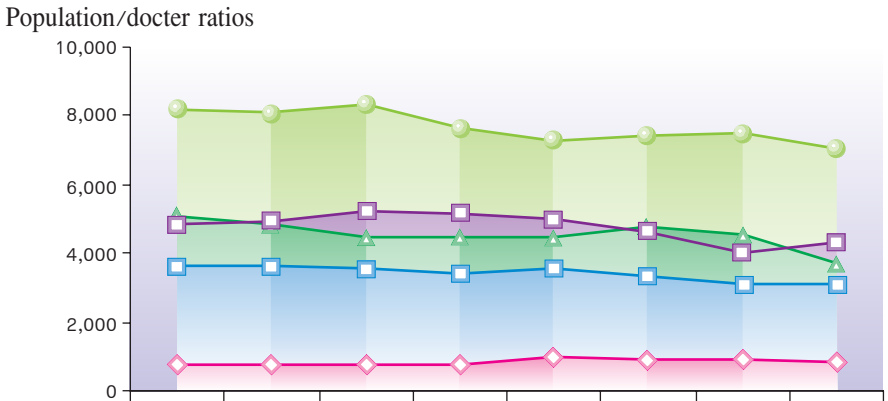
1.4 Distribution of Health Manpower

1.4.1 Distribution of Health Manpower by Geographical Region

1) Ratio of Population to Healthcare Provider by Region

Between 1998 and 2005, a regional comparison of the ratio of population to doctor (population per doctor ratio) revealed that the ratio for the Northeast has steadily declined, but still higher than those in other regions; the North, South and Central having a comparable ratio (Figure 6.23).

Figure 6.23 Population/doctor ratios by region, 1998-2005

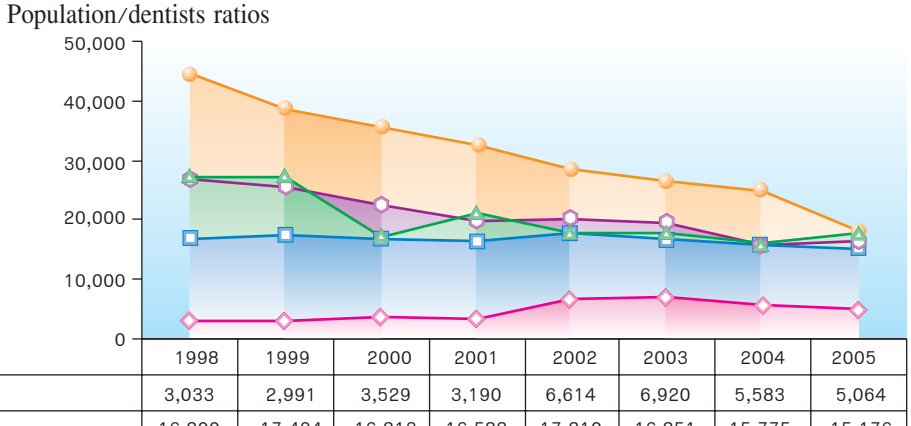


	1998	1999	2000	2001	2002	2003	2004	2005
Bangkok	762	760	793	760	952	924	879	867
Central	3,614	3,653	3,576	3,375	3,566	3,301	3,134	3,124
North	5,050	4,869	4,501	4,488	4,499	4,766	4,534	3,724
South	4,814	4,888	5,194	5,127	4,984	4,609	3,982	4,306
Northeast	8,218	8,116	8,311	7,614	7,251	7,409	7,466	7,015

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

Similarly, the population/dentist ratio in the Northeast has steadily declined, until 2005 it became close to those for the North, South and Central (Figure 6.24).

Figure 6.24 Population/dentist ratios by region, 1998-2005

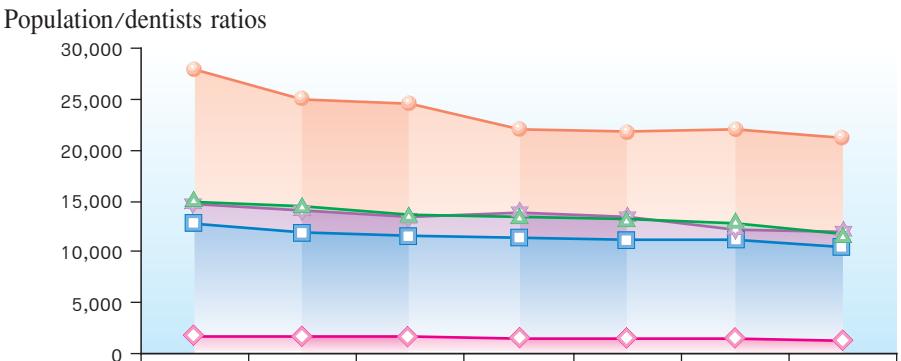


	1998	1999	2000	2001	2002	2003	2004	2005
Bangkok	3,033	2,991	3,529	3,190	6,614	6,920	5,583	5,064
Central	16,800	17,494	16,813	16,588	17,810	16,851	15,775	15,176
North	27,310	27,225	17,037	20,993	17,824	17,694	16,039	17,897
South	26,954	25,663	22,549	19,963	20,105	19,578	15,620	16,595
Northeast	44,484	38,487	35,476	32,499	28,432	26,351	24,699	18,157

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

However, according to other data sources especially the report on dental health personnel of the Department of Health, the population/dentist ratios are lower (larger number of dentists). The ratio for the Northeast was higher than those for other regions in 2005 (Figure 6.25).

