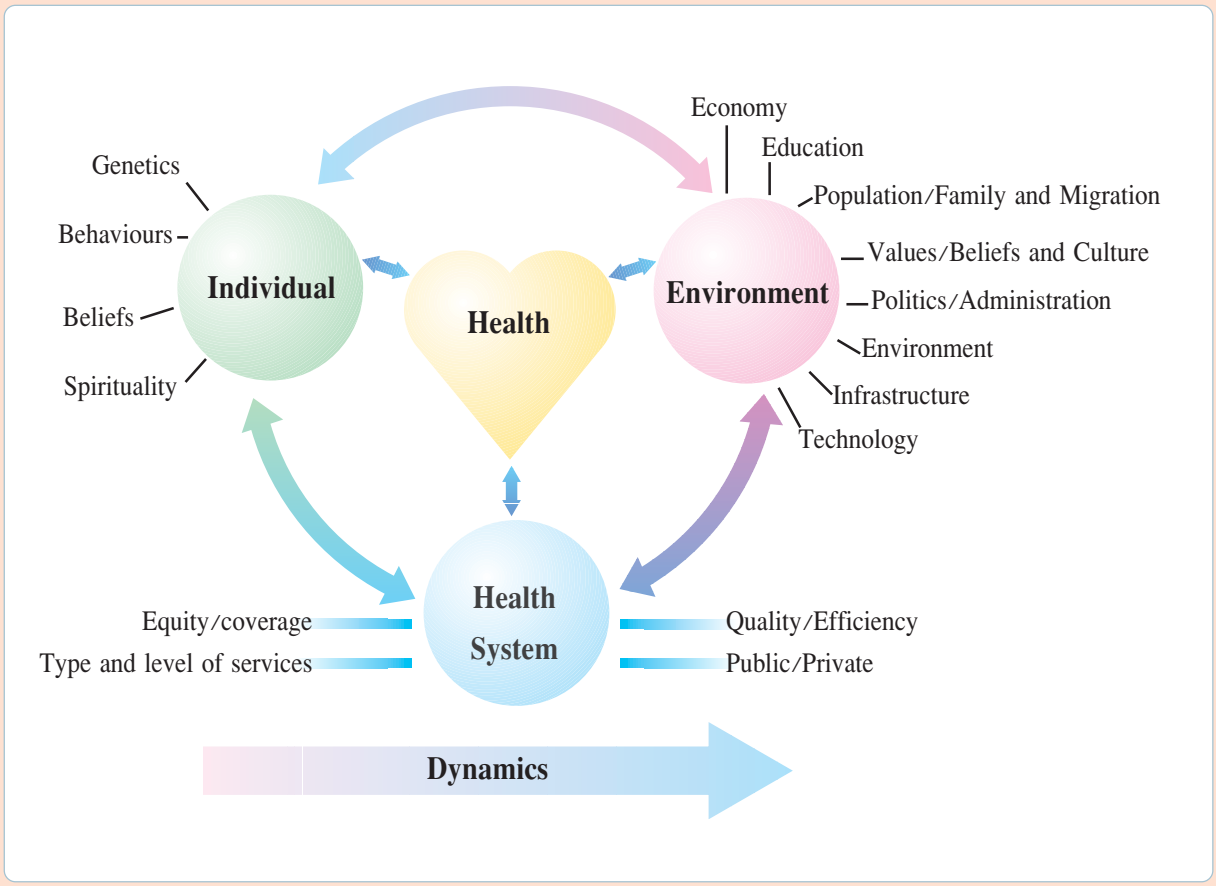
CHAPTER 4

Situations and Trends of Health Determinants

As health becomes more complex due to its association with numerous factors, Thailand's health situations and trends require a wider range of analyses and syntheses of changes in individual and environmental factors of all dimensions that determine health problems as well as the health services system (Figure 4.1).

Figure 4.1 Linkage and dynamics of factors related to health

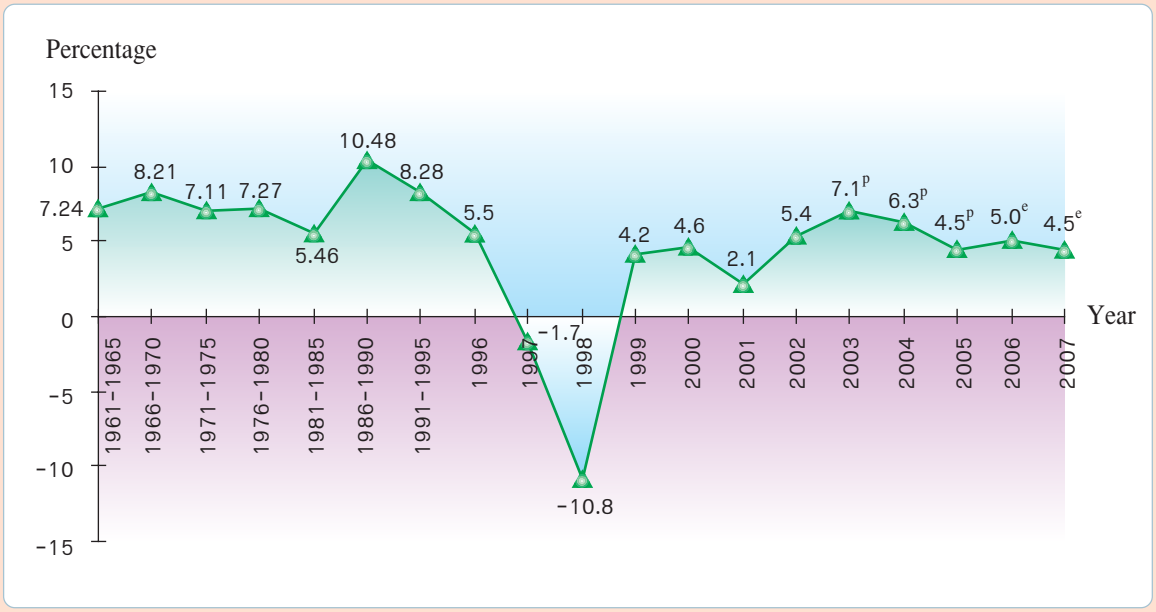


1. Economic Situations and Trends

1.1 Economic Growth

Over the three decades before 1997 the average annual economic growth was higher than 7% and the gross domestic product (GDP) per capita increased 28-fold, in particular after 1986. After the 1997 economic crisis, the annual economic growth declined to -1.7% in 1997 and -10.8% in 1998 (Figure 4.2), and the crisis drastically affected the GDP per capita (Figure 4.3). So Thailand has adopted a number of monetary and financial measures to resolve the problems, resulting in a positive growth of 4.2% in 1999 and 7.1% in 2003, but a drop is expected to 4.5% in 2007.

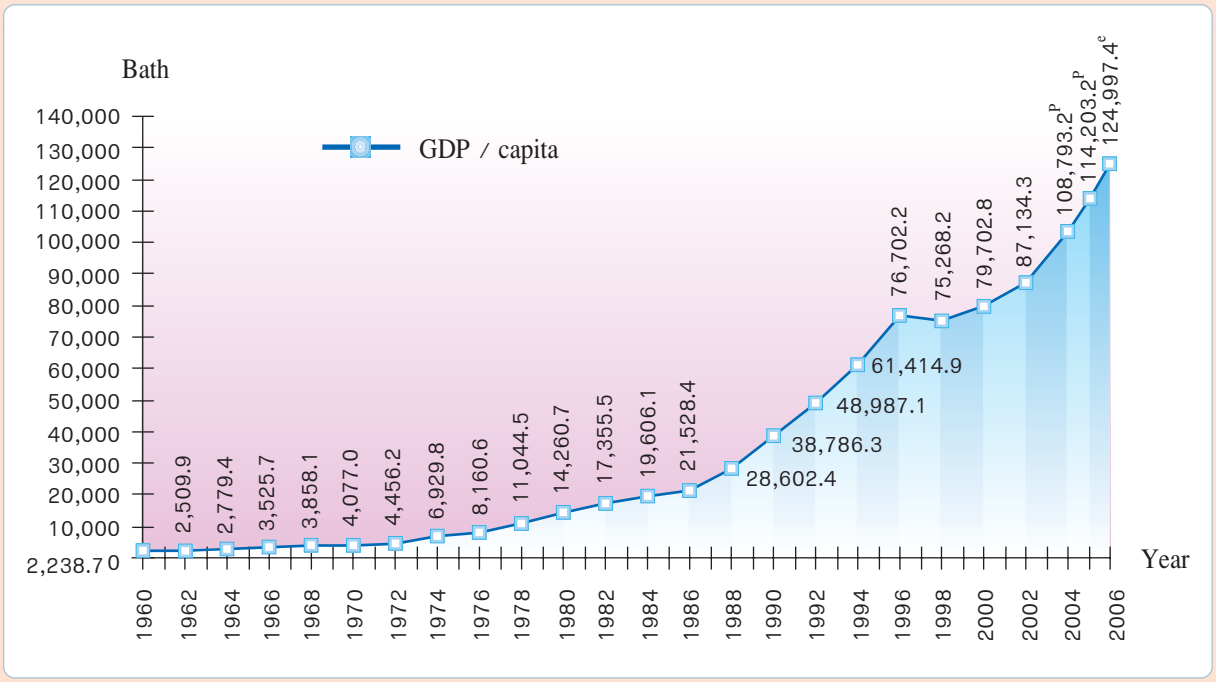
Figure 4.2 Economic growth rate in Thailand, 1961-2007



Source : Office of the National Economic and Social Development Board (NESDB).

Notes : [P] Preliminary figure; [e] estimated figure.

Figure 4.3 Gross domestic product per capita, 1960-2006 (market prices)



Source : Office of the National Economic and Social Development Board (NESDB).

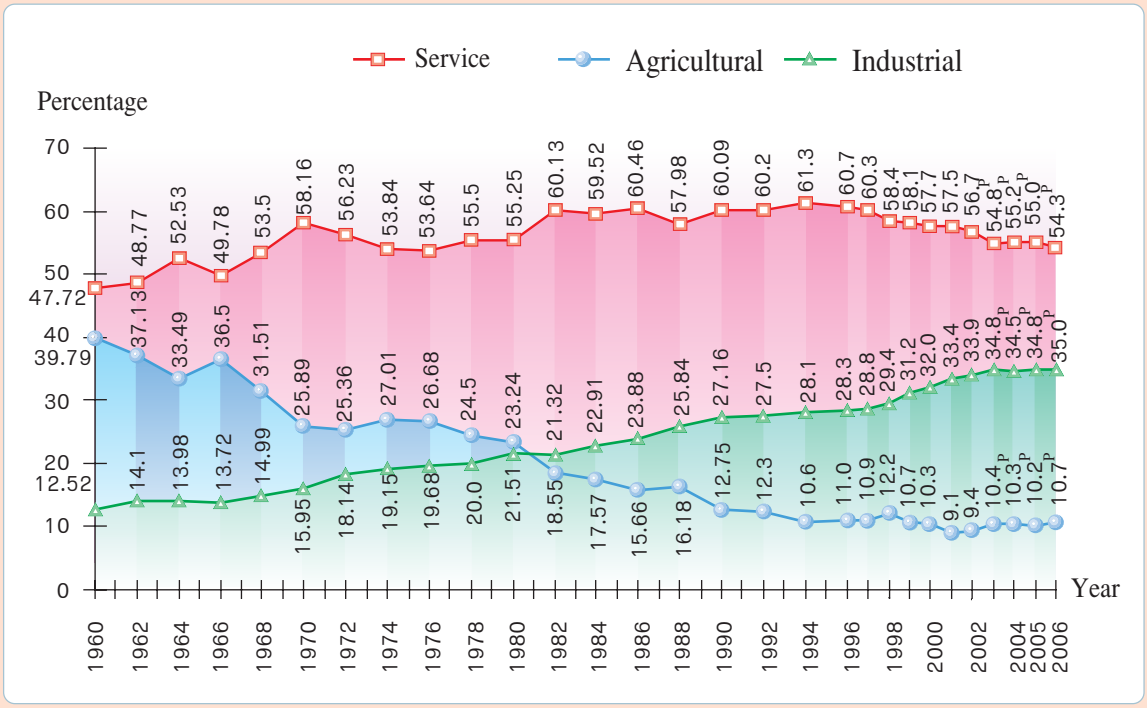
Notes : 1. P Preliminary figure; e estimated figure.

2. Since 1994, the data on GDP have been adjusted.

1.2 Economic Structure

The Thai economic structure has been transformed in such a away that the proportion of the industrial and service sectors grows faster than the agricultural sector (Figure 4.4). It is noted that since 1990, the production structure of the agricultural, industrial and service sectors has almost never changed.

Figure 4.4 Proportion of economy in the agricultural, industrial and service sectors, as a percentage of GDP, 1960-2006



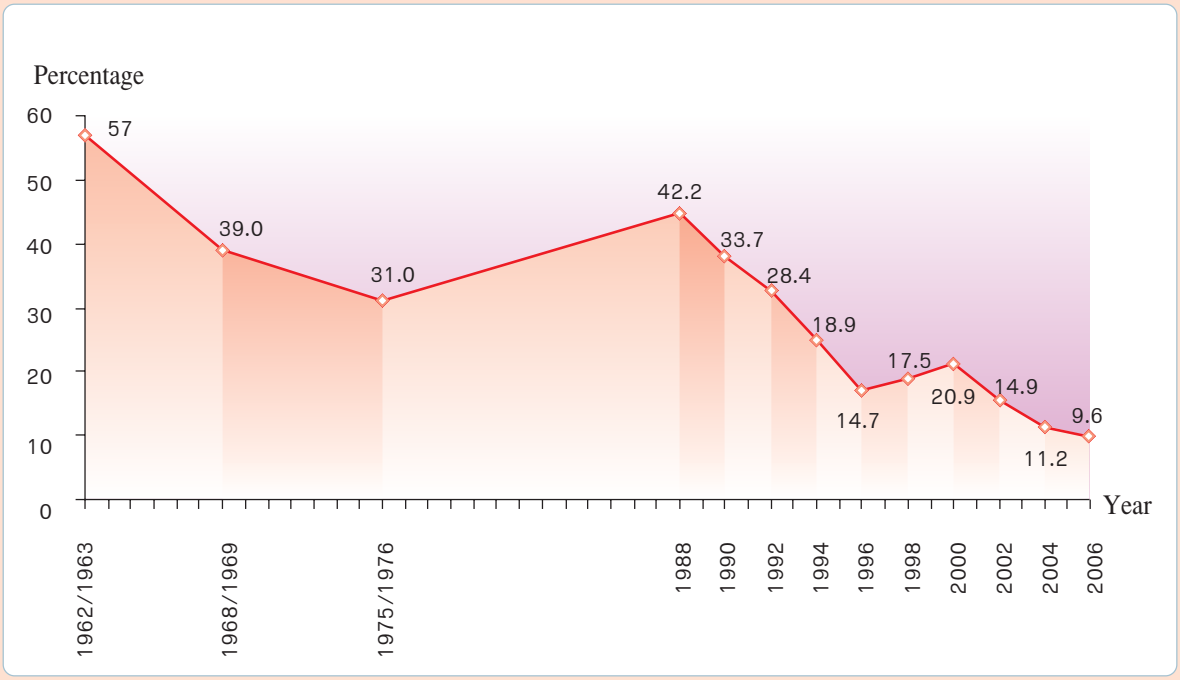
Source: National Income of Thailand, 4th Quarter (4/2006). Office of the National Economic and Social Development Board.

