



Project
HealthCare

Healthcare Financial Sustainability Index 2025





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Executive Summary

Diverging Paths: A Region Splitting Apart

Analysis of performance data from 2014-2024 reveals a troubling paradox. While every country improved its healthcare sustainability score, the variance in improvement rates is creating fundamentally different healthcare realities. Bulgaria achieved a remarkable 29.2-point improvement, while Slovakia managed only 4.7 points – a six-fold difference that cannot be explained by resources alone. This has resulted in three distinct trajectories:

- + high performers (Estonia, Lithuania, Latvia, Bulgaria) gaining 23-29 points through comprehensive reforms;
- + steady progressors (Poland, Czechia, Slovenia, Croatia) achieving 14-17 points; and
- + laggards (Slovakia, Romania, Hungary) improving by less than 11 points despite similar EU resources.

Projections to 2045 show this gap accelerating catastrophically. Estonia is projected to reach 205 points, while Slovakia stagnates at 129 – a 76-point chasm representing not just different service levels but fundamentally different health outcomes and life opportunities for EU citizens. This threatens core European principles of convergence and solidarity.

Four Pillars of Sustainability

The HFSI measures sustainability across four weighted dimensions. The Financial dimension (50%) reveals public healthcare expenditure ranging from Romania's critically low 5.80% of GDP to Slovenia's 9.30%, all below Western European standards. Out-of-pocket costs reach 35.1% in Bulgaria, creating severe access barriers, while Croatia maintains the region's best financial protection at 9.2%. The Public Health & Outcomes dimension (25%) ensures spending translates into results, as countries failing to demonstrate value risk losing public support. The Socio-Demograph-

ic dimension (15%) captures alarming population projections – declines of 20-30% by 2050 with old-age dependency ratios exceeding 50%. The Governance dimension (10%), while smallest, acts as a multiplier – corruption drains 10-25% of health spending in some countries.

Critical Breaking Points

The workforce crisis poses the most immediate threat. Romania has lost 40% of its physicians since EU accession; Croatia could lose one-third within five years. Current physician density shows concerning disparities: from Bulgaria's critical shortage of 60.62 per 100,000 inhabitants to Lithuania's adequate 105.93 per 100,000. Wage differentials of 2-3 times create unstoppable migration incentives. This brain drain creates a vicious cycle where deteriorating conditions drive further emigration.

Per capita spending disparities compound these challenges, ranging from Romania's €857 to Slovenia's €2,820 – more than a three-fold difference within the same economic union. These gaps reflect not just different spending levels but fundamentally different capacities to retain healthcare professionals and maintain service quality.

Demographic transformation presents a slower but deeper challenge. By 2050, fewer than two working-age persons will support each elderly citizen. Those over 65 already consume 40-50% of healthcare spending while representing only 17-23% of population. Traditional solidarity models become mathematically impossible without fundamental reform.

Differentiated Strategies for Transformation

High performers must maintain momentum while building resilience. Estonia should evolve its digital infrastructure into AI-driven, predictive systems. Lithuania could export its reform expertise. These nations must consolidate gains and guard against complacency. Middle performers need selective excellence strategies rather than broad mediocrity. Czechia could leverage its pharmaceutical heritage; Poland, its market size for health innovation. They must identify specific areas for European leadership rather than incremental improvements everywhere. Laggards require transformation, not incremental change. They need healthcare “shock therapy” – reform champions with extraordinary powers, international oversight, and sustained political commitment beyond electoral cycles. Without this, permanent second-tier status is inevitable.

Beyond Traditional Support

The EU faces a critical test. Traditional structural funds have not prevented divergence. A new Healthcare Convergence Fund must tie disbursements directly to HFSI improvements, with embedded advisors and clear milestones. The European Semester should weigh health sustainability equally with fiscal targets. Regular summits where lagging countries explain their failures could create the necessary political pressure. International financial institutions must shift from project lending to transformation partnerships. Comprehensive packages should link financing to index improvements, include mandatory technical assistance, and explore innovations like diaspora bonds and regional risk pools.

The Closing Window

The next five years are critical. Current trends suggest accelerating divergence that will become irreversible as high performers attract talent and investment while struggling systems spiral downward. The human cost – preventable deaths, medical bankruptcies, lost potential – represents a moral failure that strikes at European values. The HFSI provides both diagnosis and prescription. It proves transformation is possible through the suc-

cess of Estonia, Lithuania, and others. But it warns that without immediate comprehensive action, healthcare convergence will give way to permanent division. The path forward requires political courage for difficult reforms, EU innovation beyond traditional support, and recognition that healthcare sustainability tests the very foundation of European solidarity. The data shows equitable healthcare for all CEE citizens remains achievable – but only with urgency and determination matching this historic challenge.

Introduction

Healthcare systems in CEE EU member states – including Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia – face persistent challenges to their financial sustainability.

Many of these countries are grappling with accelerating demographic decline (populations projected to shrink 20-30% by 2100 in some cases) and rapid population aging (old-age dependency ratios rising from ~33% in 2022 to over 50% by 2050). At the same time, chronic underfunding and high out-of-pocket costs burden households. Based on 2023 data, out-of-pocket spending varies dramatically across the region: Bulgaria faces the highest burden at 35.1% of total health expenditure, while Croatia maintains the lowest at 9.2%. Latvia and Lithuania also show concerning levels at 30.7% and 31.8% respectively, all significantly above the WHO recommendation that out-of-pocket payments should not exceed 15-20% of total health expenditure.

In this context, we propose the Healthcare Financial Sustainability Index as a comprehensive monitoring tool. The index tracks each country's short-term financial stability and long-term system resilience, helping policymakers identify weaknesses and measure progress. By integrating indicators across financing, workforce, demographics, and governance dimensions, the index captures the multifaceted nature of sustainability. Importantly, it relies on publicly available data (e.g. WHO, World Bank, OECD, Eurostat), ensuring transparency and comparability. The index is designed primarily to track trends within countries over time – signaling improvements or deteriorations – rather than to simply rank countries. This allows each nation to gauge its own progress toward sustainability while still enabling peer comparisons. In the following sections, we outline the objectives of the index, the multi-tier structure and dimensions, the selected indicators and their data sources, the normalization and aggregation methodology, and the approach for projecting the index over the next several years

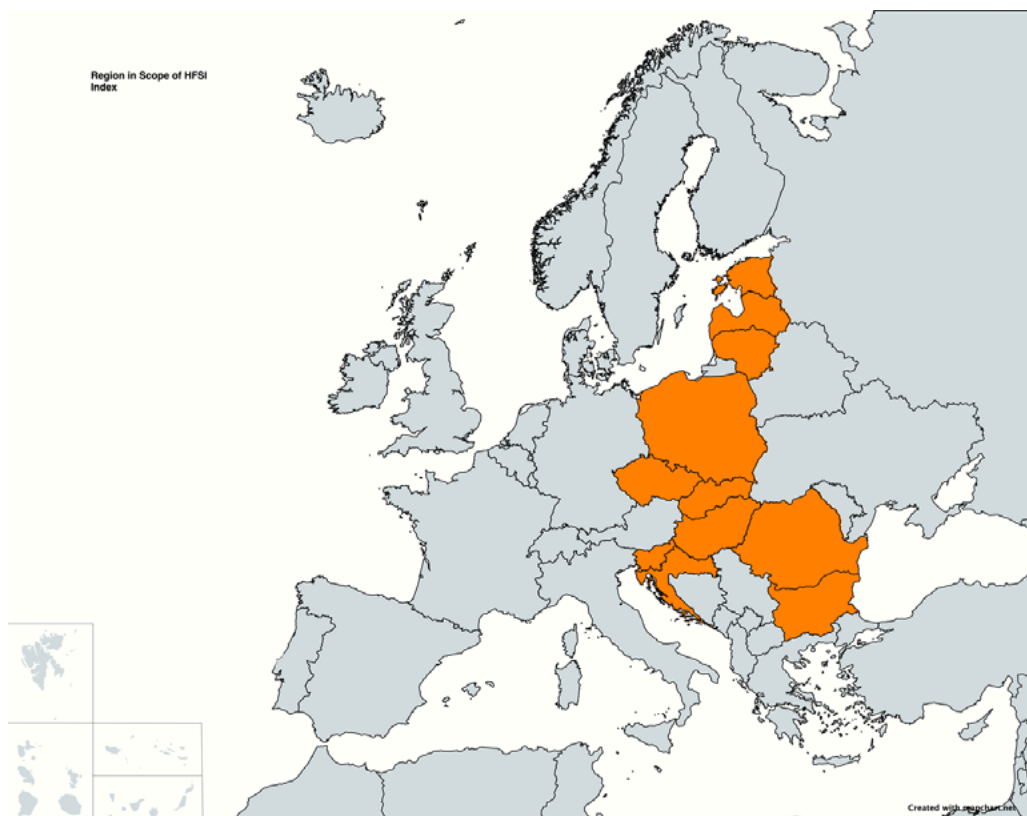


Figure 1: Countries of scope.

under various scenarios. We also provide an analytical framework for interpreting the results across all eleven EU member states in the region.

