



HEALTH SYSTEM IN THE KINGDOM OF THAILAND

Reforms, Achievements, and Challenges



Copyright © Madhurima Nundy and Pankhuri Bhatt

Centre for Social and Economic Progress (CSEP)
CSEP Research Foundation
6, Dr Jose P. Rizal Marg, Chanakyapuri,
New Delhi - 110021, India

Recommended citation:

Nundy, M. Bhatt, P., (2022). *The Health System in the Kingdom of Thailand: Reforms, Achievements, and Challenges* (CSEP Working Paper 45). New Delhi: Centre for Social and Economic Progress.

The Centre for Social and Economic Progress (CSEP) conducts in-depth, policy-relevant research and provides evidence-based recommendations to the challenges facing India and the world. It draws on the expertise of its researchers, extensive interactions with policymakers as well as convening power to enhance the impact of research. CSEP is based in New Delhi and registered as a company limited by shares and not for profit, under Section 8 of the Companies Act, 1956.

All content reflects the individual views of the authors. The Centre for Social and Economic Progress (CSEP) does not hold an institutional view on any subject.

CSEP working papers are circulated for discussion and comment purposes. The views expressed herein are those of the author(s). All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including copyright notice, is given to the source.



HEALTH SYSTEM IN THE KINGDOM OF THAILAND

Reforms, Achievements, and Challenges

Madhurima Nundy

Fellow

Centre for Social and Economic Progress

New Delhi, India

Pankhuri Bhatt

Research Analyst

Centre for Social and Economic Progress

New Delhi, India

Table of Contents

Abbreviations	6
Abstract	7
1. Introduction	8
2. Political, socio-economic, epidemiological, and demographic context	10
2.1. Macroeconomic context	14
2.2. Burden of disease	14
3. Organisation of health services	16
3.1. Governance of health services	16
3.1.1. Governance in hospitals	17
3.1.2. Reforms in governance	18
3.1.3. Achievements and challenges	18
3.2. Provisioning	19
3.2.1. Public health services	19
3.2.2. Private sector in healthcare	23
3.2.3. Growth of hospitals by ownership	23
3.2.4. Contracting public and private health services under the UCS, SHI, and CSMBS	24
3.2.5. Utilisation of health services	25
3.2.6. Access to essential and non-essential medicines	27
3.2.7. Achievements and challenges	27
3.3. Financing	28
3.3.1. Current health expenditure by function	28
3.3.2. Financing services and provider payments under insurance schemes	29
3.3.3. Achievements and challenges	32
3.4. Human resources	36
3.4.1. Distribution and density of health personnel	36
3.4.2. Reforms in human resources	39
3.4.3. Achievements and challenges	40
4. Discussion	41
References	47

List of Figures

Figure 1: Health infrastructure and human resources development trends in Thailand (1962–2007)	9
Figures 2.1–2.10: Select indicators and health outcomes for comparable countries (1990–2020)	10
Figure 2.1: Life expectancy at birth, total (years)	10
Figure 2.2: Mortality rate, infants (per 1,000 live births)	11
Figure 2.3: Mortality rate, neonatal (per 1,000 live births)	11
Figure 2.4: Mortality rate, under-5 (per 1,000)	11
Figure 2.5: Maternal mortality ratio (per 100,000 live births)	12
Figure 2.6: Fertility rate, total (births per woman)	12
Figure 2.7: Population above 65 years (%)	12
Figure 2.8: Current expenditure on health (% GDP)	13
Figure 2.9: Domestic government health expenditure (% of current health expenditure)	13
Figure 2.10: out of pocket (% of total health expenditure)	13
Figure 3: Thailand GDP growth trend (1961–2021) (%)	14
Figure 4: Share of the total disease burden by cause in Thailand (2019)	15
Figure 5: Burden of disease by NCDs across countries (1990–2019)	15
Figure 6: Organisational structure and interlinkages between the MOPH and NHSO	16
Figure 7: Governance mechanisms in the national health system	17
Figure 8: District health system in Thailand	20
Figure 9: ThaiHealth strategies for preventive and promotive services towards attaining SDG goals	21
Figure 10: Number of private hospitals and beds	23
Figure 11: Hospital proportion trend classified by affiliation (1973–2017) (%)	24

Figure 12: Hospital beds proportion trend classified by affiliation (1973–2017) (%)	24
Figure 13: Number of visits and utilisation rates of outpatient and inpatient facilities under the UCS in fiscal years 2003–2020	25
Figure 14: Outpatient visits (2019)	26
Figure 15: Inpatient admissions (2019)	26
Figure 16: Current health expenditure as a percentage of the GDP (2000–2019)	28
Figure 17: Health expenditure as a percentage of the current health expenditure (2020)	28
Figure 18: Current health expenditure by function	29
Figure 19: Type of health insurance among older persons (2017)	32
Figure 20: Timeline of insurance schemes	32
Figure 21: Incidence of impoverished households using national poverty line (percentage of total)	35
Figure 22: Catastrophic health expenditure (1990–2015)	35
Figure 23: Number of physicians per 1,000 people	36
Figure 24: Number of nurses and midwives per 1,000 people	37
Figure 25: Number of doctors by type of administration (2012–2021)	37
Figure 26: Trends of production of general and specialist doctors (1990–2010)	38
Figure 27: Number of professional nurses by type of administration	39
Figure 28: Number of population to single health personnel by type (2019)	41

List of Tables

Table 1: Number of hospitals in Thailand	23
Table 2: Characteristics of the three insurance schemes	30
Table 3: Percentage of the population covered according to the type of health insurance (2011–2021)	34
Table 4: Select health outcomes over time in Thailand (compared to SDG targets, upper-middle income countries, high-income countries, and India)	42
Table 5: Summary of the phases of health reforms	43
Table 6: Lessons from major health sector reforms	45

Abbreviations

CHE	Catastrophic health expenditure
CPIRD	Collaborative project to increase production of rural doctors
CSMBS	Civil Service Medical Benefit Scheme
CUP	Contracting unit for primary care
DHO	District health office
DHS	District health system
DRG	Diagnosis-related group
FM	Family medicine
FP	Family physician
GDP	Gross Domestic Product
GP	General practitioner
HAI	Health Accreditation Institute
HSRI	Health Systems Research Institute
IMR	Infant mortality rate
LHPF	Local Health Promotion Fund
LTC	Long-term care
MMR	Maternal mortality ratio
MOPH	Ministry of Public Health
MRD	Medical Registration Division
NCD	Non-communicable disease
NGO	Non-governmental organisation
NHA	National Health Assembly
NHC	National Health Commission
NHCO	National Health Commission Office
NHSO	National Health Security Office
ODOD	One district one doctor
OECD	Organisation for Economic Co-operation and Development
OOPE	Out-of-pocket expenditure
OPD	Out-patient department
PCMO	Provincial chief medical officer
PCU	Primary care units
PHC	Primary healthcare
PHO	Provincial health office
PC	Position Classification
P&P	Prevention and promotion
SDHPH	Sub-district health promotion hospitals
SDG	Sustainable development goals
SHI	Social health insurance
SSO	Social Security Office
THE	Total health expenditure
ThaiHealth	Thai Health Promotion Foundation
UCS	Universal Coverage Scheme
UHC	Universal health coverage
VHV	Village health volunteer
WHO	World Health Organization

Abstract

Health systems in Thailand have been frequently researched since its reforms in early 2000s, especially in the context of universal health coverage (UHC). Globally, Thailand comes closest to having achieved UHC, adhering to the principles of universality, comprehensiveness, and equitable access. The country has followed the path to UHC since 2001, even before it became a global sustainable development goal. There was one major reform in Thailand that took place in 2001 that defined its journey to UHC. Minor reforms have been occurring in the development of infrastructure and expansion of human resources in health since the 1970s. Since 2002, the Universal Coverage Scheme has been the single defining and most significant driving force of the Thai healthcare system. Despite political disruptions, coups, and military rule, the UHC has been upheld. The system has institutionalised consensus building across stakeholders and interest groups, including citizen representatives, to provide universally accessible services. The health outcomes show that Thailand performs better than many upper-middle income countries and has among the lowest out-of-pocket expenditure (OOPE) in the world.

1. Introduction

Health systems of Thailand have been frequently researched since last two decades, especially in the context of universal health coverage (UHC). Globally, Thailand comes closest to having achieved UHC, adhering to the principles of universality, comprehensiveness, and equitable access. The country has followed the path to UHC since 2001, even before it became a global sustainable development goal (SDG).

Thailand transitioned from an absolute monarchy to a constitutional monarchy in 1932. In 1942, the Ministry of Public Health (MOPH) was established. The establishment of the MOPH signified a shift in the country's outlook on public health from a matter of national security to that of public health for all (Aspalter, Pribadi, & Gauld, 2020). During this period, there was also significant development of Thailand's health infrastructure, with economic and financial support from the United States government (Rangsan, 2021). During 1952–1957, provincial hospitals and health centres were built in all 72 provinces and districts, respectively (Rangsan, 2021).

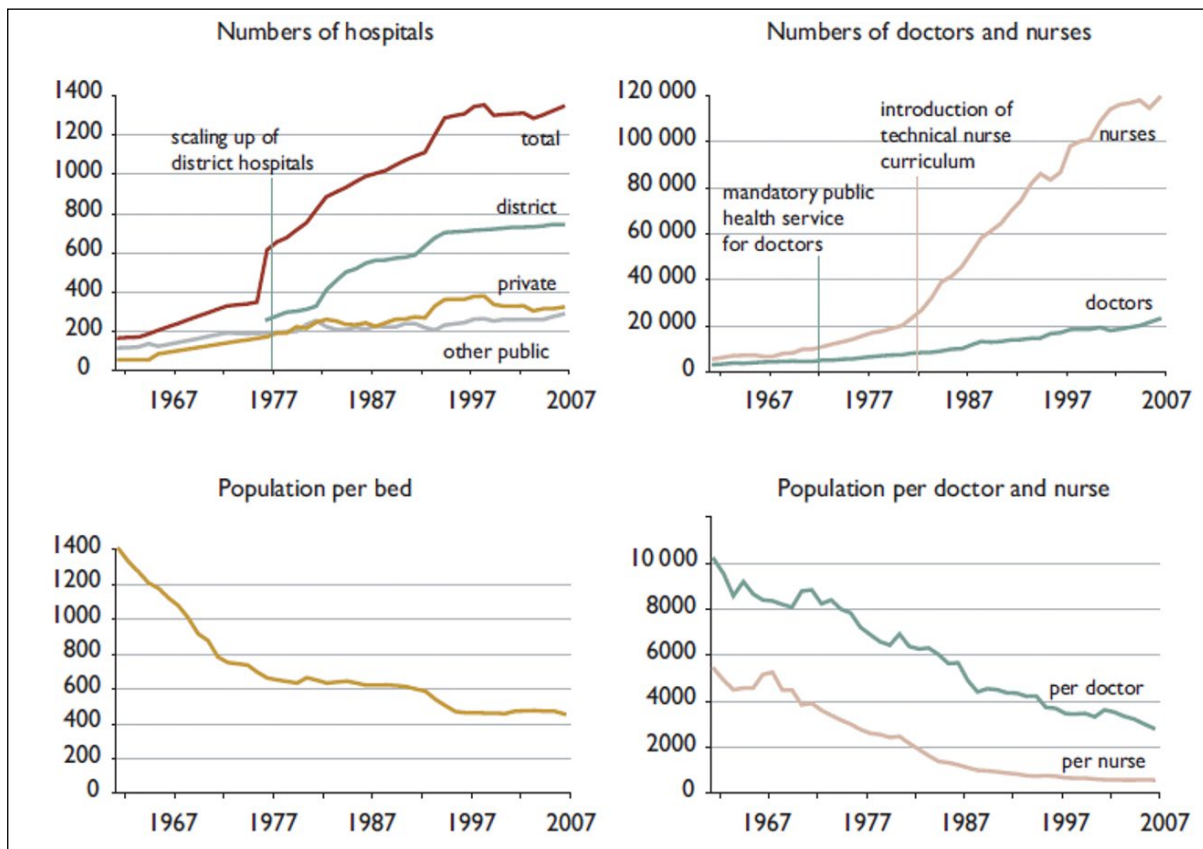
Between the 1960s and 1980s, there was a period of rapid economic growth in Thailand, in spite of successive macroeconomic crises and political instability. However, despite these crises, Thailand's health system was progressively developed. The Indochina Wars (1946-91), and the rising threat of communism in South-east Asia, triggered concerns that Thailand would yield to communist domination. Therefore, Thailand directed its policies towards rural development, reducing poverty and extending agricultural services (Tangcharoensathien et al., 2018). Health and education became keystones of achieving rural development and fighting poverty. During the first major economic crisis in 1977, Thailand passed its first healthcare reform. It restructured the MOPH and established a health policy for impoverished individuals (Dulin, 2016). It redirected capital investment from urban hospitals towards building rural health service infrastructure and the capacities of community health workers and rural doctors. During this time, public hospitals charged fees to maintain infrastructure, sustain the flow of medical supplies, and employ staff (Thaiprayoon & Wibulpolprasert, 2017).

Between late 1980s and the mid-1990s, Thailand's economy grew in double digits, thus boosting the purchasing power and increasing the demand for private health care (Thaiprayoon & Wibulpolprasert, 2017). There were efforts to limit the government's role in the health sector. Economic prosperity corresponded with the mushrooming of the private sector, which peaked between 1994 and 1997. This resulted in the public sector's share shrinking to 25% of the total health expenditure (THE), with high out-of-pocket expenditure (OOPE) (Capano et al., 2015).

In the past, Thailand was essentially an agricultural country. However, since the 1980s, it made a significant shift from being an agricultural-based economy to becoming a more industry-based and export-oriented economy. In 1997, 40% of the country's population lived in urban areas. Thailand went through an economic crisis in 1997 and experienced negative economic growth, inflation, and an increase in foreign debts. This crisis had major social implications for unemployment, underemployment, and depletion in household income. Although Thailand had made substantial economic progress, it still had 10 million poor people in 2002. The 1997 Asian financial crisis led to widespread inequality and heightened the population's vulnerability to the increasing cost of health services. To reverse the impact of the crisis, Thailand introduced a second set of health sector reforms, which included the expansion of welfare to children and the elderly, establishment of a national AIDS programme, and creation of a social security scheme (Dulin, 2016). Community hospitals were established and public health emphasised. Thailand also made significant improvements to human resources in health.

Perhaps, the most pivotal moment in the development of the health system in Thailand was the implementation of UHC in 2002. Investment in rural health in the preceding years had laid a strong foundation for UHC. This had been propelled by the Rural Doctors' Society. Previously, most reforms were locally initiated by both state and non-state actors; they were context-specific and were not really influenced by international agencies. Further, the landslide victory of the reformist Thai Rak Thai Party, in the 2001 general elections, paved the way for introducing UHC. Three public health insurance schemes defined UHC: the Civil Service Medical Benefit Scheme (CSMBS) for civil servants and dependents; social health insurance (SHI) for all private sector employees; and the 30-Baht Scheme that came to be known as the Universal Coverage Scheme (UCS). The UCS extended free healthcare to people not covered by any other scheme, which at the time constituted around 70% of the population (Aspalter, Pribadi, & Gauld, 2020). Since 2002, the UCS has been the most important reform of the Thai healthcare system. Despite political disruptions, coups, and military rule, UHC has been upheld. Figure 1 shows the development of infrastructure and human resources over the years till 2007.

Figure 1: Health infrastructure and human resources development trends in Thailand (1962–2007)



Source: Balabanova et al. (2011).

2. Political, socio-economic, epidemiological, and demographic context

Thailand is a constitutional monarchy, but it has a national assembly and a prime minister as head of government. There have been several iterations and drafts of the constitution by governments in power.

There is a dual administrative structure at the sub-national level, with local administration and local autonomous governments. The local administration constitutes 77 provinces (*changwat*), with 2 special governed districts: the capital city of Bangkok and Pattaya. The provinces are further sub-divided into districts (*amphur*) and sub-districts (*tambons*). There are 928 districts, including 50 in Bangkok, called *Khet*, since the 1979 administrative reforms in Bangkok, and over 7,000 sub-districts (Ministry of Education Thailand, 2016). Local autonomous governments are headed by elected councils and mayors, and supervised by provincial and district officials and the Minister of the Interior. These officials have the authority to approve budget plans and regulations, dissolve local councils, and dismiss local councillors. Officials are appointed by the centre and hold posts in local administration in the provinces and districts.

The estimated population of Thailand was 69.7 million, as of 2020, with a sex ratio of 94.8 males to 100 females (The World Bank, 2020). About 53% of the population resides in urban areas. Life expectancy at birth has markedly improved in Thailand, from 55 in 1960 to 77 in 2020 (The World Bank, 2020). Thailand's total fertility rate dropped to 1.5 in 2020. Meanwhile, the infant mortality rate (IMR) fell sharply from 101 per 1,000 live births in 1960 to 30 in 1990, and 7 in 2020 (The World Bank, 2020). Likewise, the under-five mortality per 1,000 live births declined from 147 in 1960 to 37 in 1990, and 9 in 2020 (The World Bank, 2020).

Thailand is transitioning to an aging society faster than other Asian countries. In 2020, people above 65 years constituted approximately 13% of the total population (The World Bank, 2021). Figures 2.1–2.10 show the trends of these indicators since the early 2000s in comparison to other countries being reviewed. Thailand ranks third in gross domestic product (GDP) per capita when compared to the other five countries. The country's health outcomes are similar to China's except in Figures 2.9 and 2.10, which show that public spending on health is high compared to that in other countries, while OOE is among the lowest in the world.

Figures 2.1–2.10: Select indicators and health outcomes for comparable countries (1990–2020)

Figure 2.1: Life expectancy at birth, total (years)

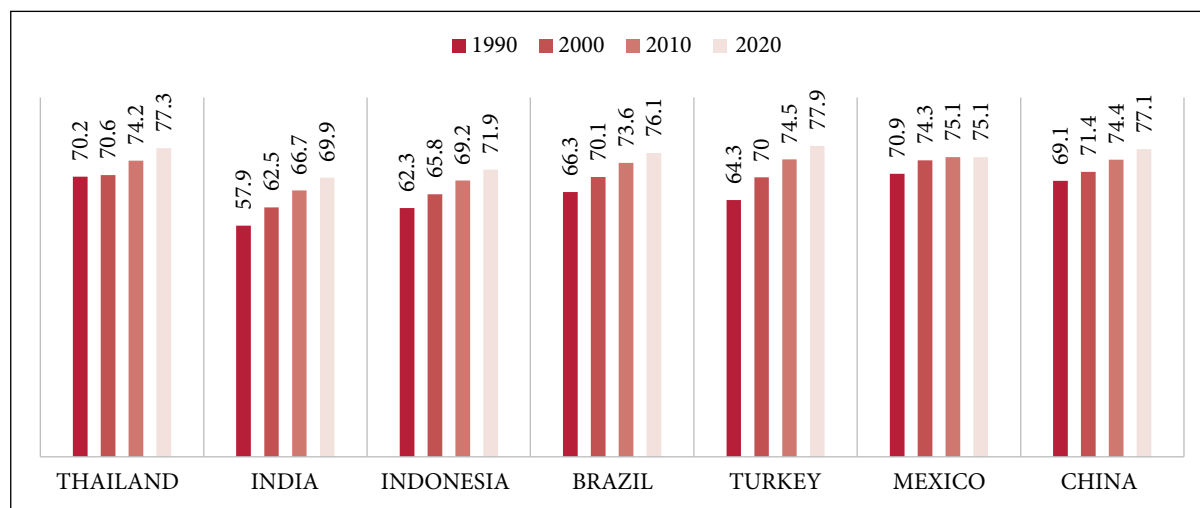


Figure 2.2: Mortality rate, infants (per 1,000 live births)

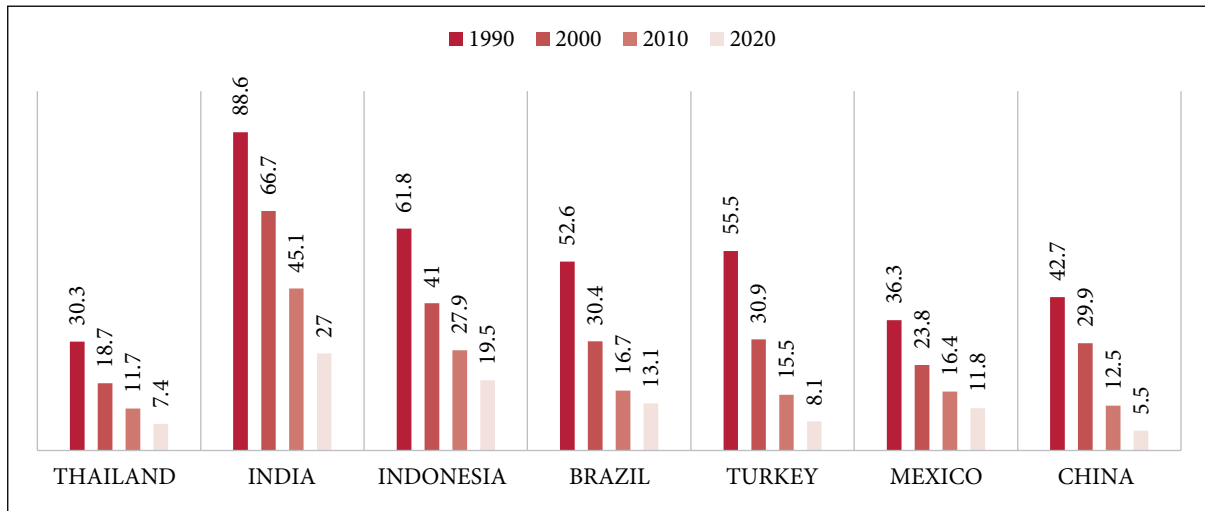


Figure 2.3: Mortality rate, neonatal (per 1,000 live births)