Notes: P Preliminary figure

1.3 Income Distribution and Poverty

The poverty situation in Thailand has been a positive trend; the proportion of people living with poverty dropped from 57.0% in 1962 to 14.7% in 1996 as a result of the rapid economic growth during that period. But after the 1997 economic crisis, the poverty prevalence rose to 20.9% in 2000, but dropped to 9.6% in 2006 (Figure 4.5) due to the economic recovery. However, even although the poverty prevalence has been steadily declining, the proportion of poverty in the rural areas is three times greater than that in the urban areas (Table 4.1).

Figure 4.5 Proportion of poverty, based on expenditure, 1962-2006



Sources: Data for 1962/63-1975/76 were derived from Ouay Meesook. Income, Consumption and Poverty in Thailand, 1962/63 to 1975/76.

Data for 1988-2006 were derived from the Household Socio-Economic Survey, analyzed by the Bureau of Economic Development and Income Distribution, Office of the National Economic and Social Development Board.

Notes: Studies on poverty in Thailand in different periods had different assumptions.

Table 4.1 Proportion of poverty based on expenditure, by locality, 1962-2006

Year	Urban area,%	Rural area, %	Whole country, %
1962/1963	38	61	57
1968/1969	16	43	39
1975/1976	14	35	31
1988	23.7	49.7	42.2
1990	20.5	39.2	33.7
1992	12.1	35.3	28.4
1994	9.9	22.9	18.9
1996	6.8	18.2	14.7
1998	7.1	21.9	17.5
2000	8.6	26.5	20.9
2002	6.4	18.9	14.9
2004	4.6	14.2	11.2
2006	3.6	12.0	9.6

Sources: Data for 1962/63-1975/76 were derived from Ouay Meesook. Income, Consumption and Poverty in Thailand, 1962/63 to 1975/76.

Data for 1988-2006 were derived from the Household Socio-Economic Survey, analyzed by the Bureau of Economic Development and Income Distribution, Office of the National Economic and Social Development Board.

Regarding income distribution, it is found that the gap between the rich and the poor has been widening. In 1962, the highest income group (one-fifth of the entire population) had a 49.8% share of the national income. Such a share rose to 56.7% in 1996, while the lowest income group (one-fifth of the entire population) had a national income share of only 7.9% in 1962, falling to 4.2% in 1996 (Figure 4.6), and being slightly better during the period 1994-1996.

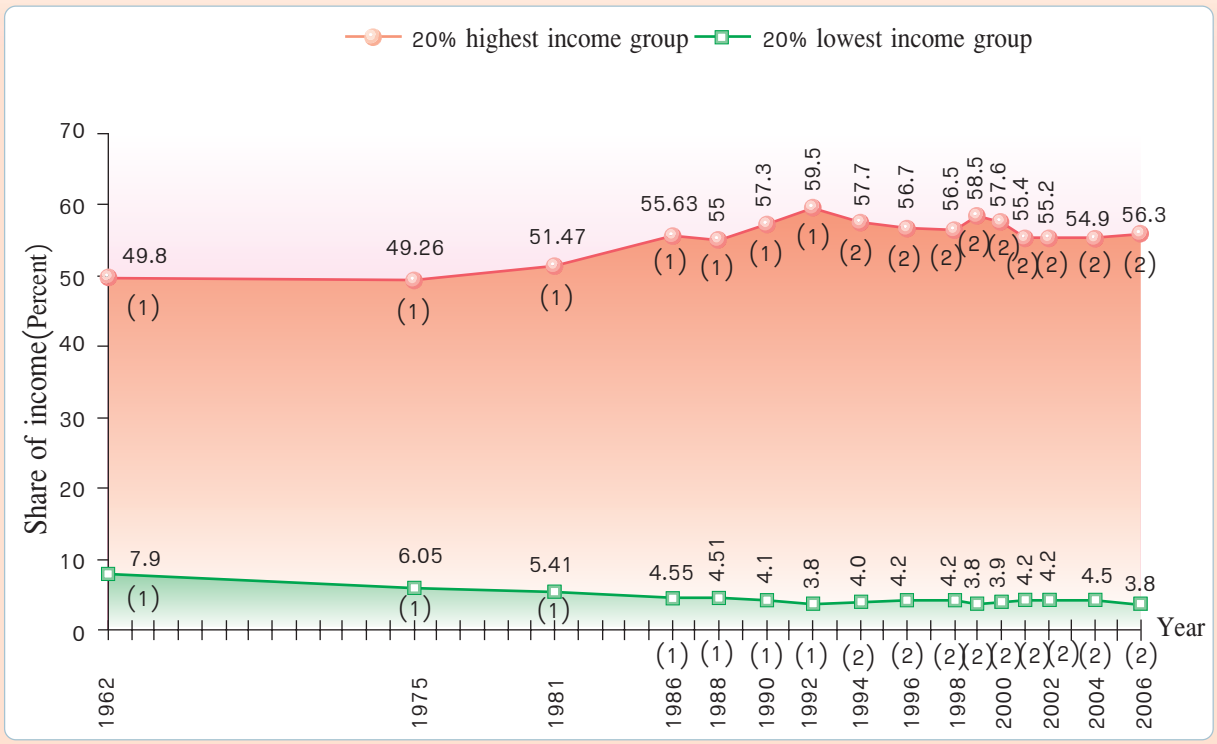
During the economic crisis, the income distribution became more inequitable. The 20% lowest income group had their income proportion declining from 4.2% in 1996 to 3.9% in 2000, while the 20% highest income group had their income proportion rising from 56.7% to 57.6% during the same period. But in 2001-2004, the trend in income distribution improved slightly. The income disparity between the richest and the poorest groups increased from 12.2-fold in 2004 to 14.8-fold in 2006. Nonetheless, in terms of income distribution inequalities, Thailand is higher than in many other countries in Southeast Asia (Table 4.2).

Table 4.2 Income share of the population in Southeast Asian countries

Country	20% highest income group	20% lowest income group	Discrepancy (times)
Thailand (2002)	55.2	4.2	13.2
Singapore (1998)	49.0	5.0	9.8
Malaysia (1997)	54.3	4.4	12.3
Indonesia (2002)	43.3	8.4	5.1
Philippines (2000)	52.3	5.4	9.7
Vietnam (2002)	45.4	7.5	6.0
Cambodia (1997)	47.6	6.9	6.9
Laos (2000)	43.3	8.1	5.3

Source: Human Development Report, 2006.

Figure 4.6 Income share of Thai people: five income groups



	Year															
	1962	1975	1981	1986	1988	1990	1992	1994	1996	1998	1999	2000	2001	2002	2004	2006
20% highest income group	7.9	6.05	5.41	4.55	4.51	4.1	3.8	4.0	4.2	4.2	3.8	3.9	4.2	4.2	4.5	3.8
20% lowest income group	49.8	49.26	51.47	55.63	55.0	57.3	59.5	57.7	56.7	56.5	58.5	57.6	55.4	55.2	54.9	56.3
Income disparities	6.3	8.1	9.5	12.2	12.2	14.0	15.6	14.4	13.5	13.5	15.4	14.8	13.2	13.2	12.2	14.8

Sources: (1) For 1962-1992, from the Office of the National Economic and Social Development Board and the Thailand Development Research Institute.

(2) For 1994-2006, from the Economic and Social Household Survey of the National Statistical Office, analyzed by the Development Evaluation and Dissemination and Bureau of the Economic Development and Income Distribution, Office of the National Economic and Social Development Board.

Note: For 2002, the data for computation of income disparities according to the Economic and Social Household Survey were adjusted from the first six months of survey to 12-month cycle of survey.

1.4 Global and Regional Economic Cooperation

In the globalization era, the world has entered into the free trade system and consolidated regional trade organizations so as to establish negotiating power for competition. This has resulted in movements in establishing economic cooperation mechanisms, in which Thailand is involved, such as the ASEAN Free Trade Area (AFTA), the Asia-Pacific Economic Cooperation (APEC), the Asia-Europe Meeting (ASEM), the Southern Triangle for Economic Cooperation, the Mekong Committee (for development cooperation among six countries), and the Ayeyawady - Chao Phraya - Mekong Economic Cooperation Strategy (ACMECS). In other regions, such organizations include the North America Free Trade Area (NAFTA) and the European Community (EC). At the global level, there are international trade agreements coordinated by the World Trade Organization (WTO). This has tremendously led to greater liberalization and competition. In particular, developed countries have generated new non-tariff barriers, such as environmental measures, child labour employment, human rights, anti-dumping duty (AD) or countervailing duty (CVD).

At present, Thailand has focused on the expansion of free trade policies in the form of bilateral agreement to minimize trade barriers with several other countries such as Australia, China, New Zealand, India, Japan, the USA, Peru and Bahrain. Other mechanisms have also been adapted to enhance its status and protect national interest in multi-lateral frameworks such as WTO and ASEAN.

Such economic changes affect the Thai health system as follows:

1. **Rising health expenditure.** The national health accounts have been rising from 3.8% of GDP in 1980 to 6.14% in 2005. In terms of equality of health spending burden, it was found that in 2004 the poor had a higher health spending burden relative to their income, i.e. 2.1 times higher than that of the rich. This inequality has however fallen from 6.4 times in 1992 as a result of the implementation of universal healthcare scheme (see Chapter 6, Health Financing).

2. **Roles of the public and private sectors in health care delivery.** During the bubble economy, the demand for doctors in the private sector rose rapidly; the proportion of doctors in the private sector climbed from 6.7% in 1971 to 20.5% in 1996, resulting in a serious public-to-private sector brain drain. During the economic crisis, with the people's declining purchasing power, a portion of the people who could not afford private health care turned to state-run health facilities instead. As a result, the utilization of private health facilities dropped slightly in the initial stage. But since 2001, with the government's implementation of the universal healthcare policy, more outpatients have attended **public health facilities.** In 2005, the number of outpatients rose by 131.7%, compared with that for 2000, whereas the increase of inpatients in the public sector was only 4.0% for the same period.

3. **Income disparities between the rich and the poor resulting in inequalities in health resource distribution.** Despite the increase in resources and infrastructure for health care, the inequalities in resource distribution are still high as a result of the rapid expansion in the private health

sector, draining human resources from the rural to urban areas and from the poor to the rich (see Chapter 6, Health Resources). Such inequalities have resulted in inaccessibility to state health services of the rural poor and urban slum dwellers.

4. Mental health problems are on the rise. Even though the crisis has been over, mental health problems are on a rising trend, the prevalence of mental disorder rising from 440.1 per 100,000 population in 1997 to 640.6 per 100,000 population in 2006 (see the section on mental health indicators in Chapter 5).

5. Government budget for health is rising. The state health budget varies with the economic situation. During the period of economic boom, the health budget was rising, the Ministry of Public Health's budget being 7.7% of the national budget. But during the economic crisis, the government budget for health had a declining trend. Since 2001 the government has implemented to universal healthcare policy and the government health budget, particularly the operating budget, has risen steadily. As a result, the proportion of overall MoPH budget has risen from 6.7% in 2001 to 8.3% in 2007 (see Chapter 7, MoPH Budget).

6. Free trade and international economic agreements. Trade competition and discrimination are more widespread with a negative impart on the part of health products and healthcare industries.

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[1] UNDP. Human Development Report,2005.

2. Educational Situations and Trends

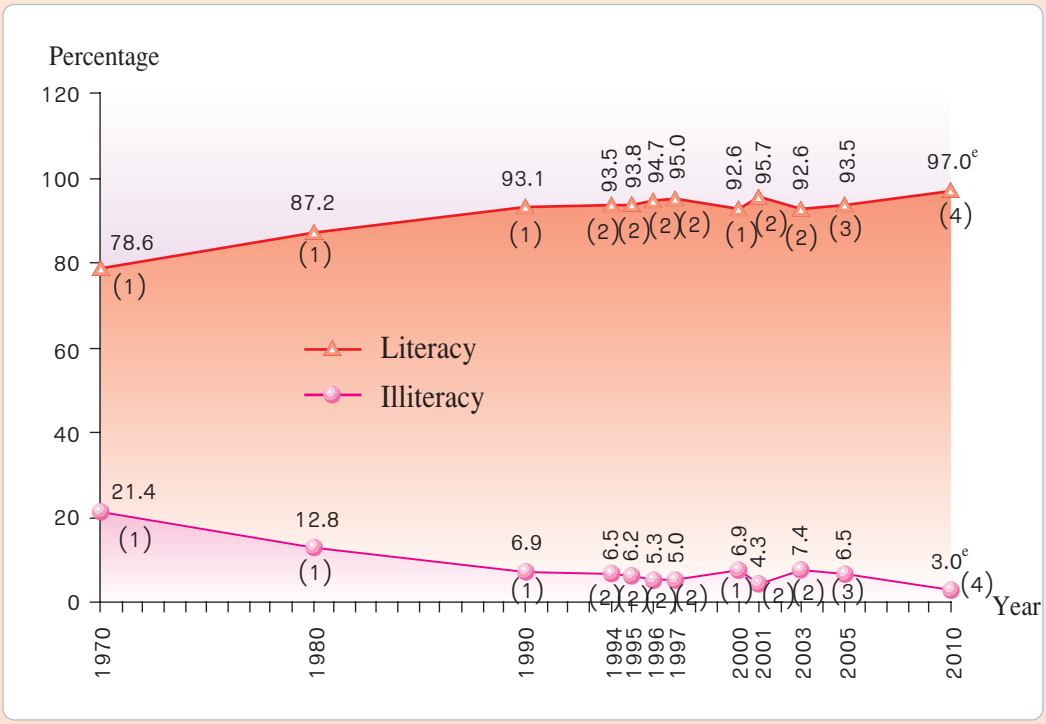
2.1 Knowledge, Capability and Skills of Thai People

2.1.1 Literacy Rate

The literacy rate among Thai population aged 15 and over rose from 78.6% in 1970 to 93.5 in 2005 (Figure 4.7), much higher than the average for developing countries (67.0%). Although Thailand's literacy rate ranks second among the ASEAN member countries,[1] second to Brunei, its illiteracy rate was recorded at 6.5% in 2005; and it is estimated that the literacy rate will be as high as 97% in 2010.

