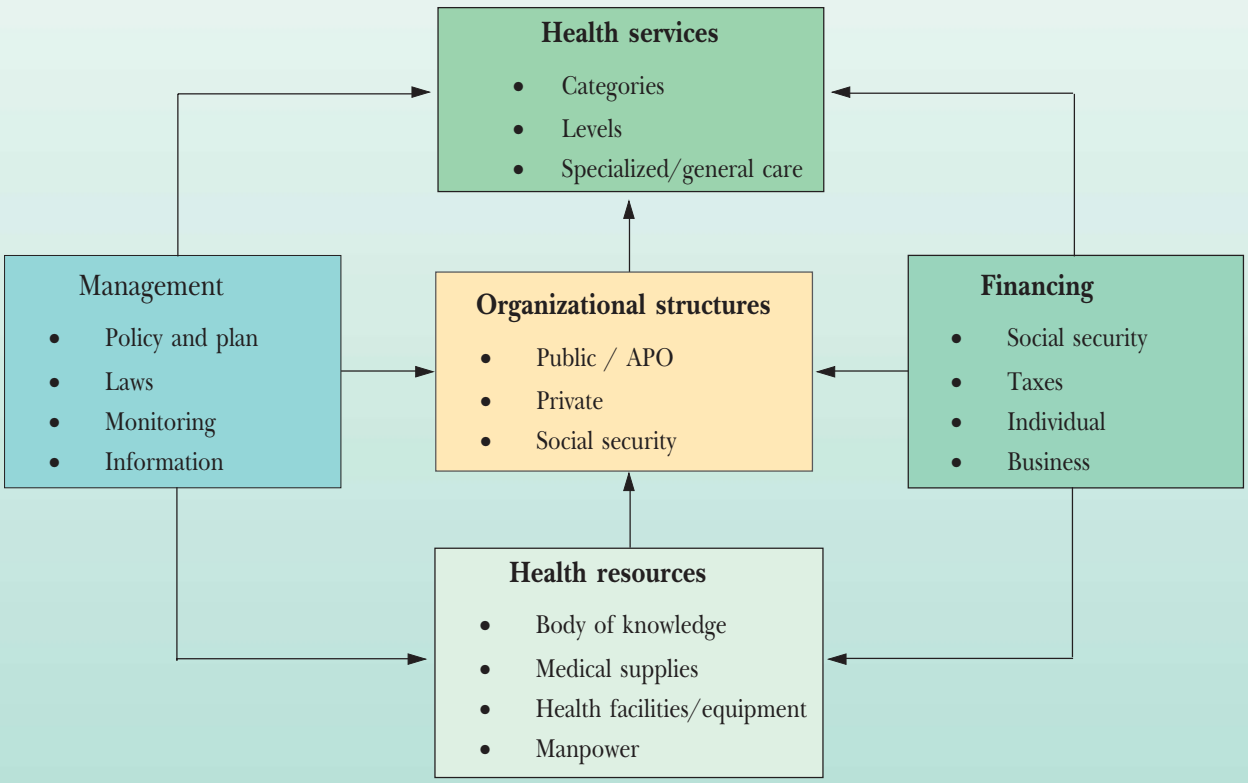
CHAPTER 6
HEALTH SERVICE SYSTEMS IN THAILAND

The health service systems in Thailand have evolved from self-reliance, in the past, by utilizing local wisdom for curative care and health promotion, to the system of modern medical and public health services. In the new health care system, several levels of health care have been organized, beginning with self-care at the family level to higher-level of medical care that has to be rendered by medical specialists. Numerous health personnel in response to various health disciplines have been produced under the new system which also requires the procurement and development of health technologies. There is a clear picture of role designation of "providers" and "recipients", as well as a more effective health service system. In the pluralistic health service system, the main service provision is managed by the public sector, while the people have to help themselves in a traditional way which has been constantly changing, and the private for-profit and non-profit sectors are also involved. The changes in the budgeting system under the universal healthcare scheme has resulted in the change in the Thai healthcare system so as to make it more convenient to the people to get access to such care.

The components of the health service system include (1) health resources, (2) management, (3) organizational structures, (4) financing, and (5) health services (Figure 6.1) as detailed below:

Figure 6.1 The Structure of Health Service Systems



Note: APO = Autonomous Public Organization

1. Health Resources

Health resources are (1) manpower, (2) health facilities, (3) medical supplies and technologies, and (4) the body of knowledge.

1.1 Health Manpower

At present there are 70 institutions responsible for producing and developing manpower for health in Thailand: 13 under the Ministry of Education (Office of the Higher Education Commission or HEC), 43 under the Ministry of Public Health, three under the Ministry of Defence, one under the Ministry of Interior, and ten in the private sector including the Thai Red Cross Society. For the past few decades the production of health manpower at the degree and auxiliary levels has been accelerated to cope with the needs of society.

Health personnel are both creators and managers of health technologies and then develop service systems so as to make all the people healthy. The proportion of budget for health manpower is the highest, i.e. 60 - 80% of operating costs. Actually, it has been found that health manpower is imbalanced in terms of categories, qualities, quantities and distribution. The information and understanding about health manpower is one of the most important issues in the health service system.

This chapter provides the information about five major categories of health manpower (doctors, dentists, pharmacists, nurses and health centre staff) as follows:

1.1.1 Doctors

(1) Production of Doctors

At present Thailand has 11 medical schools: ten public and one private. Beginning in 2004, there will be another six state-run universities that will be producing medical graduates: Burapha, Mahasarakham, Ubon Ratchathani, Suranaree Technology, Walailuck, and Kasetsart Universities.

Between 1997 and 2003 Thailand could produce 1,300 - 1,500 medical doctors each year (Table 6.1). But in the next ten years (2004 - 2013), more doctors will be urgently produced to meet the needs of the country. On a regular basis, the annual output will be about 1,000 - 1,400 doctors and under the accelerated production programme another 600 doctors or more will be produced. However, the private medical school will maintain it current production level (Table 6.2). Overall, the number of medical graduates has been and will be as shown in Table 6.3.

Table 6.1 Number of Medical Students Admissions in Thailand, 1997-2003

Unit : students

Institution	1997	1998	1999	2000	2001	2002	2003	Total
1. Public sector	**1,426**	**1,382**	**1,539**	**1,498**	**1,501**	**1,315**	**1,274**	**9,935**
1.1 HEC	1,152	1,147	1,169	1,132	1,130	959	911	7,600
1.2 MoPH and HEC	150	143	277	272	276	293	301	1,712
1.3 Other agencies	124	92	93	94	95	63	62	623
2. Private sector	**102**	**100**	**96**	**97**	**77**	**102**	**100**	**674**
Total	**1,528**	**1,482**	**1,635**	**1,595**	**1,578**	**1,417**	**1,374**	**10,609**

Source: Bureau of Policy and Planning, Office of the Higher Education Commission.

Notes: 1. The number of medical students actually admitted.

2. Other agencies include the Phramongkutklao College of Medicine and the Bangkok Metropolitan Administration Medical College at Vajira Hospital.

Table 6.2 Plans for Medical Students Admissions in Thailand, Academic Years 2004-2013

Unit: students

Production agencies	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
I. Regular production plan											
1. Public sector	**1,324**	**1,358**	**1,338**	**932**	**932**	**932**	**932**	**932**	**932**	**932**	**10,564**
1.1 HEC	882	882	882	882	882	882	882	882	882	882	8,820
1.2 MoPH and HEC	392	426	426	-	-	-	-	-	-	-	1,244
1.3 Other agencies	50	50	50	50	50	50	50	50	50	50	50
2. Private sector	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**1,000**
Total - regular plan	**1,424**	**1,458**	**1,458**	**1,032**	**1,032**	**1,032**	**1,032**	**1,032**	**1,032**	**1,032**	**11,564**
II. Increased production plan											
1. Public sector	**596**	**681**	**721**	**1,215**	**1,215**	**1,250**	**1,250**	**1,250**	**1,250**	**1,250**	**10,678**
1.1 HEC	426	476	516	584	584	604	604	604	604	604	5,606
1.2 MoPH and HEC	75	75	75	501	501	516	516	516	516	516	3,807
1.3 Other agencies	95	130	130	130	130	130	130	130	130	130	1,265
2. Private sector	-	-	-	-	-	-	-	-	-	-	-
Total - increased production plan	**596**	**681**	**721**	**1,215**	**1,215**	**1,250**	**1,250**	**1,250**	**1,250**	**1,250**	**10,678**
Grand Total	**2,020**	**2,139**	**2,179**	**2,247**	**2,247**	**2,282**	**2,282**	**2,282**	**2,282**	**2,282**	**22,242**

Source: Bureau of Policy and Planning, Office of the Higher Education Commission.

Notes: 1. Data on medical students admissions.

2. Other agencies include the Phramongkutklao College of Medicine and the Bangkok Metropolitan Administration Medical College at Vajira Hospital.

Teble 6.3 Numbers of Actual and Expected Medical Graduates, Academic Years 1997-2006.

Unit : students

Production agencies	No. of graduates										Total
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	
1. Public sector	**877**	**1,148**	**1,177**	**1,222**	**1,272**	**1,504**	**1,422**	**1,462**	**1,422**	**1,426**	**12,932**
1.1 HEC	852	1,073	1,089	1,124	1,140	1,250	1,206	1,111	1,075	1,074	10,994
1.2 MoPH and HEC	-	-	-	8	31	134	137	263	258	262	1,093
1.3 Other agencies	25	75	88	90	101	120	79	88	89	90	845
2. Private sector	**37**	**30**	**58**	**40**	**66**	**79**	**56**	**91**	**92**	**73**	**622**
Total	**914**	**1,178**	**1,235**	**1,262**	**1,338**	**1,583**	**1,478**	**1,553**	**1,514**	**1,499**	**13,554**

Source: The Medical Council of Thailand and the Increased Production of Medical Doctors for Rural Residents Project, MoPH.

Notes:
1. For academic years 1997-2003, the numbers are those actually graduated and registered with the Medical Council of Thailand.
2. For 2004-2006, the numbers are estimated based on the graduation rate of 95% of admissions.
3. Other agencies include the Phramongkutklao College of Medicine and the Bangkok Metropolitan Administration Medical College at Vajira Hospital.

(2) Numbers of Doctors Actually Working and Reguired

In 2003, in Thailand there were 28,920 medical doctors who were still alive and registered with the Medical Council of Thailand. But according to the 2000 population census, there were actually 22,465 doctors actually practising,[1] a doctor to population ratio of 1:2,750. It has been projected that in 2020, there will be totally 44,028-47,519 doctors,[2] a doctor to population ratio of 1:1,540, while there will be approximately 44,064-50,359 doctors[2] (Table 6.4). Therefore, if the doctor production is underway according to the increased production plan and there are more medical schools, there should be no overall storage of doctors in the next 20 years, **but the problem of distribution will still exist.**

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[1] Thakasaphon Thammarangsi. A Study on the Different Aspects of Health Personnel Distribution, based on the data from the Population and Housing Census, 2000. International Health Policy Programme, Thailand.

[2] Nichakorn Sirikanokvilai. Modified population-to-physician ratio method to project future physician requirement in Thailand, HRDJ; 1998, Vol.2, No. 3 : 197-209.

Table 6.4 Estimated Numbers of Practising Medical Doctors, 2000-2020

Year	No. of doctors actually practising		
	Low value	High value	Average
2000	20,263	21,866	21,065
2005	25,526	27,699	26,608
2010	31,855	34,467	33,161
2015	38,217	41,282	39,750
2020	44,028	47,519	45,774

Source: Nichakorn Sirikanokvilai. Modified population-to-physician ratio method to project future physician requirement in Thailand, HRDJ; 1998, Vol. 2, No. 3: 197-209.

(3) Geographical Distribution of Doctors

Most medical doctors are clustered in Bangkok and other provinces in the Central Plains. However, the Bangkok-rural disparities had been steadily better between 1979 (Table 6.5, and Figures 6.2 and 6.3) and 1989. But after 1989 until 1997, the disparities tended to be stable and **became worse** as a result of expansions of private healthcare facilities in provincial cities and Bangkok during the bubble economy. After the economic crisis, the distribution of doctors tends to be better. The proportion of doctors in the private sector is lower than that in the public sector; and the proportion as well as quantities in the MoPH, especially in the rural areas, are higher.

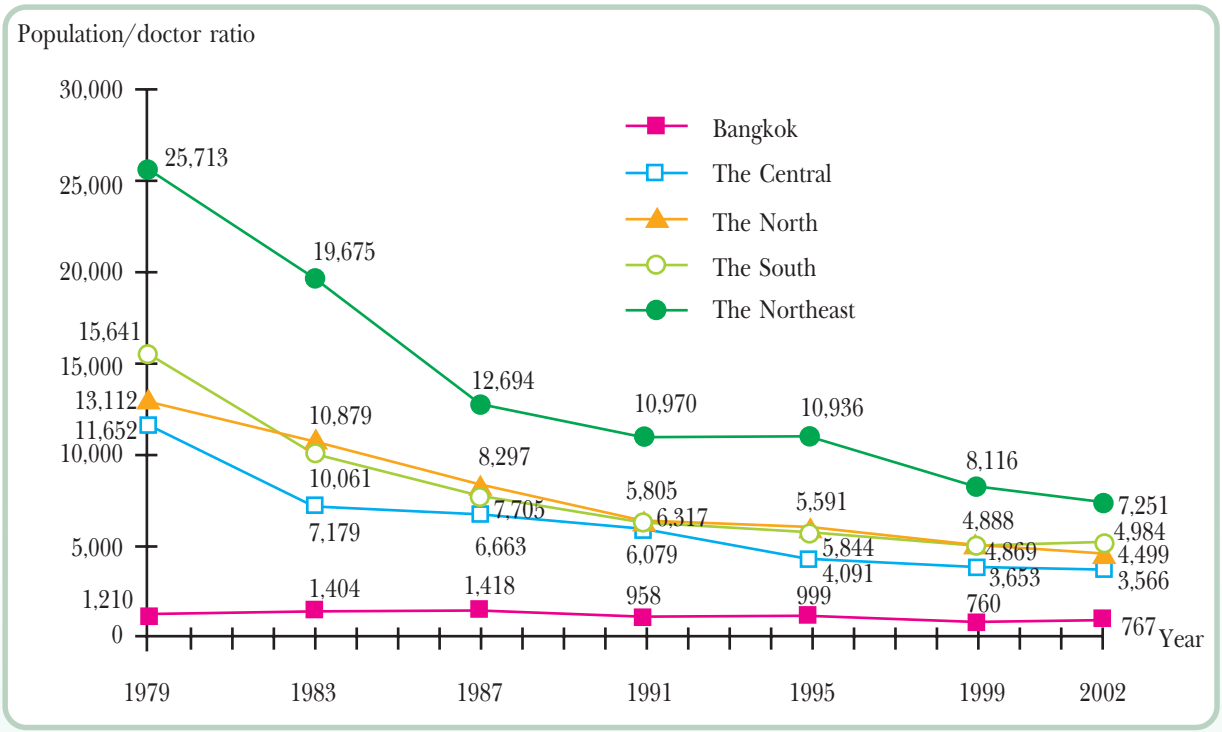
Table 6.5 Distribution of Medical Doctors by Region, 1979 - 2002

Region	No. of doctors and population/doctor ratio												
	1979	**1981**	**1983**	**1985**	**1987**	**1989**	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2002**
Bangkok Metropolis	4,069	3,927	4,084	3,966	4,211	5,888	5,832	6,191	5,582	7,771	7,438	7,504	7,504
	(1,210)	(1,362)	(1,404)	(1,431)	(1,418)	(1,062)	(958)	(1,045)	(999)	(720)	(760)	(760)	(767)
The Central	814	1,019	1,387	1,521	1,730	2,008	2,227	2,490	3,309	3,100	3,917	4,315	4,135
	(11,652)	(9,407)	(7,179)	(7,335)	(6,663)	(5,920)	(5,805)	(5,180)	(4,091)	(4,506)	(3,653)	(3,375)	(3,566)
The North	741	815	934	935	1,264	2,021	1,747	1,822	2,037	2,079	2,494	2,699	2,698
	(13,112)	(12,075)	(10,879)	(10,884)	(8,297)	(5,331)	(6,317)	(6,117)	(5,844)	(5,791)	(4,869)	(4,488)	(4,499)
The South	362	447	608	865	908	1,165	1,179	1,274	1,369	1,510	1,659	1,612	1,678
	(15,641)	(13,154)	(10,061)	(7,684)	(7,705)	(6,306)	(6,079)	(6,257)	(5,591)	(5,216)	(4,888)	(5,127)	(4,984)
The Northeast	633	723	889	1,209	1,467	1,631	1,818	1,848	1,884	2,109	2,632	2,817	2,972
	(25,713)	(23,238)	(19,675)	(14,908)	(12,694)	(11,762)	(10,970)	(10,851)	(10,936)	(9,951)	(8,116)	(7,614)	(7,251)
Disparity between Bangkok's Northeast's population/doctor ratios	1 : 21.3	1 : 17.1	1 : 14.0	1 : 10.4	1 : 8.9	1 : 11.1	1 : 11.4	1 : 10.4	1 : 10.9	1 : 13.8	1 : 10.7	1 : 10.0	1 : 9.5
Total	**6,619**	**6,931**	**7,902**	**8,496**	**9,580**	**12,713**	**12,803**	**13,634**	**14,181**	**16,569**	**18,140**	**18,947**	**18,987**
	(6,956)	**(6,847)**	**(6,259)**	**(6,083)**	**(5,595)**	**(4,361)**	**(4,426)**	**(4,297)**	**(4,180)**	**(3,649)**	**(3,395)**	**(3,277)**	**(3,295)**

Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

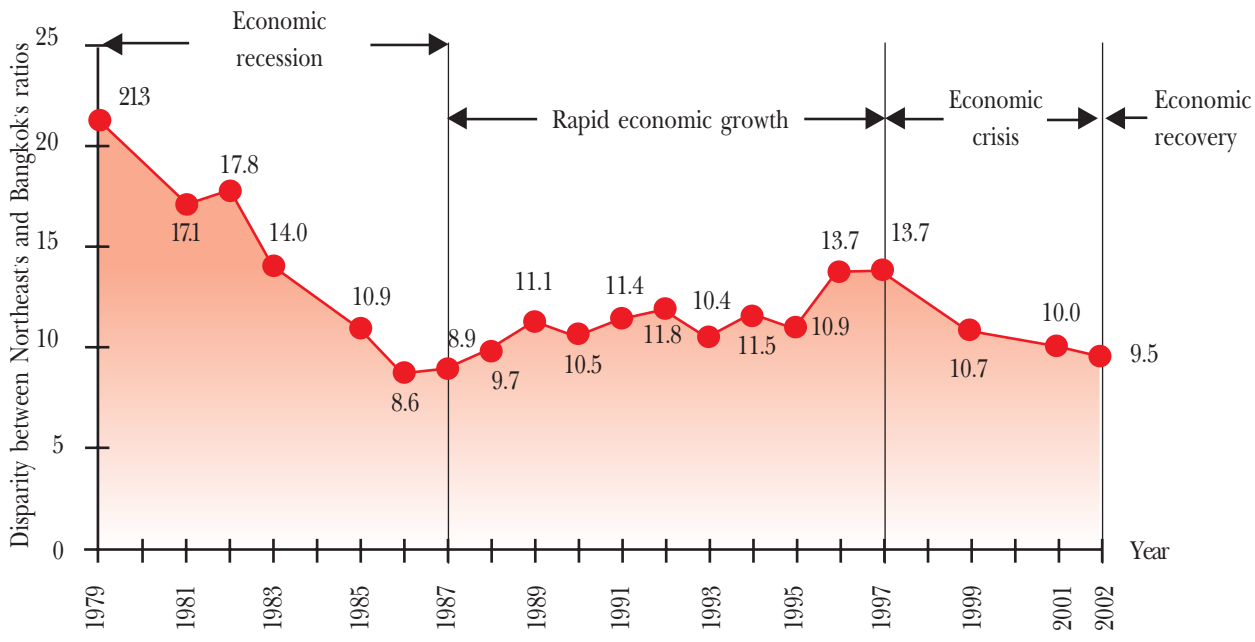
Notes:
1. Figures in ( ) are population to doctor ratios.
2. Figures from the surveys are estimated to be 20% less than actuality
3. Due to incompleteness of data for 1985, the data for 1984 were used instead.
4. For 2002, data were received from only 65.6% of all health facilities; 44.3% from Bangkok, 60.5% from the Central, 76.7% from the Northeast, 74.9% from the North, and 68.3% from the South.
5. For Bangkok in 2002, the 2001 data were used instead.

Figure 6.2 Population to Doctor Ratios by Region, 1979-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Figure 6.3 Disparity between Northeast's and Bangkok's Population/Doctor Ratios, 1979-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. For 2002, data were received from only 44.3% from Bangkok and 76.7% from the Northeast.

2. For Bangkok in 2002, the data for 2001 were used instead.

(4) Distribution of Doctors by Agency

In the past decade, it was found that since 1989 the proportion of doctors in the public sector had been declining while that in private sector had been rising. In addition, the proportion of medical doctors in the public sector (MoPH, other ministries, state enterprises and local authorities) dropped from 93.3% in 1971 to 76.3% in 1995, while that in the private sector rose from 6.7% to 23.7% during the same period.

After the economic crisis, in 2002, the proportion in the public sector rose to 79%, particularly in the MoPH, whereas the proportion in the private sector dropped during the crisis but increased slightly to 21.0% (Table 6.6 and Figure 6.4).

Table 6.6 Number and Proportion of Medical Doctors by Agency, 1971-2002

Year	Number and percentage					
	MoPH	Other ministries	State enterprises	Local adm. agencies	Private sector	Total
1971	1,515	1,832	123	341	274	4,085
	(37.1)	(44.8)	(3.0)	(8.3)	(6.7)	
1973	1,678	2,039	147	357	386	4,607
	(36.4)	(44.2)	(3.2)	(7.7)	(8.4)	
1975	1,922	2,068	143	452	420	5,005
	(38.4)	(41.3)	(2.8)	(9.0)	(8.4)	
1977	2,198	2,575	147	344	526	5,790
	(38.0)	(44.5)	(2.5)	(5.9)	(9.1)	
1979	2,510	2,768	168	433	740	6,619
	(37.9)	(41.8)	(2.5)	(6.5)	(11.2)	
1981	2,987	2,667	175	371	731	6,931
	(43.1)	(38.5)	(2.5)	(5.3)	(10.5)	
1983	3,622	2,806	197	333	890	7,848
	(46.1)	(35.8)	(2.5)	(4.2)	(11.3)	
1985	4,289	2,630	248	363	1,000	8,530
	(50.3)	(30.8)	(2.9)	(4.3)	(11.7)	
1987	4,758	3,086	235	407	1,094	9,580
	(49.7)	(32.2)	(2.5)	(4.2)	(11.4)	
1989	5,396	4,398	640	483	1,796	12,713
	(42.4)	(34.6)	(5.0)	(3.8)	(14.1)	
1991	5,437	4,100	442	517	2,307	12,803
	(42.5)	(32.0)	(3.5)	(4.0)	(18.0)	
1993	5,843	4,152	613	484	2,542	13,634
	(42.8)	(30.5)	(4.5)	(3.5)	(18.6)	

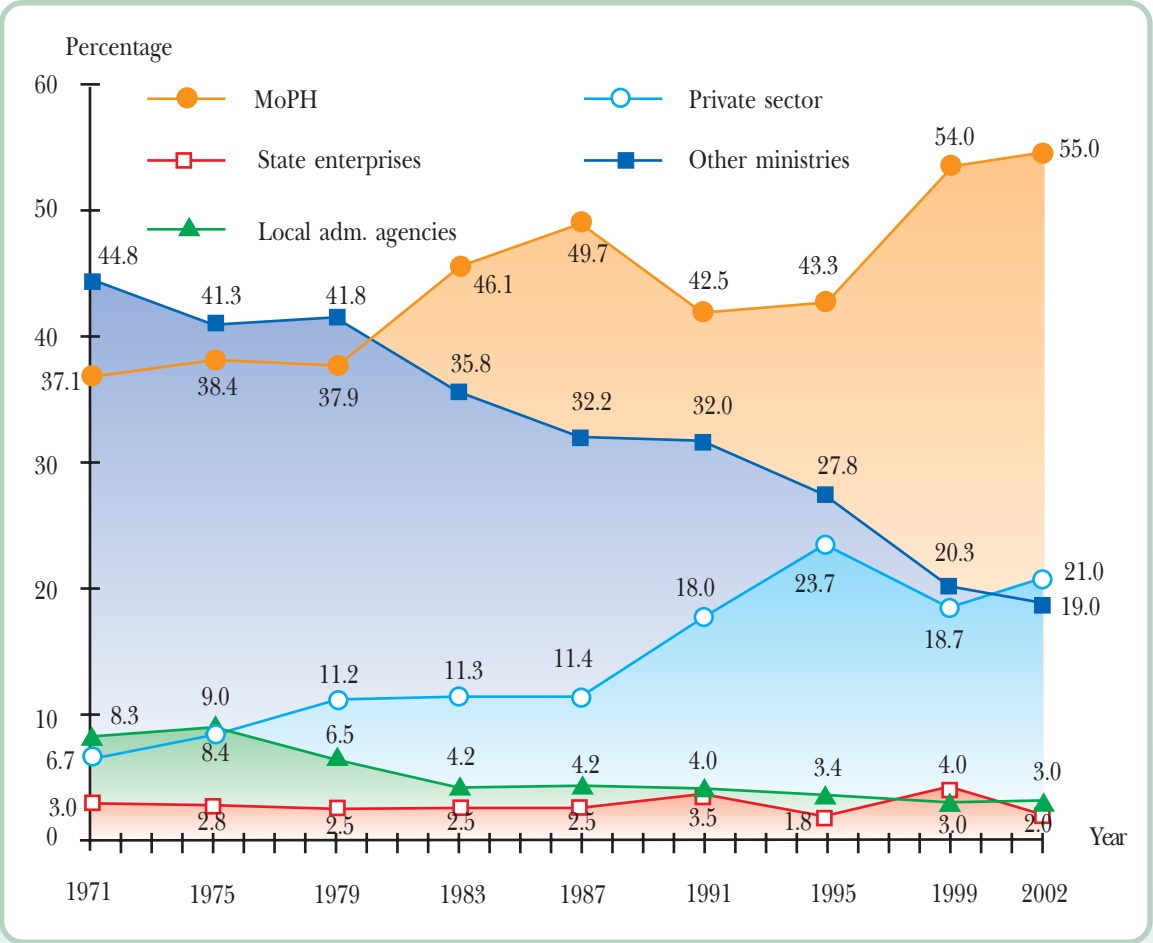
Table 6.6 Number and Proportion of Medical Doctors by Agency, 1971-2002 (Cont.)

Year	Number and percentage					
	MoPH	Other ministries	State enterprises	Local adm. agencies	Private sector	Total
1995	6,134	3,936	259*	488	3,364	14,181
	(43.3)	(27.8)	(1.8)	(3.4)	(23.7)	
1997	8,026	3,873	933	493	3,244	16,569
	(48.4)	(23.4)	(5.6)	(3.0)	(19.6)	
1999	9,799	3,683	721	534	3,403	18,140
	(54.0)	(20.3)	(4.0)	(3.0)	(18.7)	
2001	10,068	3,568	384	543	4,384	18,947
	(53.1)	(18.8)	(2.0)	(2.9)	(23.1)	
2002	10,444	3,613	374	565	3,991	18,987
	(55.0)	(19.0)	(2.0)	(3.0)	(21.0)	

Sources: Reports on Health Resources, Bureau of Policy and Strategy, MoPH.

Notes:
1. Figures in ( ) are in percentage terms.
2. * For 1995, no data were available for Chulalongkorn Hospital (under the Thai Red Cross Society).
3. For 2002, data were received from 65.6% of all health facilities nationwide: 62.5% from among public sector facilities and 77.3% from among private sector agencies.
4. For 2002, the figures for Chulalongkorn Hospital were transferred from "state enterprise and independent agencies" to "other ministries".
5. For 2002, the number of doctors under various agencies in Bangkok for 2001 was used instead.

Figure 6.4 Proportion of Medical Doctors by Agency, 1971-2002

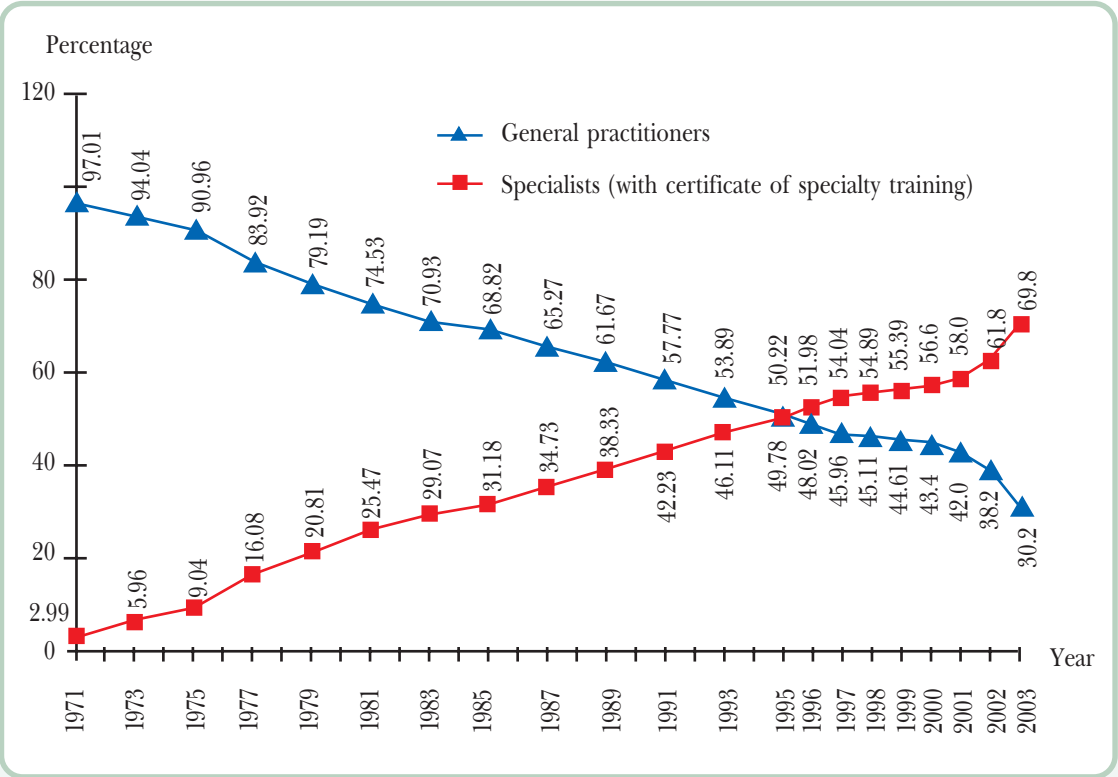


Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

(5) Distribution of Medical Specialists

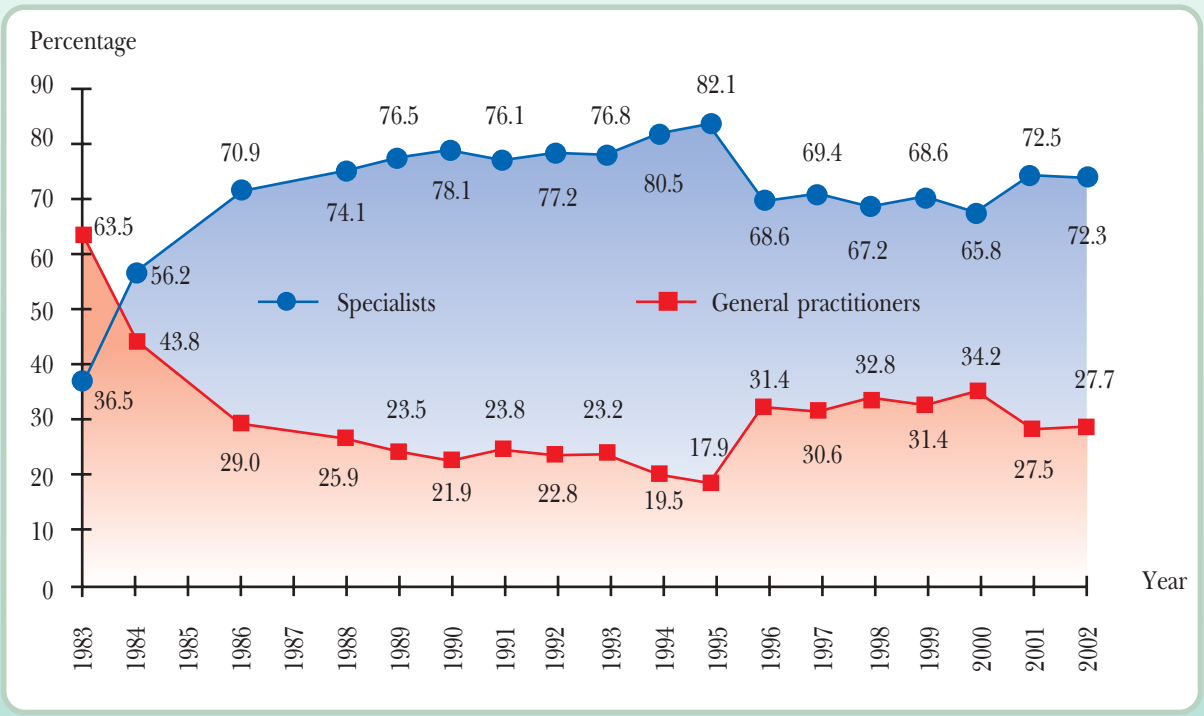
In Thailand, the trends of residency training have been rising steadily. In 2003, the percentage of specialists awarded certificates of specialty training was as high as 69.8% or a total of 21,126 medical doctors (Figure 6.5). In fact, about 72.3% of medical doctors are actually practising as specialists without any specialty certification from the Medical Council of Thailand (Figure 6.6).

Figure 6.5 Proportions of Medical Specialists and General Practitioners, 1971-2003



Sources: The Medical Council of Thailand (medical specialists include only those certified by the Medical Council of Thailand).

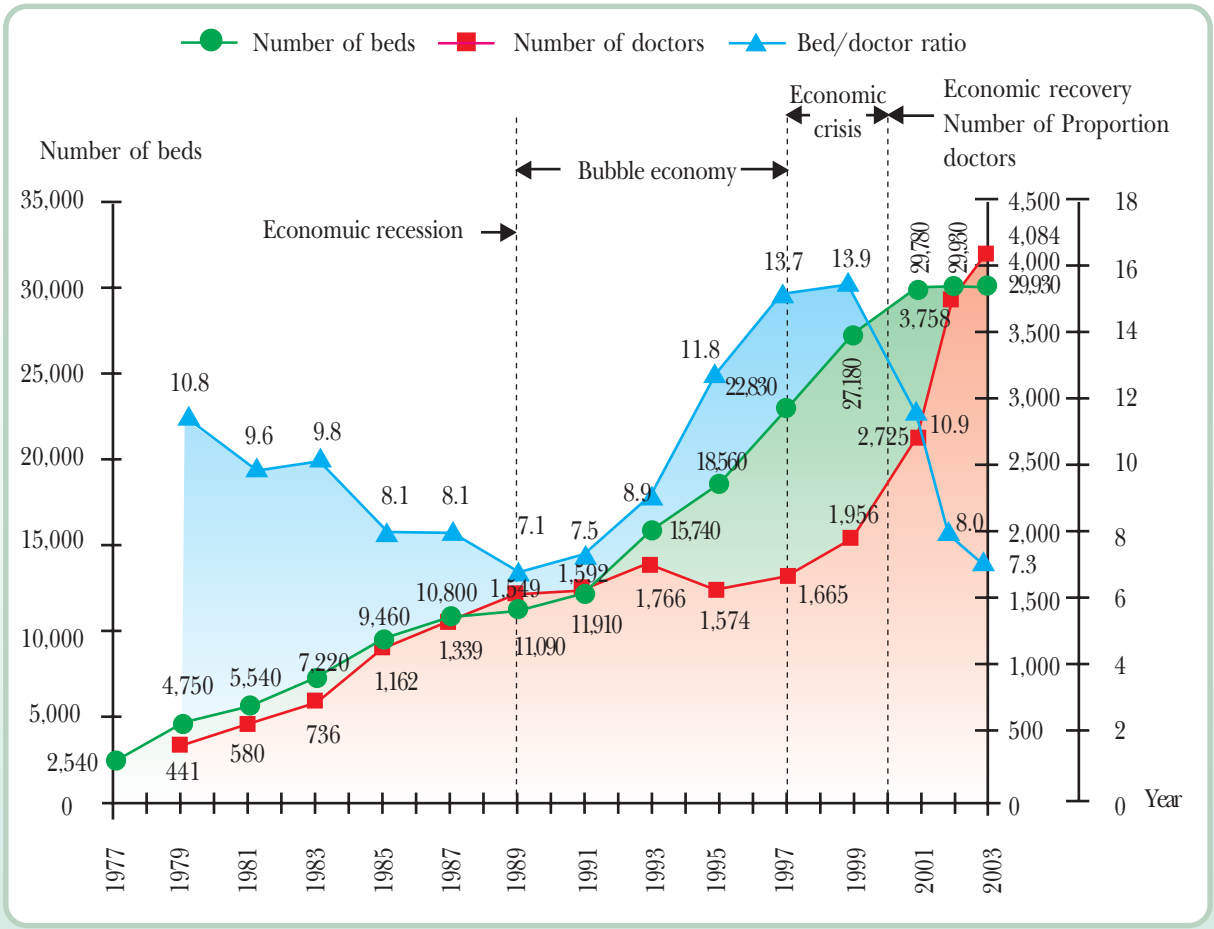
Figure 6.6 Proportions of General Practitioners and Specialists Actually Practising, 1983-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

With regard to the number and percentage of medical doctors lost (in relation to newly graduated ones) of the MoPH, the trends have been found to be rising. During the bubble economy period, whose peak was in 1996 (before the economic crisis began), 21 community hospitals had no physicians at all. After the 1997 crisis, the situation remarkably improved; during the 2001 - 2003 economic recovery period, the loss of MoPH doctors became severe again (Table 6.7), which reflected the distribution of physicians to the district level (Figure 6.7).

Figure 6.7 Numbers of Beds and Doctors at Community Hospitals, 1977-2003



Sources: 1. Bureau of Health Service System Development, Department of Health Service Support, MoPH.
2. Bureau of Central Administration, Office of the Permanent Secretary, MoPH (for doctors at community hospitals in 2001 onwards).

Notes: For 2001 - 2003, there was no survey on doctors actually working at community hospitals. So the data from the official payrolls (Jor 18) were used; the numbers were higher than actuality.

Table 6.7 Number and Proportion of Doctors Loss in Relation to Newly Appointed Doctors, Office of the Permanent Secretary for Public Health, 1994-2003

Fiscal year	No. of doctors						Net loss No. (percent)
	Increase			Decrease (resigned)			
	Newly graduated	Re-appointed	Total	Civil servants	State employees	Total	
1994	526	-	526	42	-	42	42(8.0)
1995	576	-	576	260	-	260	260 (45.1)
1996	568	-	568	344	-	344	344 (60.6)
1997	579	30	609	336	-	336	306 (52.8)
1998	618	93	711	299	-	299	206 (33.3)
1999	830	57	887	204	-	204	147 (17.7)
2000	893	98	991	201	-	201	103 (11.5)
2001	883	82	952	193	83	276	194 (22.0)
2002	878	38	916	401	163	564	526 (59.9)
2003	1,013	39	1,052	287	508	795	756 (74.6)

Sources: Bureau of Central Administration, Office of the Permanent Secretary for Public Health.