Objectives of the HFSI Index

The primary goal of the Healthcare Financial Sustainability Index (HFSI Index) is to provide a robust, actionable tool for assessing and improving the financial sustainability of health systems in the target countries. Key objectives include:

- + **Assess Short-Term Stability:** Evaluate the current health financing situation – including adequacy of public funding and the financial protection of households – to flag immediate sustainability concerns (e.g. budget shortfalls or high out-of-pocket burdens).
- + **Gauge Long-Term Resilience:** Measure structural factors that determine the system’s ability to withstand future pressures (such as demographic shifts or economic shocks), ensuring that emerging risks (like population aging or workforce gaps) are identified early.
- + **Multi-Dimensional Diagnosis:** Provide a multi-tiered view of sustainability by examining critical dimensions such as financing, workforce and infrastructure, demographic and disease burden, and governance/economic context. This helps pinpoint which aspect of the system is weakest or strongest, guiding targeted reforms.
- + **Track Trends and Progress:** Use standardized, normalized indicators to produce an overall index (0-200 scale where 100 is the benchmark) that can be tracked annually. Improvements in the index signal successful policy interventions (e.g. expanding public coverage that lowers out-of-pocket share), while declines warn of growing vulnerabilities. The index will highlight future projected trajectories, encouraging a long-term planning perspective.
- + **Facilitate Comparisons and Accountability:** Allow benchmarking against regional peers and within-country baselines. While the focus is on within-country improvement, having a common index framework enables cross-country learning – e.g. understanding why a similar country achieved higher sustainability can

inform policy. Clear scoring and publicly available data also promote accountability by making gaps transparent.

- + **Inform Policy and Resource Allocation:** Translate complex data into an accessible composite measure to support decision-makers. For example, a low score in the Workforce & Infrastructure dimension would underscore the urgency of investing in health workers and facilities. The index can be used to prioritize investments (such as preventive care or capital upgrades) and to monitor the impact of reforms or external support programs over time.

Ultimately, the HFSI Index aims to ensure that stakeholders have a holistic yet digestible “dashboard” of health system financial health, combining near-term fiscal indicators with long-run demographic and capacity indicators. This helps balance immediate needs with future preparedness, aligning with the goals of universal health coverage and fiscal sustainability in the region.

From a certain perspective, the HFSI Index can be seen as an extension of the GLOBSEC Healthcare Readiness Index, which also looks at the sustainability of healthcare systems, but from a broader perspective. The HFSI Index primarily targets a different audience, namely, in addition to politicians and policymakers, it includes finance ministers, governors of national banks, and other national financial institutions.

Rationale for Country Selection: The sustainability crisis beyond COVID

The healthcare systems of Central and Eastern European EU member states face a perfect storm of sustainability challenges. Public healthcare expenditure ranges from Romania's critically low 5.80% of GDP to Slovenia's 9.30%, far below Western European levels despite escalating demands. These systems bear the twin burdens of communist legacies and post-communist transformations while confronting unprecedented demographic pressures -- aging populations, healthcare worker emigration, and high out-of-pocket costs that reach 35.1% of total healthcare spending in Bulgaria.

The impact of these combined pressures threatens the financial sustainability of these healthcare systems. Our approach identifies specific metrics, benchmarks, and methodological approaches to strengthen a Healthcare Financial Sustainability Index for Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. By capturing the region's unique historical context, current challenges, and emerging opportunities, an enhanced index would provide valuable guidance for evidence-based policy reforms.

Historical foundations: The Semashko shadow

The region's healthcare systems share a common historical foundation in the Soviet-inspired Semashko model, characterized by:

- + Universal coverage with services officially free at point of use.
- + Centralized planning and state ownership of healthcare facilities.
- + Focus on quantitative targets like bed numbers over quality.
- + Multi-tiered delivery networks with strong specialist emphasis.

While initially successful in providing basic healthcare access and controlling infectious diseases post-WWII, the system proved increasingly ineffective by the 1980s, suffering from chronic underfunding, deteriorating infrastructure, and pharmaceutical shortages.

The post-communist transformation (1990s-2000s) brought varied reforms across the region:

- + Decentralization of governance structures.
- + Transition from tax-based to social health insurance systems.
- + Privatization (primarily of primary care and pharmacies).
- + Introduction of market mechanisms like DRGs.
- + Strengthening of primary care/family medicine.

These reforms produced highly diverse outcomes. Countries implementing comprehensive early reforms (Hungary, Czechia, Slovakia, Estonia, Poland) generally achieved better results than those with more limited or inconsistent approaches. Poland, for instance, established its National Health Fund (NFZ) in 2003, creating a single-payer system that consolidated previously fragmented insurance funds. Romania underwent significant reforms after 1998, introducing social health insurance and attempting to decentralize healthcare delivery, though implementation challenges persisted. EU accession further influenced healthcare development through:

- + Access to structural and cohesion funds for infrastructure.
- + Healthcare worker migration to Western Europe.
- + Regulatory harmonization in pharmaceuticals and medical devices.

- + European policy frameworks guiding national health policies.

Current healthcare financing data reveals significant disparities across the region, with Table 1 providing the comprehensive overview of 2023 healthcare financing patterns.

Financing realities: A regional diagnosis

Table 1: Healthcare financing data, overview.¹

COUNTRY	% OF GDP (2023)	PER CAPITA (€), 2023	OOP %	PHYSICIANS PER 100,000 INHABITANTS #
BULGARIA	7.92%	€1,150	35.1%	60.62
CROATIA	7.15%	€1,440	9.2%	82.41
CZECHIA	8.23%	€2,483	14.3%	76.37
ESTONIA	7.47%	€2,142	23.1%	88.23
HUNGARY	6.37%	€1,311	24.3%	72.77
LATVIA	8.10% #	€1,545 #	30.7%	75.79
LITHUANIA	7.32%	€1,921	31.8%	105.93
POLAND	6.98%	€1,417	18.8%	104.95
ROMANIA	5.80% #	€857 #	21.4%	79.31
SLOVAKIA	7.35%	€1,670	19.3%	Not available/Not reported
SLOVENIA	9.30%	€2,820	12.4%	71.26

* OOP = Out-of-pocket, Source: EC EUROPA

Year 2022

Key financing patterns emerge:

- + **Public expenditure hierarchy:** Slovenia leads the region at 9.30% of GDP, followed by Czechia (8.23%) and Latvia (8.10%), while Romania lags critically at 5.80% -- a 3.5 percentage point gap that represents fundamental differences in healthcare commitment. Even the highest regional spenders trail Western European standards, with most countries clustering between 6-8% of GDP.
- + **Out-of-pocket burden creates access barriers:** Bulgaria faces the region's highest financial burden at 35.1% of total health expenditure, followed by Lithuania (31.8%) and Latvia (30.7%) -- all dangerously

above WHO recommendations of 15-20%. Croatia demonstrates the region's best financial protection at just 9.2%, with Slovenia (12.4%) and Czechia (14.3%) also maintaining reasonable levels. This variation creates fundamentally different healthcare experiences for citizens across the region.

- + **Per capita spending disparities reflect economic realities:** A dramatic 3.3-fold difference exists between Slovenia's €2,820 per capita and Romania's €857, highlighting the resource constraints facing some systems. The middle tier includes Czechia (€2,483), Estonia (€2,142), and Lithuania (€1,921), while several

¹ Sources of data:

% of GDP: Eurostat, doi: https://doi.org/10.2908/HLTH_SHA11_HC, CHE (Current Healthcare Expenditure), Last accessed: 10th of September, 2025

Per capita spending: Eurostat, DOI: https://doi.org/10.2908/CENS_21AGR2 & DOI: doi: https://doi.org/10.2908/HLTH_SHA11_HC, Last accessed: 10th of September, 2025

Physicians per 1000 inhabitants: Eurostat, DOI: https://doi.org/10.2908/HLTH_RS_PHYSCAT, Last accessed: 11th of September 2025

OOP (%): World Bank, Available online: <https://data.worldbank.org/indicator/SH.XPD.OOPC.CH.ZS> Last accessed: 11th of September, 2025 (Out-of-pocket expenditure, as % of current health expenditure)

countries remain below €1,500 per capita: Croatia (€1,440), Poland (€1,417), Slovakia (€1,670), Latvia (€1,545), Hungary (€1,311), and Bulgaria (€1,150).

- + **Healthcare workforce density varies dramatically:** Physician availability ranges from Lithuania's robust 105.93 per 100,000 inhabitants and Poland's strong 104.95 to Bulgaria's critically low 60.62 per 100,000 - a near two-fold difference that directly impacts care accessibility. Estonia (88.23), Croatia (82.41), and Romania (79.31) maintain mid-range densities, while Czechia (76.37), Latvia (75.79), Hungary (72.77), and Slovenia (71.26) cluster in the lower-middle range.
- + **Capital investment priorities:** All countries are prioritizing infrastructure modernization, with significant EU funding support, though the effectiveness varies considerably based on governance capacity and strategic planning.

Healthcare workforce compensation shows even wider variations, with Slovenian healthcare professionals earning approximately three times more than their Bulgarian counterparts. This drives regional workforce migration and creates sustainability challenges.

Healthcare workforce compensation shows even wider variations, with per capita health spending serving as a proxy for professional compensation levels. Slovenian healthcare professionals benefit from a system spending €2,820 per capita compared to Romania's €857 -- more than a three-fold difference that drives substantial regional workforce migration. This creates sustainability challenges as countries struggle to retain qualified professionals against Western European wage competition.