[1] UNDP. Human Development Report,2005.

Figure 4.7 Literacy and illiteracy rates of Thai population aged 15 and over, 1970-2010



Sources: (1) Data for 1970, 1980, 1990 and 2000 were derived from the Population and Housing Censuses. National Statistical Office.

(2) Data for 1994-1997, 2001, and 2003 were derived from UNDP, Human Development Reports, 1997-2003.

(3) Data for 2005 were derived from the report on population characteristics from the population change survey, 2005-2006, National Statistical Office.

(4) UNESCO, Principal Regional Office for Asia and Pacific, Literacy in Asia and the Pacific.

2.1.2 Learning Rate

The learning rate of Thai people is rather low at only 60.0% (2005) and there are wide disparities between those for the regions and between urban and rural residents (Table 4.3).

Table 4.3 Learning rate of Thai people, 1992-2005

Unit: Percent

Region and area	1992	1996	1997	1999	2001	2002	2003	2004	2005
Urban	57.1	60.0	61.7	65.4	67.5	68.6	70.0	70.8	71.2
Rural	36.5	41.0	42.2	46.9	49.4	50.8	52.9	54.6	54.3
Region									
Central	41.0	48.2	49.4	52.1	52.4	53.2	58.6	59.7	62.3
North	36.2	38.6	40.7	43.5	46.6	48.2	49.9	51.8	50.0
Northeast	39.6	44.1	45.0	51.0	54.8	55.7	56.5	58.3	56.0
South	43.6	47.5	48.5	53.8	56.3	58.7	58.7	60.7	62.5
Bangkok	61.6	64.8	66.8	72.1	73.1	73.7	75.7	75.9	76.4
Whole country	**42.3**	**47.1**	**48.5**	**53.0**	**55.3**	**56.6**	**58.7**	**60.1**	**60.0**

Source: Data from the Workforce Survey (3rd Round) of the National Statistical Office, analyzed by the Bureau of Development Evaluation and Dissemination, NESDB.

Note: Learning rate is the level of literacy and basic computation required for daily livelihood; to attain such a level, a person should have had 5-6 years of formal schooling or equivalent.

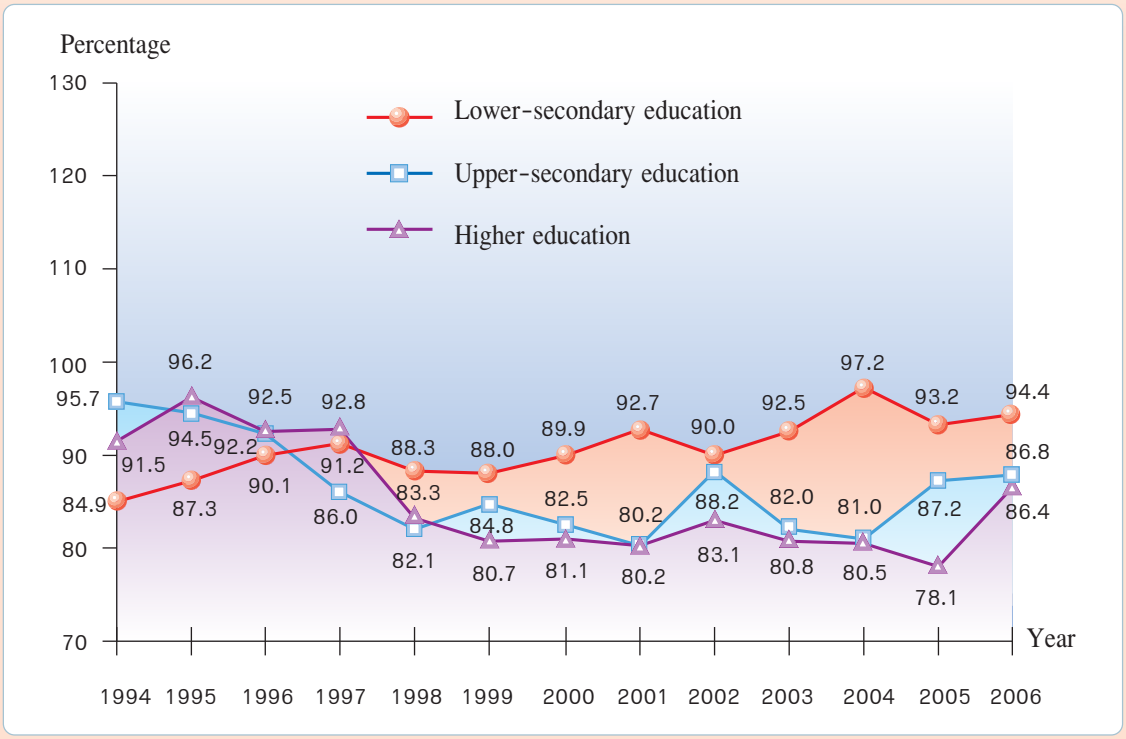
Nevertheless, when considering the reading rate among the Thai people, it was found that only 35.4 million people (61.2%) read regularly in 2003 and the trend rose slightly to 40.9 million (69.1%) in 2005 (Report on Reading of Population Survey, 2005, National Statistical Office).

2.2 Education Opportunities

2.2.1 Educational Continuation

The rates of students continuing their education from primary to lower-secondary, from lower to upper-secondary, and from upper-secondary to higher education tended to be rising during the pre-economic crisis period. But the rates dropped during the crisis and rose again after the crisis was over (Figure 4.8).

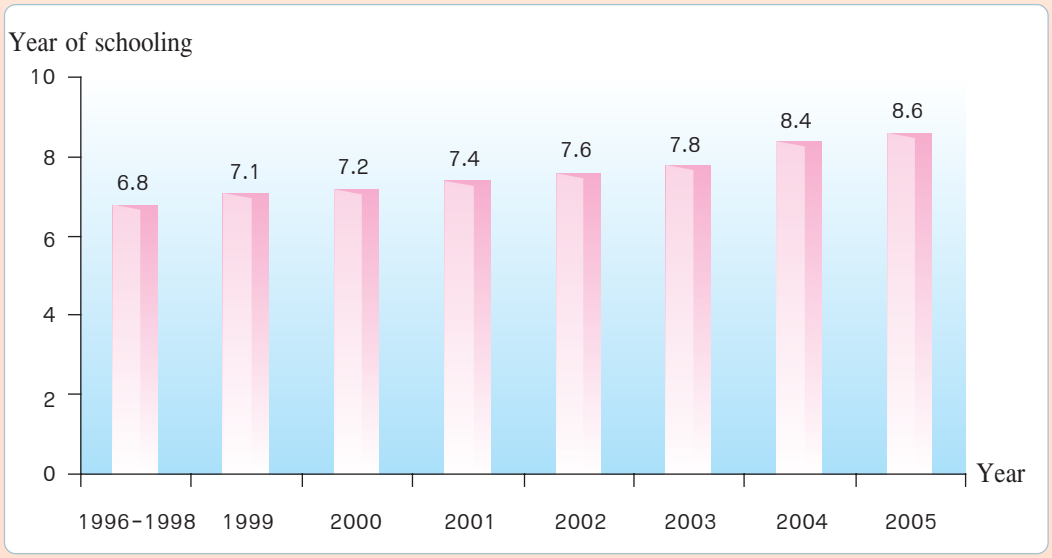
Figure 4.8 Rates of educational continuation by educational level, academic years 1994-2006



Sources: Office of the Education Council, Ministry of Education.

With the higher rate of educational continuation, coupled with an increase in the average duration of education among Thai population aged 15 and over from 6.8 years in 1996 to 8.6 years in 2005 (Figure 4.9), the proportion of labour force (2006) with primary schooling has dropped to 59.9%. It has been projected that the proportion of workers with primary education will drop further to only 39.9% in 2020, while those with higher education will rise from 14.0% in 2006 to 22.5% in 2020 (Table 4.4).

Figure 4.9 Average years of schooling of Thai people, 1996-2005



Source: Office of the Education Council.

Note: Data for 1996-2003 covered the population aged 15 years and over and 2004-2005 for population aged 15-59 years.

Table 4.4 Structure (percentage) of labour force by educational level, 1995-2020

Educational level	1995(1)	1997(1)	1999(1)	2001(1)	2003(1)	2005(1)	2006(1)	2010(2)	2020(2)
Primary and lower	78.0	75.2	69.8	66.3	63.8	61.4	59.9	55.9	39.9
Lower-secondary	8.9	10.1	12.0	12.7	13.7	13.8	14.1	14.7	14.6
Upper-secondary	3.3	3.6	5.0	6.2	7.2	8.1	8.8	8.7	14.3
Vocational	4.7*	4.8*	5.0*	3.4*	3.3*	3.3*	3.2*	6.6	8.7
Higher	5.1	6.2	8.2	11.3	11.9	13.4	14.0	14.1	22.5
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: (1) Data for 1995-2006 were derived from the Reports of the Workforce Survey, 3rd Round, National Statistical Office.

(2) Data for 2010-2020 were derived from the Report on Thailand's Social and Economic Trends, Thailand Development Research Institute.

Note: *Including graduates from vocational and teacher-training colleges for 1995-2006.

2.2.2 Education Equalities among Male and Female Children

At present, boys and girls have an equal educational opportunity. In 2004, the proportion of boys attending primary school was slightly higher than that for girls; on the contrary, at the higher educational level there were more female students than male students. However, the educational equalities among boys and girls in Thailand are inferior to those in other ASEAN countries, all countries in Europe and the USA (Table 4.5).

Table 4.5 Educational inequalities at the primary, secondary, and tertiary levels, 2000-2004

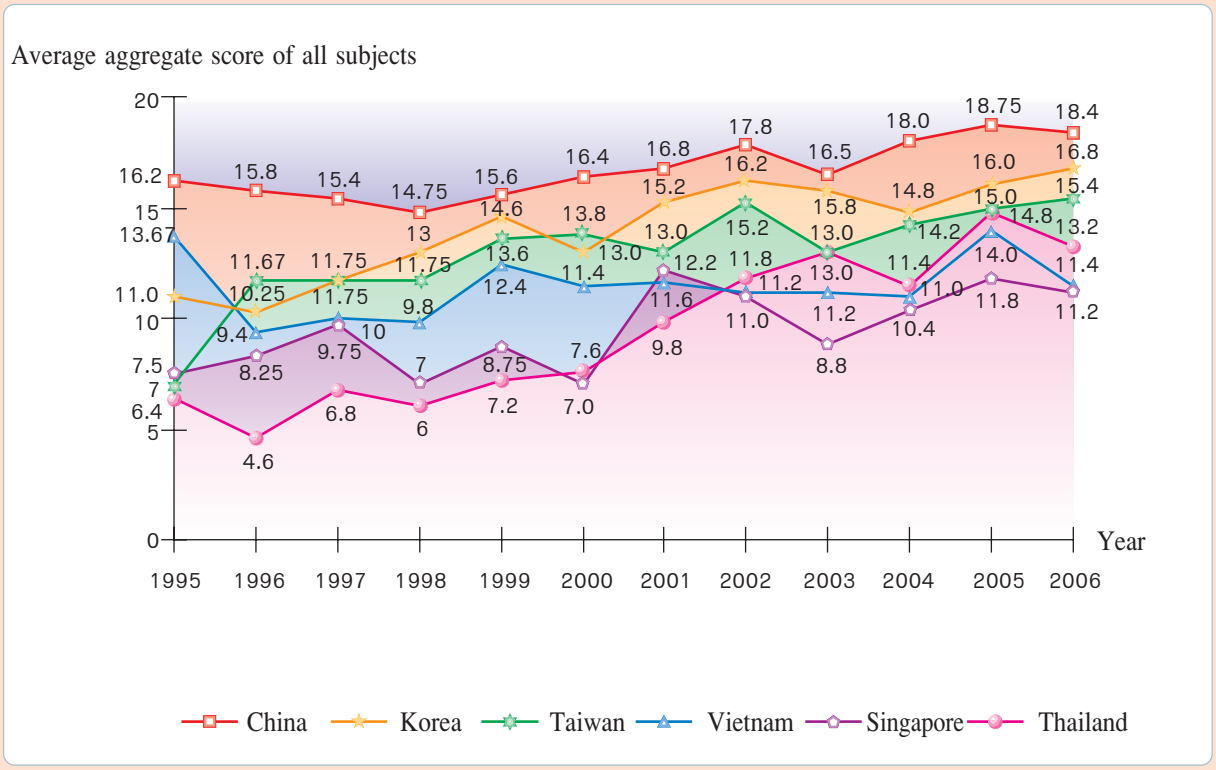
Group/country	2000/2001			2004		
	Ratio of female-to-male students			Ratio of female-to-male students		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
WHO/SEAR						
Sri Lanka	1.00	NA	NA	1.00	NA	NA
Maldives	1.01	1.13	NA	1.00	1.15	NA
Indonesia	0.99	0.96	0.77	0.98	0.99	0.79
Bangladesh	1.02	1.05	0.55	1.03	1.11	0.50
Thailand	0.93	1.01	1.12	0.97	1.01	1.17
India	NA	NA	0.66	0.94	NA	0.66
Myanmar	0.99	0.95	1.75	1.01	0.95	1.77
Nepal	0.87	NA	0.27	0.87	NA	0.41
Bhutan	NA	NA	NA	NA	NA	NA
North Korea	NA	NA	NA	NA	NA	NA
ASEAN						
Malaysia	1.00	1.11	1.08	1.00	1.14	1.41
Vietnam	0.94	NA	0.74	0.94	NA	0.77
Philippines	1.01	1.18	1.10	1.02	1.20	1.28
Indonesia	0.99	0.96	0.77	0.98	0.99	0.79
Singapore	NA	NA	NA	NA	NA	NA
Brunei	NA	NA	1.96	NA	NA	1.74
Thailand	0.93	1.01	1.12	0.97	1.01	1.17
Cambodia	0.90	0.59	0.38	0.96	0.73	0.45
Laos	0.92	0.81	0.59	0.73	NA	0.80
Myanmar	0.99	0.95	1.75	1.01	0.95	1.77
Worldwide: Top Ten						
Norway	1.00	1.01	1.52	1.00	1.01	1.54
Iceland	1.00	1.05	1.74	0.98	1.04	1.78
Australia	1.01	1.03	1.24	1.01	1.01	1.23
Ireland	1.00	NA	1.27	1.00	1.06	1.28
Sweden	0.99	1.04	1.52	1.00	1.03	1.55
Canada	1.00	1.01	1.35	1.00	0.99	1.36
Japan	1.00	1.01	0.85	1.00	1.01	0.89
U.S.A.	1.01	1.02	1.32	0.96	1.02	1.39
Switzerland	0.99	0.95	0.78	1.00	0.93	0.20
Netherlands	0.99	1.00	1.07	0.99	1.01	1.08

Sources: - Human Development Report, 2003.
- Human Development Report, 2006.
- Report on the Achievements of the MDGs, Thailand, 2004.

