65. **In Croatia, the available quality care data is mostly on the effectiveness and efficiency domains,** with very limited or no data on other domains such as timeliness, patient-centeredness, and

[60] Croatia Public Health Institute Yearbooks

safety. **The** available quality care data on effectiveness and efficiency suggest deficiencies exist in both hospital and primary care levels.

3 Developmental challenges and opportunities for Croatia's health care system

3.1 Main challenges:

66. Croatia's health care challenges are similar to those of most other middle- and high-income countries: coping with rising health care demand and health care costs; modernizing services to match the population's increasingly complex and chronic health care needs; bridging quality care gaps and facilitating continuous quality improvement; at the same time strengthening governance and institutional capacity to design and deliver ambitious health care reform. This section explores each of these challenges in more detail. Complementing the discussion of challenges, some key strengths of Croatia's health care system are also identified, since these provide a basis upon which reforms can be built.

3.1.1 Current financing arrangements do not deliver value-for-money or ensure sustainability

67. **Diminishing revenues and increasing health care expenditures are likely to remain an important challenge for the country in the years to come.** Within a relatively small financial envelope, Croatia's health system delivers good outcomes. Nevertheless, the financial base of the health care system is under chronic strain, as evidenced by the accrual of financial liabilities over the past two decades. Several factors explain this.

68. **On the revenue side, the key challenges to financial sustainability include**:

- An ageing and shrinking population poses a serious challenge to the financial sustainability of the health system, as it heavily relies on employment-linked health insurance contributions. Croatia's population is projected to decrease from 4.165 million in 2018 to 3.896 million in 2030[61]. The projected percentage of the population aged 65 and older is expected to increase from 18.9percent of the total population (in 2015) to 24.7 percent (in 2030)[16]. Given that only 34 percent of the population pays full mandatory health insurance premium contributions and that the remaining population, including elderly, are covered from the general taxation, it might be a challenge for the government to increase or even maintain its current revenue base in the years to come in the absence of substantial economic growth.
- The current revenue collection model relies heavily on cross-subsidization between contributors and non-contributors. With the recent adjustment, health insurance contributions to the mandatory health insurance scheme (16.5 percent of monthly earnings) are already at the high end of the global spectrum with little room, if any, for further increases.
- The state's obligations on health insurance contributions for the vulnerable population are relatively low, even though these are likely to be the groups with the highest consumption of health care services. To date, government contributions account for less than 20 percent of HZZO health expenditure, and even this is not always fulfilled in a timely manner (see table in

[61] United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

Annex 3), further increasing the reliance on contributions from the declining working adult population.

69. **On the expenditure side, the key challenges to financial sustainability include:**

- The payment mechanisms used to influence provider and patient behavior to increase efficiency and optimize service utilization are limited. Rationing the benefits package might be politically challenging. Diagnosis-related groups (DRG) were introduced in 2009, but, until recently, they have been mostly used for activity monitoring rather than budgeting purposes. While hospitals in Croatia operate largely under global budgets based on their historical spending, the partial introduction of DRG linked payments within the global budget framework can still prove to be a useful tool for improving efficiency, optimizing care delivery networks and data driven service planning. A series of recent efforts aimed at linking an increasing share of hospital budgets to DRGs have been put on hold or rolled back. Regulations allowing hospitals to commit to expenditures beyond the planned budget are also at the root of health expenditure growth.
- The use of targeted co-payments in reducing the utilization of inappropriate services is limited. Given the very good coverage and limited user charges, most patients do not have any financial incentives to be cost-conscious when seeking care. Further analytical work might be needed, but the limited available data suggests there is a high utilization of emergency and primary care services, a sizable share of which are likely to be inappropriate.
- Health system liabilities almost entirely come from the hospital sector. Despite repeated investments to reconcile liabilities, this has become a new norm in the health sector. Hospitals incur arrears, expecting financial rehabilitation at one point, while newly available funds are barely sufficient to clear one-year overdue arrears. Unfulfilled state obligations may play a role in the accumulation of hospital arrears, but other factors are also in play. A back-of-envelop estimation suggests that the unfulfilled state obligations are approximately 1.5 billion kuna a year, with approximately 9 billion kuna in the period from 2012 to 2017. However, the data in Section 2 shows that, despite a financial rehabilitation worth 8 billion kuna during this period, arrears kept accumulating.
- Disconnects in the health system governance also may explain poor expenditure control. For example, the central government is responsible for the county owned hospitals' incurred liabilities, while it can exert little control over their hiring and procurement decisions.
- While specific measures, including payment mechanisms, can improve efficiencies and contain costs, their effect will be limited if this is not a part of a holistic multi-pronged health systems approach. In Croatia, unless health systems initiatives involve the multiple active (existing) players, reductions in inefficiencies and costs containment will be difficult to achieve. Coordinated health systems initiatives are a challenge in the country. For example, DRG based payments (in the realm of HZZO) are expected to incentivize provider behavior to reduce costs and increase savings. However, if hospitals are limited in how they can use savings or optimize their workforce (in the realm of MoH and counties), the intended effect of DRG implementation in the health system will be very limited.
- The primary care system is relatively underfunded, although it plays a critical gatekeeping, and hence cost containment, role in the health system. A stronger and well-equipped primary care would also likely be better able to contain costs through improved quality of care and the provision of a wider range of services in a relatively low-cost environment.

- Expenditures for pharmaceuticals and medical devices are reported to be the single highest contributor to hospital arrears. Expensive medication expenditures have also been rapidly increasing, outpacing the economic and health expenditure growth. Health technology assessment is in the advanced development stage in the country, however, more work is needed to ensure that HTA becomes an integral part of decision-making process on health technology purchasing and procurement[62].
- The existing payment mechanisms are often designed to incentivize higher utilization of services over the quality of care or provider performance. Minimal service volumes are not used to improve quality or efficiency.

3.1.2 Health care services are not adapted to today's health care challenges

70. **Service design and delivery has not kept up with the changes in disease patterns, patient expectations and technology.** The current demographic and population trends in Croatia, if they continue, are, for example, likely to translate to a declining need for pediatric care and an increasing need for long-term care. The available data also shows relatively low bed occupancy rates for pediatric beds in both general and specialty hospitals (67 percent and 64 percent respectively in 2017), while there is an unmet demand for long-term beds. The current hospital service delivery system, however, applies strict regulations that leave little room for expedient self-adaptation to the changing needs at the provider level. For example, a Network of Healthcare Institutions planning document identifies the number of beds by specialty and staff numbers, which guides HZZO contracting arrangements. Hospitals are unlikely to be reimbursed for the services that are beyond the contracted set of services. The MoH's role in the planning of the overall hospital system, in the backdrop of counties' ownership of general hospitals, is very limited too. For example, in-patient pediatric services in Zagreb may benefit from the consolidation of hospitals to improve efficiency and quality, as there are 4 pediatric stand-alone hospitals and 3 hospitals with pediatric in-patient services. Plans to consolidate pediatric care in fewer modern hospitals are broadly supported, but, beyond Zagreb, many counties will likely be reluctant to agree to consolidation if this implies a loss of workforce or local services. Global best practices in service delivery are also not routinely identified for adaptation and dissemination.

71. **The shift from provision of episodic acute care towards continuous integrated care for complex chronic conditions has not taken place.** Although there are specific interventions towards improving secondary prevention of chronic conditions (i.e. preventive panels), metrics for measuring and incentivizing continuity of care even within the primary care seems to be limited. A case management nursing framework, a good starting platform to implement various disease management programs, seems to have been rolled back partially. While evidence on cost-effectiveness of chronic disease management programs is inconclusive, they have been shown to improve efficiency and health outcomes for several chronic high burden conditions[63]. Preventive and health promotion activities are not closely integrated into the delivery of continuous care across all levels of care. Systematic care-planning for post-hospital care also seems to be limited.

[62] Huic M, Tandara Hacek R, Svajger I. HTA in Central, Eastern, and South European countries: Croatia. Int J Technol Assess Health Care. 2017;33(3):376-383

[63] Hisashige, A., The effectiveness and efficiency of disease management programs for patients with chronic diseases. Global journal of health science, 2012. **5**(2): p. 27-48.

