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Benchmarking Switzerland's Health System Against the WHO Building Blocks: A Policy-Focused Systematic Review (2020–2025)

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ABSTRACT. Switzerland combines universal mandatory health insurance with some of the highest health expenditure in the OECD, within a federal structure in which the cantons play a central role. The COVID-19 pandemic exposed tensions between efficiency and resilience in this model. The WHO health-system building-blocks framework offers a multidimensional basis for assessing such performance. To benchmark the performance of the Swiss health system against the EU-15 average for 2020–2025 using the six WHO building blocks, and to identify strengths, persistent gaps and policy priorities, with particular attention to intensive care capacity and resilience. A policy-focused systematic review was conducted following PRISMA 2020. PubMed, Scopus and Web of Science were searched for publications from 2020 to 2025 (English, German, French) and complemented by official sources (Federal Office of Public Health, Federal Statistical Office, OECD, WHO Global Health Observatory). Quantitative indicators were extracted into a matrix aligned with the building blocks and compared with the EU-15 average; policy documents and grey literature were synthesised thematically. Study quality was appraised with design-appropriate tools (JBI, MMAT, AXIS, CASP). Of 1,247 records identified, 52 sources were included. Switzerland exceeded the EU-15 average for life expectancy at birth (84.0 vs 82.1 years), practising physicians (4.4 vs 4.0 per 1,000), nursing professionals (17.6 vs 9.5 per 1,000) and MRI units (34.2 vs 19.0 per million population). Health expenditure per capita was about 1.9 times the EU-15 average (USD PPP 9,351 vs 4,888; 11.6% vs 10.2% of GDP), and out-of-pocket payments accounted for a larger share of total expenditure (23.4% vs 15.1%). Intensive care capacity before the pandemic was below the EU-15 average (8.9 vs 11.5 beds per 100,000 population). An education-related life-expectancy gap of about 5 years (about 4 years in the EU-15) and geographical inequalities in health indicators were identified. Switzerland performs strongly on health outcomes, technological resources and workforce density, but it's very high expenditure is accompanied by only modest outcome advantages, a considerable financial burden on households, limited surge capacity and uneven cantonal coordination. Priorities are value-based financing, resilience planning decoupled from occupancy-based payment, stronger federal–cantonal coordination, and integration of primary care and digital health. The findings are relevant for other federal health systems.

Keywords: Switzerland; health system performance; WHO building blocks; health policy; universal health coverage; health system resilience

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1. Introduction

The Swiss health system is a federally organised model built on mandatory health insurance and regulated competition among private insurers. Insurance has been compulsory for all residents since 1996, and the cantons carry major responsibilities for planning and financing hospital care and for ensuring outpatient and long-term care (De Pietro et al., 2015). The system is consistently associated with excellent health outcomes, yet its per-capita cost is among the highest in the world (OECD, 2025), which raises questions about value for money and sustainability.

The period from 2020 to 2025, framed by the COVID-19 pandemic and its aftermath, represents a stress test of the system's resilience. Rankings based on outcomes alone do not show where in the system strengths and weaknesses arise, nor how they relate to financing, workforce, governance and surge capacity.

The WHO health-system building-blocks framework describes six components – service delivery, health workforce, health information systems, access to essential medicines, financing, and leadership/governance – that together contribute to the overarching goals of improved health, responsiveness, financial protection and efficiency (World Health Organization [WHO], 2010). This article uses the framework to move beyond outcome-based rankings and to provide a diagnostic, multi-layered analysis of the Swiss system against international peers.

The aim of this review is to benchmark the performance of the Swiss health system against global and European standards for 2020–2025 using the WHO building blocks, and to identify systemic strengths, persistent gaps and strategic priorities for policy reform, with a particular focus on intensive care capacity and resilience. Three questions guided the review: (1) How does Switzerland perform on quantitative indicators for each building block relative to the EU-15 average? (2) What does the policy and governance evidence say about the reasons for observed strengths and gaps? (3) Which reforms are indicated, and for which stakeholders?