2.3 Quality of Education

The Thai educational system tends to focus on memorization rather than strengthening of analytical skills for problem solving and self-study, resulting in low educational achievements, below 50% for both primary and secondary levels. Thai children's capability is weaker in terms of rational and systematic analysis and synthesis (Table 4.6). Besides, the Thai educational quality cannot compete with that in other countries as evidenced in the results of the academic Olympics competition. In the contest, Thai students' mathematics and science capabilities were lowest among the six Asian countries participating in the event, except for 2002-2006 when Thailand was ranked fourth, better than Singapore and Vietnam (Figure 4.10). Most Thai students have a problem with answering a question that requires the application of knowledge for further analysis, and problem solving and the measuring of process skills. As a result, a lot of Thai people lack the skills for analysis which is a basis for creating life skills, leading to failure or inability to resolve a problem or situation related to health risks.

Figure 4.10 Results of Olympic scientific knowledge contest of students from Thailand and other Asian countries, 1995-2006



Source: Office of the Education Council, Ministry of Education.

Note: Average aggregate score of all subjects means an average score of 5 subjects (mathematics, chemistry, physics, biology and computer science) for each year.

Table 4.6 Learning achievements and scholastic aptitudes of primary and secondary school students, 2000-2006

Educational level / Learning achievement		Average score (percent)			
		Mathematics	Science	Thai language	English
1. Primary	2001	46.9	NA	54.3	49.6
	2002	49.9	NA	50.6	47.4
	2003	41.7	42.4	45.2	41.1
	2004	43.8	41.6	44.2	37.3
	2006	38.9	43.2	42.7	34.5
2. Lower-secondary	2000	31.2	40.4	53.0	38.9
	2001	32.4	NA	46.3	38.9
	2002	39.1	NA	46.7	45.3
	2003	35.0	38.1	54.0	37.9
	2004	34.8	37.2	38.3	32.3
	2006	31.1	39.3	43.9	30.8
3. Upper-secondary	2003	34.0	48.8*	44.5	39.1
	2005	28.5	34.0	48.6	29.8
	2006	29.6	34.9	50.3	32.4

Educational level / Learning aptitude		Computational	Analytical	Language capability
- Upper-secondary	2000	38.3	43.1	37.2
	2001	41.7	39.6	38.7
	2003	38.9	38.3	40.7
	2004	41.6	46.1	39.9

Sources: - Office of the Basic Education Commission, Ministry of Education.
- National Institute for Educational Testing Services, Ministry of Education.

Notes:
1. Assessments of students' learning achievements for primary and lower-secondary levels, 2001-2002 were undertaken in three subjects: Thai language, English and mathematics.
2. For 2000-2004, the assessments of upper-secondary school students' scholastic aptitudes were undertaken in three aspects: computational, analytical and language capabilities.
3. For 2003, there was also an assessment of learning achievements for upper-secondary school students.
4. *For physical/biological sciences.

The changes in the educational system have affected the Thai health system in the following aspects:

1. Some Thai people lack the ability to screen health information in a well-informed manner resulting in the practice of risky health behaviours. At present, many Thai people consume food or something that is unhealthy such as alcohol, junk food, and tobacco (see Chapter 4, health behaviours).

2. Educational attainment of Thai labour force; in 2006 as many as 59.9% of Thai workers had completed only primary schooling which affects the development of labour and health. A lot of workers are unable to take care of their own health and protect themselves resulting in a rise in occupational injuries. In additional, the underprivileged such as the rural and urban poor have no access to the educational system; a number of them have no access to even primary schooling and they will be the group that has no access to health services; so they have to face a lot of health problems.

3. Situations and Trends of Population, Family and Migration

3.1 Population Structure Changing to Be an Elderly Society

The success in Thailand's family planning campaigns has led to an increase in the contraceptive prevalence rate from 14.4% in 1970 to 81.1% in 2006, resulting in a drastic reduction in the total fertility rate to below the replacement level (a couple having two children, only enough to replace themselves). And as a result, the population growth has continuously dropped from 3.2% prior to 1970 to 0.41% in 2006, below the level of 0.53% projected for 2020 (Figure 4.11). Such a decrease in the population growth has affected the number and age structure of population. Thailand will have a population of 72.3 million in 2025 (Figure 4.12), while the proportion of children aged 0-14 tends to drop whereas the working-age and elderly proportions are likely to escalate (Figure 4.13). This describes the phenomenon of declining dependency ratio for children but rising for the elderly. Though the overall dependency ratio keeps falling until 2010, it will rise again due to a greater proportion of the elderly (Figure 4.14). This will result in a change in Thailand's population pyramid from an expansive or wide-base to a constrictive or narrow-base one, similar to those in developed countries (Figure 4.15). Thailand thus has a tendency to very rapidly become an elderly society within 20 years (from 2010 to 2030). In 2010, Thailand will begin to become an elderly society,[2] only four years from now, while other developed countries except Japan spent more than 60 years to be so (Table 4.7), resulting in the working-age population bearing a higher burden in taking care of the elderly.

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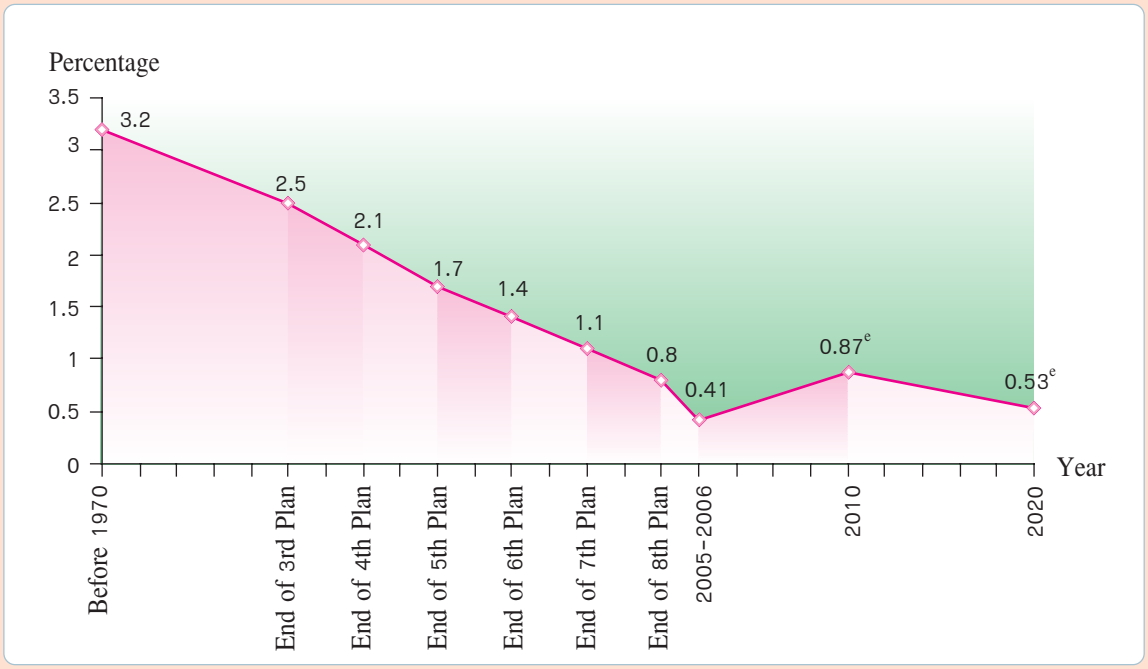
[2] The United Nations has defined that, for a country to become an elderly society, its ratio of population aged 65 years or over to the entire population ranges from 7% to 14% and it fully becomes an elderly society when the ratio exceeds 14%.

So the government has to develop a plan and strategy preparing to enter an elderly society, preparing young people to become active ageing people. Moreover, the health care system has to be prepared to cope with chronic diseases and illnesses of the elderly, which are more and more prevalent, such as hypertension, diabetes and heart disease. Studies are to be carried out to forecast the budget required for elderly health care, particularly under the universal health security scheme, due to the fact that the elderly tend to be sick and disabled in need of institutional-based long-term care with a greater proportion of budget, compared to that for other age groups. This is to ensure that it will not pose a budgetary burden for the country in the long run.

Besides, as Thailand is becoming an elderly society, there will be an opportunity for expansion of market for health-food supplements, herbal medicines and indigenous medicine as the elderly with deteriorating physical conditions will require more supplementary products or tonicums for promoting health, maintaining memory and relieving problems related to the bones and joints. So the government has to formulate measures to control such products which tend to become more widespread in the future.

Figure 4.11 Population growth rate and projection, Thailand, 1970-2020



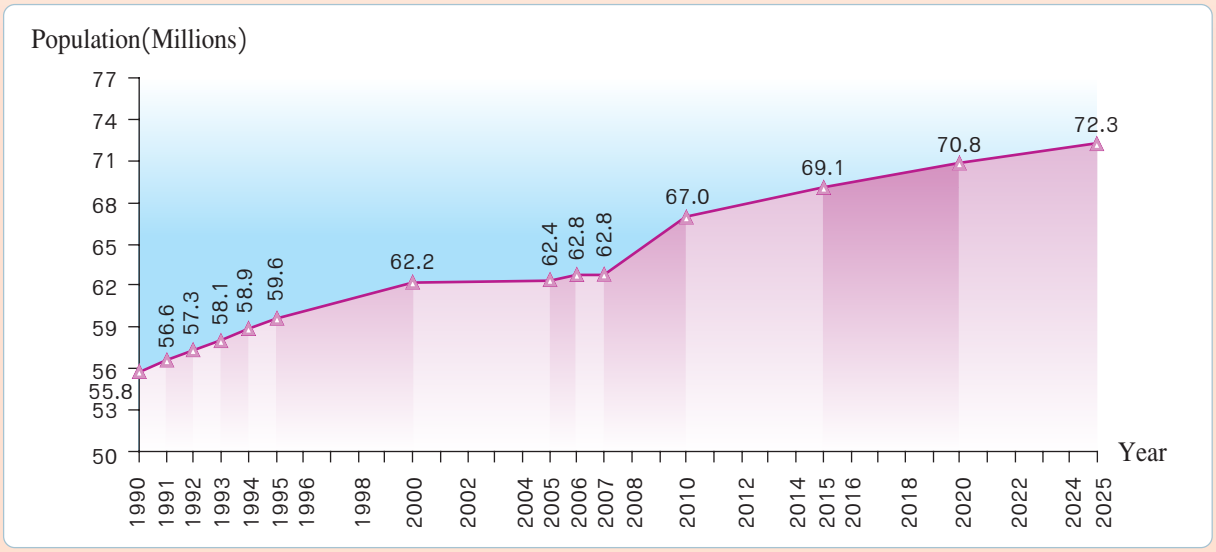
Sources: (1) Data before 1970 were derived from Niphon Debavalya, Before Getting the 1970 Population Policy.

(2) Data for end of the 3rd-8th Plans were derived from the Department of Health, MoPH.

(3) Data for 2005/2006 were derived from the Population Change Survey, National Statistical Office.

(4) Data for 2010-2020 were derived from Population Projections, Thailand, 1990-2020, NESDB.

Figure 4.12 Projection of population, Thailand, 1990-2025

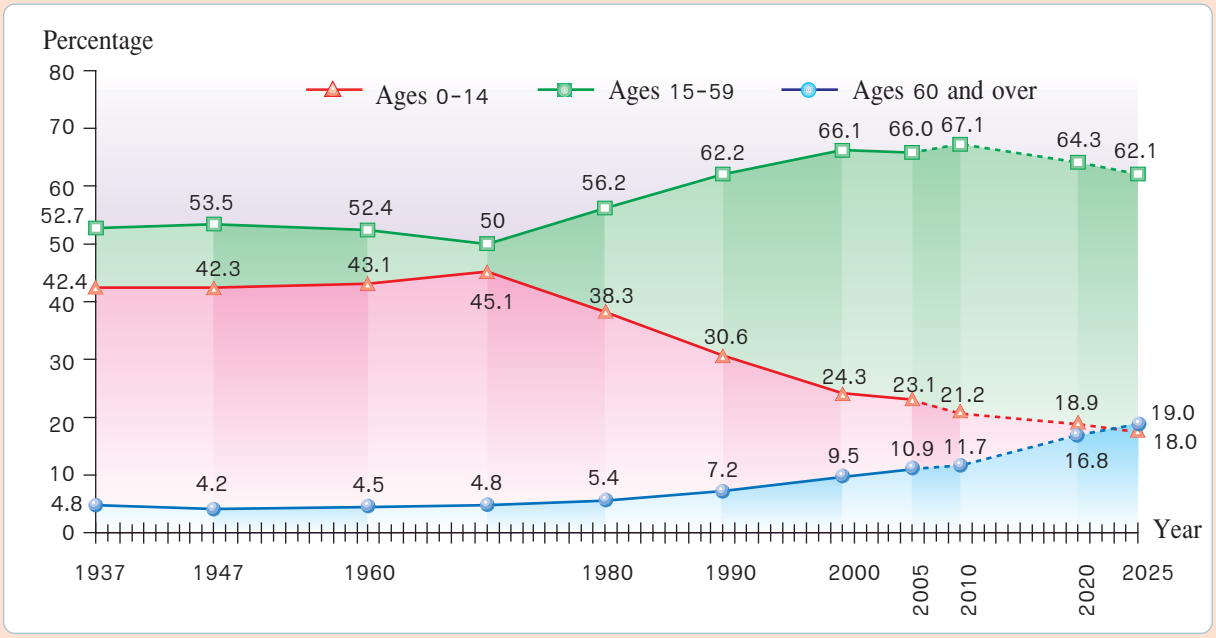


Source: Population Projections, Thailand, 2000-2025, NESDB.

Note: For 2005 and 2006 data were derived from the Bureau of Registration Administration. Ministry of Interior.

For 2007, data were derived from mid-2007 population estimate (1 July) of the Institute of Population and Social Research, Mahidol University.