The financing sustainability crisis deepens with demographic pressures. Countries with both low per capita spending and high out-of-pocket costs -- such as Bulgaria (€1,150 per capita, 35.1% OOP) and Romania (€857 per capita, 21.4% OOP) -- face particularly acute sustainability threats. These systems must simultaneously increase public investment while reducing household financial burdens, requiring fundamental financing reforms rather than incremental adjustments.

The data reveals three distinct financing clusters: **sustainability leaders** (Slovenia, Estonia, Czechia) with adequate public spending and reasonable out-of-pocket levels; **middle performers** (Croatia, Lithuania, Poland, Slovakia, Latvia) with mixed financing profiles requiring selective improvements; and **crisis systems** (Romania, Bulgaria, Hungary) facing comprehensive sustainability threats requiring immediate transformation.

Rationale for country's classification:

SUSTAINABILITY LEADERS

Slovenia

Slovenia demonstrates the strongest overall financing profile in the region with 9.30% of GDP spending (highest regionally) and €2,820 per capita (highest regionally). Crucially, it maintains excellent financial protection with only 12.4% out-of-pocket burden - the second-lowest in the region and well within WHO recommendations. While physician density of 71.26 per 100,000 is moderate, the combination of highest public investment and strong financial protection creates a sustainable foundation that can attract and retain healthcare professionals through adequate system resources.

Estonia

Estonia combines strong per capita investment (€2,142 - fourth highest regionally) with good physician availability (88.23 per 100,000 - third highest). Although its 23.1% out-of-pocket burden exceeds WHO recommendations, the 7.47% GDP spending provides a solid public foundation. Estonia's classification as a leader is reinforced by its documented success in HFSI improvement (26.64 points gained 2014-2024), demonstrating that strong public investment and workforce availability can overcome moderate financial protection challenges through systematic reform.

Czechia

Czechia presents a balanced sustainability profile with 8.23% GDP spending (second highest regionally) and substantial per capita investment of €2,483 (third highest). Its 14.3% out-of-pocket burden remains within acceptable WHO guidelines,

providing strong financial protection . While physician density of 76.37 per 100,000 is mid-range, the combination of high public investment and good financial protection creates conditions for system sustainability and professional retention.

MIDDLE PERFORMERS

Croatia

Croatia demonstrates the region's best financial protection with only 9.2% out-of-pocket burden - exceptional by regional standards . However, moderate GDP spending of 7.15% and per capita investment of €1,440 limit overall system capacity . Good physician density of 82.41 per 100,000 indicates adequate workforce availability, but the lower spending levels prevent Croatia from joining sustainability leaders despite its excellent household financial protection.

Lithuania

Lithuania showcases the region's strongest physician availability at 105.93 per 100,000 (highest regionally) and reasonable per capita spending of €1,921 . However, the concerning 31.8% out-of-pocket burden significantly above WHO recommendations creates access barriers that undermine system sustainability . The 7.32% GDP spending is moderate, creating a mixed profile where excellent workforce availability is offset by poor financial protection.

Poland

Poland maintains the region's second-highest physician density at 104.95 per 100,000, indicating strong workforce capacity . Per capita spending of €1,417 is modest but sustainable, while 18.8% out-of-pocket burden approaches WHO recommendations . However, 6.98% GDP spending is among the region's lowest, preventing Poland from achieving sustainability leader status despite good workforce indicators and reasonable financial protection.

Slovakia

Slovakia's 7.35% GDP spending places it in the middle tier - above crisis countries but below leaders . Its €1,670 per capita spending is modest but sustainable, and crucially, its 19.3% out-of-pocket

burden remains manageable compared to crisis levels . However, Slovakia's classification aligns with its slow HFSI improvement (only 4.7 points 2014-2024) , suggesting that while financing fundamentals are reasonable, systematic reform barriers prevent breakthrough to sustainability leadership.

Latvia

Latvia presents a particularly complex case with strong public investment (8.10% of GDP - third highest regionally) but concerning 30.7% out-of-pocket burden well above WHO recommendations . Per capita spending of €1,545 is moderate, while physician density of 75.79 per 100,000 is adequate . This mixed profile - adequate public funding but poor household financial protection - exemplifies middle performer status requiring selective improvements rather than comprehensive transformation.

CRISIS SYSTEMS

Romania

Romania faces the region's most severe financing crisis with critically low 5.80% GDP spending (lowest regionally) and €857 per capita (lowest regionally by far) . While 21.4% out-of-pocket burden exceeds WHO recommendations, the fundamental problem is massive public underinvestment . Physician density of 79.31 per 100,000 is adequate, but the severe resource constraints create unsustainable conditions driving workforce emigration and system deterioration. The 5.57-point HFSI improvement 2014-2024 confirms systematic reform failure .

Bulgaria

Bulgaria demonstrates the region's worst financial protection with catastrophic 35.1% out-of-pocket burden - nearly double WHO recommendations and creating severe access barriers . While 7.92% GDP spending is reasonable, the €1,150 per capita investment is among the region's lowest . Most critically, physician density of 60.62 per 100,000 represents a severe workforce crisis . Although Bulgaria achieved remarkable HFSI improvement (29.21 points 2014-2024) , the current financing fundamentals remain unsustainable without continued comprehensive reform.

Hungary

Hungary combines multiple sustainability threats: critically low 6.37% GDP spending (second-lowest regionally), modest €1,311 per capita investment, and 24.3% out-of-pocket burden exceeding WHO recommendations. Physician density of 72.77 per 100,000 is below regional average, indicating workforce challenges. The minimal 10.51-point HFSI improvement 2014-2024 demonstrates systematic reform failure, creating a comprehensive crisis requiring immediate transformation rather than incremental change.

This classification system reveals that sustainability leadership requires balanced excellence across public investment, financial protection, and workforce availability, while crisis systems typically suffer from multiple simultaneous failures requiring comprehensive rather than selective intervention.

The Czechia-Slovakia comparison: Diverging paths

The comparison between Czechia and Slovakia provides instructive insights into how similar systems can evolve differently. Both countries maintained compulsory health insurance systems after their 1993 separation but took different approaches: key differences reveal spending levels at 8.23% of GDP in Czechia versus 7.35% in Slovakia, with Czechia relying more heavily on public financing. These variations also manifest in their out-of-pocket burden, which is 14.3% in Czechia and 19.3% in Slovakia, a discrepancy that signals differences in how costs are distributed between the state and households. A further contrast lies in the insurance structure, where Slovakia's more competitive model has three insurers, while Czechia retains seven quasi-public funds. Hospital ownership diverges as well: Czechia preserves stronger public control, whereas Slovakia underwent more extensive privatization. Additionally, Czechia implemented sophisticated Pharmacy-based Cost Groups, promoting fairer resource allocation through risk adjustment, whereas Slovakia employs a less nuanced mechanism. Meanwhile, overall health outcomes correlate with these differing structural approaches: life expectancy stands at 78.3 years in Czechia, compared to 77.2 years in Slovakia. The Czech system also demonstrates stronger financial stability

metrics; this can be partly attributed to more effective governance and mechanisms for fund allocation. Both nations continue to refine their models, but Czechia has so far adopted more advanced financial measures, whereas Slovakia focuses on more fundamental structural reforms. This divergence underscores that even countries sharing a historical baseline can produce markedly different outcomes when they adopt distinct strategies for financing, governance, and resource allocation. Both still grapple with common legacy challenges, yet their chosen pathways have led to varying degrees of success in controlling costs, improving quality, and ensuring financial sustainability.

Current Fiscal Pressures (and COVID-19)

The COVID-19 pandemic has had profound long-term impacts on health system resilience, the healthcare workforce, and fiscal sustainability across CEE EU member states. In many respects, the pandemic was a stress test that exposed both strengths and vulnerabilities of regional health systems. Countries had to rapidly mobilize emergency funds, expand hospital capacity, and improvise new care delivery methods – all while dealing with an unprecedented health crisis. One immediate impact was on system resilience: it became clear that many systems were not fully prepared for a shock of this magnitude. Gaps in critical care infrastructure, supply chain weaknesses (such as dependence on imported protective equipment), and limited surge capacity revealed the fragility of these health systems. At the same time, some positive adaptations were observed – for example, the accelerated rollout of telemedicine and cross-border cooperation for medical supplies – highlighting that with the right investments and reforms, resilience can be improved. Overall, the COVID-19 pandemic underscored that investing in preparedness and flexible health delivery (from robust public health surveillance to stockpiles of supplies) is integral to financial sustainability, as resilient systems can mitigate the costs of crises by responding more effectively.

The healthcare workforce emerged as perhaps the most strained element during the pandemic, with effects that will be felt for years. CEE EU countries

entered the pandemic already facing health workforce challenges – including shortages of doctors and nurses in rural areas, an ageing cadre of practitioners, and the out-migration of medical professionals to Western Europe. The pandemic exacerbated these issues dramatically. Frontline workers endured enormous stress, burnout, and even personal risk, leading to increased rates of early retirement and resignations. In some countries, waves of infections among health staff stretched systems to their limits. By 2022-2023, many nations saw a spike in industrial actions (strikes, protests) by doctors and nurses calling attention to poor working conditions and inadequate compensation. The World Health Organization's Regional Director for Europe noted that the health workforce crisis is "here and now," not a distant threat, with a "ticking timebomb" of ageing staff and too few new recruits. For instance, in over a dozen countries in the WHO Europe region, 40% of medical doctors are already over 55 years old – a statistic mirrored in several CEE states, including Poland and Romania – portending a wave of retirements without enough younger professionals to replace them. Moreover, the pandemic's pressures led many to leave the profession or move abroad, worsening the brain drain from countries like Romania and Bulgaria to wealthier European countries. All of this threatens financial sustainability: a depleted, demoralized workforce cannot deliver care efficiently, and replacing human capital (through training or international recruitment) is costly. Moving forward, countries are recognizing that bolstering the health workforce – through better incentives, retention strategies, and working conditions – is a cornerstone of both resilience and sustainable financing. Investment in the workforce yields long-term financial benefits by improving system performance and avoiding the high costs of crises and turnover.