Figure 6.25 Population/dentist ratios by region, 1999-2005

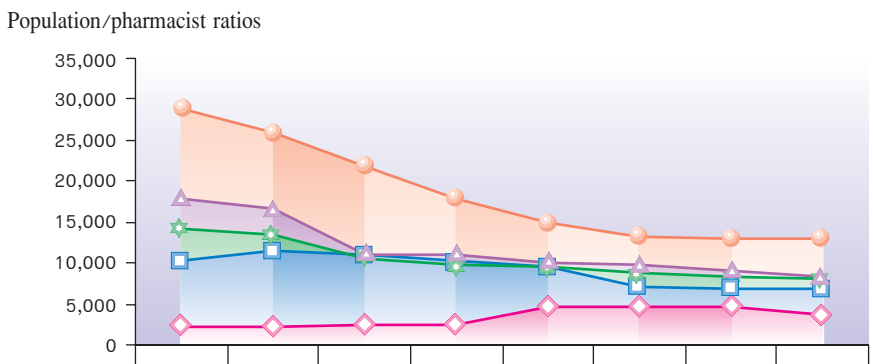


	1999	2000	2001	2002	2003	2004	2005
Bangkok	1,722	1,690	1,605	1,506	1,458	1,422	1,305
Central	12,864	12,042	11,524	11,474	11,259	11,235	10,494
North	14,956	14,468	13,566	13,471	13,137	12,752	11,830
South	14,640	14,032	13,383	13,852	13,443	12,160	11,877
Northeast	28,005	25,034	24,462	22,112	21,739	21,967	21,120

Source: Report on Dental Health Personnel, 1999-2005, Department of Health, MoPH.

Regarding pharmacists, the Northeast has a steady decline in the population/pharmacist ratio; and the ratios are comparable for the North, South and Central (Figure 6.26).

Figure 6.26 Population/pharmacist ratios by region, 1998-2005

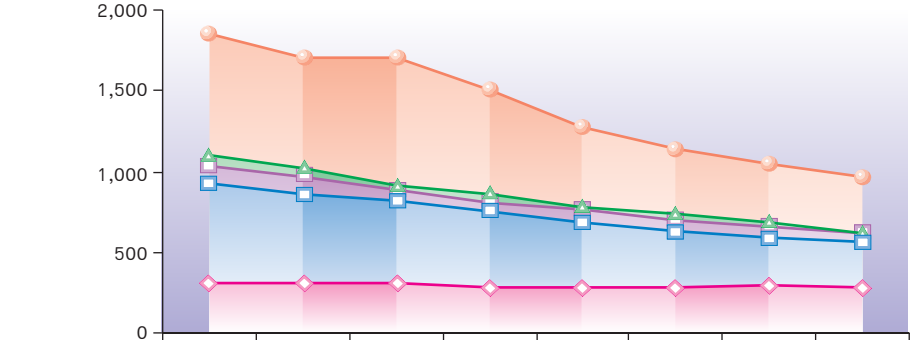


	1998	1999	2000	2001	2002	2003	2004	2005
Bangkok	2,221	2,132	2,551	2,485	4,667	4,765	4,632	3,562
Central	10,346	11,458	11,058	10,213	9,557	7,169	6,819	6,852
North	17,780	16,610	11,012	11,082	10,115	9,743	9,037	8,273
South	14,094	13,382	10,575	9,712	9,569	8,801	8,292	8,125
Northeast	28,988	25,954	21,740	17,979	14,987	13,183	13,032	12,869

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

The population/professional nurse ratio has also been declining; the Northeast has the ratio closer to those for other regions (Figure 6.27).

Figure 6.27 Population/professional nurse ratios by region, 1998-2005

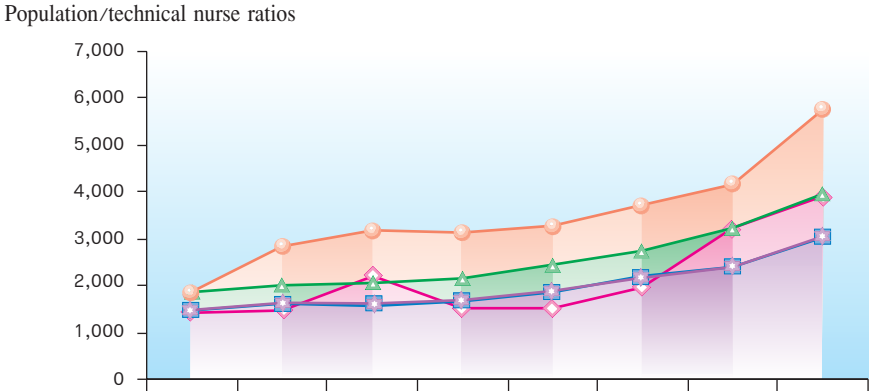


	1998	1999	2000	2001	2002	2003	2004	2005
Bangkok	311	305	309	287	279	285	289	285
Central	922	855	825	749	684	631	593	562
North	1,100	1,022	908	856	785	734	684	621
South	1,037	973	884	807	765	692	659	622
Northeast	1,849	1,707	1,702	1,498	1,278	1,145	1,045	968

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

In connection with population/technical nurse ratio, the trend is rising in all regions due to the change in their status to professional nurses. The Northeast has the highest ratio, while the Central and South have the lowest (Figure 6.28).