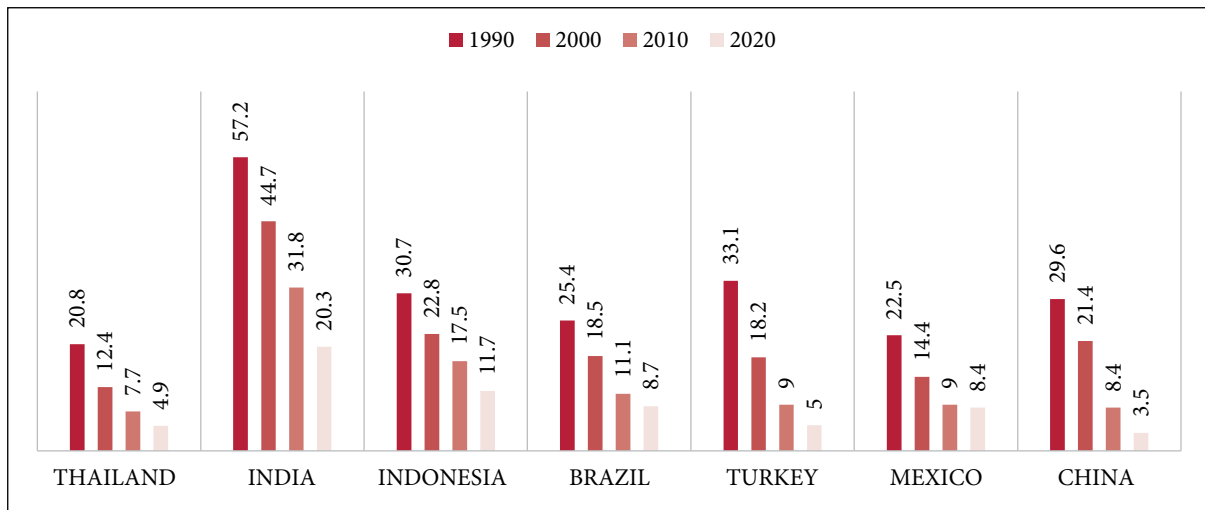


Figure 2.4: Mortality rate, under-5 (per 1,000)

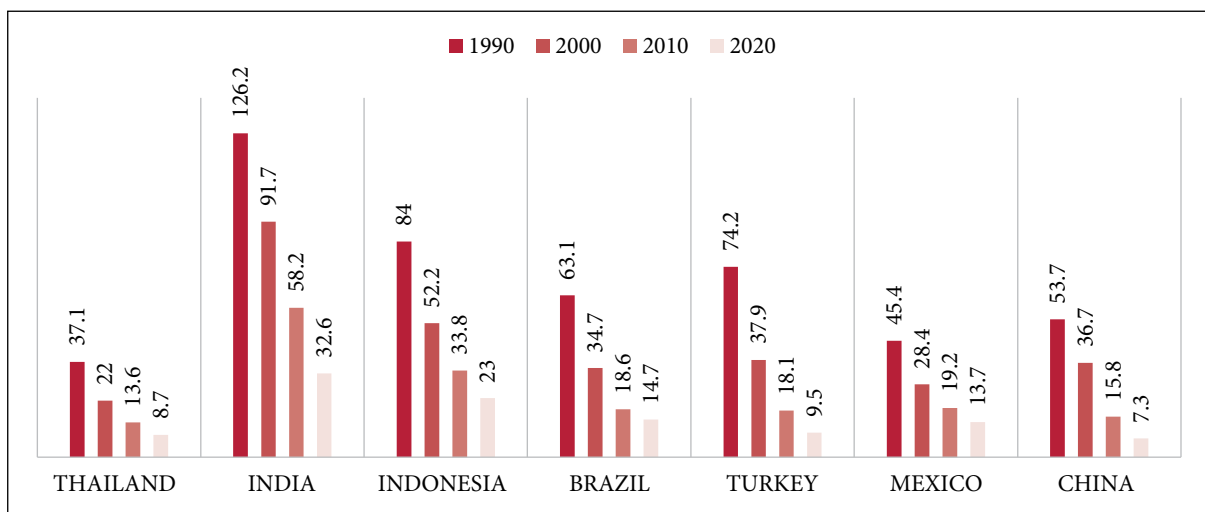


Figure 2.5: Maternal mortality ratio (per 100,000 live births)

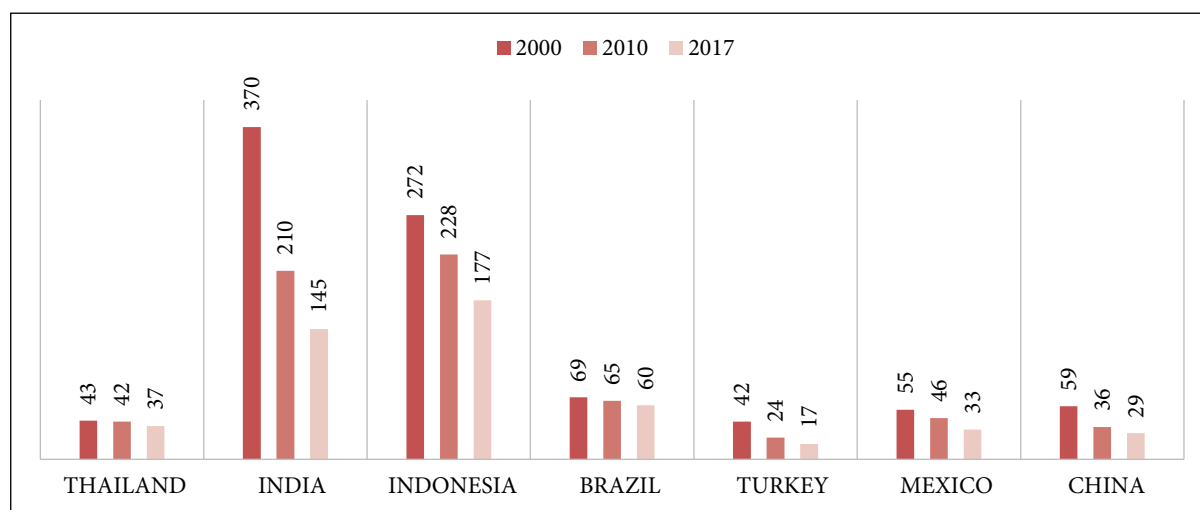


Figure 2.6: Fertility rate, total (births per woman)

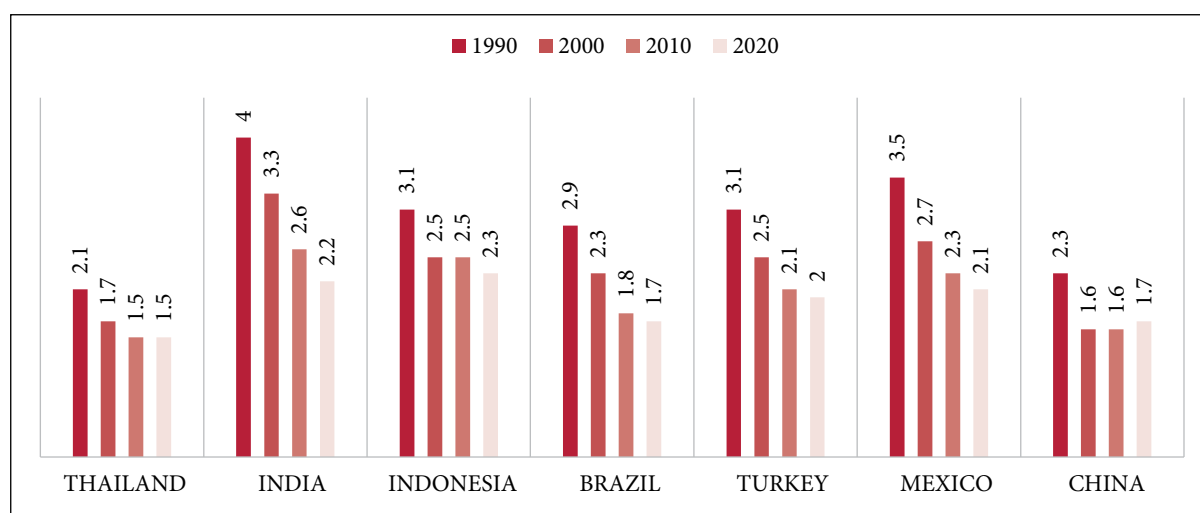


Figure 2.7: Population above 65 years (%)

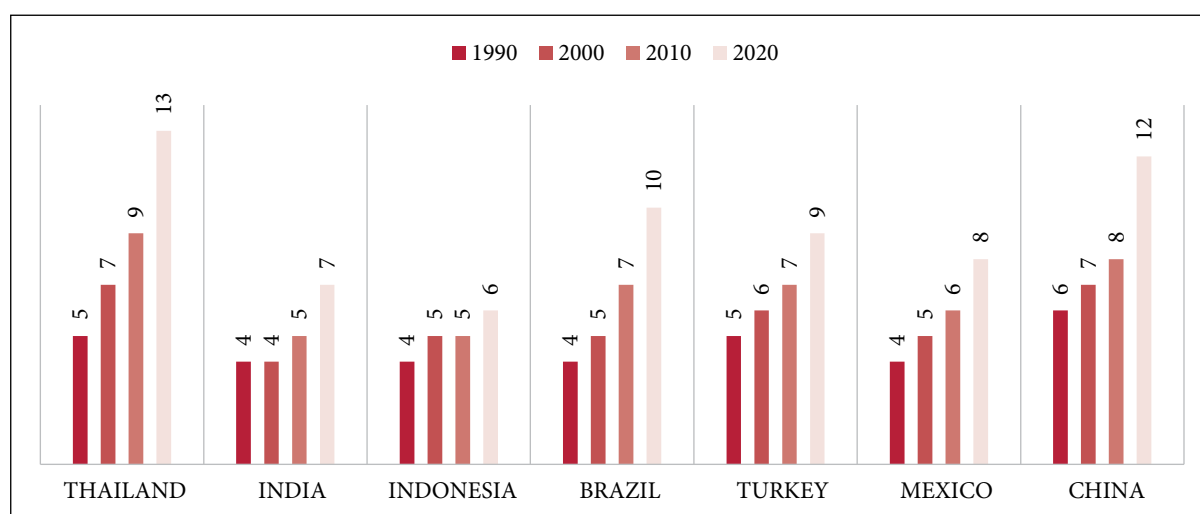


Figure 2.8: Current expenditure on health (% GDP)

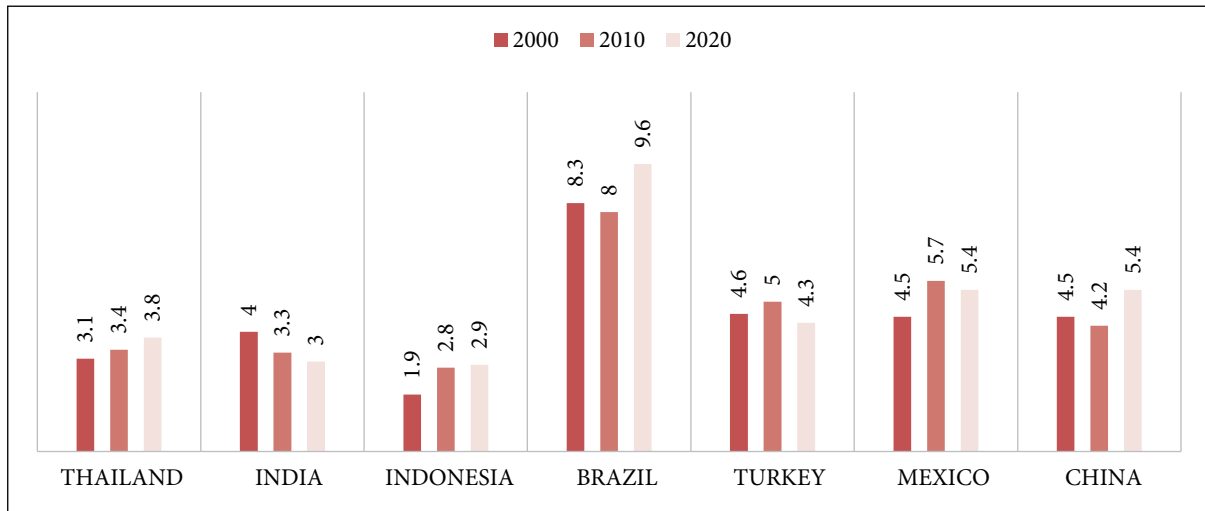


Figure 2.9: Domestic government health expenditure (% of current health expenditure)

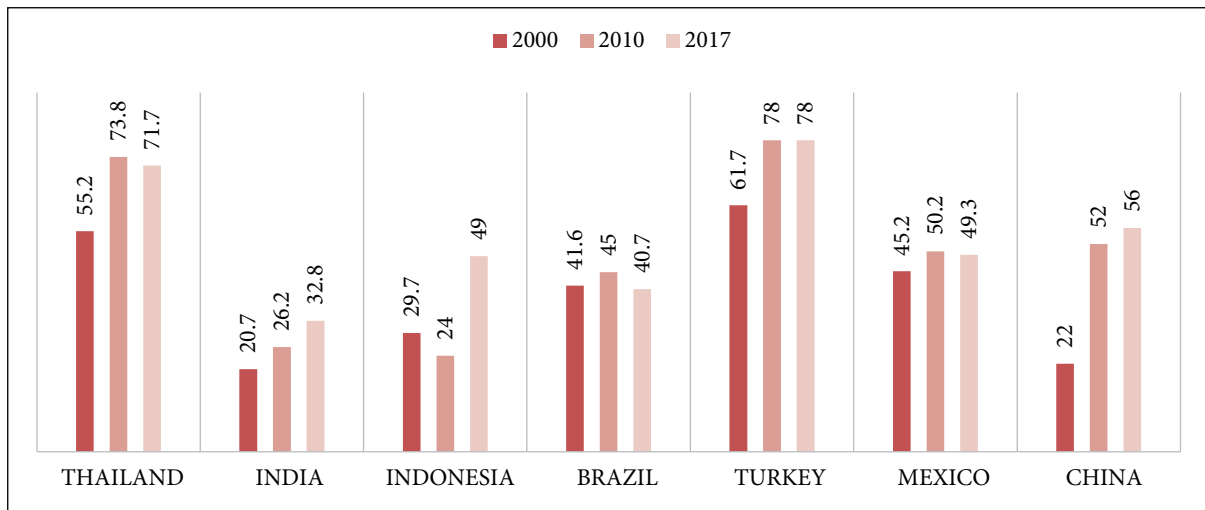
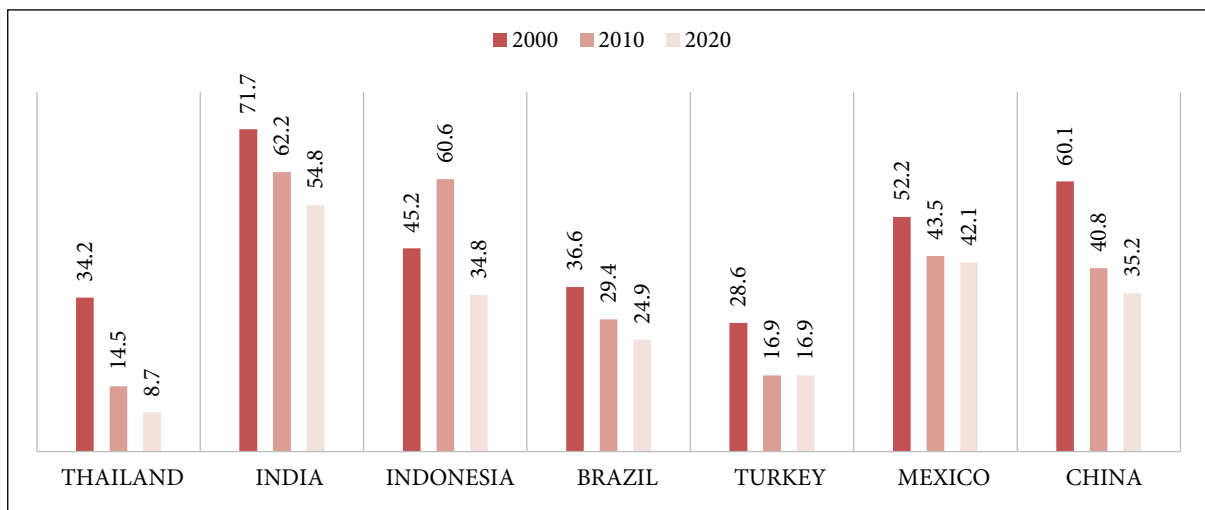


Figure 2.10: out of pocket (% of total health expenditure)



Source: The World Bank (2021).

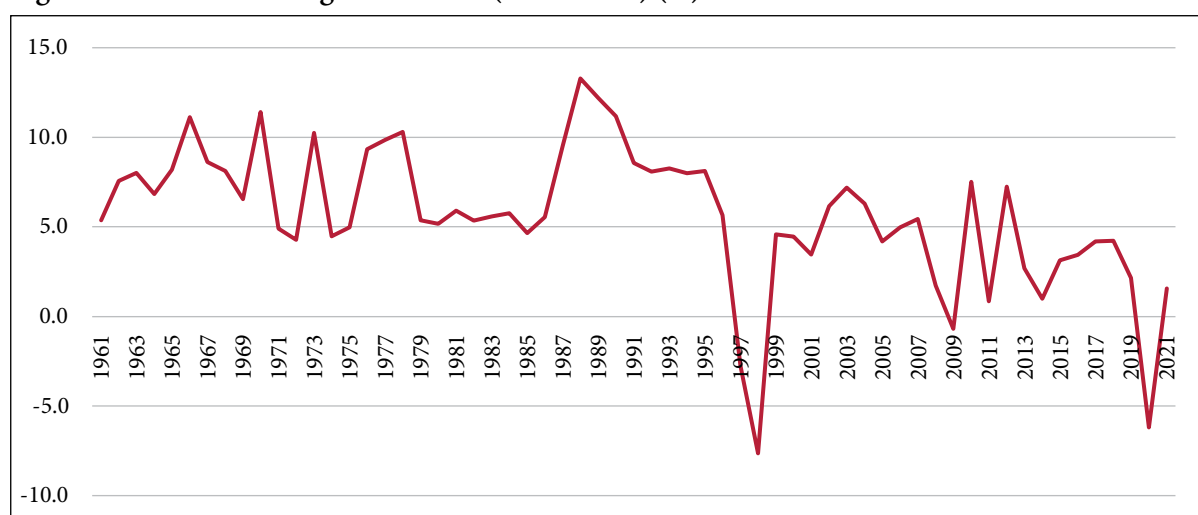
Note: Thailand is placed first. The other countries are organised in ascending order of GDP per capita (current US\$).

2.1. Macroeconomic context

Thailand has made substantial improvements to key social and economic aspects, which are clear in its transition from being a lower-middle income country to an upper-middle income country in 2011. Thailand has a mixed economy, with agriculture, manufacturing, tourism, and natural resources as its major sectors (National Statistical Office, Ministry of Digital Economy and Society, 2020). Its GDP in 2021 was US\$ 506 billion, and around US\$ 7,200 per capita (The World Bank, 2022). Its tax-GDP ratio was 16.5% in 2020, which was below the Asia-Pacific average of 19.1% and above the 11.9% average for South Asian countries (The World Bank, 2022).

Thailand has experienced periods of rapid economic growth, with an average of 7% between 1960s and 1990s. However, it has also undergone three major macroeconomic instabilities: the oil crises of 1973–1975 and 1979–1985; and the currency crisis (1997–1999) (Figure 3). The 1997 Asian financial crisis led to the collapse of the Thai stock market; in this year, the country experienced relatively sluggish growth, of around 3%. Thailand took over a decade to revert to its pre-1997 growth rate (Tangcharoensathien et al., 2018).

Figure 3: Thailand GDP growth trend (1961–2021) (%)



Source: The World Bank (2022).

Thailand has significantly reduced its population below the poverty line from 65% in 1988 to 7% in 2015. However, some of these gains were reversed in the recent past; around 10% of the population was below the poverty line in 2018. The increase in poverty from 2015 to 2018 can be explained by low GDP growth rates and an increase in droughts, which affected the farmers' income adversely (The World Bank, 2022).

2.2. Burden of disease

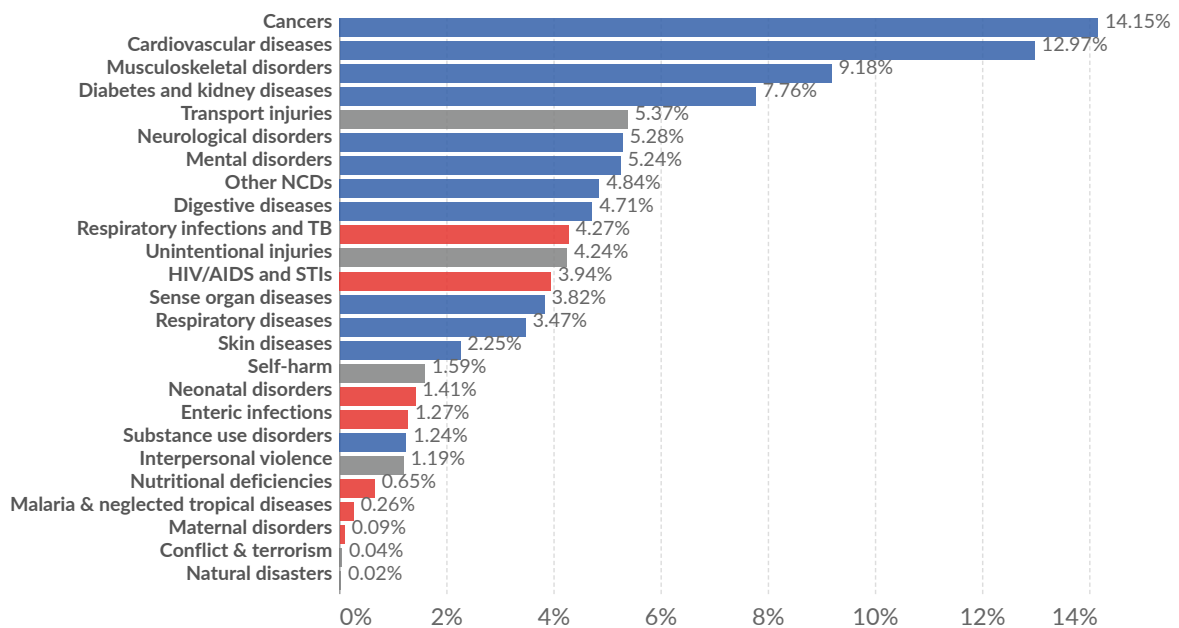
With significant investment in the public health system since the 1960s, Thailand has tremendously improved some key health indicators. Additionally, the country has halved the inequalities in child mortality across economic strata. Disparities at the regional level have also decreased, although some provinces in the northern, eastern, and southern parts of Thailand still account for a relatively high burden of child and infant mortality (Balabanova et al., 2011).