72. **A system for methodical planning, implementing, evaluating and adjusting financial and non-financial instruments that incentivize provider and patient behavior is not in place**. For example, it has been reported that the number of preventive visits increased by approximately 250 percent over a one-year period and about seven-fold in the two years since the implementation of the financial incentives[64]. This should raise concerns either over the quality of reporting or the fact that providers are prioritizing reimbursed services, to the detriment of services that are not reimbursed. However, little systematic work to understand the spike in the number of preventive visits and make appropriate adjustments to the payment or reporting mechanisms seems to have been undertaken.

73. **Systematic analyses of the under- and over-utilization of services, so as to identify the appropriate utilization levels and plan follow up actions, are limited.** While underutilization might lead to inefficiencies in the system, overcrowding can also limit efficiency through its negative effects on quality of care and staff morale. Primary care, for example, has seen a substantial (50 percent) increase in services utilization from 2009 to 2012. More information will be needed to understand whether these are reporting artifacts or are due to earlier underperformance or other factors. High levels of inappropriate care are reported in emergency services; however, reducing the utilization of emergency services without understanding and addressing the underlying causes (such as improving convenience and quality of primary care or reducing waiting times) is likely to negatively impact access to care. Hospital bed capacity planning should consider the variations in demand when planning reductions, whilst contemporarily keeping in mind that 'a built bed is a filled bed'[65] when adding new beds. Limited use of clinical pathways and protocols is also likely to contribute to variations in the utilization of care.

74. **The health care workforce has not been sufficiently adapted to meet today's health care challenges**. Despite some growth in the ratio of physicians per population over the past two decades[66], shortages persist. These are pronounced in rural areas and specific specialties such as primary care, psychiatrics, pediatrics, obstetrics and gynecology, school and adolescence medicine specialists and other specialist working in public health institutes. In Croatia, however, efforts to address the workforce challenges frequently take a siloed approach, where a limited number of occupations and solutions are considered, rather than taking a more comprehensive approach to planning. A detailed national workforce strategy that takes a comprehensive planning approach to solving emerging workforce issues seems to be missing. New approaches such as changes in the 'skill mix' of the workforce (a nurse to physician ratio), transfer of competencies, re-designing medical training, and using technologies to mitigate the effects of workforce shortages[67] have had limited application.

75. **Full integration of care across levels of care remains a challenge despite the gatekeeping role of primary care and improved flow of information.** Different providers in the system (hospitals, GPs, emergency services, public health institutes, etc.) continue to work in their own siloes without a systematic coordination mechanism and shared incentives to collectively improve population health. Tracing and managing patients across care providers and along a care continuum using the existing health information structure is difficult and there seems to be a lack of structures, processes and incentives for providers to do so. In fact, despite the rich information collected in different parts of the system, the lack of integration of information systems between primary care providers and hospitals and across different

[64] Vončina, L., Arur, A., Dorčić, F., Pezelj-Duliba, D. 2018. "*Universal Health Coverage in Croatia: Reforms to Revitalize Primary Health Care*". Universal Health Care Coverage Series 29, World Bank Group, Washington, DC.
[65] Romer's Law
[66] WHO Health for all database
[67] OECD (2016), Health Workforce Policies in OECD Countries: Right Jobs, Right Skills, Right Places, OECD Health Policy Studies

platforms (i.e. e-Ordering, e-Referrals, e-Results) makes it challenging for GPs and other health professionals to track patient care efficiently. For example, physicians often lack information on whether patients have followed up on their referral advice, the types of care patients received from other providers, and the care outcomes. Beyond the integration within the health system, cross-sectoral collaboration across health, education and social services on public health issues and interventions is limited. Public health programs on mental health, dental health education among children, tobacco, alcohol, obesity, and the promotion of vaccines are some examples of programs that would greatly benefit from cross-sectoral coordination.

76. **The private sector forms a small portion of service delivery for the moment, but it has the potential to contribute more in selected areas such as long-term care, rehabilitative care.** However, leveling the playing field will be critical, such as through improving access to public funds, reporting and accountability frameworks.

77. **Despite the wealth of electronic health data and human capacity in the system, in-depth analytical work to inform decisions in tackling various health care issues seems to be limited.** Given the advanced health system, further improvements in Croatia need to be based on strong analytical work. For example, flexible bed allocation arrangements in the hospital sector[68] or the use of advanced data analytics to predict and shape demand for services, can improve efficiencies but would require in-depth analytical work. Some other examples may include analytical work on how to use innovative approaches such as transfer of competencies, use of CPDs and telemedicine to address workforce shortage and the skills mismatch in Croatia.

3.1.3 Mechanisms to measure and continuously improve quality of care are not well developed

78. **A comprehensive quality improvement strategy with an action plan that defines priorities, performance indicators and roles/responsibilities is missing.** Currently, multiple players are involved in quality measurement and improvement activities[69] in the country, with their organizational priorities and objectives playing into how and when quality is measured and acted upon. Addressing quality gaps and bringing about sustainable quality improvements across all levels of care will require a holistic and systems-level approach to quality improvement. The key challenges to building a sustainable quality improvement framework in the country can be addressed by further strengthening the national level strategy and governance for quality, continuous measurement of quality, better alignment of the quality improvement initiatives with the best practices.

79. **The roles of the quality and accreditation unit, as well as of the health technology assessment (HTA) unit (formerly called AAZ) within the governance of quality care are limited, given the multitude of independent players.** This is partly due to a lack of a legal framework and mechanisms to ensure their coordinating and governing role for quality in the system. For example, CPD, pay-per-performance schemes, clinical guideline development, HTA, measurement of quality are all important elements of the national quality improvement system in Croatia, but with little regulatory role and space for the quality and HTA units to coordinate and govern for quality across these various elements of the system. Although the new Law on quality care sets the stage for establishing national governance for

[68] Bekker, R., G. Koole, and D. Roubos, *Flexible bed allocations for hospital wards.* Health care management science, 2017. **20**(4): p. 453-466.
[69] Players involved in quality improvement include Croatia Health Insurance Fund, Agency for Quality and Accreditation in Health Care, medical universities, medical professional associations, and Chamber of physicians.

quality, detailed governance and coordination mechanisms for quality improvement are missing and need to be developed.

80. **Rich individual level electronic health data routinely collected in the system has not been effectively utilized to monitor and improve quality.** This is in part because the existing information systems were designed for different purposes, such as to facilitate the work of health insurance, laboratories and e-prescribing. Re-designing the IT systems to inform on quality will require an in-depth understanding of what is available and in what form and how it can be leveraged to improve quality, including in emerging quality care areas (i.e. patient experience, patient safety). Furthermore, the existing IT systems in various levels of care (i.e. hospital, primary) are not interconnected to inform quality improvement efforts that span across several levels of care. Finally, additional processes and procedures may have to be put in place to ensure system-wide compliance with the EU General Data Protection Regulation, which requires countries to obtain patient consent for the data to be used for purposes beyond the original intent.

81. **Mechanisms and processes for systematic evaluation of the quality and completeness of the data collected as well as the remedial actions, are not clearly described and implemented.** Some of the existing data has a limited utility despite all the resources invested in infrastructure and data collection. The hospital waiting list data, for example, is reported as not always being sufficiently accurate and up to date to evaluate the timeliness aspect of quality and act upon it.

82. **Routine patient engagement in care decision making and health management issues is lacking.** There are few pilots to capture patient reported outcomes and experiences with care, but they have yet to become a part of a system to routinely inform policy and decision making.

83. **The existing national level quality improvement interventions require a more structured approach and need to be better aligned to global best practices**. There is a need for the systematic evaluation of the existing improvement interventions and identification of best global practices for local adaptation and dissemination. For example, continued professional development activities within the physician license revalidation system are not designed to reduce variation in learning outcomes. Given an almost universal proficiency in English among physicians, effectively leveraging international peer reviewed e-learning platforms (such as BMJ Learning, Medscape, UpToDate) and fostering centers of excellence could reduce variations in knowledge and competency.