Figure 4.13 Proportion of population by major age group, 1937-2025

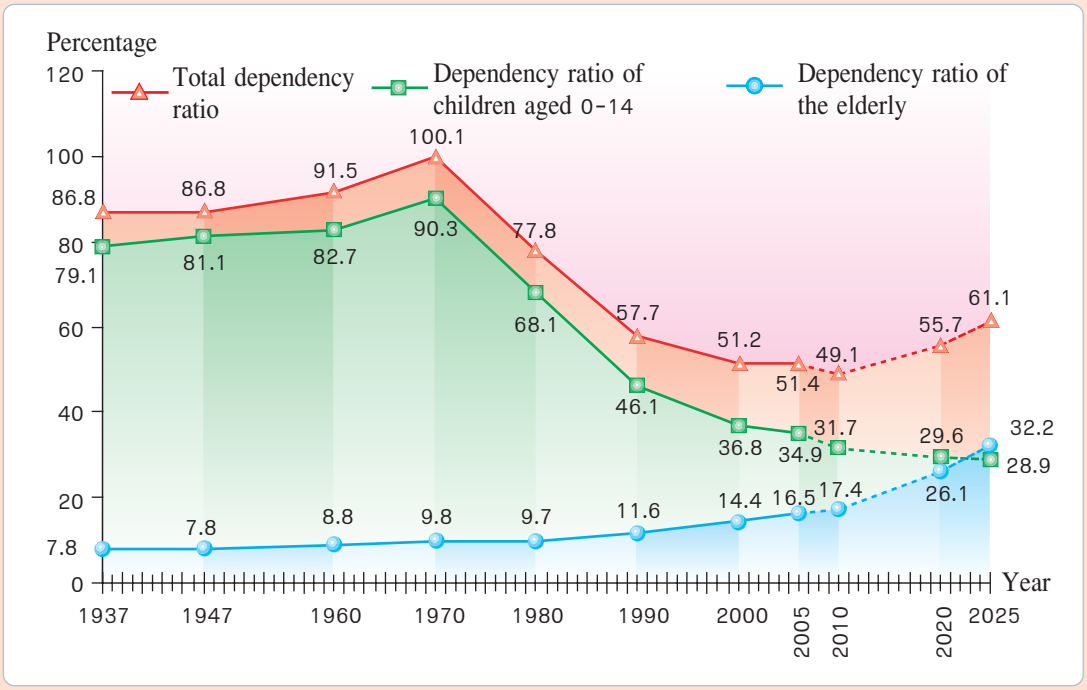


Sources: (1) Data for 1937, 1947, 1960, 1970, 1980, 1990 and 2000 were derived from the Population and Housing Censuses. National Statistical Office.

(2) Data for 2005 were derived from the Population Change Survey 2005/2006, National Statistical Office.

(3) Data for 2010, 2020 and 2025 were derived from Population Projections, Thailand, 2000-2025, NESDB.

Figure 4.14 Population dependency ratio, 1937-2025



Sources: (1) Data for 1937, 1947, 1960, 1970, 1980 and 1990 were derived from the Population and Housing Censuses. National Statistical Office.

(2) Data for 2005 were derived from the Population Change Survey 2005/2006, National Statistical Office.

(3) Data for 2010-2025 were derived from Population Projections. Thailand, 2000-2025, NESDB.

Figure 4.15 Proportions pyramids of Thailand in 1960,1990, 2000, 2010, 2020 and 2025 compared to those at present in Sweden, Denmark, and Japan

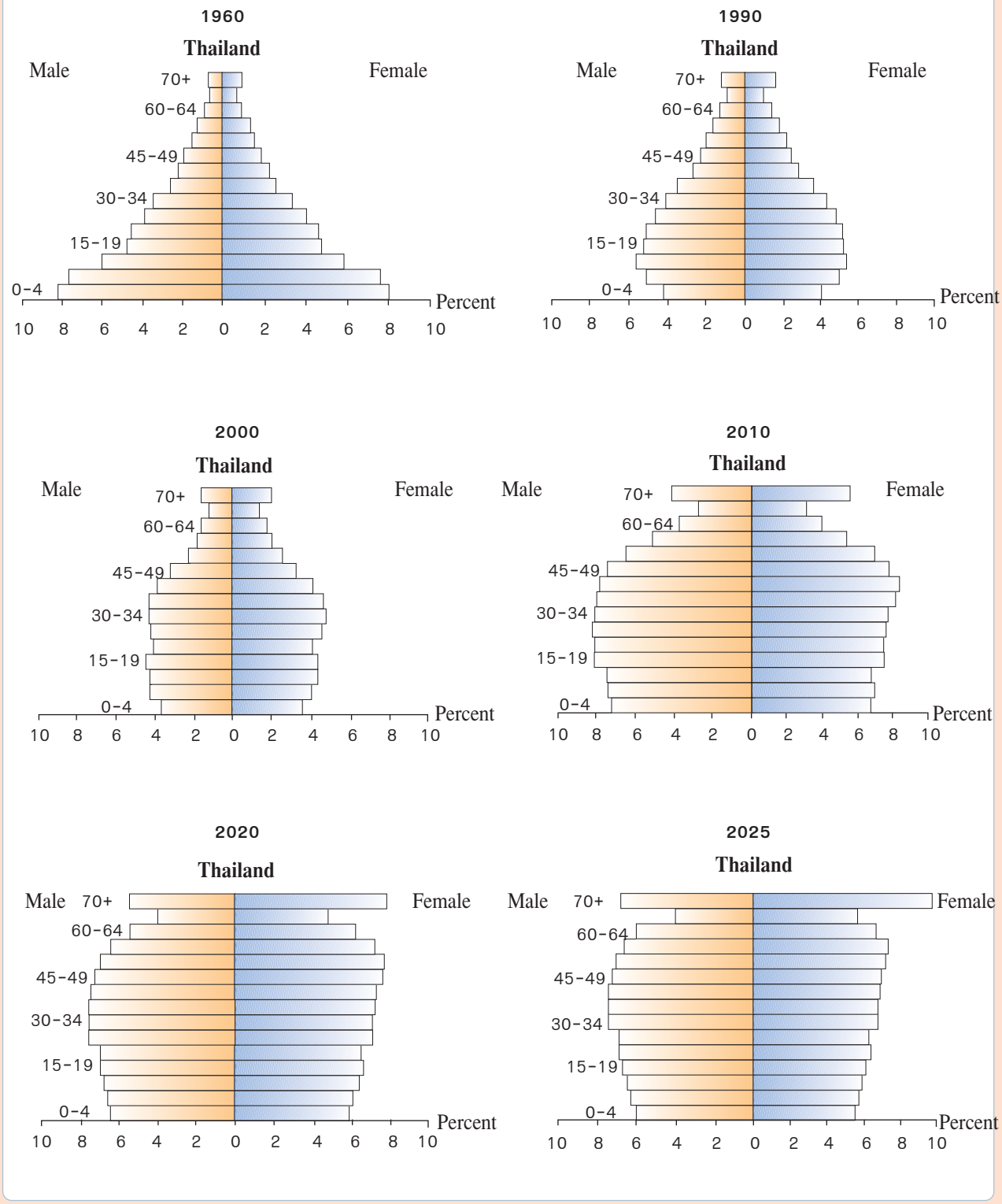
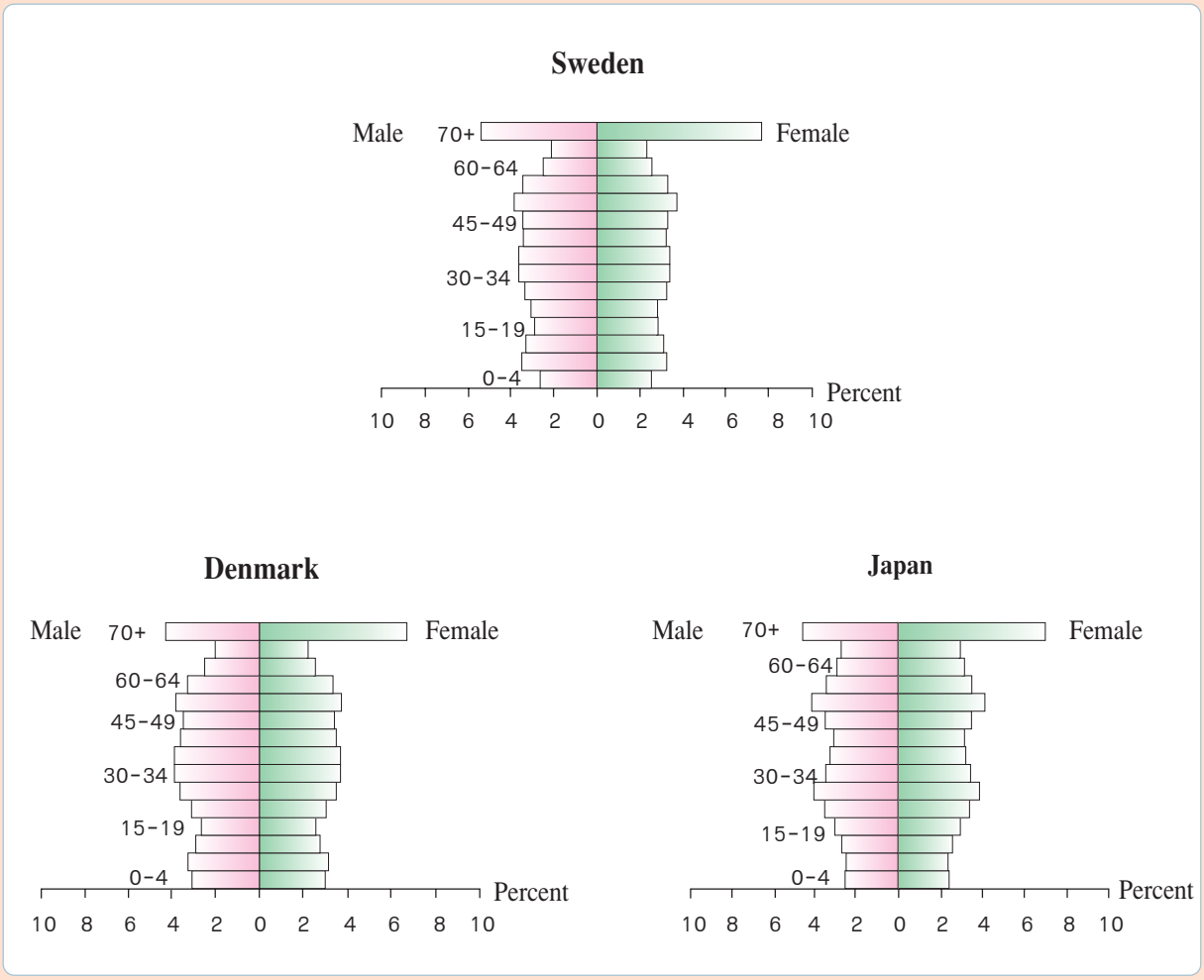


Figure 4.15 Proportions pyramids of Thailand in 1960,1990, 2000, 2010, 2020 and 2025 compared to those at present in Sweden, Denmark, and Japan (cont'd)



Sources: (1) Data for 1960, 1990 and 2000 were derived from the Population and Housing Censuses. National Statistical Office.

(2) Data for 2010, 2020 and 2025 were derived from the Population Projections for Thailand, 2000-2025 NESDB.

(3) United Nations (1999) World Population Prospects: 1998 Revision, Volume II: Sex and Age.

Table 4.7 Years in which the proportions of people aged 65 and over were or will be 7% and 14%, respectively, in developed and developing countries

Group of countries	Year for 7%	Year for 14%	Years to become an elderly society
Developed countries			
- France	1865	1980	115
- Sweden	1886	1971	85
- U.S.A.	1941	2013	72
- Italy	1924	1987	63
- Japan	1969	1994	26
Developing Countries			
- Korea	2000	2020	20
- Singapore	2000	2017	17
- Thailand	2010	2030	20
- China	2002	2027	25

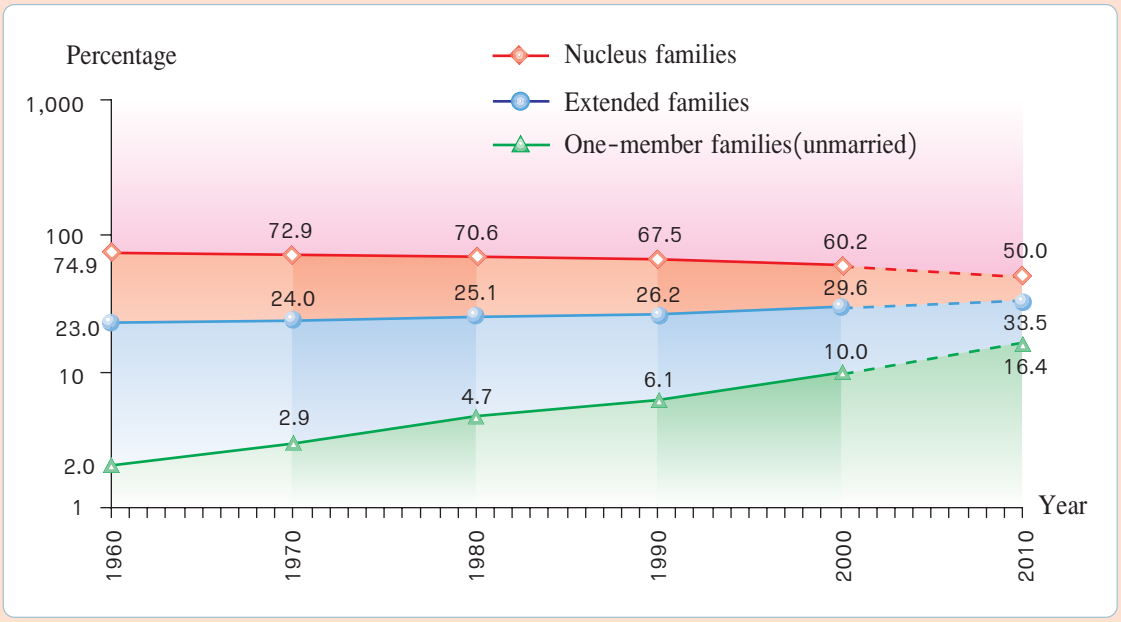
Source: World Population Prospects, The 2002 Revision Volume I: Comprehensive Table, United Nations. In Suwannee Khamman, "Last Chance for Thailand: Six Golden Years of Sustainable Development of Thai People", NESDB.

3.2 Thai Families

3.2.1 Family Structure

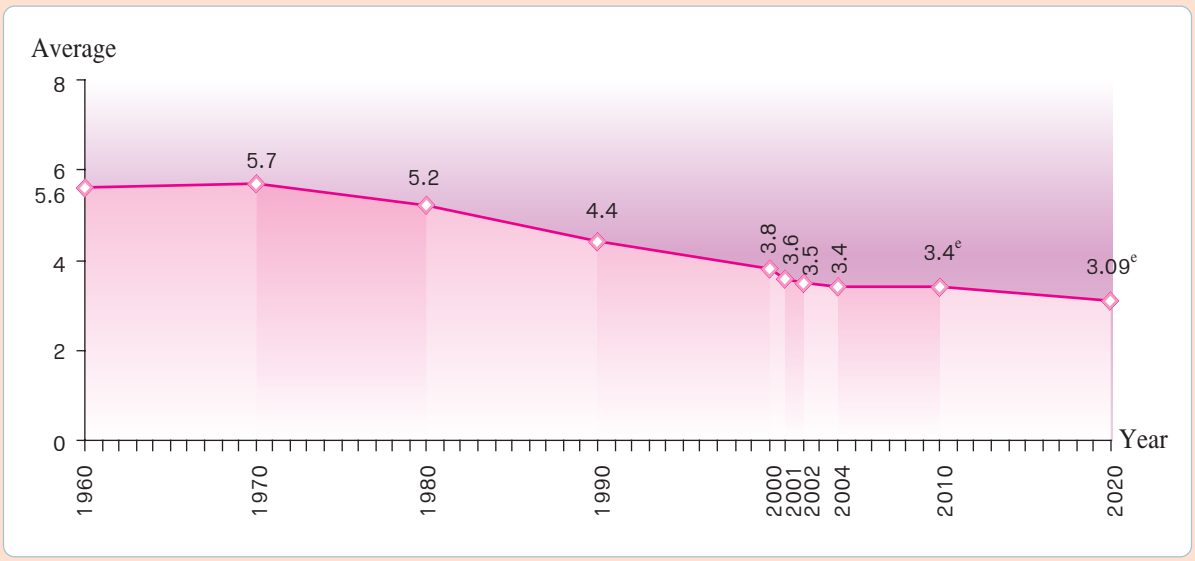
The family structure has become diverse and complex mostly being a nucleus family rather than extended family and there are more and more one-member families (Figure 4.16). The average family size has dropped to 3.4 persons in 2004 and expected to drop further to 3.09 persons in 2020 (Figure 4.17).