From a fiscal perspective, COVID-19 has left many governments in the region grappling with new financial pressures and difficult trade-offs. During the height of the crisis, public spending on health was increased dramatically. Emergency budgetary rules were invoked to allow deficit spending beyond normal limits, as saving lives took priority over fiscal constraints. For example, in the European Union context, the Stability and Growth Pact rules (limiting deficits to 3% of GDP) were

temporarily suspended, giving both strong and weak health systems latitude to spend what was needed. This infusion of funds paid for things like testing, vaccination campaigns, overtime for health workers, and financial support to hospitals. However, as the acute phase of the pandemic subsided, governments emerged with swollen deficits and higher public debt due to these necessary expenditures. Now, the return of strict fiscal rules and the winding down of emergency funding have created a post-COVID budget crunch. Policymakers face the challenge that health budgets which grew in 2020-2021 are coming under scrutiny and pressure to shrink in order to rebalance public finances. High inflation and the economic fallout caused by the war in Ukraine (which has driven up energy and food prices across CEE) compound the problem by squeezing government budgets from multiple angles. In this context, health ministers worry that without special measures, health spending will be among the first areas to face cuts. Such cutbacks, if carried out indiscriminately, could have devastating impacts on health system performance, leading to longer waiting times, deferred investments, and reduced access to care – outcomes that would undermine the very sustainability the index aims to measure.

The pandemic experience has also shifted perspectives on healthcare as an investment versus a cost. Many CEE countries have historically underinvested in health (spending a lower percentage of GDP on health than the EU15 average), and the austerity that followed the 2008 financial crisis hit their health sectors hard. COVID-19, however, demonstrated the social and economic value of robust health systems – healthier populations and effective health crisis responses save lives and prevent economic losses. There is a growing chorus of experts and leaders in the region who argue that health expenditures should be seen as long-term investments in human capital and economic stability, not merely as budgetary costs. This is prompting discussions about new fiscal approaches, such as protecting or ring-fencing health budgets, or adjusting EU-level fiscal frameworks to exclude certain health investments from deficit calculations. In sum, COVID-19's legacy in CEE is a heightened awareness that system resilience, workforce stability, and prudent financing are

deeply interlinked. The crisis has left fiscal scars and workforce challenges, but it has also opened a policy window to address long-standing issues (like chronic underfunding and health worker migration) with newfound urgency. The coming years will test whether countries can convert these hard lessons into sustainable improvements, ensuring that their health systems are better prepared – financially and structurally – for future shocks.

Lastly, the COVID-19 pandemic exposed vulnerabilities in healthcare systems while accelerating certain reforms. The pandemic created immediate fiscal shocks across all countries. Government health expenditure increased throughout the region, with Hungary experiencing the most significant increases at 1.9 percentage points of GDP. Poland and Romania, as the largest countries in the group, faced particular challenges in coordinating pandemic responses across their extensive territories. Preventive healthcare expenditure increased dramatically, rising by 88.2% between 2020 and 2021. All countries experienced increased budget deficits as a direct result of pandemic-related healthcare spending.

The pandemic also catalyzed several long-term structural changes in healthcare systems. Digitalization accelerated significantly during this period, with the pandemic serving as a catalyst for digital health transformation. Slovenia emerged as a regional leader in this area, implementing e-prescriptions at a rate of 92%. Estonia's existing digital infrastructure proved particularly valuable, allowing seamless transition to remote consultations. Hospital capacity showed varied responses across countries, with Bulgaria increasing bed numbers by 13.2%, while most other countries continued their pre-pandemic reduction trends. The healthcare workforce experienced significant impacts, including temporary compensation increases, but also suffered from substantial burnout and increased emigration. Procurement practices shifted toward greater centralization, with increased emphasis on centralized purchasing systems and the development of strategic reserves.

The pandemic revealed important differences in system resilience. Countries with more robust pre-pandemic healthcare systems, such as Slove-

nia, Estonia, and Czechia, demonstrated greater resilience during the crisis. Conversely, countries with pre-existing systemic weaknesses struggled more significantly during later waves of the pandemic.

Demographic pressures: The looming crisis

Demographic challenges represent perhaps the greatest long-term threat to healthcare sustainability in the region. This crisis is particularly acute in CEE countries, which face a unique combination of rapid population aging, significant healthcare worker emigration, and historical underinvestment in health systems. The demographic transition in these countries is occurring at a faster pace than in Western Europe, leaving less time for adaptation and system reform. Economic development has not kept pace with demographic shifts, creating a mismatch between healthcare needs and available resources.

Rapid Aging

Population projections show alarming declines: Bulgaria -21%, Latvia -21%, Lithuania -20.7% by 2050. Poland, despite its larger population, is projected to decline by approximately 15% by 2050, while Romania faces an 18% reduction. These dramatic population reductions are compounded by changing age structures throughout the region. Old-age dependency ratios projected to reach 50-65% in most countries by 2050. This means by 2050, fewer than two working-age persons for each elderly person in most countries. The fertility rates across the region have remained below replacement levels for decades, averaging between 1.3-1.7 children per woman, significantly lower than the 2.1 needed for population stability. Rural areas are experiencing particularly severe demographic pressures as younger people migrate to urban centers or abroad, leaving behind increasingly elderly populations with high healthcare needs but diminished local healthcare infrastructure.

Healthcare Worker Migration

Significant outflows to Germany, Austria, UK, and Scandinavian countries continue to deplete the healthcare workforce. The exodus is particularly

pronounced among specialists and younger professionals, creating gaps in critical specialties and an aging domestic workforce. Wage differentials: 2-3x higher in Western Europe create powerful economic incentives for migration that most countries struggle to counteract despite increasing investment in salaries. Croatia could lose one-third of all doctors in the next five years. Romania has already lost an estimated 40% of its medical graduates since EU accession. Poland faces similar challenges, with approximately 10,000 physicians working abroad. Professional development opportunities, working conditions, and administrative burdens also significantly influence migration decisions, with many healthcare professionals citing excessive bureaucracy and limited career advancement as motivations for leaving.

Healthcare Utilization Impacts

People over 65 account for 40-50% of healthcare spending despite representing 17-23% of population. This disproportionate utilization reflects higher prevalence of chronic conditions and multimorbidity among older populations. Hospital admissions are 2-3 times higher for those over 65 and long-term care needs are expected to increase from 11.6% in 2020 to 14.1% by 2070. The current healthcare systems in the region remain heavily hospital-centric, lacking sufficient ambulatory and community-based services that could more efficiently address the needs of aging populations with chronic conditions.

Countries are implementing various responses, including pension reforms, healthcare workforce retention strategies, and healthcare system restructuring, but the scale of demographic change threatens to overwhelm these efforts without more substantial interventions. Some countries have begun implementing digital health solutions to extend the reach of limited healthcare workforces, though implementation varies significantly across the region. International organizations including the EU, WHO, and World Bank have developed support programs specifically targeting demographic sustainability in healthcare systems, recognizing the regional nature of this challenge.

Overall, the CEE EU member states share a set of intertwined historical, cultural, and institutional dynamics that strongly affect healthcare financing:

- + **Common Historical Trajectory:** All eleven states experienced decades of communist rule, which centralized healthcare delivery under state-run models. Despite post-1990 reforms, vestiges of this legacy remain: public-sector dominance, lower private insurance penetration, and often incomplete governance reforms.
- + **Post-Communist Transition:** Following the collapse of communist regimes, severe economic shocks and privatization waves reshaped public finances. Some countries rapidly modernized, joining the EU and benefiting from structural funds (e.g. Czechia, Slovakia, Poland in 2004; Romania and Bulgaria in 2007), with varied success in healthcare modernization. This patchwork transition left diverse healthcare spending paths but a common theme of chronic underfunding and cost-shifting onto households.
- + **Cultural and Institutional Continuities:** Traditions of strong public medical education co-exist with informal payment practices. Political cycles have often disrupted long-term healthcare reforms. Broadly, these states also share cultural attitudes toward family caregiving, which affects formal long-term care financing and usage.
- + **Demographic Challenges:** Most of the region faces shrinking, aging populations (e.g. old-age dependency ratios projected to exceed 50% by 2050). Emigration of younger, skilled workers compounds financing pressures by reducing the tax base and depleting the local health workforce.
- + **Economic and Fiscal Constraints:** All grapple with tight budgets and public-debt pressures. COVID-19 exacerbated deficits, forcing governments to balance healthcare spending with broader fiscal consolidation. In some settings, high out-of-pocket payments reflect insufficient public coverage and hamper equitable access.