3.1.4 Institutional capacity to implement, monitor and evaluate ambitious reform is limited

84. **Limited institutional capacity has resulted in the slow implementation of key reforms.** Examples include the centralized procurement of medicines, commodities, and devices; although the MoH had evidence on its potential economic impact, it had difficulty implementing it at a larger scale. Given the complex political environment, where there are multiple stakeholders involved in the decision-making process, there are challenges in getting full cooperation from all parties and expediting the process to conclude framework agreements, in particular for the hospitals under the county ownership. Despite all the complexities, a good progress has been made on centralized procurement over the past two years, so that approximately 30 percent of medicines and supplies are now procured centrally. Hospital functional integration and hospital arrears reforms have slowed from limited motivation on the part of the hospital management and constraints the MoH has faced in fully designing and implementing actionable policies.

85. **There is little systematic effort to follow up and evaluate initiated reforms to inform future work**. The routine uses of data and evidence to inform reform designs, implementation and continuous

course correction is also limited. Shortage of health workforce and high turn-over rates affect institutional memory and capacity to implement ambitious reform plans.

3.2 Opportunities for development:

This section identifies some of the strengths within the Croatian health care system. In responding to the health care challenges outlined above, these represent key institutions, policies and practices which Croatia can build on.

3.2.1 3.2.1 Health system strengthening is recognized as a national priority

86. **The Government of Croatia has sought to address health sector reforms for many years, recognizing many of the challenges outlined above.** The National Health Care Strategy 2012–2020, for example, identified the strategic challenges and reform priorities for the health care sector, including (a) poor connectivity and insufficient continuity of health care across levels (primary, secondary and tertiary) in the health system; (b) uneven or unknown quality of care; (c) inadequate efficiency and effectiveness of the health care system; (d) poor or uneven availability of health care across regions; and (e) relatively poor health indicators, particularly those related to risk factors and health behaviors.

87. **The national strategy defines the following eight main priorities** that are closely reflective of the challenges and future directions identified in this note:

- Developing a Health Information System and eHealth.
- Strengthening and better using human resources in health care.
- Strengthening management capacity in health care.
- Reorganizing the structure and activities of health care institutions.
- Fostering quality of care.
- Strengthening preventive activities.
- Preserving the financial stability of health care.
- Improving cooperation with other sectors and society in general.

88. **There have been a number of successful service delivery reforms** that have led to a reduction in the number of acute-care beds since 2014, the development of a hospital master plan and national plan of hospitals, and the increased performance of elective surgeries in outpatient settings. The health system capacity to conduct highly complex procedures and interventions (such as organ transplants) has grown substantially. In 2018, some 41 organ transplants per one million people were conducted in Croatia. Furthermore, the law on quality care has recently been enacted, reflecting the importance the government and parliament assign to this issue. Major foundational blocks for quality improvement, such as a governance body, continuous clinical data collection and select quality improvement interventions (such as technical audits of hospital care quality) are already in place in Croatia. This is a good moment, therefore, to build upon the progress made and take the reform efforts in service delivery and quality care to the next level.

89. **Croatia is working to establish a sustainable and mandatory national HTA process and strengthening HTA capacities for national and international HTA activities through three EUnetHTA Joint Actions[70]**. It aims to inform coverage and disinvestment decisions at the national level and to produce joint clinical HTA reports (relative-effectiveness assessment reports) among the Member States after 2020, according to the proposed new Regulation[71].

90. **There are already a few examples of programs that have taken a multi-pronged approach to addressing challenges**. For example, the national health promotion program "Healthy Living" has been initiated in all Croatian counties and applies a comprehensive systematic approach to cover health education, health and physical activity, health and nutrition, health and the workplace, and health and environment.

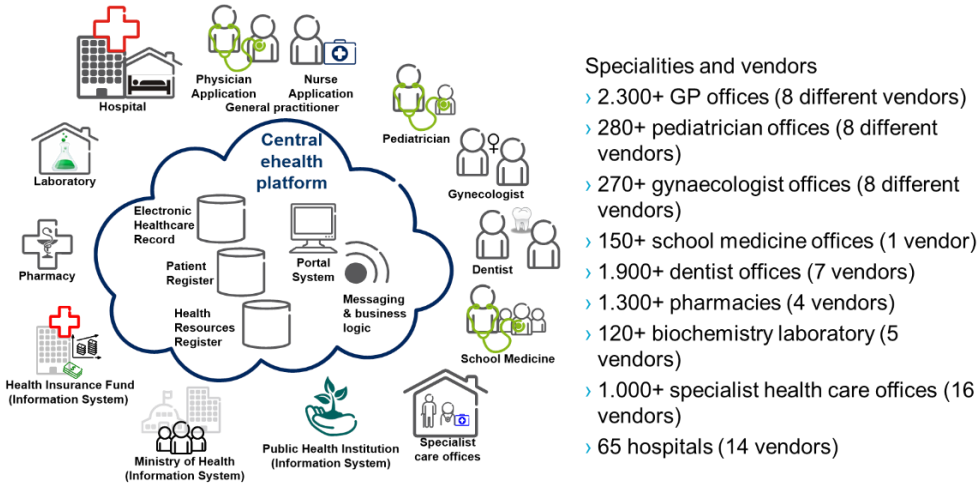
91. **Croatia is actively participating in the European Horizon2020 SELFIE project[72] related to integrated chronic care models for patients with multi-morbidity** –and is conducting two primary research projects related to two Croatian integrated care models - Palliative care and GeroS. SELFIE aims to improve the care for persons with multi-morbidity through a person-centered approach, by proposing evidence-based, economically sustainable, integrated chronic care models that stimulate cooperation across health and social care sectors. It also aims to propose appropriate financing/payment schemes that support the implementation of these models. The Croatian Institute of Public Health is actively involved in several EU Joint Actions establishing health interoperability in different public health fields (i.e. PARENT JA – Patient Registries Initiative, InfAct – Information for Action, EU-JAV – Immunization Joint Action).

3.2.2 Digitalization is well-established and continues to advance across the health care system

92. **The Central Health Information System of the Republic of Croatia (CEZIH) operated by the HZZO is an integrally built system** for a standardized exchange of health data and information to support the effective implementation of primary, secondary and tertiary level healthcare. Currently, it connects and controls all peripheral information systems in primary care doctors' offices, pharmacies and biochemical laboratories, as well as information systems in hospitals used for the centralized scheduling of specialist consultations and diagnostic tests. It supports the performance of public health processes, the implementation of special healthcare programs and helps to connect other information systems in healthcare. It includes issuing digital certificates for CEZIH users, subsystems, and applications based on public key cryptography.

[70] Guegan EW, Huić M, Teljeur C**. EUnetHTA: further steps towards European cooperation on health technology assessment.** Int J Technol Assess Health Care. 2014 Nov;30(5):475-7
[71] Proposal for a Regulation of the European Parliament and of the Council on health technology assessment and amending Directive 2011/24/EU, 2018
[72] https://www.selfie2020.eu

93. The outline of Croatian e-Health below shows that it spans across levels and functions of care:



94. **One of the most important national projects is the implementation of the EHR (in Croatian: eKarton) portal.** It is the central electronic health record (or a consolidated and structured set of personal patient health data collected and stored in CEZIH) which can be only accessed –based on the level of authorization– by healthcare workers involved in the treatment of the patient and following the consensual approval of the patient. The objective therefore is to create a system where the duplication of diagnostic tests and polypharmacy-related complications is reduced. Supporting patients in navigating complicated health system would be another important element of the EHR.

95. **In addition, through Croatia's eCitizen portal, patients can receive extensive information** about their care, such as the chosen doctor (GP, gynecologist, pediatrician, dentist), the start of their sick leave, dispensed medications, the announcement of the term of the appointed procedures in hospitals, diagnostic results from laboratories, etc. Patients can also access the health portal, where they can then manage security preferences (permissions for the chosen doctor to access their electronic health record on CEZIH and connections from/to foreign EU countries) and also can see who was watching their electronic health record data.

96. **A new Health Data and Information Act was adopted in early 2019.** This is intended to improve the use of semantic and process standards in Croatian eHealth, the scope of personal data protection in healthcare by amending regulations on the collection, storage, management, disposal, and protection of patient medical records data in CEZIH. The Act also foresees the establishment of a central eHealth authority, which will be set up within the Ministry of Health, with expertise decision-making and financing of state-level eHealth projects. One of the main resources of the standards' implementation will be Croatian health information process and semantic standards catalogue (sort of a metaregistry) enabling interoperability on technical, semantic, process and organizational level in Croatian healthcare.