Figure 6.28 Population/technical nurse ratios by region, 1998-2005

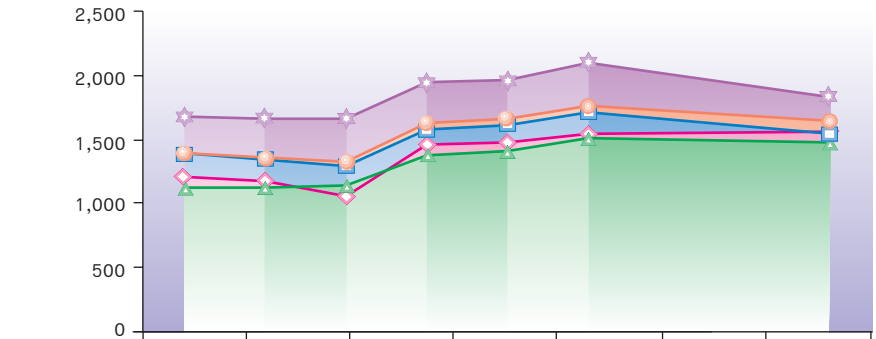


	1998	1999	2000	2001	2002	2003	2004	2005
Bangkok	1,425	1,477	2,208	1,535	1,511	1,960	3,250	3,900
Central	1,466	1,597	1,555	1,686	1,848	2,187	2,402	3,047
North	1,849	1,994	2,078	2,160	2,449	2,737	3,228	3,944
South	1,466	1,609	1,612	1,639	1,791	2,137	2,481	3,042
Northeast	1,857	2,821	3,183	3,130	3,257	3,730	4,141	5,761

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

For health personnel at subdistrict health centres, the overall population/ health worker ratio had a declining tend in 2006. The highest ratio is noted for the Northeast and lowest for the South (Figure 6.29). Overall, the regional disparities have also declined.

Figure 6.29 Population/health worker ratios (at subdistrict health centres) by region, 1998-2006



	1998	1999	2000	2001	2002	2003	2006
Central	1,207	1,180	1,059	1,453	1,470	1,552	1,562
North	1,389	1,349	1,292	1,572	1,603	1,713	1,547
South	1,129	1,127	1,141	1,378	1,416	1,511	1,484
Northeast	1,681	1,655	1,666	1,938	1,971	2,097	1,832
Total	1,390	1,366	1,324	1,628	1,657	1,762	1,637

Source: Table 6.4.

Table 6.4 Health personnel at subdistrict health centres by regions, 1987-2003 and 2006

Region	No. of health workers									
	1987	1996	1997	1998	1999	2000	2001	2002	2003	2006
Central	4,217	7,724	7,917	8,928	9,017	8,769	8,150	8,027	7,604	8,502
North	3,233	5,734	6,826	6,970	7,167	7,068	6,558	6,456	6,043	6,823
South	2,318	4,628	5,038	5,152	5,264	5,146	4,843	4,761	4,463	4,837
Northeast	4,573	9,114	10,430	10,236	10,569	10,248	9,693	9,591	9,015	10,279
Disparity between population/worker ratios of the Central and Northeast	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	1: 1.2
Total	**14,341**	**27,200**	**30,211**	**31,286**	**32,017**	**31,231**	**29,244**	**28,835**	**27,125**	**30,441**

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

2. For 2001-2003 and 2006, data were derived from the Bureau of Central Administration, Office of the Permanent Secretary, MoPH.

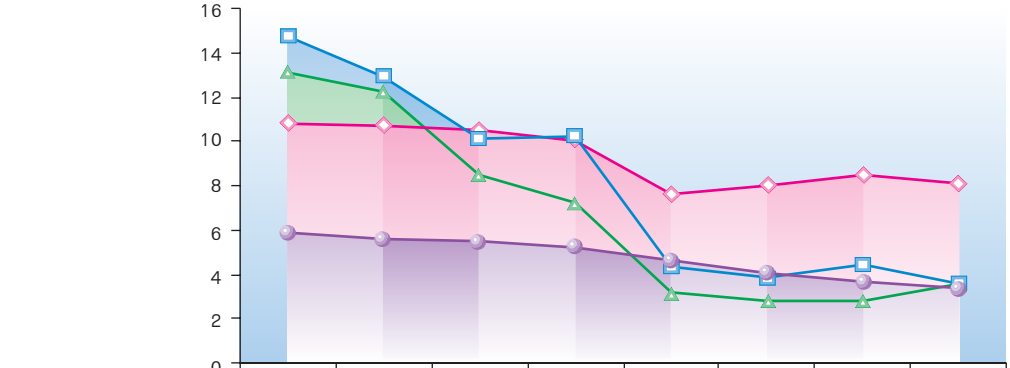
Notes: 1. The figure in ( ) is the ratio of health personnel to population outside municipal areas and Sanitary districts.