Between the 1950s and 1990s, there was a significant reduction in mortality from communicable diseases, largely due to the drop in the incidences of malaria, pneumonia, and tuberculosis (TB). However, between 1998 and 2003, there was an increase in mortality from infectious diseases, mainly due to the AIDS epidemic and opportunistic infections related to TB and pneumonia (Balabanova

et al., 2011). As of 2021, Thailand maintained its position on the list of 30 countries with a high burden of TB/HIV (WHO, 2021).

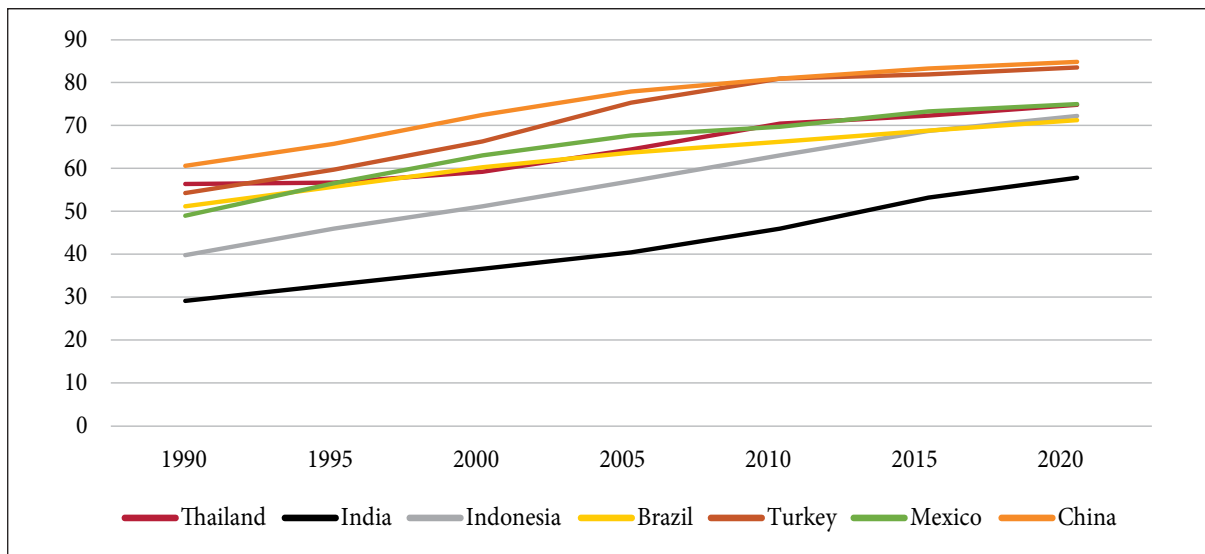
Along with a rapidly aging population, as in other middle-income countries, Thailand is also experiencing a rising incidence of non-communicable diseases (NCDs), and related morbidity and mortality (Figure 4). NCDs account for 75% of the burden of diseases and have increased by 20% since 1990 (Figure 5) (Roser, Ritchie and Spooner 2021). Moreover, cardiovascular disease, cancer, and diabetes are placing increasing pressure on the Thai health system, which is evident from the increasing rate of hospitalisation due to NCDs. It is estimated that over 1,000 Thai people die every day due to NCDs (WHO, 2020).

Figure 4: Share of the total disease burden by cause in Thailand (2019)



Source: Roser, Ritchie and Spooner (2021).

Figure 5: Burden of disease by NCDs across countries (1990–2019)



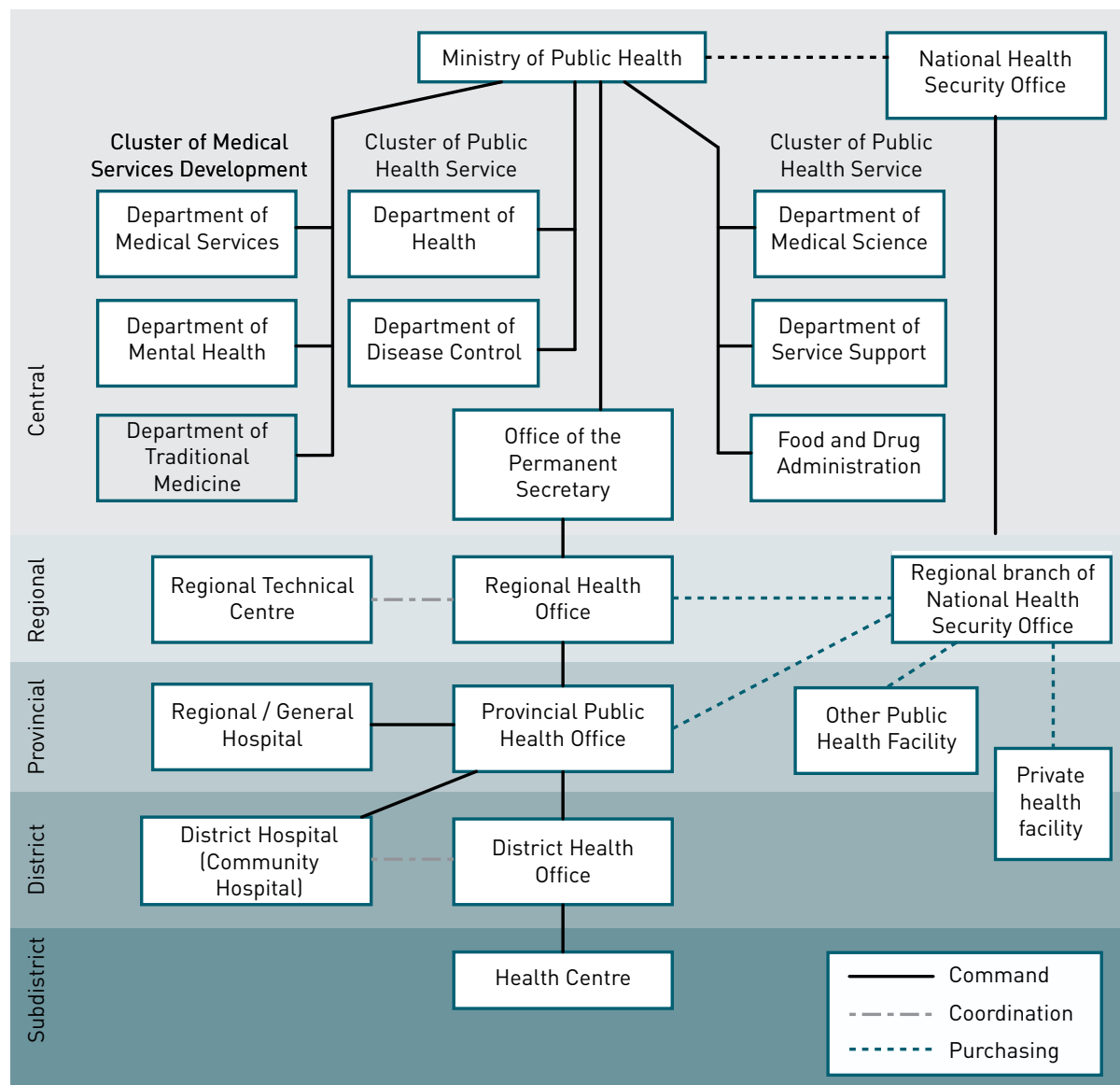
Source: IHME (2020).

3. Organisation of health services

3.1. Governance of health services

The MOPH is the central agency responsible for the formulation, implementation, stewardship, and monitoring of health policies in Thailand. There are several departments under it as depicted in Figure 6. Governance is centralised even though there are departments up to the sub-district level. Central government personnel are deployed to local government departments.

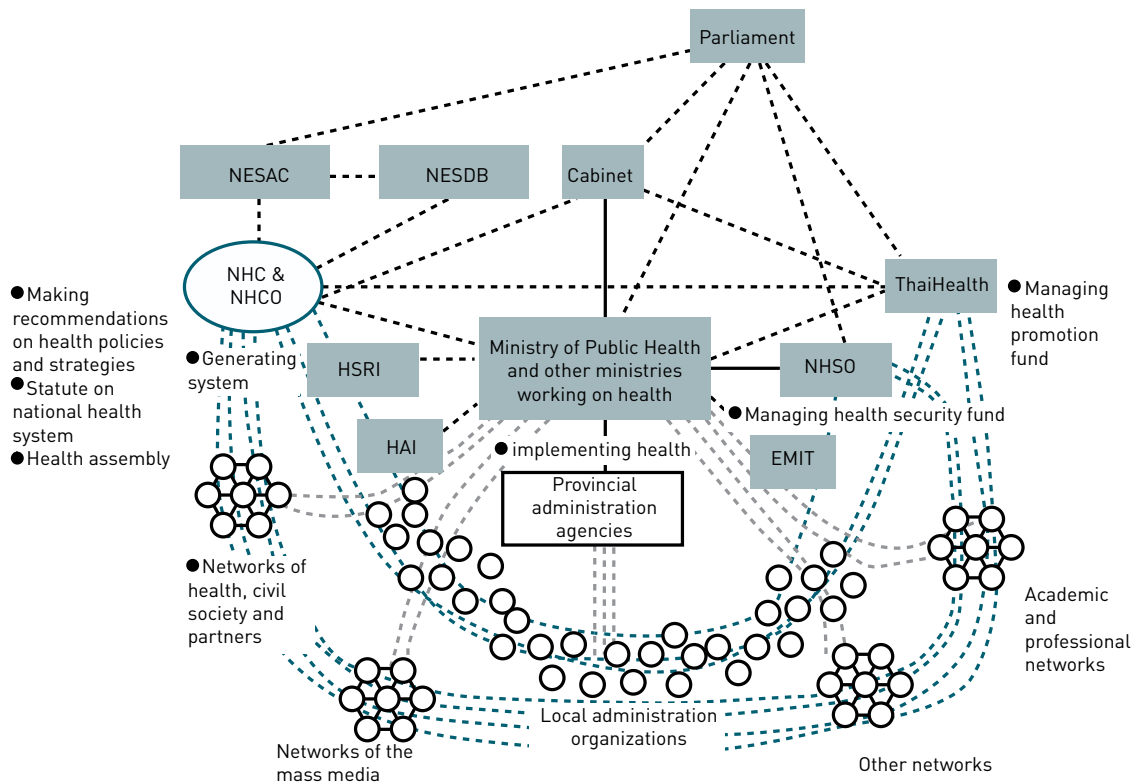
Figure 6: Organisational structure and interlinkages between the MOPH and NHSO



Source: WHO (2015).

The MOPH is further supported by various semi-autonomous and autonomous health agencies, including the National Health Security Office (NHSO) established in (2002), National Health Commission Office (NHCO) established in 2007, Health Systems Research Institute (HSRI) in 1992, Health Accreditation Institute (HAI) in 1999, and Thai Health Promotion Foundation (ThaiHealth) established in 2001. The MOPH and other autonomous health agencies form a complex governance structure (Figure 7).

Figure 7: Governance mechanisms in the national health system



Source: Wibulpolprasert (2011).

The HSRI is an autonomous government unit, responsible for research coordination, management, and promotion of research on national health policy. Likewise, the NHC is responsible for organising the National Health Assembly (NHA) that is held annually, which involves the engagement of all government and non-government actors in health policy formulation (Legido-Quigley & Asgari-Jirhandeh, 2018). The resolutions passed by the NHA are further enforced by the cabinet, thus strengthening their legitimacy. The HAI is responsible for establishing operational standards and certifying the quality of service in hospitals. ThaiHealth was established in 2001 as an autonomous government body to address growing NCDs in Thailand. The agency acts outside the bureaucratic system of the MOPH, with the objective to promote a healthy society (Sopitarchasak et al., 2015).

3.1.1. Governance in hospitals

Decision-making in public hospitals is centralised. The MOPH appoints directors for general and regional hospitals. Meanwhile, the directors of district hospitals are appointed by provincial chief medical officers in each province. Members of hospital boards are appointed by hospital directors. Hospitals at the province and district levels are mandated to implement policies of the MOPH and are subject to inspection by the MOPH.

The hospital accreditation programme in Thailand was established in 1997, as a research and development project. The idea behind the project was for peers to assess hospitals and create a learning platform to enhance quality of services. Based on learnings from the projects, the HAI was established in 2009 as an administrative organisation responsible for healthcare accreditation. The NHSO allocates funds for hospitals to make qualitative improvements. Improvements in quality is assessed using a five-point scoring system, constituting three factors: systems for risk prevention; systems for quality improvement; and assurance and accreditation status. In 2006, the accreditation standard for hospitals was revised to include hospital safety and health promotion criteria for performance excellence.

Hospital accreditation guidelines are the same for public and private hospitals. Private hospitals have to register annually with the Medical Registration Division (MRD) of the MOPH (Morgan & Ensor, 2016). The MRD regulates licensing, setting the rules and standards of quality and safety (Morgan & Ensor, 2016). On account of any failure, private hospitals are sanctioned, which may include revocation of licenses, suspension, reprimand, or probation.

The private sector is also involved in the governance of the UCS on two levels—policy and operational. Representatives from the sector serve on the NHSO board and the quality control board of the public health service. On the operational side, private organisations, local government, community organisations, and non-governmental organisations (NGOs) participate in the management of health insurance at the local level.

The NHSO conducts annual inspections of all facilities empanelled under the UCS, based on guidelines developed in collaboration with the MOPH and relevant stakeholders. Similarly, the SSO also conducts annual assessments of hospital facilities under the SHI (Marshall et al., 2021).

3.1.2. Reforms in governance

The three insurance schemes that ensure UHC are managed and governed by three laws. The CSMBS was enacted under the Royal Decree on Medical Benefits of Civil Servant 1980, which was amended in 2010. The SHI was enacted under the Social Security Act 1990, under which the Social Security Office (SSO) was established, and amended in 2010. The UCS was enacted under the National Health Security Act 2007, under which the NHSO was founded.

The 2002 reforms led to the institution of the NHSO, which is responsible for managing funds and purchasing services for the UCS. The MOPH oversees the NHSO's functions via an independent board and has the authority to determine the budget and benefit packages under the UCS. However, the MOPH does not have direct authority over the NHSO. The NHSO board constitutes 30 external members that include representation from civil society organisations, MOPH officials and officials from other ministries and public health experts. The MOPH has limited command and authority over this board (Berman et al., 2019).

The National Health Act in 2007 led to the establishment of the NHCO. The National Health Commission (NHC) is the steering body of NHCO. It directs the government on health-related policies. The NHC has 39 members, including those from the government, the policy and professional sectors, and civil society. The NHC acknowledges the importance of citizen involvement in decision-making; this is realised during the annual NHA, which involves multiple stakeholders (Berman et al., 2019; Tejativaddhana et al., 2018).

3.1.3. Achievements and challenges

Reforms in governance is necessary for achieving UHC. One good lesson from Thailand is its participatory health governance platform; that is, the establishment of the NHA which has facilitated responsive governance. The NHA has effectively brought together all stakeholder groups, including civil society and private sector representatives. This has helped to foster dialogue among stakeholders. The institutionalised collaborative governance model is a main takeaway from the Thai experience.

Another important factor of the governance reforms has been the evidence-based research that has informed policy formulation. This was cultivated through the establishment of the HSRI. The investigators included international and national health researchers, academics, and policy analysts. A critical mass of researchers was created and absorbed into several research institutions to work on health policies and technological assessments of the MOPH.

In 1999, the Decentralisation Act was instituted to devolve the governance of all public health facilities to local governments at the provincial and district levels. However, by 2002 the decentralisation process was suspended because of UHC that led to recentralisation. Since financial powers shifted from the MOPH to the NHSO, the devolution of funds to local-level governments was stopped and there was recentralisation. This split between the role of the purchaser (NHSO) and the provider (MOPH) had consequences on the relationship between the two. We discuss this further in the section on financing. The MOPH largely retains regulatory powers and financing for capital investments.

The UCS has better governance structures with diverse stakeholders, as it covers the majority of the population. Similarly, the SSO for SHI is also represented by private sector employees (beneficiaries), employers, and representatives of the government. The CSMBS lacks such governance structures. Being more privileged than the other two schemes, there is a lack of will to bring in major reforms in CSMBS.

Intersectoral collaboration and community participation are core principles in the governance of Thailand's health system. Thailand's NHA ensures the involvement of citizens and other stakeholders (such as policymakers, and people in government agencies, NGOs, and academia) in health-related policymaking through participation in annual NHA meetings (Marshall et al., 2021). Legislative provisions on the participatory nature of governance are provided in the 1997 and 2013 Constitution of Thailand. These provisions allowed citizens to play an integral role in drafting the UHC Bill.

The Standard and Quality Control Board of the UCS also comprises five members from the public. Citizens can influence decisions related to the quality of care; for example, they can audit treatment and request compensation for patients who experience negligence. The NHSO earmarks around 1% of its annual service budget for this compensation. These citizens also have access to information about governance, annual disclosures on performance, and other reports by the NHSO. Similarly, for SHI, there is a 21-member committee, including 7 employees, 7 employers, and 7 government officials (Marshall et al., 2021; Legido-Quigley & Asgari-Jirhandeh, 2018).

3.2. Provisioning

The Thai healthcare system is pluralistic. Around 48% of the country's population lives in rural areas, and, as such, public facilities reach out to them. The MOPH owns most of the health facilities and is the major provider of health services. Over 60% of the total health facilities in the country are run by the government; 95% of all rural health facilities are in the public sector. The private sector provides 10% of outpatient services and about 10% of inpatient services—it holds a 20% share of the health resources across rural and urban areas (Thaiprayoon & Wibulpolprasert, 2017).

3.2.1. Public health services

Thailand's public health services are hierarchically structured from the central to the sub-district level. There are medical colleges at the top followed by provincial-level hospitals, district hospitals, and sub-district hospitals.

Structure of primary health services

The development of primary healthcare (PHC) in Thailand predates the Alma-Ata Declaration's endorsement of primary healthcare in 1978. The PHC programme was launched by the MOPH in 1977. Thailand adopted a systematic approach towards developing PHC, with policies based on national development plans and experimentation through several pilot programmes. In 1966, the MOPH, in collaboration with the World Health Organization (WHO), set up a special project to strengthen rural health in the Phitsanulok Province of Thailand, with the objective of increasing the capacities of sub-district and district-level health personnel (Nitayarumphong, 1990). Community

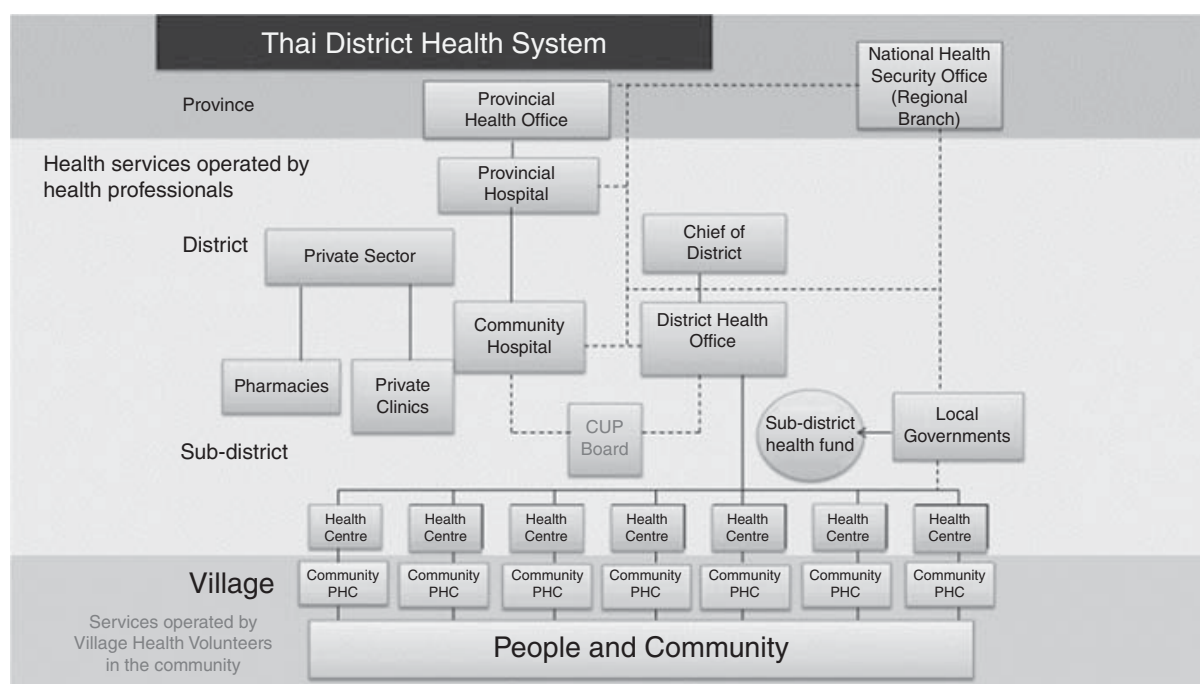
participation was key to strengthening PHC; this was evident in the national, social, and economic development plans over the years.

The MOPH organised the PHC system based on three structures—the regional management system, the district health system (DHS), and the primary care cluster (WHO, 2017). Thailand is divided into 13 regional health service areas and has 13 regional management offices to effectively and efficiently manage and allocate resources.