3.2.3 Croatia has a strong primary care base upon which to build

97. **Croatia's primary care sector is well-organized, covering a wide variety of the health needs of the population.** As well as providing direct care, primary care doctors are tasked with prescribing medicines, referring patients to secondary care and granting patients a sick leave. Primary care is also widely recognized as one of the core services that ensure the continuity and integration of care for people with complex care needs. Preventive care is another example of how primary care helps deliver patient-centered care and deliver on national priorities such as the National Prevention Program.

98. Contracting and purchasing arrangements are also designed to incentivize performance of both acute and preventive primary care. From 2013 onwards, for example, a set of activities targeting the efficiency, quality and accessibility of services were implemented, primarily focusing on preventive activities and improving the management of NCDs[73]. Specifically, fee-for-service payments (FFS) increased to 30 percent as the capitation was decreased; performance has been monitored and evaluated by the use of performance and quality indicators (KPIs and QIs); bonus payments became available for the so-called "five star" model.

99. Croatia has a good level of digitalization in primary care. All practices are connected to the Central Integrated Information System administered by HZZO (CEZIH) and exchange information through different services such as ePrescription, eOrdering, eResults in real time. IT systems cover most business processes, with good levels of data protection. Data available at primary care level, is not always, however, easily accessible to other players in the health care sector such as hospitals, public health offices and even the MoH.

4 Prioritized policy recommendations

100. This section gives key policy recommendations to improve financial sustainability, service delivery, quality of care and institutional capacity in the health care system**.** All policy recommendations identify gaps in data or analysis that should be addressed going forward and highlight the importance of piloting and fine-tuning so that implementation best meets local needs.

4.1 Ensure financial sustainability of health system, addressing both revenue and spending

101. **Problem**: Current arrangements risk medium and long-term financial sustainability, because revenues have limited space to grow and increased health spending is likely due to changing health care needs, public expectations and technology. These pressures are compounded by inefficiencies in the system.

102. **Approach**: A comprehensive approach examining both the revenue and expenditure side of the health care system will be critical. A strong analytical work should underpin any changes in health system financing, alongside impact evaluation need to enable learning, course-correction and ensure the sustainability of reforms. Finally, cohesion with efforts in other areas such as care service delivery, quality of care and governance are also needed.

103. Required action

Short-term actions:

- Conduct a comprehensive exercise that models financing requirements under various scenarios including changing health care needs, expectations and technology. Based on this, develop a roadmap to ensure that adequate funds are available and/or that savings are made where appropriate;
- Existing revenue collection policies should be reviewed and alternative revenue sources, such as increasing contributions from general tax revenue or earmarked taxes, should be explored; Review state obligations to ensure timely fulfillment of fiscal commitments with respect to the health sector;
- Conduct an analytic study to identify and cost major inefficiencies in the health system (i.e. in staffing, hospital service delivery), propose solutions, and develop an action plan to implement solutions with impact evaluation and on-going monitoring. Distribution of funds among different levels of care and services should be reviewed, so that cost-effective and cost-saving levels of care and services (i.e. primary care, prevention activities) can be prioritized;
- Evaluate existing payment mechanisms for primary and hospital care with a view to sustainability, efficiency and quality of care, and develop an action plan to adjust the existing payment mechanisms, or pilot the new ones as appropriate, with impact evaluation and on-going monitoring. *Note: One high priority area would be the evaluation of DRG payments and hospital global budgets within the existing political economy and legal regulations and an action plan to improve expected health system benefits. The use of targeted co-payments to control inappropriate utilization can also be considered within the broader framework of access and costs.*

Disconnects between different segments of the system that impede progress should be identified and appropriate remedial actions proposed.

Mid-term and long-term actions:

- Revise and implement revenue collection and payment policies in line with health sector fiscal projections and national development priorities;
- Continued implementation of action plans to address inefficiency issues in primary and hospital care. *Note: One example of an action could be an integration of mandatory HTA into the re-imbursement/coverage, implementation and disinvestment decision-making processes in health technology purchasing and procurement, so that HTA becomes part of a process at the very beginning of value-based purchasing and procurement on medical devices and other health technologies and used to inform the drafting and design of the tender specification as well as contract negotiations with suppliers.*

4.2 Modernize service delivery to meet emerging challenges

104. **Problem**: The current hospital-centered, relatively inflexible and fragmented health system is not a best fit for today's health care needs: an ageing population and increasing NCD cases are likely to require more continuous and close to home primary care services that focus on risk management, continuous care and fewer inpatient services.

105. **Approach**: Addressing emerging challenges will require strong prevention-oriented primary care that coordinates patient care across levels of care; agile and modern hospital systems that can quickly adapt to changing care needs and adopting new delivery models to delivery efficient high-quality care; and strong data-driven analytics to inform decision making on a continuous basis.

106. Required actions:

Short-term actions:

- Conduct comprehensive evaluation of service delivery across all levels of care including primary, emergency, inpatient and long-term care to identify gaps and future directions to improve care integration, health system costs, efficiency, access and quality. Develop a roadmap and implementation plan based on evaluation findings;
- For primary care, mapping and evaluation of preventive activities should be considered within the larger framework of NCD prevention and control that takes into account governance and coordination roles of other key agencies (eg. Public Health Institutes and HZZO). The roles and responsibilities of different levels of care (i.e. primary care, general and tertiary hospitals) should be clearly defined and reflected in clinical pathways so as to reduce inefficiencies. Payment mechanisms, including pay-per-performance schemes should be reviewed;
- Define key features of the care coordination role within primary care in conjunction with key stakeholders, including patients. Develop a roadmap to strengthen this role within primary care for selected high burden NCD conditions such as diabetes, hypertension, depression;
- Identify options for the reconfiguration of the hospital sector, considering different models (merger, functional integration, reshaping etc.), and assess readiness against preconditions for reconfiguration (IT tools, human resources, required legal changes, payment mechanisms, clinical pathway, training materials etc.). Develop a roadmap and implementation plan based on

these findings and start implementation in selected sites; *Note: For pediatric services, Zagreb could become a pilot city where pediatric services from several existing hospitals will be consolidated into one modern hospital.*

- Identify and pilot options for further integration of health information technologies into routine service delivery processes to improve access and quality, reduce costs; Note: Use of teleconsultations, clinical decision support systems, and mHealth could be some of the potentially attractive areas given the technological developments in the country and health system.
- Establish structures, processes and procedures to carry out in-depth analytical work, including impact evaluation analyses on a routine basis to inform key national policy and decision making on service delivery. *Note: This function can be made a core function of existing structures within the MoH or sub-ordinate institutions (Public Health Institute) with dedicated staff and resources. Processes and procedures should be established to ensure routine and on-demand delivery of key analytical outputs.*
- Strengthen capacity in public health institutes and other relevant bodies for design and implementation of evidence-based prevention and health promotion programes and policies.

Medium- and long-term actions:

- Conduct an impact evaluation of implementation activities for primary care, emergency care, waiting lists, and hospital optimization using newly established structures, processes and procedures;
- Based on pilot experiences and impact evaluation results, scale-up hospital optimization and other service delivery pilots nationally,

4.3 Strengthen health care quality measurement and improvement

107. **Problem**: Multiple players are involved in ad-hoc quality improvement activities and tend to work in siloes. There are no documents at the national level that set out goals, specific activities, key roles and players, performance measures and accountability mechanisms. Existing quality improvement activities may also need to better reflect global best practices.

108. **Approach**: The foundations of a national quality improvement framework will need to focus on: a) establishing continuous quality data collection and monitoring, b) alignment of quality improvement initiatives with global best practices, c) capacity building for national quality governance and d) piloting new quality improvement initiatives to address quality gaps in priority areas (cardiovascular diseases, diabetes, cancer).