- + Impact of COVID-19: The pandemic stressed these health systems - ICU bottlenecks, workforce burnout, deferred care for chronic diseases. Governments boosted emergency spending, but many still struggle with structural underinvestment. Post-pandemic fiscal tightening now threatens to reverse those gains.

These countries' shared communist-era heritage, ongoing transition, and comparable demographic-economic headwinds justify combining them into one Healthcare Financial Sustainability Index (HFSI). This unified approach helps highlight region-specific vulnerabilities – like high out-of-pocket costs, outmigration of health workers, and strains on public budgets – while still allowing nuanced comparisons.

Overview of the Consolidated Index Methodology

Core Dimensions and Weighting

The Healthcare Financial Sustainability Index is built around four core dimensions, each assigned a weight reflecting its relative importance to overall sustainability. The rationale behind the weighting is to ensure that the most critical factors influencing a health system's financial resilience are given prominence, while still accounting for broader outcomes and context. The four dimensions and their weights are as follows:

Financial Dimension (Fiscal Score, 50%) – Funding Adequacy and Efficiency. This carries the highest weight because robust health financing is the foundation of any sustainable system. It captures how well a country mobilizes and uses financial resources for health (e.g. healthcare spending as a share of GDP, budgetary stability, efficiency of expenditures). A strong financial base ensures that health services can be maintained and expanded over time. Without adequate financing, even the best policies cannot be implemented, making this dimension pivotal. This 50% weight underscores that sustainable funding and prudent financial management are indispensable for long-term system viability. Health financing is recognized by the WHO as a core “building block” of health systems, closely linked to effective governance, and so it rightfully dominates the index weighting.

Public Health & Outcomes Dimension (Health Score, 25%) – Health Outcomes and System Performance. This dimension reflects that financial sustainability is not just about how much money is spent, but what results it achieves. It includes indicators like life expectancy, disease burden, preventable mortality, and other outcome measures. The 25% weight signals that achieving strong public health outcomes and value for money is the second-most important pillar. A country that translates resources into positive health outcomes is more likely to sustain public and political support for health financing. The rationale is that better health

outcomes can reduce future costs (for example, lower rates of chronic disease lighten the long-term financial load on the system) and indicate a more effective and resilient health system. In short, good outcomes are both a goal of sustainability and a contributor to it, justifying a substantial share of the index.

Socio-Demographic Dimension (Social Score, 15%) – Population Demographics and Social Factors. This dimension acknowledges that the context in which a health system operates – population age structure, growth, and other social determinants – directly impacts financial sustainability. It has a more modest weight (15%) because while demographics are critical, they are underlying factors rather than direct levers of policy in the short term. Aging populations, for instance, increase demand for healthcare and long-term care, exerting pressure on budgets over decades. Many CEE and Balkan countries face low birth rates, emigration of young people, and rising life expectancy, leading to higher dependency ratios. By incorporating socio-demographic factors, the index accounts for future expenditure pressures (e.g. an older population requiring more costly chronic disease management and pensions) and the capacity of the society to finance health (e.g. size of the workforce contributing via taxes or insurance). The 15% weight ensures these slow-moving but powerful trends are considered without overshadowing more immediate performance indicators.

Political and Governance Dimension (Governance Score, 10%) – Stability, Governance Quality, and Policy Environment. This dimension carries the smallest weight (10%), yet it is vital for creating an enabling environment for sustainability. It covers factors such as political stability, quality of governance, control of corruption, and effectiveness of health policy implementation. Good governance and stable institutions are the “glue” that holds the system together – they ensure that funds are used as intended, policies are carried out consis-

tently, and reforms are sustained beyond electoral cycles. The rationale for a 10% weight is that while governance issues can be somewhat intangible and harder to quantify, they have a profound influence on all other dimensions. Poor governance can undermine financial inputs and health outcomes; for example, corruption in health procurement or management can siphon off resources, threatening sustainability. In fact, it is estimated that globally 10–25% of all health spending is lost to corruption – an amount that exceeds what would be needed to achieve universal health coverage worldwide. By including governance (albeit with a moderate weight), the index incentivizes transparency, accountability, and political commitment, recognizing that even well-funded systems will struggle to sustain progress without sound governance.

Each of these dimensions is weighted to balance immediacy and impact. The Financial dimension's dominant share highlights that without baseline fiscal health the system cannot function. The Outcomes dimension's weight affirms that spending must translate into tangible health gains. Socio-demographics introduce a forward-looking perspective on looming challenges, and the Governance dimension ensures that the soft but crucial factors of leadership and integrity are not ignored. Together, these weighted dimensions create a composite picture of sustainability that is comprehensive and tailored to the realities of CEE health systems.

Data Sources and Benchmarks

All indicators rely on publicly available data from entities like Eurostat, WHO, World Bank, OECD, Transparency International, and specialized EU Commission reports. For instance:

- + Debt Sustainability: European Commission's Debt Sustainability Monitor, or IMF assessments for non-EU.
- + Health Graduates: Eurostat's "hlth_rs_grd2" table or similar.
- + Old-Age Dependency: Eurostat's "proj_23np" or World Bank.
- + CPI: Transparency International's annual Corruption Perceptions Index.

Benchmarks typically compare a country's value to the EU average or established targets (e.g. OOP below 20% is considered favorable). Scores tilt positive if a country is "less" than the undesirable benchmark (like out-of-pocket) or "more" than a beneficial target (like healthy life years or digital skills).

Strengths and Limitations of the HFSI Index

This Healthcare Financial Sustainability Index offers a structured, evidence-based way to compare and understand the health financing outlook of CEE EU member states. However, like any composite index, it comes with certain strengths and limitations. Below is an expanded analysis of what the index does well and where caution is warranted, including specific regional examples to illustrate each point.

Strengths

- + **Holistic, Multi-Dimensional View:** One of the primary strengths of the index is its comprehensive framework. By incorporating four dimensions – financial, health outcomes, socio-demographic, and governance – the index provides a holistic view of sustainability rather than a one-dimensional score. This means countries are assessed not just on how much they spend or how healthy their population is, but on a balanced combination of factors. For example, a country like Slovenia (an EU member in the region with relatively high health spending) might score well on the Financial dimension, but if its health outcomes were to lag behind peers, the Outcomes dimension would pull its overall score down. This holistic approach rewards balanced progress – nations need to perform across the board, not only in pouring money into the system, but also in translating resources into results and preparing for future demographic changes. The broad scope encourages policymakers to pursue well-rounded strategies (e.g. investing in prevention and primary care, not just hospitals, and strengthening governance structures alongside funding) to improve their overall standing.
- + **Data-Driven Benchmarking and Comparability:** The index uses quantifiable indicators for each dimension, allowing for objective comparisons across countries and over time. This data-driven approach is considered a strength because it grounds discussions in evidence. Policymakers and stakeholders can pinpoint specific indicators where their country lags. For instance, a country like Bulgaria might discover that its index score is dragged down by high out-of-pocket payments (a financial indicator) or poor cancer survival rates (an outcome indicator) relative to regional peers. This benchmarking aspect can spur targeted policy responses – such as implementing financial protection schemes to lower out-of-pocket costs, or investing in early cancer detection programs. The quantifiable nature of the index also means progress (or deterioration) can be tracked year by year. If updated regularly, the index can serve as an early warning system; improving scores would signal that reforms are on the right track, whereas a stagnating or falling score could alert decision-makers to emerging problems. In short, what gets measured gets managed – and the index's clear metrics provide that measuring stick.
- + **Relevance to Regional Context:** Another strength is that the index is tailored to the CEE context, making the insights especially actionable for these countries. Unlike global indices that might not account for regional specificities, this index was designed with the post-communist transition experience, EU membership dynamics, and regional health challenges in mind. The socio-demographic dimension, for example, captures population decline due to emigration – a pressing issue across the region – and aging, which is accelerated in Eastern Europe. The governance dimension likely incorporates measures like control of corruption or government effectiveness, which are particularly salient given some countries' struggles with informal payments in healthcare. By reflecting these realities, the index ensures apples-to-apples comparisons. A country like Romania can more fairly compare

its performance to Bulgaria or Poland (which share some historical and system characteristics) than to far richer or very different systems outside the region. This regional focus makes the findings more resonant for local stakeholders and increases the likelihood that the index will be used in policy dialogues and planning within CEE forums.

- + **Stimulating Policy Dialogue and Accountability:** The very act of publishing and using this index promotes transparency and accountability. It shines a spotlight on otherwise abstract concepts like “sustainability,” breaking it down into tangible components and scores. Health ministers and finance ministers in the region can use the results to advocate for needed reforms or resources. For example, if a country scores poorly on the Political/Governance dimension, reformist policymakers can leverage that in domestic debates to push anti-corruption measures or better health management practices, armed with evidence that poor governance is undermining sustainability. Likewise, a strong score or an improvement can be used to build political capital – e.g. a government might highlight that its health financing reforms have led to the country climbing in the rankings, demonstrating to the public and investors that it is committed to sustaining its healthcare system. The index thus serves as a common language for discussing complex issues, helping to align various stakeholders (health officials, finance ministries, international partners) around the goal of sustainability. It encourages knowledge exchange as well: countries will want to learn from the top performers in specific dimensions (for instance, learning from Estonia’s successful e-health investments or Poland’s demographic family policies). In summary, the index’s clear structure and public visibility act as a catalyst for policy dialogue, peer learning, and greater accountability for long-term results.