* According to the cabinet resolution, since 1999 MoPH has been required to accept the scholarship students in academic year 1999 as state employees under the MoPH, rather than as civil servants.

Note: Parent agencies adjusted their own data for fiscal years 1995-2003.

(6) Doctor's Workloads

Based on the numbers of patients at all levels, doctors at community hospitals have greater workloads than those in urban areas, Bangkok and the private sector (Table 6.8).

Table 6.8 Patient Loads of Doctors, 2002

Health	(1) No. of outpatients	(2) No. of inpatients	(3) Inpatients adjusted*	Total patient loads (1)+ (3)	No. of doctors	Patient loads per doctor	Comparison index
Community hospitals	17,831,867	3,305,860	46,282,040	64,113,907	2,732	23,467.8	2.2
Regional/General hospitals	5,823,778	2,605,672	46,902,096	52,725,874	4,619	11,415.0	1.1
University hospitals	934,774	303,866	5,469,588	6,404,362	2,576	2,486.2	0.2
BMA hospitals	430,098	81,267	1,462,806	1,892,904	543	3,486.0	0.3
Private hospitals	4,025,727	1,535,831	21,501,634	25,527,361	3,572	7,146.5	0.7
Total	**29,046,244**	**7,832,496**	**121,618,164**	**150,664,408**	**14,042**	**10,729.6**	**1.0**

Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: * In calculating the patient loads, for consistency, the numbers were weighted as follows:

1. For community and private hospitals = number of inpatients times 14.
2. For regional/general, university and BMA hospitals = number of inpatients times 18.
3. For 2002, the number of doctors in Bangkok for 2001 was used instead.

1.1.2 Dentists

(1) Production of Dentists

At present, there are only eight dentistry schools in Thailand, all in the public sector, producing approximately 500 dentists each year (Table 6.9). However, beginning in 2005, an additional 200 dentists will be produced annually (Table 6.10). The numbers of dentists who have graduated and who are expected to graduate are shown in Table 6.11.

Table 6.9 Number of Dentistry Student Admissions, Thailand, Academic Years 1997-2004

Production agency	No. of students								
	1997	1998	1999	2000	2001	2002	2003	2004	Total
HEC	469	478	460	504	486	502	528	528	3,951

Source: Bureau of Policy and Planning, Office of the Higher Education Commission.

Note: The number of students actually admitted.

Table 6.10 Dental Student Admissions Plan, Thailand, Academic Years 2005-2014

Production agency	No. of students										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
1. Regular admission plan, HEC	513	513	513	533	533	533	533	533	533	533	5,270
2. Increased production plan, HEC	200	200	200	200	200	200	200	200	200	200	2,000
Total	713	713	713	733	733	733	733	733	733	733	7,270

Source: Bureau of Policy and Planning, Office of the Higher Education Commission.

Note: Data on dental student admission plan.

Table 6.11 Actual and Expected Numbers of Dental Graduates, Academic Years 1997-2006

Production agency	No. of graduates										
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
HEC	318	358	332	349	383	420	423	437	479	462	3,961

Source: The Dental Council, Thailand.

Notes: 1. For academic years 1997 - 2003, the numbers of dentists who graduated and registered with the Dental Council.

2. For academic years 2004 - 2006, 95% of admitted dental students are expected to graduate.

(2) Numbers of Dentists Actually Practising and Required

In 2003, the were 8,178 registered dentists (Dental Council, 2003), of whom 7,828 were actually practising.[3] It is projected that in 2015 there will be a total of 10,323 dentists,[4] whereas approximately 8,924-9,768 dentists are required.[4] Therefore, the number of dentists will be sufficient or might be excessive in the future (Table 6.12).

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[3] Report on Dental Health Personnel, 2003. Dental Health Division, Department of Health.

[4] Duangjai Leksomboon. Supply Projectons for Dentists, Thailand (2000 - 2030). HRDJ; 2000. Vol.4, No.2: 94-105.

Table 6.12 Estimated/Projected Number of Dentists Actually Practising and the Population to Dentist Ratio, 2000-2030

Year	Practising dentists	Population to dentist ratio
2000	6,021	10,350
2005	7,651	8,603
2010	9,118	7,625
2015	10,323	7,114
2020	11,354	6,501
2025	12,119	6,276
2030	12,652	6,072

Source: Duangjai Leksomboon. Supply Projectons for Dentists, Thailand (2000-2030). HRDJ; 2000. Vol.4, No.2: 94-105.

(3) Geographical Distribution of Dentists

Most dentists are clustered in Bangkok and the Central Region. The Bangkok-regional disparities have changed in the same pattern as those for medical doctors (Table 6.13 and Figures 6.8-6.9).

According to a survey on dentist distribution in various regions of the country conducted by the Department of Health during 1999 - 2003, the distribution pattern was consistent with that revealed in the reports on health resources. But the population to dentist ratio reported in the DoH Survey was 1.5-2.2 times lower as it had a wider coverage. It was found that the shortage of dentists was most severe in the Northeast; the ratio was 15 times higher than that for Bangkok (Table 6.14).

Table 6.13 Distribution of Dentists by Region, 1979-2002

Region	No. of dentists and population to dentist ratio												
	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2002
Bangkok Metropolis	705	676	752	797	878	1,085	1,215	1,331	1,077	1,651	1,891	1,788	1,788
	(6,982)	(7,914)	(7,624)	(7,123)	(6,802)	(5,766)	(4,599)	(4,861)	(5,179)	(3,389)	(2,991)	(3,190)	(3,218)
The Central	113	152	193	206	257	369	443	526	735	657	818	878	828
	(83,938)	(63,066)	(51,591)	(54,155)	(44,852)	(32,213)	(29,181)	(24,612)	(18,420)	(21,263)	(17,494)	(16,588)	(17,810)
The North	108	110	160	168	141	220	268	295	348	398	446	577	681
	(89,963)	(89,464)	(63,506)	(60,577)	(74,381)	(48,969)	(41,176)	(37,780)	(34,208)	(30,248)	(27,225)	(20,993)	(17,824)
The South	38	57	61	69	78	179	255	246	298	248	316	414	416
	(114,900)	(103,158)	(100,279)	(96,333)	(89,696)	(41,044)	(28,108)	(32,406)	(25,687)	(31,760)	(25,663)	(19,963)	(20,105)
The Northeast	58	83	81	86	114	254	227	388	462	460	555	660	758
	(280,655)	(202,422)	(215,938)	(209,581)	(163,352)	(75,526)	(87,858)	(51,680)	(44,595)	(45,622)	(38,487)	(32,499)	(28,432)
Disparity between BKK's and Northeast's population/ dentist ratios	1: 40.2	1 : 25.6	1 : 28.3	1 : 29.4	1 : 24.0	1 : 13.1	1 : 19.1	1 : 10.6	1 : 8.6	1 : 13.5	1 : 12.9	1 : 10.2	1 : 8.8
Total	1,022	1,078	1,247	1,326	1,468	2,107	2,408	2,786	2,920	3,414	4,026	4,317	4,471
	(45,074)	(44,024)	(39,662)	(38,975)	(36,516)	(26,315)	(23,531)	(21,028)	(20,301)	(17,711)	(15,295)	(14,384)	(13,991)

Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. Figures in ( ) are population to dentist ratios.

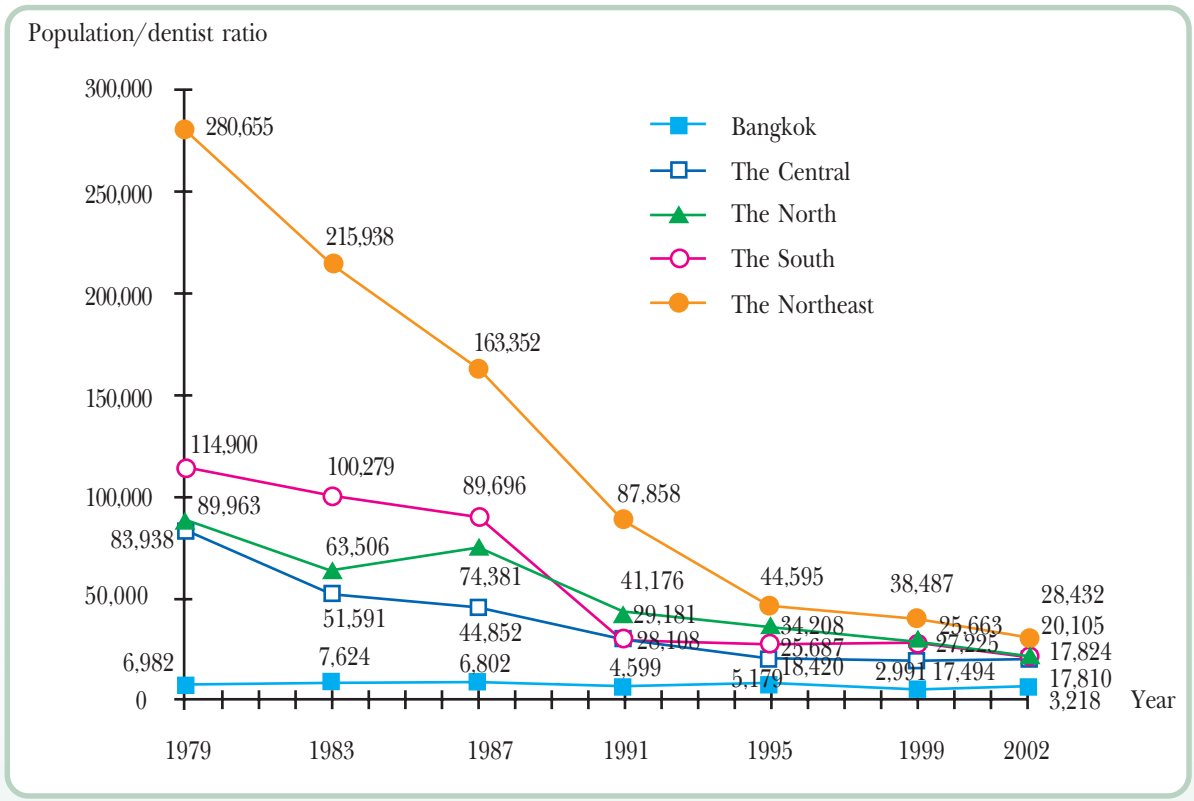
2. Figures from the surveys are estimated to be 40% less than actuality.

3. The data of 1985 were incomplete; the 1984 data were used instead.

4. For 2002, data were received from only 65.6% of all health facilities; 44.3% from Bangkok, 60.5% from the Central, 76.7% from the Northeast, 74.9% from the North, and 68.3% from the South.

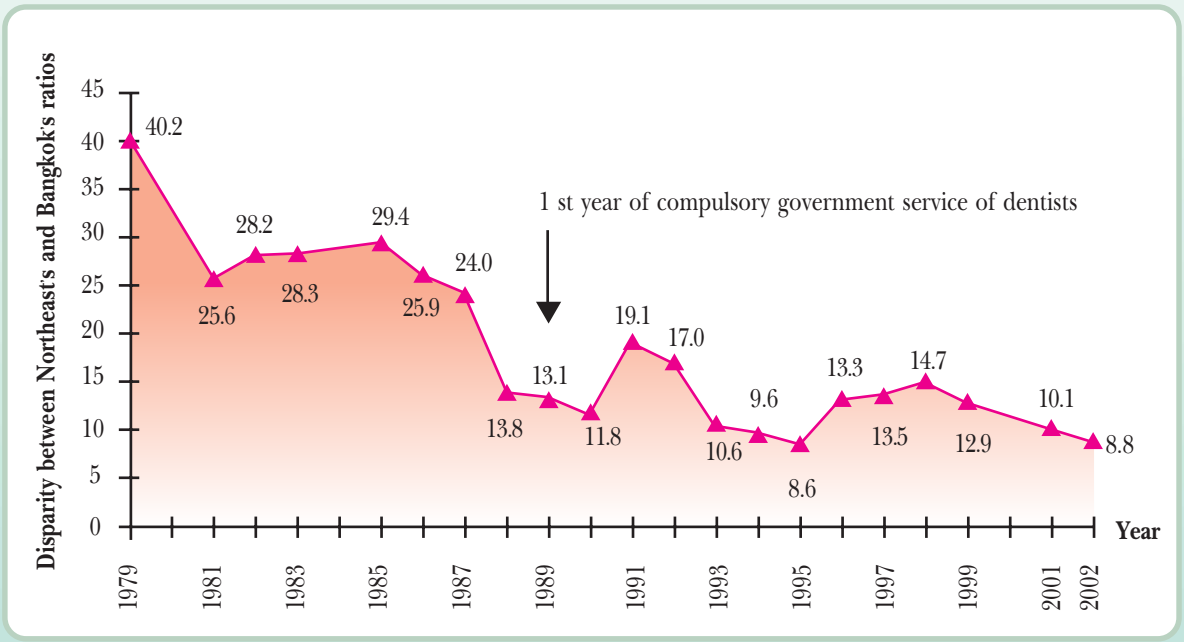
5. For Bangkok in 2002, the 2001 data were used instead.

Figure 6.8 Population to Dentist Ratios by Region, 1979-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Figure 6.9 Disparity between Northeast's and Bangkok's Population/Dentist Ratios,1979-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. For 2002, data were received from only 44.3% of health facilities in Bangkok and 76.7% of health facilities in the Northeast.

2. For 2002 data for Bangkok were incomplete, the 2001 data were used instead.

Table 6.14 Distribution of Dentists by Region, 1999-2003

Region	No. of dentists and dentist to population ratio				
	1999	2000	2001	2002	2003
Bangkok	3,279 (1:1,722)	3,331 (1:1,690)	3,538 (1:1,605)	3,802 (1:1,506)	3,965 (1:1,458)
The Central Plains	1,110 (1:12,864)	1,191 (1:12,042)	1,256 (1:11,524)	1,277 (1:11,474)	1,318 (1:11,259)
The North	813 (1:14,956)	838 (1:14,468)	892 (1:13,566)	900 (1:13,471)	925 (1:13,137)
The South	551 (1:14,640)	581 (1:14,032)	614 (1:13,383)	600 (1:13,852)	626 (1:13,443)
The Northeast	761 (1:28,005)	854 (1:25,034)	875 (1:24,462)	972 (1:22,112)	994 (1:21,739)
Disparity between Northeast's and Bangkok's ratios	16.3	14.7	15.2	14.7	14.9
Total	6,514 (1:9,436)	6,795 (1:9,074)	7,175 (1:8,624)	7,551 (1:8,252)	7,828 (1:8,022)

Source: Reports on Dental Health Personnel, 1999-2003. Department of Health.

(4) Distribution of Dentists by Agency

In the past decade, after 1987, the proportion of dentists in the public sector (MoPH, other ministries, state enterprises, and local authorities) was declining, whereas that in the private sector was rising. In the private sector the proportion rose from 3.8% in 1971 to 25.4% in 1995, while in the public sector the proportion dropped from 96.2% to 74.6% during the same period (Table 6.15).

After the 1997 economic crisis, the dentist proportion in the public sector increased to 88.4% in 2002 in the MoPH, especially in community hospitals the proportion rising to 99.0%, but dropping slightly to 96.0% in 2003 (Figure 6.10). It is projected that the loss would be down to only 1.06% in 2004 (Figure 6.11).

A survey on dentist distribution by agency conducted by the Department of Health for 1999-2003 revealed the opposite, compared with the those revealed in the MoPH Report on Health Resources. The DoH survey found that, due to the low questionnaire response rate of only 60%, the proportion of dentists in the public sector has declined from 49.0% in 1999 to 46.8% in 2003, while that in the private sector has risen from 51.0% to 53.2% during the same period (Table 6.16).

Table 6.15 Number and Proportion of Dentists by Agency, 1971-2002

Year	Number and percentage					
	MoPH	Other ministries	State enterprises	Local adm. agencies	Private sector	Total
1971	146	296	20	49	20	531
	(27.5)	(55.7)	(3.8)	(9.2)	(3.8)	
1973	171	327	20	52	26	596
	(28.7)	(54.9)	(3.3)	(8.7)	(4.4)	
1975	187	337	24	69	35	652
	(28.7)	(51.7)	(3.7)	(10.6)	(5.3)	
1977	230	416	34	82	53	815
	(28.2)	(51.0)	(4.2)	(10.1)	(6.5)	
1979	289	513	47	82	47	978
	(29.5)	(52.4)	(4.8)	(8.4)	(4.8)	
1981	401	420	41	97	98	1,057
	(37.9)	(39.7)	(3.9)	(9.2)	(9.3)	
1983	469	504	52	97	125	1,247
	(37.6)	(40.4)	(4.2)	(7.8)	(10.0)	
1985	581	503	79	134	154	1,451
	(40.0)	(34.7)	(5.4)	(9.2)	(10.6)	
1987	618	484	85	85	196	1,468
	(42.1)	(33.0)	(5.8)	(5.8)	(13.3)	
1989	852	623	79	143	410	2,107
	(40.4)	(29.6)	(3.7)	(6.8)	(19.5)	
1991	1,020	612	76	156	544	2,408
	(42.4)	(25.4)	(3.1)	(6.5)	(22.6)	
1993	1,201	728	76	125	656	2,786
	(43.1)	(26.1)	(2.7)	(4.5)	(23.5)	
1995	1,420	574	77	108	741	2,920
	(48.6)	(19.6)	(2.6)	(3.7)	(25.4)	
1997	2,064	658	31	195	466	3,414
	(60.5)	(19.3)	(0.9)	(5.7)	(13.6)	
1999	2,660	652	63	141	510	4,026
	(66.1)	(16.2)	(1.6)	(3.5)	(12.6)	
2001	3,014	520	86	133	564	4,317
	(69.8)	(12.0)	(2.0)	(3.1)	(13.1)	
2002	3,130	578	85	161	517	4,471
	(70.0)	(12.9)	(1.9)	(3.6)	(11.6)	

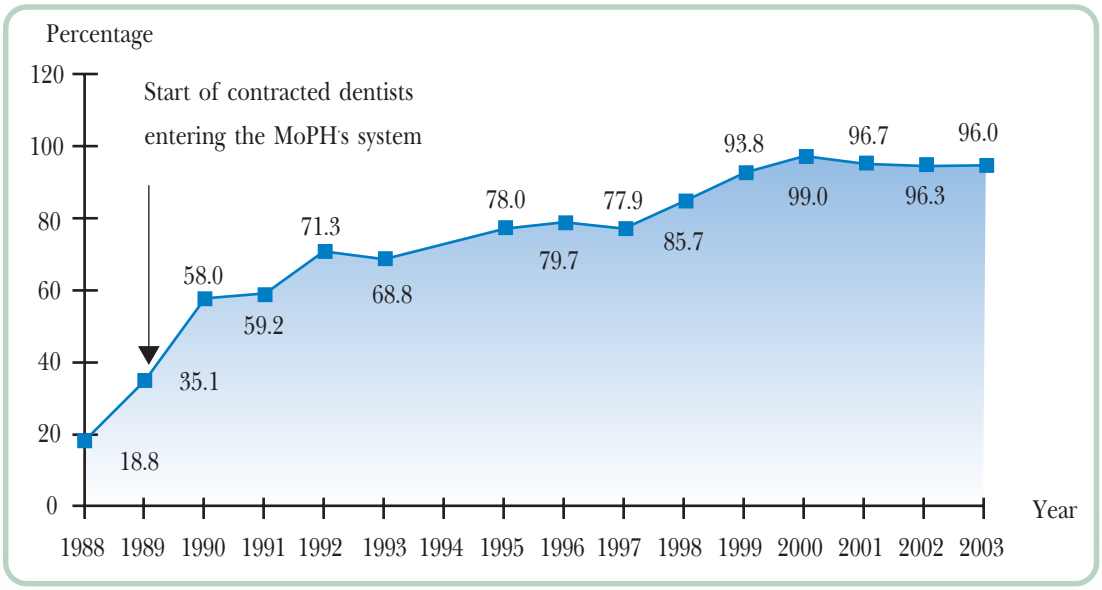
Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. Figures in ( ) are in percentage terms.

2. For 2002, data were received from 65.6% of all health facilities nationwide: 62.5% from among public sector facilities and 77.3% from among private sector agencies.

3. For the 2002 figure of dentists in Bangkok, the 2001 data were used instead.

Figure 6.10 Percentage of Dentist Distribution in Community Hospitals,1988-2003

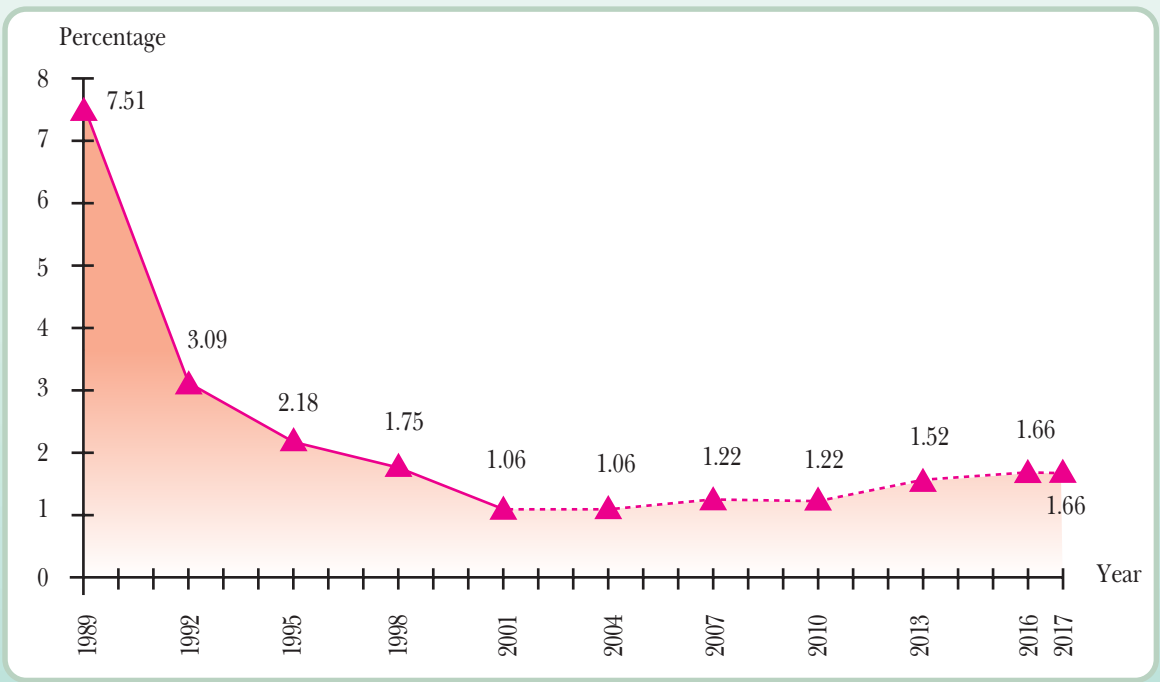


Sources: For 1988-1997, data were derived from Bunyarit Suwannophas et al. Problem Analysis and Improvment in Dentist Distribution Project, 1998.

For 1998 - 2000, data were derived from the Bureau of Health Service System Development, Department of Health Service Support, MoPH.

For 2001 - 2003, data were derived from Sunee Wongkongkathep et al. Problems of Dentist Distribution in Rural Areas, 2003.

Figure 6.11 Percentage of Dentist Loss in Community Hospitals,1989-2017



Sources: For 1989-1998, data were derived from the Bureau of Health Service System Development, Department of Health Service Support, MoPH.

For 2001-2017, data were derived from Bunyarit Suwannophas. Projection of Dentists in Community Hospitals, 2000.

Table 6.16 Distribution of Dentists by Agency, 1999-2003

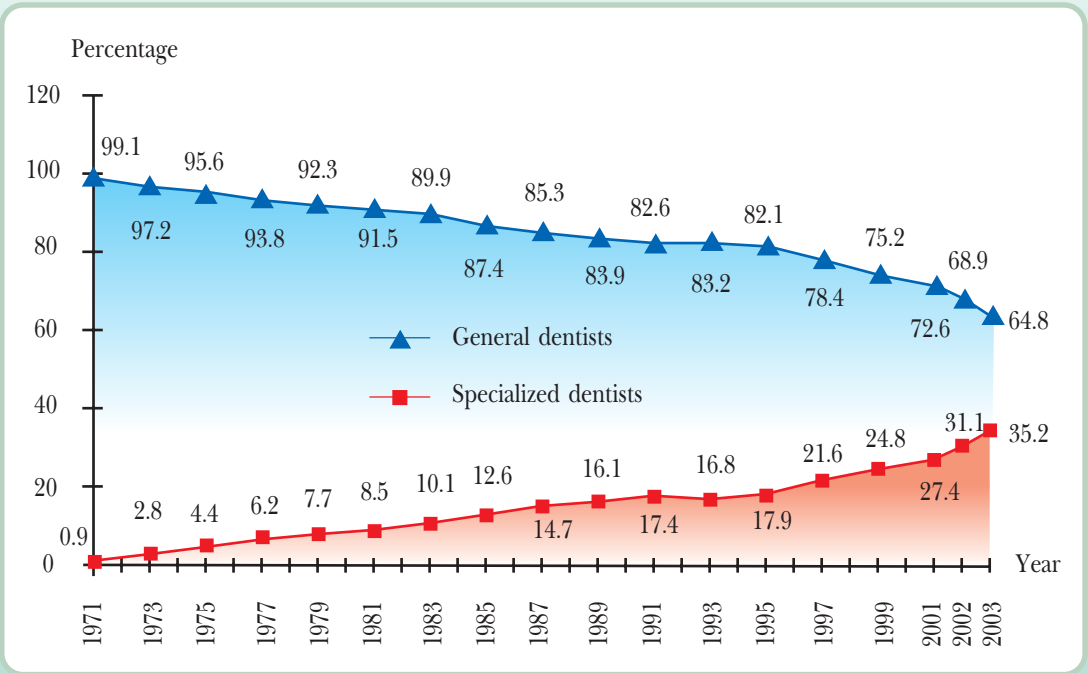
Year	Number and percentage					
	MoPH	Other ministries	State enterprises	Local adm. agencies	Private sector	Total
1999	1,912	1,112	43	126	3,321	6,514
	(29.3)	(17.1)	(0.7)	(1.9)	(51.0)	
2000	2,095	1,134	48	133	3,385	6,795
	(30.8)	(16.7)	(0.7)	(2.0)	(49.8)	
2001	2,249	1,089	51	129	3,657	7,175
	(31.3)	(15.2)	(0.7)	(1.8)	(51.0)	
2002	2,443	1,045	51	129	3,883	7,551
	(32.4)	(13.8)	(0.7)	(1.7)	(51.4)	
2003	2,452	1,039	52	123	4,162	7,828
	(31.3)	(13.3)	(0.6)	(1.6)	(53.2)	

Source: Report on Dental Health Personnel, Department of Health.

(5) Distribution of Dental Specialists

It is found that, since 1995, the trends of specialized dental training have been rising. In 2003, the percentage of specialists awarded certificates of specialty training was as high as 35.2% of all dentists (Figure 6.12).

Figure 6.12 Proportions of Specialized Dentists and General Dentists, 1971-2003



Source: Dental Health Division, Department of Health, MoPH, 2003.

1.1.3 Pharmacists

(1) Production of Pharmacists

At present there are 13 institutions producing pharmacists in both public and private sectors in Thailand: 11 public and two private. Beginning in 2004, Burapha University, a state-run university, will also offer its pharmacy degree programme.

Between 1997 and 2006, it has been found that the proportion of pharmacy graduates working in the public sector has slightly risen, but since 2003 there has been a downward trend in the private sector; the annual outputs dropping from 300 to 220 graduates (Table 6.17). The number of pharmacy graduates and their projection in the future are shown in Table 6.18.

Table 6.17 Numbers of Current and Future Pharmacy Students Entrants, Thailand,Academic Years 1997-2006

Production agency	No. of students										
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
HEC	1,016	1,055	1,070	1,173	1,219	1,307	1,472	1,582	1,582	1,582	13,058
Private sector	294	294	304	314	290	270	220	220	220	220	2,646
Total	**1,310**	**1,349**	**1,374**	**1,487**	**1,509**	**1,577**	**1,692**	**1,802**	**1,802**	**1,802**	**15,704**

Source: Bureau of Policy and Planning, Office of the Higher Education Commission.

Notes: 1. For 1997 - 2002, the figures are the numbers of new students actually admitted.

2. For 2003 - 2006, the numbers are derived from the pharmacy student admission plan.

Table 6.18 Numbers of Actual and Projected Pharmacy Graduates, Academic Years 1997-2006

Production agency	No. of graduates										
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
HEC	657	700	807	868	959	965	815	1,114	1,158	1,242	9,285
Private sector	106	176	140	159	262	199	145	298	276	257	2,018
Total	**763**	**876**	**947**	**1,027**	**1,221**	**1,164**	**960**	**1,412**	**1,434**	**1,499**	**11,303**

Source: The Pharmacy Council, Thailand.

Notes: 1. For 1997 - 2003, numbers of actual pharmacy graduates and registered with the Pharmacy Council.

2. For 2004 - 2006, the projection is based the assumption that 95% of entrants would actually graduate.

(2) Practice of Pharmacists

In 2003, there were 17,903 registered pharmacists (Pharmacy Council, 2003), but only 13,836[5] were actually practising. It is projected that in 2015, there would be 25,124 pharmacists[5] which is lower than the country's demand by approximately 6,915-9,122 individuals.[5]

In the future, the demand for pharmacists would depend on the health service system and the legal requirement for pharmacists being stationed at drugstores. According to the current procedure (without any legal requirement for a pharmacist to be stationed at each drugstore and any hospital/ clinic being able to dispense medications), there would be an over-supply of pharmacists in the near future.

(3) Geographical Distribution of Pharmacists

Most pharmacists are clustered in Bangkok and the Central Region. The Bangkok-regional disparities have changed in the same pattern as those for medical doctors and dentists (Table 6.19 and Figures 6.13 and 6.14).

(4) Distribution of Pharmacists by Agency

It was found that, between 1971 and 1985, approximately half (50%) of pharmacists nationwide worked in the private sector in such undertakings as drug manufacturing, imports, and sales, while only 43.0% to 50.9% worked in the public sector. Since the government has imposed the compulsory government service requirement for all new pharmacy graduates, the proportion of pharmacists working in the public sector, especially in the MoPH, has increased to 48.9% in 1995 and to 81.8% in 2002. Such a proportion in the private sector has fallen to 32.2% in 1995 and to only 10.8% in 2002 (Table 6.20 and Figure 6.15).

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[5] Nipa Payanantana. Future Human Resurces Balance for Phamacy and Health Consumer Protection Services in Thailand. HRDJ, 1998, Vol. 2, No. 2: 129-141.

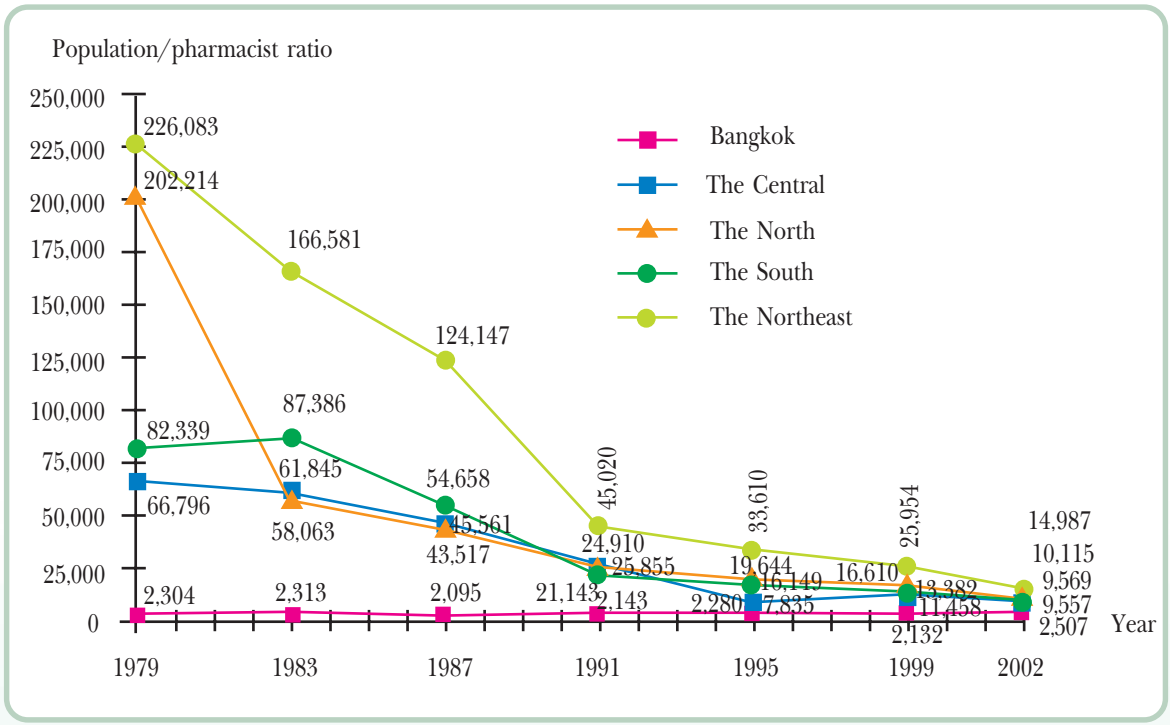
Table 6.19 Distribution of Pharmacists by Region, 1979-2002

Region	No. of pharmacists and population to pharmacist ratio												
	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2002
Bangkok Metropolis	2,136	2,295	2,479	2,762	2,850	2,445	2,608	2,717	2,446	2,847	2,653	2,295	2,295
	(2,304)	(2,331)	(2,313)	(2,055)	(2,095)	(2,559)	(2,143)	(2,381)	(2,280)	(1,965)	(2,132)	(2,485)	(2,507)
The Central	142	143	161	175	253	408	500	615	1,728	1,145	1,249	1,426	1,543
	(66,796)	(67,035)	(61,845)	(63,748)	(45,561)	(29,134)	(25,855)	(21,050)	(7,835)	(12,201)	(11,458)	(10,213)	(9,557)
The North	28	51	175	188	241	375	443	490	606	757	731	1,093	1,200
	(202,214)	(192,961)	(58,063)	(54,133)	(43,517)	(28,729)	(24,910)	(22,745)	(19,644)	(15,903)	(16,610)	(11,082)	(10,115)
The South	118	114	70	74	128	256	339	416	474	507	606	851	874
	(82,339)	(51,579)	(87,386)	(89,824)	(54,658)	(28,699)	(21,143)	(19,163)	(16,149)	(15,535)	(13,382)	(9,712)	(9,569)
The Northeast	72	77	105	113	150	341	443	483	613	685	823	1,193	1,438
	(226,083)	(218,195)	(166,581)	(159,504)	(124,147)	(56,257)	(45,020)	(41,515)	(33,610)	(30,636)	(25,954)	(17,979)	(14,987)
Disparity between BKK's and Northeast's population/pharmacist ratios	1: 98.1	1 : 93.6	1 : 72.0	1 : 77.6	1 : 59.3	1 : 22.0	1 :21.0	1 : 17.4	1 : 14.7	1 : 15.6	1 : 12.2	1 : 7.2	1 : 6.0
Total	2,496	2,603	2,990	3,312	3,622	3,825	4,333	4,721	5,867	5,941	6,062	6,858	7,350
	(18,455)	(18,232)	(16,541)	(15,604)	(14,800)	(14,496)	(13,077)	(12,409)	(12,409)	(10,178)	(10,158)	(9,054)	(8,511)

Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

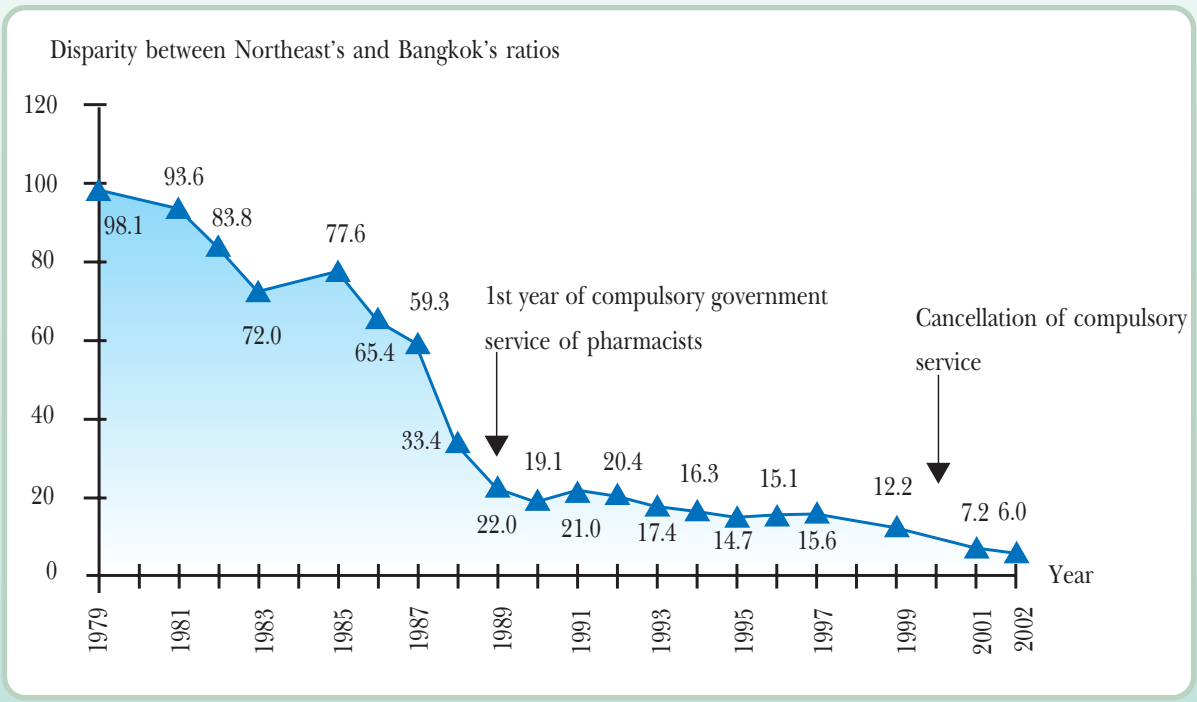
Notes:
1. Figures in ( ) are population to pharmacist ratios.
2. Figures from the surveys are estimated to be 50% less than actuality.
3. Due to incompleteness of data for 1985, the data for 1984 were used instead.
4. For 2002, data were received from only 65.6% of all health facilities; 44.3% from Bangkok, 60.5% from the Central, 76.7% from the Northeast, 74.9% from the North, and 68.3% from the South.
5. For 2002 in Bangkok, the 2001 data were used instead.

Figure 6.13 Population to Pharmacist Ratios by Region, 1979-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Figure 6.14 Disparity between Northeast's and Bangkok's Population/Pharmacist Ratios, 1979-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. For 2002, the survey information was received from only 44.3% of health facilities in Bangkok and 76.7% from the Northeast.