109. Required actions:

Short-term actions:

- Develop a strategy/policy document and a roadmap with operational level details with the quality improvement unit within the MoH as the main governing and coordination body. The document should outline a short- and long-term vision, goals and specific time-bound actions needed to establish a holistic quality improvement framework in the country. The strategy will be key to ensuring coordinated efforts in the quality improvement area with a clear detailed roadmap with roles assigned to specific players, coordination and accountability mechanisms

as well as specific time-bound targets against which the effectiveness of the efforts in this area could be measured;

- Conduct analytic studies on how the existing health information technologies in the country can be redesigned to better a) measure, analyze and report quality data; b) integrate and facilitate coordination of different levels of care; c) improve physician engagement through an improved user interface and d) optimize physician data collection/reporting workload;
- Conduct an analytic review of the existing national-level quality improvement interventions highlighting strengths and weaknesses, as well as proposing a detailed roadmap on how to better align them with best practices;
- Strengthen the methodology for hospital ranking and benchmarking efforts and ensure that the ranking and benchmarking exercises occur annually with publicly reporting of the findings;
- Pilot new quality improvement initiatives to address quality gaps in priority areas (i.e. diabetes, heart conditions, cancer);
- Establish a methodology, processes and procedures for the routine adaptation of international clinical guidelines to local context;
- Establish processes and procedures for routine collection, monitoring and reporting of quality care indicators;
- Capacity strengthening for national quality governance at the MoH and HZZO levels.
- Capacity strengthening for national quality improvement including HTA, CPD, pay-per-performance, and public reporting.

Mid-term actions:

- Continued support to strengthen national governance for quality;
- Implement selected actions from analytic studies to better align the existing quality improvement interventions with best practices (e.g. CPD, pay-per-performance, clinical guideline development/adaptation, HTA);
- Update the existing health information technologies to better measure, monitor and report quality indicators;
- Design and implement data collection and quality improvement interventions on ‘neglected’ quality domains, such as patient safety, timeliness, and patient experiences;
- Scale-up quality improvement initiatives to address quality gaps in priority areas (i.e. diabetes, heart conditions, cancer);
- Develop or update nationally adapted clinical guidelines and patient pathways for the prevention and control of selected high burden NCDs;
- Develop a system for the routine collection, monitoring and public reporting of quality indicators in selected high burden conditions in primary care.

4.4 Improve governance capacity through more effective use of data to steer the health care system

110. **Problem**: the health system continuously collects a large amount of health data. However, the data is not routinely used to inform decisions to improve the efficiency, quality, and effectiveness of care.

111. **Approach**: Structures, processes and procedures should be set up to integrate data analysis and reporting into existing decision and policy making practices at the provider, payer and policy making levels. The algorithms need to be embedded into the system so that they can automatically turn pre-selected health data into health information on which key decisions can be made.

112. Required action –

Short-term actions:

- Complete a legal framework to manage health data (data sharing, data use, confidentiality issues), including national e-health cybersecurity policies and regulations. Legal frameworks and policies should be aligned with those in the EU and the world;
- Develop comprehensive strategies and action plans to streamline data collection, improve data access, sharing and privacy across and within levels of care, as well as outline national governance mechanisms with key players and accountability mechanisms;
- Assess investment needs (for infrastructure, staffing, training) related to the implementation of the strategies and action plans;
- Establish and improve the catalog of health information standards in Croatia aligned with European standards and formats to ensure the interoperability of health information systems within the European health information framework;
- Improve the National Public Health Information System (NAJS) through services that are integrated between health-care providers and other sectors, eliminating data reporting redundancies, and improving clinical processes.

Medium- and long-term actions:

- Set up a national health information governance system;
- Implement a national health IT strategy and roadmap;
- Routinely apply population health intelligence tools to inform targeted prevention and disease management activities;
- Build national capacity in data analytics including integration of provider and patient dashboards into the existing infrastructure and practices;
- Build national capacity via hands-on participation in global and EU health IT flagship projects, such as Artificial Intelligence (AI), High Performance Computing (HPC), e-Health Cybersecurity (eHC) and Advanced Digital Skills (ADS).

5 Cross-cutting issues

113. **In addition to the four policy areas outlined in section 4, there are cross-cutting issues that should also be addressed to strengthen Croatia's health care system.** A high-performing health care workforce is one such issue that is critical to success in each of the four areas. Tackling the challenge of an ageing population is another such issue since success here is critically dependent on partnerships beyond the health system.

5.1 Optimizing numbers, distribution and training of the health care workforce

114. **Problem**: There is a shortage of health care workers, particularly in rural areas and in specialties such as primary care, pediatrics, psychiatry and obstetrics.

115. **Approach**: A holistic approach should be used to assess the country's health care workforce needs and develop strategies for strengthening human resources. The strategy should identify directions and actions that should be undertaken in order to meet current and future workforce needs using a systems approach that addresses the continuum of workforce development, starting from medical school training to retirement.

116. Required action

Short-term actions:

- Conduct comprehensive mapping, evaluation and modelling of healthcare workforce in the country to inform current and future needs under different development scenarios;
- Develop a workforce development strategy/policy document and a roadmap with operational level details based on evaluation and modelling findings. The document should outline a short- and long-term vision, goals and specific time-bound actions. The strategy will be key to ensuring coordinated efforts in workforce planning across key human resources planning areas such as training, re-training and retention with a clear detailed roadmap with roles assigned to specific players, coordination and accountability mechanisms as well as specific time-bound targets against which effectiveness of the efforts in this area could be measured;
- A new set of interventions, such as changing the "skill mix", transferring tasks or creating new roles in service delivery (i.e. diseases management), should be piloted. International practices should inform these interventions as to their relevance and feasibility in the Croatian context;
- Engage professional associations on curriculum development for in-service training.

Mid-term and long-term actions:

- Continued implementation of human resource strategy and action plans.

5.2 Ensuring healthy and active ageing through collaboration with other sectors and a life-course approach

117. **Problem:** It is imperative to ensure healthy and active ageing, both for individuals' well-being and for broader social prosperity, using a life-course approach. This goal, however, is threatened by Croatia's high burden of adverse risk factors and complex, chronic diseases.

118. Approach: Reducing risk factors requires a complex set of measures both at the individual and population levels, many of which lay beyond the reach of the health sector alone, and require multi sectoral interventions. Examples of cross-sectoral interventions could be a) urban development policies (i.e. on housing density, public transportation, green space) can encourage walking and recreational activities thus influence individual behavior; b) earmarked taxation of tobacco, alcohol, unhealthy food and beverages taxation, which increase health system revenues and discourage risky behavior.

119. Required action

Short-term actions:

- Review and revise existing multi-sectoral policies on prevention and control of the major risk factors which lead to chronic ill-health;
- Establish processes and procedures to strengthen coordination and supervision mechanisms in the implementation of intersectoral NCD prevention and control activities both horizontally and vertically (i.e. tobacco control);
- Strengthen surveillance systems and institutional capacity for early detection, monitoring, analysis and reporting of major risk factors and NCDs including injuries and mental health;
- Establish processes and procedures to improve the enforcement of tobacco and alcohol control policies;
- Integrate health promotion interventions into clinical pathways in primary care.
- Revise standards for cooperation between health and social assistance offices, including through enhanced coordination and joint case management.

Medium and long-term actions:

- Strengthen the strategic focus and effectiveness of the health care delivery systems at a local level to support the poorest and most vulnerable elderly citizens;
- Ensure capacity building for intersectoral work, health promotion, health impact assessment and economic assessment sector policies on prevention and control of NCDs;
- Incentivize, through financial and non-financial measures, the close collaboration of primary care and public health services;
- Design and implement national level public health interventions to reduce NCDs and other age-related health issues.