Limitations

- + **Data Gaps and Quality Issues:** A key limitation of the index is that it is only as good as the data it relies on. Some CEE countries have incomplete or inconsistent health data re-

porting, which can affect the accuracy of the scores. For example, up-to-date information on disease outcomes or health expenditures might be lacking for countries that have weaker statistical capacity or where health information systems are still developing (a challenge noted particularly in Romania and Bulgaria). In such cases, the index may need to use proxies or older data, which could misrepresent the current situation. Moreover, differences in data definitions between countries can complicate comparisons – one country’s method of recording infant mortality or health spending might differ from another’s. As a result, smaller nations or those with recent turmoil (like political changes or economic crises) might see more volatility or uncertainty in their scores purely due to data issues. Users of the index need to be aware that a lower score does not always mean a poorer-performing system – it might occasionally mean poorer data availability. Continuous efforts to improve health data quality and standardize indicators across the region are needed to bolster the reliability of this tool.

- + **Weighting and Subjectivity:** While the index’s weighting of dimensions (50% financial, 25% outcomes, etc.) is grounded in logical rationale, it nonetheless involves a degree of expert judgment. Different experts might debate whether, for instance, the Public Health & Outcomes dimension should be weighted more, or if the Political/Governance context deserves greater emphasis despite being only 10%. These weights can influence country rankings. For instance, a hypothetical country that is a financial over-performer, but an outcomes under-performer could rank somewhat higher with the current weights than it would if outcomes had equal weight to finances. If the weights were shifted, the same country’s position might drop. This subjectivity means that the index is not an absolute truth but a constructed measure. The chosen weights reflect the creators’ consensus on what matters most, which is reasonable, but users should interpret the results in light of this. Sensitivity analyses (testing how rankings change with different weights) are often a good practice with such

indices to ensure no single weighting scheme unduly biases the results. In the context of this index, the current weighting seems to mirror common priorities (finances first, outcomes second, etc.), but stakeholders might still question or wish to tweak them based on specific policy priorities.

- + **Oversimplification of Complex Systems:** Reducing a multifaceted concept like healthcare financial sustainability to an index score inherently simplifies reality. This index aggregates numerous indicators into composite dimensions, and then into one overall score or ranking. Important nuances can get lost in aggregation. For example, two countries might end up with similar scores for very different reasons – one might have moderate finances and moderate outcomes, while another has excellent finances but poor outcomes that offset each other. Yet in the ranking they could appear side by side. Contextual factors are not directly visible in the index. A country's unique circumstances – such as recent healthcare reforms not yet yielding results, or a history of conflict that affects its current system capacity – might not be captured fully by the numbers. As a limitation, this means policymakers should avoid a narrow interpretation of “we are rank X, therefore we are doing well/poorly.” Instead, the value lies in digging into the sub-indices and individual metrics. In practice, the index should be a starting point for deeper analysis. It flags potential strengths and weaknesses, but detailed country-specific assessments are needed to truly understand causal factors. Oversimplification is a trade-off for comparability; hence, results should be complemented with qualitative insights and local knowledge.
- + **Comparability and Equity Concerns:** Although the index is region-specific, there is still considerable diversity among CEE countries in terms of economic development, population size, and health system structures. Some smaller or less affluent countries might feel it is unfair to be directly compared to larger, wealthier EU member states, even within this region. For example, compare Latvia (a small economy with ~1.9 million people) and Poland (nearly 38 million people and a much larger

GDP) – their ability to sustain health financing differs greatly. The index does adjust via the indicators (which are often in relative terms like percent of GDP, per capita spending, etc.), but there is an inherent challenge in capturing scale and capacity differences. Additionally, countries in the midst of rapid change may be penalized in the short term. A nation implementing a major health finance reform might incur transitional costs or show a dip in certain indicators (like higher spending or deficits) that in the long run are beneficial – the index might score them lower during the transition, not reflecting the positive trajectory. Equity within countries is also not captured – the index is at national level, so disparities (e.g. if rural areas have much worse health outcomes and access than cities) are averaged out. These comparability issues mean that the index should be used with an understanding of each country's baseline and constraints. It is more useful for identifying relative gaps and prompting questions than as a strict report card. Policymakers in smaller or poorer countries can use the index to argue for more support (e.g. “our low score in finances reflects our limited tax base – perhaps warranting greater EU structural funding”), while those in better-off countries might focus on how to assist neighbors or address internal inequalities flagged indirectly by weaker outcomes.

- + **Static Snapshot Limitations:** Financial sustainability is a dynamic, long-term concept, but the index provides an annual or periodical snapshot. This is a limitation because it might not fully capture momentum or trajectories. A country that is improving rapidly might still score low until those improvements register in the data, while a country with a historically strong system could score well even if early signs of decline are emerging. The COVID-19 pandemic is a prime example – an index measured just before the pandemic would have looked rosy for many European countries, not predicting the stress that would come. Conversely, extraordinary one-off events (like a single-year economic recession or a temporary spike in health spending for an immunization campaign) could skew the results without indicating a fundamental change in sustainability.

Keeping the above considerations in mind, it should also be acknowledged that our analysis relied on nominal healthcare expenditure values and did not adjust for purchasing power parity (PPP). As a result, countries such as Romania, Bulgaria, and Poland may appear at a disadvantage in direct comparisons. While this approach highlights trends and the dynamic development of nominal expenditures, it is important to note that the observed differences between countries would likely be less pronounced if PPP adjustments were applied.

We believe that the index should be interpreted as an entry point for deeper inquiry rather than a definitive verdict. Trend analysis (looking at how the index values change over multiple editions) is crucial to understanding whether a country is on a sustainable path or not. The creators of the index and its users should re-main cautious about over-reliance on a single year's score. In practice, pairing the quantitative index with qualitative assessments – including policy analysis and expert opinion – provides a more robust evaluation of financial sustainability.

In conclusion, we consider the Healthcare Financial Sustainability Index for CEE EU Member States as a promising tool that combines a wealth of information into an accessible format. Its strengths lie in breadth, data-driven insight, and regional tailoring, which together facilitate informed discussion and benchmarking. However, users must be mindful of its limitations: data constraints, methodological choices, and the inherent reductionism of an index format. When used wisely – as a spotlight and a compass, rather than a strict grading tool – it can greatly aid senior health executives, policymakers, and partners in identifying priorities to ensure the long-term sustainability of healthcare systems in the region.

Results and Practical Implications for Decision-Makers

Understanding What the Index Results Really Mean

When we examine the Healthcare Financial Sustainability Index data from 2014 to 2054, we observe a trend that is both noteworthy and concerning. Every single country has improved its healthcare sustainability, demonstrating that progress is possible even within constrained resources. However, the varying rates of improvement reveal important insights into the healthcare system dynamics that policymakers must consider.

The fastest improvers – Bulgaria, Lithuania, Latvia, and Estonia – have gained between 23 and 29 points in just a decade (Table 2). To put this in perspective, such gains reflect presents a fundamental transformation in healthcare delivery, financing, and outcomes. Meanwhile, Slovakia and Romania have improved by fewer than 6 points, suggesting that their reform efforts have either been insufficient or ineffectively implemented. This divergence

is not just a statistical curiosity; it represents real differences in healthcare security for millions of European citizens.

Why the Growing Gap Matters More Than Individual Scores

The projections extending to 2045 reveal an increasingly troubling pattern (Figure 2). If current trends continue, Estonia is on track to reach a score of 205, while Slovakia would remain at just 129. This 76-point gap would reflect fundamentally different healthcare realities within the European Union. Practically: an Estonian citizen could expect access to healthcare services comparable to the best systems in Western Europe. Meanwhile, a Slovak citizen would likely face longer wait times, higher out-of-pocket costs, and health outcomes more typical of middle-income countries outside the EU.

Table 2: Overall results and future predictions.

COUNTRY	SCORE 2014	SCORE 2024	SCORE 2030	SCORE 2045	CHANGE (VS EU AVERAGE)	CHANGE (2024 VERSUS 2014)
BULGARIA	107.49	136.70	154.22	198.04	12.18	29.21
CROATIA	101.01	115.96	124.92	147.33	-2.09	14.94
CZECHIA	123.94	140.97	151.19	176.73	0.00	17.03
ESTONIA	122.33	148.97	164.96	204.92	9.61	26.64
EU	106.75	116.22	121.90	136.11	-7.56	9.47
HUNGARY	99.66	110.17	116.47	132.24	-6.52	10.51
LATVIA	106.01	128.97	142.75	177.20	5.94	22.96
LITHUANIA	108.94	137.69	154.95	198.08	11.73	28.75
POLAND	111.24	127.11	136.63	160.44	-1.16	15.87
ROMANIA	111.30	116.87	120.21	128.56	-11.46	5.57
SLOVAKIA	113.98	118.70	121.54	128.62	-12.31	4.72
SLOVENIA	109.42	123.91	132.60	154.32	-2.54	14.48