2. For the 2002 data for Bangkok, the 2001 data were used instead.

Table 6.20 Number and Proportion of Pharmacists by Agency,1971-2002

Year	Number and percentage					
	MoPH	Other ministries	State enterprises	Local adm. agencies	Private sector	Total
1971	298	280	68	32	899	1,577
	(18.9)	(17.8)	(4.3)	(2.0)	(57.0)	
1973	307	299	73	31	917	1,627
	(18.9)	(18.4)	(4.5)	(1.9)	(56.4)	
1975	345	366	85	58	1,059	1,913
	(18.0)	(19.1)	(4.4)	(3.0)	(55.4)	
1977	415	398	105	59	1,259	2,236
	(18.6)	(17.8)	(4.7)	(2.6)	(56.3)	
1979	569	446	135	73	1,273	2,496
	(22.8)	(17.9)	(5.4)	(2.9)	(51.0)	
1981	616	419	153	68	1,424	2,680
	(22.9)	(15.6)	(5.7)	(2.5)	(53.1)	
1983	748	451	175	68	1,548	2,990
	(25.0)	(15.1)	(5.9)	(2.3)	(51.8)	
1985	1,133	310	216	60	1,657	3,376
	(33.6)	(9.2)	(6.4)	(1.8)	(49.1)	
1987	1,372	393	236	78	1,543	3,622
	(37.9)	(10.8)	(6.5)	(2.2)	(42.6)	
1989	1,431	516	238	109	1,531	3,825
	(37.4)	(13.5)	(6.2)	(2.8)	(40.0)	
1991	1,759	626	240	116	1,592	4,333
	(40.6)	(14.4)	(5.5)	(2.7)	(36.7)	
1993	2,012	685	253	87	1,684	4,721
	(42.6)	(14.5)	(5.4)	(1.8)	(35.7)	
1995	2,869	719	284	106	1,889	5,867
	(48.9)	(12.3)	(4.8)	(1.8)	(32.2)	
1997	3,835	344	344	117	1,301	5,941
	(64.5)	(5.8)	(5.8)	(2.0)	(21.9)	
1999	4,534	352	101	124	951	6,062
	(74.8)	(5.8)	(1.7)	(2.0)	(15.7)	
2001	5,465	381	113	115	784	6,858
	(79.7)	(5.6)	(1.6)	(1.7)	(11.4)	
2002	6,012	286	123	132	797	7,350
	(81.8)	(3.9)	(1.7)	(1.8)	(10.8)	

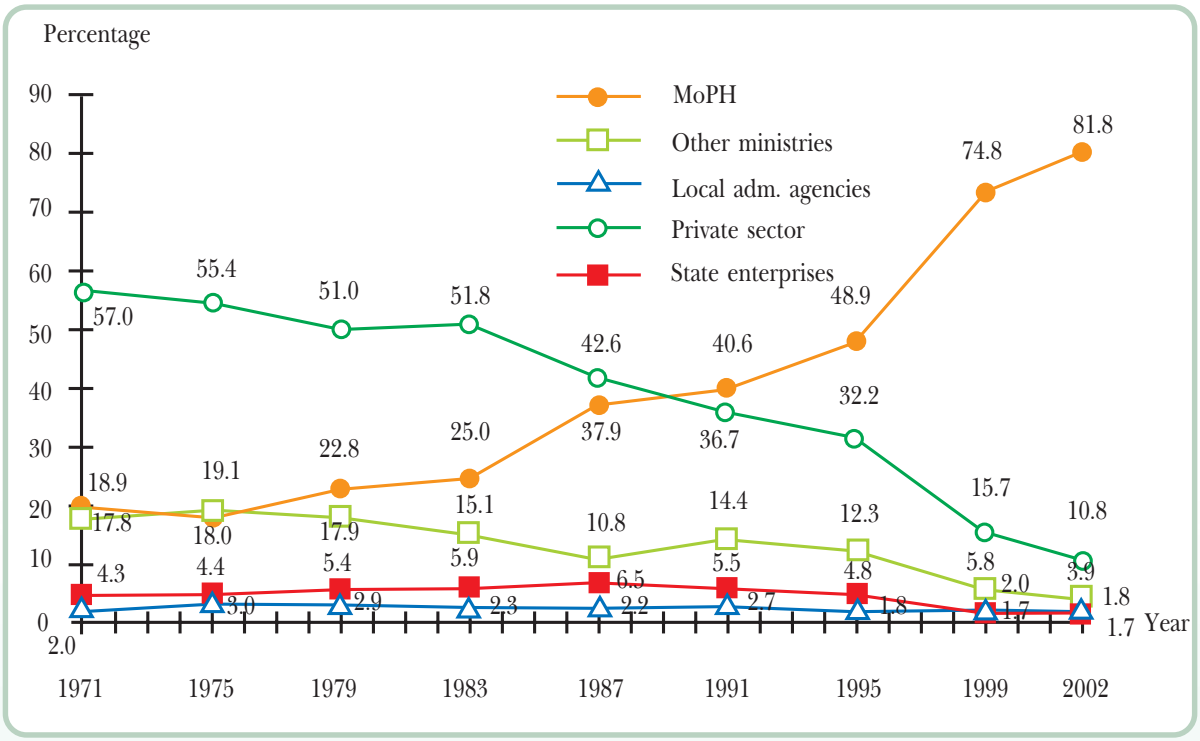
Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. Figures in ( ) are in percentage terms.

2. For 2002, data were received from 65.6% of all health facilities nationwide: 62.5% from among public sector facilities and 77.3% from among private sector agencies.

3. For 2002, the number of pharmacists in Bangkok for 2001 was used instead.

Figure 6.15 Proportion of Pharmacists by Agency,1971-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

1.1.4 Professional Nurses

(1) Production of Professional Nurses

At present, Thailand has 64 nursing colleges under seven major agencies: 13 under the Ministry of Education, 35 under the MoPH, three under the Ministry of Defence, one under the Royal Thai Police, one under the Thai Red Cross Society and ten in the private sector. Beginning in 2004, another two nursing colleges will be taking student nurses at Kasetsart and Suranaree Technology Universities.

Beginning in 2005, state-run nursing colleges (except for those under the Ministry of Education) will be producing more nurses. The MoPH nursing colleges will be producing 1,000 more nurses each year, in addition to the current output of 1,500 nurses per annum as the current production output is insufficient (Table 6.21). The actual and expected nursing graduates are as shown in Table 6.22.

In 1990, to resolve the shortage problem on a short-term basis, the MoPH began to produce technical nurses. However, in 2000, such a programme was discontinued and since then only professional nurses have been produced. This is to enhance the efficiency of health services.

Table 6.21 Plan on Admissions of Nursing Students in Thailand, Academic Years, 1997-2014

Production agency	No. of entrants																		Total
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
1. Public Sector																			
1.1 HEC	1,842	2,020	1,639	1,376	1,353	1,435	1,455	1,725	1,725	1,725	1,725	1,755	1,755	1,755	1,755	1,755	1,755	1,755	30,305
1.2 MoPH	3,725	3,725	1,500	2,000	2,000	1,700	1,700	1,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	42,850
1.3 Other agencies	564	581	545	528	465	490	490	405	685	685	685	685	685	685	685	685	685	685	10,918
2. Private sector	610	610	610	610	610	755	755	875	975	975	975	975	975	975	975	975	975	975	15,185
Total	**6,741**	**6,936**	**4,294**	**4,514**	**4,428**	**4,380**	**4,400**	**4,505**	**5,885**	**5,885**	**5,885**	**5,915**	**5,915**	**5,915**	**5,915**	**5,915**	**5,915**	**5,915**	**99,258**

Sources:
1. For 1997 - 2003, data were derived from various agencies: MoPH's Phra Boromrajchanok Institute, Office of the Higher Education Commission, other agencies, and private nursing colleges.
2. For 2004 - 2014, data were derived from the Thai Nursing Council.

Notes:
1. Other agencies include Nursing Colleges of the Ministry of Defence, the Thai Red Cross Society, the Bangkok Metropolitan Administration, and the Royal Thai Police.
2. For 2001 - 2004, the Police Nursing College stopped taking new students, but will resume in 2005.

Table 6.22 Numbers of Actual and Expected Professional Nursing Graduates in Academic Years 1997-2006

Production agency	No. of graduates										Total
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	
1. Public Sector											
1.1 HEC	1,674	1,808	1,722	2,099	1,511	1,722	1,561	1,285	1,363	1,382	16,127
1.2 MoPH	1,616	1,950	3,726	3,535	3,202	1,499	1,943	1,900	1,615	1,615	22,601
1.3 Other agencies	589	618	580	600	600	469	458	442	466	466	5,288
2. Private sector	321	364	430	507	589	629	768	580	717	717	5,622
Total	**4,200**	**4,740**	**6,458**	**6,741**	**5,902**	**4,319**	**4,730**	**4,207**	**4,161**	**4,180**	**49,638**

Sources: The Nursing Council and Phra Boromrajchanok Institute for Health Manpower Development, MoPH.

Notes:
1. For 1997 - 2003, the numbers of those who actually graduated.
2. For 2004 - 2006, the numbers of those expected to graduate, assuming that 95% of the entrants will graduate.
3. Other agencies include Nursing Colleges of the Ministry of Defence, the Thai Red Cross Society, the Bangkok Metropolitan Administration, and the Royal Thai Police.

(2) Numbers of Professional Nurses Actually Practising and Required

In 2002, there are 113,718 registered professional nurses (The Nursing Council, 2003), but only 76,578-91,602 nurses are actually practising.[6] It is estimated that in 2015 there will be 120,197-173,321 professional nurses,[6] whereas there will be a need for 137,997-142,366 professional nurses,[6] i.e. the supply is close to the demand in the future.

(3) Geographical Distribution of Professional Nurses

Most professional nurses are clustered in Bangkok and the Central Region. Their distribution trends are close to those of medical doctors, dentists, and pharmacists (Table 6.23 and Figures 6.16-6.17).

(4) Distribution of Professional Nurses by Agency

In the past decade, the proportion of professional nurses working in the public sector (MoPH, other ministries, state enterprises, and local administration agencies) dropped from 93.2% in 1971 to 85.8% in 1995. After the economic crisis, such a proportion rose to 89.5% in 1997, whereas that in the private sector dropped to 10.5%. However, upon restructuring of the health service systems after the economic crisis, the proportion of nurses in the private sector has risen to 11.7-12.6% in 1999-2002 (Table 6.24 and Figure 6.18).

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[6] Dr. Wichit Srisuphan. Supply and Requirement Projection of Professional Nurses in Thailand over the Next Two Decades (1995-2015 A.D.). HRDJ: 1998; Vol. 2, No. 3 : 210-220.

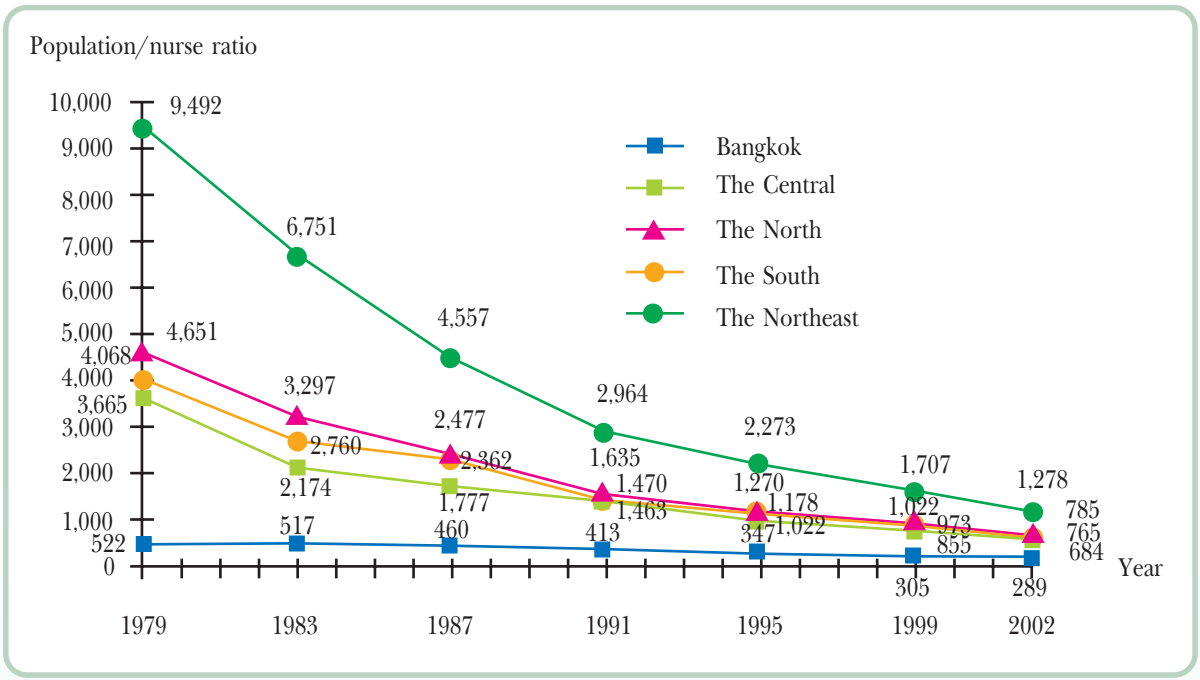
Table 6.23 Distribution of Professional Nurses by Region, 1979-2002

Region	No. of nurses and population/nurse ratio												
	1979	**1981**	**1983**	**1985**	**1987**	**1989**	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2002**
Bangkok metropolis	9,428	10,826	11,096	11,831	12,982	14,338	13,514	14,979	16,089	15,190	18,543	19,889	19,889
	(522)	(494)	(517)	(480)	(460)	(436)	(413)	(432)	(347)	(368)	(305)	(287)	(289)
The Central	2,588	2,954	4,580	5,032	6,488	7,368	8,795	10,526	13,240	13,915	16,738	19,437	21,545
	(3,665)	(3,245)	(2,174)	(2,217)	(1,777)	(1,613)	(1,470)	(1,230)	(1,022)	(1,004)	(855)	(749)	(684)
The North	2,089	2,548	3,082	3,313	4,234	4,620	6,747	7,823	9,370	10,130	11,882	14,149	15,456
	(4,651)	(3,862)	(3,297)	(3,072)	(2,477)	(2,332)	(1,635)	(1,425)	(1,270)	(1,188)	(1,022)	(856)	(785)
The South	1,392	1,415	2,216	2,423	2,962	4,138	4,900	5,694	6,498	7,290	8,332	10,247	10,993
	(4,068)	(4,155)	(2,760)	(2,743)	(2,362)	(1,775)	(1,463)	(1,400)	(1,178)	(1,080)	(973)	(807)	(765)
The Northeast	1,715	1,931	2,591	3,420	4,086	5,251	6,729	7,649	9,065	9,841	12,513	14,320	16,860
	(9,492)	(8,701)	(6,751)	(5,270)	(4,557)	(3,653)	(2,964)	(2,621)	(2,273)	(2,132)	(1,707)	(1,498)	(1,278)
Disparity between Bangkok's and Northeast's population/nurse ratios	1: 18.2	1: 17.6	1: 13.1	1: 11.0	1: 9.9	1: 8.4	1: 7.2	1: 6.1	1: 6.6	1: 5.8	1:5.6	1: 5.2	1: 4.4
Total	**17,212**	**19,674**	**23,565**	**26,019**	**30,752**	**37,515**	**40,685**	**46,671**	**54,262**	**56,366**	**68,008**	**78,042**	**84,683**
	(2,676)	**(2,412)**	**(2,099)**	**(1,986)**	**(1,743)**	**(1,478)**	**(1,255)**	**(1,255)**	**(1,092)**	**(1,073)**	**(905)**	**(796)**	**(739)**

Sources: Reports on Health Resources. Bureau of Policy and Stratgy, MoPH.

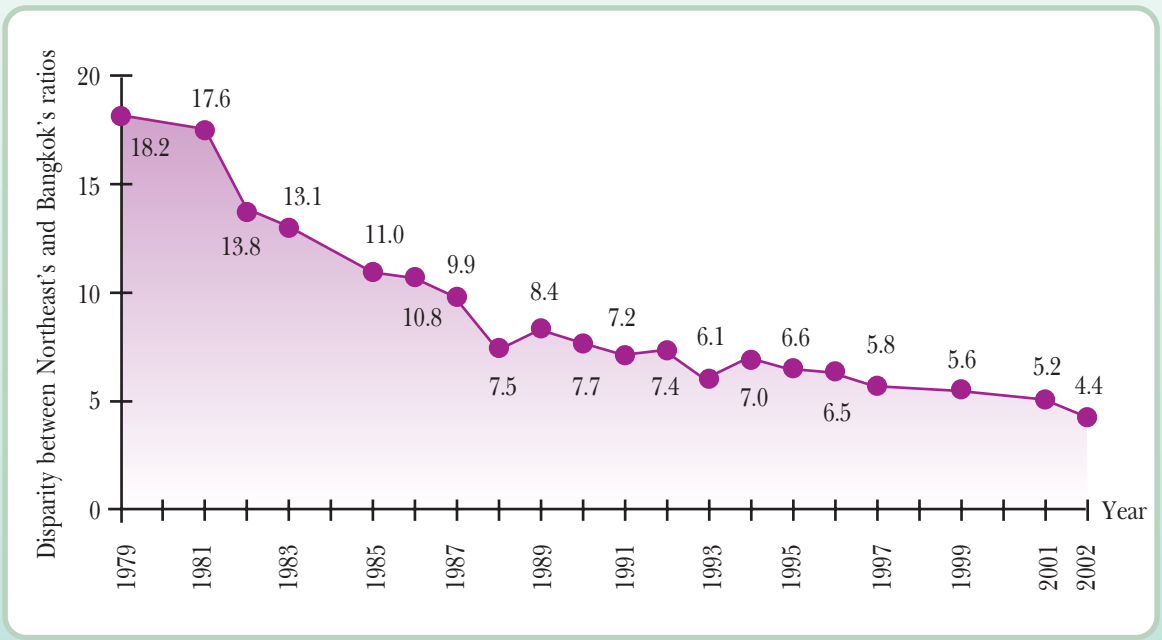
Notes:
1. Figures in ( ) are population to professional nurse ratios.
2. Figures from the surveys are estimated to be 50% less than actuality.
3. Due to incompleteness of data for 1985, the data for 1984 were used instead.
4. For 2002, data were received feom only 65.6% of all health facilities; 44.3% from Baangkok, 60.5% from the Central, 76.7% from the Northeast, 74.9% from the North, and 68.3% from the South.
5. For 2002 in Bangkok, the 2001 data were used instead.

Figure 6.16 Population to Professional Nurse Ratios by Region, 1979-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Figure 6.17 Disparity between Northeast's and Bangkok's Population/Nurse Ratios, 1979-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. For 2002, the survey information was received from only 44.3% of health facilities in Bangkok and 76.7% from the Northeast.

2. For 2002, the 2001 data were used instead.

Table 6.24 Number and Proportion of Professional Nurses by Agency,1971-2002

Year	Number and percentage					
	MoPH	Other ministries	State enterprises	Local adm. agencies	Private sector	Total
1971	4,016	3,720	274	713	637	9,360
	(42.9)	(39.7)	(2.9)	(7.6)	(6.8)	
1973	4,757	3,708	409	761	927	10,562
	(45.0)	(35.1)	(3.9)	(7.2)	(8.8)	
1975	6,021	4,203	415	982	1,037	12,658
	(47.6)	(33.2)	(3.3)	(7.7)	(8.2)	
1977	6,462	5,588	550	1,099	1,532	15,231
	(42.4)	(36.7)	(3.6)	(7.2)	(10.1)	
1979	7,630	5,544	605	1,638	1,794	17,211
	(44.3)	(32.2)	(3.5)	(9.5)	(10.4)	
1981	8,526	6,370	680	1,525	2,498	19,599
	(43.5)	(32.5)	(3.5)	(7.8)	(12.7)	
1983	11,537	6,935	791	1,522	2,780	23,565
	(48.9)	(29.4)	(3.4)	(6.5)	(11.8)	
1985	16,036	5,462	1,958	1,683	2,880	28,019
	(57.2)	(19.5)	(6.9)	(6.0)	(10.3)	
1987	16,169	6,797	2,002	2,975	2,809	30,752
	(52.6)	(22.1)	(6.5)	(9.6)	(9.1)	
1989	19,423	10,849	2,103	2,000	3,140	37,515
	(51.8)	(28.9)	(5.6)	(5.3)	(8.4)	
1991	23,996	8,540	1,986	2,263	3,900	40,685
	(58.9)	(20.9)	(4.9)	(5.6)	(9.6)	
1993	28,088	9,117	2,072	2,539	4,855	46,671
	(60.2)	(19.5)	(4.4)	(5.4)	(10.4)	
1995	32,976	9,148	1,816	2,643	7,679	54,262
	(60.8)	(16.8)	(3.3)	(4.9)	(14.2)	
1997	37,087	9,099	2,017	2,220	5,943	56,366
	(65.8)	(16.1)	(3.6)	(3.9)	(10.5)	
1999	44,333	10,247	2,359	2,825	8,244	68,008
	(65.2)	(15.0)	(3.5)	(4.2)	(12.1)	
2001	51,450	11,240	2,564	2,917	9,871	78,042
	(65.9)	(14.4)	(3.3)	(3.7)	(12.6)	
2002	57,804	10,934	2,574	3,427	9,944	84,683
	(68.3)	(12.9)	(3.0)	(4.0)	(11.7)	

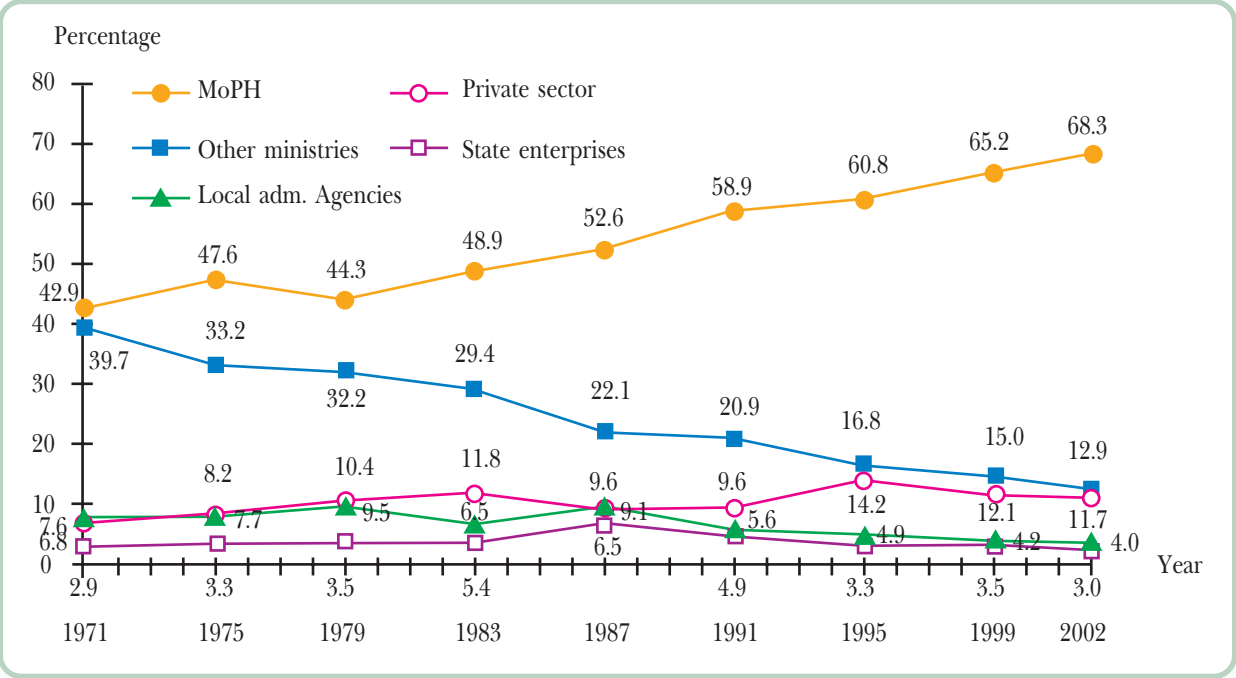
Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. Figures in ( ) are in percentage terms.

2. For 2002, data were received from 65.6% of all health facilities nationwide: 62.5% from among public sector facilities and 77.3% from among private sector agencies.

3. For 2002, the number of professional nurses in Bangkok for 2001 was used instead.

Figure 6.18 Proportion of Professional Nurses by Agency, 1971-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

(5) Professional Nurses' Workloads

Based on the numbers of outpatients, professional nurses in community hospitals and private hospitals have greatest workloads, compared with those in other hospitals located in urban areas and Bangkok (Table 6.25).

Table 6.25 Patient loads of Professional Nurses, 2002

Health facility	(1) No. of outpatients	(2) No. of inpatients	(3) Inpatients adjusted*	Total patientloads (1) + (3)	No. of nurses	Patientload per nurse	Comparison index
Community hospitals	17,831,867	3,305,860	46,282,040	64,113,907	22,744	2,818.9	1.3
Regional/general hospitals	5,823,778	2,605,672	46,902,096	52,725,874	25,083	2,102.1	1.0
University hospitals	934,774	303,866	5,469,588	6,404,362	8,496	753.8	0.3
BMA's hospitals	430,098	81,267	1,462,806	1,892,904	2,917	648.9	0.3
Private hospitals	4,025,727	1,535,831	21,501,634	25,527,361	9,702	2,631.1	1.2
Total	**29,046,244**	**7,832,496**	**121,618,164**	**150,664,408**	**68,942**	**2,185.4**	**1.0**

Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. * For comparison purpose, the number of inpatients in each hospital category is adjusted as follows:
For community and private hospitals = No. of inpatients X 14
For regional/general hospitals, university and BMA hospitals = No. of inpatients X 18
2. For the number of nurses in 2002 in Bangkok, the 2001 data were used instead.

1.1.5 Health Centre Personnel

(1) Quantity

In 2003, there were 9,765 health centres nationwide with 28,839 health workers (in 2003) or an average of 3.0 workers per centre. In 2015, a total of 56,937 health workers[7] will be required (one health worker for every 600 population). At present, the MoPH can produce 5,000 health workers per annum, based on the capacity of all seven Sirindhorn Public Health Colleges and 35 Boromrajchonnanee Nursing Colleges. But actually, of this number only about 1,500 are assigned to work at various health centres each year. For several years, professional nurses and dental nurses have been assigned to work at large health centres; and, in the future, doctors will also be assigned to work at health centres located in large communities.

(2) Geographical Distribution of Health Centre Personnel

The trends of health centre personnel to population ratio have risen in all regions and nationwide, i.e. from 1:2,421 in 1987 to 1:1,762 in 2003. Most health workers are normally clustered in the Central Plains and the South, while regional disparities are lowering (Table 6.26).

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[7] Amphon Jindawattana. Report on study of Health Manpower Requirement in the Next Two Decades: the Primary Care Providers in Communities, 1997.

Table 6.26 Number and Ratio of Health Centre Personnel to Population by Region,1987-2003

Region	Number and worker/population ratio								
	1987	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
The Central	4,217 (1:1,833)	7,724 (1:1,125)	7,917 (1:1,109)	8,928 (1:1,207)	9,017 (1:1,180)	8,769 (1:1,059)	8,150 (1:1,453)	8,027 (1:1,470)	7,604 (1:1,552)
The North	3,233 (1:2,387)	5,734 (1:1,512)	6,826 (1:1,293)	6,970 (1:1,389)	7,167 (1:1,349)	7,068 (1:1,292)	6,558 (1:1,572)	6,456 (1:1,603)	6,043 (1:1,713)
The South	2,318 (1:2,064)	4,628 (1:1,161)	5,038 (1:1,079)	5,152 (1:1,129)	5,264 (1:1,127)	5,146 (1:1,141)	4,843 (1:1,378)	4,761 (1:1,416)	4,463 (1:1,511)
The Northeast	4,573 (1:3,167)	9,114 (1:1,785)	10,430 (1:1,582)	10,236 (1:1,681)	10,569 (1:1,655)	10,248 (1:1,666)	9,693 (1:1,938)	9,591 (1:1,971)	9,015 (1:2,097)
Disparity between Central's and Northeast's population/ worker ratios	1:1.73	1:1.59	1:1.43	1:1.39	1:1.40	1:1.57	1:1.3	1:1.3	1:1.4
Total	**14,341 (1:2,421)**	**27,200 (1:1,434)**	**30,211 (1:1,309)**	**31,286 (1:1,390)**	**32,017 (1:1,366)**	**31,231 (1:1,324)**	**29,244 (1:1,628)**	**28,835 (1:1,657)**	**27,125 (1:1,762)**

Sources: 1. For 1987 - 2000, data were derived from the Bureau of Health System Development, Department of Health Service Support.

2. For 2001 - 2003, data were derived from the Bureau of Central Administration, MoPH.

Notes: 1. Figure in ( ) are ratios of health centre worker to population outside municipalities and sanitary districts.

2. From FY 1999, data were derived from the payrolls (Jor 18) of health centre staff of the Bureau of Central Administration. Office of the Permanent Secretary, MoPH.

3. Data on population outside municipal areas for 2001 are the data as of 31 Dec, 2001 and data for 2002-2003 are as of 1 Jan 2003, from the Bureau of Registration Administration, Department of Provincial Administration, Ministry of Interior, as calculated by Rujira Taverat of the Bureau of Policy and Strategy, MoPH.

1.2 Health Facilities

1.2.1 Number and Coverage of Health Facilities

1) Health Facilities in the Public Sector (see in Table 6.27)

In Bangkok Metropolis, there are five medical school hospitals, 29 general hospitals, 19 specialized hospitals/institutions, five 10-bed community hospitals (under BMA), and 61 public health centres (with 82 branches, in all BMA districts).

Region level. There are four medical school hospitals, 25 regional hospitals, and 40 specialized hospitals.

Provincial level. There are 70 general hospitals covering all provincial areas (previously there were 67 general hospitals; and now Hua Hin Community Hospital has been upgraded as a general hospital, two other hospitals have been transferred to MoPH, i.e. Chonprathan Hospital of the Agriculture Ministry and the Northeastern Region Infectious Disease Hospital of the MoPH Disease Control Department) and 57 hospitals under various agencies of the Ministry of Defence.

District level. There are 725 community hospitals, covering 91.2% of all districts, two extended OPD or hospital outlets, and 214 municipal health centres.

Tambon (subdistrict) level. There are 9,765 health centres, covering all Tambons; some Tambons have more than one health centre.

Village level. There are 311 community health posts, 66,223 rural community primary health care centres, and 3,108 urban community primary health care centres.

Table 6.27 Number of Health Facilities in the Public Sector, 2003

Administrative level	Health facility	Number	Coverage
Bangkok Metropolis	Medical school hospitals	5	-
	General hospitals	29	-
	- MoPH	5	-
	- Ministry of Interior (excluding BMA)	5	-
	- Ministry of Defence	7	-
	- BMA	8	-
	- State enterprises	4	-
	Specialized hospitals/institutions	19	-
	Public health centres/branches	61/82	All districts in BMA
	10-bed hospitals (BMA)	5	
Regional level and branches	Medical school hospitals	4	
	Regional hospitals	25	

Table 6.27 Number of Health Facilities in the Public Sector, 2003

Administrative level	Health facility	Number	Coverage
	Specialized hospitals:	40	
	- Maternal & child health hospitals	12	
	- Psychiatric hospitals	11	
	- Neurological hospital	1	
	- Leprosy hospital	1	
	- Communicable disease hospital	1	
	- Chest disease hospital	1	
	- Cancer prevention & control centres	6	
	- Drug dependence treatment centres	5	
	- Hearing centre	1	
	- Centre for elderly care	1	
Provincial level	General hospitals, under MoPH	70	100%
(75 provinces)	Military hospitals under the Ministry of Defence	57	
795 districts	Community hospitals (Jan, 2004)	725	91.2%
81 minor-districts	Extended hospitals	2	
	Minicipal health centres (Oct, 2003)	214	
7,255 tambons	Health centres (2003)	9,765	100%
72,861 villages	Community health posts	311	
	Community PHC centres (2003)		
	- Rural	66,223	90.9%
	- Urban	3,108	-

Sources:
1. Bureau of Policy and Strategy, MoPH.
2. Bureau of Health Service System Development, Department of Health Service Support, MoPH.
3. Primary Health Care Division, Department of Health Service Support, MoPH.
4. Department of Provincial Administration, Ministry of Interior.
5. Department of Health, Bangkok Metropolitan Administration (BMA).

2) Health Facilities in the Private Sector include:

(2.1) Pharmacies or drugstores: 8,225 modern pharmacies; 4,653 pharmacies selling only packaged drugs; and 2,106 traditional medicine drugstores.

(2.2) Clinics: 14,953 clinics without inpatient beds.

(2.3) Hospitals: 346 private hospitals with inpatient beds, as shown in Table 6.28.

Table 6.28 Private Health Facilities, 2003

Type	Bangkok		Provincial areas		Total
	No.	Percentage	No.	Percentage	
1. Pharmacies					
1.1 Modern pharmacies	3,393	41.3	4,832	58.7	8,225
1.2 Modern pharmacies selling only packed drugs	565	12.1	4,088	87.9	4,653
1.3 Traditional medicine drugstores	420	19.9	1,686	80.1	2,106
Total	**4,378**	**29.2**	**10,606**	**70.8**	**14,984**
2. Clinics (without inpatient beds)					
- Modern	2,687	n.a.	n.a.	n.a.	n.a.
- Traditional	413	n.a.	n.a.	n.a.	n.a.
Total	**3,100**	**20.7**	**11,853**	**79.3**	**14,953**
3. Private hospitals (with inpatient beds)					
- No. of hospitals	100	28.9	246	71.1	346
- No. of beds	15,227	43.7	19,636	56.3	34,863

Sources: 1. Drug Control Division, Food and Drug Administratin, MoPH.
2. Medical Registration Division, Department of Health Service Support, MoPH.

Between 1993 and 2003, the number of clinics (without inpatient beds), especially in provincial areas increased markedly, but dropping in Bangkok Metropolis (Table 6.29 and Figure 6.19). For the number of hospitals, the tendencies are similar to those for clinics (Figure 6.20).

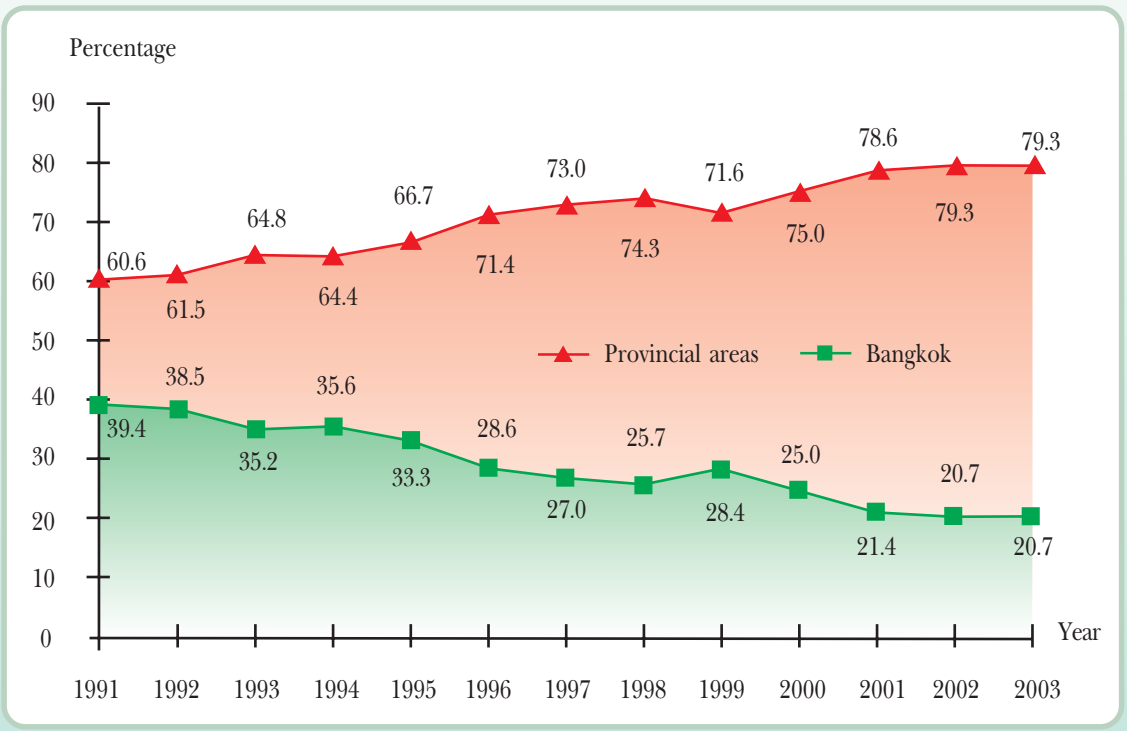
Table 6.29 Number of Health Facilities without Inpatient Beds (Private Clinics), 1991-2003

Region	No. of clinics and percentage (in parentheses)												
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Bangkok	5,625	4,130	3,829	4,247	4,062	3,114	3,087	3,143	3,399	3,552	3,081	3,156	3,100
	(39.4)	(38.5)	(35.2)	(35.6)	(33.3)	(28.6)	(27.0)	(25.7)	(28.4)	(25.0)	(21.4)	(20.7)	(20.7)
Provincial areas	8,658	6,592	7,037	7,689	8,122	7,787	8,354	9,063	8,572	10,698	11,322	12,111	11,853
	(60.6)	(61.5)	(64.8)	(64.4)	(66.7)	(71.4)	(73.0)	(74.3)	(71.6)	(75.0)	(78.6)	(79.3)	(79.3)
Total	14,283	10,722	10,866	11,936	12,184	10,901	11,441	12,206	11,971	14,250	14,403	15,267	14,953
Change (%)	-	-24.9	+1.3	+9.8	+2.1	-10.5	+4.9	+6.7	-1.9	+19.0	+1.1	+6.0	-2.1

Source: Medical Registration Division, Department of Health Service Support, MoPH.

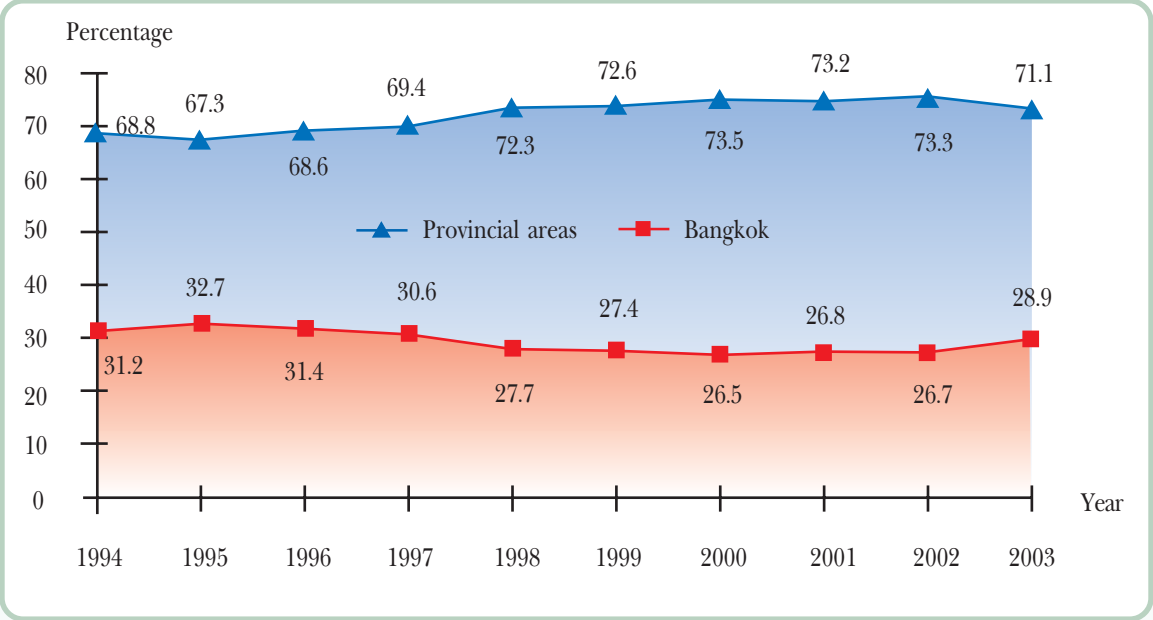
Notes: Figures in ( ) are in percentage terms.