District health system

The DHS is the official mechanism for administering PHC under the UCS, and other health policies at the district level. The DHS covers a population of about 50,000 people, with a network of 10–15 primary care units (PCUs). This network includes sub-district health promotion hospitals (SDPHs), health centres at the village level, and a district hospital with 30–120 beds and 100–300 medical staff (Tuangratananon et al., 2021). There are over 11,000 health centres catering to all sub-districts that is the first point of contact. Further, there are about 900 district hospitals, also known as community hospitals, with 30–120 beds, covering over 90% of districts. Urban areas have community health centres, municipality health centres, private clinics, and drug stores (Figure 8) (Pagaiya et al., 2019).

Figure 8: District health system in Thailand



Source: Tejativaddhana et al. (2018).

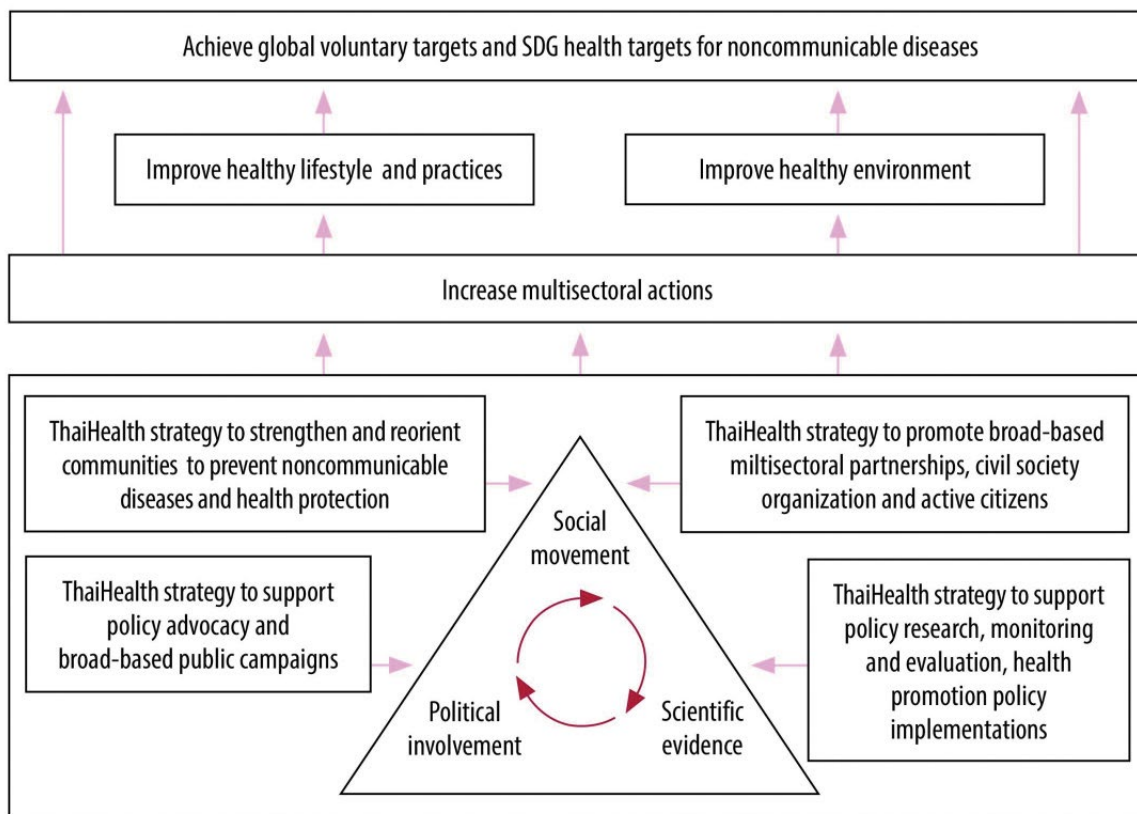
Under the primary care cluster, PHC as well as prevention and promotion (P&P) services are comprehensively provided by a team consisting of a family physician (FP) and other local medical staff (WHO, 2017). PHC is delivered through a contracting unit for primary care (CUP) (Kitreerawutiwong et al., 2017). As of 2020, there are 11,001 PCUs and 1,386 CUPs affiliated to the UCS (NHSO, 2020). All district hospitals are assigned to CUPs that provide comprehensive services (from preventive to rehabilitative assistance), in cooperation with a network of PCUs in the district (Tuangratananon et al., 2021). Private clinics that fulfil the human resources norm are also part of the CUPs (WHO, 2017). In urban areas, PHC coverage is weak due to inadequate involvement of local government in providing health services. Therefore, healthcare is provided through outpatient departments (OPDs) in public and private hospitals (WHO, 2015; Hanson et al., 2022).

There are over a million village health volunteers (VHVs) all over Thailand; these people are paramedical personnel who each offer PHC to 10–15 households. VHVs along with PHC personnel provide preventive, promotive, and basic curative services (Krassanairawiwong et al., 2021).

Prevention and promotion

In Thailand, basic health P&P services cover immunization, family planning services, antenatal and postnatal services, nutritional surveillance, screening for NCDs and routine health check-ups (WHO, 2015). Before the 2001 reforms, the MOPH was the main provider of health P&P services. To offer these services with a focus on NCDs, the government instituted the Health Promotion Foundation Act in 2001. This led to the establishment of ThaiHealth, which manages P&P funds (Figure 9). P&P has been integral to UHC. A major proportion of the funds is used for campaigns against tobacco and alcohol use and substance abuse and community programmes for health living. Such campaigns emphasise healthy food, physical activity, and road safety (Pongutta et al., 2019).

Figure 9: ThaiHealth strategies for preventive and promotive services towards attaining SDG goals



Source: Pongutta et al. (2019).

Long-term care (LTC) policy in Thailand

With the increasing burden of an aging population, Thailand has established a robust LTC system. About 82% of older people (65 years and above) are covered under the UCS; CSMBS and other state employee insurance funds cover 15%; and around 1.6% are covered by SHI (Glinskaya et al., 2021). The Second National Plan on Older Persons (2002–2021) and the 2003, Older Person’s Act laid the foundation for LTC. In 2003, Community Volunteer Caregivers were introduced by the government as a separate cadre for older people. Through the project, volunteers are trained to provide social support for older people belonging to the poor quintile or to those who live alone and do not have care givers. The project is managed by local government authorities (Glinskaya et al., 2021).

In 2016, a community-based LTC project to improve the life of incapacitated older people through home-based care was initiated. The pilot programme was launched in 1,000 sub-districts; by 2018, it had expanded to over 5,639 sub-districts. The programme runs under the NHSO, with support from the DHS. The programme provides a range of medical services, broadly classified within three categories: care management, social care, and healthcare (ADB, 2020). The programme is funded under the UCS by the NHSO. Majority of the budget is transferred to local governments, to support home-based care provision; the remaining money is allocated to health centres and district hospitals to support capacity building and volunteer caregiver training (ADB, 2020). At the level of health services, hospitals and VHVs provide primary and preventive care to older persons. VHVs conduct home visits under the supervision of SDHPHs. Further, some hospitals have established elderly care clinics, which provide preventive, promotive, and basic curative services (Glinskaya et al., 2021).

Governance of PHC

The reporting mechanism for primary health services in Thailand runs from the provincial health office (PHO) to the MOPH and the NHSO. The SDHPH reports to the CUP, through the district health office (DHO) (Tejativaddhana et al., 2018). The DHO and the SDHPH form the CUP board, which is responsible for managing health services. The board includes district hospital directors and representatives from district hospitals, DHOs, and SDHPHs. In some districts, representatives from the community (for instance, community leaders, VHVs, and local government members) are also invited to be on the board (Tejativaddhana et al., 2018).

Initially, the majority of UCS funding was transferred to CUPs, and were then utilised to fund the referral regional and provincial hospitals and to support community service units in their networks (Intaranongpai et al., 2012). This resulted in the CUPs acquiring more power than the PHOs, which were left weak in their management role. CUPs in rural areas were under the control of the directors of district hospitals, who allocated resources according to their own priorities (Hughes and Leethongdee, 2007). However, with the advent of a new purchaser, the NHSO, the financial power of the CUPs was diluted. This was done to guarantee funding for provincial hospitals and to keep a check on the control of funds by district hospital directors for their pet projects. NHSO outposts collaborated with PHOs to develop management tools, such as strategic plans, targets, key performance indicators, and benchmarks, and established PHOs to oversee the DHS (Intaranongpai et al., 2012).

Secondary and tertiary public hospitals

The majority of hospitals in Thailand are public. Around 75% are owned by the MOPH, while the remaining 25% are private (Sathapongakdee, 2018). At the top are 11 university medical colleges with general hospitals, each comprising 100–150 beds, catering to 600,000 people at the provincial level. At the district level, there is at least one hospital (also known as a community hospital), with 30–120 hospital beds and a population coverage of 50,000 (WHO, 2015; Legido-Quigley & Asgari-Jirhandeh, 2018).

District or community hospitals provide secondary-level curative, preventive, and promotive care. In addition, they also provide inpatient/outpatient care and emergency services, and collaborate with PCUs.

Tertiary care is primarily provided by general, regional, and specialised hospitals, in varying size and capacity. University-affiliated hospitals are super tertiary care hospitals, and are owned by the Ministry of Education, Science, Research, and Innovation. These hospitals also serve as teaching and research institutes, and are equipped with the best medical resources in the country.

Table 1: Number of hospitals in Thailand

Type of hospital	Number
University	11
Specialised	61
Regional	34
General	92
District	878
Private	382
Total	1,355

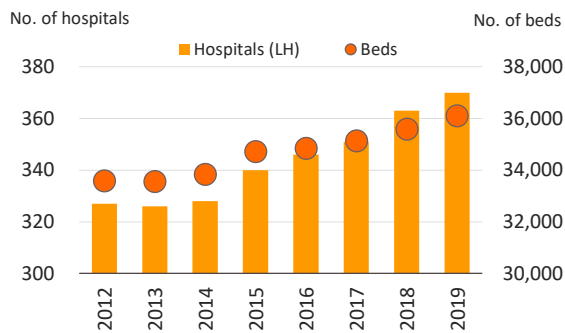
Source: MOPH, Thailand (2022).

3.2.2. Private sector in healthcare

At the primary level, private clinics are small commercial units that provide outpatient care and dispense medicines. Private health facilities account for 72% of all health facilities—most of these are private clinics (Marshall et al., 2022). As of 2019, there were more than 25,000 private clinics in Thailand (Collingwood, 2022). Most private clinics are owned by government doctors who work after official government hours. These clinics are primarily located in urban areas. However, they do not provide comprehensive PHC, and, as such, are not full-time establishments (WHO, 2015).

There are over 382 private hospitals operating in Thailand, with a total of 36,000 beds (Figure 10). Around 71% of all private hospitals are located in Bangkok (Thai Health Project, 2021). Most private hospital establishments are small, with less than 100 beds. Large private hospitals, including hospital chains, especially those located in Bangkok, primarily cater to international patients (WHO, 2015). Thailand has a huge medical tourism industry which is driven by private hospitals. One of the government's aims has been to make Thailand a medical hub. Therefore, several new investors in the private sector have been allowed to invest, and, as such, private hospitals have been increasing (Koh, 2019). There are mergers and acquisitions taking place between these private hospitals.

Figure 10: Number of private hospitals and beds



Source: Poonsuk Ninkitsaranont (2020)

The economic expansion during 1992–1997 bolstered investments in healthcare and expansion in the private sector, with tax incentives given to private hospitals. This led to a rise in the number of private hospitals from 219 in 1986 to 491 in 1997. However, after the 1997 economic crisis, the growth of private hospitals was stalled due to a decline in customers, increase in the price of medical goods, including drugs, and burdens of foreign loans and interest (ILO, 2008). Some of the private hospitals shut down.

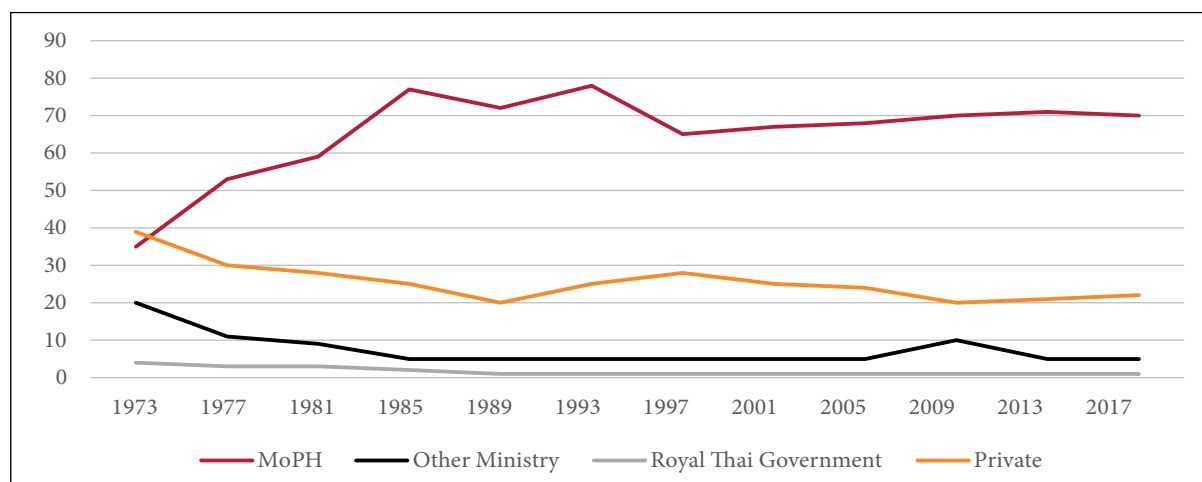
Following the 2001 health reforms, almost all public health facilities joined the UCS. However, the private sector's involvement with the scheme remained low. In 2013, around 191 private clinics and 38 private hospitals joined the UCS, but covered only 5.7% of all UCS beneficiaries (Paek et al., 2016). A possible reason for little participation of the private sector was the low capitation rates, which could not sustain the steady participation of private sectors in the UCS (Srithamrongsawat et al., 2010).

3.2.3. Growth of hospitals by ownership

As mentioned, public hospitals constitute 75% of all hospitals, while private hospitals make up the remaining 25%. The share of private hospitals has declined, from 39% in 1973 to around 22% in 2017. However, in terms of the number of hospital beds, there has been an increase in the share of private hospitals, while the MOPH's share has remained steady. Beds in the public sector amount to

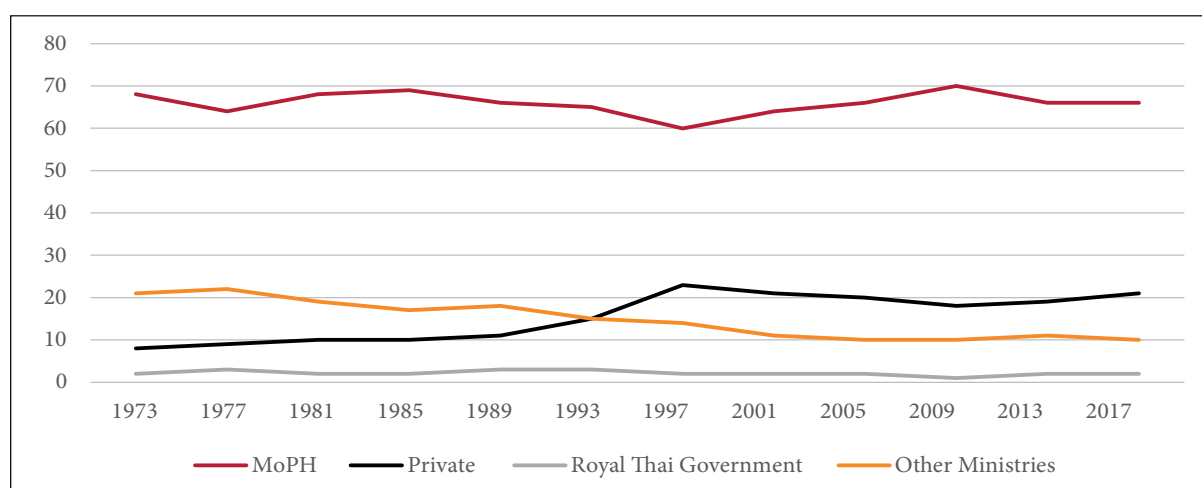
79% of all beds (66% are owned by the MOPH), and the private sector accounts for 21% (Figures 11 and 12) (Thai Public Health Report, 2019).

Figure 11: Hospital proportion trend classified by affiliation (1973–2017) (%)



Source: Thai public health 2016-2017. (2019).

Figure 12: Hospital beds proportion trend classified by affiliation (1973–2017) (%)



Source: Thai public health 2016-2017. (2019).

Thailand has witnessed a rise in the total number of beds. The number of beds per 1,000 people has gone up from 2.1 in 2010 to around 2.3 in 2021. However, it is still lower than the world average of around 2.9 beds per 1,000 people (Thai Public Health Report, 2019).

3.2.4. Contracting public and private health services under the UCS, SHI, and CSMBS

Following the 2001 UHC reforms, all public health facilities have been required to provide services under public insurance schemes. Under the NHSO, all facilities (PCUs, the main CUPs, and referral units) must meet the minimum eligibility criteria. The provider is then given a unique identification number, created by the MOPH. PCUs must have agreements with their respective CUPs, and CUPs must have agreements with referral units registered under the NHSO (Marshall et al., 2022). In addition, CUP facilities must have a doctor to population ratio of 1:10,000. A referral unit must have a minimum of 30 beds and include at least four specialist staff members in internal medicine, general surgery, gynaecology, and paediatrics (Marshall et al., 2022).

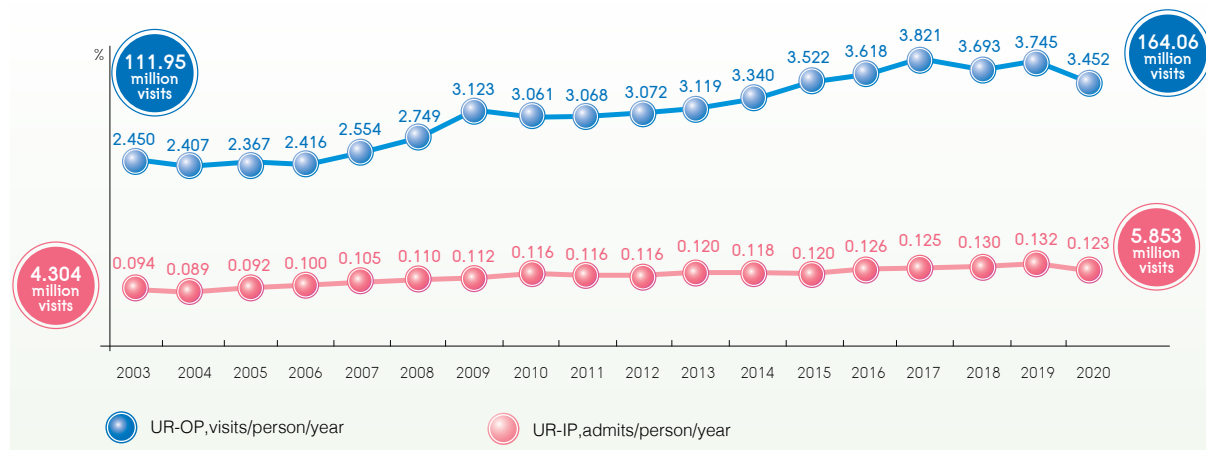
Prior to entering into a contractual agreement with a health service provider, the NHSO inspects applicants against set standards and guidelines established by the NHSO, MOPH, and other relevant stakeholders. These inspections are mostly conducted by doctors and nurses, but CUPs are inspected by staff from affiliated referral hospitals. Providers that do not qualify after the inspection are required to make improvements within a stipulated timeframe or risk being removed from the NHSO (Marshall et al., 2022). For private CUPs, the NHSO renews contractual agreements annually, provided they meet the NHSO’s set standards and pass the yearly inspections.

Under the SHI scheme, the SSO enters into a contractual agreement with public and private hospitals that are main contracting units, on a competitive basis (Marshall et al., 2022). The SSO has minimum resources and standard criteria. For instance, facilities must have a minimum of 100 beds and 12 specialists and be able to arrange referrals. Under the SSO, contracted private hospitals have to be equivalent to provincial hospitals in terms of standards and resources (Marshall et al., 2022). There is automatic renewal of agreements with public contracting units, while private contracting units undergo compulsory annual inspections and re-registration processes through the SSO. Under the CSMBS, there are no registration requirements for public and private healthcare providers.

3.2.5. Utilisation of health services

Since the UCS reforms in 2001, there has been a significant increase in outpatient utilisation (number of visits/consultations per individual). The rate of outpatient visits increased from 2.5 visits per individual in 2003 to 3.5 in 2020. The rate of inpatient visits increased from 0.09 admissions per individual per year in 2003 to 0.12 in 2020 (Figure 13) (NHSO, 2020).

Figure 13: Number of visits and utilisation rates of outpatient and inpatient facilities under the UCS in fiscal years 2003–2020



Source: NHSO (2020).

Note: UR–OP = utilisation rate for outpatient facilities; UR–IP = utilisation rate for inpatient facilities.

In 2019, around 58.33% of outpatient visits were to a public hospital, while around 12.9% were to a private institution (NHSO, 2020). The remaining patients went directly to drug stores or traditional practitioners in a private setting. Around 88.6% of inpatient admissions occurred in public hospitals (community/district hospitals, regional hospitals/provincial hospitals, non-MOPH hospitals, and medical schools), and 11.4% of inpatient admissions happened in private healthcare settings (NHSO, 2020).