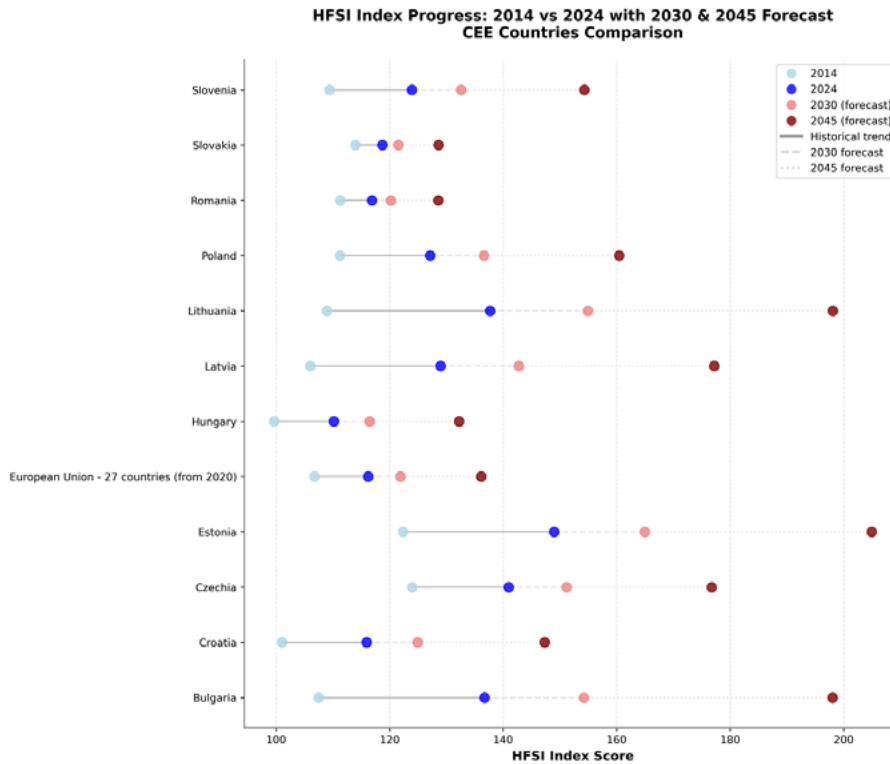


Figure 2: HFSI Index Progress – from past to future. CEE countries comparison.

This growing divergence threatens the core European principle of convergence and solidarity. When citizens in some member states receive dramatically different levels of healthcare despite being part of the same union, it undermines trust in European institutions and fuels political tensions. Moreover, these healthcare disparities also influence migration patterns, as health professionals gravitate toward better-performing systems, while patients seek care across borders, further weakening already fragile healthcare systems.

The findings of the index carry important practical implications for decision-makers in CEE and the Balkans. A clear understanding of each country's strengths and weaknesses across the dimensions of sustainability should guide both immediate and long-term strategies. The following section outlines actionable next steps that national governments, regional institutions, and international donors or partners can take to bolster healthcare financial sustainability, guided by the data and the analysis above.

A New Framework for National Government Action

Traditional approaches to healthcare reform have clearly yielded varying results across the region. The data suggests that one-size-fits-all recommendations are no longer sufficient. Instead, we must abandon and instead recognize three distinct categories of countries, each requiring fundamentally different strategies.

For high performers like Estonia, Lithuania, Latvia, and Bulgaria, the challenge is maintaining momentum while avoiding the complacency that often follows early success. These countries have demonstrated that rapid transformation is possible, likely through a combination of political will, strategic focus, and effective implementation. The next step is to position themselves as innovation leaders within Europe. Estonia's advanced digital infrastructure could evolve into AI-driven predictive healthcare model. Lithuania's successful reforms could be packaged and exported as consultancy or technical assistance to other countries. At the same time, these countries should also focus on building resilience buffers, as rapid growth can expose vulnerabilities if growth is not properly consolidated.

The middle performers – Poland, Czechia, Slovenia, and Croatia – occupy a unique position: their healthcare systems rank above the EU average yet still fall short of the region's top performers. Their steady progress indicates broadly functioning systems that require optimization rather than transformation. These countries should pursue selective excellence strategies, identifying specific areas where they can achieve European or global leadership. Czechia, for instance, might leverage its strong pharmaceutical industry heritage; Poland could harness its large market size and digital infrastructure to become a hub for health technology innovation; and Slovenia could leverage its small size to pioneer integrated care experiments. The key challenge is to avoid the trap of attempting to do everything and excelling at nothing.

The lagging performers – Slovakia, Romania, and Hungary – face an existential challenge. Their slow progress, despite overall regional improvement, points to systemic barriers to reform. These may include entrenched interests, political instability, or fundamental resource constraints. What these countries need is not gradual improvement, but a form of what we might call “shock therapy” for their health systems. This means appointing reform leaders with extraordinary mandates, similar to how economic reformers were empowered during the post-communist transitions. It may require accepting international oversight and assistance even if it challenges national pride. Most importantly, it means recognizing that incremental change has failed and only transformative action can prevent permanent divergence.

Regional Institutions Must Prevent a Two-Speed Europe

The European Union and other regional bodies face a critical test. The divergence shown in the index data could become a template for broader socioeconomic divergence, creating a two-speed Europe that undermines the entire European project. This requires moving beyond traditional structural funds and technical assistance to more innovative and forceful interventions.

A dedicated Healthcare Convergence Fund should be established with different rules than general EU funds. This fund would specifically target countries

falling significantly below the EU average, but with strict conditions. Unlike traditional funds that often support infrastructure projects with unclear outcomes, this fund would tie disbursements directly to measurable improvements in health system performance. Countries would need to accept international advisors embedded in their health ministries and commit to specific reforms with clear timelines.

The EU should also facilitate intensive twinning arrangements that go beyond current programs. Such arrangements may include Estonian digital health experts embedded for six months within Romanian health institutions, or Lithuanian reform leaders cooperating directly with Slovak counterparts. These would go beyond traditional study visits or conferences, constituting operational partnerships where successful practices are directly transferred and adapted. The EU could incentivize such arrangements by funding salary differentials and creating career advancement opportunities for participants.

Perhaps most importantly, the EU needs to use its most powerful tool – peer pressure and political accountability. Regular summits focused solely on health system performance, where lagging countries must explain their lack of progress to their peers, could create the political momentum that technical assistance alone cannot generate. The European Semester process should give health system sustainability equal weight with fiscal sustainability, recognizing that failing health systems ultimately create fiscal crises.

International Financial Institutions Need New Approaches

Traditional lending for hospital construction or equipment purchases has clearly not produced convergence. The World Bank, European Investment Bank, and other institutions need to fundamentally rethink their approach to health sector support in the region. Instead of project-based lending, these institutions should offer comprehensive transformation packages tied directly to index improvements.

Consider a new instrument where a country like Romania could access a billion-euro package, but disbursements would be tied to achieving specific improvements in each dimension of the health index. This creates powerful incentives for comprehensive reform rather than piecemeal improvements. Moreover, such packages should include mandatory technical assistance components, ensuring that the finances are accompanied by knowledge transfer and capacity building.

These institutions should also pioneer innovative financing mechanisms that address specific regional challenges. For instance, diaspora bonds targeted at health professionals who have emigrated could fund workforce retention programs. Regional risk pools could help smaller countries manage catastrophic health costs. Technology leasing programs could help countries adopt digital health solutions without major capital outlays. The key is moving from traditional lending to becoming transformation partners.

Learning from Success Stories

The noteworthy improvements in countries like Estonia and Bulgaria were not the product of mere chance but as a result of deliberate and strategic efforts. Understanding and replicating their success factors is crucial for regional convergence. Estonia leveraged its small size and digital infrastructure to create integrated health information systems that improved efficiency and outcomes. Bulgaria appears to have benefited from sustained political commitment to health reform despite overall political instability. Lithuania used EU accession and subsequent funding strategically to transform its system rather than simply upgrading facilities.

These success stories need to be studied, documented, and transformed into actionable strategies for other countries. This is not about replicating policies wholesale, but understanding the underlying success factors: political leadership, strategic focus, implementation capacity, and sustained commitment. International organizations should fund detailed case studies that go beyond surface-level policy descriptions to examine how reforms were achieved – including how opposition was overcome and how implementation challenges were addressed.

Among the most significant attempts to standardize best practices are EU initiatives within the EU Health Union, such as the EU Cancer Plan, which aims to standardize public health policies to achieve the greatest possible impact on preventive care.

The Window for Action is Closing

The forecast data contains a stark warning. The gap between leaders and laggards is accelerating, not stabilizing. By 2045, some examined countries will have health systems comparable to the best in the world, while others will struggle with basic service delivery. This divergence, once established, becomes self-reinforcing. Better systems attract better professionals, generate better outcomes, and justify higher investment. Weaker systems lose professionals, generate poor outcomes, and struggle to justify investment in a vicious cycle.

For lagging countries, the next five years represent a critical window. They must either commit to transformative change now or risk permanent second-tier status within Europe. This isn't hyperbole but a realistic assessment based on the trend data. The longer reform is delayed, the more difficult and expensive it becomes. Political leaders in these countries face a historic choice: accept the difficult reforms needed today or condemn future generations to inferior healthcare.

For the European Union and international community, supporting convergence is not just about solidarity – it is about self-interest. Health threats do not respect borders, and weak health systems anywhere in Europe represent a vulnerability for everyone. Moreover, the political instability that could result from permanent health disparities

would affect the entire European project. The investments needed to support convergence today are modest compared to the costs of managing permanent divergence tomorrow.