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

3. Data on population outside municipal areas for 2001 are as of 31 Dec 2001; and for 2002-2003, are as of 1 Jan 2003; for 2006, as of 31 Dec 2006 from the Registration Administration, analyzed by Rujira Taverat of the Bureau of Policy and Strategy, MoPH.

A comparison of population/healthcare provider ratios for Bangkok and the Northeast reveals that the disparities have declined steadily, especially for dentists and pharmacists for whom the disparities dropped from 13- to 14-fold in 1998 to 3.5-fold in 2005. However, the disparities were about 8-fold for doctors and 3.4-fold for professional nurses in 2005 (Figure 6.30). But with another source of data for dentists, from the Department of Health, the disparity was 15-fold for 2005 (Figure 6.31).

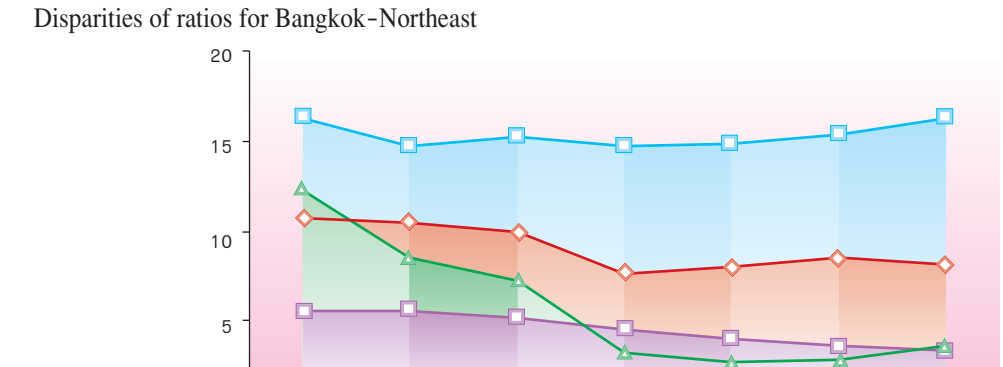
Figure 6.30 Disparities of population/healthcare provider ratios for Bangkok and the Northeast



	1998	1999	2000	2001	2002	2003	2004	2005
Doctors	10.8	10.7	10.5	10.0	7.6	8.0	8.5	8.1
Dentists	14.7	12.9	10.1	10.2	4.3	3.8	4.4	3.6
Pharmacist	13.1	12.2	8.5	7.2	3.2	2.8	2.8	3.6
Professional Nurses	5.9	5.6	5.5	5.2	4.6	4.0	3.6	3.4

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

Figure 6.31 Disparities of population/healthcare provider ratios for Bangkok and the Northeast (Database of the Department of Health)



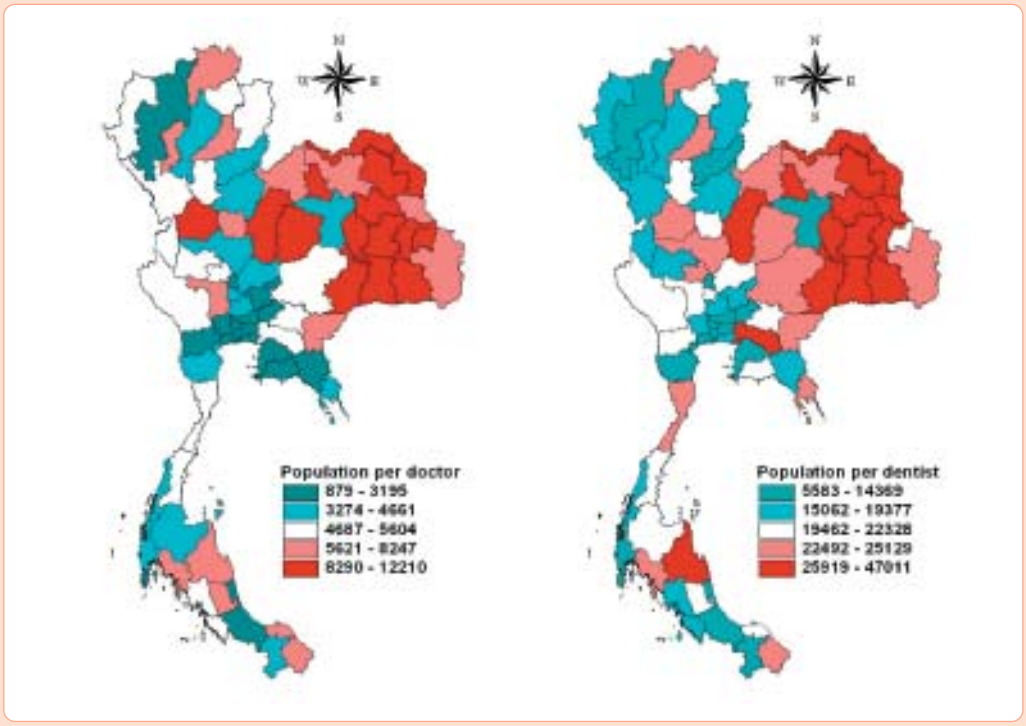
	1999	2000	2001	2002	2003	2004	2005
Doctors	10.7	10.5	10.0	7.6	8.0	8.5	8.1
Dentists	16.3	14.7	15.2	14.7	14.9	15.4	16.2
Pharmacist	12.2	8.5	7.2	3.2	2.8	2.8	3.6
Professional Nurses	5.6	5.5	5.2	4.6	4.0	3.6	3.4