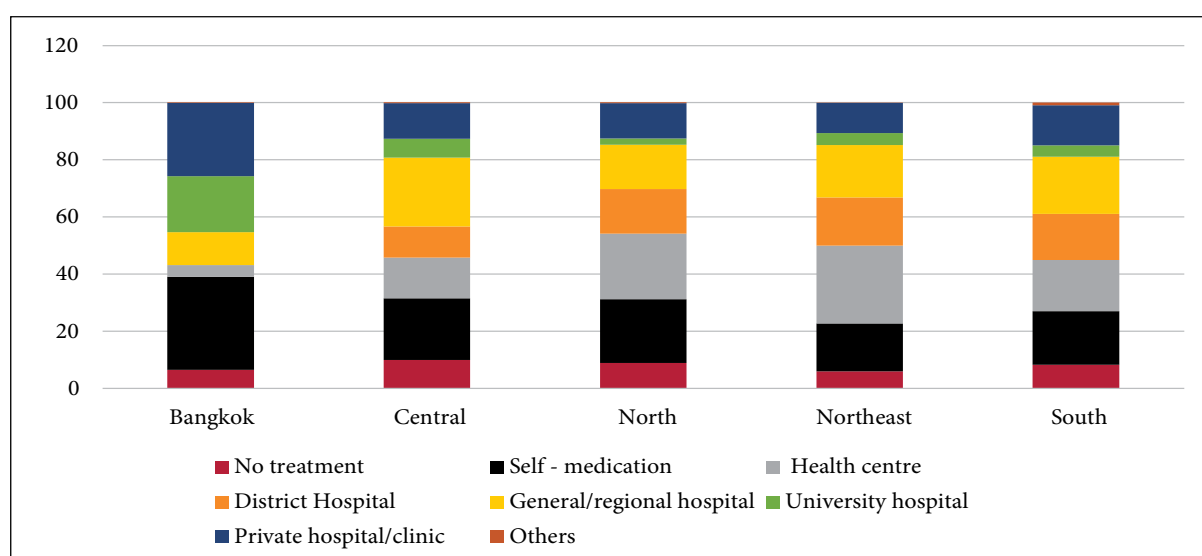
Vongmongkol et al. (2021) used the Health and Welfare Survey (2011–2019) to analyse the annual rate of unmet need. It was less than 3%, which is lower than the Organisation for Economic Co-

operation and Development (OECD) countries average of 28%.¹ This positive outcome is attributed to a well-functioning DHS. Unmet need is higher among older persons and those in urban areas due to long queues.

The Health and Welfare Survey also shows that 21.7% of UCS members, 20% of SHI members, and 4% of CSMBS members belong to the poor wealth quintile (Vongmongkol et al., 2021). Utilisation rates are negatively correlated to wealth, with the poorest quintile under the UCS seeking more inpatient services and making more outpatient visits.

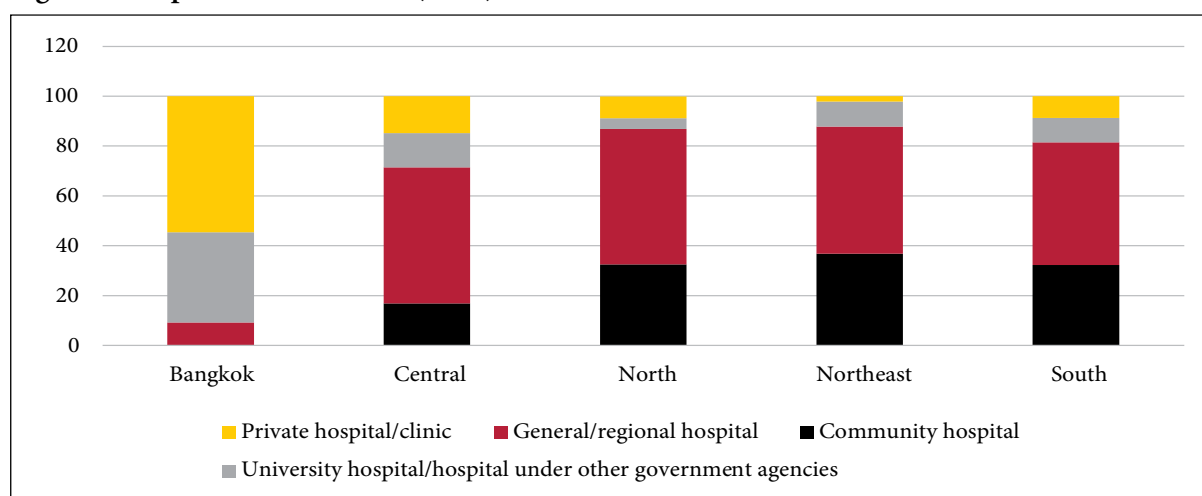
There is wide variation in utilisation rates across regions; this is dependent on the availability and allocation of health resources. For instance, private hospitals and clinics dominate the health services in Bangkok, but district and sub-district hospitals are more widely used in the north-eastern region (Figure 14 & 15).

Figure 14: Outpatient visits (2019)



Source: Thai public health report (2019).

Figure 15: Inpatient admissions (2019)



Source: Thai public health report (2019).

¹ Unmet healthcare need is a key indicator for determining and monitoring access to health services. It refers to people who need health services but are unable to use them for various reasons. It could reflect gaps in the availability of services, accessibility in terms of finance and location, poor quality of care and long waiting times. Thailand is one of few countries that analyses the unmet need in healthcare through an annual national household survey (Vongmongkol et al., 2019).

Patient pathways

Under the UCS, patients can bypass PCUs and directly access OPDs in registered hospitals. However, the propensity for patients bypassing PHC units has been decreasing (WHO, 2015). Under SHI, the patient pathway is similar to that under the UCS—patients can directly access OPDs in registered hospitals. To streamline the patient load and optimise the utilisation of services, most contracted hospitals are part of an established network with other small hospitals. SHI patients can access OPDs in private hospitals but will require referral from general OPDs to access specialised care. However, they can directly access specialised care in public hospitals without referrals (WHO, 2015).

Under the CSMBS, members have more flexibility. They can access any public facility and bypass primary health units or district hospitals (WHO, 2015).

3.2.6. Access to essential and non-essential medicines

Beneficiaries under the UCS have access to all essential medicines listed by the government without needing to make any additional payment. The NHSO negotiates prices and procures medicines (Sakulbumrungsil et al., 2020).

Since 2008, expensive medicines that are essential to some patients suffering from diseases like cancer, have been reimbursed separately from capitation and diagnosis-related groups (DRGs). Further, reimbursement for anti-cancer drugs, which are prescribed according to protocol, is based on a fixed fee schedule. Likewise, under SHI, the benefit package for expensive drugs is similar to that under the UCS. Meanwhile, the CSMBS reimburses all medicines (listed as essential and others outside the list) on a fee-for-service basis (Sakulbumrungsil et al., 2020)

Access to non-essential medicines is harder than essential medicines. Under the UCS and SHI, expensive cancer medicines that are not in the list might be partially reimbursed. Under the CSMBS, non-essential medicines are given prior authorisation and are reimbursed on a fee-for-service to the provider, without a ceiling (Sakulbumrungsil et al., 2020).

3.2.7. Achievements and challenges

Thailand worked on developing its rural health infrastructure through the 1970s and 1980s. It aimed to increase the rural population's access to primary health services and human resources. During this time, the government halted investments in hospitals in urban areas to achieve equity in geographic access to health services. By the mid-1990s, the government had covered almost all districts. Between 1977 and 2010, the share of rural health centres had increased from 29% to 54% of all public health facilities and the proportion of district hospitals had reduced from 46% to 12.6%, thus reversing the system from being top-heavy to being bottom-heavy (Piensriwatchara & Patcharanarumol, 2017). One important achievement has been the integration of preventive and promotive services within the PHC system and the building of a gatekeeper system that follows a referral. This has made the coverage of services more comprehensive.

As in other countries, urban health systems in Thailand are less structured than rural ones; the former is dominated by hospitals and has less effective PHC. There is room for improvement here, and for strengthening the role of municipalities in service delivery. Thailand faces the challenge of an aging population, and is still developing its LTC policies. However, it has started on good footing by emphasising community-based health and social care. This approach prioritises home-based rather than institutional care; the country has integrated these services under the UCS.

There are tensions between the dominant public sector and the private sector. Private sector has voiced its criticism regarding UHC in the parliament (Harris & Maia, 2022). In one particular instance, the Private Hospital Association expressed its displeasure towards government's decision to include dialysis services in the benefit package. The NHSO had directly negotiated the prices,

thereby curtailing the possibility for private hospitals to profit from haemodialysis. The MOPH, however, was able to successfully defend its inclusion of dialysis in the benefit package against commercial interests (Harris & Maia, 2022).

The medical tourism industry is a huge revenue source for Thailand. In 2015, medical tourism generated over US\$ 3 billion for the Thai economy. However, despite its financial potential, there are concerns within the government about medical tourism and its impact on the health sector. Doctors at private clinics and hospitals earn almost 10 times that of doctors working at government hospitals (Harris & Maia, 2022). Studies indicate that medical tourism exacerbates the drain of human resources in public and private health facilities. As a means to check the growth of private industry, a proposal to tax private hospitals involved in medical tourism was raised by the government—it would direct the income generated through medical tourism towards the UCS. However, this proposal has not yet been approved as the private sector has argued against the move (Harris & Maia, 2022).

3.3. Financing

3.3.1. Current health expenditure by function

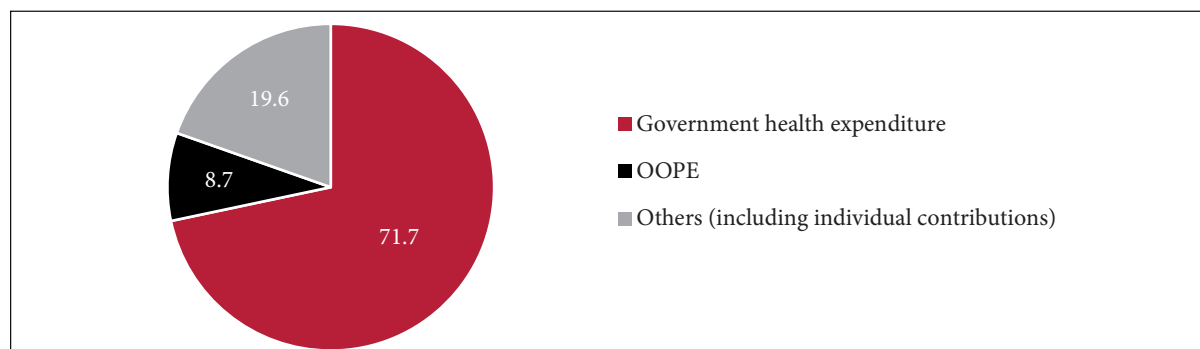
Since 2000, Thailand has made reforms towards progressive financing. The country's health expenditure as a percentage of its GDP increased from 3.1% in 2000 to 3.8% in 2019 (Figure 16). Within the same period, the government health expenditure increased from 55.2% to 71.7% of the current health expenditure (Figure 17). There was also a dramatic reduction in OOPE in this timeframe, from 34.2% to 8.7% of the current health expenditure.

Figure 16: Current health expenditure as a percentage of the GDP (2000–2019)



Source: The World Bank (2020).

Figure 17: Health expenditure as a percentage of the current health expenditure (2020)

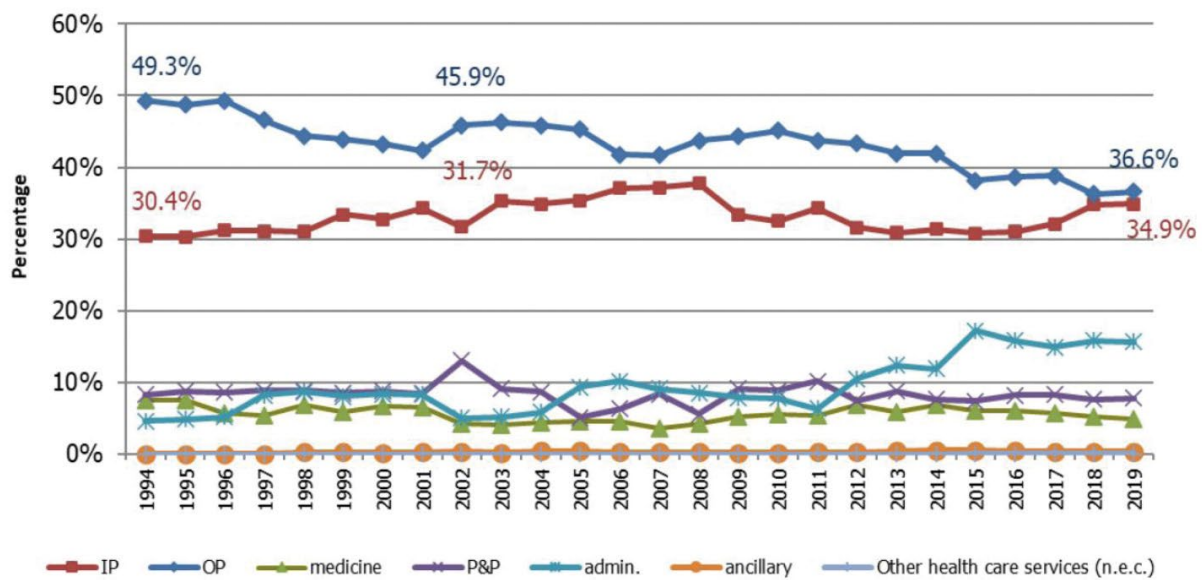


Source: The World Bank (2022).

Outpatient services and rehabilitation expenses constituted 49.3% of the health expenditure in 1994; this decreased to 36.6% in 2019. Meanwhile, inpatient care, rehabilitation, and LTC constituted 30.4% in 1994; this gradually increased to 34.9% in 2019. Expenditure on P&P activities and disease control accounted for around 8% of the expenditure on healthcare in 1994; this rose to 13% in 2002, coinciding with the establishment of UCS across the country. But then, this share reduced to 7.8% in 2019. While expenditure on medicines remained below 10% throughout the period between 1994 and 2019, administrative costs significantly increased (Thai National Health Accounts, 2017-2019).

Thailand's National Health Accounts calculates the total primary health care expenditure as the sum of expenses for general, outpatient, curative, and preventive services provided at SDHPHs. During 2015–2019, the total expenditure for PHC constituted around 38–40% of the current health expenditure. Further, OOPE comprised around 4–7% of primary care expenditure (Hanson et al., 2022).

Figure 18: Current health expenditure by function



Source: Thai National Health Accounts, (2017-2019)

3.3.2. Financing services and provider payments under insurance schemes

As discussed before, Thailand achieved UHC through three public schemes: the UCS, SHI, and CSMBS (Table 2). The UCS was introduced in 2002 to expand coverage to those who were uncovered—the poor and those in the informal sector.

Table 2: Characteristics of the three insurance schemes

	CSMBS	SHI	UCS
Inception	1978	1991	2002
Population coverage (%)	7.0	18.2	74.5
Beneficiaries (in millions)	4.7	12.4	51.0
Source of finance and financial supporters/ institutional governance mechanism	Tax-based and non-contributory. Comptroller General's Department, Ministry of Finance.	Tripartite contribution from employee, employer, and government. SSO, Ministry of Labour.	Tax-based and non-contributory. NHSO (independent public agency).
Budgeting	Open-ended.	Closed-ended.	Closed-ended.
Provider choice	Free choice of public Providers; some services, especially emergency and elective surgeries, are also given by the private providers.	Annual choice of public and private hospitals (more than 100 beds) as main providers.	Annual choice of mostly public primary care providers through a referral system.
Benefit package	Comprehensive, excluding P&P services.	Comprehensive, including some specific prevention services.	Comprehensive, including extensive P&P services
Payment mechanism	OP: Fee-for-service IP: DRG without a budget Ceiling.	Capitation with DRG for some inpatient care.	OP: Capitation IP: Global budget & DRG. There are some fixed fee schedules to reduce providers' risks and promote access.

Source: *Thaiprayoon and Wibulpolprasert (2017); Tangcharoensathien et al. (2018).*

All three schemes have comprehensive benefit packages that includes outpatient and inpatient services, and essential medicines, as listed by the government. The packages also include some high-cost interventions with no co-payment necessary at the point of delivery of these services.

The CSMBS is completely tax-based, and works on a fee-for-service reimbursement model in which patients are reimbursed for payments made towards outpatient services; inpatient services come under the DRG payment model, in which hospitals are reimbursed. This public insurance scheme is tax funded and has no budget ceiling. Hospitals therefore have incentives to make profits on medicines and diagnostics. This model causes high expenditure, which is shouldered by the government; expenditure under the CSMBS is four times higher than that under the UCS (Tangcharoensathien et al., 2019).

SHI has adopted a capitation model for outpatient and inpatient services, and accordingly contracts public and private hospitals. Hence, there is a budget ceiling. SHI members have to choose and register with their preferred contracted hospital annually; they have the flexibility to shift to another contracted hospital once a year. This scheme has been effective for cost containment, unlike the CSMBS. The capitation is adjusted annually based on utilisation rates and the costs of medical products, technologies, and medicines.

The UCS improved on the CSMBS and SHI when it was launched in 2002. For outpatient services, the UCS adopted a capitation model and, for inpatient services, it utilised a DRG model with a global budget. One of the main policy objectives of the UCS was to create an efficient system and contain costs. This led to a purchaser–provider split, in which the NHSO became the sole purchaser for the UCS. Another objective was to expand benefits and improve financial protection for all to ensure access. For this the NHSO applied strategic purchasing model to develop benefit packages and used different provider payment methods. Initially the scheme necessitated a contribution of THB 30 from enrollees; this fee was terminated in 2006 and the scheme made completely tax-based.

CUPs oversee financing, human resources, and the provision of diagnostic and other treatments in PCUs, and where necessary arrange for patient referrals to the higher facilities. Funds are channelled from the regional NHSO via the PHO to CUPs, which further channel the money to PCUs on the basis of registered beneficiaries (Kitreerawutiwong et al., 2017). Further, every CUP receives support for P&P activities from the UCS fund. In addition, every CUP has a co-funding arrangement with the local government for P&P activities, rehabilitation, and public health; the local government may contribute, depending on its fiscal capacity (Blecher et al., 2016).

The NHSO transfers additional funds (around THB 40 per capita) to the Local Health Promotion Fund (LHPF) at the sub-district level. The funds are used to act on local health priorities.

Funding for preventive and promotive services

The funding for ThaiHealth comes from a surcharge of around 2% on goods like tobacco and alcohol. The money is pooled in an independent public fund (Watabe et al., 2017). The budget for ThaiHealth went up more than 150% from just under US\$ 50 million in 2001 to around US\$ 132 million in 2017. However, there have been concerns about transparency in the utilisation of the funds, with politicians using them for personal benefit. Subsequently, laws have been implemented to ensure strict adherence to policies (Watabe et al., 2017).

With the advent of the UCS in 2002, P&P services were transferred to and funded under the UCS and managed by the NHSO. Under the UCS, these services are also funded by capitation. For certain services with low demand, a fee-for-service model is used; with this model, payment is dependent on the number of services provided. Every year, a lump sum per capita is transferred by the MOPH for P&P services under the UCS. However, there are some difficulties associated with securing funding for P&P services from the government due to limited outcome-based evidence derived from the P&P services. Hence the allocation for P&P is typically limited to only 10–15% of the UCS budget (Watabe et al., 2017).

Apart from the NHSO, the MOPH is a key player in developing P&P health policies and providing services from the national to sub-district level. Funding for the MOPH comes from general taxes (Watabe et al., 2017).

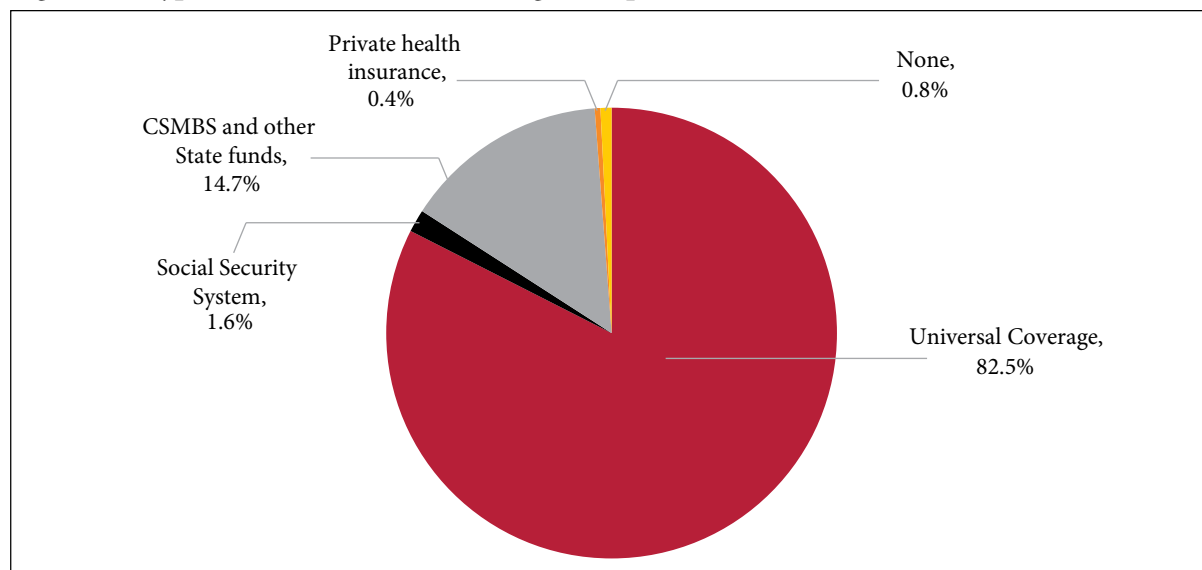
At the local government level there is a sub-district fund for P&P services (WHO, 2010). The NHSO earmarks THB 37.5 per capita for P&P activities, and local governments make contributions on a voluntary basis, depending on their fiscal capacities (WHO, 2010). The P&P fund at the sub-district level is managed by a committee of local government representatives, health workers, and local leaders.

Financing healthcare for older persons

The UCS funds community-level LTC services—0.5% of its budget is dedicated to these services (Glinskaya et al., 2021). The aging population of Thailand has increased the demand for healthcare. While the UCS budget has grown faster than the annual GDP, it has also been under tremendous pressure to meet the growing demand. This mismatch between resources and demand may directly impact the sustainability of Thailand's health system (Rattanavipapong et al., 2021). According to the

Thailand Development Research Institute, a prominent think tank based in Bangkok, the country's aging society can push healthcare costs up to THB 1.4 trillion by 2030 (TDRI, 2018). Inthawong et al. (2019) indicate that the healthcare costs due to cardiovascular diseases in the population above 45 years of age accounted for more than 80% of the total healthcare costs incurred for cardiovascular diseases. Figure 19 shows the coverage of older persons under various health schemes.