Figure 4.16 Proportions of families by type, 1960-2010



Source: Yothin Sawangdee, Change in Population Structure in Thai Households. Population and Development Bulletin, Vol. 25, No. 4, Apr.-May 2005.

Figure 4.17 Average family size and projections, Thailand, 1960-2020



Sources: (1) For 1960-2000, Population and Housing Censuses, National Statistical Office.

(2) For 2001-2004, Household Socio-Economic Surveys, National Statistical Office.

(3) For 2010-2020, Reports on Trends in Thailand's Economic and Social Status. Thailand Development Research Institute.

3.2.2 Family Relationship

The national development under the capitalism focussing on industrial development as well as consumerism and competition has changed the Thai family livelihood. More and more women have to work outside the home to financially support the family, resulting in family members having less time for living together and helping each other. A survey on parents in 1,066 families in Bangkok reveals that most parents work for 7-9 hours a day and 43% of the parents feel estranged from their children as they spend only 1 to 3 hours undertaking activities together.[3] Thus, there is a lack of family warmth and the family relationship has become weakened as evidenced by the rising rate of divorces, from 10.5% in 1994 to 25.1% in 2006. It is noteworthy that even though the population is growing, the number of marriages each year has fallen from 492,683 couples in 1994 to 355,460 couples in 2006 (Bureau of Registration Administration, Ministry of Interior). This is due to rising numbers of delayed marriages and cohabitation without wedding registration. Such a change in the family structure and relationship has an impact on the Thai health system as follows:

1) Rising numbers of abandoned children and elders have negatively affected their physical and mental health. The problems of divorce have caused broken homes resulting in more and more children and elders being abandoned particularly during the 1998/99 economic crisis and there was no declining trend after the crisis (Table 4.8). In fact, there are a lot more abandoned children and elders and they cannot have access to health care, which negatively affects their physical and mental health conditions.

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[3] Report from the Families Network Foundation and the Referendum Centre, Institute of Research and Development, Ramkhamhaeng University, 2003.

Table 4.8 Numbers and proportions of abandoned children and elders, 1993-2006

Year	Children abandoned		Elders abandoned	
	Number	Proportion per 100,000 children	Number	Proportion per 100,000 elders
1993	5,605	30.33	2,141	51.30
1994	5,748	31.19	2,200	49.11
1995	5,736	31.22	2,311	51.60
1996	5,896	32.25	2,504	53.50
1997	6,049	33.38	2,624	53.83
1998	6,341	35.15	2,619	51.47
1999	6,262	35.00	2,652	50.33
2000	6,096	34.42	2,896	53.41
2001	6,151	35.11	2,804	49.94
2002	6,110	35.24	2,884	49.33
2003	6,192	35.71	2,991	51.16
2004	6,035	35.43	2,860	49.75
2005	6,102	36.05	2,497	42.00
2006	4,366	25.92	1,390	22.78

Source: Ministry of Social Development and Human Security.

Note: Since 2005, the Ministry of Social Development and Human Security has transferred some welfare institutions to local administration organizations, resulting in difficulties in collecting such data.

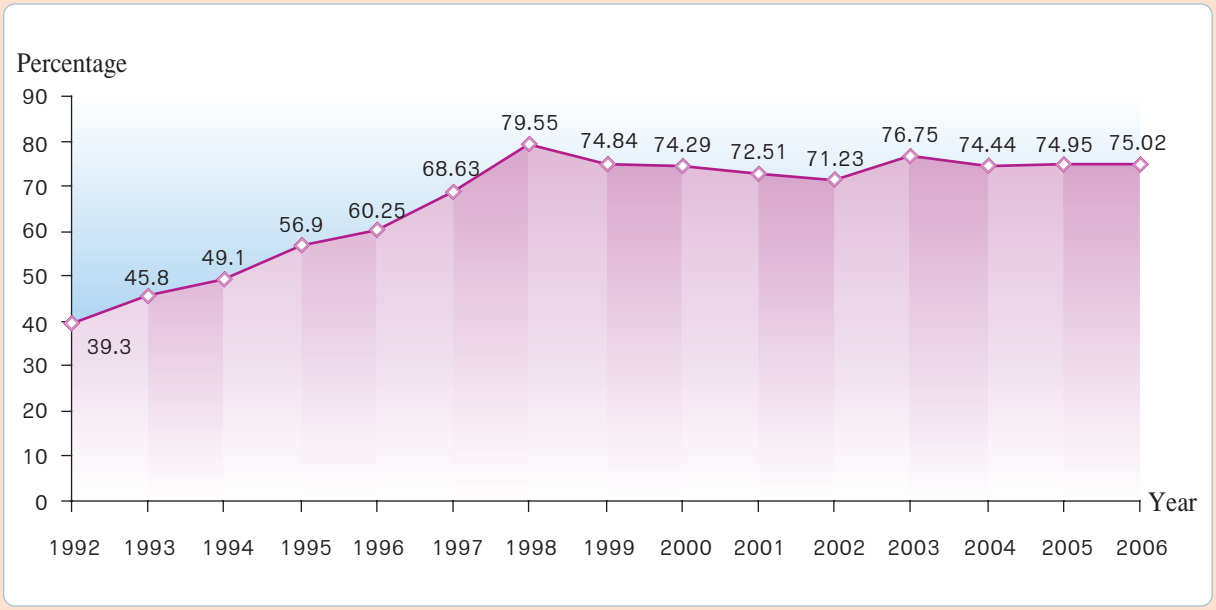
2) More family violence deteriorating women and children's physical and mental health status. As a lot of people cohabiting without marriage registration or traditional wedding, they are not prepared to live a marriage life, lacking family-life and problem-solving skills. Whenever a problem arises, more people tend to end up with physical or mental assaults and sexual abuse. A survey on 2,279 male and female householders in Bangkok, Suphan Buri, Chiang Mai, Nakhon Ratchasima and Nakhon Si Thammarat in 2004 revealed that as many as one-fifth of housewives (20.9%) were physically assaulted, and 8.7% of housewives were seriously assaulted (mentally abused and physically and sexually harassed). The impact was that most seriously assaulted women felt irritated, frustrated, depressed and frightened; some were physically injured. Interestingly, 6.5% of the women had suicidal ideation. For factors contributing to domestic violence, it was found that that almost half or 47.1% of the families with parents drinking alcohol would have domestic violence.

Therefore, the government should develop a medical service system to help more and more women and children who are domestically assaulted and carry out measures for effective campaigns in a continuous and serious manner for the families to stop drinking.

3.2.3 Child-Rearing Pattern in Family

The child-rearing pattern has also changed; parents do not take care of their children as they have no time. So more and more parents would take their children to be under the care of non-family members. A survey in 2002 on children and youths of the National Statistical Office revealed that among children aged 3-5 years 53.3% were reared at a nursery, a child development centre, or a school, and 28.6% by parents. And another survey conducted on 388 parents aged 21-40 years with children aged 2-12 years in Bangkok by Real Parenting in 2006 found similar results: 30.2% of parents raised children by themselves.[4] The results corresponded to the pre-elementary school attendance rate among children aged 3-5 years, rising steadily from 39.3% in 1992 to 75.0% in 2006 (Figure 4.18).

Figure 4.18 Rate of children aged 3-5 years attending pre-elementary school, 1992-2006



Source: Education Statistics in the Schooling System. Ministry of Education.

[4] Research and development report of Amarin Printing and Publishing Public Limited Company. Real Parenting Magazine, July 2006.

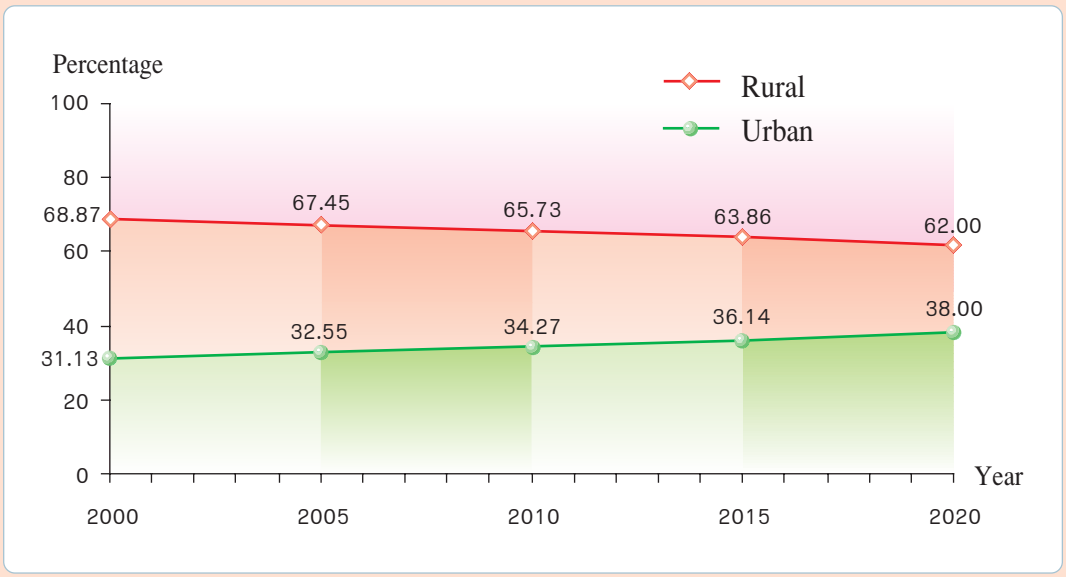
As most parents have no time to closely look after their children, they have to take children to the educational system with teachers taking care of them while parents are at work. Some have to leave their children at a child-care centre, which might be substandard; and some child caregivers have no spiritual linkages with the children, having an adverse effect on the level of development and intelligence of Thai children and youths. A cross-sectional study on 9,488 children aged 1-18 years in 2001, using a development screening test and an intelligence quotient test by age group, revealed that for children under 6 only 63% had normal and faster-than-normal development levels and most of children aged 6-18 had a rather low IQ (Chanpen Choprapawan, Holistic Child Development Research Project. A document distributed at the 10th Anniversary of Exhibition of the Thai Research Fund, 2003). That is why there are a lot of health problems such as homosexuality, HIV/AIDS, drug abuse in adolescents, and mental health.

3.3 Migration

3.3.1 Rural-to-Urban Migration

The national development with industrialization emphasis plays a major role in causing rural people to migrate to cities to seek jobs in the industrial and service sectors. The proportion of rural-to-urban migrants was 31.13% of all migrants in 2000; and it has been forecasted that, in 2020, 38% of the total population will reside in urban areas (Figure 4.19). Most of the migrants will move to Bangkok, followed by to Bangkok's vicinity, as well as to the eastern seaboard area.

Figure 4.19 Projection of urban and rural populations, Thailand, 2000-2020



Source: Population Projections, Thailand, 2000-2025, NESDB.

The 1997 economic crisis resulted in the shutdown or downsizing of a lot of business operations, leading to a reverse of labour migration from urban to rural domiciles, particularly to the Northeast and the North. In 1997, the migration of Thai population from urban to rural areas was as high as 37.2% of all migrants, while only 13.4% migrated from rural to urban areas. After the economic expansion in 2002, the proportion of urban-to-rural migration dropped to only 33.0% while the rural-to-urban migration rose to 19.2%. But in 2006, the urban-to-rural migration was as high as 35.6% while the rural-to-urban migration was only 14.4% (Table 4.9).

Table 4.9 Percentage of migrants by type of migration and current residential region, 1992-2006

Type of migration	Total	Current residential region				
		Bangkok	Central	North	Northeast	South
All migrants						
Urban to urban	100.0	100.0	100.0	100.0	100.0	100.0
Rural to urban	17.6	33.6	26.8	12.4	11.8	13.6
1992	15.5	NA	NA	NA	NA	NA
1994	15.0	78.4	9.8	10.0	6.9	14.4
1997	13.4	74.1	10.5	8.8	5.9	15.9
2002	19.2	67.0	21.1	14.1	9.6	18.6
2005	11.7	67.5	13.4	9.5	5.8	14.8
2006	14.4	64.9	18.2	10.7	6.3	15.2
Unknown[1] to urban	0.6	1.5	0.5	0.6	0.5	0.5
Rural to rural	29.7	-	31.2	28.8	26.9	43.5
Urban to rural						
1992	32.2	NA	NA	NA	NA	NA
1994	33.4	-	28.2	38.1	47.0	20.9
1997	37.2	-	32.0	39.6	55.5	20.3
2002	33.0	-	24.9	38.0	47.2	24.3
2005	39.1	-	24.6	42.0	55.5	23.7
2006	35.6	-	22.9	44.5	50.3	26.8
Unknown[1] to rural	2.1	-	0.4	3.0	4.2	0.4

Sources: Data for 1992, 1994, 1997, 2002, 2005 and 2006 were derived from the Reports on Surveys of Population Migration, 1992, 1994, 1997, 2002, 2005, and 2006. National Statistical Office.

Note: [1] Including immigrants from foreign countries.

Due to more rural-to-urban migration, the migrants have to change their rural lifestyles and adopt urban lifestyles. This has led to health problems in some workers who cannot properly adjust themselves to the changing conditions; such problems are mental disorders, peptic ulcer, hypertension, and certain diseases or conditions commonly found in urban slums, i.e. child malnutrition, diarrhoea and tuberculosis. In addition, most of the migrant workers working in factories are more likely to be exposed to occupational diseases related to industrial chemicals, such as cancer and chemical poisoning. A number of them have to live in an unhygienic environment and some of those who are involved in commercial sex are at increased risk of contracting and spreading HIV/AIDS.