Sources: Report on Health Resources, Bureau of Policy and Strategy, MoPH.
Report on Dental Health Personnel, 1999-2005. Department of Health, MoPH.

2) Ratios of Population to Healthcare Provider by Province

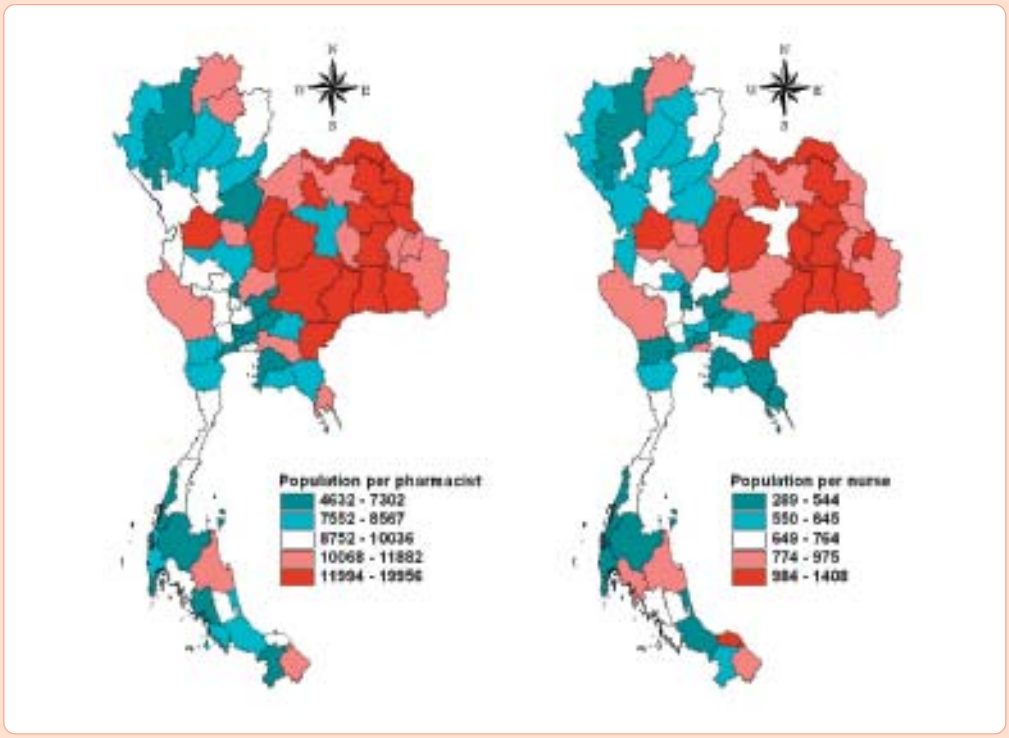
A comparison of population/healthcare provider ratios for all 76 provinces grouped in five quintiles and shown in different colours for each quintile on a shaded area map (Figures 6.32 and 6.33) reveals that most provinces in the Northeast have a higher ratio, compared with those in other regions, except for provinces with a university hospital. The provinces near Bangkok and in the East as well as those in the upper South, such as Phuket, have more health personnel than other provinces.

Figure 6.32 Geographical distribution of doctors and dentists: population/doctor and population/dentist ratios, 2004



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

Figure 6.33 Geographical distribution of pharmacists and professional nurses: population/pharmacist and population/nurse ratios, 2004



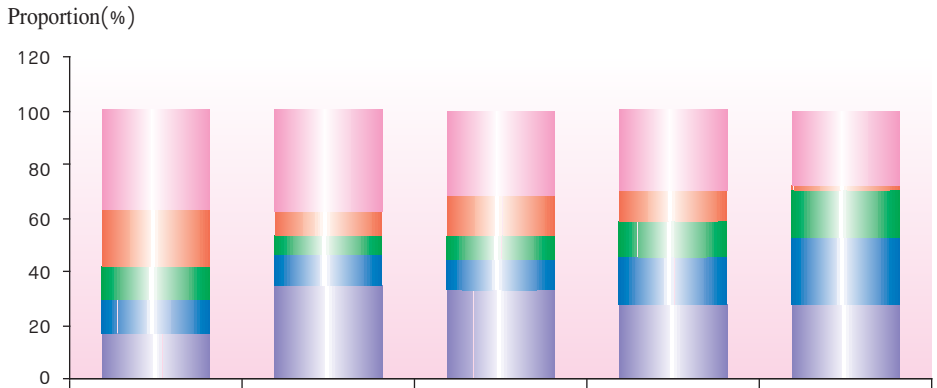
Source: Report on Health Resources, Bureau of Policy and Strategy, MoPH.