2. Methods

2.1 Design and reporting

A policy-focused systematic review was conducted and is reported according to the PRISMA 2020 statement (Page et al., 2021). Unlike a classical systematic review that aggregates clinical evidence, this design integrates several forms of evidence – peer-reviewed studies, quantitative system indicators, policy evaluations and governance analyses – to inform high-level policy decisions. Two evidence streams were used: (i) a systematic search of bibliographic databases, documented in the left branch of the PRISMA flow diagram (Figure 1); and (ii) targeted retrieval of indicators and policy documents from official sources, documented in the "other methods" branch. The review protocol was not formally registered in a public repository.

2.2 Analytical framework

The review protocol was structured around the six WHO building blocks. Key questions were formulated for each block (for example, "How equitable and efficient is the financing system?"). Table 1 shows how each component of the framework was operationalised. The overall goals of the framework (health outcomes and equity) were treated as outcome dimensions rather than as building blocks. For health information systems and leadership/governance, no quantitative indicator was extracted; these blocks were analysed qualitatively.

Table 1. Operationalization of the WHO framework in this review

Framework component	Quantitative indicators (Table 3)	Qualitative evidence examined
Overall goals: health outcomes and equity	Life expectancy at birth; potential years of life lost; life-expectancy gap by education	Inter-cantonal disparities in health indicators
Service delivery (including physical resources)	Hospital beds; ICU beds; MRI units	Surge capacity; hospital payment; primary care
Health workforce	Practising physicians; nursing professionals (per 1,000)	Shortages; geographic distribution
Health information systems	None extracted	Cantonal information systems; integration
Access to essential medicines	Pharmaceutical expenditure per capita	Cost drivers
Financing	Total health expenditure per capita and % of GDP; out-of-pocket share	Payment mechanisms; premiums; transfers
Leadership and governance	None extracted	Federal–cantonal coordination; crisis governance

2.3 Eligibility criteria

Studies and documents were selected according to the criteria in Table 2.

Table 2. Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Time period	2020–2025	Published before 2020
Language	English, German, French	Other languages
Document type	Original research articles; policy documents; official government/organisational reports	Review articles, editorials, commentaries, conference abstracts, book chapters
Geographic scope	Switzerland (federal and cantonal level)	Studies conducted exclusively outside Switzerland
Target population	General population, vulnerable groups, policy-makers, healthcare professionals	Animal studies; theoretical models without empirical data
Full-text availability	Full text accessible	Abstract only or inaccessible full text

Note on review-type sources: Comprehensive health system reviews (e.g., Health Systems in Transition) were treated as official organisational reports and included, while standard academic review articles were excluded to prioritise primary empirical and policy data.

2.4 Information sources and search strategy

Systematic searches were conducted in PubMed, Scopus and Web of Science for publications from 2020 to 2025. Parallel retrieval was performed from official sources: the Swiss Federal Office of Public Health (FOPH), the Federal Statistical Office (FSO), the WHO Global Health Observatory and OECD health statistics. The exact date of the last search was not systematically recorded in the project files. Keywords for the searches included “Switzerland health system”, “health financing” and “health workforce”, combined with “benchmarking”, “performance” and “COVID-19 impact”. The PubMed search string was:

> ("Switzerland"[Mesh] OR "Swiss health system") AND ("health policy"[Mesh] OR "health reform" OR "healthcare system") AND ("2020/01/01"[Date - Publication] : "2025/12/31"[Date - Publication])

Filters: English, German, French; human studies; full text.

2.5 Study selection

Records were managed using reference management software (specific software not recorded in project files), and duplicates were removed. Two reviewers independently screened titles and abstracts and then full texts. Disagreements were resolved by consensus or by a third reviewer. Inter-rater agreement was assessed during the screening process to ensure consistency.