Figure 19: Type of health insurance among older persons (2017)



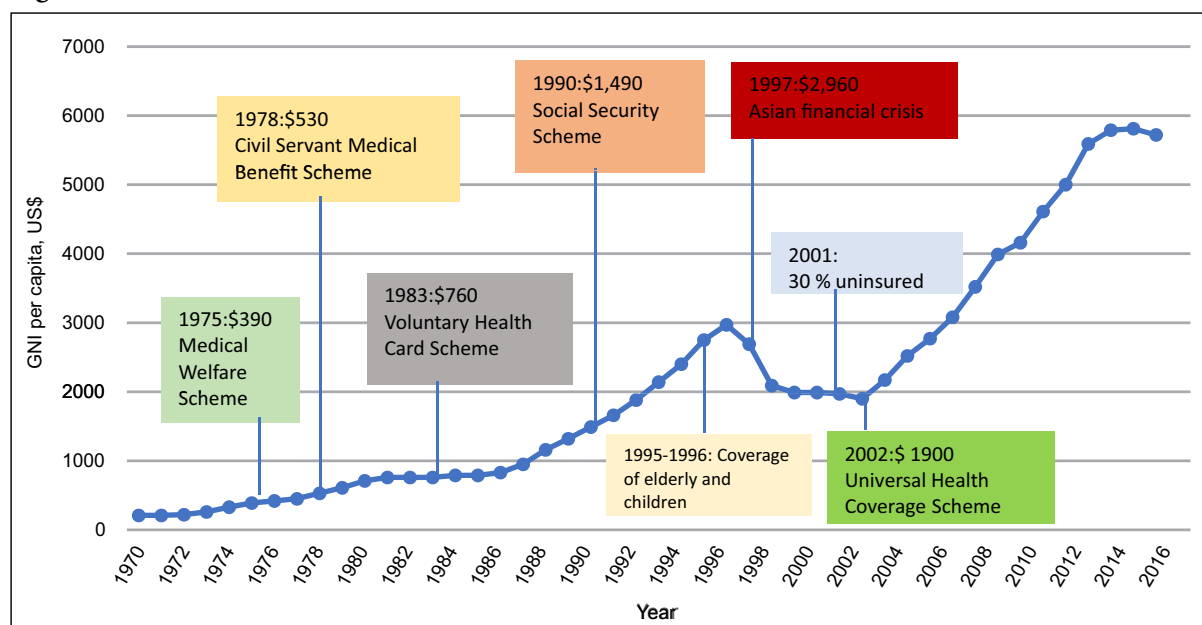
Source: Glinskaya et al. (2021).

3.3.3. Achievements and challenges

Financial reforms and the politics of UHC

Thailand's historical development towards providing universal access to healthcare is a lesson for low- to middle-income countries across the globe (Figure 20).

Figure 20: Timeline of insurance schemes



Source: Thaiprayoon and Wibulpolprasert (2017).

Before 2002, there were four insurance schemes in Thailand, which left 30% of the population without coverage. The low-income Medical Welfare Scheme was initiated in 1975 to provide free medical care to poor and vulnerable people. Means testing was conducted to identify beneficiaries from the population for this scheme, but many poor people were left out in this process and several non-poor people enrolled. This scheme was extended to include older people, disabled and children below 12 years in later years. In the mid-1980s, a few policy elites in the MOPH started working towards formulating plans for UHC. These were former students who were part of the Rural Doctors' Society that had been operating in rural areas since the mid-1970s. (Thaiprayoon & Wibulpolprasert, 2017; Tangcharoensathien et al., 2018).

The CSMBS was introduced in 1978 for government employees and their dependents. It was followed by the voluntary health card scheme in 1983, which had an annual premium of THB 500. The benefits of the health card scheme were similar to those of the medical welfare scheme. This led to adverse selection as it was mostly people who were chronically ill who enrolled. In order to increase enrolment, the government made it a publicly subsidised scheme by contributing 50% of the premium in 1994. Still, the scheme was not financially viable as expenditure exceeded revenue.

The SHI was introduced for private employees in 1991. With the Asian financial crisis in 1997 and the political and economic instability thereafter, the democratic government Thai Rak Thai Party mandated UHC. The Rural Doctors' Society, which had invested in building rural health infrastructure, supported the government and made UHC the centre of the political campaign. Around this time, 25% of the population was still uncovered, and contributory voluntary health insurance for workers in the informal sector did not have many takers. Moreover, OOPe still accounted for about 34% of health expenditure. There were many opinions from different stakeholders about whether the health system should be tax-based.

UHC was a promise made by the government, which was obligated to deliver once they won the elections. Civil society participation was integral to the push for it. UHC was designed to be wholly funded through general taxation, and the National Health Act of 2002 consolidated the promise. Interestingly, healthcare providers and the medical community were not opposed to this reform. Majority of MOPH personnel were physician bureaucrats who had practical and theoretical expertise in healthcare. They provided evidence-based knowledge necessary for advancing the UHC reform (Kuhonta, 2017).

But there were issues surrounding the budget and the purchaser-provider split, including tensions between the MOPH and the to-be-formed NHSO. Earlier the MOPH had control over the budget and provisioning through programmes. With the 2002 reforms, budget control shifted to the NHSO (except for capital outlays); the MOPH still managed provisioning and had regulatory functions. The increased resources from the government made this transition easier, as facilities started to receive more funding than before (Tangcharoensathien et al., 2019).

The government adopted a per-capita budget based on demand, and terminated supply-side financing. The per-capita budget was calculated at THB 1,202, an aggregate of the related unit cost of services and quantity of services provided as measured by utilisation rates. Based on this, the budget for 2001 was THB 56.5 billion, which was THB 30 billion more than the earlier ones. This was decided after deliberations by multiple stakeholders, among them the Ministry of Finance. Hence, the process was transparent.

The Thai experience with health financing is a lesson in providing just and equitable financial protection. The basis for financing UHC was already created given that health provisioning was in place. With the reforms in 2001, the supply-based budget was changed to a demand-based one, centred on the needs of the population. This was done to ensure financial equity. The extensive process of determining the budget for the UCS is based on the needs of the population. It involves the

participation of several stakeholders who must come to a consensus on the capitation budget. While the UCS covers majority of the population, there is little harmony between the three prominent schemes. There is a lack of political will to merge them, as CSMBS benefits and expenditure are excessive.

Today Thai people are able to access even highly unaffordable services, as 98% of health facilities are covered under the UCS. When the UCS was established in 2002, everyone enrolled had to pay a small fee of THB 30. This fee was eliminated by 2006, and government subsidies completely lowered the OOPE. Table 3 shows the financial protection extended to the population over the last decade.

Table 3: Percentage of the population covered according to the type of health insurance (2011–2021)

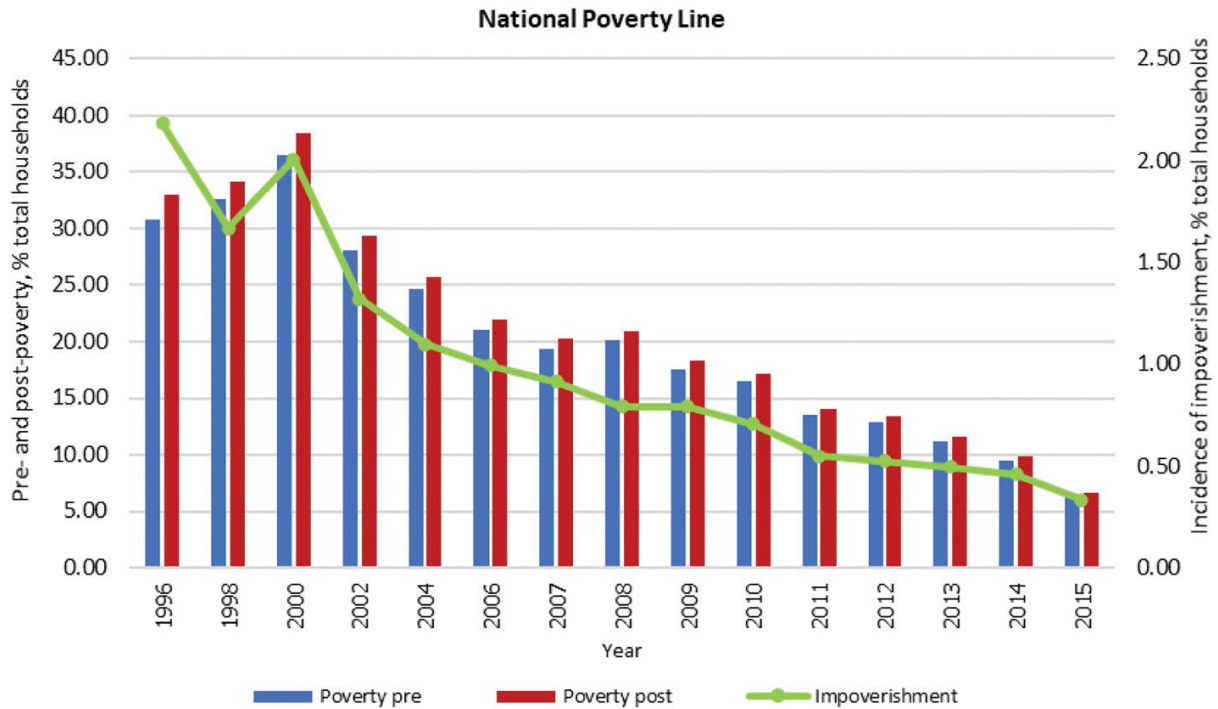
Type of health insurance	2011 (population: 67.5 million)	2013	2015	2017	2019	2021 (population: 68.2 million)
Have no health insurance	1.6	1.6	1.3	0.8	0.6	0.7
Have health insurance	98.1	98.3	98.5	99.2	99.3	99.3
UCS	77.7	74.4	74.2	75.7	75.9	74.5
SHI	11.3	15.4	16.2	17.2	17.8	18.2
CSMBS	8.6	8.6	7.4	7.1	6.6	7.0
State enterprise	–	–	0.8	1.0	0.7	0.7
Independent agency of the state	–	–	0.2	0.1	0.1	0.04
Local government	–	–	0.2	0.5	0.5	0.3
Private health insurance	4.1	5.3	6.6	7.1	7.3	6.3
Health insurance covered by employer	0.5	0.7	0.9	1.7	1.6	6.3
Others	0.5	0.5	0.9	1.0	1.2	1.1
Unknown	0.3	0.1	0.2	0.04	0.07	–
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Survey on Health and Welfare, National Statistical Office, Ministry of Digital Economy and Society (2011/2013/2015/2017/2019/2021).

Reducing impoverishment and catastrophic health expenditure

Overall, there has been a significant reduction in impoverishment against the national poverty line. The incidence of poverty that was measured as the percentage of households living below poverty line after spending on health care, increased from 32.9% in 1996 to 38.5% in 2000. But after 2002, poverty dramatically decreased to 6.6% in 2015. Impoverishment due to spending on health care also reduced from 1.3% in 2002 to 0.3% in 2015 (Tangcharoensathien et al., 2020).

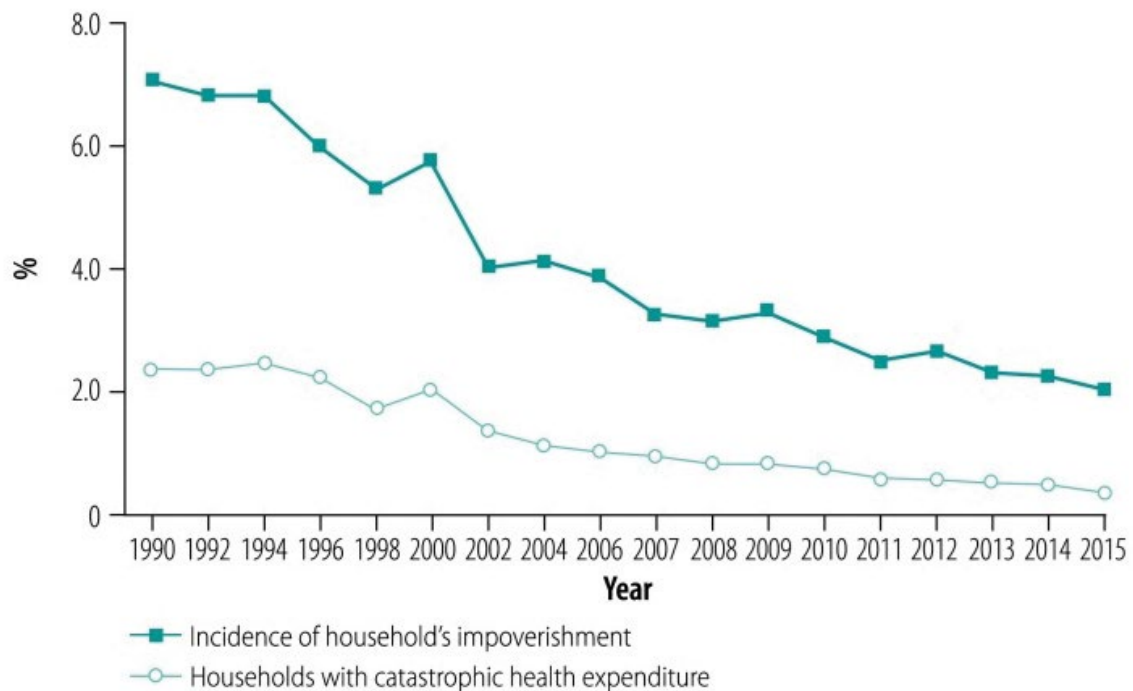
Figure 21: Incidence of impoverished households using national poverty line (percentage of total)



Source: Tangcharoensathien et al., (2020)

The incidence of catastrophic health expenditure (CHE) has drastically decreased (Figure 22); this can be directly attributed to the UHC provided to citizens. The incidence of CHE dropped from 6% in 1996 to 2% in 2015, when calculated as health expenditure more than 10% of household income (Tangcharoensathien et al., 2020).

Figure 22: Catastrophic health expenditure (1990–2015)



Source: Tangcharoensathien et al., (2020).

Accountability mechanisms

The UCS system has inbuilt accountability and monitoring mechanisms, which have been institutionalised. A positive of this financing design is that there is no co-payment expected of users. Extra billing is prohibited, and providers and patients are both informed of this. Unlike the fee-for-service model, a closed-end budget discourages unnecessary services from providers. The NHSO monitors a helpline which patients can call to report extra billing.

The capitation budget under the UCS includes the full cost of services—salaries, materials, and capital depreciation. All this is paid by the NHSO to government health facilities. The NHSO transfers the salary component to the MOPH. Capital budgets and expenditure are undertaken by the MOPH. This way, there are clear frameworks for the flow of funds, ensuring smooth functioning of the system.

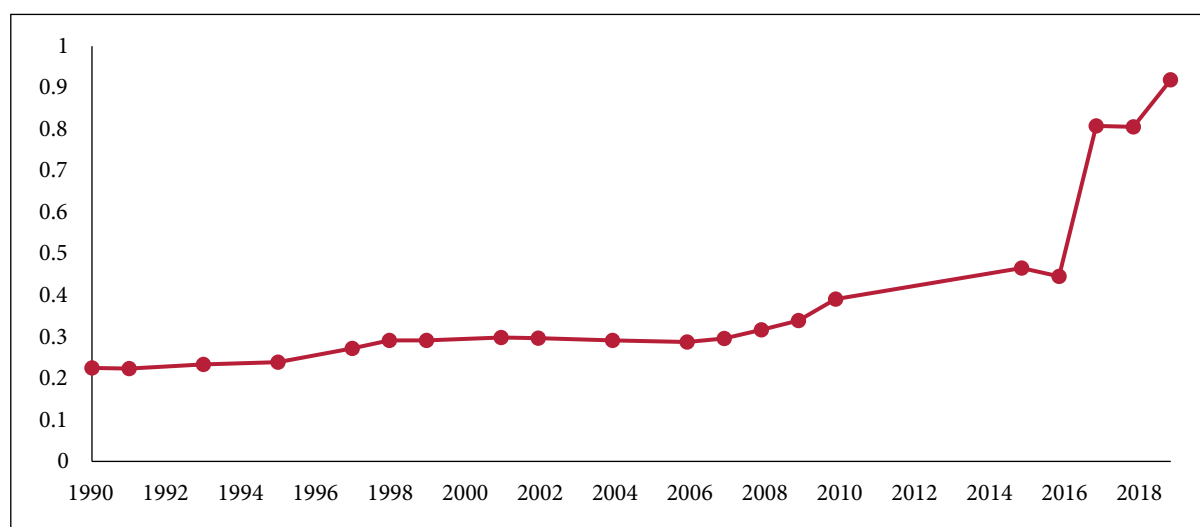
Strategic purchasing by the NHSO has created tensions among other actors. Capitation and DRG-based payments under the global budget were not supported by all providers, such as pharmaceutical companies and hospitals, who preferred fee-for-service payments, as under that model they could charge more for diagnostics and non-essential medicines. Tactics such as false reporting, used to increase payments for inpatient care, were stringently kept in check by the NHSO through audits, and required reimbursements for over-claimed amounts. Further, the NHSO's monopolistic bargaining strategy for pharmaceutical products was unpopular in hospitals, which would have benefited from purchasing their own medicines and medical devices. The pharmaceutical companies were unable to make desired profits by selling directly to the hospitals. Recently, however, the Auditor General Office stated that the NHSO did not have a legal mandate to exercise purchasing power (Tangcharoensathien et al., 2018).

3.4. Human resources

3.4.1. Distribution and density of health personnel

Thailand's main health personnel are doctors, nurses, midwives, dentists, and pharmacists. Despite a marked growth in the health workforce, maldistribution of it is a lingering problem. A health centre is typically staffed by 3–5 nurses and paramedics; a district hospital, meanwhile, has 3–4 general practitioners (GPs), 30 nurses, 2–3 pharmacists, and administrative staff.

Figure 23: Number of physicians per 1,000 people

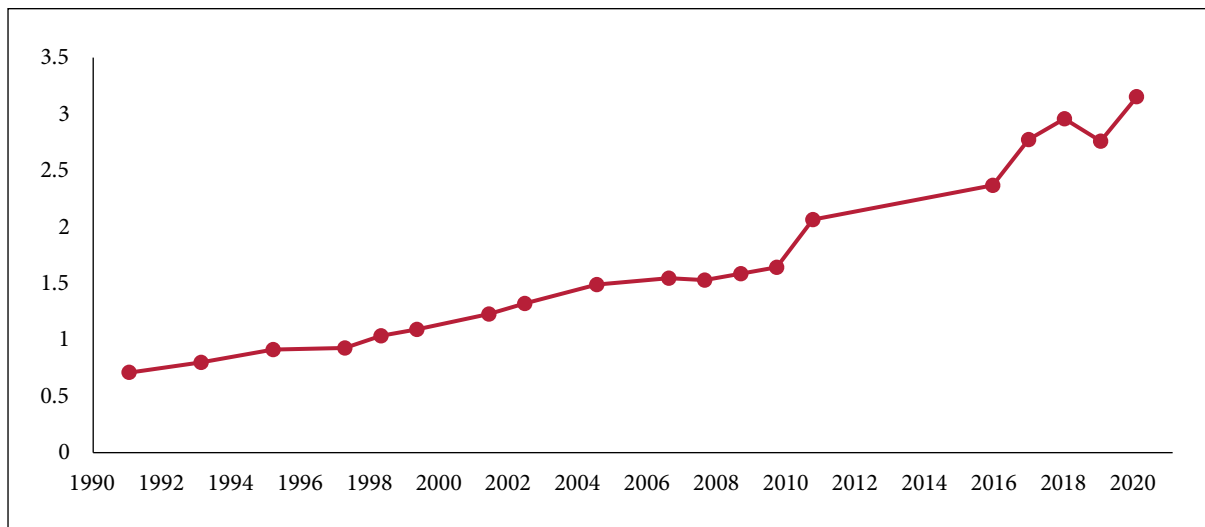


Source: The World Bank (2019).

The number of physicians in Thailand has risen rapidly since 2010. The number grew from 8,000 in 1985 to over 40,000 in 2013 (Witthayapipopsakul et al., 2019). The ratio of physicians to 1,000 people also improved from around 0.2 in the 1990s to 0.9 in 2019. However, this ratio in Thailand in 2019 was still only around half the world average of 1.8 (The World Bank, 2019).

The number of nurses and midwives per 1,000 people has also sharply risen from 0.7 in 1991 to 3.2 in 2019. This 2019 ratio is more comparable to the world average of 4 (The World Bank, 2019). Thailand had 2.04 health professionals per 1,000 people working in public facilities. The establishment of medical and nursing schools has contributed to a considerable rise in the country's capacity to produce physicians and nurses (Witthayapipopsakul et al., 2019).

Figure 24: Number of nurses and midwives per 1,000 people

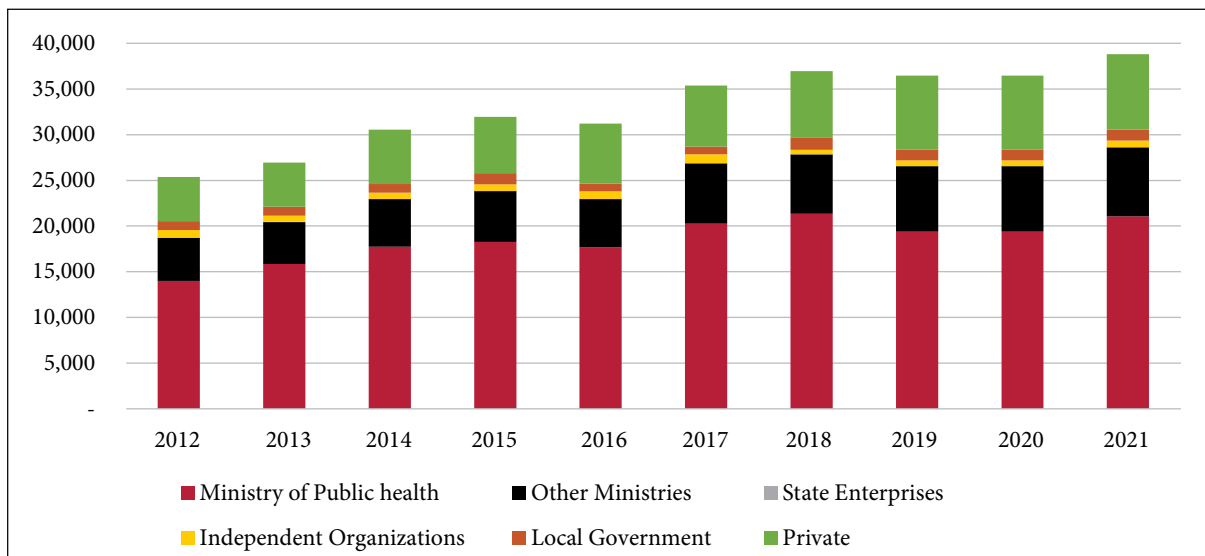


Source: The World Bank (2020).