1.4.2 Distribution of Health Manpower by Level of Services and Workload

1) Proportion of Health Manpower by Level of Services

Based on the level and type of health facilities, the proportion of doctors working in private hospitals is higher than those of other professionals, and the proportion in community hospitals is lower than other professionals. But for dentists, pharmacists, professional nurses and technical nurses, most of them work in community hospitals (Figure 6.34).

Figure 6.34 Proportion of health manpower by type of hospitals, 2005



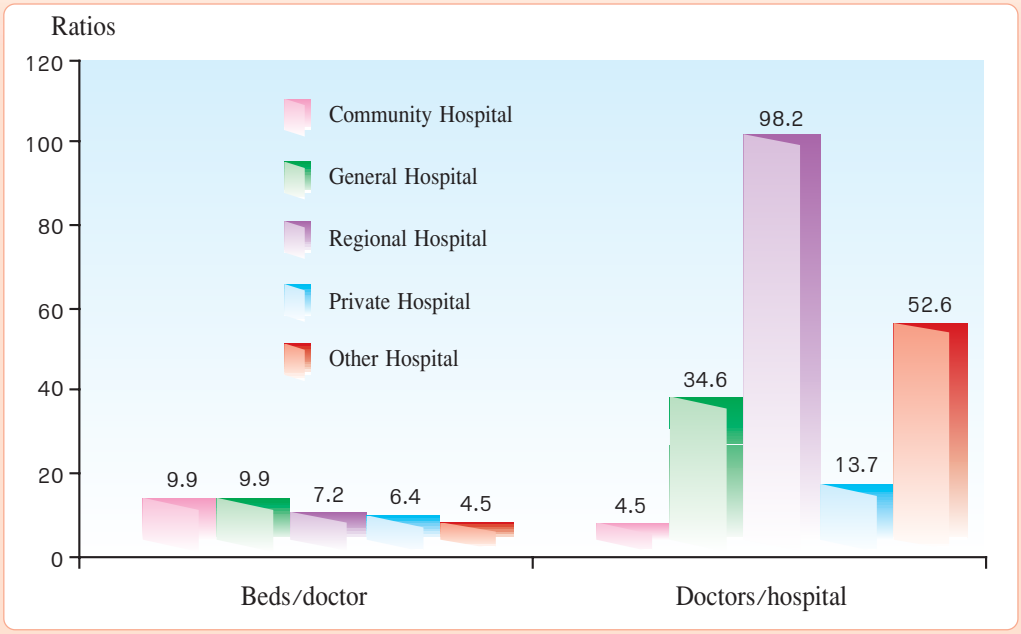
	Doctors	Dentists	Pharmacists	Professional Nurses	Technical Nurses
Others	36.9	37.7	31.9	29.5	27.9
Private Hospitals	21.6	9.4	14.6	12.2	1.9
Regional Hospitals	12.6	6.6	8.8	12.7	17.6
General Hospitals	12.4	11.4	12.1	17.7	25.2
Community Hospitals	16.5	34.9	32.6	28.0	27.4

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

An analysis of beds-to-doctor ratio and the average number of doctors per hospital will reflect the existence of doctors in comparison with the size of hospital. In 2005, it was found that community hospitals had the highest beds/doctor ratio, close to that for general hospitals, followed by regional hospitals and private hospitals. For the doctors per hospital comparison, on average, a hospital will have 4.5 doctors; a general hospital, 35 doctors; a regional hospital, 98 doctors; and a private hospital, 14 doctors (Figure 6.35).