The increasing rural-to-urban migration has created problems of mega-cities requiring a suitable urban development planning approach; and health services have to be provided to cover all target groups.

3.3.2 Transnational Labour Migration

At present, there is more transnational labour migration than in the past. More Thai workers tend to seek jobs overseas; the number of workers rose from 61,056 in 1990 to 202,296 in 1995, but dropped to only 160,846 in 2006 (Bureau of Overseas Workers Administration, Department of Employment). The number would be much greater if illegal workers were taken into account. Recently, they are more likely to go to work in Taiwan, Singapore, Malaysia, and the Middle East. Nevertheless, a lot of foreign workers have migrated to work in Thailand, both legally and illegally, especially low-wage labourers from neighbouring countries such as Myanmar, Laos, China and Cambodia. Since 2003, the government has allowed the registration of alien workers. In 2006, there were 705,293 registered foreign workers; 539,416 (76.5%) from Myanmar; 90,073 (12.8%) from Laos; and 75,804 (10.7%) from Cambodia. The provinces with the highest numbers of workers from Myanmar are Bangkok, Tak, Samut Sakhon, Chiang Mai, and Ranong, each having 20,000 to 90,000 workers (Department of Employment). The number of registered foreign workers has dropped to about one half and it is estimated that there are a lot of unregistered workers.

As Thailand has had more and more alien workers particularly along the borders, several infectious diseases are widespread such as malaria, diarrhoea, HIV/AIDS, poliomyelitis, and anthrax. Certain diseases that Thailand could once be able to control have re-emerged, such as filariasis; it was reported that 3% of Myanmar workers along the border were carriers of such a disease.

4. Quality of Life of Thai People

4.1 Consumption and Lifestyle Values

The influence of western culture has resulted in the deterioration of good Thai values such as giving more importance to materialism, imitating foreign-style consumption, neglecting Thainess, becoming extravagant and luxurious. Teenagers tend to have an attitude towards becoming rich fast,

lacking endurance, living a casual life, and lacking knowledge about changes. According to the 2003 child watch report of the Thai Research Fund, 60% of teenagers spent their time hanging out at shopping malls, going to night entertainment places, movies, owning a mobile phone, eating fast-food, surfing the Internet and playing games. As a result, they seemed to overspend in relation to their economic status; some consumed items non-beneficial to health and intelligence such as tobacco, alcohol and narcotic substances.

The media tends to play a more active role in shaping Thai people's lifestyle and leisure-time spending, particularly television and the Internet, while radio seems to be less significant in this regard (Table 4.10).

Table 4.10 Leisure-time spending of Thai people by administrative region, 2001 and 2004

Time spending category	Time spent by each person, hours/day					
	Municipal area		Non-municipal area		Whole country	
	2001	2004	2001	2004	2001	2004
- Watching TV or VDO	3.2	2.9	2.7	2.6	2.9	2.7
- Getting info from the Internet	2.0	2.0	1.7	1.8	1.9	1.9
- Going to sports, movies, music events	1.7	2.3	1.8	2.5	1.8	2.4
- Socializing with others	1.8	2.6	1.7	2.0	1.7	2.2
- Doing hobbies	1.6	1.9	1.5	1.9	1.6	1.9
- Playing sports	1.5	1.6	1.5	1.5	1.5	1.6
- Listening to music/radio	1.5	1.4	1.4	1.4	1.4	1.4

Source: Report on Survey of Leisure-Time Spending among People Aged 10 Years and Over, 2001 and 2004. National Statistical Office.

4.2 Beliefs and Culture

A lot of people tend to stay away from religious principles and pay less respect for Buddhist monks. A 2005 survey conducted by the National Statistical offer revealed that 43.5% of Thai people aged 15 years and over had never prayed, 54.9% never listened to a sermon or watched a Buddhist teaching (Dhamma) programme on television, even though as many as 65.7% still had faith in Buddhist monks when they met outside monasteries. Besides, a lot of them lack morality and tend to compete with, or took advantage of, each other or are more likely to become individualistic in trying to seek more political and financial powers. And unfortunately, the Thai culture relating to solicitude and respect for seniority tends to be diminishing to the level that a plan on conserving Thai culture has to be

developed. In addition, very little of certain local culture and wisdom has been transmitted to the new generation resulting in a lack of cultural preservation. Moreover, the new generation is less interested to learn, resulting in a lack of further development of local wisdom for widespread use, for example in the field of Thai herbal medicine.

4.3 Comparison of Quality of Life of Thai People and Those in Other Countries

The United Nation Development Programme (UNDP) has developed a Human Development Index (HDI), a quality of life measurement, based on social factors (education, life expectancy at birth and economic factors - GDP per capita). In 1990, the quality of life of Thai people stood at the "moderate" level, ranking 74th (HDI = 0.715) among 173 countries worldwide, and fourth among ASEAN member states after Singapore, Brunei and Malaysia. In 1995, the HDI ranking of Thailand rapidly jumped from 74th in 1990 to 59th among 174 nations, and stayed at the "high" level, ranking third (HDI = 0.838) among ASEAN nations, after Singapore and Brunei (Table 4.22). The major factor contributing to such a higher ranking is its high level of economic growth.

After the economic crisis, the quality of life of Thai people worsened between 1998 and 2004; Thailand's HDI dropped from "high" to "moderate" level (HDI = 0.745-0.784) and the ranking fell from 59th to 66th to 76th among 174 countries and 4th among ten ASEAN member states, after Singapore, Brunei and Malaysia (Table 4.11).

Table 4.11 Human Development indexs for Thailand and some other countries, 1990-2004

Group and Country	1990 Actual rank	1990 In-group rank	1990 HDI value	Group and Country	1995 Actual rank	1995 In-group rank	1995 HDI value	Group and Country	1998 Actual rank	1998 In-group rank	1998 HDI value	Group and Country	1999 Actual rank	1999 In-group rank	1999 HDI value	Group and Country	2001 Actual rank	2001 In-group rank	2001 HDI value	Group and Country	2003 Actual rank	2003 In-group rank	2003 HDI value	Group and Country	2004 Actual rank	2004 In-group rank	2004 HDI value
WHO/SEAR				**WHO/SEAR**				**WHO/SEAR**				**WHO/SEAR**				**WHO/SEAR**				**WHO/SEAR**				**WHO/SEAR**			
Thailand	74	1	0.715	Thailand	59	1	0.838	Thailand	74	1	0.768	Thailand	66	1	0.757	Thailand	74	1	0.768	Thailand	73	1	0.778	Thailand	74	1	0.784
Sri Lanka	86	2	0.663	Sri Lanka	90	2	0.716	Sri Lanka	99	3	0.730	Sri Lanka	81	3	0.735	Sri Lanka	99	3	0.730	Sri Lanka	93	2	0.751	Sri Lanka	93	2	0.755
Maldives	112	4	0.497	Maldives	95	3	0.683	Maldives	86	2	0.751	Maldives	77	2	0.739	Maldives	86	2	0.751	Maldives	96	3	0.745	Maldives	98	3	0.739
Indonesia	108	3	0.515	Indonesia	96	4	0.679	Indonesia	112	4	0.682	Indonesia	102	4	0.677	Indonesia	112	4	0.682	Indonesia	110	4	0.697	Indonesia	108	4	0.711
Myanmar	123	5	0.390	Myanmar	131	5	0.481	Myanmar	131	6	0.549	Myanmar	118	6	0.551	Myanmar	131	6	0.549	Myanmar	129	6	0.578	Myanmar	130	6	0.581
India	134	6	0.309	India	139	6	0.451	India	127	5	0.590	India	115	5	0.571	India	127	5	0.590	India	127	5	0.602	India	126	5	0.611
Bhutan	159	9	0.150	Bhutan	155	9	0.347	Bhutan	136	7	0.511	Bhutan	130	8	0.471	Bhutan	136	7	0.511	Bhutan	134	7	0.536	Bhutan	135	7	0.538
Nepal	152	8	0.170	Nepal	152	8	0.351	Nepal	143	9	0.499	Nepal	129	7	0.48	Nepal	143	9	0.499	Nepal	136	8	0.526	Nepal	138	9	0.527
Bangladesh	147	7	0.189	Bangladesh	147	7	0.371	Bangladesh	139	8	0.502	Bangladesh	132	9	0.47	Bangladesh	139	8	0.502	Bangladesh	139	9	0.520	Bangladesh	137	8	0.530
DPR Korea	-	-	-	DPR Korea	-	-	-	DPR Korea	-	-	-	DPR Korea	-	-	-	DPR Korea	-	-	-	DPR Korea	-	-	-	DPR Korea	-	-	-
ASEAN				**ASEAN**				**ASEAN**				**ASEAN**				**ASEAN**				**ASEAN**				**ASEAN**			
Singapore	43	1	0.849	Singapore	28	1	0.896	Singapore	24	1	0.881	Singapore	26	1	0.876	Singapore	28	1	0.884	Singapore	25	1	0.907	Singapore	25	1	0.916
Brunei	44	2	0.847	Brunei	35	2	0.880	Brunei	32	2	0.848	Brunei	32	2	0.857	Brunei	31	2	0.872	Brunei	33	2	0.866	Brunei	34	2	0.871
Malaysia	57	3	0.790	Malaysia	60	4	0.834	Malaysia	61	3	0.772	Malaysia	56	3	0.774	Malaysia	58	3	0.790	Malaysia	61	3	0.796	Malaysia	61	3	0.805
Thailand	74	4	0.715	Thailand	59	3	0.838	Thailand	74	4	0.768	Thailand	66	4	0.757	Thailand	74	4	0.768	Thailand	73	4	0.778	Thailand	74	4	0.784
Philippines	92	5	0.603	Philippines	98	6	0.677	Philippines	77	5	0.744	Philippines	70	5	0.749	Philippines	85	5	0.751	Philippines	84	5	0.758	Philippines	84	5	0.763
Vietnam	115	7	0.472	Vietnam	122	7	0.560	Vietnam	108	6	0.671	Vietnam	101	6	0.682	Vietnam	109	6	0.688	Vietnam	108	6	0.704	Vietnam	109	7	0.709
Indonesia	108	6	0.515	Indonesia	96	5	0.679	Indonesia	109	7	0.670	Indonesia	102	7	0.677	Indonesia	112	7	0.682	Indonesia	110	7	0.697	Indonesia	108	6	0.711
Myanmar	123	8	0.390	Myanmar	131	8	0.481	Myanmar	125	8	0.585	Myanmar	118	8	0.551	Myanmar	131	9	0.549	Myanmar	129	8	0.578	Myanmar	130	9	0.581
Cambodia	148	10	0.186	Cambodia	140	10	0.422	Cambodia	136	9	0.512	Cambodia	121	9	0.541	Cambodia	130	8	0.556	Cambodia	130	9	0.571	Cambodia	129	8	0.583
Laos	141	9	0.246	Laos	136	9	0.465	Laos	140	10	0.484	Laos	131	10	0.476	Laos	135	10	0.525	Laos	133	10	0.545	Laos	133	10	0.553
World (top ten)				**World (top ten)**				**World (top ten)**				**World (top ten)**				**World (top ten)**				**World (top ten)**				**World (top ten)**			
Japan	1	1	0.983	Canada	1	1	0.960	Canada	1	1	0.935	Norway	1	1	0.939	Norway	1	1	0.944	Norway	1	1	0.963	Norway	1	1	0.965
Canada	2	2	0.982	France	2	2	0.946	Norway	2	2	0.934	Australia	2	2	0.936	Iceland	2	2	0.942	Iceland	2	2	0.956	Iceland	2	2	0.960
Norway	3	3	0.979	Norway	3	3	0.943	U.S.A.	3	3	0.929	Canada	3	3	0.936	Sweden	3	3	0.941	Australia	3	3	0.955	Australia	3	3	0.957
Switzerland	4	4	0.978	U.S.A.	4	4	0.943	Australia	4	4	0.929	Sweden	4	4	0.936	Australia	4	4	0.939	Luxembourg	4	4	0.949	Ireland	4	4	0.956
Sweden	5	5	0.977	Iceland	5	5	0.942	Iceland	5	5	0.927	Belgium	5	5	0.935	Netherlands	5	5	0.938	Cannada	5	5	0.949	Sweden	5	5	0.951
U.S.A.	6	6	0.976	Finland	6	6	0.942	Sweden	6	6	0.926	U.S.A.	6	6	0.934	Belgium	6	6	0.937	Sweden	6	6	0.949	Cannada	6	6	0.950
Australia	7	7	0.972	Netherlands	7	7	0.941	Belgium	7	7	0.925	Iceland	7	7	0.932	U.S.A.	7	7	0.937	Switzerland	7	7	0.947	Japan	7	7	0.949
France	8	8	0.971	Japan	8	8	0.940	Netherlands	8	8	0.925	Netherlands	8	8	0.931	Cannada	8	8	0.937	Ireland	8	8	0.946	U.S.A.	8	8	0.948
Netherlands	9	9	0.970	New Zealand	9	9	0.939	Japan	9	9	0.924	Japan	9	9	0.928	Japan	9	9	0.932	Belgium	9	9	0.945	Switzerland	9	9	0.947
U.K.	10	10	0.964	Sweden	10	10	0.936	U.K.	10	10	0.918	Finland	10	10	0.925	New Zeland	10	10	0.932	U.S.A.	10	10	0.944	Netherlands	10	10	0.947

Sources : Human Development Report, 1993-2006

5. Situation and Trends of Environment and Livelihood

5.1 Infrastructure

5.1.1 Transportation

1) Land Transportation

In 2005, Thailand had a road network of approximately 182,848.7 km, of which 64,156.2 km was under the highway network and 118,692.6 km under the rural road network as well as a network of 1,889 km of four-lane roads leading to all regions of the country. It is considered that the road network has covered all localities nationwide.

In Bangkok, there are expressways of 175.9 km and another 146.3 km under construction expected to be completed by 2009. Two lines of electric rail mass transit system have been operational and another four lines are expected to be completed in the near future to help ease the traffic problems in Bangkok.

Besides, there is a railway system of 5,359.6 km.

2) Waterway Transportation

In 2006, Thailand had seven principal harbours and 11 ports with an adequate potential for waterway transport of industrial products. However, some improvements in the infrastructure of the ports may be needed to cope with future economic expansion.

3) Air Transportation

At present, Thailand has five international airports: Bangkok, Chiang Mai, Hat Yai, Phuket and Chiang Rai. The Bangkok International Airport is capable of handling 10,143 international passengers per hour and 8,685 domestic passengers per hour during rush hours, or 36.5 million passengers per year, which is quite crowded. However, the government opened Suvarnnabhumi Airport in September 2006 as a modern air transport hub in this region, with a capacity to handle 30 million passengers in the first year and up to 100 million passengers when the entire airport is completed. This is considered that Thailand is well-prepared in terms of air transport infrastructure.