6 Proposed implementation roadmap

120. **Ensure financial sustainability of health system, addressing both revenue and spending**

Starting from	Sub-actions	Milestone	Resource(s)	Area
2019 (IV) – 2020 (IV) 2020 (IV) -2023 (IV)	Analytical studies to inform future directions in health financing and improve fiscal sustainability Revise and implement national revenue collection and payment policies for health informed by the analytic studies	Modeling exercise to inform a health financing roadmap A study to identify major inefficiencies and opportunities for improvement in the system Evaluation of existing payment mechanisms for primary and hospital care with a view to improve sustainability, efficiency and quality The existing financing framework and policies revised and approved The revised framework and policies implemented nationwide	MoH HZZO Grants and technical assistance EU funds	Health financing

121. Modernize service delivery to meet emerging challenges

Starting from	Sub-actions	Milestone	Resource(s)	Area
2019 (IV) -2020 (III) 2020 (IV) -2025 (IV) 2020 (II) – 2022 (IV) 2021 (II) -2025 (IV) 2021 (I) -2025 (IV) 2021 (I)-2025 (IV)	Comprehensive evaluation of service delivery for gaps and opportunities in care integration, coordination, efficiency and costs. Selected service delivery improvement interventions designed, piloted and scaled up Information technologies redesigned to meet the needs of an updated service delivery framework Structures, processes and procedures to carry out in-depth analytical work, including impact evaluation analyses on a routine basis to inform decision making established National prevention and health promotion frameworks strengthened National health workforce planning and management strengthened	Key focus areas identified Analytical studies conducted In primary care In hospital care (hospital consolidations, i.e. pediatric hospital integration in Zagreb) In ambulatory care In public health institutes In ancillary services (laboratory, food) Integrated care Terms of reference for health IT changes developed Terms of reference requirements implemented An agency identified with designated staff and clear responsibilities Capacity building activities carried out Analytical studies conducted National strategies and action plans developed Action plans implemented Analytical studies conducted	MoH HZZO Grants and technical assistance EU funds	Service delivery

		National strategies and action plans developed Action plans implemented		

122. Strengthen health care quality measurement and improvement

Starting from	Sub-actions	Milestone	Resource(s)	Area
2019 (IV) -2020 (IV) 2020 (I) -2021 (II) 2021 (II) -2025 (IV) 2021 (II) -2025 (IV)	Analytic studies to inform on gaps and opportunities in quality and health data for quality, including health information technologies A national strategy and priorities for quality and an implementation roadmap developed Alignment of the existing quality improvement interventions with the best global practices Implementation of the national strategy	Key focus areas identified Analytical studies conducted National strategy, priorities and implementation plans developed Legal framework updated Best practices implemented To be identified after the development of the strategy	MoH HZZO Grants and technical assistance EU funds	Quality improvement

123. Improve governance capacity through more effective use of data to steer the health care system

Starting from	Sub-actions	Milestone	Resource(s)	Area
2020 (I) -2012 (IV) 2021 (I) -2025 (IV) 2020 (I) -2021 (IV) 2020 (IV) 2021 (I) -2025 (IV)	Legal frameworks and policies on managing health data reviewed and updated National health system evaluation and monitoring structures and processes strengthened A national strategy and action plans on health data and IT developed National governance system for health information systems set up Implementation of the national strategy	Reviews Updates to framework and policies An agency identified with designated staff and clear responsibilities Staff capacity strengthened National strategy and implementation plans developed An agency identified with designated staff and clear responsibilities To be identified after the development of the strategy	MoH HZZO Grants and technical assistance EU funds	Health IT governance

7 Proposals for strategic (“Flagship”) projects

124. **Strengthening national prevention and health promotion systems project**

a) Description of flagship project:

Strengthening national prevention and health promotion systems project will aim to facilitate data and evidence driven systems to design, pilot and implement prevention activities throughout the health system and beyond and cover the following set of activities:

- Analytic studies to identify gaps and opportunities for improvement in the existing prevention framework, including the evaluation of decision flows, funding, cohesion across levels of care, methods, tools and channels used.
- Development of national strategies and action plans;
- Redesign of existing health information systems, financing and regulatory frameworks to incorporate prevention and health promotion measurements, monitoring and reporting as a core function; and,
- Implementation of selected disease specific prevention and health promotion programs on high priority conditions and modifiable risks.

b) Project’s relevance to national strategic framework:

The project will contribute to the achievement of the following NDS strategic goals:

- Improving the health of Croatian citizens throughout life; and,
- Improving the access and quality of services and creating an efficient health care system.

c) Economic (if applicable) and social impact:

The majority of the prevention activities are shown to be either cost-saving or cost-effective. Improvements in preventive practices, therefore, will lead to both improved health outcomes and economic benefits.

d) Sustainability:

This proposal focuses on strengthening existing prevention systems that already have designated financing sources, structures and processes. The proposed activities will focus on revising and putting in place structures, processes and mechanisms that can be maintained within the existing budgets; wherever an additional financing is required, the sustainable sources of financing will be identified. For example, prevention and health promotion is carried out by the Croatian Institute of Public Health, primary care providers and hospitals, each with its own financing mechanism. Putting in place mechanisms and processes to ensure cohesive coordinated work or redesigning information systems will require a limited time investment, which can be in the future maintained within the existing budgets. New health promotion activities may require additional resources to sustain, in particular, those activities that involve the media. The government will be engaged in seeking continuous support for key promotional activities

once the benefits of the successful activities can be quantified and shown in terms of the reduced modifiable risks.

e) Duration:

2019 - 2020 – Analytic studies to identify gaps and opportunities in prevention and health promotion

2020 – 2021 – Development of a national strategy and priorities

2021 – 2022 – Health IT redesign, changes in financing and regulatory framework

2021 – 2025 – Selected prevention and health promotion interventions on high burden chronic conditions and modifiable risks

2021- 2025 – Capacity building for prevention and health promotion at the provider level

f) Estimated amount of funding required:

10 – 50 million (Euro)

g) Preconditions - points for consideration before the project can begin:

N/A

h) Project leader:

MoH

i) Beneficiaries

General population, health care users, health care providers

125. **Quality of care improvement project**

a) Description of flagship project:

Quality of care improvement project will cover the following sets of activities:

- Development of national quality improvement strategy, national priorities for quality and implementation plan;
- Analytic studies to understand the underlying reasons for quality deficiencies reflected in the national priorities for quality and develop detailed recommendations on the way to proceed forward;
- Improved alignment of the existing and planned national quality improvement interventions with international best practices (e.g. CPD, pay-per-performance, HTA);
- Redesign of the existing health information systems to incorporate quality measurement, monitoring and reporting as a core function;
- Designing, piloting, scaling up and impact analysis of new disease specific quality improvement interventions on high burden conditions (e.g. cardiovascular conditions, diabetes, cancer).
- Capacity building for quality at the provider level.

b) Project's relevance to national strategic framework:

The project will contribute to the achievement of the following NDS strategic goals:

- Improving the health of Croatian citizens throughout life; and,
- Improving the access and quality of services and creating an efficient health care system.

c) Economic (if applicable) and social impact:

The economic impact is difficult to quantify at this stage, but it is expected to be substantial. For example, studies suggest that the inappropriate utilization of services makes up 1/3 of all service utilizations, implying significant economic benefits could be reaped from improvements in mis- and overused health services. Economic benefits are also likely to accrue from avoided hospitalizations, reduced medical errors and improved health outcomes (i.e. improved productivity, reduced working days lost).

d) Sustainability:

This proposal focuses on strengthening the existing quality improvement system. Proposed activities will focus on revising and putting in place structures, processes and mechanisms that can be maintained within the existing budgets. Where additional financing is required, sustainable sources of financing will be identified. For example, a health information redesign would involve a one-time investment to restructure the existing information systems so that quality care data collection and reporting becomes automated and requires minimal "manual" work. The redesigned infrastructure is unlikely to require additional resources to maintain.

Regular evaluations and impact analysis findings of quality interventions can quantify the benefits to inform policy and decision makers, so that continuous support to the changes becomes politically appealing.

e) Duration:

2019 - 2020 - National quality care strategy and priorities.

2020 – 2022 – Health IT redesign, revision and update of financing and regulatory frameworks.

2020 – 2025 – Analytic studies to inform quality improvement interventions.

2021 – 2025 – Aligning national quality improvement interventions with global best. practices

2022 – 2025 – Piloting and scaling up selected disease specific quality improvement interventions nationally.

2021- 2025 – Capacity building for quality improvement at the provider level.

f) Estimated amount of funding required:

Indicative estimated value (it can be a wide range), based on the team's experience.

10 – 35 million (Euro)

g) Preconditions - points for consideration before the project can begin:

N/A

h) Project leader:

MoH, Health Insurance Agency

i) Beneficiaries

Health care users (primary and hospital care), patients with chronic conditions, health providers, policy and decision makers, health insurance agency staff.