Figure 6.19 Percentage of Clinics in Provincial Areas and Bangkok, 1991-2003



Source: Medical Registration Division, Department of Health Service Support, MoPH.

Figure 6.20 Percentage of Private Hospitals in Provincial Areas and Bangkok, 1994-2003



Source: Medical Registration Division, Department of Health Service Support, MoPH

1.2.2 Distribution of Health Facilities

1) Hospitals

(1.1) Geographical Distribution of Hospitals

The bed/population ratio has risen in the past decade across the country from 1: 752 in 1979 to 1: 462 in 2002. Although most of the hospital beds are clustered in Bangkok and the Central Region, the Bangkok-provincial disparities have been rather stable (Table 6.30 and Figure 6.21).

(1.2) Distribution of Hospitals by Agency

In the public sector, the largest agency is the MoPH with two-thirds of all hospitals and beds across the country. In 2002, 67.7% of hospitals and 64.1% of beds belonged to the MoPH. Of which, over 80% were community hospitals in various districts, and only 5.9% belonged to other ministries. But, as most of non-MoPH health facilities are large hospitals, their overall proportion of beds is as high as 11.3% (Tables 6.31 - 6.32 and Figure 6.23).

With regard to the increase in beds, the MoPH's hospital beds climbs slightly, but its proportion tends to be declining (Figure 6.24). This is because the MoPH has been building more community hospitals, one in each district according to its policy, most of which being 30-bed and 60-bed hospitals (Table 6.33).

Since 1993, the numbers of hospitals and beds have been remarkably increasing, but the number of medical doctors has not increased at all. As a result, the doctor to bed ratio steadily dropped from 1:7.5 in 1991 to 1:15.3 in 1998; however, after the economic crisis the ratio has increased to 1:7.3 in 2003.

In the private sector, the number of private hospitals increased from 23 in 1970 to 473 in 1998, but decreased to 346 in 2003; a fifteen-fold increase, compared with that in 1970, nevertheless. Almost half of the private hospitals (43.1%) have 50 beds or fewer. Only 101 hospitals (29.2%) with over 100 beds participate in the health insurance scheme according the criteria of the Social Security Act (Tables 6.34 and 6.36). Their distribution varies to the economic potential; therefore, they are mostly in Bangkok and the Central Plains rather than in the Northeast, the North, and the South (Table 6.36). On average, private hospitals in Bangkok have 152 beds each and those in provincial areas have only 80 beds each (Table 6.28).

It is noteworthy that between 1970 and 1989 the proportion of private hospitals was declining, but since 1991 the proportion of beds has been rising more rapidly than that of hospitals. This is a result of a rapid growth in large hospitals, consistent with the rapid economic growth in the past decade together with government's investment promotion privileges (Tables 6.34 and 6.36).

During the economic crisis, the private health services have been obviously affected, the bed-occupancy dropping by 20-30% in large hospitals and by over 50% in small hospitals. Several hospitals reduced the number of service beds, some cut down on the number of staff as well as staff salaries or compensation (Impact of Economic Crisis on Health Manpower Development, 1999). Some were likely to close down their business while applications for building new hospitals were on the decline (Figure 6.22).

Table 6.30 Distribution of Inpatient Beds by Region, 1979-2002

Region	No. of beds and population/bed ratio (in parenthesis)												
	1979	**1981**	**1983**	**1985**	**1987**	**1989**	**1991**	**1993**	**1995**	**1997**	**1999**	**2001**	**2002**
Bangkok Metropolis	14,585	17,661	18,486	19,376	24,376	20,337	21,704	24,351	25,236	27,327	28,454	27,879	27879
	(337)	(303)	(310)	(293)	(245)	(308)	(257)	(266)	(221)	(205)	(199)	(205)	(206)
The Central	17,481	20,246	21,954	32,018	24,628	24,156	25,519	27,658	34,248	37,386	38,103	39,615	37,721
	(543)	(473)	(453)	(348)	(468)	(492)	(506)	(468)	(395)	(374)	(376)	(368)	(391)
The North	9,917	12,503	12,751	12,650	14,252	17,520	16,181	17,502	20,943	25,874	25,426	25,570	24,483
	(980)	(787)	(797)	(804)	(736)	(615)	(682)	(637)	(568)	(465)	(478)	(474)	(496)
The South	8,515	8,521	10,258	10,334	11,153	11,394	11,888	12,936	14,449	16,016	15,944	16,814	16,862
	(665)	(690)	(596)	(643)	(627)	(645)	(603)	(616)	(530)	(492)	(509)	(492)	(496)
The Northeast	10,776	13,437	14,989	15,294	15,887	16,575	18,560	18,719	23,541	25,802	27,376	27,819	28,389
	(1,511)	(1,250)	(1,167)	(1,178)	(1,172)	(1,157)	(1,074)	(1,071)	(875)	(813)	(780)	(771)	(759)
Disparity between Bangkok's and Northeast's population/ bed ratios	1 : 4.5	1 : 4.1	1 : 3.8	1 : 4.0	1 : 4.8	1 : 3.8	1 : 4.2	1 : 4.0	1 : 3.9	1 : 4.0	1 : 3.9	1 : 3.8	1 : 3.7
Total	**61,274**	**72,368**	**78,438**	**80,438**	**87,554**	**89,982**	**93,852**	**101,166**	**118,417**	**132,405**	**135,303**	**137,697**	**135,334**
	(752)	**(656)**	**(630)**	**(642)**	**(612)**	**(616)**	**(604)**	**(579)**	**(500)**	**(457)**	**(455)**	**(451)**	**(462)**

Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

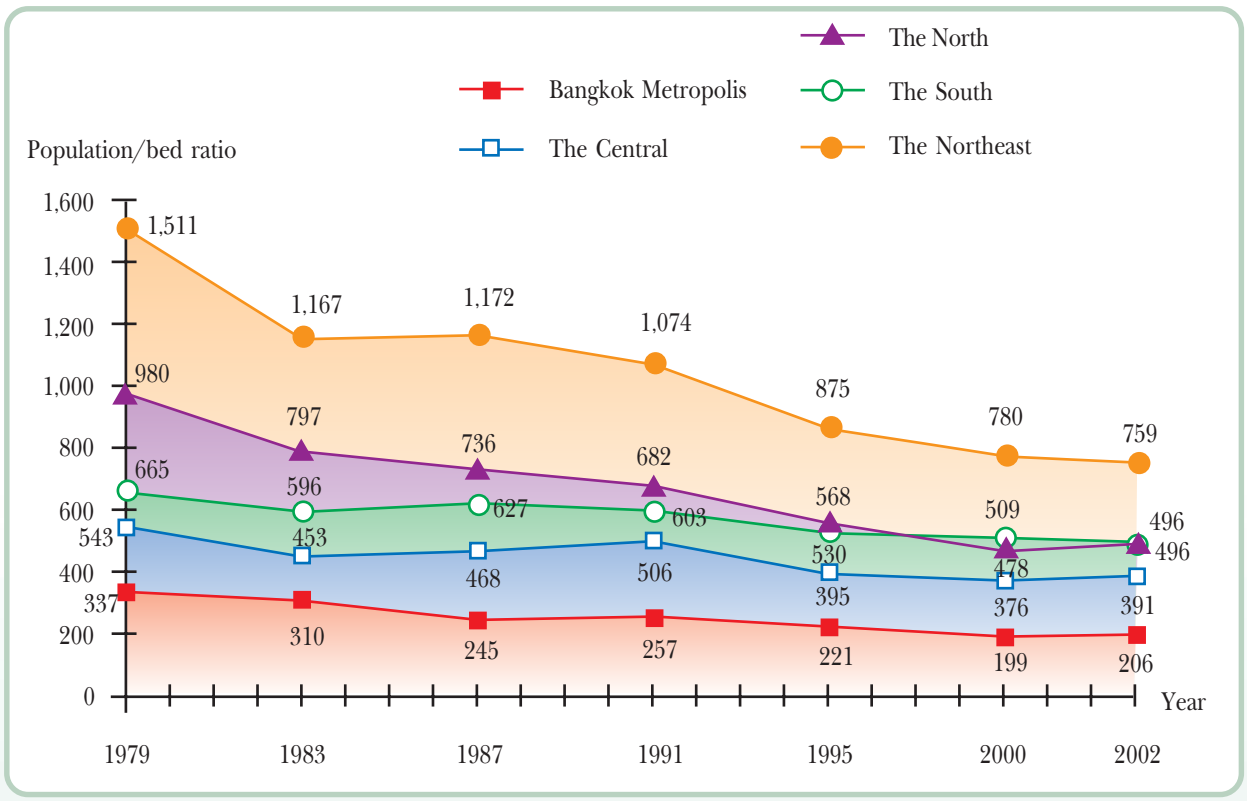
Notes: 1. Figures in ( ) are population to bed ratios.

2. Due to incompleteness of data for 1985, the data for 1984 were used instead.

3. For 2002, data were received from only 65.6% of all health facilities; 44.3% from Bangkok, 60.5% from the Central, 76.7% from the Northeast, 74.9% from the North, and 68.3% from the South.

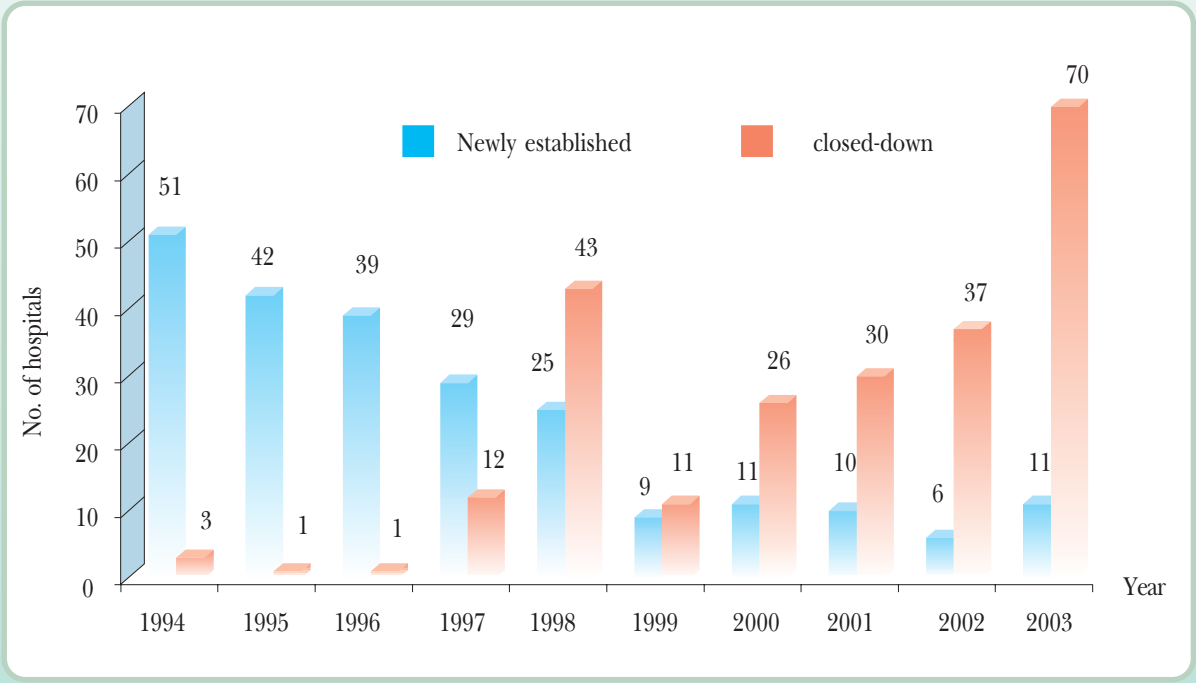
4. For Bangkok in 2002, the 2001 data were used instead

Figure 6.21 Population to Bed Ratios by Region, 1979-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Figure 6.22 Numbers of Newly Established and Closed-down Private Hospitals, 1994-2003



Source: Medical Registration Division, Department of Health Service Support, MoPH.

Table 6.31 Number and Proportion of Hospitals by Agency, 1973-2002

Year	Number and percentage (in parenthesis)					
	MoPH	Other ministries	State enterprises	Local adm. agencies	Private sector	Total
1973	112	65	14	6	127	324
	(34.6)	(20.1)	(4.3)	(1.8)	(39.2)	
1975	116	64	13	6	135	334
	(34.7)	(19.2)	(3.9)	(1.8)	(40.4)	
1977	295	68	19	6	167	555
	(53.2)	(12.3)	(3.4)	(1.1)	(30.1)	
1979	389	66	24	6	186	671
	(57.9)	(9.8)	(3.6)	(0.9)	(27.7)	
1981	444	64	23	6	210	747
	(59.4)	(8.6)	(3.1)	(0.8)	(28.1)	
1983	531	67	19	6	256	879
	(60.4)	(7.6)	(2.2)	(0.7)	(29.1)	
1985	625	58	9	6	229	927
	(67.4)	(6.2)	(1.0)	(0.6)	(24.7)	
1987	664	66	10	6	237	983
	(67.5)	(6.7)	(1.0)	(0.6)	(24.1)	
1989	692	64	11	7	237	1,011
	(68.4)	(6.3)	(1.1)	(0.7)	(23.4)	
1991	718	70	11	8	257	1,064
	(67.5)	(6.6)	(1.0)	(0.8)	(24.1)	
1993	754	68	12	8	263	1,105
	(68.2)	(6.1)	(1.1)	(0.7)	(23.8)	
1995	831	73	11	8	357	1,280
	(64.9)	(5.7)	(0.8)	(0.7)	(27.9)	
1997	845	79	11	8	358	1,301
	(64.9)	(6.1)	(0.8)	(0.6)	(27.5)	
1999	855	84	21	11	374	1,345
	(63.6)	(6.2)	(1.6)	(0.8)	(27.8)	
2001	875	79	10	11	323	1,298
	(67.4)	(6.1)	(0.8)	(0.8)	(24.9)	
2002	877	77	11	12	319	1,296
	(67.7)	(5.9)	(0.8)	(0.9)	(24.6)	

Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. Figures in ( ) are percentages.

2. Due to incompleteness of data for 1985, the data for 1984 were used instead.

3. For 2002, data were received from 65.6% all health facilities nationwide: 62.5% from among public sector facilities and 77.3% from among private sector agencies.

4. For Bangkok in 2002, the 2001 data were used instead.

Table 6.32 Number and Proportion of Beds by Agency, 1973 - 2002

Year	Number and percentage (in parenthesis)					
	MoPH	Other ministries	State enterprises	Local adm. agencies	Private sector	Total
1973	34,206	11,108	671	918	3,746	50,649
	(67.5)	(21.9)	(1.3)	(1.8)	(7.4)	
1975	36,201	12,361	591	1,307	3,963	54,423
	(66.5)	(22.7)	(1.1)	(2.4)	(7.3)	
1977	40,712	14,765	635	1,456	5,785	63,353
	(64.3)	(23.3)	(1.0)	(2.3)	(9.1)	
1979	44,964	14,672	843	1,387	6,210	68,076
	(66.0)	(21.5)	(1.2)	(2.0)	(9.1)	
1981	48,442	13,912	956	1,558	7,500	72,368
	(66.9)	(19.2)	(1.3)	(2.1)	(10.4)	
1983	53,943	13,835	823	1,541	8,296	78,438
	(68.8)	(17.6)	(1.0)	(1.9)	(10.6)	
1985	56,286	13,773	951	1,687	8,275	80,972
	(69.5)	(17.0)	(1.2)	(2.1)	(10.2)	
1987	57,766	15,482	2,243	2,089	9,974	87,554
	(65.9)	(17.7)	(2.6)	(2.4)	(11.4)	
1989	58,927	17,118	2,335	2,057	9,545	89,982
	(65.5)	(19.0)	(2.6)	(2.3)	(10.6)	
1991	62,250	15,422	2,178	2,152	11,877	93,852
	(66.3)	(16.4)	(2.3)	(2.3)	(12.6)	
1993	65,558	15,784	2,229	2,232	15,363	101,166
	(64.8)	(15.6)	(2.2)	(2.2)	(15.2)	
1995	73,191	15,430	2,333	2,165	25,298	118,417
	(61.8)	(13.0)	(2.0)	(1.8)	(21.4)	
1997	79,818	18,074	2,360	2,208	29,945	132,405
	(60.3)	(13.6)	(1.8)	(1.7)	(22.6)	
1999	82,085	17,110	2,541	2,360	31,207	135,303
	(60.7)	(12.6)	(1.9)	(1.7)	(23.1)	
2001	87,753	16,218	2,525	2,245	28,956	137,697
	(63.7)	(11.8)	(1.8)	(1.6)	(21.0)	
2002	86,761	15,254	2,555	2,267	28,497	135,334
	(64.1)	(11.3)	(1.9)	(1.7)	(21.0)	

Sources: Reports on Health Resources. Bureau of Policy and Strategy,MoPH.

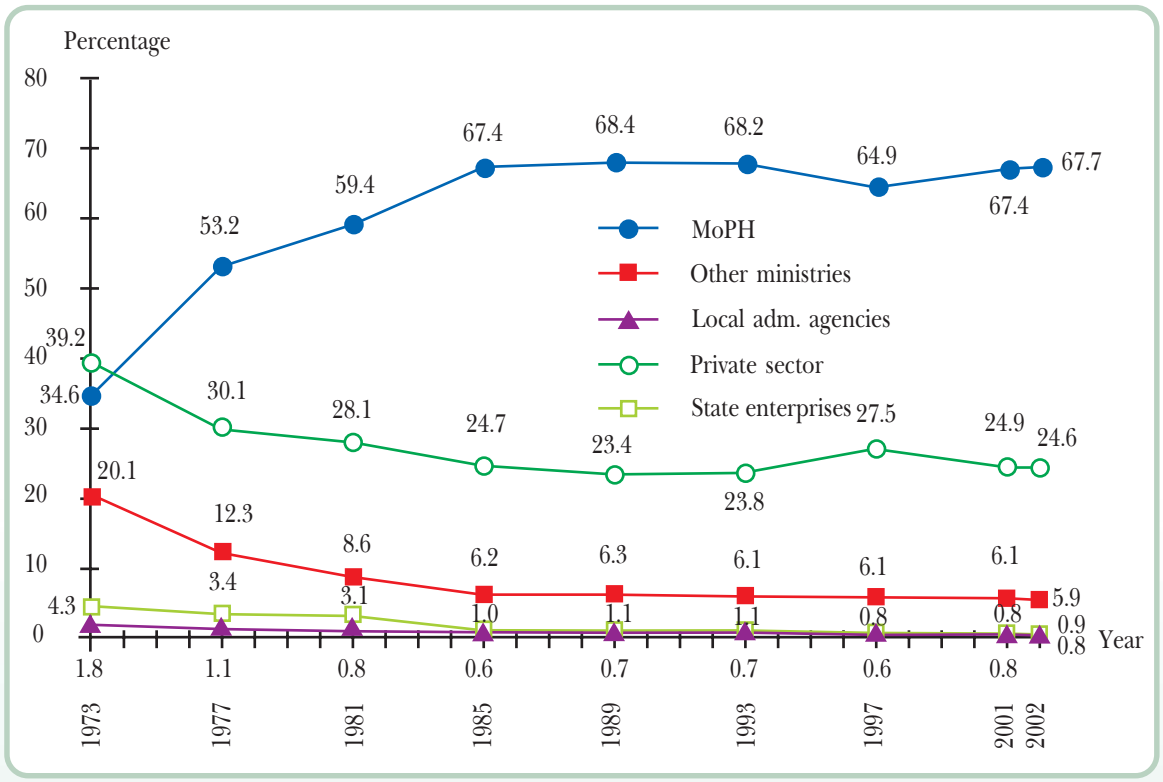
Notes: 1. Figures in ( ) are percentages.

2. Due to incompleteness of data for 1985, the data for 1984 were used instead.

3. For 2002, data were received from 65.6% of all health facilities nationwide: 62.5% from among public sector facilities and 77.3% from among private sector agencies.

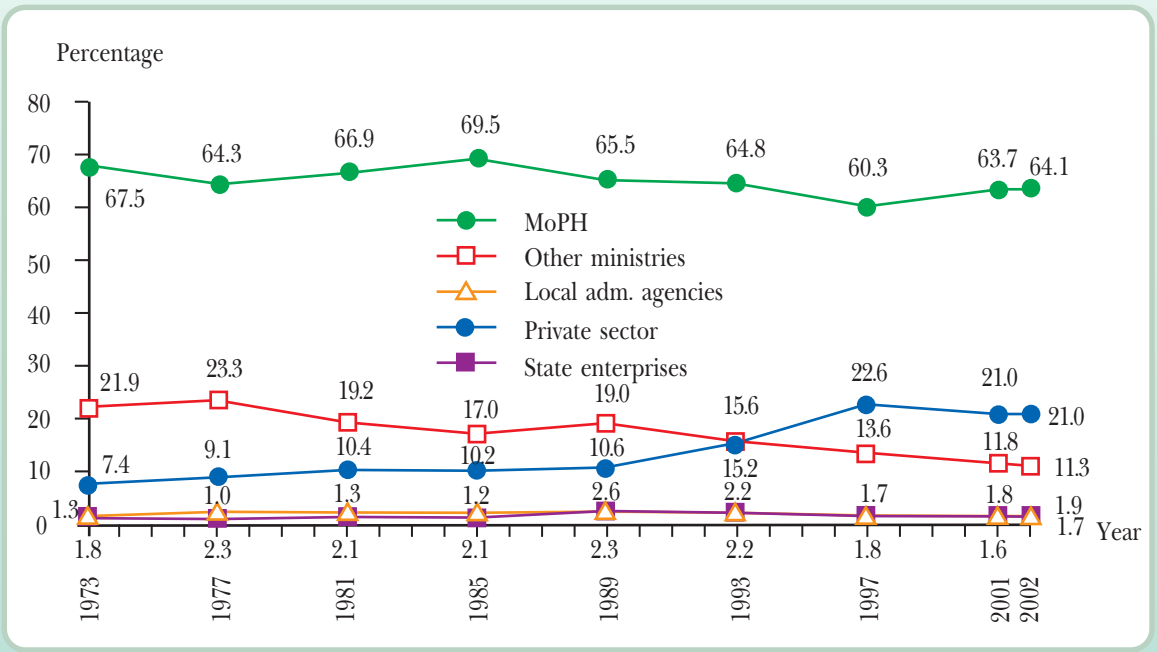
4. For Bangkok in 2002, the 2001 data were used instead.

Figure 6.23 Proportion of Hospitals by Agency, 1973-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Figure 6.24 Proportion of Beds by Agency, 1973-2002



Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Table 6.33 Numbers of Doctors, Beds and Community Hospitals, 1977-2003

Year	No. of community hospitals							No. of beds	No. of doctors	Doctor/ bed ratio	Doctors per community hospital
	10 bed	30 bed	60 bed	90 bed	120 bed	150 bed	Total				
1977	254	-	-	-	-	-	254	2,540	n.a.	n.a.	n.a.
1979	211	72	8	-	-	-	291	4,750	441	1:10.8	1.5
1981	215	83	15	-	-	-	313	5,540	580	1:9.6	1.8
1983	263	97	28	-	-	-	388	7,220	736	1:9.8	1.9
1985	325	109	40	6	-	-	480	9,460	1,162	1:8.1	2.4
1987	376	131	43	7	-	-	557	10,800	1,339	1:8.1	2.4
1989	377	131	46	7	-	-	561	11,090	1,549	1:7.1	2.8
1991	375	140	51	10	-	-	576	11,910	1,592	1:7.5	2.8
1993	344	224	65	12	5	-	650	15,740	1,766	1:8.9	2.7
1995	317	260	87	17	7	-	688	18,560	1,574	1:11.8	2.3
1996	368	302	97	21	7	-	695	20,290	1,653	1:12.3	2.4
1997	219	335	103	37	9	-	703	22,830	1,665	1:13.7	2.4
1998	142	397	112	46	9	-	706	26,830	1,758	1:15.3	2.5
1999	102	422	125	52	11	-	712	27,180	1,956	1:13.9	2.7
2000	96	418	136	52	12	-	714	27,780	2,617	1 : 10.6	3.7
2001	83	410	148	59	18	2	720	29,780	2,725	1 : 10.9	3.8
2002	83	415	148	59	18	2	725	29,930	3,758	1 : 8.0	5.2
2003	83	415	148	59	18	2	725	29,930	4,084	1 : 7.3	5.6

Sources: 1. Bureau of Health Service System Development, Department of Health Service Support,MoPH.
2. Bureau of Central Administration, Office of the Permanent Secretary for Public Health.

Notes: 1. For 1977-2001, data were derived from a survey conducted by the Bureau of Health Service System Development, Department of Health Service Support, MoPH.
2. Data for 2002 were derived from the Bureau of Central Administration, Office of the Permanent Secretary for Public Health, based on the number of civil servants and state employees in the payrolls (Jor 18), which had some limitations, resulting in the number being higher than reality.

Table 6.34 Numbers of Doctors, Beds and Private Hospitals, 1970-2003

Year	No. of doctors (full-time)	No. of beds	No. of hospitals	Doctor/ bed ratio	Doctors per hospital
1970	236	1,780	23	1 : 7.5	10.3
1972	329	2,281	28	1 : 6.9	11.7
1974	387	3,039	38	1 : 7.8	10.2
1976	461	4,239	50	1 : 9.2	9.2
1978	687	6,139	67	1 : 8.9	10.2
1980	781	7,328	87	1 : 9.4	9.0
1982	819	8,066	112	1 : 9.8	7.3
1984	890	8,942	132	1 : 10.0	6.7
1986	892	11,721	177	1 : 13.1	5.0
1988	1,065	13,024	203	1 : 12.2	5.2
1990	1,938	14,175	245	1 : 7.3	7.9
1992	2,552	21,297	335	1 : 8.3	7.6
1994	3,217	25,471	398	1 : 7.9	8.1
1996	3,325	35,052	474	1 : 10.5	7.0
1997	3,244	38,275	491	1 : 11.8	6.6
1998	3,567	40,253	473	1 : 11.3	7.5
1999	3,403	40,852	471	1 : 12.0	7.2
2000	3,920	40,250	456	1 : 10.3	8.6
2001	4,384	39,551	436	1 : 9.0	10.1
2002	3,572	38,370	405	1 : 10.7	8.8
2003	n.a.	34,863	346	n.a.	n.a.

Sources: 1. Medical Registration Division, Department of Health Service Support, MoPH.
2. Bureau of Policy and Strategy, MoPH.

Notes: 1. The number of beds is based on the registration records; but the number of beds actually in service is smaller and the bed-occupancy rate is less than 50%.
2. For 2002, the information was received from 77.3% of all private health facilities.

Table 6.35 Numbers of Hospitals and Beds in the Public and Private Sectors, 2002

Region	No. of hospitals		No. of beds	
	Public	Private	Public	Private
Bangkok Metropolis	45	87	16,868	11,011
The Central	247	106	29,582	8,139
The North	210	56	19,900	4,583
The South	168	32	14,734	2,126
The Northeast	307	38	25,753	2,638
Total	**977**	**319**	**106,837**	**28,497**

Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: 1. For 2002, data were received from only 65.6% of all health facilities; 44.3% from Bangkok, 60.5% from the Central, 76.7% from the Northeast, 74.9% from the North, and 68.3% from the South.

2. For Bangkok in 2002, the 2001 data were used instead

Table 6.36 Numbers of Private Hospitals and Beds Providing General and Specialized Services by Hospital Size, 2003

Region	1 - 10 beds		11 - 25 beds		26 -50 beds		51 - 100 beds		101 - 200 beds		> 200 beds		Total	
	Hospitals	Beds	Hospitals	Beds	Hospitals	Beds	Hospitals	Beds	Hospitals	Beds	Hospitals	Beds	Hospitals	Beds
Bangkok Metropolis	9	77	4	84	22	820	19	1,755	22	3,598	24	8,893	100	15,227
	(20.5)	(19.2)	(23.5)	(23.0)	(25.0)	(24.1)	(19.8)	(20.2)	(31.4)	(32.4)	(77.4)	(81.5)	(28.9)	(43.7)
	(9.0)	(0.5)	(4.0)	(0.6)	(22.0)	(5.4)	(19.0)	(11.5)	(22.0)	(23.6)	(24.0)	(58.4)	(100.0)	(100.0)
The Central	16	154	9	182	27	947	39	3,513	23	3,919	4	1,180	118	9,895
	(36.4)	(38.3)	(52.9)	(49.7)	(30.7)	(27.9)	(40.6)	(40.5)	(32.9)	(35.3)	(12.9)	(10.8)	(34.1)	(28.4)
	(13.5)	(1.6)	(7.6)	(1.8)	(22.9)	(9.6)	(33.1)	(35.5)	(19.5)	(39.6)	(3.4)	(11.9)	(100.0)	(100.0)
The Northeast	4	39	-	-	17	747	13	1,220	7	939	1	214	42	3,159
	(9.1)	(9.7)	(0.0)	(0.0)	(19.3)	(22.0)	(13.5)	(14.1)	(10.0)	(8.5)	(3.2)	(2.0)	(12.1)	(9.1)
	(9.5)	(1.2)	(0.0)	(0.0)	(40.5)	(23.6)	(30.9)	(38.6)	(16.7)	(29.7)	(2.4)	(6.8)	(100.0)	(100.0)
The North	7	70	1	25	12	472	20	1,739	9	1,224	2	620	51	4,150
	(15.9)	(17.4)	(5.9)	(6.8)	(13.6)	(13.9)	(20.8)	(20.0)	(12.9)	(11.0)	(6.5)	(5.7)	(14.7)	(11.9)
	(13.7)	(1.7)	(2.0)	(0.6)	(23.5)	(11.4)	(39.2)	(41.9)	(17.6)	(29.5)	(3.9)	(14.9)	(100.0)	(100.0)
The South	8	62	3	75	10	413	5	456	9	1,426	-	-	35	2,432
	(18.2)	(15.4)	(17.6)	(20.5)	(11.4)	(12.2)	(5.2)	(5.3)	(12.9)	(12.8)	(0.0)	(0.0)	(10.1)	(7.0)
	(22.8)	(2.5)	(8.6)	(3.1)	(28.6)	(17.0)	(14.3)	(18.8)	(25.7)	(58.6)	(0.0)	(0.0)	(100.0)	(100.0)
Whole country	44	402	17	366	88	3,399	96	8,683	70	11,106	31	10,907	346	34,863
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
	(12.7)	(1.2)	(4.9)	(1.0)	(25.4)	(9.7)	(27.7)	(24.9)	(20.2)	(31.9)	(9.0)	(31.3)	(100.0)	(100.0)

Sources: Medical Registration Division, Department of Health Service Support, MoPH

Notes: Figures in ( ) are percentages: upper ones, column total and lower ones, row total.

2) Health Centres

(2.1) Quantity

Health centres have been built and distributed to cover all Tambons (subdistricts) throughout the country since the last decade. In 2003, there were 9,765 health centres. In the future, more emphasis will be placed on service quality improvement in accordance with socio-economic conditions of each locality and in preparation for the power decentralization to local administration organizations.

(2.2) Geographical Distribution of Health Centres

The trends of health centre to population ratio have been rising in all regions nationwide; the ratio being raised from 1:10,064 in 1979 to 1:4,895 in 2003. Although most health centres are clustered in the Central Region, regional disparities have become lower as shown in Table 6.37 and Figure 6.25.

Table 6.37 Distribution of Health Centres by Region in 1979, 1987 and 1996-2003

Region	No. of health centres and health centre/population ratio									
	1979	**1987**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
The Central	1219 (1:7,781)	1635 (1:4,729)	2377 (1:3,654)	2471 (1:3,554)	2508 (1:4,298)	2523 (1:4,219)	2524 (1:3,681)	2559 (1:4,628)	2559 (1:4,611)	2549 (1:4,629)
The North	914 (1:10,748)	1,616 (1:4,775)	1,965 (1:4,412)	2,151 (1:4,103)	2,203 (1:4,393)	2,225 (1:4,345)	2,231 (1:4,093)	2,210 (1:4,667)	2,216 (1:4,670)	2,220 (1:4,662)
The South	688 (1:8,230)	1,252 (1:3821)	1,400 (1:3,839)	1,488 (1:3,653)	1,505 (1:3,864)	1,513 (1:3,922)	1,516 (1:3,872)	1,507 (1:4,427)	1,526 (1:4,418)	1,521 (1:4,433)
The Northeast	1,277 (1:12,747)	2,489 (1:5,818)	3,100 (1:5,248)	3,367 (1:4,900)	3,398 (1:5,063)	3,428 (1:5,102)	3,433 (1:4,972)	3,462 (1:5,427)	3,509 (1:5,387)	3,475 (1:5,440)
Disparity between Central's and Northeast's ratios	1:1.64	1:1.23	1:1.44	1:1.38	1:1.18	1:1.21	1:1.21	1:1.17	1:1.17	1:1.18
Total	**4,088 (1:10,064)**	**6,992 (1:4,964)**	**8,842 (1:4,411)**	**9,477 (1:4,173)**	**9,614 (1:4,522)**	**9,689 (1:4,514)**	**9,704 (1:4,262)**	**9,738 (1:4,890)**	**9,810 (1:4,872)**	**9,765 (1:4,895)**

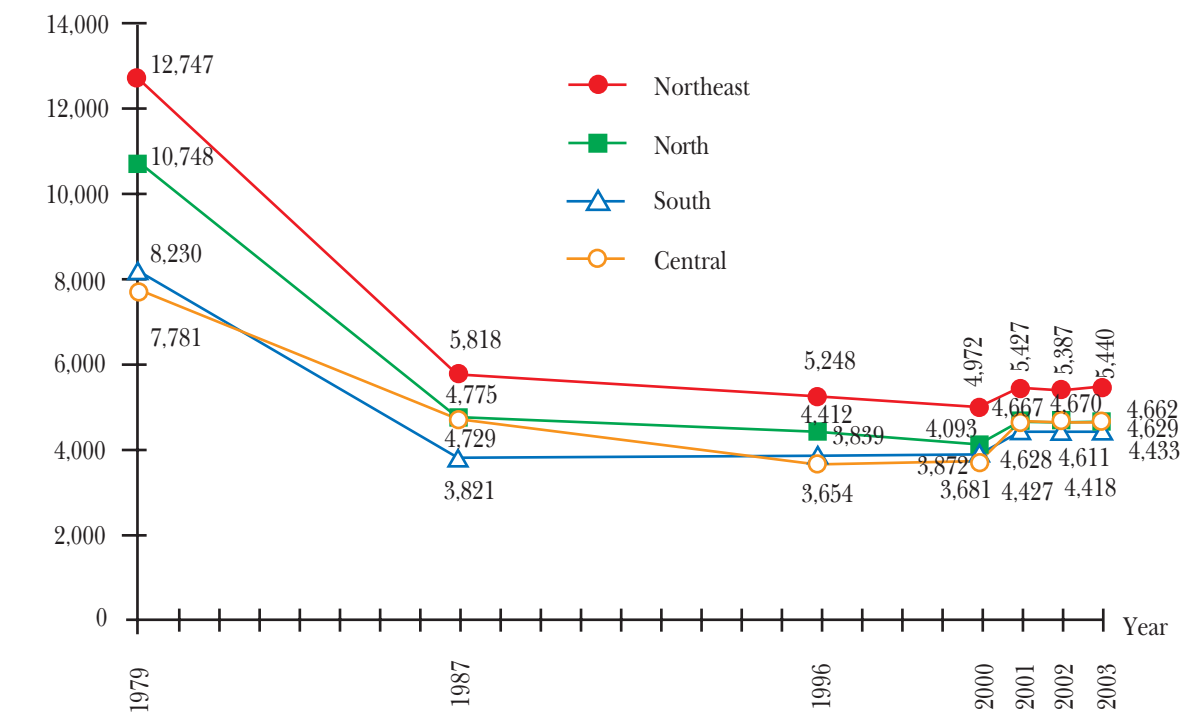
Source: The Bureau of Central Administration, Office of the Permanent Secretary, MoPH, recalculated by Rujira Taverat, Bureau of Policy and Strategy, MoPH

Notes: 1. The figure in ( ) is the ratio of health centre to population outside municipal areas and sanitary districts.

2. Data on population outside municipal areas for 2001-2002 were derived from the Bureau of Registration Administration, Department of Provincial Administration, Ministry of Interior, and recalculated by Rujira Taverat, Bureau of Policy and Strategy, MoPH.

3. For 2003, data on population in 2002 outside municipal areas were derived from the Bureau of Registration Administration, Department of Provincial Administration.

Figure 6.25 Population to Health Centre Ratios by Region, 1979-2003



Sources: 1. Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

2. Bureau of Central Administration, Office of the Permanent Secretary, MoPH.

3) Pharmacies

The ratio of modern pharmacy (with a pharmacist) to population has been rising for the past 13 years, from 1:15,694 in 1989 to 1:7,739 in 2003. But the ratio of another type of modern pharmacy without pharmacist (selling readily packaged drugs, without a pharmacist) to population and the ratio of traditional pharmacy to population have been declining (Table 6.38).

Nearly half of pharmacies (with pharmacist) are in Bangkok, while more than 80% of pharmacies without pharmacist (selling non-dangerous readily packaged drugs, without a pharmacist) and traditional pharmacies are in provincial areas (Table 6.38).