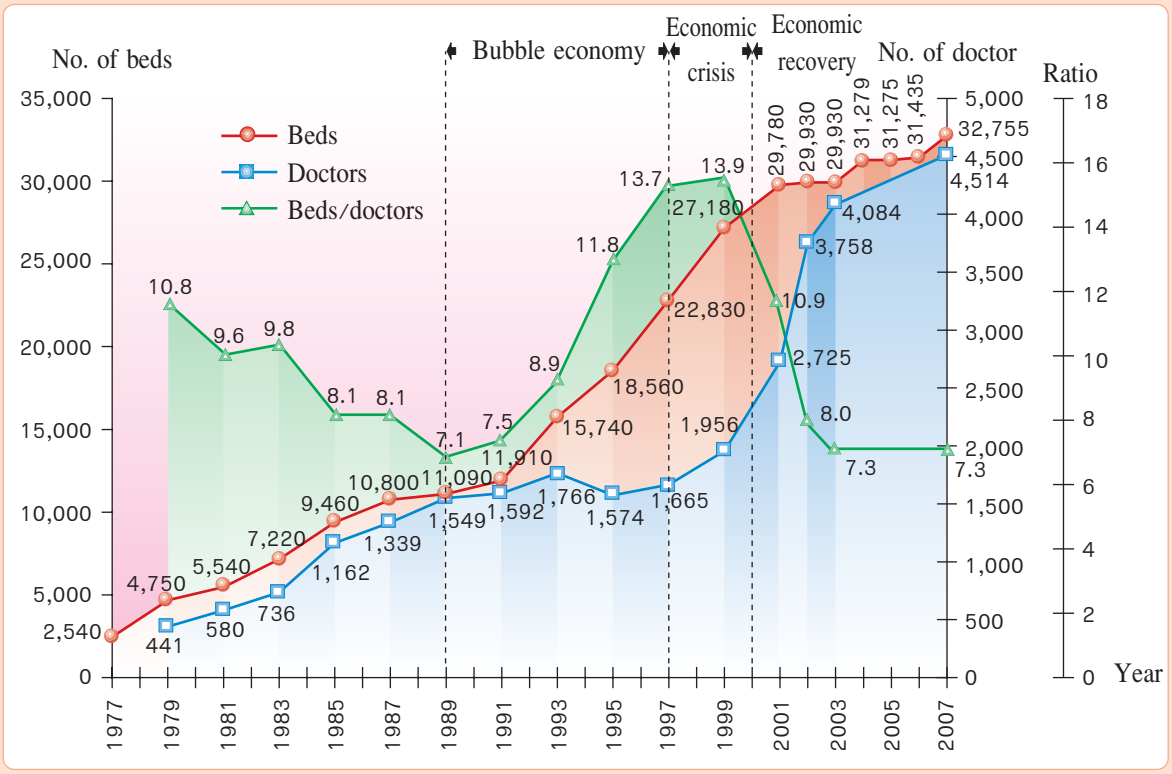
However, when considering the trends in beds-to-doctor ratios of community hospitals, using data from the Department of Health Service Support, before the economic crisis the ratio for private hospitals increased markedly, reflecting the shortages of doctors during that period. But after the crisis, the ratio began to decline due to increasing numbers of doctors (Figure 6.36).

Figure 6.35 Beds/doctor ratios and average number of doctors per hospital by type of hospital, 2005



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

Figure 6.36 Numbers of beds and doctors, beds-to-doctor ratios at community hospitals, 1977-2007

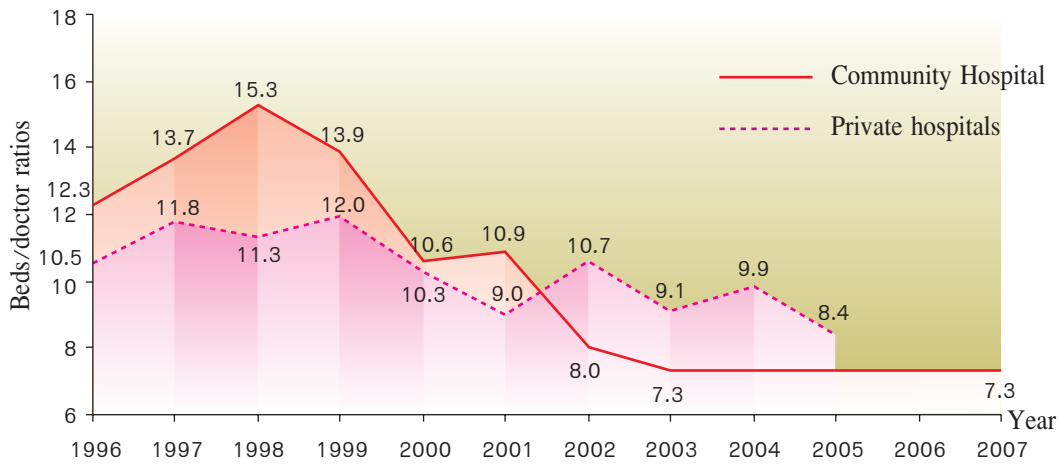


Sources: Bureau of Health Service System Development, Department of Health Service Support, MoPH. Bureau of Central Administration, Office of the Permanent Secretary, MoPH (for doctors at community hospitals in 2001 onwards).

Note: For 2001-2007. There was no survey on doctors actually working at community hospitals; so data from official payrolls (Jor 18) were used; such limitation resulted in the numbers being higher than actuality.