126. **Hospital services consolidation/integration pilots (for example, the consolidation of pediatric services in Zagreb[74])**

a) Description of flagship project:

Hospital services consolidation/integration pilots (for example, the consolidation of pediatric services in Zagreb) will cover the following sets of activities:

- A comprehensive hospital consolidation/integration plan with service mapping and volume and cost projections;
- Development of a detailed infrastructure planning document aligned with the hospital consolidation/integration plan and modern concepts in hospital service delivery; and,
- Hospital consolidation/integration implementation in line with the consolidation/integration and infrastructure plans (i.e. National Children's Hospital in Zagreb).

b) Project's relevance to national strategic framework:

The project will contribute to the achievement of the following strategic goals:

- Improving the health of Croatian citizens throughout their lives; and,
- Improving the access and quality of services and creating an efficient health care system.

c) Economic (if applicable) and social impact:

A hospital consolidation plan will provide in-depth economic analysis and quantify potential benefits and losses for various consolidation/integration options. In the case of pediatric hospital services in Zagreb, inefficiencies and quality shortfalls in care delivery are noted to be obvious and as such proposed for early implementation. For example, pediatric services are provided in four stand-alone hospitals and three pediatric wards within general hospitals. Several of the hospitals are hosted in aged buildings that are not a good fit for new technologies and modern hospital service delivery concepts.

The consolidation of services in fewer hospitals is expected to yield efficiency gains form economy of scales, quality improvements from higher volumes, new technologies and multidisciplinary work in complex cases.

[74] This is expected to follow a phased approach, whereby in the first phase, the focus would be on consolidation/integration of existing services in Zagreb. The focus of the following phases would be on consolidating complex pediatric procedures and services nationally (eg. organ transplants), with the pediatric hospital becoming a national level hospital/center of excellence in near future.

d) Sustainability:

With the consolidation/integration plan, new infrastructure investments are likely to happen in the backdrop of closure or downsizing of older hospitals, therefore overall hospital expenditures, including maintenance costs, are likely to be reduced over the long-term. Detailed information on costing and expenditures will be provided by the infrastructure plan and feasibility studies.

e) Duration:

2019 - 2020 – A comprehensive hospital consolidation/integration plan; feasibility studies; infrastructure planning documents.

2020 – 2024 – Infrastructure investments for selected pilots.

2023 – 2025 – Design and implementation of new hospital service delivery models in pilot projects.

f) Estimated amount of funding required:

300 – 400 million (Euro)

g) Preconditions - points for consideration before the project can begin:

N/A

h) Project leader:

MoH, Health Insurance Agency

i) Beneficiaries

Health care users (hospital care)

127. **National workforce planning and management project**

a) Description of flagship project:

The workforce planning and management project will aim to address the existing and potential workforce issues in the Croatian health system and cover the following sets of activities**:**

- Analytic studies to understand the underlying reasons for the current workforce issues and develop detailed recommendations on the way forward;
- National workforce planning strategy and roadmap development informed on the analytic work and global evidence-based practices;
- Piloting of selected national level interventions to address workforce shortages, including innovative approaches such as task-shifting; and,
- Impact evaluation and scale-up of pilots.

Examples of the pressing workforce issues could be shortages of physicians in rural areas, the high workload in primary care and shortages of selected specialist physicians. Potential solutions may require

reforms in medical education (i.e. undergraduate and postgraduate education, in-service training, specialization framework) and the introduction of changes to traditional job responsibilities so as to enable task shifting and other interventions.

b) Project's relevance to national strategic framework:

The project will contribute to the achievement of the following strategic goals:

- Improving the health of Croatian citizens throughout their lives; and,
- Improving the access and quality of services and creating an efficient health care system.

c) Economic (if applicable) and social impact:

Economic benefits will come from improved access to health services and improved health outcomes.

d) Sustainability:

This proposal focuses on strengthening the existing systems, such as those for training, service delivery and remuneration. Proposed activities will focus on revising and putting in place structures, processes and mechanisms that can be maintained within the existing budgets. Whenever additional financing is required, sustainable sources of financing will be identified. For example, undergraduate and postgraduate education already have funding streams as well as structures and processes in place. Reform initiatives in medical education could involve changes to the training framework or mechanisms for the systematic re-distribution of specialty slots, both of which are likely to require one-time investments and can be maintained within the existing funding envelops.

e) Duration:

2019 - 2020 – Analytic studies;

2020 – 2021 – A national strategy and an implementation plan;

2021 – 2025 – Design and implementation of structural reforms outlined in the strategy;

f) Estimated amount of funding required:

10 – 35 million (Euro)

g) Preconditions - points for consideration before the project can begin:

N/A

h) Project leader:

MoH

i) Beneficiaries

Health care users, health professionals (i.e. physicians, nurses, ancillary staff)

128. **Integrated service models in primary, inpatient and long-term care project**

a) Description of flagship project:

Integrated service models in primary, inpatient and long-term care project will aim to improve the integration and coordination of services across and within levels of care and cover the following sets of activities:

- Analytic studies to identify gaps and opportunities for improved integration and coordination of care;
- Designing, pilot testing and scaling up of interventions in primary and hospital care (i.e. care coordination for NCDs at the primary care level, integration of hospitals and at-home LTC);
- Redesign of the existing health information systems to incorporate care integration and coordination measurements, monitoring and reporting as a core function; and,
- Impact evaluation analysis.

b) Project's relevance to national strategic framework:

The project will contribute to the achievement of the following strategic goals:

- Improving the health of Croatian citizens throughout their lives; and,
- Improving the access and quality of services and creating an efficient health care system.

c) Economic (if applicable) and social impact:

Analytic studies will provide detailed estimates of the potential benefits of improved care integration and coordination. Economic benefits are likely to accrue from the reduced duplication of services and work days lost as well as from improved health outcomes.

d) Sustainability:

Care coordination and integration is expected to reduce overall health system expenditures through improved efficiency and better health outcomes.

e) Duration:

2019- 2020 – Analytic studies to inform of gaps and opportunities in care coordination and integration

2020 – 2021 – Designing and pilot testing new schemes/interventions

2020 – 2021 – Health IT redesign

2021 – 2025 – National scale-up of care coordination and integration schemes/interventions

2020- 2025 – Capacity building for care coordination and integration at the provider level

f) Estimated amount of funding required:

20 – 50 million (Euro)

g) Preconditions - points for consideration before the project can begin:

N/A

h) Project leader:

MoH, Health Insurance Agency

i) Beneficiaries

Health care users (primary and hospital care), patients with chronic conditions, health providers.

8 Annexes

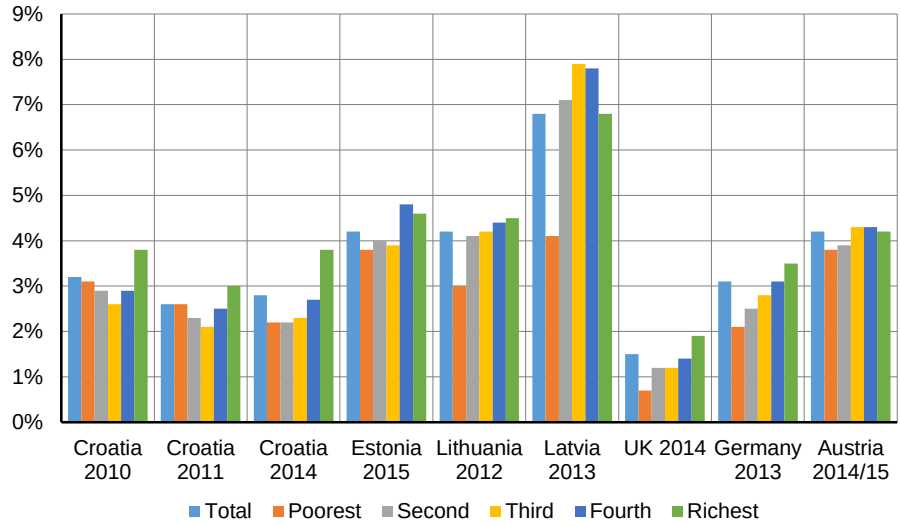
Annex 1: Summary of policies on user charges (Table A) and Out-of-pocket payments for health care as a share of household consumption, by consumption quintile (2010-2014) (Figure A)