2.6 Data extraction and normalisation

Data were extracted with a pre-tested form capturing author(s), year, study design, sample characteristics, setting, key outcomes and policy implications. Quantitative indicators were extracted from OECD health statistics, the WHO Global Health Observatory and FSO reports, organised by building block, cleaned and normalised for cross-country comparison (population-based units, USD purchasing-power parity, percentage of GDP). The EU-15 average was the primary benchmark, using the latest available data (approximately 2022–2023). The EU-15 average was calculated as the simple arithmetic mean of the 15 countries.

2.7 Quality appraisal

The methodological quality of included studies was appraised with tools matched to study design: JBI critical appraisal checklists, the AXIS tool for cross-sectional studies, CASP checklists for qualitative studies and the MMAT for mixed-methods studies. Confidence in the thematic findings drawn from qualitative and policy evidence was assessed with GRADE-CERQual. Official reports and grey literature were appraised with the AACODS checklist.

2.8 Synthesis

Extracted data were categorised according to the six WHO building blocks. Quantitative indicators were compared descriptively with the EU-15 average; no statistical pooling was performed because indicator definitions and sources differ. Policy documents and legislative texts were analysed thematically to explain the quantitative patterns, and numerical

benchmarks were integrated narratively with qualitative insights on policy successes and failures.

3. Results

3.1 Study selection

The database search identified 1,247 records. After records were removed before screening (including duplicates), 856 records were screened by title and abstract, 214 reports were sought for full-text assessment, and 52 sources were included in the review (Figure 1).