Table 6.38 Distribution of Drugstores Selling Modern Medicines, Only Readily-packaged Modern Medicines and Traditional Medicines, 1989-2003

Type of drugstore	No. of drugstores and ratio of drugstore to population													
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	2000	2001	2002	2003
1. Drugstores: modern medicine														
Bangkok Metropolis.	1,917	1,963	2,123	2,194	2,135	2,176	2,249	2,262	2,208	2,420	2,773	3,047	3,200	3,393
	(1:3,263)	(1:3,258)	(1:2,632)	(1:2,903)	(1:3,030)	(1:2,564)	(1:2,480)	(1:2,466)	(1:2,534)	(1:2,325)	(1:2,039)	(1:1,872)	(1:1,798)	(1:1,962)
Provincial areas	1,616	1,743	1,743	1,743	2,336	2,363	2,500	2,461	2,506	2,931	3,197	3,458	3,458	4,832
	(1:30,440)	(1:29,654)	(1:29,302)	(1:29,484)	(1:22,309)	(1:22,487)	(1:21,480)	(1:22,028)	(1:21,896)	(1:18,946)	(1:17,492)	(1:16,307)	(1:16,426)	(1:11,796)
Whole Kingdom	3,533	3,706	3,866	3,937	4,471	4,539	4,749	4,723	4,714	5,351	5,970	6,505	6,658	8,225
	(1:15,694)	(1:15,202)	(1:14,656)	(1:14,671)	(1:13,103)	(1:12,936)	(1:12,482)	(1:12,659)	(1:12,827)	(1:11,429)	(1:10,315)	(1:9,546)	(1:9,395)	(1:7,739)
2. Drugstores: readily-packed modern medicine														
Bangkok Metropolis	747	926	925	844	793	748	748	710	648	681	638	620	577	565
	(1:8,375)	(1:6,907)	(1:6,041)	(1:7,547)	(1:8,159)	(1:7,458)	(1:7,456)	(1:7,856)	(1:8,634)	(1:8,262)	(1:8,864)	(1:9,199)	(1:9,973)	(1:11,781)
Provincial areas	4,604	4,644	4,644	4,644	4,548	4,442	4,484	4,437	4,551	4,326	4,286	4,195	4,195	4,088
	(1:10,684)	(1:10,754)	(1:10,998)	(1:11,066)	(1:11,459)	(1:11,962)	(1:11,976)	(1:12,218)	(1:12,057)	(1:12,836)	(1:13,048)	(1:13,442)	(1:13,540)	(1:13,943)
Whole Kingdom	5,351	5,570	5,569	5,488	5,341	5,190	5,232	5,147	5,199	5,007	4,924	4,815	4,772	4,653
	(1:10,362)	(1:10,115)	(1:10,174)	(1:10,525)	(1:10,969)	(1:11,313)	(1:11,330)	(1:11,616)	(1:11,630)	(1:12,214)	(1:12,506)	(1:12,896)	(1:13,109)	(1:13,680)
3. Drugstores: traditional medicine														
Bangkok Metropolis	535	479	459	436	432	413	445	395	370	398	398	409	412	420
	(1:11,693)	(1:13,353)	(1:12,174)	(1:14,610)	(1:14,977)	(1:13,507)	(1:12,534)	(1:14,121)	(1:15,121)	(1:14,136)	(1:14,209)	(1:13,944)	(1:13,967)	(1:15,848)
Provincial areas	1,999	1,999	1,999	1,999	1,916	1,900	1,854	1,854	1,913	1,792	1,600	1,581	1,581	1,686
	(1:24,607)	(1:24,984)	(1:25,550)	(1:25,708)	(1:27,200)	(1:27,967)	(1:28,965)	(1:29,240)	(1:28,683)	(1:30,987)	(1:34,952)	(1:35,668)	(1:35,927)	(1:33,807)
Whole Kingdom	2,534	2,478	2,458	2,435	2,348	2,313	2,299	2,249	2,283	2,190	1,998	1,990	1,993	2,106
	(1:21,881)	(1:22,736)	(1:23,052)	(1:23,721)	(1:24,951)	(1:25,358)	(1:25,784)	(1:26,584)	(1:26,485)	(1:27,925)	(1:30,820)	(1:31,203)	(1:31,387)	(1:30,226)
4. All categories of drugstores														
Bangkok Metropolis.	3,199	3,368	3,507	3,474	3,360	3,337	3,442	3,367	3,226	3,499	3,809	4,076	4,189	4,378
	(1:1,956)	(1:1,899)	(1:1,593)	(1:1,834)	(1:1,925)	(1:1,672)	(1:1,620)	(1:1,657)	(1:1,734)	(1:1,608)	(1:1,485)	(1:1,399)	(1:1,374)	(1:1,520)
Provincial areas	8,219	8,386	8,386	8,386	8,800	8,705	8,838	8,752	8,970	9,049	9,083	9,234	9,234	10,606
	(1:5,985)	(1:5,956)	(1:6,090)	(1:6,128)	(1:5,922)	(1:6,104)	(1:6,076)	(1:6,194)	(1:6,117)	(1:6,136)	(1:6,157)	(1:6,107)	(1:6,151)	(1:5,374)
Whole Kingdom	11,418	11,754	11,893	11,860	12,160	12,042	12,280	12,119	12,196	12,548	12,892	13,310	13,423	14,984
	(1:4,856)	(1:4,793)	(1:4,764)	(1:4,870)	(1:4,818)	(1:4,876)	(1:4,827)	(1:4,933)	(1:4,958)	(1:4,874)	(1:4,776)	(1:4,665)	(1:4,660)	(1:4,248)

Source: Food and Drug Administration, MoPH

Note: Figures in ( ) are ratios of drugstore to population.

1.3 Medical Supplies and Technology

1.3.1 Medical Supplies

Drugs normally dispensed and consumed in Thailand are mostly (55%) manufactured domestically and the rest (45%) are imported. Between 1988 and 2002, the values of drug consumption rose on average by 12.2% at market prices or 7.7% at the constant price annually. The rate of increase was greater than those of health expenditure and economic growth (Tables 4.4 and 6.39, and Figure 4.11).

During the economic boom period of 1988 to 1996, the values of drug imports rose from 27.7% to 37.1% in relation to overall drug consumption values. After the baht devaluation between 1997 and 2000, coupled with the monopoly of new drugs, the proportion of imported drugs jumped to 40.7-44.3%. Even after the economic crisis, the proportion has steadily risen to 45.1% in 2002. If such a trend prevails, the proportion of imported drugs will be greater than that of domestically produced drugs. However, the universal coverage of health care scheme that employs the capitation payment mechanism has shifted the financial burden to service providers. This kind of system has led to the economization of drug use and a greater use of domestically produced drugs. It is interesting to monitor this change more seriously.

Of the values of domestically produced drugs, 40% are attributable to imported raw materials (over 90% of which are imported); and about 60% of the import values are paid in foreign currencies to overseas drug companies. Thus, of the wholesale value (Table 6.39), 46.27% are paid in foreign currencies. It only raw materials are taken into account (for both locally produced and imported drugs), 96% of such items are imported.

The quality of domestically produced drugs has much improved as a result of the introduction and promotion of Good Manufacturing Practices (GMP). Currently, the proportion of GMP-certified manufacturers has risen to more than 70%, since 1997 (Figure 6.26). In addition to being consumed locally, domestic drugs are exported. Their export values have risen from 480.8 million baht in 1989 to 4,821.9 million baht in 2003 (Figure 6.28).

During 2000, some foreign drug manufacturers are shut down due to the economic crisis and higher labour costs, thereby shifting their production bases to other countries where labour costs are lower, such as Vietnam. As a consequence, the proportion of GMP-certified manufacturers has declined.

In 2003, the MoPH issued a regulation requiring that all drug manufacturers comply with the GMP requirements by 5 June 2004.

Table 6.39 Values of Locally Produced and Imported Drugs (for Human Use), 1983-2002

Year	Wholesale values as reported (current prices)									Estimated consumption values, 2002		Change (%)		Total retail price value as a percentage of health expenditure
	Locally produced drugs		Imported drugs		Total (million baht)	Values of exports (million baht)	Values of domestic consumption[1] (million baht)	Estimates of Value domestic consumption (wholesale)[2] X 1.675	Estimates of retail prices in- country x 1.8	Wholesale prices	Retail prices	Current prices	Constant prices	
	Values	Percent	Values	Percent										
1983	3,777.9	65.2	2,012.0	34.8	5,789.9	255.6	5,534.3	9,270.0	16,686.0	18,429.31	33,172.76	-	-	40.52
1984	5,453.0	76.5	1,673.0	23.5	7,126.0	284.0	6,842.0	11,460.4	20,628.7	22,615.19	40,707.30	+23.6	+22.7	39.49
1985	6,651.2	73.5	2,393.1	26.5	9,044.3	315.5	8,728.8	14,620.7	26,317.3	28,142.73	50,657.00	+27.6	+24.4	44.41
1986	4,678.0	71.5	1,864.5	28.5	6,542.5	350.5	6,192.0	10,371.6	18,668.9	19,595.70	35,272.50	-29.1	-30.4	28.26
1987	5,145.8	68.9	2,325.4	31.1	7,471.2	389.4	7,081.8	11,862.0	21,351.6	21,883.91	39,391.04	+14.4	+11.7	28.73
1988	6,708.8	72.3	2,571.0	27.7	9,279.8	432.7	8,847.1	14,818.9	26,674.0	26,318.37	47,373.02	+24.9	+20.3	29.65
1989	8,372.9	71.7	3,307.6	28.3	11,680.5	480.8	11,199.7	18,759.5	33,763.1	31,629.94	56,927.15	+26.6	+20.2	32.13
1990	8,886.0	72.0	3,449.1	28.0	12,335.1	604.1	11,731.0	19,649.4	35,368.9	31,270.01	56,285.99	+4.8	-1.1	28.23
1991	9,657.6	69.6	4,216.4	30.4	13,874.0	784.8	13,089.2	21,924.4	39,463.9	32,998.08	59,396.51	+11.6	+5.5	28.43
1992	10,696.6	69.6	4,682.6	30.4	15,379.2	1,193.5	14,185.7	23,761.0	42,769.8	34,364.44	61,856.00	+8.4	+4.1	27.08
1993	11,831.0	70.0	5,075.3	30.0	16,906.3	2,855.3	14,051.0	23,535.4	42,363.7	32,929.76	59,273.58	-0.9	-4.2	23.02
1994	12,969.7	68.1	6,086.6	31.9	19,056.3	1,536.2	17,520.1	29,346.2	52,823.2	39,084.14	70,360.50	+24.7	+18.7	26.41
1995	15,820.9	63.0	9,276.4	37.0	25,097.3	2,398.5	22,698.8	38,020.5	68,436.9	47,867.02	86,160.63	+29.6	+22.5	30.08
1996	18,120.4	62.9	10,676.0	37.1	28,796.4	1,784.9	27,011.5	45,244.3	81,439.7	53,808.40	96,855.07	+19.0	+12.4	31.63
1997	19,608.0	59.3	13,467.1	40.7	33,075.1	2,319.7	30,755.4	51,515.3	92,727.5	58,052.77	104,494.95	+13.9	+7.9	32.88
1998	16,127.7	53.3	14,146.5	46.7	30,274.2	2,782.3	27,491.9	46,048.9	82,888.1	47,994.63	86,390.41	-10.6	-17.3	30.02
1999	19,033.9	57.2	14,232.3	42.8	33,266.2	3,014.9	30,251.3	50,670.9	91,207.7	52,647.14	94,764.94	+10.0	+9.7	32.09
2000	20,995.9	55.7	16,700.4	44.3	37,696.3	3,732.7	33,963.6	56,889.0	102,400.2	58,199.81	104,759.65	+12.3	+10.5	34.16
2001	23,087.9	53.6	19,967.6	46.4	43,055.5	4,326.9	38,728.6	64,870.4	116,766.7	65,311.70	117,561.03	+14.0	+12.2	36.35
2002	24,144.6	54.9	19,867.9	45.1	44,012.5	4,115.5	39,897.0	66,827.5	120,289.5	66,827.50	120,289.50	+3.0	+2.3	36.04
											Avg.15yrs	12.2	7.7	-

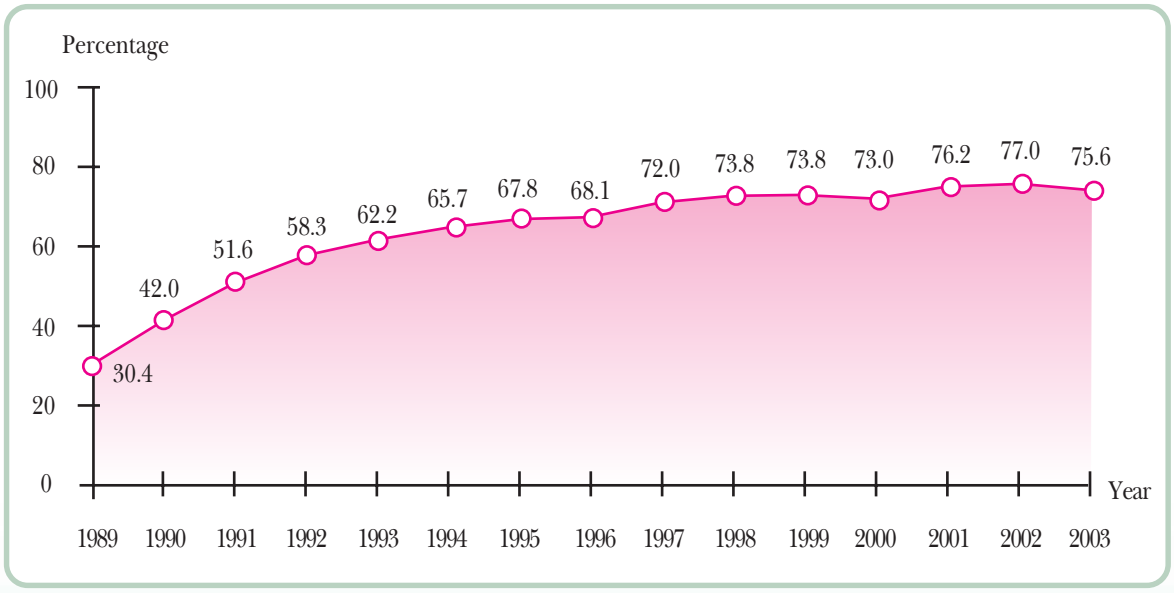
Source: Drug Control Division, Food and Drug Administration, MoPH.

Notes: 1. The estimates are to be deducted by export values (Figure 6.28).

2. The reported figures are about 67.5% lower than actuality (48% underreported; and the reports do not include drugs from GPO, narcotics and psychoactive drugs).

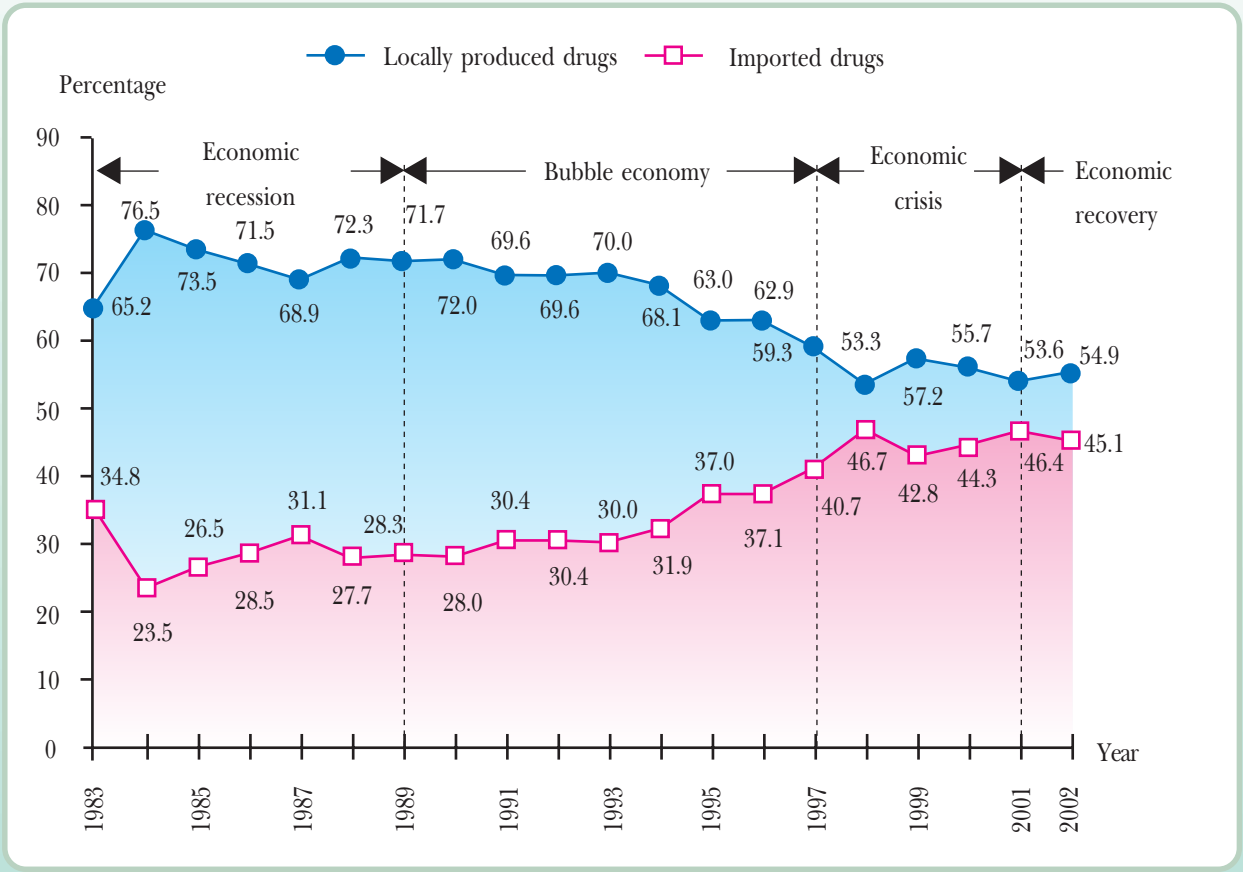
3. Retail values are about 1.8 times as much as wholesale values.

Figure 6.26 Percentage of GMP-Certified Manufacturers, 1989-2003



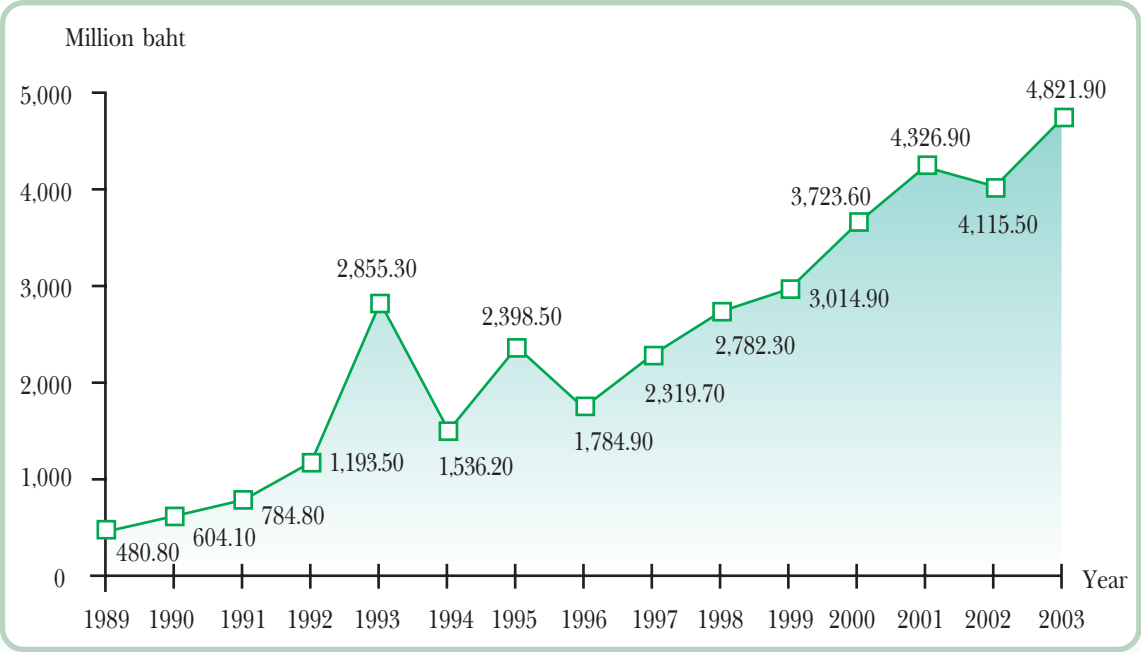
Source: Food and Drug Administration, MoPH.

Figure 6.27 Percentage of Locally Produced and Imported Drugs (for Human Use) 1983-2002



Source: Drug Control Division, Food and Drug Administration, MoPH.

Figure 6.28 Values of Drugs Exported from Thailand (Current Prices), 1989-2003



Source: Food and Drug Administration, MoPH.

Note: Data for 1989-2003 were derived from the Customs Department, Ministry of Finance.

1.3.2 Medical and Health Technology

The development of medical and health technology as well as epidemiological transition has contributed to the use of expensive, high-tech medical equipment in the Thai health system. More complex procedures for diagnostic and curative care have been introduced. Such imports increased considerably during the bubble economy period and discontinued as soon as the economic crisis erupted (for example, in the case of imports and uses of MRI machines in Thailand between 1988 and 2000), but increased again slightly after the crisis was over (Figure 6.29). Most of the medical and health technologies, particularly high-tech medical devices are clustered in large cities, mostly in the private sector except for lithotripters and ultrasound devices which are more abundant in the public sector (Table 6.40).

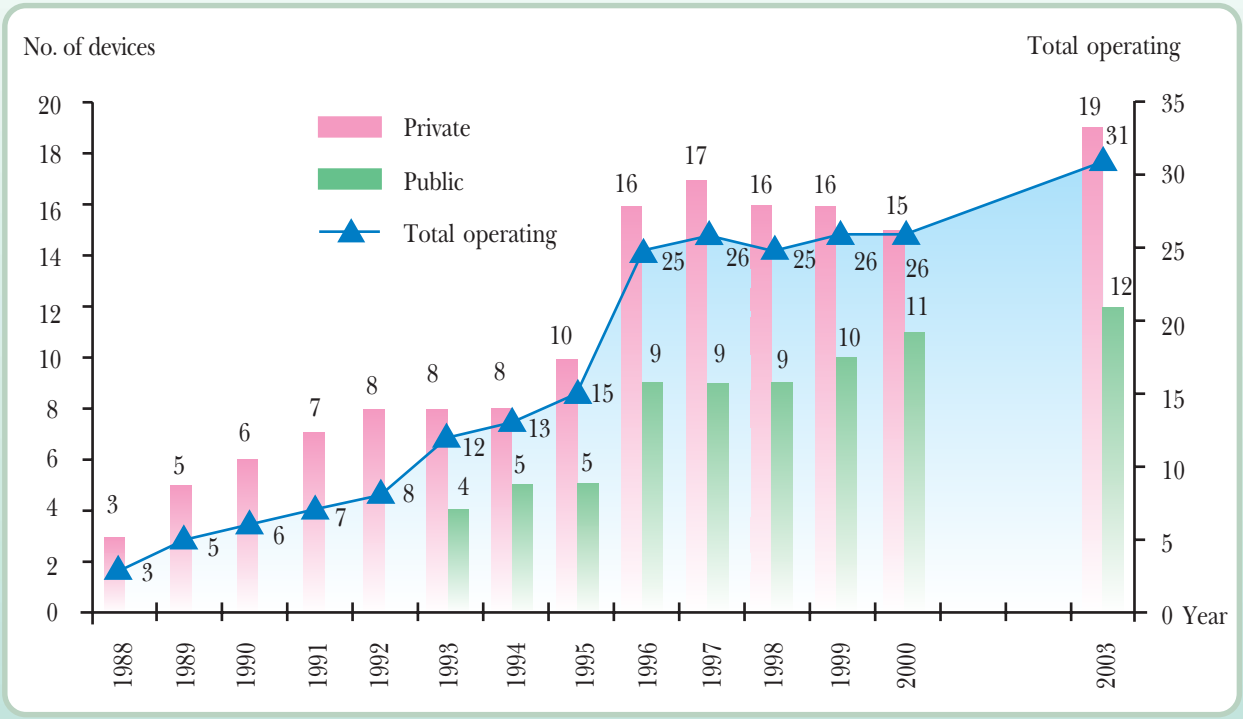
Table 6.40 Number and Distribution of Important Medical Devices, 2002-2003

Device	No. of devices			Total by sector		Remarks
	Total	In Bangkok: No. (%)	In provinces: No. (%)	Public	Private	
1. CT scanners [1]	266	89 (33.5)	177 (66.5)	83 (31.2)	183 (68.8)	2003
2. Magnetic resonance imaging (MRI) [1]	31	20 (64.5)	11 (35.5)	12 (38.7)	19 (61.3)	2003
3. Lithotripters [2]	75	22 (29.3)	53 (70.7)	55 (73.3)	20 (26.7)	2002
4. Mammogram [1]	113	62 (54.9)	51 (45.1)	45 (39.8)	68 (60.2)	2003
5. Ultrasound [2]	1,643	269 (16.4)	1,374 (83.6)	1,271 (77.4)	372 (22.6)	2002

Sources: [1] Division of Radiology and Medical Devices, Department of Medical Services, 2003.
[2] Report on Health Resources. Bureau of Policy and Strategy, MoPH, 2003.

Note: Figures in ( ) are percentages.

Figoure 6.29 Number of MRI Devices in the Private and Public Sectors in Thailand, 1998-2003



Sources: Data for 1988-1999 were derived from Piya Hanvoravongchai, 1999.
Data for 2003 were derived from the Radiology and Medical Devices Division, Department of Medical Sciences, MoPH, 2003.

Note: The number for each year is as recorded at the end of the year, except for 2000.

The imported values of medical equipment rose by 12.4% annually between 1991 and 2003. At the beginning of the economic crisis, the imported values were decreasing, but increased as much as 19.2% in 2003, whereas the values of exports have been rising since 1997, by 24.7% during 2002-2003. For 2004, the demand for medical equipment/supplies grows considerably in both domestic and overseas markets. As a result of the economic growth, Thai people have a higher purchasing power and are more interested in health care for themselves, coupled with the government policy on promoting Thailand as the Centre of Excellence in Healthcare of Asia and the rising demand for Thaimedical equipment/supplies from other countries as their prices are not so high, compared with those from other Asian competing countries (Tables 6.41 and 6.42 and Figure 6.30).

Table 6.41 Values of Imported Major Medical Equipment and Supplies in Thailand, 1991-2003 (million baht)

Product	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
HS 9018.90 Other medical equipment and supplies	491.9	705.9	1,292.8	925.2	1,070.7	1,359.1	1,566.7	1,161.2	1,079.0	2,323.7	2179.1	2,453.0	2,794.4
HS 9018.19 Other electro-diagnostic apparatus	377.9	417.5	718.8	773.9	784.5	873.5	996.2	493.6	542.7	1,402.4	1051.9	955.7	1,426.2
HS 9019.20 Ozone therapeutic apparatus, etc.	138.6	130.1	195.8	221.7	303.7	303.8	404.0	417.3	188.9	458.6	366.6	306.2	398.3
HS 8419.20 Medical, surgical or laboratory sterilizers	98.4	99.4	180.5	228.5	202.6	301.0	501.9	312.9	146.3	293.3	410.5	335.9	177.7
HS 9018.39 Syringes and needles	113.6	136.0	178.3	312.9	298.8	382.4	388.3	303.3	326.4	416.3	496.8	509.0	647.8
HS 9021.30 Other artificial body parts	119.9	112.2	139.4	187.1	243.6	267.3	284.9	237.1	263.1	309.0	342.1	2.7	-
HS 3701.10 Photographic plates and films for x-rays	137.1	165.7	132.3	140.6	169.7	220.7	224.4	202.0	240.6	222.7	291.9	297.6	322.8
HS 9018.50 Other ophthalmic instruments and appliances	32.6	88.3	105.6	137.9	156.2	209.7	215.4	197.5	136.7	324.2	210.0	301.8	329.8
HS 3006.10 Sterile surgical catgut, similar suture materials	102.9	136.8	134.1	157.7	172.3	186.4	256.1	194.6	244.6	231.8	302.9	290.6	342.7
HS 9018.32 Tubular metal needles and needles for sutures	143.4	174.9	194.9	204.3	193.6	209.5	255.4	193.3	171.4	227.8	262.7	233.1	250.6
HS 9021.19 Other orthopaedic appliances	73.3	88.4	104.8	148.9	209.8	260.6	267.6	190.7	232.8	297.0	354.1	4.8	-
HS 9018.49 Dental instruments and appliances	38.7	51.7	84.5	117.6	138.2	170.4	181.1	182.8	213.0	350.5	386.1	418.9	398.2
HS 9019.10 Mechano-therapy appliances	40.5	58.8	56.9	333.5	403.2	279.5	211.6	141.1	53.8	57.0	74.0	105.7	198.9
HS 3005.90 Wadding, gauze, bandages and similar acticles	71.4	100.4	92.1	119.2	138.1	139.3	184.5	138.7	66.2	95.1	111.4	140.6	110.8
HS 9402.90 Medical furniture	41.8	59.9	113.9	165.1	211.3	310.9	290.2	111.1	60.2	65.7	63.4	97.8	91.3
Total	**2,022.0**	**2,526.0**	**3,724.7**	**4,168.1**	**4,696.3**	**5,474.1**	**6,198.3**	**4,477.2**	**3,965.8**	**7,707.4**	**6,903.5**	**6,453.3**	**7,489.5**
Others	471.2	719.5	670.9	976.0	1,163.9	1,276.7	1,471.8	980.4	1,222.9	2,257.4	1,938.5	2,008.6	2,600.7
Grand total	**2,493.2**	**3,245.5**	**4,395.6**	**5,144.1**	**5,860.2**	**6,750.8**	**7,670.1**	**5,457.6**	**5,188.7**	**9,334.8**	**8,842.0**	**8,461.9**	**10,090.2**
Growth rate (%)	-	+30.2	+35.4	+17.0	+13.9	+15.2	+13.6	-28.8	-4.9	+79.9	-5.3	-4.3	+19.2

Average growth rate (12-yr): +12.4

Source: Customs Department, Ministry of Finance.

Table 6.42 Values of Thailand's Exported Medical Equipment and Supplies, 1991-2003 (million baht)

Product	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
HS 3005.10 Adhesive dressiogs and other articles having adhesive layer	8.0	146.8	212.3	238.2	298.1	267.8	344.4	465.9	501.5	590.9	719.5	567.3	682.9
HS 3005.90 Wadding, gauze, cottonwool and similar articles	173.5	308.5	1,365.7	136.5	783.7	23.0	26.3	45.0	107.9	356.4	424.1	548.5	650.9
HS 3006.10 Sterile surgical catgut and similar sterile suture materials	3.5	0.3	1.9	2.2	0.1	1.6	3.2	2.8	2.6	8.7	16.3	4.1	4.6
HS 3006.20 Blood-group testing reagents	-	-	-	-	0.1	0.4	0.3	1.7	0.1	0.2	0.2	0.3	2.8
HS 3006.30 Microbial diagnotic reagents	0.2	-	278.3	0.3	1.1	0.1	0.4	21.0	2.6	2.2	2.5	-	-
HS 3006.40 Dental cements and other dental filling materials	-	-	0.2	-	5.1	-	0.1	1.4	1.4	-	0.006	0.70	0.20
HS 3006.50 First-aid boxes and kits	-	-	2.6	-	-	0.8	0.7	0.2	0.5	1.2	1.3	1.4	1.8
HS 3701.10 Photographic plates and films for x-rays	9.0	281.0	4.8	1.6	0.3	0.4	0.7	2.5	1.1	0.4	0.6	0.4	1.0
HS 3702.10 Non-flat photographic films for x-rays	5.6	5.3	2.2	-	0.2	1.1	-	0.3	0.2	-	-	0.03	0.6
HS 4015.11 Surgical gloves	451.0	780.2	1,227.2	1,045.1	822.2	1,022.0	1,206.3	1,649.0	1,521.3	1,796.4	2,019.9	1,733.5	1,905.9
HS 8419.20 Medical, surgical or laboratory sterilizers	0.9	5.6	2.0	0.3	1.4	7.3	32.8	4.6	6.7	2.3	7.4	12.7	2,757.4
HS 8713.10 Invalid carriages, non-mechanically propelled	0.1	-	-	-	0.2	0.2	-	0.4	0.0	0.8	1.1	1.0	0.2
HS 8713.90 Other invalid carriages	0.1	1.5	14.7	0.2	3.1	1.5	2.7	1.6	0.4	1.1	2.2	0.7	1.4
HS 9001.30 Contact lenses	-	-	0.6	-	-	0.5	8.7	2.8	0.9	3.1	80.0	258.0	208.4
HS 9018.11 Electro-cardiograph machines	1.2	0.5	0.3	-	0.2	0.8	0.2	4.0	0.1	1.7	4.7	4.2	3.0
HS 9018.19 Other electro-diagnostic apparatus	5.1	16.0	13.6	10.2	28.0	40.0	95.0	113.6	118.8	395.2	178.4	295.7	250.9
HS 9018.20 Ultraviolet or infrared ray apparatus	0.1	1.5	4.0	2.0	7.2	3.1	25.6	7.7	0.5	6.8	0.8	8.8	22.7
HS 9018.31 Syringes, with or without needles	60.0	142.0	246.5	240.9	378.3	204.9	228.0	337.3	187.3	248.5	247.0	247.3	246.0
HS 9018.32 Tubular metal needles and needles for sutures	170.6	162.4	180.9	202.8	234.7	250.7	346.5	324.0	211.1	64.5	464.6	405.7	413.0
HS 9018.39 Other types of syringes and needles	-	126.7	11.0	56.3	28.1	20.4	31.1	69.0	65.4	32.7	77.3	93.9	138.8
HS 9018.41 Dental drilling machines	0.2	0.8	-	0.5	-	0.1	0.9	2.4	19.5	3.2	34.9	25.9	67.7
HS 9018.49 Other dental instruments and appliances	0.4	4.3	2.9	0.6	6.3	8.5	13.1	28.7	12.6	8.0	5.7	11.0	11.9

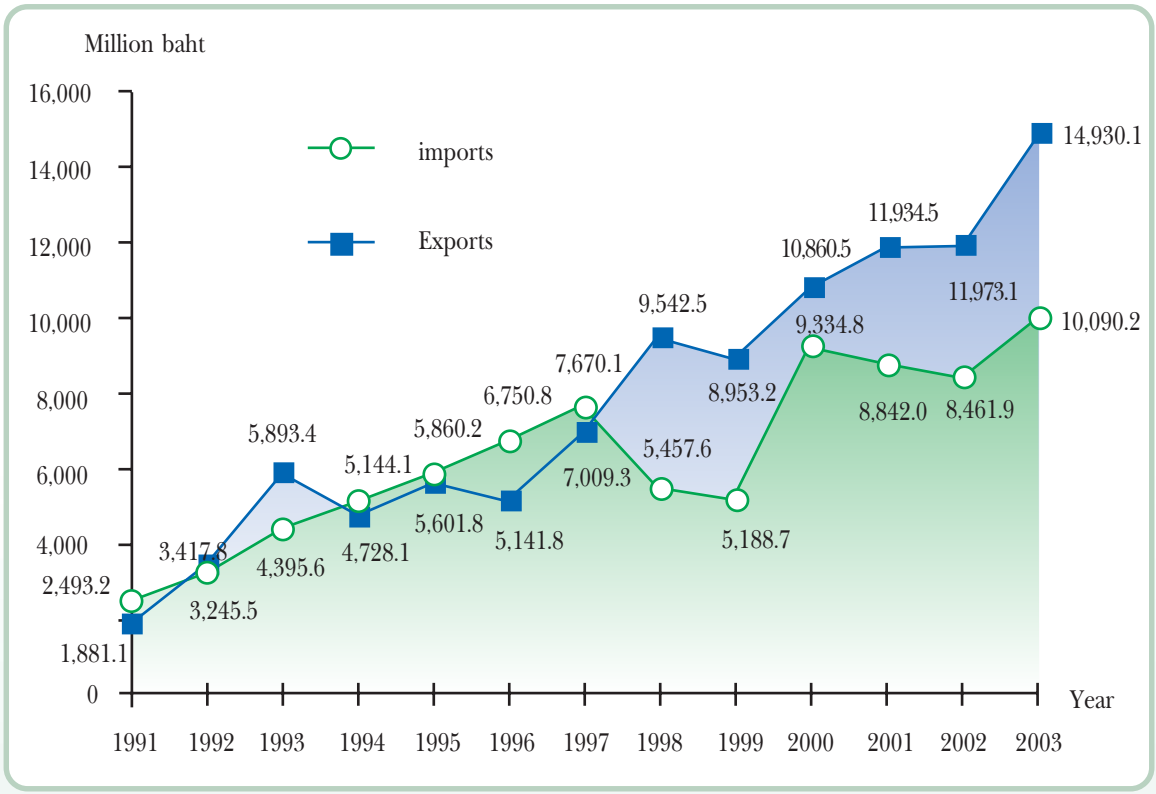
Table 6.42 Values of Thailand's Exported Medical Equipment and Supplies, 1991-2003 (million baht)

Product		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
HS 9018.50	Other ophthalamic instruments and appliances	0.2	0.4	2.2	1.1	3.0	1.5	5.0	2.2	2.8	8.0	6.8	12.8	9.6
HS 9018.90	Other instruments and appliances	722.4	1,190.3	1,906.1	2,415.2	2,622.4	3,007.5	4,206.7	5,993.5	5,819.4	6,605.6	7,121.6	7,239.0	7,131.2
HS 9019.10	Mechano-therapy appliances	97.4	115.2	273.3	239.6	267.9	160.3	258.2	324.1	233.5	239.0	298.8	246.2	153.9
HS 9019.20	Ozone therapy apparatus	32.1	33.0	41.3	53.0	28.0	35.3	51.1	13.3	28.9	67.0	73.8	98.8	63.9
HS 9021.11	Artiificial joints	0.8	-	-	-	0.1	-	0.1	0.1	0.1	0.1	0.2	-	-
HS 9021.19	Other orthopaedic appliances	2.7	0.1	0.2	0.3	1.8	1.2	2.8	1.3	3.4	1.2	2.0	-	-
HS 9021.21	Dentures	25.1	54.9	27.7	10.6	6.7	8.0	13.4	19.3	18.3	26.2	44.1	47.8	59.8
HS 9021.29	Dental appliances	0.3	-	4.5	22.8	18.2	20.6	23.0	34.8	26.1	3.9	15.4	39.9	52.5
HS 9021.30	Other artificial body parts	1.7	1.2	0.5	1.6	2.3	0.1	1.3	0.7	1.4	2.0	0.3	-	-
HS 9021.40	Hearing aids	-	0.2	-	-	-	-	0.6	0.2	2.9	1.0	-	0.2	0.02
HS 9021.50	Pacemakers for stimulating heart muscles, excluding parts and accessories	-	-	-	0.1	-	-	-	-	-	-	0.01	-	-
HS 9021.90	Others in section HS 9021	0.5	0.4	0.1	0.3	1.1	1.0	2.3	0.2	5.8	3.9	3.3	8.2	13.5
HS 9022.19	Others in section HS 9022	1.6	9.7	25.1	14.1	10.1	2.6	2.6	3.4	23.6	10.8	12.8	10.1	18.3
HS 9022.21	Apparatus for use in medical radiography or radiotherapy	0.5	0.4	0.1	0.8	1.4	4.3	1.3	-	0.5	2.7	0.1	3.8	0.7
HS 9022.29	Other apparatus for use in radiography or radiotherapy	1.1	-	1.3	3.7	0.1	1.1	-	-	0.2	-	2.0	1.3	0.03
HS 9022.30	X-ray tubes	0.3	1.9	3.1	0.4	2.0	1.7	0.3	3.1	1.2	1.6	0.5	1.8	2.7
HS 9022.90	Others in section HS 9022	1.6	3.2	5.2	2.6	16.2	8.2	14.5	23.4	11.2	30.7	50.7	27.6	36.2
HS 9402.10	Dental chairs	10.2	18.6	23.3	19.2	19.0	20.6	13.1	7.1	4.6	3.7	2.9	9.5	3.1
HS 9402.90	Medical furniture	3.1	4.9	7.7	5.0	3.1	12.6	46.0	30.7	6.8	17.6	10.7	5.0	12.5
Grand total		1,881.1	3,417.8	5,893.4	4,728.1	5,601.8	5,141.8	7,009.3	9,542.5	11,495.2	10,860.5	11,934.5	11,973.1	14,930.1
Growth rate (%)		-	+81.6	+72.4	-19.7	+18.4	-8.2	+36.3	+36.1	-6.2	+21.3	+9.9	+0.3	+24.70

Source: Custom Department, Ministry of Finance.

12-year average growth rate: +18.8

Figure 6.30 Values of Imported and Exported Medical Devices, Thailand, 1991-2003



Source: Tables 6.41 and 6.42.

1.4 Body of Knowledge

There are two types of knowledge in the health system: basic knowledge for use in health service provision and systematic knowledge for service system development.

Regarding the basic knowledge, Thailand has mostly imported this kind of knowledge from Western developed countries; recently, more research activities have been supported within the country with funding from the Thailand Research Fund (TRF) and the National Science and Technology Development Agency (NSTDA).

In particular, the knowledge derived from local wisdom such as medicinal herbs and Thai traditional medicine have just been of interest and seriously developed since the past decade. Such herbal medicines have been found to be efficacious such as **Phaya Yo cream, Fa Talai Chon (Andrographis paniculata), Khamin Chan** (curcumin).