Doctors

As of 2021, there were 38,820 doctors in Thailand. Most medical doctors are civil servants and the majority of them affiliated to the MOPH. Only around 8,276 (21%) are associated with private enterprises (NSO, 2021). There are three types of doctors: GPs, FPs, and specialists.

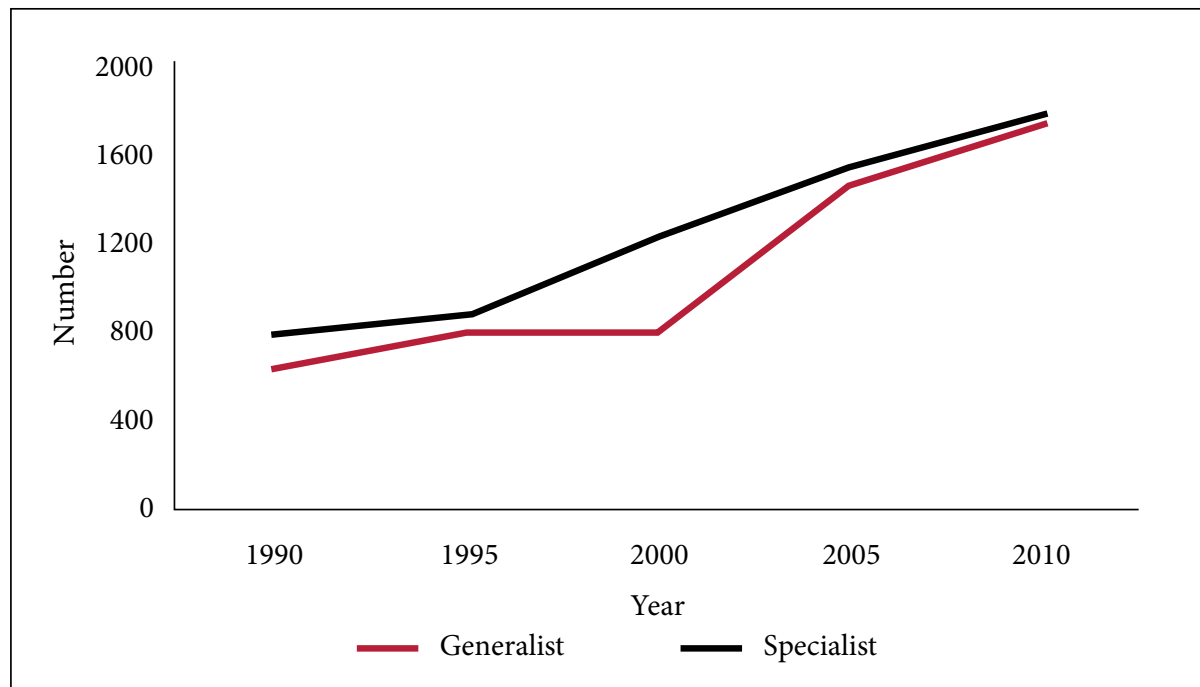
Figure 25: Number of doctors by type of administration (2012–2021)



Source: NSO, Thailand, 2021

While the majority of doctors are GPs who practice in the district hospitals, medical graduates are increasingly advancing towards specialist training. Specialist doctors practice in general and regional hospitals. Dual practice by public sector doctors is permitted and no permission is required. Dual practice is regulated through disciplinary mechanisms (WHO, 2015).

Figure 26: Trends of production of general and specialist doctors (1990–2010)



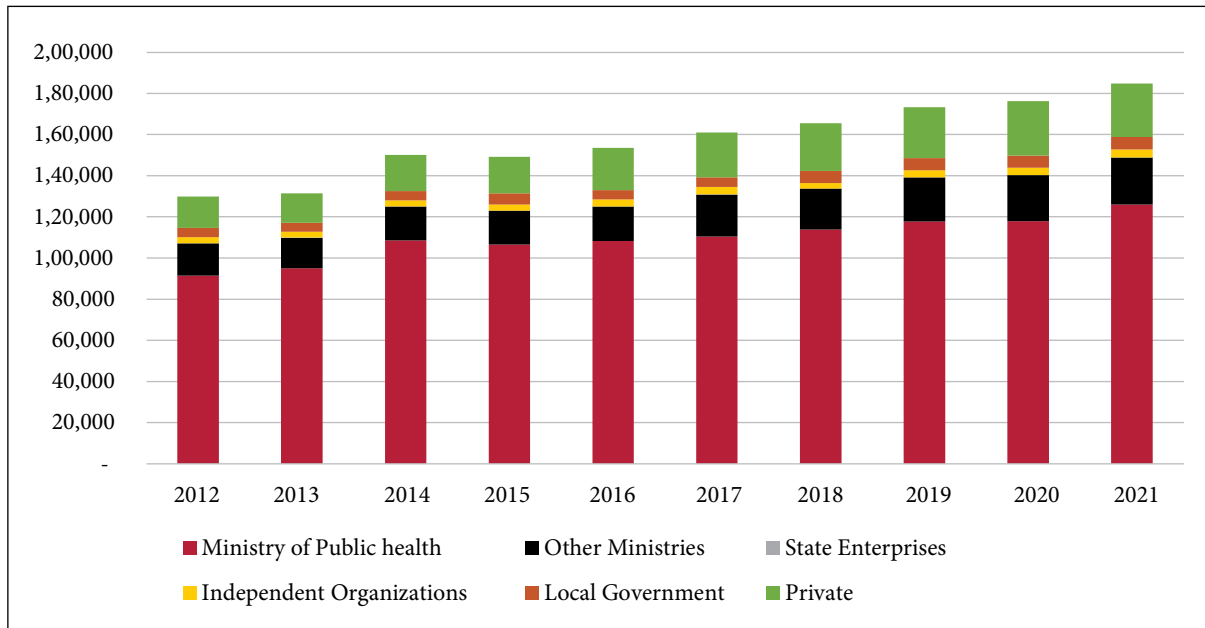
Source: WHO (2015).

A medical doctor's practice is regulated by the Medical Council of Thailand, and their license is lifelong. To apply for specialist training, three years of rural practice is mandatory. However, there are exceptions in some disciplines, for instance, psychiatry, forensic medicine, and pathology, due to the scarcity of specialists in these fields (WHO, 2015). There are 11 levels of position classification (PC) for doctors; new medical graduates begin their careers at level 4 (WHO, 2015). To advance to a higher PC level, they have to undergo an evaluation and receive approval from their hospital directors. If doctors serve for longer periods in rural areas they move to higher levels of PC which is equivalent to a provincial CMO or deputy director general of the MOPH (WHO, 2015).

Nurses

As of 2021, there were 184,840 nurses in Thailand. The majority of them were affiliated with the MOPH (around 125,937); around 26,030 were affiliated with private healthcare enterprises (NSO, Thailand). Nurses make up the second highest proportion of healthcare professionals, after doctors. The regional distribution of nurses is fairly even, but there are still fewer in rural areas. Dual practice in the private sector is allowed for nurses (WHO, 2015).

Figure 27: Number of professional nurses by type of administration



Source: NSO, Thailand (2021)

The nursing practice in Thailand is regulated by the Thailand Nursing and Midwifery Council. All nursing graduates must undergo a licensing examination and renew their licenses every five years (Tangcharoensathien et al., 2018). During the period of rapid development of district hospitals, Thailand introduced a new policy for nurses. After their mandatory rural services, nurses generally undergo two years of post-service training following which they are upgraded to professional nurses (WHO, 2015).

There are three types of nurses: general nurses, clinical nurse specialists, and advanced practice nurses. General nurses are trained for four years and hold a bachelor's degree. Nurses with two years of experience can advance to clinical nurse specialists after one year of training in a specialist discipline (WHO, 2015). An advanced practice nurse gets certified at the post-graduate level and works in one of 10 specialist roles including maternal and child health, paediatrics, community care, care for older people and so on (Rakhab et al., 2021).

A public health sector nurse with 6 years of experience is appointed to levels 3–5; they are further promoted to professional levels 6–7 when they have between 6–10 years of experience. After this, few registered nurses become senior professionals (level 8), and an even smaller number can be promoted to chief nursing officers (level 9) at regional or general hospitals (WHO, 2015).

3.4.2. Reforms in human resources

Between 1960 and 1975, about 25% of physicians who were trained in Thailand emigrated, primarily to the US and the United Kingdom (UK). This created a shortage of doctors in the country. In 1972, Thailand mandated three years of work in rural areas for nursing and medical graduates. Subsequently, dentists and pharmacists were also included in this policy. The graduates were offered financial incentives, housing benefits, and awards (Tangcharoensathien et al., 2018).

To further increase human resources in healthcare, in 1995, the government implemented the Collaborative Project to Increase Production of Rural Doctors (CPIRD) to recruit high school students from rural districts. The idea was that after they finished training, they would work in

their respective districts (Putthasri et al., 2013). To fill the gaps in remote areas, in 2005, Thailand introduced the One District One Doctor (ODOD) programme. The government began awarding full scholarships to medical students for the entire six-year training period, aiming to place fresh graduates in these remote areas. Students in both programmes undergo a comprehensive exam and a national license exam, to obtain a medical license. A penalty is imposed in both cases in case of non-compliance (Nithiapinyasakul et al., 2016). These projects had a significant impact on the production of medical doctors. However, there are still challenges associated with retention, due to doctors leaving after serving their mandatory tenure, and, as such, the long-term success of the projects.

In 1999, Thailand launched the family medicine (FM) programme, denoting a separate medical specialist, as a means to deliver first-contact care to the population. These were the FPs. Initially, new medical graduates were assigned to district hospitals as GPs. They had primary medical qualifications but had not chosen a speciality during their residency. They were required to serve a three-year period in various parts of the country and had to undergo on-the-job training. However, this programme was not successful among the majority of GPs, who preferred going back to teaching hospitals for further training, due to low recognition, modest pay, and a heavy workload (Intralawan et al., 2020). FM was framed as a specialisation, and FPs were also trained in traditional Thai medicine. However, the programme had bottlenecks. For instance, there was confusion about the distinction between GPs and FPs. Moreover, FM specialists received less recognition, despite the certification being equivalent to any other specialisation. (Wiwanitkit, 2016; Intralawan et al., 2020).

In addition to these reforms, the MOPH established public health schools that offered two-year diploma courses to skilled paramedical personnel in fields like dentistry, public health, and pharmacy. These schools were crucial in supplying professionals for the rapid expansion of DHSs under the UCS (Tangcharoensathien et al., 2018).

The Community Health Volunteer (CHV) Scheme has existed since the 1960s. Its workers provide preventive, promotive, and basic curative services. The number of volunteers has increased to 1 million; they have successfully implemented several disease prevention programmes.

3.4.3. Achievements and challenges

Thailand has designed and implemented policies focused on human resources in health and has grown the number of personnel across its provinces. The reforms have had a positive impact, with the number of doctors and nurses increasing considerably over the last three decades.

Although the shortfalls have reduced, the distribution of doctors, nurses, dentists, and pharmacists across Thailand is still unequal. There is significant variance between regions in the number of medical personnel per person. The difference is especially stark among medical professionals like doctors, dentists, and other specialists. However, these disparities have been reducing in recent years (Thai Health Profile, MOPH, 2019).

Figure 28: Number of population to single health personnel by type (2019)

	Doctor	Dentist	Pharmacist	Nurse
Bangkok	576	5,376	1,925	163
Central	1,737	8,019	4,096	405
North	1,914	7,426	4,815	419
Northeast	2,629	11,186	6,409	521
South	2,032	7,681	4,911	387
Country's overall	1,700	8,275	4,424	384

Source: Thai Health Project (2021).

The central region of Thailand, including Bangkok, has the best doctor to population ratio. Meanwhile, the north-east region has a relatively low doctor to population ratio, indicating that urban areas are better staffed (Thai Health Project, 2021). In 2015, 94% of nurses and midwives combined were located in urban areas. There is no recent data on the distribution of medical practitioners across rural and urban areas, although 2010 data shows that 82.07% of practitioners were in urban areas (IHPP, 2016). A study by Pagaiya et al. (2019) predicts that by 2026 there will be a sufficient number of key health professionals, except for nurses, of whom there will be a severe shortage.

4. Discussion

Thailand was the most inequitable country in the Southeast Asia region in the 1990s, with immense regional disparities in human development. Since the early 2000s, Thailand has made significant leaps, improving access to public services for its population. It has made gains, especially in health outcomes, by reducing OOPE, impoverishment due to the cost of healthcare, and CHE. Thailand is one few countries that has achieved UHC with a relatively low GDP per capita. The government acknowledges that health is an entitlement for all people; this intent has been clear since the reforms in 2001. Health insurance coverage has also been pro-poor, further promoting equity.

The health outcomes in Table 4 show that Thailand has outperformed other upper-middle income countries, even though its burden of communicable diseases is still higher than that of other countries.

The phases of reform can be clearly demarcated as pre- and post-2001; they are summarised in Table 5.

Table 4: Select health outcomes over time in Thailand (compared to SDG targets, upper-middle income countries, high-income countries, and India)

Indicators	1960	1980	1990	1995	2000	2005	2010	2015	2020	SDG target	Upper-middle income countries (2020)	High-income countries (2020)	India (2020)
Mortality rate, neonatal (per 1,000 live births)	57	31	21	16	12	10	8	6	5	<12	6	3	20
Mortality rate, infant (per 1,000 live births)	101	47	30	24	19	15	12	9	7	–	9	4	27
Mortality rate, under five (per 1,000)	147	61	37	28	22	17	14	11	9	<25	11	5	33
Prevalence of stunting (% of children under five)	NA	NA	24.6 (1987)	18.1	NA	15.7	16.4 (2012)	10.5 (2016)	13.4 (2019)	<40% of 2012 level	NA	NA	35
Maternal mortality ratio (modelled estimate, per 100,000 live births)	NA	NA	NA	NA	43	43	42	38	37 (2017)	<70	41 (2017)	11 (2017)	145
Mortality due to communicable diseases and maternal, prenatal, and nutrition conditions (% of total deaths)	NA	NA	NA	NA	24	NA	16	16	14 (2019)	–	7	7	24 (2019)
Mortality from NCDs (% of total deaths)	NA	NA	NA	NA	63	NA	NA	71	77 (2019)	–	88	85	66 (2019)
Life expectancy at birth (total years)	55	64	70	70	71	72	74	76	77	–	76	80	70
Fertility rate (total births per woman)	6.1	3.4	2.1	1.9	1.7	1.6	1.5	1.5	1.5	–	1.8	1.6	2.2
Low-birthweight babies (% of births)	NA	NA	NA	NA	14	11	11	11	11	<30% of 2012 level ^s	7 (2015)	8 (2015)	NA
Incidence of TB (per 100,000 people)					241	224	181	163	150	..	67	9	188

Source: The World Bank (2020).

Table 5: Summary of the phases of health reforms

Phases of reform	Governance	Provisioning	Financing	Human resources
Pre-2001	<p>Financing and provisioning of existing welfare and voluntary health insurance schemes was by the MOPH.</p> <p>There was a shift from centralisation towards decentralisation in 1999.</p>	<p>Developing rural health infrastructure and deploying health personnel to rural districts started in the 1970s.</p>	<p>Supply-side budget Allocation annually and funding for demand-side medical welfare and voluntary insurance schemes.</p> <p>Budget allocation was at the discretion of the Finance Ministry.</p> <p>Only 70% (44.5 out of 63.5 million) people in the Thai population were covered by many fragmented health schemes.</p>	<p>Reforms for increasing human resources in health started in the 1970s.</p> <p>The three-year mandatory rural programme for medical doctors; the full scholarship programme for studying medicine; the FM programme; and the CHV programme were initiated in the 1960s.</p>
Post-2001 UCS	<p>The NHSO was created and the role of the purchaser and provider split. The NHSO has the financial power while the MOPH oversees provisioning and has regulatory powers.</p> <p>Once the NHSO started functioning, there was a recentralisation of the governance.</p>	<p>A PHC system was created; it was governed through the district to implement UCS.</p> <p>Comprehensive benefit packages were introduced for all three schemes.</p>	<p>Full subsidies for delivering a comprehensive package.</p> <p>Evidence-based budget estimates were based on service utilisation rates and unit costs.</p> <p>A multi-stakeholder financing subcommittee ensured transparency.</p> <p>More than 99% of the Thai population was covered by the three main public health schemes. The new scheme covered the rest that was the majority (75%), about 51.7 million people.</p>	<p>The reforms that were implemented before 2001 started yielding results. These reforms continued after 2001.</p>

Source: Tangcharoensathien et al (2018, 2019, 2020)

The success of UHC in Thailand has depended on several factors. Changes to provisioning and human resources had started much before the financial reforms of 2001. The already accessible primary-level services, especially in rural areas, became the backbone of the 2001 reforms. Advances in provisioning and financing have helped Thailand achieve UHC.

Attaining UHC goals has been achieved through dialogue with several stakeholders. Involving multiple actors and stakeholders in the design of health systems was critical to the success of UHC in Thailand; indeed, there is citizen representation on every health board.

The recognition that all people are entitled to health coverage and financial protection was key to implementing UHC. In that regard, if an SHI member loses their job, they are automatically transferred to the UCS. Dependents of CSMBS members, especially children of members who reach the age of 20 years, automatically get transferred to the UCS, or SHI if they are employed in the private sector. This inbuilt design ensures that there are no gaps in coverage.

Negative outcomes of the CSMBS prompted financial reforms for the UCS. The total health budget under the UCS is a closed-end one, and is calculated as an aggregate of the per-capita cost, which is based on the services utilised. Redesigning the budget in this way helped to contain costs. To prevent the under-provision of services, some high-cost interventions were unbundled from closed-end payment models and paid for following an agreed fee schedule. This demand-side financing is based on the health needs of the people, which is age-adjusted. As such, unmet healthcare need has reduced significantly. The reduction of OOPE has also been equitable, and the poor financially protected under the UCS.

In recent years, strategic purchasing has been a key policy instrument in achieving the UHC goals of better access and financial protection. The UCS initiated a purchaser-provider split, where the NHSO, as purchaser, enforces accountability from public and private providers. A comprehensive benefit package resulted in effective financial risk protection, as reflected in the low incidence of CHE and impoverished households. The NHSO contracted the DHS network to provide outpatient, health promotion, and disease prevention services in respective districts.

An important aspect of the design of the health system in Thailand is the institutionalisation of accountability and monitoring mechanisms. Accountability is built into the implementation of services so that citizens are aware of their entitlements. To monitor the coverage of the population, benefit packages, and financial protection, key resources used include national surveys, health facility data, disease registries, and research. Monitoring via these data sources also helps the government with tracking the progress of health priorities. Thailand has a robust information system and supportive infrastructure that routinely collects data. Such a system could be useful to other low- and middle-income countries developing monitoring platforms (Witthayapipopsakul et al., 2019). For this centralised healthcare system, the MOPH is responsible for collecting and pooling health data. All facilities are mandated to submit reports and information to the MOPH. However, there is a lack of commitment in this respect from the private sector.

Table 6: Lessons from major health sector reforms

Priority reform areas	Features	Outcomes	Challenges
Governance structures	<p>Domestic government health expenditure, political commitment, and a tax-financed scheme, which promoted greater equity, were essential to achieving UHC.</p> <p>The NHSO, an autonomous agency created by the government to split the provider and purchaser in the delivery of health services, was created.</p> <p>Multi-stakeholder involvement and participatory governance in decision-making helped to reach a consensus.</p>	<p>Reforms resulted in recentralisation, as the NHSO had the financial power.</p> <p>Accountability in governance was institutionalised and hence effective due to representation from different sections and multi-stakeholder involvement.</p>	<p>The tensions between the NHSO and MOPH were prevalent due to the split between the provider and purchaser.</p>
Provisioning (PHC system)	<p>The DHS, which delivered PHC services, was developed. This included preventive, promotive, and curative services at the village, sub-district and district levels.</p>	<p>Accessibility and availability of services improved, especially for the poor population, indicating the equitable distribution of the population. Utilisation of both outpatient and inpatient services increased. This helped gatekeeping in the system.</p>	<p>Future growth in the private sector might be a challenge to regulate and monitor.</p>
UCS for UHC	<p>A shift from supply-side to demand-side budgeting and the use of evidence, secured adequate resources, promoted transparency, limited discretionary budget allocation, and improved accountability to citizens.</p> <p>Calculation of costs was done on a per capita basis, to include the cost of services, technology, and human resources.</p> <p>A comprehensive benefit package reduced OOPE and improved financial protection of the population.</p>	<p>OOPE has reduced significantly since the inception of the UCS.</p> <p>Impoverishment due to medical costs has decreased and CHE considerably reduced.</p>	<p>Negotiations with the private sector regarding billing and pricing was a challenge.</p>

<p>Human resources</p>	<p>Adequate production of doctors and nurses for rural and remote areas, and retention policies, took into account incentivisation and other career opportunities once the mandatory term of service in rural areas was completed.</p>	<p>The disparities in the distribution of personnel have narrowed.</p>	<p>Regional disparities in the distribution of health personnel in the population still existed.</p> <p>There is concern about shortfall of nurses in the future.</p> <p>Additionally, there was the challenge of personnel in the public sector moving to the private sector.</p>
-------------------------------	--	--	--

Source: Tangcharoensathien et al (2018, 2019, 2020)

While there have been many successes in the UHC model of Thailand, there are challenges associated with sustaining it over the next few decades. These challenges are linked to the country's aging population and increase in the incidence of chronic diseases. These issues will directly impact the cost of care. The growth of the private sector will also exacerbate the challenges of cost monitoring and pricing negotiations. The growing private sector and their nexus with the pharmaceutical companies will put demands on the government to suit their interests.