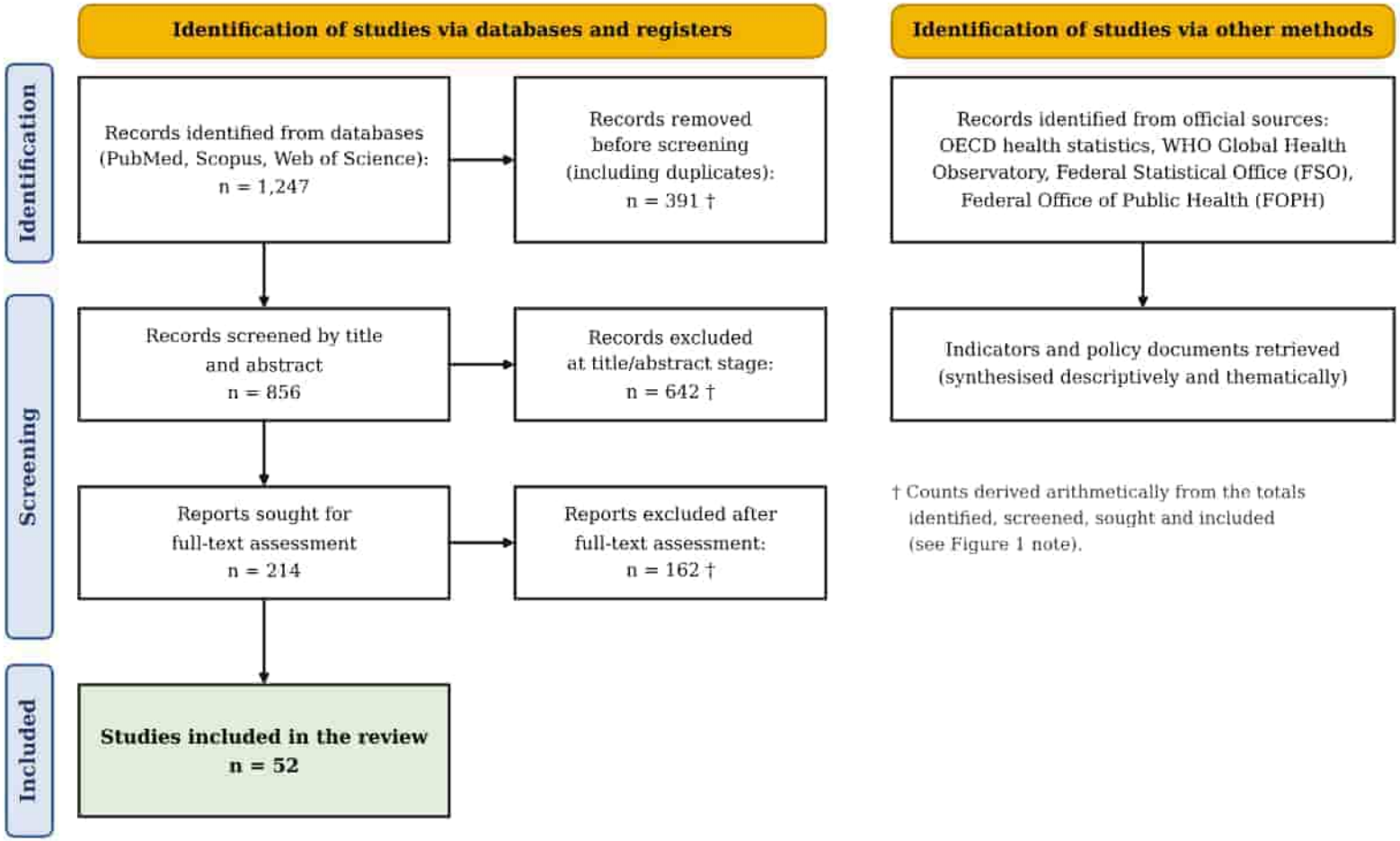


Figure 1. PRISMA 2020 flow diagram of study selection (adapted from Page et al., 2021; CC BY 4.0). *Where feasible, report the number of records identified from each database. **If automation tools were used, report how many records were excluded by humans and by automation. † The counts for records removed before screening (n = 391), records excluded at the title/abstract stage (n = 642), and reports excluded after full-text assessment (n = 162) are derived arithmetically from the total records identified (1,247), screened (856), sought for retrieval (214), and included (52). This derivation assumes that all 214 sought reports were successfully retrieved. Detailed, itemized reasons for exclusion and the exact screening log were not systematically recorded in a format that allows categorical breakdown, and thus are not presented here.

3.2 Core health-system indicators

Table 3 compares Switzerland with the EU-15 average on the core indicators, grouped by building block. Differences quoted in the text were calculated from the values in the table.

Table 3. Core health-system indicators: Switzerland versus the EU-15 average (latest available data, approximately 2022–2023)

WHO component	Indicator	Switzerland	EU-15 average	Note
Overall goals: outcomes	Life expectancy at birth (years)	84.0	82.1	Consistent strength
Overall goals: outcomes	Potential years of life lost per 100,000 population	3,200	4,100	Lower premature mortality
Overall goals: equity	Life-expectancy gap, low vs high education (years)	~5	~4	Significant inequity
Health workforce	Practising physicians per 1,000 population	4.4	4.0	Above average, but maldistribution
Health workforce	Nursing professionals per 1,000 population	17.6	9.5	High, but workload concerns
Financing	Total health expenditure per capita (USD PPP)	9,351	4,888	Among the highest in the OECD
Financing	Total health expenditure (% of GDP)	11.6	10.2	High economic footprint
Financing	Out-of-pocket payments (% of total health expenditure)	23.4	15.1	High burden on households
Service delivery	Hospital beds per 1,000 population	4.5	4.9	Slightly below average
Service delivery	ICU beds per 100,000 population (early 2020)	8.9	11.5	Critical gap identified
Service delivery	MRI units per million population	34.2	19.0	Excellent technical resources
Access to medicines	Pharmaceutical expenditure per capita (USD PPP)	1,102	756	Major cost driver

Sources: OECD Health Statistics 2024 (OECD, 2024); WHO Global Health Observatory (WHO, n.d.); Swiss FSO (Federal Statistical Office, 2023).