Regarding the body of knowledge for health service system development, we have adopted it from the West especially the U.S.A. Thus, our health system follows the Western style (especially the U.S.). However, the government has increasingly realized the importance of developing our own health service system so that it is responsive to Thailand's economic, social and cultural settings, leading to the establishment of the Health Systems Research Institute (HSRI) as an independent organization in 1992.

2. Health System Management

2.1 Health Policies and Plans

The Thai health system (particularly in the public sector) has been developed in accordance with the Health Development Plan, which is part of the National Economic and Social Development Plan.

During the past three decades, Health Development Plans have been implemented continuously in the following phases:

(1) The 1st - 7th Plan period (1961-1996)

During the 1st-7th Health Development Plans (1961-1996), numerous efforts were mainly made for making people healthy and for enhancing national capacity in economic development. During the first period of the 1st-3rd Plans, there were investments in infrastructure development. The 4th-6th Plans were the transitional phase of adopting a more systematic national health development planning process by using the Country Health Programming technique and Managerial Process for National Health Development (MPNHD) - the systematic process, including problem analysis, policy and strategy identification, as well as the Planning Programming and Budgeting System (PPBS) technique. The primary health care concept was applied, aimed at encouraging people to realize the problem and causes of problem as well as to allow them to learn and apply new knowledge to solve the problems. Consequently, the **"Health for All by the Year 2000"** goal was established as a long-term target emphasizing people and community participation in health development.

As a result, health development programmes were expanded extensively during the 7th Plan, and efforts were made on quality assurance, resulting in health facilities' quality development at all levels, effective management system, new technology application, health manpower training and development of health centres to serve as the coordinating centre for health for all. Thus, the 10-year project on health centre development (1992-2001) was initiated and expanded to provide services covering two-thirds of the population.

(2) The 8th Plan period (1997-2001)

During this period, the emphasis on economic development was shifted to people-centred development focus, as people were regarded as the key to successful development. As a result, health development plans was aimed at holistic development. However, in the beginning of this Plan's implementation, the economic crisis occurred, which led to a requirement for the plan adjustment so as to reduce investment budget and maintain basic health services provided for the poor.

During 2000-2001, the movement of health care reform was initiated, resulting in the issuance of the Prime Minister's Office's regulation pertaining to health care reform, the establishment of the health care reform committee and the establishment of the National Health System Reform Office (HSRO). At that time, it was expected that within the following three years, a National Health Act will be enacted (by 31July 2003). However, the timeframe was extended for two years, with an expectation that the law will be proclaimed by 8 August 2005.

Moreover, the government laid down a policy on univeral coverage of healthcare scheme

in February 2001, which has been implemented and covered the entire country since 2002.

(3) The 9th Health Development Plan (2002-2006)

During this period, the emphasis is still placed on people-centred development approach, as well as the "self-sufficient economy" principles directed by His Majesty the King. Such phylosophy has been used to guide the formulation of the **national health development** plan aimed at improving the public health and the overall health system. The strategies adopted include the creation of balances in the individual, social, economic, and environmental systems, based on active participation of all sectors concerned.

Moreover, the government has placed emphasis on other health programmes such as food safety, exercise for health, and road safety management.

2.2 Laws

Laws related to health include acts, ministerial regulations, orders and procedures as follows:

1) Acts under the responsibility of the MoPH (four categories, 37 acts) are listed in Table 6.43.

Table 6.43 Acts under the Direct Responsibility of the Ministry of Public Health

No.	Act
1	Acts related to health service systems
	1.1 Medical Facilities Act, 1998
	1.2 Health Systems Research Institution Act, 1992
	1.3 Thai Traditional Medicine Protection and Promotion Act, 1999
	1.4 Government Pharmaceutical Organization Act, 1966
	1.5 Thai Health Promotion Foundation Act, 2001
	1.6 National Health Security Act, 2002
2	Acts related to disease prevention and control
	2.1 Public Health Act, 1992
	2.2 Communicable Diseases Act, 1980
	2.3 Zoonoses Act, 1982
3	Acts related to consumer protection in health
	3.1 Food Act, 1979
	3.2 Drugs Act, 1967; Amendment No. 2 (1975), No. 3 (1979) , No. 4 (1985), and No. 5 (1987)
	3.3 Cosmetics Act, 1992
	3.4 Hazardous Substances Act, 1992
	3.5 Psychoactive Substances Act, 1975; Amendment No. 2 (1985), No. 3 (1992) and No. 4 (2000)
	3.6 Narcotics Act, 1979; Amendment No. 2 (1985) No. 3 (1987) and No. 4 (2000)
	3.7 Medical Devices Act, 1988
	3.8 Royal Degree on Prevention of Volatile Substance Use, 1990; Amendment No. 2 (2000)
	3.9 Tobacco Product Control Act, 1992
	3.10 Non-smokers' Health Protection Act, 1992
4	Acts related to health professions
	4.1 Medical Registration Act, 1999
	4.2 Medical Profession Act, 1982
	4.3 Nursing and Midwifery Profession Act, 1985; Amendment No. 2 (1997)
	4.4 Pharmaceutical Profession Act, 1994
	4.5 Dental Profession Act, 1994

2) Acts that the MoPH is not directly responsible for their implementation, but shares responsibilities with other ministries (six with the Ministry of Interior).

(1) Cemeteries and Crematoriums Act, 1985

(2) Drug Addicts Rehabilitation Act, 1991

(3) Rehabilitation of Disabled People Act,1991

(4) Household and City Cleanliness and Orderliness Act, 1992

(5) Trade Secret Act, 2002

(6) The Act Establishing Youth and Family Courts and Trial Procedures for Youth and Family Cases, 1991

3) Other health-related acts and announcements under other ministries' responsibilities.

(1) The Environment Act,1992

(2) The Industrial Works Act, 1992

(3) Social Security Act (No. 2), 1990

(4) Vehicle Accident Victims Protection Act,1992

(5) Workmen's Compensation Act,1994

(6) Labour Protection Act, 1998

(7) Elderly People Act, 2003

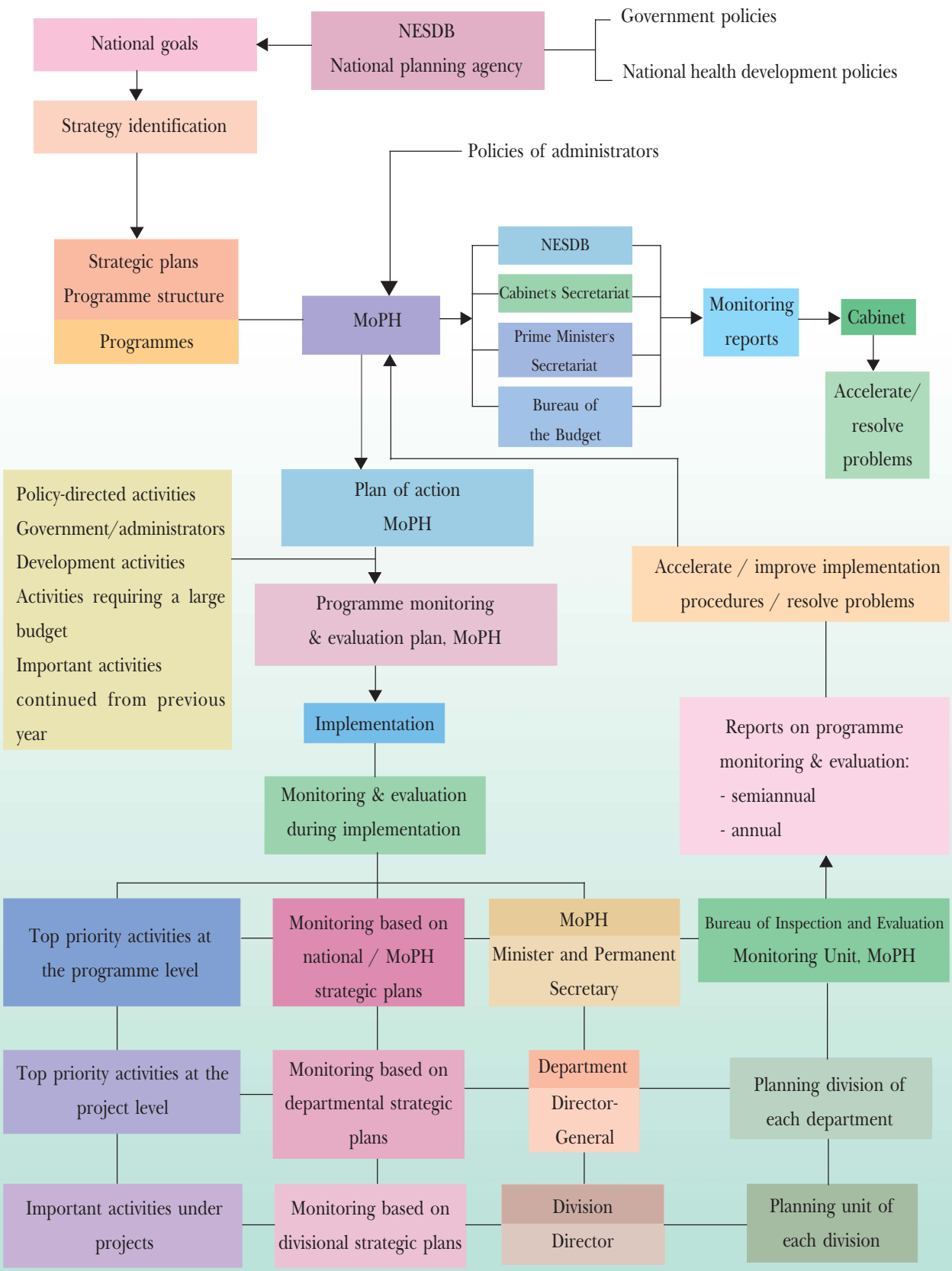
Besides, the National Health System Reform Office has been established, according to the regulation of the Prime Minister's Office, aimed at formulating processes leading to the passage of a National Health Act, which will be regarded as a "health constitution" of Thai people.

2.3 Monitoring and Evaluation System

According to the government's public sector management policy, which emphasizes the results-based management system, goals, targets and strategies of all government agencies are to be set up in response to the needs of people. As a result, the results-based budgeting system has been adopted since fiscal year 2003. And the MoPH has to revise its major programmes according to MoPH's strategic plans, using key performance indicators (KPI) in the monitoring and evaluation of health development programmes so as to meet the national development goals (Figure 6.31).

In order that MoPH's monitoring and evaluation system is undertaken systematically in a unified manner, agencies relevant to programme inspection and evaluation have been merged as the Bureau of Inspection and Evaluation under the MoPH's Office of the Inspector-Gernerals. The Bureau is assigned to be responsible for monitoring, inspection and evaluation of health programmes according to the mandate of the MoPH.

Figure 6.31 The System for Monitoring and Evaluation of MoPH programmes



2.4 Health Information

Health information is available at various agencies; the core agency being the Bureau of Policy and Strategy of the Ministry of Public Health. The evolution of Thailand's health information system can be categorized into four phases as follows:

(1) Prior to the 4th Plan

During that period, the MoPH collected a number of health statistics on births, deaths, population, and morbidity. Health activity reports were prepared and conducted by health officials at Tambon (subdistrict) and district levels, then submitted to various divisions concerned at the central level for processing as national health statistics. When the decision-makers requested information and data, they had to ask for them directly from such responsible agencies. This led to problems of scattered health statistical data in various agencies and inefficiency of data utilization. The lack of clear understanding about data requirement and use, coupled with inappropriate data processing and reporting, resulted in considerably poor quality and inaccuracy of data.

(2) The 4th to 6th Plans (1977-1991)

During this period, MoPH decided to establish the Health Information Centre at the central, provincial and district levels under the Planning Management Information System Development Project (PMIS). The developed system and formats were aimed at obtaining quality and complete health data and information at a single unit at the same administrative level. Moreover, the computer technology was introduced for the improvement of the health information system. The capacity of the computerized systems was expanded to all MoPH agencies at both central and provincial levels. Besides, the Management Information System was set up to serve health administrator's decision-making at all levels.

(3) The 7th to 8th Plans (1992-2001)

During the 7th Plan, a new concept of health information system was adopted. The MoPH lessened the reporting of unnecessary activity items and promoted a data collection system based on provincial health surveys and national health examination surveys, including surveys on the underprivileged such as the hilltribes. For use as a guide in future surveys for health planning purposes, the MoPH coordinated with public educational institutions (under the then Ministry of University Affairs) and the Thailand Development Research Institute in developing the methodology and health survey patterns in four underprivileged groups: the urban and rural poor, child and female commercial sex workers, the disabled, and the elderly who had no relatives or caretakers.

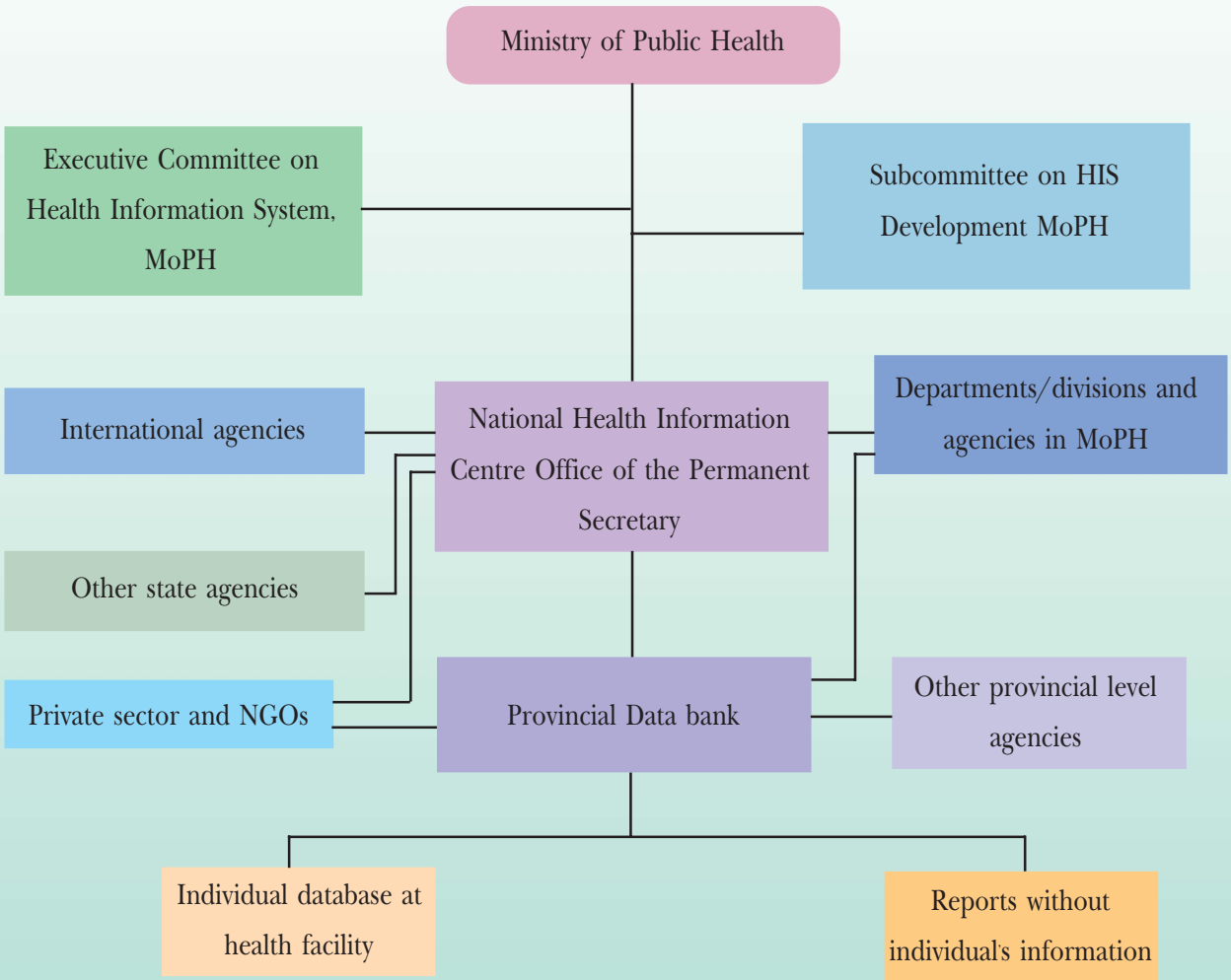
During 1999-2001, the MoPH also conducted a study on the causes of death in 16 provinces, based on the assumption that the mortality information derived from the population registration system of the Ministry of Interior was markedly inaccurate. The study aimed to explore and improve the information system so as to obtain standardized mortality information on causes of death, which would be used for making decisions on investment in effective health service programmes.

In 1997, the MoPH initiated the compilation of all information about health systems of the country as a biennial report entitled “Thailand Health Profile”.

(4) The 9th Plans (2002-2006)

The health information system of the MoPH has been reformed during this period, in line with the government's public sector reform policy and the restructuring of the MoPH. New guidelines for developing the health information system or MIS reform have been laid down. The new system aims to develop electronic individual cards, which can be linked between the central and local levels. The information in this format can be used for integrated provincial administration purposes. At the operational level, the information systems have been revised at all health centres, community health posts, hospitals and provincial public health offices. The standardized system and structure has been able to link with all agencies concerned; and it is expected to link to the "smart card" system in the future. This system will be able to respond to the need for measuring programme achievement indicators such as KPI, e-inspection, and providing the information to the Ministry Operations Centre (MOC), according to the roles and functions of each agency in an efficient manner (Figure 6.32).

Figure 6.32 Flowchart of the Network of Health Information System, Thailand



3. Structure of Organizations Implementing Health Programmes

Health resources are distributed to various agencies implementing health programmes, including those in the public and private sectors.

3.1 Public Sector

1)Principal Agencies Responsible for the Public Health Nationwide

The MoPH is the principal agency responsible for the promotion, support, control and coordination of all physical and mental health activities, well-being of people, and the provision of health services so that the people will be healthy and live a long life, without premature death.

2) Public Sector Agencies Supporting and/or Implementing Health Activities

(1) Public sector agencies providing health services are the Bangkok Metropolitan Administration (BMA), the Ministry of Education (Office of the Higher Education Commission), the Ministry of Interior, and the Ministry of Defence.

(2) Public sector agencies implementing health-related activities in connection with the environment, workers, children and women, are the Ministry of Industry, the Ministry of Science and Technology, the Ministry of Agriculture and Cooperatives, the Ministry of Labour, the Ministry of Social Development and Human Security, the Ministry of Education, and the Ministry of Natural Resources and Environment.

(3) Public sector agencies supporting efficient implementation of health programmes include the National Economic and Social Development Board (planning support), the Bureau of the Budget (budgetary support), the Civil Service Commission (health manpower support), the Department of Technical and Economic Cooperation (international assistance), the National Statistical Office (information support), the Thailand Research Fund (TRF), the Health Systems Research Institute (HSRI: medical and health research assistance), the Thai Health Promotion Foundation (supporting health promotion activities), and the National Health Security Office (supporting standardized and equitable universal coverage of health insurance).

(4) Public sector agencies responsible for health services for specific groups are the Social Security Office of the Ministry of Labour and the Insurance Department of the Ministry of Commerce.

3.2 Non-profit Private Organizations

There are about 300-500 health-related, non-profit, private organizations throughout the country, including foundations and associations. Such agencies are required to get registered with the Ministry of Culture (National Cultural Commission and/or the Ministry of Interior). So a lot of them are juristic persons but several other small NGOs are non-juristic-person agencies, such as the Rural Doctors Club and the Drug Studies Group.

Generally, these organizations receive financial support from international agencies, and from in-country donations, including government subsidies.

The MoPH allocated approximately 49.2 million baht each year during 1992-1997 and only

35 million baht each year during 1998-2003 for four major programmes of those NGOs: healthcare for the elderly, healthcare for the disabled and disadvantaged, healthcare for mothers, children and youths, and others. In 2004, a total budget of 26.4 million baht has been provided to 70 NGOs (182 projects) for their relevant health programmes (Table 6.44). Besides, another 70 million baht has been provided to 508 NGOs working on HIV/AIDS (Table 6.45) as they all will help the government in implementing health-related development programmes.

For the past several years, these organizations have helped a number of health programmes to effectively achieve their goals in such areas as family planning, sanitation, maternal and child health, and medical services.

Besides, the World Health Organization, a specialized agency of the United Nations System, has also provided financial aids to several non-profit organizations; previously WHO provided such grants for public sector agencies only.

Table 6.44 Number of Non-Profit Private Organizations and the MoPH Budgetary Support, 1992-2004

Year	No. of organizations			No. of projects			Budget, baht		
	Requesting	Supported	%	Proposed	Supported	%	Requested	Allocated	%
1992	45	42	93.3	91	72	79.1	85,600,000	49,200,000	57.5
1993	142	119	83.8	264	185	70.1	160,844,928	49,200,000	30.6
1994	416	305	73.3	909	654	71.9	334,481,098	49,200,000	14.7
1995	362	103	28.5	615	287	46.7	205,348,213	49,200,000	23.9
1996	150	106	70.7	491	219	44.6	192,234,358	49,200,000	25.6
1997	142	78	54.9	420	180	42.8	230,287,800	49,200,000	21.4
1998	152	101	66.4	258	174	67.4	129,016,142	35,000,000	27.1
1999	177	114	64.4	541	223	41.2	241,270,797	35,760,000	14.8
2000	163	92	56.4	493	191	38.7	257,227,874	46,582,300	18.1
2001	152	66	43.4	411	166	40.4	160,768,084	33,557,800	20.9
2002	161	70	43.5	327	124	37.9	161,955,967	34,965,922	21.6
2003	235	128	54.5	411	251	61.1	160,813,010	34,831,160	21.7
2004	106	70	66.0	295	182	61.7	103,900,200	26,369,545	25.4

Sources:
- For 1992-2001, data were derived from the Medical Registration Division, Department of Health Service Support.
- For 2002-2003, data were derived from the Primary Health Care Division, Department of Health Service Support.
- Consumers Potential Development Division, Food and Drug Administation.

Note: The Food and Drug Administration provided financial support to consumer protection NGOs during 1999-2003 only.

Table 6.45 Number of NGOs Involved in HIV/AIDS Programmes and the MoPH Budgetary Support, 1992-2004

Year	No. of organizations			No. of projects			Budget, baht		
	Requesting	Supported	%	Proposed	Supported	%	Requested	Allocated	%
1992	37	23	62.2	42	35	83.3	66,125,734	11,900,000	18.0
1993	38	36	94.7	61	56	91.8	33,123,818	15,000,000	45.3
1994	101	76	75.2	120	91	75.8	72,903,868	10,300,000	14.1
1995	115	94	81.7	209	153	73.2	350,765,292	75,000,000	21.4
1996	186	122	65.6	308	188	61.0	267,232,488	80,000,000	29.9
1997	268	184	68.7	385	247	64.1	309,015,357	90,000,000	29.1
1998	434	244	56.2	725	343	47.3	494,739,684	90,000,000	18.2
1999	596	371	62.2	931	458	49.2	450,972,885	87,262,350	19.3
2000	625	293	46.9	882	372	42.2	368,671,357	60,000,000	16.3
2001	497	371	74.6	730	457	62.6	403,438,189	70,000,000	17.4
2002	660	444	67.3	922	522	56.6	370,340,183	70,000,000	18.9
2003	712	519	72.9	987	605	61.3	337,938,984	70,000,000	20.7
2004	678	508	74.9	868	577	66.5	289,624,851	70,000,000	24.2

Source: Bureau of AIDS, Tuberculosis and Sexually Transmitted Infections, Department of Disease Control, MoPH.

3.3 For-profit Private Organizations

In addition to providing health services, the private sector also plays a relatively little role in producing health personnel, except that their role in producing nurses has been rising. In 2003, there were six private nursing colleges producing 586 graduate nurses (Table 6.46).

Table 6.46 Numbers of Private Educational Institutions and Graduates from Their Health Personnel Production Programmes by Field of Study,1997-2003

Field of study	For-profit institutions										Non-profit institutions									
	No. of institutions					No. of graduates					No. of institutions					No. of graduates				
	1997	1999	2001	2002	2003	1997	1999	2001	2002	2003	1997	1999	2001	2002	2003	1997	1999	2001	2002	2003
1. Medicine	1	1	1	1	1	53	52	41	49	79	-	-	-	-	-	-	-	-	-	-
2. Nursing	3	4	3	3	3	42	166	174	224	160	6	6	6	6	6	279	329	413	485	586
3. Pharmacy	1	1	1	1	1	88	81	78	108	116	1	1	1	1	1	18	54	61	110	109
4. Medical technology	1	1	1	1	1	28	16	55	27	46	1	1	1	1	1	11	15	47	68	107
5. Physical therapy	1	1	1	1	1	6	13	7	29	18	1	1	1	1	1	11	21	20	58	65
6. Public health	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	11	19	25	92	130
7. Dentistry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Source: Bureau of Private Higher Education Coordination Affairs, Office of the Higher Educational Commission.

In privately-run for-profit medical facilities, 12 groups of investors have been formed and listed in the Stock Exchange of Thailand (2003). Such corporates and their networks include Aekchon Hospital, Bangkok Dusit Vejakarn Hospital, Krung Thon Hospital, Mahachai Hospital, Chiang Mai Medical Co. Ltd., Wattana Medical, Nonthavej Hospital, Ramkhamhaeng Hospital, Smitivej Hospital, Vibhavadi Hospital, Bamrungrad Hospital, and Sikharin Hospital.

4. Health Services

Health services in Thailand are classified into five levels according to the level of care as follows (Figure 6.33).

4.1 Self-Care at Family Level. Services at this level include the enhancement of people's capacity to provide self-care and make decisions about health. Thai people tend to realize more about their health such as reducing smoking and performing physical activity. However, self-care is lessening when ill due to their greater utilization of public and private health facilities.

4.2 Primary Health Care Level. The primary health care services include those organized by the community in providing services related to health promotion, disease prevention, curative care and rehabilitative care. The medical and health technologies applied at this level are generally not so high, in response to community's needs and culture. Service providers are the people themselves, village health volunteers (VHVs) or other non-governmental volunteers. Clearly, the services provided are relatively close to self-care and primary care service provision.

4.3 Primary Care Level. Primary care is provided by health personnel and general practitioners (GPs). In the Thai primary care system, except for to those services provided in health centres and community hospitals, there are no designated geographical areas. And in general there are no holistic care services at the family level.

The universal coverage of health care policy of the present government aims to develop a holistic primary care system for all families across the country. In the near future, the entire holistic primary care system will be more effective and stronger. The components of the primary care system are as follows:

1) Community Health Posts. A community health post is a village level health service unit established specifically in remote areas, covering a population of 500 to 1,000, and staffed by only one community health worker (a permanent employee of MoPH). Services provided at this level include health promotion, disease prevention and simple curative care.

2) Health Centres. A health center is a subdistrict (tambon) or village level health service unit - a first - line unit, covering a population of about 1,000 - 5,000, with health staff including a health worker, a midwife and a technical nurse. The MoPH is now in the process of assigning a dental nurse, a professional nurse, and a health specialist to each large health centre. Services provided at this level include health promotion, disease prevention, and curative care. Health centre staff run health programmes according to the standard operational procedures established by the MoPH, under the technical supervision and support of the community hospital.

Since 2002, under the universal coverage of health care scheme, Primary Care Unit (PCUs) have been established to provide basic or primary care to the people, with a linkage in a holistic manner as well as referral system with higher-level of health care facilities. At present, 5,946 PCUs have been upgraded from subdistrict health centres and another 953 PCUs transformed from other types of health facilities such as hospital-initiated community health service centres, municipal health centres or newly established PCUs.

3) Health Centres of Municipalities, Outpatient Departments of Public and Private Hospitals at All Levels, and Private Clinics. At these facilities, outpatient care is provided by physicians and other health professionals.

4) Drugstores. A drugstore is a healthcare unit at the primary care level that is operated by a pharmacist or someone who has been trained in basic pharmacy.

4.4 Secondary Care Level. Medical and health care at this level is managed by medical and health personnel with intermediate level of specialization. General and specialized medical facilities include the following:

1) Community hospitals. A community hospital is located in a district or minor-district with 10 to 150 inpatient beds, covering a population of 10,000 or more, and staffed by doctors and other health professionals. Generally, services provided are mostly curative care, compared to those at primary care facilities.

2) General or regional hospitals and other large public hospitals. A general hospital in this category is located in a provincial city or a large district town, equipped with 200 to 500 beds, while a regional hospital located in a provincial city has over 500 beds and medical specialists in all fields.

3) Private hospitals. Most private hospitals are operated as a business entity with both full-time and part-time staff, and clients are required to pay for services.

4.5 Tertiary Care. Medical and health services at this level are provided by medical specialists and health professionals. Tertiary care facilities include:

1) General hospitals

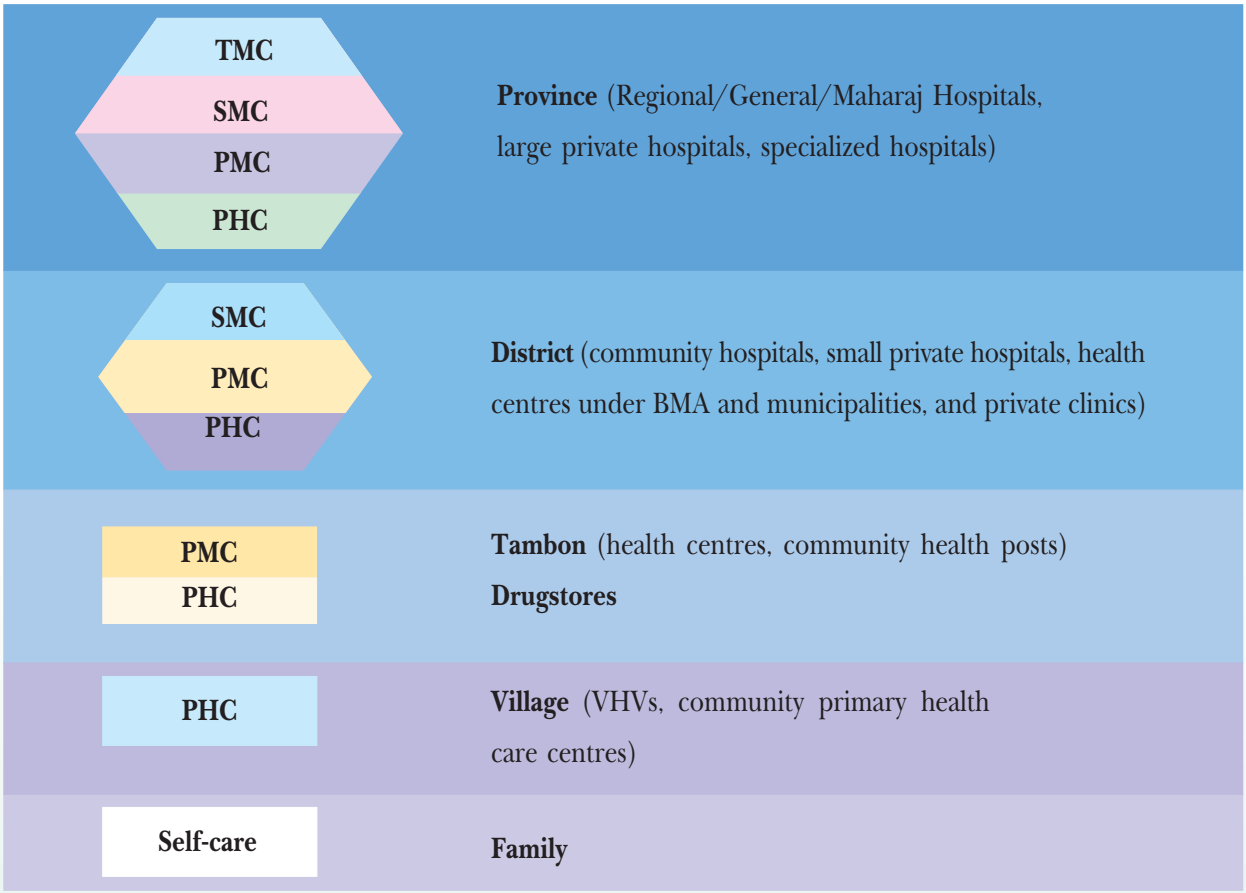
2) Regional hospitals

3) University hospitals and large public hospitals belonging to other ministries or local administrative organizations.

4) Large private hospitals have medical specialists in all specialties. mostly with over 100 beds.

The classification of health facilities mentioned above is relatively rough; as a matter of fact, the tertiary care facilities also provide primary care services.

Figure 6.33 Levels of Health Services in Thailand



In analyzing the pattern of outpatient services at three levels of health care, i.e., health centres or community health posts, community hospitals or extended OPDs, and regional/general hospitals, in the past three decades, it is found that there has been a change in the number of outpatients. The number of outpatients has a tendency to increase substantially particularly at the health centre and community health post levels, followed by that at community hospitals; the increase is the least at general/regional hospitals. For this reason, the patient structure is inclined to gradually transform from a reverse triangle to a broad-based triangle (Table 6.47 and Figure 6.34).

Table 6.47 Numbers of Outpatients at Regional, General, and Community Hospitals,and Health Centres as well as Community Health Posts, 1977-2003

Health facility	Outpatient visits (in millions)											
	1977	1981	1985	1989	1993	1995	1996	1997	1998	1999	2000	2003
Regional/general hospitals	5.5 (46.2)	7.5 (33.1)	10.0 (32.4)	10.9 (27.7)	12.0 (21.2)	14.6 (20.0)	15.5 (19.6)	16.8 (19.1)	18.1 (18.8)	19.4 (18.8)	20.4 (18.2)	23.0 (17.8)
Community hospitals and extended OPDs	2.9 (24.4)	6.0 (26.4)	11.1 (35.9)	12.9 (32.8)	21.1 (37.2)	26.1 (35.7)	28.0 (35.5)	29.6 (33.7)	33.9 (35.1)	36.7 (35.6)	40.2 (35.7)	43.7 (33.8)
Health centres and community health posts	3.5 (29.4)	9.2 (40.5)	9.8 (31.7)	15.5 (39.4)	23.6 (41.6)	32.4 (44.3)	35.4 (44.9)	41.5 (47.2)	44.5 (46.1)	46.86 (45.5)	51.8 (46.1)	62.4 (48.3)
Total	11.9	22.7	30.9	39.3	56.7	73.1	78.9	87.9	96.5	103.0	112.4	129.1

Sources: Bureau of Policy and Strategy and Bureau of Health Service System Development.

Note: The figures in ( ) are a percentage in relation to total outpatients.

Figure 6.34 Proportions and Numbers of Outpatients at Various Levels of Health Facilities,1977-2003

Note : In parentheses are the numbers of outpatient visits in millions.

5. Health Care Financing

5.1 Thailand's National Health Expenditure

During the past decades, Thailand's national health spending has risen considerably from 3.82% of gross domestic product (GDP) in 1980 to 6.1% in 2002, more rapidly than the GDP growth. The average health spending increased 7.95% per annum in real terms, while the average annual GDP growth was 5.66%.

The national health expenditure has climbed from 25,315 million baht in 1980 to 333,798 million baht in 2002. The per capita health spending has jumped 13.2-fold from 545 baht in 1980 to 5,336 baht in 2002 or 9.8-fold in current prices (Tables 6.48, 6.49 and 6.50). Most of the national health expenditure is used for curative, and 30% or one-third of which was spent on drugs (Table 6.50).

5.2 Sources of Health Care Expenditure

5.2.1 Public Financing. The largest public financial source is the MoPH, which is the central agency. During 1980-1989, the proportion of public financing dropped from 29.9% in 1980 to 19.7% in 1989. After that, the proportion steadily rose to 37.8% in 1997 as a result of the rapid economic growth of the country and the government's policies on human development and health for all. But during the economic crisis, the government had to adjust the national budget downwards, according to the requirements of the International Monetary Fund (IMF); the proportion dropped to 32.9% in 2001, but rose again to 34.1% in 2002 to support the government's policy on universal coverage of healthcare. Overall, the MoPH budget as a percentage of the total national budget has risen from 6.7% in 2001 to 6.9% and 7.6% in 2002 and 2004, respectively (Tables 6.48 and 6.49, and Figure 6.37).

5.2.2 Private Sector Financing. With regard to private health spending, the household is the largest source as the government health insurance scheme did not cover all the population; 30% of whom were uninsured and they had to buy their own healthcards. Thus, household spending played a significant role in the health service system, the proportion being more than 60% (Tables 6.48 and 6.49, and Figure 6.35). In 1980, the proportion of household health spending was 68.6% and peaked at 80.1% in 1989 due a decrease in the government budget and the households had to bear a greater share of overall health expenditure. Between 1989 and 1997 (the year of economic crisis), the proportion of household spending declined steadily to 62.2%, while that of public spending rose to 67.03% in 2000. However, after the 1997 economic crisis, the government budget dropped again. In the future, if the economy continues to grow, the public health budget will be rising consistent with the policies on universal healthcare scheme and healthcare quality improvement. And there has been a tendency for the people to use health services at health facilities and a drop in drug purchases for self-medication, resulting in a decline in household spending.

5.2.3 International Financial Assistance. The trends in international financial support declined from 1.44% in 1980 to 0.15 in 1990 and continued declining to 0.06 in 2001. However, since 2002, such international support has risen to 0.11% in 2002, and Thailand has a tendency to become one of the donor countries providing assistance to other countries particularly those in Indochina.

Table 6.48 Health Expenditure at Current Prices, 1980-2002 (Million baht)

Year	Public sector								Private sector				International financial aid		Total health expenditure		
	MoPH	Other ministries	Civil servant benefit scheme	State enterprise benefit scheme	Workers, compensation fund	Social security	Total	Percent	Private health insurance	House-holds & employers	Total	Percent	Total	Percent	Amount	Per capita	As percentage of GDP
1980	4,495	2,210	660	111	100	-	7,576	29.93	224	17,150	17,374	68.63	365	1.44	25,315	544.94	3.82
1981	5,572	2,535	995	167	149	-	9,418	29.66	284	21,229	21,513	67.75	824	2.59	31,755	668.70	4.18
1982	6,652	2,838	1,219	204	153	-	11,066	31.73	318	23,109	23,427	67.18	380	1.09	34,873	719.16	4.14
1983	7,902	3,134	1,482	248	205	-	12,971	31.50	350	27,469	27,819	67.55	391	0.95	41,181	832.63	4.47
1984	8,618	3,467	1,791	300	250	-	14,426	27.61	469	36,951	37,420	71.63	395	0.76	52,241	1,036.61	5.29
1985	9,044	3,716	2,157	362	236	-	15,515	26.18	547	42,751	43,298	73.06	452	0.76	59,265	1,146.75	5.61
1986	9,275	3,965	2,594	435	221	-	16,490	24.96	630	48,432	49,062	74.27	508	0.77	66,060	1,254.78	5.83
1987	9,525	4,082	2,828	474	274	-	17,183	22.70	756	57,258	58,014	76.63	507	0.67	75,704	1,439.10	5.82
1988	10,373	4,338	3,156	529	347	-	18,743	20.83	951	69,955	70,906	78.81	319	0.35	89,968	1,649.70	5.77
1989	11,733	4,448	3,521	590	397	-	20,689	19.69	1,162	82,988	84,150	80.07	252	0.24	105,091	1,895.31	5.66
1990	16,225	4,558	4,316	723	443	-	26,265	20.96	1,403	97,450	98,853	78.89	184	0.15	125,302	2,224.04	5.74
1991	20,569	4,699	5,127	859	624	778	32,656	23.52	1,544	104,348	105,892	76.28	270	0.19	138,818	2,449.93	5.54
1992	24,604	4,840	5,854	981	753	2,057	39,089	24.75	1,775	116,745	118,520	75.03	356	0.23	157,965	2,753.20	5.58
1993	32,898	4,928	7,906	1,291	927	2,473	50,423	27.39	2,061	131,297	133,358	72.45	281	0.15	184,062	3,141.85	5.81
1994	39,319	5,558	9,954	1,668	1,169	3,773	61,441	30.73	2,307	136,047	138,354	69.19	154	0.08	199,949	3,405.40	5.51
1995	45,833	6,677	11,156	1,869	1,370	3,991	70,896	31.17	4,984	151,508	156,492	68.79	89	0.04	227,477	3,837.50	5.43
1996	55,861	7,768	13,587	2,418	1,610	6,239	87,483	33.97	6,296	163,693	169,989	66.01	35	0.01	257,507	4,307.00	5.58
1997	68,934	7,182	15,503	2,756	1,987	10,245	106,607	37.80	7,518	167,780	175,298	62.16	96	0.03	282,001	4,663.80	5.96
1998	65,065	5,740	16,440	2,817	1,630	7,637	99,329	35.98	7,803	168,876	176,679	63.99	82	0.03	276,090	4,514.50	5.97
1999	62,787	6,087	15,174	2,539	1,404	7,676	95,667	33.66	8,171	180,356	188,527	66.33	41	0.01	284,235	4,615.90	6.13
2000	63,001	6,195	17,062	1,622	1,257	9,623	98,760	32.95	7,291	193,634	200,925	67.03	72	0.02	299,757	4,852.80	6.09
2001	61,563	7,134	19,180	3,013	1,277	13,543	105,710	32.91	8,400	206,942	215,342	67.03	187	0.06	321,239	5,173.40	6.26
2002	70,923	6,884	20,475	3,081	1,220	11,223	113,806	34.09	9,734	209,886	219,620	65.80	372	0.11	333,798	5,336.10	6.12

Sources: 1. NESDB, Thailand's National Income, 1951-2002.