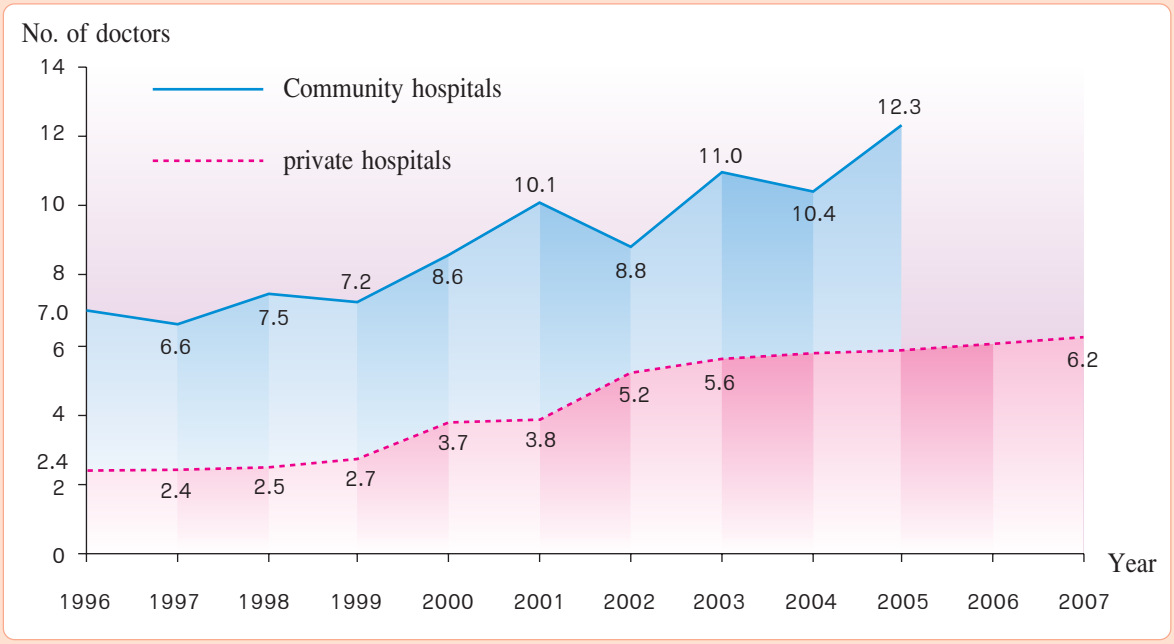
A comparison between community and private hospitals revealed that, between 1996 and 2001, the beds/doctor ratio for community hospitals was higher than that for private hospitals; but after that the ratio for community hospitals was lower (Figure 6.37). The average number of doctors per hospital for private hospitals was higher than that for community hospitals (Figure 6.38).

Figure 6.37 Beds/doctor ratios in community and private hospitals, 1996-2007



Sources: Bureau of Health Service System Development, Department of Health Service Support.
Bureau of Central Administration, Office of the Permanent Secretary for Public Health.
Medical Registration Division, Department of Health Service Support.

Figure 6.38 Average numbers of doctors per hospital in community and private hospitals, 1996-2007



Sources: - Bureau of Health Service System Development, Department of Health Service Support, MoPH.

- Bureau of Central Administration, Office of the Permanent Secretary, MoPH.
- Medical Registration Division, Department of Health Service Support, MoPH.
- Bureau of Policy and Strategy, Office of the Permanent Secretary, MoPH.

Notes

1. Data on doctors in community hospitals in 1977-2001 were derived from a survey conducted by the Bureau of Health Service System Development, Department of Health Service Support, MoPH.
2. Data on doctors in community hospitals from 2002 onwards were derived from the Bureau of Central Administration, Office of the Permanent Secretary, MoPH, based on the numbers of civil servants and state employees in the payrolls (Jor 18), which had some limitation, resulting in the numbers being higher than reality.
3. The number of beds in private hospitals was based on their permit records; in actuality, the number would be lower; and the bed-occupancy rate was less than 50%.
4. For 2002, data were obtained from a survey on 77.3% of private hospitals.

2) Workload of Health Manpower by Level of Services

An analysis of doctors' workloads in various levels of health facilities reflects the workloads of doctors in hospitals at each level. However, the computation of the workload might not be so accurate due to the complexity of patients which could be different at each level. A patient with a complex illness might cause a greater burden to the doctor than other patients in general.

The 2005 health resources survey revealed that doctors at community hospitals had the highest workload, followed by those at general hospitals, while those at university hospitals had the lowest; and doctors at private hospitals had a workload close to that for doctors at regional hospitals; based on the assumption that the multiplier for inpatients in the case of general, regional and university hospitals being equal, for community and private hospitals being equal, and for outpatients at all levels of hospitals being equal (Table 6.5).

Table 6.5 Workloads of doctors, 2005

Health facility	Outpatients (visits) (1)	Inpatients (cases) (2)	Inpatients, adjusted* (3)	Total workloads (1) + (3)	Doctors (cases) (4)	Workloads per doctor (1)+(3)/(4)	Com-parison index
Community hospitals	54,005,596	3,061,014	42,854,196	96,859,792	3,229	29,997	1.9
General hospitals	15,623,960	1,552,186	27,939,348	43,563,308	2,422	17,987	1.14
Regional hospitals	10,954,499	1,171,450	21,086,100	32,040,599	2,456	13,046	0.83
University hospitals	6,396,731	317,878	5,721,804	12,118,535	3,179	3,812	0.24
Private hospitals	35,299,555	1,790,142	25,061,988	60,361,543	4,229	14,273	0.9
Total	**122,280,341**	**7,892,670**	**122,663,436**	**244,943,777**	**15,515**	**15,788**	**1**

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

Notes: * In order that the inpatient workloads for each type of hospitals is in the same output, the number of inpatients is adjusted as follows:

1. For community and private hospitals = no. of inpatients X 14
2. For regional/general, university and BMA hospitals = no. of inpatients X 18