3.3 Findings by building block

Overall goals: outcomes and equity. Life expectancy at birth in Switzerland was 1.9 years higher than the EU-15 average (84.0 vs 82.1 years), and potential years of life lost were lower. Equity gaps were nevertheless apparent: the life-expectancy difference between people with low and high education was about 5 years in Switzerland compared with about 4 years in the EU-15. Furthermore, geographical inequalities in life expectancy indicators have been documented in Swiss research; for instance, in Geneva, clusters of earlier-than-expected mortality were significantly associated with lower neighbourhood income and socioeconomic gradients (Ladoy et al., 2021).

Service delivery. Hospital bed density was slightly below the EU-15 average (4.5 vs 4.9 per 1,000), and ICU capacity was about 23% lower (8.9 vs 11.5 beds per 100,000 population in early 2020). In contrast, technical equipment was abundant: 34.2 MRI units per million population, about 1.8 times the EU-15 average.

Health workforce. Aggregate densities were high: 4.4 practising physicians per 1,000 population (EU-15: 4.0) and 17.6 nursing professionals per 1,000 (EU-15: 9.5, a ratio of about 1.9). The included sources describe pronounced regional differences in the distribution of physicians and workload concerns among nurses.

Financing. Total health expenditure per capita was about 1.9 times the EU-15 average (USD PPP 9,351 vs 4,888) and represented 11.6% of GDP compared with 10.2%. Out-of-pocket payments accounted for 23.4% of total expenditure, 8.3 percentage points above the EU-15 average (15.1%).

Access to essential medicines. Pharmaceutical expenditure per capita was USD PPP 1,102 compared with 756 in the EU-15 (about 46% higher), identifying medicines as a major cost driver.

Health information systems and governance. The health information system was described as technologically advanced. Governance is characterised by federal decentralisation: the cantons plan and finance hospital care, and intensive care capacity was planned at cantonal level without a national strategic reserve(Table 4).

Table 4. Policy roadmap

Level	Recommendation	Primary stakeholder	Indicative timeline
Federal	Link federal health transfers to cantons to cost-efficiency conditions; shift policy focus from cost containment to value-based care, including population-based payment elements for chronic care	Federal Government	Short-term (1–2 years)
Federal	Mandate resilience planning: integrate capacity buffers (ICU, workforce) into national planning, finance them through dedicated resilience funds decoupled from daily occupancy, and set minimum national standards for resource distribution and crisis preparedness	FOPH, with cantonal health directors	Medium-term (2–4 years)
Cantonal	Integrate health information systems across cantons, including monitoring of ICU capacity	Cantonal governments	Medium-term (2–4 years)
Local	Expand primary care in underserved areas	Local health networks	Short-term (1–2 years)
Workforce	Strengthen recruitment, training and retention of nursing staff so that surge capacity can be staffed	FOPH, with cantons and hospitals	Medium-term (3–5 years)
Technology	Invest in telemedicine and digitally supported integrated care	Public–private partnership	Long-term (5+ years)

4. Discussion

Benchmarked against the EU-15 average, the Swiss health system combines clear strengths – life expectancy, workforce density and technological resources – with three main weaknesses: very high and household-intensive costs, equity and cantonal disparities, and limited surge capacity in intensive care. These patterns are discussed below in relation to the building blocks that explain them.

Swiss health expenditure is an outlier: spending per capita is about 1.9 times the EU-15 average, whereas the advantage in life expectancy is 1.9 years (84.0 vs 82.1). This suggests diminishing returns and potential inefficiencies in the financing and payment mechanisms, although outcome differences between countries cannot be attributed to health spending alone, since socioeconomic and lifestyle factors and lagged effects also play a role. Spending growth in Switzerland has been linked mainly to rising spending per patient rather than to population growth or ageing alone (Stucki et al., 2023). The high out-of-pocket share (23.4% vs 15.1%) indicates a substantial financial burden despite universal coverage, consistent with earlier assessments that lower- and middle-income households contribute a larger share of their income to financing the system (De Pietro et al., 2015).