2. Viroj Tangcharoensathien. Sufferings and Causes in Health System, 1996.

3. Charles Myers. Finacing Health Services and Medical Care in Thailand, 1985.

Notes: Methods of estimating health expenditure

1. MoPH-real figures from the Bureau of Policy and Strategy, Office of the Permanent Secretary.
2. Workers' Compensation Fund and Social Security–real figures from the Social Security Office.
3. Civil servants welfare–real figures form the Comptroller–General's Department, Ministry of Finance.
4. Health spending of households and employers–figures were derived from NESDB's National Income Reports; since 1994, such figures have been adjusted to include only fees for curative care, medication, and medical supplies/equipment; while the spending on emergency care has been shifted to "other service item", resulting in a drop in this category.
5. Other ministries
   - 5.1 1980-1983–from Financing Health Services and Medical Care in Thailand, Charles Myers, 1985.
   - 5.2 1984-1992 (odd number years)–from the Viroj's Sufferings and Causes Study.
   - 5.3 1984-1992 (even number years)–by averaging the figures in the previous and following years.
   - 5.4 1994-2000–from the Bureau of the Budget.
   - 5.5 2001-2002–figures were derived from actual expenditure or spending as reported by the Comptroller–General's Department, Ministry of Finance, computed by NESDB.
6. State enterprise welfare
   - Estimates based on a constant proportion in relation to the civil servants welfare, i.e. = civil servants welfare x $\frac{1,668}{9,954}$ (based on national health account figures for 1994)

     1996-2002–real numbers from the State Enterprise Office, Bureau of the Budget.
7. Private health insurance

   Data for 1980-1986, derived by Charles Myers from the Insurance Department.

   Data for 1994, from Viroj Tangcharoensathien.
   - 7.1 1980-1983–from Charles Myer's report.
   - 7.2 1984-1994–using the ratio of private insurance to total private health expenditure, i.e. ~1.26 for 1983 and ~1.62 for 1994, and average increasing ratios during the period.
   - 7.3 1995-2002–real numbers from the Insurance Department, Ministry of Commerce.
8. Foreign aid
   - 8.1 1980-1983–from Charles Myer's report.
   - 8.2 1984-1992 (even number years)–from Viroj's Sufferings and Causes Study.
   - 8.3 1984-1993 (odd number years)–by averaging the figures in the previous and following years.
   - 8.4 1994-2001–data were derived from Viroj Tangcharoensathien et al. Report on National Health Accounts, 1994-2001.
   - 8.5 2002, data were derined from the World Health Organization, the Department of Technical and Economic Cooperation, and all MoPH's departments.
9. Drug consumption figures for 2002 were derived from Chapter 6 (Table 6.39).

Table 6.49 Proportion of Overall Health Expenditure Sources in Thailand, 1980-2002 (1988 prices)

Source of spending	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
1. Public sector																							
Ministry of Public Health	17.76	17.55	19.07	19.19	16.50	15.26	14.04	12.58	11.53	11.16	12.95	14.82	15.58	17.87	19.67	20.15	21.69	24.44	23.57	22.10	21.02	19.16	21.25
Other ministries	8.73	7.98	8.14	7.61	6.64	6.27	6.00	5.39	4.82	4.23	3.64	3.39	3.06	2.68	2.78	2.94	3.02	2.55	2.08	2.14	2.07	2.22	2.06
Civil servants benefit scheme	2.61	3.13	3.50	3.60	3.43	3.64	3.93	3.74	3.51	3.35	3.44	3.69	3.71	4.30	4.98	4.91	5.28	5.50	5.95	5.34	5.69	5.97	6.13
State enterprise benefit scheme	0.44	0.53	0.58	0.60	0.57	0.61	0.66	0.63	0.59	0.56	0.58	0.62	0.62	0.70	0.83	0.82	0.94	0.98	1.02	0.89	0.54	0.94	0.92
Workers' compensation fund	0.40	0.47	0.44	0.50	0.48	0.40	0.33	0.36	0.39	0.38	0.35	0.45	0.48	0.50	0.58	0.60	0.62	0.70	0.59	0.49	0.42	0.40	0.37
Social security	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	1.30	1.34	1.89	1.75	2.42	3.63	2.77	2.70	3.21	4.22	3.36
Total	29.93	29.66	31.73	31.50	27.61	26.18	24.96	22.70	20.83	19.69	20.96	23.52	24.75	27.39	30.73	31.17	33.97	37.80	35.98	33.66	32.95	32.91	34.09
2. Private sector																							
Private health insurance	0.88	0.89	0.91	0.85	0.90	0.92	0.95	1.00	1.06	1.11	1.12	1.11	1.12	1.12	1.15	2.19	2.44	2.66	2.82	2.88	2.43	2.61	2.92
Households and emplyers	67.75	66.85	66.27	66.7	70.73	72.14	73.32	75.63	77.76	78.97	77.77	75.17	73.91	71.33	68.04	66.6	63.57	59.5	61.17	63.45	64.6	64.42	62.88
Total	68.63	67.75	67.18	67.55	71.63	73.06	74.27	76.63	78.81	80.07	78.89	76.28	75.03	72.45	69.19	68.79	66.01	62.16	63.99	66.33	67.03	67.03	65.80
3. Others																							
International financial aid	1.44	2.59	1.09	0.95	0.76	0.76	0.77	0.67	0.35	0.24	0.15	0.19	0.23	0.15	0.08	0.04	0.01	0.03	0.03	0.01	0.02	0.06	0.11
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Overall health expenditure (million baht)	34,916	40,415	42,246	48,131	60,187	66,824	73,275	80,184	89,968	99,033	111,635	116,955	127,368	143,634	149,962	161,255	172,438	178,935	162,025	166,284	172,671	182,108	187,949
Increase rate (%)	-	15.75	4.53	13.93	25.05	11.03	9.65	9.43	12.20	10.08	12.72	4.77	8.90	12.77	4.41	7.53	6.93	3.77	-9.45	2.63	3.84	5.47	3.21
As percentage of GDP	3.82	4.18	4.14	4.47	5.29	5.61	5.83	5.82	5.77	5.66	5.74	5.54	5.58	5.81	5.51	5.43	5.58	5.96	5.97	6.13	6.09	6.26	6.12
Population (million)	46.45	47.49	48.49	49.46	50.40	51.68	52.65	52.61	54.54	55.45	56.34	56.66	57.37	58.58	58.72	59.28	59.79	60.46	61.15	61.58	61.77	62.09	62.55
Per capita expenditure (baht)	752	851	871	973	1,194	1,293	1,392	1,524	1,650	1,786	1,981	2,064	2,220	2,452	2,554	2,720	2,884	2,959	2,649	2,700	2,795	2,933	3,005
Increase (%)	-	13.21	2.37	11.70	22.72	8.28	7.63	9.51	8.23	8.27	10.94	4.17	7.56	10.44	4.16	6.50	6.03	2.60	- 10.48	1.93	3.52	4.94	2.45

Source: Table 6.48

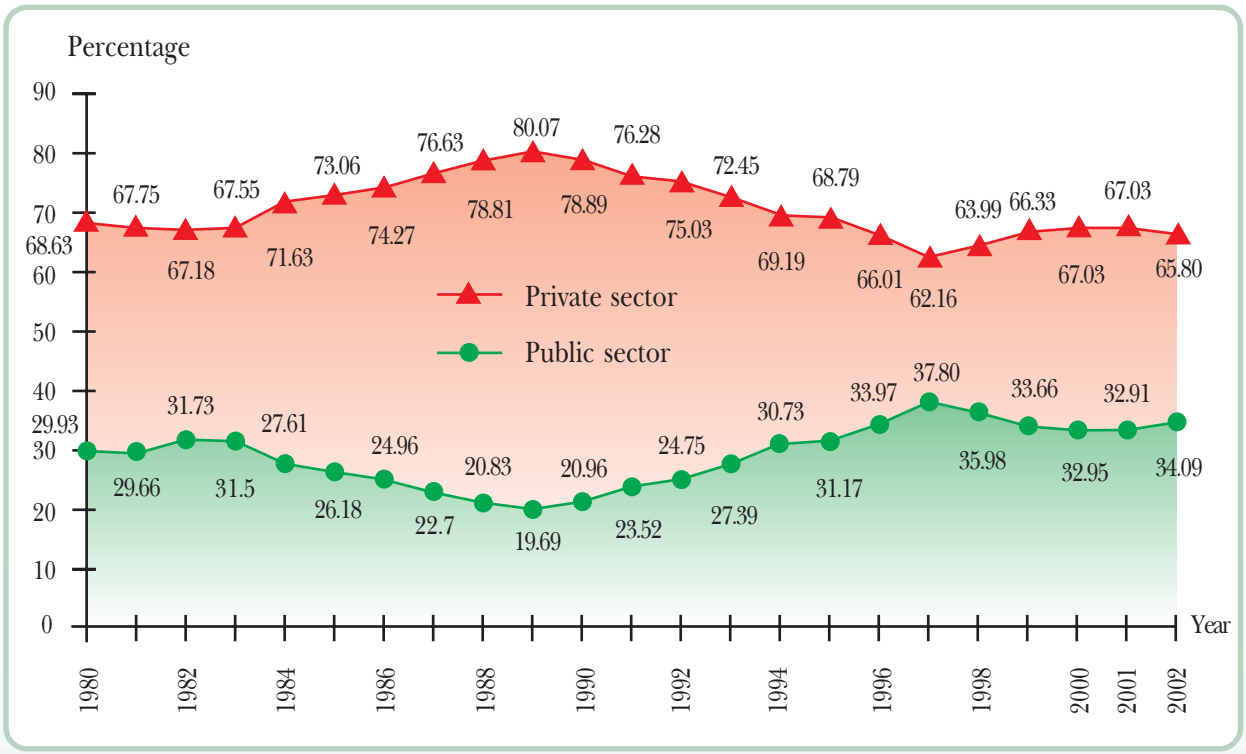
Table 6.50 Expenditures on Drugs and Health in Relation to GDP, 1980-2002 (Million baht)

Year	GDP			Health expenditure				Drug expenditure				
	Actual Values	Values in 1988 prices	Increase (percent)	Actual values	Values in 1988 prices	Increase (percent)	Percentage of GDP	Actual values	Values in 1988 prices	Increase (percent)	As percentage of GDP	As percentage of health expenditure
1980	662,482	913,733	4.61	25,315	34,916	-	3.82	-	-	-	-	-
1981	760,356	967,706	5.91	31,755	40,415	15.75	4.18	-	-	-	-	-
1982	841,569	1,019,501	5.35	34,873	42,246	4.53	4.14	-	-	-	-	-
1983	920,989	1,076,432	5.58	41,181	48,131	13.93	4.47	16,686	19,502	-	1.81	40.52
1984	988,070	1,138,353	5.75	52,241	60,187	25.05	5.29	20,629	23,767	21.87	2.09	39.49
1985	1,056,496	1,191,255	4.65	59,265	66,824	11.03	5.61	26,317	29,674	24.85	2.49	44.41
1986	1,133,397	1,257,177	5.53	66,060	73,275	9.65	5.83	18,669	20,708	-30.21	1.65	28.26
1987	1,299,913	1,376,847	9.52	75,704	80,184	9.43	5.82	21,352	22,616	9.21	1.67	28.73
1988	1,559,804	1,559,804	13.29	89,968	89,968	12.20	5.77	26,674	26,674	17.94	1.71	29.65
1989	1,856,992	1,749,952	12.19	105,091	99,033	10.08	5.66	33,763	31,817	19.28	1.82	32.13
1990	2,183,545	1,945,372	11.23	125,302	111,635	12.72	5.74	35,369	31,511	-0.96	1.62	28.23
1991	2,506,635	2,111,862	8.56	138,818	116,955	4.77	5.54	39,464	33,249	5.51	1.57	28.43
1992	2,830,914	2,282,572	8.08	157,965	127,368	8.90	5.58	42,770	34,486	3.72	1.51	27.08
1993	3,170,258	2,473,937	8.38	184,062	143,634	12.77	5.81	42,364	33,059	-4.14	1.34	23.02
1994	3,629,341	2,722,006	10.03	199,949	149,962	4.41	5.51	52,823	39,617	19.83	1.45	26.41
1995	4,186,212	2,967,542	9.02	227,477	161,255	7.53	5.43	68,437	48,514	22.46	1.63	30.08
1996	4,611,041	3,087,751	4.05	257,507	172,438	6.93	5.58	81,440	54,536	12.41	1.77	31.63
1997	4,732,610	3,002,925	-2.75	282,001	178,935	3.77	5.96	92,728	58,838	7.89	1.98	32.88
1998	4,626,447	2,715,051	-9.59	276,090	162,025	-9.45	5.97	82,888	48,643	-17.33	1.82	30.02
1999	4,637,079	2,712.800	-0.08	284,235	166,284	2.63	6.13	91,208	53,359	9.70	1.98	32.09
2000	4,923,263	2,835,981	4.54	299,757	172,671	3.84	6.09	102,400	58,986	10.55	2.08	34.16
2001	5,133,836	2,910,338	2.62	321,239	182,108	5.47	6.26	116,767	66,194	12.22	2.27	36.35
2002	5,451,854	3,069,738	5.48	333,798	187,949	3.21	6.12	120,290	67,731	2.32	2.21	36.04
		Average	5.66			7.95				6.77		

Sources: Table 6.48 and Table 6.49

Note: Since 1994, NESDB has adjusted the GDP figures.

Figure 6.35 Proportions of Health Expenditure in the Public and Private Sectors, 1980-2002



Sources: 1. National Economic and Social Development Board. Thailand National Income, 1951-2002.

2. Viroj Tangcharoensathien. Sufferings and Causes in the Health System,1996.

3. Charles Myers. Financing Health Services and Medical Care in Thailand, 1985.

In comparison with other Asian countries (Table 6.51), the Thai government has not given a high priority to health care as the people still bear a larger share in health spending for self-care.

Table 6.51 Comparison of Health Expenditures among Some Asian Countries

Country	Health expenditure		Proportion, Govt.: household
	Per capita (USD)	As percentage of GDP	
Indonesia	77	2.4	25.1 : 74.9
The Philippines	169	3.3	45.2 : 54.8
Sri Lanka	122	3.6	48.9 : 51.1
Malaysia	345	3.8	53.7 : 46.3
Thailand (2002)	124	6.1	34.1 : 65.8
Singapore	993	3.9	33.5 : 66.5
South Korea	948	6.0	44.4 : 55.6

Source: The World Health Report, 2004 (data for 2001).

Note: For 2002, the exchange rate of 43.1 baht to a US dollar is used.

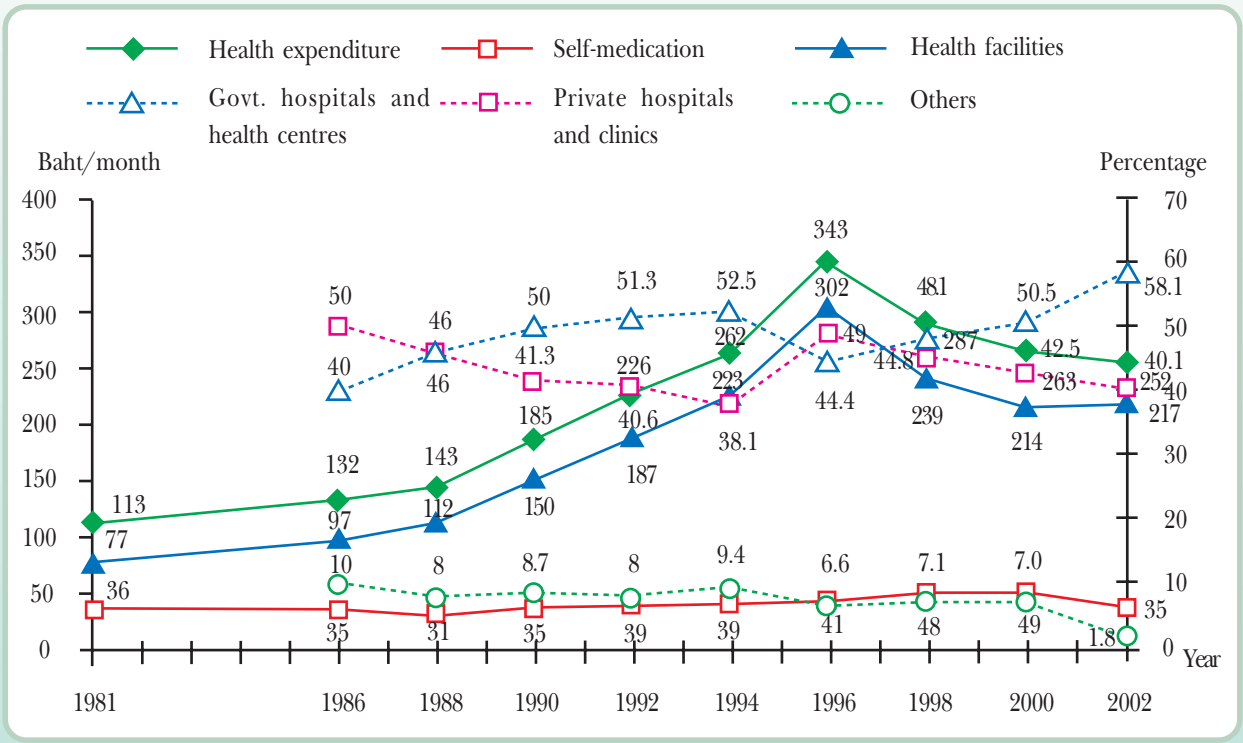
5.3 Health Expenditure in the Household

The National Statistical Office conducted a series of household income and expenditure surveys every five years in 1976, 1981 and 1986, and every two years between 1988 to 2002. The household health spending as shown in Table 6.52 between 1981 and 2002 was rather stable, ranging from 3.6% to 3.9%, between 1981 and 1996, but declining to 3.2% during the economic crisis and to 2.6% in 2002. The average household size has become smaller, declining from 4.5 to 3.5 members during the period. The monthly household spending on consumer goods is as noted below.

5.3.1 Household healthcare spending on self-prescribed drugs dropped from 31.9% in 1981 to 11.9% in 1996. On the other hand, healthcare spending at health facilities (including drug expenses) at private clinics/hospitals and public hospitals rose from 68.1% in 1981 to 88.0% in 1996.

Such trends have been apparent since the 1997 economic crisis; more people tend to spend more on self-medication and less on institutional care, particularly higher at private facilities. It is noteworthy that the spending on healthcare were rising particularly at private health facilities, but after the economic recovery in 2002, the proportion of self-medication has dropped to 13.9% (Figure 6.36 and Table 6.52).

Figure 6.36 Household Health Expenditure, 1981–2002



Sources: Reports on Household Socio-Economic Surveys. National Statistical Office.

Table 6.52 Health Expenditure Patterns of Households (baht/month), 1981-2002

Health expenditure pattern	1981		1986		1988		1990		1992		1994		1996		1998		1999		2000		2001		2002	
	Baht	%	Baht	%	Baht	%	Baht	%	Baht	%	Baht	%	Baht	%	Baht	%	Baht	%	Baht	%	Baht	%	Baht	%
Household size(persons)	4.5	-	4.3	-	4.0	-	4.1	-	3.9	-	3.8	-	3.7	-	3.7	-	3.7	-	3.6	-	3.6	-	3.5	-
Total expenses	3,374	-	3,783	-	4,161	-	5,437	-	6,529	-	7,567	-	9,190	-	10,389	-	10,238	-	9,848	-	10,025	-	10,889	-
Consumption expenses	3,151	-	3,486	-	3,804	-	4,942	-	5,892	-	6,787	-	8,072	-	8,966	-	8,903	-	8,558	-	8,758	-	9,601	-
Health expenditure	113	3.6	132	3.8	143	3.9	185	3.7	226	3.8	262	3.9	343	4.2	287	3.2	273	3.1	263	3.1	264	3.0	252	2.6
Self-medication	36	31.9	35	26.5	31	21.7	35	18.9	39	17.3	39	14.9	41	11.9	48	16.7	42	15.4	49	18.6	46	17.4	35	13.9
Spending at health facilities	77	68.1	97	73.5	112	78.3	150	81.1	187	82.7	223	85.1	302	88.0	239	83.3	231	84.6	214	81.4	218	82.6	217	86.1
- Public hospitals and health centres	-	-	48	50	52	46	62	41.3	76	40.6	85	38.1	148	49.0	107	44.8	94	40.7	91	42.5	98	45.0	87	40.1
- Private hospitals/clinics	-	-	39	40	51	46	75	50.0	96	51.3	117	52.5	134	44.4	115	48.1	122	52.8	108	50.5	110	50.4	126	58.1
- Others	-	-	10	10	9	8	13	8.7	15	8.0	21	9.4	20	6.6	17	7.1	15	6.5	15	7.0	10	4.6	4	1.8

Sources: Reports on Household Socio-Economic Surveys. National Statistical Office.

5.3.2 The proportion of healthcare spending at private facilities has been rising while that at public facilities has been declining (Table 6.52). Household health spending at private health facilities had risen from 40% in 1986 to 52.5% in 1994; on the contrary, the spending at government health facilities had fallen from 50% to 38.1% during the same period. After the economic crisis, more people tend to use health services at public hospitals and health centres, and a smaller number of people attend private health facilities. Spending on other health-related services, such as dental and eyesight care, ranges from 8% to 10% of the overall household health expenses. It is noteworthy that since 2002 (with economic recovery), household health spending at private hospitals/clinics has been rising.

The household health expenditure is generally for an individual transaction of health care between a recipient and a provider. In the medical care market, a consumer will normally never have any bargaining power with the doctor due to the unilateral information possession of the doctor. Thus, the doctor can determine both the type and quantity of consumer's demand (a supplier-dictated demand), resulting in an imperfect market and a highly inefficient health system.

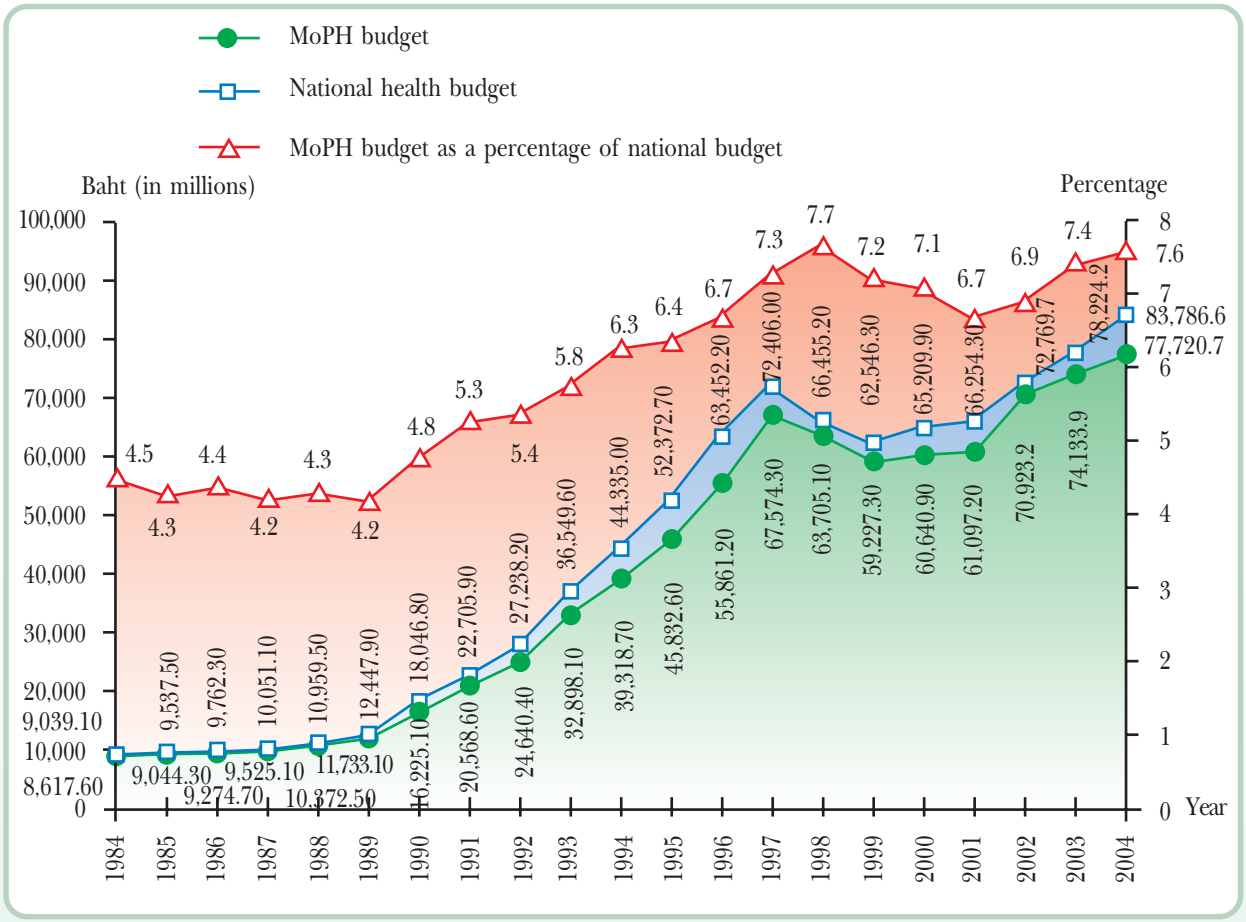
As the proportion of household health spending is over two-thirds of the national health spending, reflecting inefficiency at the macro level, the healthcare financing, therefore, becomes a prime goal of health system reform by establishing the universal health insurance scheme with a collective financing mechanism, strengthening the system for payment to health facilities by a third party, and shifting households' scattered payment without specific control by the government to a large collective fund, so as to improve the healthcare quality and to make the system more efficient.

5.4 Government Expenditure on Health Care

5.4.1 Trends of Government Health Budget

The public sector health budget rose rapidly before the economic crisis from the period of the 6th plan to the beginning of the 8th plan, the consistent economic expansion period. The MoPH budget as a percentage of the national budget also rose remarkably, by over 5% of budget expenditure since 1991 (Figure 6.37). However, the Thai health budget expenditure compared to the other developed countries is rather low at about 13-15% of the overall budget, but higher than those in many other Asian countries.

Figure 6.37 The National Health Budget and the MoPH Budget, 1984-2004



Source: Bureau of the Budget.

Note: For 1995-2004, the MoPH budget includes the health insurance revolving funds (previously known as health card revolving funds).

5.4.2 Allocation of National Health Budget

The allocation of the government health budget has been closely related to hospital-based services (Table 6.53). It is notable that approximately 60 - 66% of the budget is allocated for curative care in hospitals though there are some, but minimal, health promotion and disease prevention services. Approximately 20 - 24% of the budget is allocated for health promotion and disease prevention services at the subdistrict health centre level. During the economic crisis, the budget for hospital services decreased considerably due to cuts in construction budget, resulting in a greater proportion of the health centres budget.

Table 6.53 Allocation of Government Health Budget by Service Category, 1993-2004

Health budget	1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003		2004	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
1. Hospitals	22,955.5	66.1	26,958.0	63.8	31,006.1	62.7	37,443.0	62.6	44,881.2	65.9	39,181.2	63.7	37,795.1	62.8	38,230.0	60.2	38,949.0	60.0	35,546.9	48.8	38,554.2	49.3	41,252.5	49.2
2. Outpatient services (at health centres)	7,154.8	20.6	10,244.4	24.2	11,173.2	22.6	13,630.4	22.8	13,898.3	20.4	13,239.6	21.5	14,044.5	23.3	15,122.1	23.8	14,943.4	23.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3. Public health services	2,083.1	6.1	1,721.3	4.1	2,033.1	4.1	2,571.3	4.3	2,335.7	3.4	2,395.2	3.9	2,187.2	3.6	2,494.5	3.9	2,765.7	4.3	5,072.8	7.0	2,875.9	3.7	1,949.1	2.3
4. Health research	288.4	0.8	371.2	0.9	476.0	0.9	537.6	0.9	1,022.3	1.5	975.9	1.6	809.3	1.3	858.2	1.4	718.9	1.1	2,037.1	2.8	2113.2	2.7	3,172.3	3.8
5. Other health activities	220.5	6.4	2,951.0	7.0	4,785.7	9.7	5,628.1	9.4	5,987.3	8.8	5,716.3	9.3	5,343.6	9.0	6,796.4	10.7	7,550.5	11.6	30,112.9	41.4	34,680.9	44.3	37,412.7	44.7
Total	**32,702.3**	**100**	**42,245.9**	**100**	**49,474.1**	**100**	**59,810.4**	**100**	**68,124.8**	**100**	**61,508.2**	**100**	**60,179.7**	**100**	**63,501.2**	**100**	**64,927.5**	**100**	**72,769.7**	**100**	**78,224.2**	**100**	**83,786.6**	**100**

Source: Bureau of the Budget.

Note: Since 2002, the Bureau of the Budget has included the outpatient service budget (at health centres) in the "Other health activities" category; thus, such budget amounts cannot be calculated.

5.4.3 Pattern of Health Budget Spending

According to the 1997 study on health budget spending during the 5th-7th Health Development Plans (1982-1996) conducted by Viroj Tangcharoensathien and colleagues, most of the budget was allocated for curative care at the central level. But the proportion for municipalities rose from 22.9% to 37.5% due to increases in municipalities' budget, resulting in a drop in the budget for sanitary districts and outside during the past 15 years. By type of expenditure, the proportion for operating expenses had been declining, whereas the investment budget in the 6th Plan dropped, but increased two-fold in the 7th Plan.

Like other Plans, the health budget in the 8th Plan was mostly allocated for curative care, but lesser for health promotion and disease prevention services, while the higher proportion was allocated for addictive substance control, rehabilitative care, manpower production and capacity development, and consumer protection. By type of expenditure, the budget allocation proportion declined by almost half. After the economic crisis, as a result of the reduction of construction budget, the higher budget proportion was given to operation, salary and wages items (Table 6.54). Although there was no adequate information on the regional or provincial budget allocation, Table 6.54 shows that the health budget was mostly allocated for central level agencies.

Nonetheless, more health budget is allocated for health promotion programmes because of strong health system reform movement that drives for the adoption of healthcare financing with the health promotion and disease prevention emphasis. Also, according to the shifted determination of national health system reform, the intent is principally placed on health promotion rather than health restoration. This includes the development of budget allocation pattern focusing on performance-based or results-based budgeting system. The 30-baht healthcare policy has applied the capitation payment mechanism, which covers salaries and operationing costs. This kind of budget allocation will result in a radical reform of public healthcare facilities management in the near future.

Table 6.54 Allocation of Health Budget by Major Activity, Administrative Area and Expenditure Item, in the 5th-8th Plans

Category	5th Plan		6th Plan		7th Plan		8th Plan	
	Million baht	%	Million baht	%	Million baht	%	Million baht	%
By type of expenditure	**44,508.97**	**100**	**74,253.70**	**100**	**233,792.39**	**100**	**330,930.46**	**100**
1. Administration	2,958.9	6.65	5,431.37	7.31	12,301.07	5.5	16,859.68	5.09
2. Curative care	26,053.77	58.54	42,996.71	57.91	124,262.44	55.52	182,394.81	55.12
3. Health promotion	7,678.67	17.25	11,978.34	16.13	43,161.80	19.29	54,618.37	16.50
4. Disease prevention	4,502.25	10.12	8,143.44	10.97	26,311.92	11.75	36,612.44	11.06
5. Addictive substance control	233.15	0.52	395.50	0.53	1,337.51	0.6	3,924.44	1.19
6. Rehabilitative care	105.27	0.24	196.18	0.26	732.72	0.33	4,915.74	1.49
7. Manpower production	1,609.87	3.62	2,172.51	2.93	6,627.11	2.96	18,824.87	5.69
8. Manpower capacity development	513.42	1.15	833.83	1.12	1,206.25	0.54	2,362.14	0.71
9. Primary health care *	353.42	0.79	1,260.47	1.70	4,995.48	2.23	4,160.32	1.26
10. Consumer protection	397.33	0.89	643.52	0.87	2,117.66	0.95	4,337.09	1.31
11. Research and development	102.92	0.23	201.83	0.27	738.43	0.33	1,920.56	0.58
By administrative area								
1. Central agencies	26,766.58	60.14	41,023.08	55.25	112,696.09	50.36	n.a.	n.a.
2. Municipalities	10,203.97	22.93	23,644.55	31.84	84,088.57	37.57		
3. Sanitary districts	4,206.76	9.45	5,315.10	7.16	14,420.312	6.44		
4. Outside sanitary districts	3,331.66	7.48	4,270.97	5.75	12,587.39	5.62		
By items								
1. Operations	16,913.41	38.0	25,988.79	35.0	71,613.59	32.0	128,070.09	38.7
2. Investment	7,566.52	17.0	10,395.52	14.0	62,661.83	28.0	61,553.06	18.6
3. Salaries & wages	20,029.04	45.0	37,869.39	51.0	89,516.97	40.0	141,307.31	42.7

Source: The Budget figures for the 5th-7th National Health Development Plans were derived from Viroj Tangcharoensathien et al., 1997.

Notes: 1. * Includes only community primary health care activities (i.e. training of VHVs and community leaders).

2. The health budget's figures for the 8th Plan by activity were obtained from the Bureau of Policy and Strategy. The MoPH health budget numbers are actual numbers, but estimated numbers for MoPH agencies, based on the average numbers for the 5th-7th Plans.

6. Problems of the Thai Health System

Major problems of Thailand's health system are divided into five groups as follows:

6.1 Inequities of Medical and Health Services

6.1.1 Inequities in Resources Allocation

Although the overall proportions of health resources per capita tend to be higher, there are disparities between regions in terms of human resources, number of beds and health facilities, particularly between Bangkok and the Northeast. Such a situation clearly reflects the inequities in resources allocation as shown in Table 6.55. In Bangkok, the bed/population ratio is 1: 206 and the doctor/population ratio is 1:767, compared with the Northeast, of which the bed/population ratio is 1:759 and the doctor/population ratio is 1:7,251. An analysis of differences between regions particularly the health professional/ population ratio, such as doctors, dentists and pharmacists, reveals that between Bangkok and the Northeast the ratio differences are three- to ten-fold. Nevertheless, the inequities in all regions in the past tended to improve. During the economic boom period, beginning in 1989, there was a rapid expansion of private health facilities in Bangkok and other large cities, draining resources from the public sector especially from the rural/provincial level. Since then, regional disparities have been stabilized and increased. During the 1997 economic crisis, a number of private hospitals had to cut down on their numbers of beds, doctors and other types of personnel, resulting in an increase in the proportions of beds and manpower in the public sector. The 2001 and 2002 (with economic recovery) health resources surveys revealed that the regional disparities in resource distribution were improving (See Chapter 6, section 1, Health Resources).

Table 6.55 Distribution of Health Resources (Resource to Population Ratio) by Region,2003

Type/Region	Bangkok	Central (outside BKK)	The North	The Sourth	The Northeast	Nationwide
Beds[1]	1: 206	1: 391	1: 496	1: 496	1: 759	1: 462
Health centres[1]	1: 46,545[2]	1: 4,629	1: 4,662	1: 4,433	1: 5,540	1: 4,895
Doctors[1]	1: 767	1: 3,566	1: 4,499	1: 4,984	1: 7,251	1: 3,295
Dentists[1]	1: 3,218	1: 17,810	1: 17,824	1: 20,105	1: 28,432	1: 13,991
Pharmacists[1]	1: 2,507	1: 9,557	1: 10,115	1: 9,569	1: 14,987	1: 8,511
Nurses (all categories)[1]	1: 244	1: 499	1: 595	1: 537	1: 918	1: 556
Nurses: professional[1]	1: 289	1: 684	1: 785	1: 765	1: 1,278	1: 739
Nurses: technical[1]	1: 1,549	1: 1,848	1: 2,449	1: 1,797	1: 3,257	1: 2,240
Health centre staff	-	1: 1,552	1: 1,713	1: 1,511	1: 2,097	1: 1,762
Pharmacies: modern	1: 1,962	1: 6,052	1: 14,641	1: 11,745	1: 26,935	1: 7,739
Pharmacies: traditional	1: 15,848	1: 27,503	1: 36,419	1: 38,053	1: 36,659	1: 30,226
Pharmacies: modern, readily-packed	1: 11,781	1: 10,918	1: 12,002	1: 15,399	1: 18,439	1: 13,680

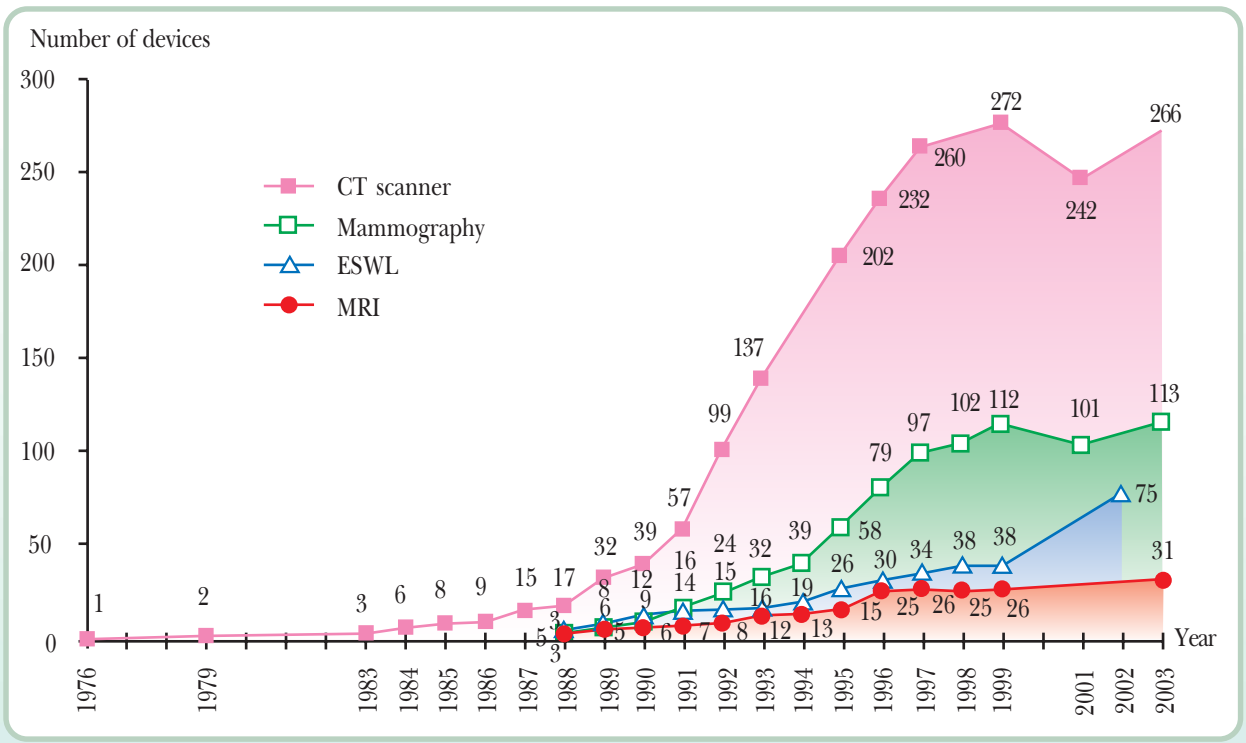
Sources: 1. Report on Health Resources, Bureau of Policy and Strategy, MoPH.
2. Food and Drug Administration, MoPH.