The index data provides both a warning and a roadmap. It shows that transformation is possible – several countries have proven it. It also shows that without decisive action, divergence is inevitable. The choice facing policymakers is clear: act now with the urgency and comprehensiveness the situation demands or accept a future where European citizens face fundamentally different health realities based solely on where they were born. That would represent a failure not just of health policy but of the European ideal itself.

Updating and Institutionalizing the Index

We recommend that this index be produced on a yearly (or biennial) basis by an independent observatory or as part of official health system performance assessments. Over time, seeing the index trend in annual health reports or regional comparisons (like a dashboard) will institutionalize its use. Ideally, it can feed into policy cycles (for instance, a low sustainability score could trigger a review by a health financing committee). Additionally, as data systems improve (especially for countries like

Romania and Bulgaria), the index can be refined to include more nuanced indicators (like quality of care metrics or regional disparities).

In summary, the index does more than just rank countries – it highlights where action is most urgently needed and who might be best positioned to take that action. National governments are urged to invest wisely and manage resources judiciously; regional institutions are called to create a supportive framework and knowledge base; and international partners are reminded to align their aid and expertise to reinforce sustainable health system development. The ultimate goal of these next steps is to ensure that every country in CEE EU member states can provide quality healthcare to its people not just today, but for generations to come, without financial collapse or constant crisis. The journey to get there will require perseverance, collaboration, and an unyielding focus on the long term – but with the insights from the Healthcare Financial Sustainability Index and the collective will of domestic and international stakeholders, tangible progress is within reach.

Conclusion

A New Understanding of Healthcare Sustainability in Central and Eastern Europe

The completion of our Healthcare Financial Sustainability Index analysis, enriched by a decade of actual performance data from 2014 to 2024, fundamentally transforms our understanding of what is possible and what is at stake in the region. When we initially conceived this index, we sought to create a comprehensive framework that would move beyond simplistic GDP percentages to capture the true complexity of healthcare system sustainability. What the data has revealed surpasses our expectations in both encouraging and concerning ways.

The index has proven its value as more than just a measurement tool. It has become a mirror reflecting the divergent paths these eleven EU member states have chosen, consciously or otherwise, in their approach to healthcare transformation. Every country improved, which validates our belief that progress is possible even within the challenging context of post-communist transition, demographic decline, and fiscal constraints. However, the dramatic variance in improvement rates – from Slovakia’s modest 4.7 points to Bulgaria’s remarkable 29.2 points – tells us something profound about the nature of healthcare system reform that policy-makers must grasp.

The Transformation Paradox: Why Some Succeed While Others Struggle

What we are witnessing is not simply different speeds of progress toward a common destination. Instead, the data reveals fundamentally different trajectories that, if continued, will result in separate healthcare realities within the European Union. This finding challenges our initial assumption that EU membership and access to common resources would naturally lead to convergence. The Baltic states and Bulgaria have demonstrated that transformation, not just improvement, is possible within a decade. Their success appears to stem from a combination of factors our index captures: aggressive financial reforms, governance improvements, strategic workforce policies, and proactive demographic adaptations.

Conversely, the limited progress in Slovakia and Romania, despite having access to similar EU resources and facing comparable challenges, suggests that the index is capturing something essential about political will and implementation capacity. These countries have not just progressed slowly; they have failed to achieve the escape velocity needed to break free from the gravitational pull of systemic inefficiencies. Our projections to 2045, showing Slovakia reaching only 129 points while Estonia soars to 205, are not just numbers. They represent a future where a Slovak citizen’s health outcomes, financial protection, and access to quality care would be fundamentally different from those of an Estonian citizen, despite both belonging to the same European community.

From Measurement to Catalyst: The Index as a Force for Change

The original vision for this index was to create an early warning system and progress tracker. What we’ve discovered is that it serves an even more crucial function: it makes the invisible visible. Before this comprehensive measurement, countries could hide behind partial statistics or blame unique circumstances for poor performance. Now, the success of comparable countries removes these excuses. When Bulgaria can improve by 29 points despite starting from a lower base, what explains Romania’s mere 5.6-point improvement? When Estonia can achieve scores approaching Western European levels, why does Hungary lag at 110?

This transparency creates what we might call productive discomfort. Political leaders can no longer claim that rapid improvement is impossible when neighboring countries have achieved it. Finance ministers cannot argue that health investment is unaffordable when countries with similar or lower GDP per capita have found ways to increase effective spending. Health ministers cannot blame EU regulations or historical legacies when others operating under the same constraints have succeeded. The index thus becomes not just a measurement tool but a catalyst for accountability and action.

The Methodology Vindicated: Why Multi-Dimensional Analysis Matters

Our decision to weight the index across four dimensions – with Financial at 50%, Public Health & Outcomes at 25%, Socio-Demographic at 15%, and Political and Governance at 10% – has been validated by the results. Countries that improved dramatically appear to have made progress across all dimensions simultaneously, confirming our hypothesis that sustainable healthcare transformation requires a comprehensive approach. You cannot achieve Estonian-level success by only increasing spending or only improving governance; you need coordinated advancement across all fronts.

The data also validates our emphasis on using publicly available, standardized indicators. This transparency has allowed countries to track their progress in real-time and understand exactly where they stand relative to peers. More importantly, it has enabled the kind of detailed analysis that can guide specific policy interventions. When a country sees its score lagging due to high out-of-pocket payments or poor workforce density, it knows exactly what needs to be addressed.

A Roadmap for Three Different Futures

The clustering of countries into three distinct groups – high performers, steady progressors, and laggards – was not part of our original framework, but it emerges clearly from the data. This suggests that our index is capturing something fundamental about system dynamics that creates these natural groupings. Each group now faces a different future requiring different strategies.

For the high performers like Estonia and Lithuania, the index reveals both achievement and challenge. Their rapid improvement proves that transformation is possible, but their trajectory also shows the difficulty of maintaining momentum. These countries must now focus on consolidation and innovation, using their success to build resilience against future shocks while potentially serving as laboratories for next-generation healthcare delivery models that others can learn from.

The middle performers like Poland and Czechia face a different challenge. Their steady but unspectacular progress suggests systems that work but do not excel. The index shows they are doing enough to stay above average but not enough to join the

leaders. For these countries, the data suggests a need for strategic focus – identifying specific areas where they can achieve excellence rather than settling for broad mediocrity.

The laggards face the starkest message from our analysis. The widening gap is not just a temporary phenomenon but appears to be accelerating. Without dramatic intervention, these countries risk being permanently left behind, creating a two-tier Europe that undermines the fundamental principles of the Union.

Beyond Numbers: The Human Cost of Divergence

While our index deals in numbers and scores, we must remember that these represent real human outcomes. A 76-point gap between Estonia and Slovakia by 2045 translates into thousands of preventable deaths, millions of impoverishing health expenses, and immeasurable suffering that could be avoided. It means young doctors and nurses continuing to emigrate from lagging countries, further weakening their systems. It means innovative treatments available in Tallinn but not in Bratislava, modern hospitals in Sofia but crumbling facilities in Bucharest.

This human dimension adds moral urgency to our technical findings. The index is not just tracking policy effectiveness; it is measuring whether European citizens receive the healthcare they deserve regardless of which member state they call home. The divergence we are documenting represents a fundamental challenge to European values of solidarity and equal opportunity.

The Path Forward: From Analysis to Action

As we look ahead, the Healthcare Financial Sustainability Index must evolve from a measurement tool to an action framework. The patterns we've identified – the success factors of high performers, the barriers facing laggards, the acceleration of divergence – provide a roadmap for intervention. But this requires moving beyond traditional approaches to health sector support.

The success stories embedded in our data prove that transformation is possible but not automatic. It requires political leadership willing to challenge vested interests, technical capacity to implement complex reforms, financial resources deployed

strategically, and sustained commitment beyond electoral cycles. Our index can identify where these elements are present or absent, but it cannot create them. That requires a new level of European solidarity and international support.

A Tool for the Future, A Warning for the Present

The Healthcare Financial Sustainability Index has fulfilled its original promise of providing a comprehensive, transparent, and actionable assessment of health system sustainability in Central and Eastern Europe. But it has also revealed something we did not fully anticipate: the speed at which divergence can occur and the difficulty of reversing it once established. The 2045 projections are not destiny, but they are a warning of what current trends will produce without intervention.

For policymakers, our analysis provides both sobering realities and genuine hope. The sobering reality is that some countries are falling dangerously behind in ensuring healthcare sustainability for their citizens. The hope lies in the proven success of others who faced similar challenges but chose transformation over stagnation. The index shows that with the right combination of political will, strategic focus, and sustained effort, even the most challenging starting position can be overcome.

As we continue to refine and update this index, it will serve as both a record of progress and a catalyst for change. It will document which countries seized the opportunity for transformation and which allowed themselves to fall behind. Most importantly, it will continue to shine a light on the path forward, showing that sustainable, high-quality healthcare for all European citizens isn't just an aspiration but an achievable goal – if we have the courage to pursue it with the urgency and determination the challenge demands.

The ultimate legacy of this index will not be the scores it generates or the rankings it produces. It will be whether it contributed to a future where every citizen of Central and Eastern Europe has access to healthcare that is financially sustainable, high quality, and responsive to their needs. The data shows this future is possible. The question now is whether we will make it reality.

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(Note: The above reference list includes key data sources and literature referenced in the methodology. All URLs were accessed as of 2 May 2025. The list combines formal citations with data source links to ensure full transparency for replication.)



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