Thailand has been a successful experiment for the UHC model. Many countries have studied its structures of governance, provisioning, and financing. While Thailand's reforms and successes have occurred in the context of its national politics and commitment to a common goal, its approach to achieving a framework of equitable, comprehensive, and universal healthcare is relevant to countries across the globe.

References

- Asian Development Bank. (2020). *Aging Asia and the Pacific: Lessons from Thailand's Community Based Long Term Care Program*. ADB. Retrieved from: <https://www.adb.org/publications/thailand-long-term-care-older-persons>
- Aspalter, C., Pribadi, K. T., & Gauld, R. (Eds.). (2020). *Health Care Systems in Developing Countries in Asia* (1st ed.). Routledge.
- Balabanova, D., McKee, M. & Mills, A. (Eds.). (2011). *Good health at low cost 25 years on: What makes a successful health system?* London School of Hygiene & Tropical Medicine. <https://blogs.lshtm.ac.uk/ghlc/files/2011/10/GHLC-book.pdf>.
- Berman, P., Azhar, A., & Osborn, E. J. (2019). Towards universal health coverage: Governance and organisational change in ministries of health. *BMJ Global Health*, 4(5), e001735. <https://doi.org/10.1136/bmjgh-2019-001735>.
- Blecher, M., Pillay, A., Patcharanarumol, W., Panichkriangkrai, W., Tangcharoensathien, V., Teerawattananon, Y., Pannarunothai, S., et al.. (2016). Health financing lessons from Thailand for South Africa on the path towards universal health coverage. *South African Medical Journal*, 106(6), 533–534. <https://doi.org/10.7196/SAMJ.2016.v106i6.10953>.
- Capano, G., Howlett, M., & Ramesh, M. (2015). *Varieties of governance: Dynamics, strategies, capacities*. Palgrave Macmillan.
- Collingwood, J. (2022, January 4). Quality healthcare with easy access in Thailand. *ITIJ*. <https://www.itij.com/latest/long-read/quality-healthcare-easy-access-thailand>.
- Dulin, A. (2016). In pursuit of excellence: A comparison between the United States and Thai health systems and access to care. [Master's thesis, University of Pittsburgh].
- Foundation for International Health Policy Development Ministry of Public Health. (2021). Thai National Health Accounts, 2017-2019. International Health Policy Program Foundation, Ministry of Public Health. <http://ihppthaigov.net/>.
- Glinskaya, E., Walker, T., & Wanniarachchi, T. (2021). *Caring for Thailand's aging population*. The World Bank. <https://openknowledge.worldbank.org/handle/10986/35693>.
- Hanson, K., Brikci, N., Erlangga, D., Alebachew, A., de Allegri, M., Balabanova, D., Blecher, M., et al. (2022). The Lancet global health commission on financing primary healthcare: Putting people at the centre. *The Lancet Global Health*, 10(5), e715–e772. [https://doi.org/10.1016/S2214-109X\(22\)00005-5](https://doi.org/10.1016/S2214-109X(22)00005-5).
- Harris, J. & J.L. Maia (2022): Universal healthcare does not look the same everywhere: Divergent experiences with the private sector in Brazil and Thailand. *Global Public Health*, 17(9):1809-1826. doi: 10.1080/17441692.2021.1981973.
- Hughes, D., & Leethongdee, S. (2007). Universal coverage in the land of smiles: Lessons from Thailand's 30 baht health reforms. *Health Affairs*, 26(4), 999–1008. <https://doi.org/10.1377/hlthaff.26.4.999>.
- Institute for Health Metrics and Evaluation (IHME). GBD Compare. Seattle, WA: IHME, University of Washington, 2015. Available from <http://vizhub.healthdata.org/gbd-compare>.
- Intaranongpai, S., Hughes, D., & Leethongdee, S. (2012). The provincial health office as performance manager: Change in the local healthcare system after Thailand's universal coverage reforms. *The International Journal of Health Planning and Management*, 27(4), 308–326. <https://doi.org/10.1002/hpm.2113>.
- International Health Policy Program (IHPP). (2016). *Progress report: Strengthening human resources for health through transformative education and rural retention in Thailand*. HRDO. Retrieved from: https://hrdo.org/wp-content/uploads/2018/11/Thailand-progress-report_HRH-strengthening_printable-with-cover.pdf.

- International Labour Organization (ILO). (2008). Thailand: Universal health care coverage through pluralistic approaches. In https://www.ilo.org/secsoc/information-resources/publications-and-tools/Workingpapers/WCMS_SECSOC_6612/lang--en/index.htm.
- Inthawong, R., Khatib, K., Whitfield, M., Collins, K., Raheem, M., & Ismail, M. (2019). Healthcare and hospitalisation costs of cardiovascular disease (CVD) in Thailand. *Open Access Library Journal*, 6, e5320. <https://doi.org/10.4236/oalib.1105320>
- Intralawan, D., Morikawa, H. C., Morikawa, M. J., Porruan, R. (2020). Focusing on the assets in our challenges: Family medicine residency programme in Chiang Rai. *Thailand Family Medicine and Community Health* 8, e000500. <https://doi.org/10.1136/fmch-2020-000500>
- Kitreerawutiwong, N., Jordan, S., & Hughes, D. (2017). Facility type and primary care performance in sub-district health promotion hospitals in Northern Thailand. *PLOS ONE*, 12(3), e0174055. Retrieved from: <https://doi.org/10.1371/journal.pone.0174055>
- Koh, D. (2019, January 13). An overview of Thailand's healthcare sector. *Healthcare IT News*. Retrieved from: <https://www.healthcareitnews.com/news/asia/overview-thailand-s-healthcare-sector>
- Krassanairawiwong, T., Suvannit, C., Pongpirul, K., & Tungsanga, K. (2021). Roles of subdistrict health office personnel and village health volunteers in Thailand during the COVID-19 pandemic. *BMJ Case Reports*, 14, e244765. <https://doi.org/10.1136/bcr-2021-244765>
- Kuhonta, E. M. (2017). The Politics of Health Care Reform in Thailand, in Ilcheong Y. (ed.). *Towards Universal Health Care in Emerging Economies*, Springer, p. 91–118. doi:10.1057/978-1-137-53377-7_4.
- Legido-Quigley, H., & Asgari-Jirhandeh, N. (2018). *Resilient and people-centred health systems: Progress, challenges and future directions in Asia*. World Health Organization.
- look the same everywhere: Divergent experiences with the private sector in Brazil and Thailand, *Global Public Health*, DOI: 10.1080/17441692.2021.1981973
- Marshall, A. I., Kantamaturapoj, K., Kiewnoin, K., Chotchoungchatchai, S., Patcharanarumol, W., & Tangcharoensathien, V. (2021). Participatory and responsive governance in universal health coverage: An analysis of legislative provisions in Thailand. *BMJ Global Health*, 6, e004117. <https://doi.org/10.1136/bmjgh-2020-004117>.
- Marshall, A.I., W. Witthayapipopsakul, S. Chotchoungchatchai, W. Wangbanjongkun, V. Tangcharoensathien (2022). Contracting the Private Health Sector in Thailand's Universal Health Coverage. medRxiv 2022.06.27.22276979; doi: <https://doi.org/10.1101/2022.06.27.22276979>.
- Max Roser, Hannah Ritchie and Fiona Spooner (2021) - "Burden of disease". Published online at OurWorldInData.org. Retrieved from: '<https://ourworldindata.org/burden-of-disease>' [Online Resource]
- Ministry of Education Thailand. (2016). *Educational statistics 2016*. Retrieved from: www.mis.moe.go.th.
- Ministry of Public Health (MOPH). (2022). Thailand. http://www.amnathos.moph.go.th/file_news/amnathosTox4L2408256150416.pdf
- Morgan, R and Ensor, T (2016) The regulation of private hospitals in Asia. *International Journal of Health Planning and Management*, 31 (1). pp. 49-64. ISSN 0749-6753
- National Health Security Office (NHSO). (2011). *OP/IP individual program of ministry of public health and national health security office*. Nonthaburi, NHSO.
- NHSO. (2020). NHSO annual report, Fiscal Year 2020. National Health Security Office. <https://www.nhso.go.th>
- National Statistical Office, Ministry of Digital Economy and Society. (2020) *Statistical yearbook Thailand 2020*. Retrieved from: <http://service.nso.go.th/nso/nsopublish/pubs/e-book/SYB-2563/files/assets/basic-html/index.html#1>

- National Statistical Office. (2021). National Statistical Office, Thailand. <http://www.nso.go.th/sites/2014en/Pages/survey/Social/Health.aspx>
- National Statistical Office. Health and welfare survey .n.d. Available from: <http://www.nso.go.th/sites/2014en/Pages/Statistical%20Themes/Population-Society/Social%20Security/Health--Welfare.aspx>
- National Statistical Office. Health and welfare survey 2019. n.d. [cited 20 September 2021]. Available from: <http://www.nso.go.th/sites/2014en/Pages/Statistical%20Themes/Population-Society/Social%20Security/Health--Welfare.aspx>.
- Nitayarumphong, S. (1990). Evolution of primary healthcare in Thailand: What policies worked? *Health Policy and Planning*, 5(3), 246–254. <https://doi.org/10.1093/heapol/5.3.246>
- Nithiapinyasakul, A., Arora, R., & Chamnan, P. (2016). Impact of a 20-year collaborative approach to increasing the production of rural doctors in Thailand. *International Journal of Medical Education*, 7, 414–416. <https://doi.org/10.5116/ijme.582f.4d3b>
- Paek, S. C., Meemon, N., & Wan, T. T. (2016). Thailand's universal coverage scheme and its impact on health-seeking behavior. *SpringerPlus*, 5(1), 1952. <https://doi.org/10.1186/s40064-016-3665-4>.
- Pagaiya, N., Phanthunane, P., Bamrung, A., Noree, T., & Kongweerakul, K. (2019). Forecasting imbalances of human resources for health in the Thailand health service system: Application of a health demand method. *Human Resources for Health*, 17(4), <https://doi.org/10.1186/s12960-018-0336-2>.
- Piensriwatchara, E., & Patcharanarumol, W. (2017). *Universal health coverage: Thailand experience* [Presentation by IHPP Thailand]. The ASEAN-Japan Health Ministers Meeting on Universal Health Coverage (UHC) and Population Ageing, 15 July, Yokohama, Japan.
- Pongutta, S., Suphanchaimat, R., Patcharanarumol, W., & Tangcharoensathien, V. (2019). Lessons from the Thai health promotion foundation. *Bulletin of World Health Organization*, 97(3), 213–220, <https://doi.org/10.2471/BLT.18.220277>
- Poonsuk Ninkitsaranont. (2020). THAILAND INDUSTRY OUTLOOK 2020-22 PRIVATE HOSPITAL. Krungsri Research. https://www.krungsri.com/getmedia/41a3d87e-ba1e-421b-a8f2-50cabdf0a255/IO_Private_Hospital_200902_EN_EX.pdf.aspx
- Prasartkul, P., Thaweessit, S., & Chuanwan, S. (2018). Prospects and contexts of demographic transitions in Thailand. *Journal of Population and Social Studies*, 27(1). DOI: 1-22. 10.25133/JPSSv27n1.001.
- Putthasri, W., Suphanchaimat, R., Topothai, T., Wisaijohn, T., Thammatacharee, N., & Tangcharoensathien, V. (2013). Thailand special recruitment track of medical students: A series of annual cross-sectional surveys on the new graduates between 2010 and 2012. *Human Resources for Health*, 11(47). <https://doi.org/10.1186/1478-4491-11-47>
- Rajan, D., Mathurapote, N., Putthasri, W., Posayanonda, T., Pinprateep, P., de Courcelles, S., Bichon, R., Ros, E., Delobre, A., & Schmets, G. (2019). Institutionalising participatory health governance: Lessons from nine years of the national health assembly model in Thailand. *BMJ Global Health*, 4, e001769. <https://doi.org/10.1136/bmjgh-2019-001769>
- Rakhab, A., Jackson, C., Nilmanat, K., Butterworth, T., & Kane, R. (2021). Factors supporting career pathway development amongst advanced practice nurses in Thailand: A cross-sectional survey. *International Journal of Nursing Studies*, 117, 103882. <https://doi.org/10.1016/j.ijnurstu.2021.103882>.
- Rangsan, S. (2021). Universal Health Coverage Development in Thailand: How Global Ideas and a National Medical Professional Movement Made a Difference. 10.21203/rs.3.rs-674771/v1.
- Rattanavipapong, W., Wang, Y., Butchon, R., Kittiratchakool, N., Thammatacharee, J., Teerawattananon, Y., Isaranuwatthai, W. (2021). Retrospective secondary data analysis to identify high-cost users in inpatient department of hospitals in Thailand, a middle-income country with universal healthcare coverage. *BMJ Open*, 11, e047330. <https://doi.org/10.1136/bmjopen-2020-047330>

Sakulbumrungsil, R., N. Kessomboon, I. Kanchanapibool, T. Manomayitthikan, T. Thathong, C. Patikorn, T. Vanichayakorn and K. Udomaksorn (2020). The Impact of Drug Financing System under Thailand Universal Health Coverage (UHC) on the Performances of Drug System. *Journal of Health Science*. 29. 59-71.

Sathapongakdee P. 2018. Thailand Industry Outlook 2016-18: Private Hospital Industry. Krungsri Research [Internet] 2016 June [November 30]; https://www.krungsri.com/bank/getmedia/9edb9946-cb72-4e47-bed8-91d9b38a0a78/IO_Hospital_2016_EN.aspx.

Sopitarchasak, S., Adulyanon, S., & Lorthong, T. (2015). Thai health promotion foundation: Innovative enabler for health promotion. *World Health & Population*, 16, 62–71.

Srithamrongsawat, S., Aekplakorn, W., Jongudomsuk, P., Thammatach-aree, J., Patcharanarumol, W., Swasdiworn, W., & Tangcharoensathien, V. (2010). *Funding health promotion and prevention: The Thai experience*. World Health Organization. <https://www.who.int/publications/m/item/funding-health-promotion-and-prevention---the-thai-experience>.

Srithamrongsawat, Samrit & Hughes, David & Thammatacharee, Jadej & Putthasri, W. & Leethongdee, Songkramchai. (2012). A Decade of Thai UCS Implementation, TOR 3 Report. Health Systems Research Institute, Nonthaburi, Thailand, Available at: <http://www.hsri.or.th/sites/default/files/browse/tor3.pdf>.

Tangcharoensathien, V., Witthayapipopsakul, W., Panichkriangkrai, W., Patcharanarumol, W., & Mills, A. (2018). Health systems development in Thailand: A solid platform for successful implementation of universal health coverage. *Lancet*, 391(10126), 1205–1223, [http://dx.doi.org/10.1016/S0140-6736\(18\)30198-3](http://dx.doi.org/10.1016/S0140-6736(18)30198-3).

Tangcharoensathien, V., Patcharanarumol, W., Greetong, T., Suwanwela, W., Kesthom, N., Viriyathorn, S., Rajatanavin, N., Witthayapipopsakul, W. (2019). Thailand case study: Universal coverage scheme. In S. L. Barber, L. Lorenzoni, & P. Ong (Eds.), *Price setting and price regulation in healthcare lessons for advancing universal health coverage* (pp. 228). World Health Organization and Organisation for Economic Co-operation and Development.

Tangcharoensathien, V., Thammatach-aree, J., Witthayapipopsakul, W., Viriyathorn, S., Kulthanmanusorna, A. & Patcharanarumola, W. (2020). Political economy of Thailand's tax-financed universal coverage scheme. *Bulletin of the World Health Organization*, 98, 140–145. <http://dx.doi.org/10.2471/BLT.19.239343>.

Tangcharoensathien, V., Tisayaticom, K., Suphanchaimat, R., Vongmongkol, V., Viriyathorn, S., & Limwattananon, S. (2020). Financial risk protection of Thailand's universal health coverage: results from series of national household surveys between 1996 and 2015. *International journal for equity in health*, 19(1), 163. <https://doi.org/10.1186/s12939-020-01273-6>.

TDRI. (2018, January 25). *TDRI warns of soaring healthcare costs*. TDRI: Thailand Development Research Institute. [https://tdri.or.th/en/2018/01/soaring-healthcare-costs/#:%7E:text=THAILAND'S%20ageing%20society%20will%20push,Institute%20\(TDRI\)%20warned%20yesterday](https://tdri.or.th/en/2018/01/soaring-healthcare-costs/#:%7E:text=THAILAND'S%20ageing%20society%20will%20push,Institute%20(TDRI)%20warned%20yesterday).

Tejativaddhana, P., Briggs, D., Singhadej, O., & Hinoguin, R. (2018). Developing primary healthcare in Thailand: Innovation in the use of socio-economic determinants, sustainable development goals and the district health strategy. *Public Administration and Policy: An Asia-Pacific Journal*, 21(1). <https://doi.org/10.1108/PAP-06-2018-005>.

Thai Health Project. 2021. Health Behaviors Thai Health 2021 (pages 10-14 & 36-39). Nakhon Pathom: Institute for Population and Social Research, Mahidol University.

Thai Public Health Report 2016-2017. (2019). Strategy and Planning Division Office of the Permanent Secretary, Ministry of Public Health. <https://www.hiso.or.th/hiso/picture/reportHealth/thp2017/ThailandHealthProfile1.pdf>

- Thaiprayoon, S., & Wibulpolprasert, S. (2017). *Political and policy lessons from Thailand's UHC experience*. Observer Research Foundation. https://www.orfonline.org/wp-content/uploads/2017/04/ORF_IssueBrief_174_ThailandUHC.pdf.
- The World Bank, World Development Indicator. (2020). Life expectancy at birth, total (years), Thailand. Retrieved from: <https://data.worldbank.org/indicator/>.
- The World Bank, World Development Indicator. (2020). Number of nurses and midwives per 1,000 people, Thailand. Retrieved from: <https://data.worldbank.org/indicator/>.
- The World Bank, World Development Indicator. (2020). Number of physicians per 1,000 people, Thailand. Retrieved from: <https://data.worldbank.org/indicator/>.
- The World Bank. (2019). *Population ages 65 and above (% of total population): Thailand*. The World Bank. Retrieved from: <https://data.worldbank.org/indicator/SP.POP.65UP.TO.ZS?locations=TH>.
- The World Bank. (2020, March 5). *Thailand's poverty on the rise amid slowing economic growth*. The World Bank. Retrieved from: <https://www.worldbank.org/en/news/press-release/2020/03/03/thailands-poverty-on-the-rise-amid-slowing-economic-growth>.
- The World Bank. (2022). The World Bank in Thailand. Retrieved from <https://www.worldbank.org/en/country/thailand/overview>.
- Tuangratananon, T., Julchoo, S., Phaiyaron, M., Panichkriangkrai, W., Pudpong, N., Patcharanarumol, W., & Tangcharoensathien, V. (2021). Healthcare providers' perspectives on integrating NCDs into primary healthcare in Thailand: A mixed method study. *Health Research and Policy Systems, 19*(139). <https://doi.org/10.1186/s12961-021-00791-1>.
- Vongmongkol, V., Viriyathorn, S., Wanwong, Y., Wangbanjongkun, W., & Tangcharoensathien, V. (2021). Annual prevalence of unmet healthcare need in Thailand: Evidence from national household surveys between 2011 and 2019. *International Journal for Equity in Health, 20*(1), 244. <https://doi.org/10.1186/s12939-021-01578-0>.
- Watabe, A., Wongwatanakul, W., Thamarangsi, T., Prakongsai, P., & Yuasa, M. (2017). Analysis of health promotion and prevention financing mechanisms in Thailand. *Health Promotion International, 32*(4), 702–710. <https://doi.org/10.1093/heapro/daw010>.
- Wibulpolprasert, S. (Ed.). (2011). *Thailand health profile 2008–2010*. Bureau of Policy and Strategy, Ministry of Public Health. Retrieved from: https://bps.moph.go.th/new_bps/thailand_health_profile/Thailand%20Health%20Profile%20Report%202008-2010.pdf.
- Witthayapipopsakul, W., Cetthakrikul, N., Suphanchaimat, R., Noree, T., & Sawaengdee, K. (2019). Equity of health workforce distribution in Thailand: An implication of concentration index. *Risk Management and Healthcare Policy, 12*, 13–22. <https://doi.org/10.2147/RMHP.S181174>.
- Wiwanitkit, V. (2016). Family medicine in Thailand: System, training, and obstacles. *Medical Journal of Dr D. Y. Patil Vidyapeeth, 9*(1), 4–6. <https://www.mjdrdyu.org/text.asp?2016/9/1/4/172412>.
- World Health Organization. (2015). The Kingdom of Thailand health system review. *Health Systems in Transition, 5*(5). <https://apps.who.int/iris/handle/10665/208216>
- World Health Organization. (2017). *Primary healthcare systems (PRIMASYS): Case study from Thailand*. WHO.
- World Health Organization. (2020a). *Non-communicable diseases progress monitor 2020*. WHO.
- World Health Organization. (2021, July 2). *Significant milestone of ending TB: WHO announces Thailand is no longer listed in high-burden countries for drug resistant TB*. WHO. <https://www.who.int/thailand/news/detail/02-07-2021-significant-milestone-of-ending-tb-who-announces-thailand-is-no-longer-listed-in-high-burden-countries-for-drug-resistant-tb>.

Independence | Integrity | Impact

Centre for Social and Economic Progress

6, Dr Jose P. Rizal Marg, Chanakyapuri, New Delhi - 110021, India



@CSEP_Org



@csepresearch



www.csep.org