Note: 1. [1] Data for 2002.
2. [2] BMA health centres (and branches).
3. For 2002, the information was received from 65.6% of health facilities: 44.3% Bangkok, 60.5% from the Central Plains, 76.7% from the Northeast, 74.9% from the North, and 68.3% from the Sourth.

In addition, the inequities in health care are also found in terms of diffusion of medical and health technologies, for instance CT scanning, magnetic resonance imaging MRI, extracorporeal shortwave lithotrypsy (ESWL) and mammogram machines. Although the number of such medical technologies tends to increase rapidly (Figure 6.38), leading to a higher proportion of Thailand's medical technologies to population, the inequitable diffusion problem in provincial areas remains unresolved (Table 6.56).

Regarding the discrepancy index, the index of four types of medical appliances in Bangkok is 3.2-6.0, while the index in provincial areas is 0.4-0.8, compared to that of the overall national figures (Table 6.56). For CT scanners, the disparity between regions tends to improve (Table 6.57).

Figure 6.38 Numbers of High-Cost Medical Technologies in Thailand, 1976-2003



Sources: - Wongduern Jindawatthana et al. High-cost Medical Devices in Thailand: Utilization, Distribution and Accessibility, 1999.

- For 2002-2003, data were derived from reports on health resources of the Bureau of Policy and Strategy, Office of the Permanent Secretary and the Division of Radiology and Medical Devices, Department of Medical Sciences.

Table 6.56 Ratio of High-Cost Medical Technologies to Population and Discrepancy Index by Region, 2003

Region	Ratio of medical devices per million population				Discrepancy index			
	ESWL (2002)	CT	MRI	Mammo	ESWL (2002)	CT	MRI	Mammo
Bangkok Metropolis	3.8	13.3	3.0	9.2	3.2	3.2	6.0	5.1
Provincial areas	0.9	3.1	0.2	0.9	0.8	0.7	0.4	0.5
The Central	1.4	5.3	0.1	1.4	1.2	1.3	0.2	0.8
The North	1.1	3.2	0.2	0.8	0.9	0.8	0.4	0.4
The Northeast	0.6	1.7	0.2	0.5	0.5	0.4	0.4	0.3
The South	0.7	2.5	0.2	1.2	0.6	0.6	0.4	0.7
Nationwide	1.2	4.2	0.5	1.8	1.0	1.0	1.0	1.0

Sources: - Report on Health Resources. Bureau of Policy and Strategy, MoPH (ESWL data for 2002).
- Division of Radiology and Medical Devices, Department of Medical Sciences (CT, MRI and mammogram device data for 2003).

Table 6.57 Ratio of CT Scanners to Population and Discrepancy Index by Region,1994 and 1998-2003

Region	No. of CT scanners				Ratio of CT scanners per million population				Discrepancy Index			
	1994	1998	1999	2003	1994	1998	1999	2003	1994	1998	1999	2003
Bangkok Metropolis	88	83	89	89	15.7	14.8	15.9	13.3	12.1	8.6	7.2	7.8
Provincial areas	117	156	183	177	2.2	2.8	3.3	3.1	1.7	1.6	1.5	1.8
The Central	45	66	74	80	3.3	4.6	5.2	5.3	2.7	2.7	2.4	3.1
The North	31	37	41	37	2.6	3.1	3.4	3.2	2.0	1.8	1.5	1.9
The Northeast	26	36	46	38	1.3	1.8	2.2	1.7	1.0	1.0	1.0	1.0
The South	15	17	22	22	2.0	2.1	2.8	2.5	1.5	1.2	1.3	1.5
Nationwide	205	239	272	266	3.5	3.9	4.5	4.2	2.7	2.3	2.0	2.5

Sources: For 1994, data were derived from Viroj Tangcharoensathien et al. Diffusion of Medical Equipment in Thailand, 1995.
For 1998 and 2003, data were derived from the Division of Radiology and Medical Devices, Department of Medical Sciences.
For 1999, data were derived from Wongduern Jindawatthana et al. High-cost Medical Devices in Thailand: Utilization, Distribution and Accessibility, 1999.

Inequities in health are also found in terms of the diffusion of health care budget. Regarding the allocation and diffusion of health care budget per capita (Table 6.58), the overall budget allocation tends to be mostly distributed to wealthier regions. It is noted that the annual health budget allotted per capita for the Northeast is lower than those for other regions, while the Central region as well as Bangkok and vicinity catches the highest. Such allocation has reflected the inequities in health services in those regions, which include the problem of centralization of the public sector management system.

Table 6.58 Allocation of Health Budget per Capita by Region (at Constant 2003 Prices)

Unit: baht

Region	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
The Central	358	412	518	547	639	692	435	813	1,656	1,643	1,383	1,800
The East	293	369	470	549	679	676	581	419	1,282	1,242	1,111	1,522
The West	351	384	454	508	632	675	712	481	1,384	1,434	1,168	1,594
The North	333	466	526	600	618	607	489	388	1,298	1,250	1,061	1,438
The Northeast	267	358	419	467	502	409	340	347	967	966	696	1,129
The South	413	440	549	631	613	608	436	433	1,291	1,318	1,038	1,570
Bangkok and vicinity	2,619	3,395	3,694	3,994	4,098	3,820	5,164	4,055	1,963	2,610	4,980	3,160
Nationwide	**700**	**894**	**1,026**	**1,130**	**1,281**	**1,127**	**1,373**	**1,067**	**1,327**	**1,398**	**1,698**	**1,650**

Source: Comptroller-General's Department, Ministry of Finance, calculated by NESDB.

Notes: 1. For 1992-1999, the budget figures for Bangkok and its vicinity include the budget for central agencies and MoPH. As the data could not be disaggregated for Bangkok and vicinity, the figures were higher than those for 2000 - 2003.

2. For 2000 - 2003, the budget is only for Bangkok and its vicinity.

6.1.2 Inequities in Access to Health Care

The people in urban and rural areas have unequal opportunities in accessing health services. Urban residents have a better access to health facilities with doctors than do rural residents. After the economic crisis, urban residents are more likely to seek self-prescribed drugs than rural residents (Table 6.59).

Table 6.59 Health Service Utilization Behaviour of People in Urban and Rural Areas and by Region, 1988, 1999, 2003, and 2004

Unit: percent

Type of service	Total				Urban				Rural			
	1988	1999	2003	2004	1988	1999	2003	2004	1988	1999	2003	2004
Health facilities with doctors	54.3	54.3	52.5	52.9	81.0	67.3	60.0	60.3	47.3	52.1	49.8	50.5
Health facilities without doctors	4.7	n.a.	23.9	24.6	1.1	n.a.	9.6	7.1	18.2	n.a.	29.5	30.8
Traditional care	2.4	1.6	2.9	2.0	1.0	0.8	2.6	2.1	2.8	1.7	3.0	2.0
Self-medication/self-care	28.6	24.1	27.4	26.2	17.0	31.0	31.0	33.1	31.7	22.3	25.9	23.7

Type of service	The North				The Northast				The Central				The South				Bangkok Metropolis			
	1988	1999	2003	2004	1988	1999	2003	2004	1988	1999	2003	2004	1988	1999	2003	2004	1988	1999	2003	2004
Health facilities with doctors	61.9	52.2	42.7	50.4	46.3	52.4	56.5	49.8	47.0	53.1	55.8	59.0	43.4	59.2	51.3	61.2	81.3	62.5	59.4	51.9
Health facilities without doctors	15.2	n.a.	29.4	26.9	15.2	n.a.	29.0	31.5	21.0	n.a.	17.4	17.0	17.1	n.a.	22.9	21.5	0.5	n.a.	8.1	5.7
Traditional care	1.9	1.3	2.4	1.7	1.3	1.2	2.4	1.7	3.8	1.9	2.1	2.1	4.1	2.9	5.4	3.0	1.0	0.8	3.5	2.4
Self-medication/self-care	21.0	20.2	32.3	25.8	37.2	23.6	21.8	24.8	28.2	26.8	27.7	25.8	35.4	17.8	26.9	21.2	17.1	32.7	32.8	41.7

Sources: Data for 1988 were derived from Morbidity Differentials, 1988. Institute for Population and Social Research.
Data for 1999 were derived from Report on Illnsses and Medical Welfare, 1999. National Statistical Office.
Data for 2003 and 2004 were derived from Reports on Health and Welfare Surveys. National Statistical Office.

6.1.3 Inequities in Health Status

The infant mortality rate (IMR) is a good indicator of health status differences in various population groups. For instance, the IMR in non-municipal areas is 1.85 times higher than that in the municipal areas. Although the IMR has dropped by half in the past 20 years, the urban-rural difference is widening (Table 6.60).

Table 6.60 Infant Mortality Rates (per 1,000 Live Births) in Municipal and Non-municipal Areas, 1964-1996

	Total	Municipal areas	Non-municipal areas	Non-mun./Mun. difference
SPC 1 (1964 - 1965)	84.3	67.6	85.5	1.26
SPC 2 (1974 - 1976)	51.8	39.6	58.7	1.48
SPC 3 (1985 - 1986)	40.7	27.6	42.6	1.54
SPC 4 (1989)	38.8	23.6	41.4	1.75
SPC 5 (1991)	34.5	21.0	37.0	1.76
SPC 6 (1995 - 1996)	26.05	15.24	28.23	1.85

Source: National Statistical Office.

Note: SPC = Survey of Population Changes.

The United Nations Development Programme (UNDP) has developed a human advancement index with eight components, one of which is health, particularly in relation to life span, health status, health promotion and health service (population to doctor ratio). It was found that there were regional disparities, i.e. Bangkok had the highest health index and the richest of all regions, while the Northeast and the North had the highest number of poor people and the lowest health index (Table 6.61).

Table 6.61 Health Index of Thai People by Region, 2002

Locality	Health index	Locality	Health index
Whole Kingdom	0.6889	The West	0.7042
Bangkok	0.7884	The South	0.6743
Bangkok's vicinity	0.7369	The North	0.6563
The East	0.7058	The Northeast	0.6234
The Central	0.7110		

Source: Human Development Report. United Nations Development Programme, Thailand, 2003.

6.1.4 Inequities in Bearing Healthcare Cost

The burden of health expenditure does not correspond with the ability to pay of people. For example, a comparison of health expenditure proportion in each income group reveals that the poor have a greater burden of health expenditure in proportion to income than the rich (Figure 4.10 in Chapter 4).

After the government launched the health insurance scheme for the poor and underprivileged, particularly the universal coverage of health care scheme, it was found that in 2002 the rich-poor disparity in healthcare spending dropped to only 1.6 times. And it was found that the poor had a very low burden of healthcare cost (Table 6.62). Regarding the equity in receiving health services under the universal healthcare scheme, some structural inequity was noted in the Thai health system, i.e. patient care at tertiary medical facilities (provincial hospitals), tends to favour the rich rather than the poor, and the poor would receive more benefits than the rich only in connection with outpatient care at health centres and community hospitals (Table 6.63).

Table 6.62 Percentage of Household Health Spending by Decile Groups, 2002

Decile group	Health spending as percentage of household income							
	0-5%	6-10%	11-20%	21-30%	31-40%	41-50%	> 50%	No.of households
1	86.0	7.3	7.2	1.2	0.4	0.2	0.7	3,483
2	90.3	5.7	2.4	0.9	0.2	0.2	0.3	3,474
3	89.5	6.0	3.0	0.7	0.3	0.2	0.3	3,477
4	90.0	5.9	2.6	0.7	0.3	0.1	0.2	3,476
5	89.9	5.7	2.7	0.9	0.4	0.2	0.2	3,478
6	90.2	5.2	2.7	0.9	0.5	0.2	0.2	3,477
7	91.0	4.8	2.5	0.9	0.3	0.2	0.3	3,525
8	91.5	4.5	2.5	0.8	0.4	0.1	0.1	3,430
9	92.1	4.5	2.1	0.6	0.3	0.1	0.3	3,476
10	92.3	4.0	2.0	0.7	0.3	0.2	0.4	3,478
Total	**90.3**	**5.4**	**2.7**	**0.8**	**0.3**	**0.2**	**0.3**	**34,774**

Source: Phusit Prakongsai. Analyses of Data from the Household Socio-Economic Survey, 2002. National Statistical Office.

Table 6.63 Proportion of Households Receiving Benefits and the Universal Coverage of Health Care Scheme by Decile Group, 2002

Decile group classified by spending level per capita per month	For outpatients			For inpatients			Total
	Health centres	Comm. hospitals	Gerneral/ regional hospitals	Comm. hospitals	Gerneral/ regional hospitals	Hospitals in other provinces	
1% poorest	12.2%	11.5%	3.5%	11.7%	6.7%	21.1%	8.90%
2	13.1%	13.6%	6.5%	10.5%	7.0%	4.3%	9.29%
3	10.8%	14.1%	8.7%	8.6%	9.2%	3.2%	9.98%
4	15.4%	11.5%	10.7%	14.2%	9.8%	10.1%	11.53%
5	13.7%	13.2%	8.5%	10.4%	10.8%	13.7%	11.03%
6	11.7%	11.8%	15.6%	7.4%	14.2%	4.7%	12.12%
7	13.9%	10.2%	10.6%	24.9%	6.7%	6.6%	12.38%
8	5.6%	8.2%	17.0%	6.5%	13.8%	26.4%	11.77%
9	2.9%	3.3%	7.8%	2.8%	14.0%	5.3%	7.13%
10% richest	0.7%	2.5%	11.1%	3.0%	7.8%	4.6%	5.87%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
CI	-0.272	-0.247	0.052	-0.189	-0.008	-0.154	-0.110
Robust SE of CI	0.043	0.038	0.043	0.054	0.042	0.186	0.023
Kakwani Index; KI	-0.689	-0.663	-0.334	-0.599	-0.399	-0.560	-0.511
Robust SE of KI	0.048	0.044	0.048	0.060	0.047	0.205	0.027

Source: Viroj Tangcharoensathien et al. Financing of the Universal Coverage of Healthcare Scheme: Present and Future, 2004.

6.2 Problems of Health Services System Efficiency

6.2.1 Problems of Health Service Efficiency

Curative care is much less efficient with regard to its capacity in making people healthy, compared to promotive and preventive care (see the section on health care financing in Charter 6). Besides, for the curative service system itself, inefficiency is found in terms of, for example, drug over-utilization (from the community level up to medical specialist level).

6.2.2 Problems of Investment in Hospital Beds

The bed-occupancy rate is an important indicator of the efficiency of investment in hospitals inpatient beds.

According to the 1995-2002 reports on health resources surveys conducted by the Bureau of Policy and Strategy, MoPH hospitals have the bed-occupancy rate of 80%, followed by those of the Ministry of Interior and other ministries. Whereas the bed-occupancy rate is less than 50% in for-profit private hospitals, even during the period of economic recovery, the trend has been declining to 38.2% in 2002. This trend clearly indicates an oversupply of beds in the private sector (table 6.64).

Table 6.64 Number of Beds and Bed-occupancy Rate in Health Facilities Nationwide, 1995-2002

Agency	No. of beds					Length of stay (days)					Patient/bed ratio					Bed-occupancy rate (percent)				
	1995	1997	1999	2001	2002	1995	1997	1999	2001	2002	1995	1997	1999	2001	2002	1995	1997	1999	2001	2002
MoPH	73,191	79,818	82,085	87,753	86,761	4.8	4.6	4.3	4.3	4.3	62.6	66.6	70.1	73.3	72.1	83.6	83.5	82.8	86.3	85.7
Other ministries	14,236	16,880	15,879	14,982	14,100	5.5	6.4	6.7	7.3	5.9	18.3	24.9	30.5	29.4	42.1	27.6	43.6	55.6	58.5	68.3
Ministry of Interior	3,359	3,402	3,591	3,481	3,421	9.7	8.1	4.6	6.2	6.2	23.0	32.6	58.0	43.2	30.8	61.2	72.5	73.7	73.3	51.9
State enterprises	365	365	385	335	335	10.9	9.3	6.4	6.7	5.4	14.3	18.6	15.6	26.1	24.1	43.2	47.3	27.3	47.6	35.7
For-profit facilities	25,298	29,945	31,207	28,956	28,497	4.0	3.1	3.1	2.8	2.6	38.3	52.8	47.4	59.0	53.9	42.3	44.3	39.9	44.8	38.2
Non-profit facilities	1,968	1,995	2,156	2,190	2,220	7.3	6.6	6.0	5.8	4.5	34.6	36.5	35.2	40.1	12.9	69.4	66.1	57.7	63.9	15.9
Total	**118,417**	**132,405**	**135,303**	**137,697**	**135,334**	**4.8**	**4.4**	**4.3**	**4.2**	**4.2**	**50.4**	**56.7**	**59.2**	**64.1**	**63.0**	**67.1**	**68.9**	**68.9**	**73.8**	**71.8**

Sources: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes:
1. The bed-occupancy rate at state enterprises' health facilities for 1999 was much lower than before due to the length of stay restriction measure imposed by the hospital under the Metroplitan Electricity Authority.
2. The bed-occupancy rate at health facilities under other ministries for 1999 onwards was much higher than before due to the fact that additional reports were received from the hospital under the Faculty of Medicine of Chiang Mai University.
3. For 2002, data were received from 65.5% of all health facilities: 62.5% from public sector facilities and 77.3% from private faciliites.
4. For 2002, the 2001 data for hospitals located in Bangkook under various agencies were used instead.

Table 6.65 Bed/Doctor, Bed/Nurse, Inpatient/Doctor, Inpatient/Nurse, and Outpatient/Doctor Ratios, 1995-2002.

Agency	Bed : MD					Bed : N					Adm : MD : yr					IP : MD : d					IP : N : d					OPD : MD : yr				
	1995	1997	1999	2001	2002	1995	1997	1999	2001	2002	1995	1997	1999	2001	2002	1995	1997	1999	2001	2002	1995	1997	1999	2001	2002	1995	1997	1999	2001	2002
MoPH	11.9	9.9	8.4	8.7	8.3	1.1	1.2	1.1	1.1	1.1	747.7	662.2	587.2	639.2	598.6	10.0	8.3	6.9	7.5	7.1	1.0	1.0	0.9	1.0	0.9	2,874.50	2,520.10	2,211.60	2,398.40	2,526.0
Other ministries	3.9	4.7	4.6	4.5	4.2	1.5	1.7	1.5	1.2	1.1	66.4	111.4	159.0	132.9	170.7	1.2	2.1	2.6	2.7	2.7	0.5	0.7	0.9	0.7	0.7	420.80	981.50	564.10	598.40	694.6
State enterprises	3.2	4.4	3.3	2.5	2.9	0.8	2.4	1.3	1.1	1.1	46.3	81.9	51.6	66.3	69.6	1.4	2.1	0.9	1.2	1.0	0.3	1.1	0.3	0.5	0.4	109.20	217.70	156.70	67.10	76.10
Municipalities	4.4	4.5	4.4	4.1	4.0	0.7	0.9	0.7	0.7	0.6	135.0	205.5	200.9	214.3	145.0	2.8	3.6	3.3	3.3	3.1	0.4	0.8	0.6	0.6	0.4	784.00	928.70	795.00	958.60	801.9
Private sector facilities	7.5	9.2	9.2	6.6	7.1	3.0	4.6	3.5	2.8	2.8	288.1	487.7	434.5	389.4	384.8	3.2	4.1	3.7	3.0	2.7	1.2	2.1	1.4	1.3	1.1	1,276.30	1,370.60	1,348.60	1,133.10	1,008.7
Independent agencies	13.5*	2.4	3.6	8.7	8.6	1.4*	1.1	0.6	1.0	1.0	466.3*	85.7	125.5	348.2	111.4	9.4*	1.5	2.1	5.6	1.4	0.9*	0.7	0.4	0.6	0.2	1,830.5*	343.10	420.00	1,745.80	522.6
Total	**8.3**	**8.0**	**7.6**	**7.3**	**7.1**	**1.4**	**1.5**	**1.4**	**1.3**	**1.2**	**420.0**	**453.2**	**441.4**	**466.0**	**448.9**	**5.6**	**5.5**	**5.1**	**5.4**	**5.1**	**1.0**	**1.1**	**0.9**	**0.9**	**0.9**	**1,709.6**	**1,764.8**	**1,600.6**	**1,700.5**	**1,765.0**

Source: Reports on Health Resources. Bureau of Policy and Strategy, MoPH.

Notes: Bed : MD = No. of beds per doctor
Bed : N = No. of beds per nurse
Adm : MD : yr = No. of admissions (inpatients) per doctor per year
IP : MD : d = No. of inpatients per doctor per day
IP : N : d = No. of inpatients per nurse per day
OPD : MD : yr = No. of outpatients per doctor per year

* For 1995, no data were available from Chulalongkorn Hospital.

For facilities under various agencies in Bangkok in 2002, the 2001 data were used instead.

6.2.3 Problems of the Quality of Service System

With regard to the level of consumers' expectations and the responses to their needs, the public and private sectors' problems are different. In the public sector, the problems related to service provision include inpatients' convenience in receiving services and providers' attention to the services. But in the private sector, the problems are mostly related to service fees (Table 6.66).

However, since the beginning of the implementation of the health facility improvement policy, using the hospital accreditation approach in both public and private sectors, the Institute of Hospital Quality Improvement and Accreditation was established under the Health Systems Research Institute to carry out this policy. Health sector reform movement has also contributed to the inclusion of health service quality development measures in the National Health Bill as well as in the amendments of the Medical Premises Act and relevant ministerial regulations. Most health facilities have undertaken these measures to improve their service quality standards, and the health accreditation process has been carried out continuously, resulting in a much higher level of patients' satisfaction. According to the 2001 and 2003 surveys on patients at various hospitals, 87.1-95.7% of patients were satisfied with the services provided. However, their satisfaction level was lower with the services at higher-level facilities (Table 6.67).

The 30-baht healthcare policy of the present government has also contributed to the acceleration of service quality improvement process at hospitals and primary care units. The 2002 - 2003 survey on people's satisfaction with the universal coverage of healthcare scheme reveals that 80% of respondents were satisfied with the services at hospitals and only 68.6% were satisfied with the quality of medicines (Table 6.68).

Table 6.66 Complaints at Outpatient Departments by Type of Health Facilities, 1998

Complaint	Percentage of complaints				
	Regional, Maharaj and university hospitals	General hospitals	Community hospitals	Private hospitals	Total (N = 1,473)
Manner of doctors	5.1	1.3	1.5	0.3	8.2
Doctors not informing about symptoms and treatment	10.5	2.7	5.9	4.3	23.4
Waiting time	18.2	5.0	7.6	3.6	34.4
High service fees	10.9	0.3	1.9	13.0	26.1
Drug dispensing system	7.7	1.9	5.6	3.3	18.5
Environment at OPD reception: overcrowding and uncleanliness	13.6	2.9	6.2	2.2	24.9
Uncleanliness of medical equipment	15.9	3.2	9.4	7.8	36.3

Source: Yothin Sawaengdee et al. Problems and Complaints of the People Attending Healthcare Facilities, 2000.

Notes: Each respondent could indicate more than one complaints.

Complaint means unhappiness and unsatisfaction that affect the patient physically and mentally when receiving services at a health facility.

Table 6.67 Satisfaction of People Attending Healthcare Facilities, 2001 and 2003

Satisfaction	2001				2003
	Total (percent)	Health centres (percent)	Community hospitals (percent)	Provincial and other state hospitals (percent)	Total (percent)
Satisfied	87.1	92.4	85.8	81.6	95.7
Unsatisfied	12.1	7.2	13.4	17.4	4.3
Unknown	0.8	0.4	0.8	1.0	-
Causes of unsatisfaction					
- Poor services	n.a.	n.a.	n.a.	n.a.	2.2
- Uncleanliness	0.5	0.3	0.7	0.5	n.a.
- Long waiting time	7.1	2.2	7.9	12.6	n.a.
- Uncured	1.2	1.6	1.2	0.7	0.2
- Incompetent doctors	0.7	0.9	0.7	0.5	0.3
- Being scolded by medical/ nursing staff	1.5	1.2	2.0	1.7	n.a.
- Doctors having no time for patients to ask about symptoms	0.6	0.4	0.6	0.9	n.a.
- Discrimination	n.a.	n.a.	n.a.	n.a.	0.3
- Poor drug quality	n.a.	n.a.	n.a.	n.a.	0.7
- Others	0.5	0.6	0.3	0.5	0.6

Source: Reports on Health and Welfare Surveys, 2001 and 2003. National Statistical Office.

Notes: 1. In the 2001 survey, interviewees were inpatients at state-run health facilities.

2. In the 2003 survey, interviewees were inpatients at public and private health facilities.

Table 6.68 Satisfaction of People under Universal Healthcare Scheme at Health Facilities, 2002 and 2003

Aspects of satisfaction	2002	2003
Overall		
- Satisfied	83.8	-
- Unsatisfied	16.2	-
Service provision/attention		
- Satisfied	-	80.5
- Unsatisfied	-	19.5
Examination and treatment provided by doctors/nurses		
- Satisfied	-	83.9
- Unsatisfied	-	16.1
Medical equipment		
- Satisfied	-	83.6
- Unsatisfied	-	16.4
Drug quality		
- Satisfied	-	68.6
- Unsatisfied	-	31.4

Sources:
- Report on Survey of Public Opinions about the 30-baht Healthcare Scheme, 2002. National Statistical Office.
- Report on Survey of Public Opinions about the Universal Coverage of Healthcare Scheme (30-baht Healthcare), 2003. National Statistical Office.

Notes:
1. For 2002, respondents were people aged 15 years and over.
2. For 2003, respondents were people aged 18 years and over.

6.2.4 Problems of Access to Emergency Services

The people still encounter problems when they have emergency illness, from the site where the illness or accident occurs to the hospital, since no medical emergency service system or agency has been systematically established. Improvements are required to solve such problems as refusal to care for patients at state hospitals in Bangkok reasoning that no beds are available, the doctor coming too late to care for the patient, and private hospitals not providing essential primary care to the patient if the patient has no money. In FY 2002, the MoPH established the Office of Emergency Medical Service System, using part of the budget from the Universal Coverage of Healthcare Scheme to set up the emergency medical service units in seven provinces: Bangkok, Khon Kaen, Nakhon Ratchasima, Nakhon Sawan, Petchaburi, Lampang, and Songkhla. Such services have been set up as a network to cover the entire province. In FY 2004, the system will be expanded to cover another 13 provinces.

After the enactment of the 1995 Third Party Insurance Act, the problems of emergency care has been lessened significantly as there is a definite party responsible for medical expenses (within the 50,000-baht limit). However, it has been found that most private hospitals tend to send the patient who has exhausted the 50,000 baht funding limit to a public hospital to take the extra burden of medical bills. Besides, health insurance companies and the people tend to push such burden to the medical welfare for the poor and the health card schemes.

6.2.5 Coverage of Health Security

Thailand has a tendency to expand the coverage of health security or insurance system to cover all the people in five major schemes: civil servants medical benefits system (also for government retirees and state enterprise employees), social security system, medical services for the poor and those who should be supported by society (such as the medical welfare for the poor project and the voluntary health insurance or health card project), private insurance system, and specific health insurance system (such as the one under the Motor Vehicle Accident Victims Protection Act). In 2001, all the schemes could cover 71.0% of Thai population, the coverage for rural residents had also increased (Tables 6.69 and 6.70). However, as Thailand has several health insurance schemes, each having different financial management systems and basic benefit packages, there have been discrepancies in benefit packages, particularly those for the poor which are much less than those for other population groups (Table 6.71).

Since 2001, the government has implemented the universal coverage of healthcare scheme, the health insurance coverage has increased from 71.0% in 2001 to 94.3% in 2004; 73.5% under the universal healthcare scheme and 5.7% are uninsured (Table 6.69). In 2004, the proportion of rural people who have received the universal healthcare cards is higher than that for urban residents. However, urban residents have got such coverage under the social security system and the civil servants medical benefit scheme in a higher proportion than do rural residents (Table 6.70).

Table 6.69 Percentage of Thai People with Health Security, 1991, 1996, 2001, 2003 and 2004

Health insurance scheme	Before the launch of the UC healthcare scheme			After the launch of the UC healthcare scheme	
	1991	1996	2001	2003	2004
1. Universal coverage healthcare	-	-	0.9	74.7	73.5
- Gold card with Tor (not paying 30 baht/visit)	-	-	-	74.7	30.6
- Gold card without Tor (paying 30 baht/visit)		-	0.9		42.9
2. Medical welfare for the poor (Sor Por Ror)	12.7	12.6	31.5	-	-
3. Medical benefits for civil servants and state enterprise employees	**15.3**	**10.2**	**8.5**	**8.9**	**9.4**
- Civil servants	13.2	9.0	7.5	8.9	9.4
- State enterprise employees	2.1	1.2	1.0		
4. Social security and workers' compensation fund	-	5.6	7.2	9.6	10.7
5. Voluntary health insurance	**4.5**	**16.1**	**22.1**	**1.7**	**0.8**
- Health card, MoPH	1.4	15.3	20.8	-	-
- Private insurance	3.1	0.8	1.3	1.7	0.8
6. Others	0.9	1.0	0.8	-	-
Population with health insurance	33.5	45.5	71.0	94.9	94.3
Population without health insurance	66.5	54.5	29.0	5.1	5.7

Sources:
1. Reports on Health and Welfare Surveys, 1991, 1996, and 2001. National Statistical Office.
2. Viroj Tangcharoensathien, Jitpranee Wasavit and colleagues. An analysis of data from the Reports on Health and Welfare Surveys, 2003 and 2004. National Statistical Office.

Note: The number of insured persons with private health insurance companies in 2004 is 2.88 million, or 4.4% of total population, but some of them have got coverage from more than one scheme.

Table 6.70 Percentage of People with Health Insurance Coverage in Municipal and Non-municipal Areas, 1991, 1996, 2001, 2003 and 2004

Health insurance coverage	Municipal areas					Non-municipal areas				
	1991	1996	2001	2003	2004	1991	1996	2001	2003	2004
No insurance	65	58	42	9	10.1	68	52	22	3	3.5
Civil servants and state enterprise officials	22	17	16	15	15.3	6	7	9	6	6.5
Universal coverage healthcare	-	-	-	56	54.6	-	-	-	84	82.8
Social security	-	11	13	18	18.2	-	3	4	6	7.0
Medical welfare for the poor	7	5	15	-	-	21	16	39	-	-
Health card	1	6	10	-	-	2	20	27	-	-
Private health insurance	5	2	3	3	1.8	1	1	1	1	0.3
Others	1	1	1	-	-	1	1	1	-	-

Sources: 1. Reports on Health and Welfare Surveys, 1991, 1996 and 2001. National Statistical Office.
2. Viroj Tangcharoensathien, Jitpranee Wasavit and colleagues. An analysis of data from the Reports on Health and Welfare Surveys, 2003 and 2004. National Statistical Office.

Note: The number of insured persons with private health insurance companies in 2004 is 2.88 million, or 4.4% of total population, but some of them have got coverage from more than one scheme.

Table 6.71 Benefit Packages of Health Insurance Systems and Medical Service Welfare

Health insurance system and medical service	Expenses baht/person/ year*	Benefits and coverage			
		Health facility selection	Cash	Pregnancy/ childbirth	Disease prevention and health promotion
Welfare for the poor and underpriviledged	273[(1)] MoPH	Referral system	None	None	Limited
Civil servants medical benefit	2,106	Public (private)	None	Available	Available
Compulsory health insurance					
• Social security	1,284	Mutual contract	Available	Available	Some
• Workers' compensation fund	n.a.	Mutual contract	Available	None	None
Voluntary health insurance					
• Health insurance card	249[(1)]	Referral system	None	Possible	Possible
• Private health insurance	1,667	Freely	Case by case	Depends	Depends

Sources: Supachutikul, 1996. "Tangcharoensathien, et al. 1998 (quoted in Jirut Srirattanaban)".
* Data for 1999 are quoted in Supasit Pannarunothai, 2000.
[(1)] Only for drugs and operational expenses, excluding labour and investment costs.

As a result of the implementation of the universal healthcare scheme, the proportion of people having access to health facilities when ill has risen from 49% in 1991 to 71.6% in 2004. In particular, among those who has never had any health insurance coverage before, the proportion has risen from 47% in 1991 to 60.6% in 2004. Insured persons under the universal healthcare scheme seem to have the highest illness rate and attend health facilities the most, compared to other groups (Table 6.72). Besides, this scheme has resulted in a reduction of household's health spending at almost all levels as the scheme is financed by the government. The population group whose health spending has decreased the most is the poor (groups 1-4), a 27-45% reduction. It is noteworthy that the highest income group (group 10) have their health spending increase by 42%, probably because they choose to use the services that are beyond the basic benefits or choose not to use the entitlement under the universal healthcare scheme (Figure 6.39).

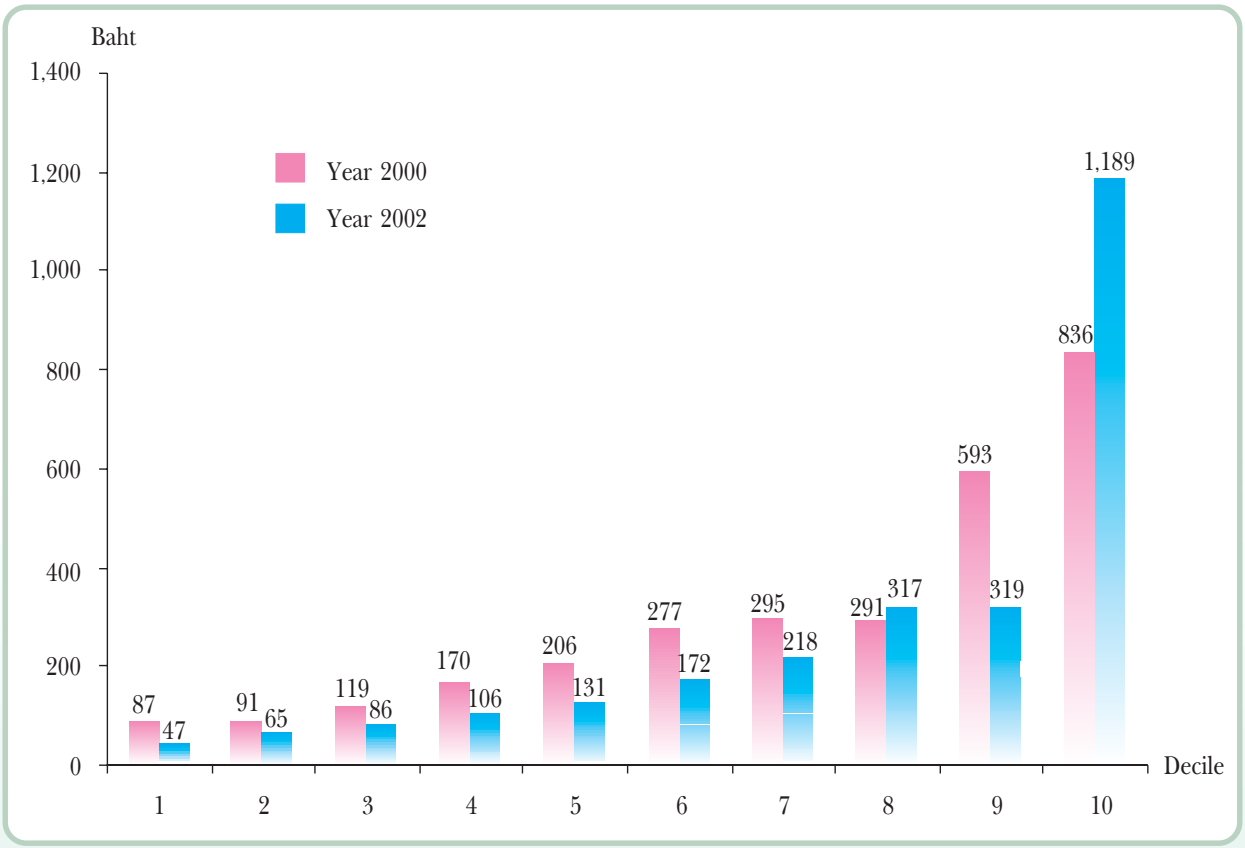
Table 6.72 Morbidity Rates and Proportion of Insured Persons Attending Health Facilities by Type of Insurance Scheme, 1991, 1996, 2001, 2003 and 2004

Type of insurance	Morbidity rate episodes/person/yr					Percentage of insured persons attending health facilities				
	1991	1996	2001	2003	2004	1991	1996	2001	2003	2004
- No insurance	5.7	3.5	3.3	4.2	3.2	47	62	61	56	60.6
- Universal coverage healthcare	-	-	3.4	5.0	5.1	-	-	62	72	72.8
- Medical welfare for the poor (Sor Por Ror)	7.2	6.9	5.3	-	-	50	67	74	-	-
- Health card, MoPH	7.0	4.5	3.7	-	-	55	68	71	-	-
- Medical benefits for civil servants and state enterprise employees	5.4	3.7	3.6	4.9	4.8	60	71	75	71	73.1
- Social security	-	2.5	2.5	3.0	3.0	-	58	66	67	63.0
- Private insurance	4.4	3.5	3.0	3.5	1.9	42	72	65	67	60.2
Nationwide	**5.9**	**4.0**	**3.9**	**4.7**	**4.7**	**49**	**65**	**70**	**71**	**71.6**

Sources:
1. Reports on Health and Welfare Surveys, 1991, 1996, and 2001. National Statistical Office.
2. Viroj Tangcharoensathien, Jitpranee Wasavit and colleagues. An analysis of data from the Reports on Health and Welfare Surveys, 2003 and 2004. National Statistical Office.

Note: The number of insured persons with private health insurance companies in 2004 is 2.88 million, or 4.4% of total population, but some of them have got coverage from more than one scheme.

Figure 6.39 Comparison of Average Monthly Household Health Spending of Ten Decile Groups Before and After the Implementation of the Universal Coverage of Healthcare Scheme



Source: Viroj Tangcharoensathien. Financing of the Universal Coverage of Healthcare Scheme: Present and Future. International Health Policy Programme, 2004.

Note: An analysis was made only for the last quarters of 2000 and 2002.