Table A Summary of policies on user charges

Services	User charges
Primary care	Fixed co-payment for visit: HRK 10 per visit (not paid if a prescription is issued during the consultation).
Hospitals	Percentage co-payment for outpatient visit: 20percent of the cost, with a minimum payment of HRK 25. Percentage co-payment for outpatient diagnostics: 20percent of the cost, with a minimum payment of HRK 50. Percentage co-payment for inpatient care: 20percent of the cost, with a minimum payment of HRK 100 per day of hospitalization
Physical medicine and rehabilitation	Percentage co-payment for outpatient care in hospitals: 20percent of the cost, with a minimum payment of 25 kn per day Percentage co-payment for care provided in patients' homes: 20percent of the cost, with a minimum payment of 25 kn per day
Dental care	Fixed co-payment for visit: HRK 10 per visit Percentage co-payments for treatment: 20percent of the cost of reimbursed dental consumables, with a minimum payment of HRK 50 & 20percent of the cost of reimbursed dental prostheses with a minimum payment of 1000,00kn for people under 65 and 500kn for people over 65
Outpatient prescription medicines	Fixed co-payment for prescription: HRK 10 per prescription plus any difference between the reference price and the price.
Medical products	Percentage co-payment: 20percent of the cost, with a minimum payment of HRK 50.
Exemptions	The following are exempted from all user charges but for medicines (difference between the reference price and the price): children under 18, severely disabled people, disabled war veterans, family members of war veterans killed in service or held as prisoners of war; treatment of cancer, infectious diseases, chronic psychiatric illness, prenatal services and fertility treatment.
Cap	2,000 kn per episode of treatment

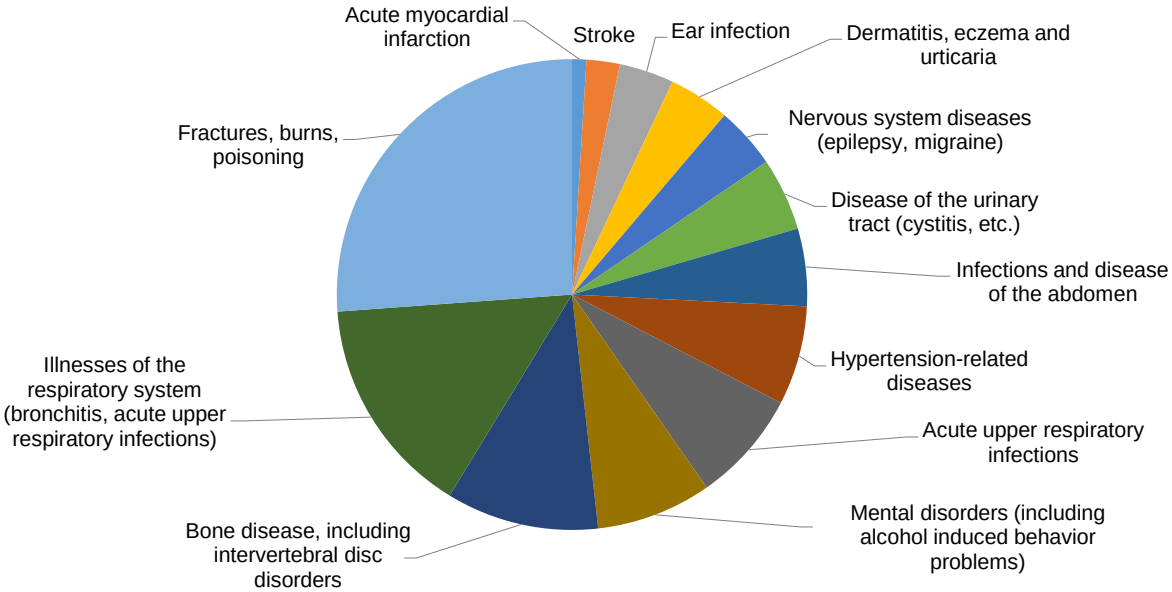
Sources:
https://gov.hr/moja-uprava/zdravlje/zdravstveno-osiguranje/sudjelovanje-u-troskovima-zdravstvenih-usluga/462
HZZO insured in mandatory and complementary health insurance:
http://www.hzzo.hr/wp-content/uploads/2014/06/FinancijskopercentC5percentA1percentC4percent87e-i-naturalni-pokazatelji-Hrvatskog-zavoda-za-zdravstveno-osiguranje-za-2013.-godinu.pdf
http://www.hzzo.hr/wp-content/uploads/2016/04/Izvjesce_o_poslovanju_hzzo_za_2015_godinu.pdf
http://www.hzzo.hr/wp-content/uploads/2018/04/Izvjesce_o_poslovanju_hzzo_01122017.pdf
CHI and VHI insured by commercial insurance companies:
2017 - https://www.huo.hr/hrv/statisticka-izvjesca/18/ (Croatian insurance market in 2017., table 26)
2016 - https://www.huo.hr/hrv/statisticka-izvjesca/18/publikacije-arhiva/2016 (Croatian insurance market in 2016., table 26)
2015 – https://www.huo.hr/hrv/statisticka-izvjesca/18/publikacije-arhiva/2015 (Croatian insurance market in 2015., table 26)
2014 – https://www.huo.hr/hrv/statisticka-izvjesca/18/publikacije-arhiva/2014 (Croatian insurance market in 2014., table 28)
2013 – https://www.huo.hr/hrv/statisticka-izvjesca/18/publikacije-arhiva/2013 (Croatian insurance market in 2013., table 28)
2012 - https://www.huo.hr/hrv/statisticka-izvjesca/18/publikacije-arhiva/2012 ((Croatian insurance market in 2012., table 28)

Figure A Out-of-pocket payments for health care as a share of household consumption, by consumption quintile (2010-2014)



Sources (data read from charts):
http://www.euro.who.int/__data/assets/pdf_file/0009/373581/Can-people-afford-to-payCroatia-WHO-FP-007-2.pdf?ua=1
http://www.euro.who.int/__data/assets/pdf_file/0004/373576/Can-people-afford-to-pay-for-health-careEstonia-WHO-FP-004.pdf?ua=1
http://www.euro.who.int/__data/assets/pdf_file/0008/373580/Can-people-afford-to-payLatvia-WHO-FP-006.pdf?ua=1
http://www.euro.who.int/__data/assets/pdf_file/0005/372425/ltu-fp-report-eng.pdf?ua=1
http://www.euro.who.int/__data/assets/pdf_file/0008/373580/Can-people-afford-to-payLatvia-WHO-FP-006.pdf?ua=1
http://www.euro.who.int/__data/assets/pdf_file/0010/373690/uk-fp-report-eng.pdf?ua=1
http://www.euro.who.int/__data/assets/pdf_file/0004/373585/Can-people-afford-to-payGermany-WHO-FP-008-4.pdf?ua=1
http://www.euro.who.int/__data/assets/pdf_file/0010/376651/austria-fp-report-eng.pdf?ua=1

Annex 2: Most frequent conditions and diseases treated by out-of-hospital EMS in Croatia (2016)



Source: HZZO Yearbook (2016); Table in Appendix 4

Annex 3: State obligations for vulnerable groups

Obligations of State Budget towards HZZO, 2015-2016 (HRK)

Obligations of State Budget towards HZZO	2015	2016
According to Article 72 of Obligatory health insurance law:		
– 5percent contributions (on law-prescribed base*) for unemployed	481,231,849	433,108,664
– 5percent contributions (on law-prescribed base*) for convicts	1,649,335	1,566,868
– 3percent contributions on war veterans' pensions	68,061,369	64,658,301
– 1percent contributions on (regular) pensions	292,941,768	322,235,945
– 32percent of all collected excise duties on tobacco products	1,190,338,696	1,332,338,696
According to Article 82 of Obligatory health insurance law:		
– costs of health care for certain vulnerable groups and preventive health care for school children, students and elderly (over 65 years old)	1,060,217,698	1,338,962,645
According to Article 14a of Voluntary health insurance law:		
– premiums of complementary health insurance for certain special groups (disabled, organ and blood donors, students) and for poor (person whose yearly income per family member is lower than law-prescribed amount)	768,828,480	735,421,680
TOTAL	**3,863,269,195**	**4,228,292,799**
Actually paid from State Budget to HZZO	***2,400,000,000***	***2,588,950,886***
DIFERRENCE (GAP/SHORTFALL)	**1,463,269,195**	**1,639,341,913**