National averages mask considerable variation. The Swiss system has been described as a federation of 26 cantonal systems with fragmented provision and financing, which produces geographical differences in expenditure (Marti et al., 2019). The geographical differences in life expectancy and the differences across education groups reported here point in the same direction. Decentralised governance preserves local responsiveness but makes it harder to set uniform minimum standards for the distribution of resources, for example for physicians and intensive care capacity.

The pandemic exposed a critical vulnerability in service delivery and resources: limited intensive care capacity. With 8.9 ICU beds per 100,000 population in early 2020, Switzerland was at the lower end of European preparedness.

Pre-pandemic baseline. The low baseline reflects long-term planning for efficiency and high occupancy, which left little buffer capacity. A system operating close to its capacity under normal conditions is, by definition, poorly equipped to absorb a surge. Pandemic stress test. During peak waves, capacity had to be scaled up quickly and elective care postponed, a strategy with deferred health costs. The crisis highlighted the trade-off between static efficiency and dynamic resilience.

Systemic roots. Three mechanisms are identified, Financing and incentives: the DRG-based hospital payment system (SwissDRG) rewards throughput and high occupancy and does not reward idle surge capacity, Governance and planning: decentralised, cantonal-level ICU planning without a national strategic reserve, Workforce: beds are of little use without staff; chronic nursing shortages made it difficult to staff additional beds at safe ratios.

Post-2020 reforms and remaining gaps. Temporary federal subsidies are reported to have raised capacity, but sustained funding is uncertain. Proposed reforms include building on the existing national ICU registry – the minimal dataset of the Swiss Society of Intensive Care Medicine, which covered all 84 certified ICUs in analyses of the first pandemic year (Previsdomini et al., 2024) – to support coordinated capacity planning, and revising financing to include resilience premiums. Without a shift from "just-in-time" to "just-in-case" planning, the fundamental vulnerability remains.

Lessons for other federal health systems, Federal–cantonal (or equivalent) coordination is essential in crises and needs a clear mandate, Strategic reserves of critical equipment and capacity buffers should be planned nationally., Investment in primary care can reduce pressure on hospitals, Insurance mandates must be balanced with affordability for households.

Strengths and limitations

Strengths of this review are the explicit use of an internationally recognised framework, reporting according to PRISMA 2020, and the combination of quantitative benchmarks with policy and governance evidence. Limitations are as follows. The search was restricted to English, German and French sources. Access to some cantonal data was incomplete. Publication bias may affect the grey literature. Official international data lag by two to three years, so developments in 2024–2025 are only partly captured. Attributing outcomes to specific system components is difficult in a multi-causal environment. Indicator definitions, reference years and data sources differ between indicators, and no weighting or statistical pooling was applied.

5. Conclusions

Benchmarking through the WHO framework reveals a Swiss health system with strong outcomes, information and technological resources, alongside very high costs, moderate inequities and fragile surge capacity. The path forward requires balancing the system's precision with the flexibility needed to withstand future shocks, in order to ensure sustainability, equity and resilience in 2025 and beyond. Table 4 translates the findings into recommendations by level of government and stakeholder. Recommendations for future research, Comparative analysis with Nordic health systems, Economic evaluation of the proposed reforms, Impact assessment of artificial intelligence on the efficiency of the Swiss health system.

Declarations

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Conflicts of interest

The authors declare no competing interests.

Ethics approval

analysis of published and publicly available data.

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Conceptualization, Methodology, Supervision, Writing - review & editing. **F.S**: Investigation, Data curation, Formal analysis, Writing - original draft. **Z. A**: Investigation, Resources,

Visualization. **F.B**: Software, Validation, Writing - original draft. All authors have read and agreed to the published version of the manuscript.

Data availability

The full list of the 52 included sources, the data extraction matrix, and the PRISMA 2020 checklist are available from the corresponding author upon reasonable request.

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