5.1.2 Telecommunications

Thailand's telecommunications have rapidly expanded, especially during the past decade. In 2006, there were 7,073,450 fixed-line telephone numbers and 40,052,612 mobile phones nationwide; a rate of 112.6 fixed-line phones per 1,000 population and 637.5 mobile phones per 1,000 population, and the rate of computer possession was 66 sets per 1,000 population (Table 4.12). The access to the Internet has increased from 30 persons in 1991 to 8.46 million persons in 2006, a use rate of 13.5% or 14,226.2 per 100,000 population. The number of Internet users in Bangkok is highest among all regions nationwide (Table 4.13). But in comparison with other countries, such as Singapore and Malaysia, Thailand's telecommunication infrastructure and Internet uses are lower (Tables 4.12 and 4.14).

Table 4.12 Telecommunication infrastructure in some countries, 1996-2004

Country	No. of fixed-line telephones per 1,000 population					No. of mobile phones per 1,000 population					No. of computers per 1,000 population				
	1996	1997	1999	2002	2004	1996	1997	1999	2002	2004	1996	1997	1999	2002	2004
Singapore	498.4	529.0	484.1	472	432	147.5	229	381.45	761.1	894.7	233	316	390.9	596	601
Malaysia	192.5	192.5	219.3	206	174	88.4	101.9	145.05	372.9	571.2	53	65	94.5	137	216
Thailand	78.6	85.5	101.9	99*	112.6**	27.8	34.5	138.6	346.8*	637.5**	22	28	40.4	43	66
Philippines	30.7	42.7	37.9	46	42	12.9	17.7	36.97	189.1	398.5	11	13	19.5	25	42
Indonesia	17.8	24.7	29.1	34	45	3.0	5.4	9.83	48.5	134.8	6	9	13.4	13	19
Sweden	684.1	685.4	694.5	750	715	281.8	358.1	590.08	900.3	1,084.7	286	353	510.4	687	776
U.S.A.	636.6	625.6	709.8	701	606	161.9	205.6	314.87	496.9	621.1	403	450	538.9	739	778
Norway	564.9	609.1	711.9	754	472	296.1	383.0	627.03	787.0	1,036.0	307	363	506.8	657	743

Source: IMD. The World Competitiveness Yearbook, 1999 and 2006.

Notes: 1. * Data for 2003.

2. ** Data for 2006.

3. Data on computer use per 1,000 population are data for 2005.

Table 4.13 Internet access by administrative jurisdiction and region Thailand, 2001, 2003, 2004, 2005 and 2006

Administrative jurisdiction and region	2001[1]		2003[2]		2004[2]		2005[2]		2006[2]	
	No. of Internet users	Use rate per 100,000 population	No. of Internet users	Use rate per 100,000 population	No. of Internet users	Use rate per 100,000 population	No. of Internet users	Use rate per 100,000 population	No. of Internet users	Use rate per 100,000 population
Whole Kingdom	3,536,001	6,163.7	6,031,300	10,434.1	6,971,528	11,891.8	7,084,201	11,990.6	8,465,823	14,226.2
- Municipal areas	2,341,433	12,361.5	3,807,900	19,897.3	4,155,737	21,427.9	3,807,055	21,230.5	4,242,901	23,370.9
- Non-municipal areas	1,194,568	3,108.7	2,223,400	5,750.2	2,815,791	7,177.6	3,277,146	7,964.0	4,222,921	10,211.6
Bangkok Metropolis	1,234,542	16,774.1	2,005,700	26,862.3	1,999,943	26,585.4	1,630,752	25,895.8	1,774,375	27,961.7
Central Plains	830,389	6,322.6	1,336,300	10,077.3	1,517,514	11,212.0	1,706,396	11,857.5	2,028,575	13,906.6
North	516,114	4,988.6	1,003,200	9,682.4	1,210,949	11,423.6	1,285,577	11,902.9	1,581,412	14,656.7
Northeast	559,193	2,937.4	1,070,100	5,586.5	1,485,725	7,687.2	1,660,707	8,411.9	2,103,780	10,599.5
South	395,763	5,283.3	616,000	8,147.4	757,396	9,914.3	800,769	10,200.5	977,680	12,316.2
Internet use rate (%)	5.7		9.5		11.1		11.4		13.5	

Sources: - Survey on Household's Usage of Information Technology Equipment and Appliances, 2001 and 2003, National Statistical Office.
- Survey on Information and Communication Technology (Households), Quarter 1, 2004. National Statistical Office.
- Survey on Information and Communication Technology (Households), Quarter 3, 2005. National Statistical Office.
- Survey on Information and Communication Technology (Households), 2006. National Statistical Office.

Notes: [1] Population aged 11 years and older.
[2] Population aged 6 years and older.

Table 4.14 Comparison of the Internet usage in Asia-Pacific countries, 1998, 2000, 2002, and 2005

Country	No. of Internet users (millions)				Internet use rate (percent)			
	1998	2000	2002	2005	1998	2000	2002	2005
Australia (2006)	4.0	8.42	10.63	14.66	22.2	43.9	54.4	71.8
Singapore	0.55	1.85	2.31	2.42	18.3	44.6	51.9	53.9
Hong Kong	1.1	3.46	4.35	4.88	18.3	48.7	59.6	70.3
New Zealand	0.55	1.49	2.06	3.20	15.3	39.0	52.7	78.4
Taiwan	3.0	6.4	11.6*	13.21	14.3	28.8	51.8	59.9
Japan	14.0	47.08	56	86.3	10.8	37.2	44.1	67.7
Korea	2.0	16.4	25.6	33.9	4.6	34.5	53.8	69.4
Thailand (2006)	0.67	2.3	4.8	8.46	1.1	3.7	7.7	13.5
Malaysia	0.4	3.7	5.7*	11.02	2.0	16.9	25.1	41.2
Philippines	0.2	2.0	4.5	7.82	0.3	2.4	7.7	8.7
China (2006)	1.5	22.5	45.8	123.0	0.1	1.7	3.5	9.3
Indonesia	0.1	1.45	4.4	16.0	0.1	0.6	1.9	7.3
India	0.4	5.0	7.0*	60.6	< 0.1	0.5	0.6	4.6
Vietnam (2006)	0.15	0.04	0.4*	13.10	< 0.1	< 0.1	0.5	15.4

Sources: - Internet Users Worldwide, 2001 and 2002.
- The World Fact Book, 2006-2007.

Notes: 1. Internet use rate $= \frac{\text{No. of Internet users}}{\text{Total population}} \times 100$

2. * Data for 2001.

Besides, Thailand has got its own Thaicom satellites, cable TV systems, and free TV systems, making the communication system more expansive. However, the access to various media is still inequitable, but the trends are getting better (Table 4.15).

Table 4.15 Percentage of households with radios, TV sets and telephones, 1990-2004

Area	Radios					TV sets					Telephones				
	1990	1994	1998	2002	2004	1990	1994	1998	2002	2004	1990	1994	1998	2002	2004
Whole Kingdom	72.6	70.8	75.5	68.9	63.6	61.3	80.3	88.7	91.6	93.0	5.8	10.1	21.9	29.2	23.9
Bangkok and peripheral provinces	79.4	80.3	86.6	80.8	78.3	80.7	83.8	90.4	92.5	93.5	24.5	33.1	59.2	59.6	50.7
Municipal areas	81.2	81.1	85.5	76.2	68.6	84.6	89.3	92.9	94.0	95.2	16.5	29.4	49.8	40.8	39.7
Sanitary districts	76.0	74.6	78.5	-	-	70.8	86.3	90.5	-	-	4.2	12.2	28.7	-	-
Outside municipal and sanitary districts	69.8	67.0	71.4	64.1	58.5	53.6	77.6	87.6	90.6	92.2	0.9	2.4	9.3	11.0	12.9

Source: Reports on Household Socio-Economic Surveys, 1990, 1994, 1998, 2002, and 2004, NSO.

Note: In 2000, all sanitary districts were upgraded to municipalities; thus, there have been no data for sanitary districts since then.

The expansion of communication networks in Thailand is related to global development and part of evolution in the "globalization" or borderless world era.

In addition, advertisement business expansion through various media is annually worth tens of billions of baht. This business sector has strongly affected Thai people's consumption behaviours. New sales patterns have been created, especially **direct sales**, through various media, which are more difficult to control than those through shopping outlets.

People's behaviours in accepting information have also shifted from radio to television sources. The 2003 media survey conducted by NSO revealed that there were as many as 54.7 million TV viewers (94.5%), compared with only 24.8 million radio listeners (24.8%). Urban people were more interested in information about economic, social, political and health conditions than, previously, in entertainment programmes. In particular, new programme patterns such as live phone-in and discourse programmes, resulting in the emergence of new communities using media as a means for interaction, for example, Jo So 100 community, TV game show communities, and various other radio programme communities.

5.1.3 Public Utilities

1) Electricity. In 2005, approximately 99.0% (68,375 villages) of all villages across the country had a moderate or good level of electricity supply. Only 721 villages (1.0%) had not yet had access to the electricity system (Table 4.16).

Table 4.16 Villages with electricity, 1992-2005

Year	No. of Villages with available information	villages with electricity				Villages without electricity	
		Good level[1]		Moderate level[2]			
		No.	Percent	No.	Percent	No.	Percent
1992	59,354	54,719	92.2	2,466	4.2	2,169	3.6
1994	59,059	55,590	94.1	1,675	2.8	1,794	3.0
1996	60,215	57,523	95.5	1,198	2.0	1,494	2.5
1999	63,230	56,483	89.3	5,678	9.0	1,069	1.7
2001	66,193	60,128	90.8	4,698	7.1	1,367	2.1
2003	68,496	60,613	88.5	7,096	10.4	787	1.1
2005	69,096	64,807	93.8	3,568	5.2	721	1.0

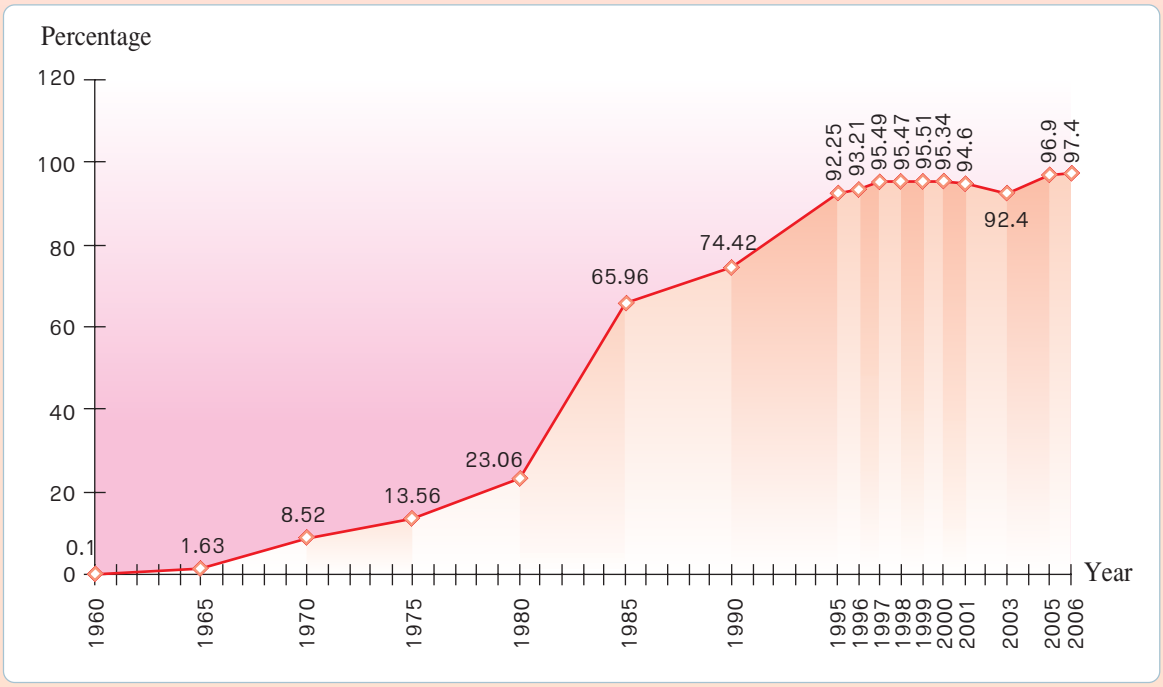
Source: Thai Rural Villages, 1992-2005, from Ko Cho Cho 2 Kho Database. Information Centre for Rural Development, Ministry of Interior.

Notes: [1] Good level: more than half of households in the village have electricity.

[2] Moderate level: less than half of households in the village have electricity.

2) Drinking Water. In 2006, 97.4% of households had adequate and safe drinking water (Figure 4.20) and 97.5% of them had adequate water for domestic use all year round.

Figure 4.20 Proportion of households with adequate and drinking water, 1960-2006



Sources: Data for 1960-2000 were derived from the Department of Health, MoPH.

Data for 2001, 2003, and 2005 were derived from Thai Rural Villages in 2001, 2003, and 2005. Information Centre for Rural Development, Ministry of Interior.

Data for 2006 were derived from the 2006 Basic Minimum Needs Report, Information Centre for Rural Development, Ministry of Interior.

Such changes in infrastructure have an impact on Thai people's health as follows:

(1) More problems of traffic accidents and higher number of vehicles as a result of transportation expansion with more roads and vehicles (see Chapter 5, section 2.6 on accident-related injuries).

(2) Disparities in access to health information as the Thai communication infrastructure is a lot inferior to those in other countries; certain segments of the population may not have access to health information, particularly those living in rural areas, compared with those in urban areas.

5.2 Biodiversity

Thailand's biodiversity is abundant in terms of genetics, species and ecological systems with about 15,000 species of plants and 25,000 species of animals, 7,800 species of bacteria, fungi and other microorganisms, and 15 eco-systems (National Resources and Environment Capital for Sustainable Development in the 10th National Development Plan, NESDB). So they have exploited lavishly without effective management and control measures. As a result, natural resources and biodiversity

have been deteriorated rapidly resulting in the distinction of as many as 14 animal species and the near-distinction of 684 animal/plant species, as well as in the deterioration of some eco-systems.

Thailand became the 188th member state of the Convention on Biological Diversity on 29 January 2004; so other member countries can now have access to the genetic resources of Thailand. Some countries have tried to take away some animal and plant species of Thailand's nature for research purposes, which may lead to the registration of intellectual property right. Thus, the government has to develop strong measures for protecting the country's interests in the long run. In addition, a good management system has to be established to link with a foreign country that owns the technology and Thailand that owns natural resources and local wisdom so as to safeguard the nation's benefits to the maximum extent possible.

Besides, the consumption of health products has been on a rising trend including the use of medicinal plants for health care and medicine production. Thus, this is a good opportunity to raise the level of knowledge of health care using local wisdom and creating value-added herbal products. The government has to promote and support research and development on Thai herbal medicine to raise the quality up to the international standards.

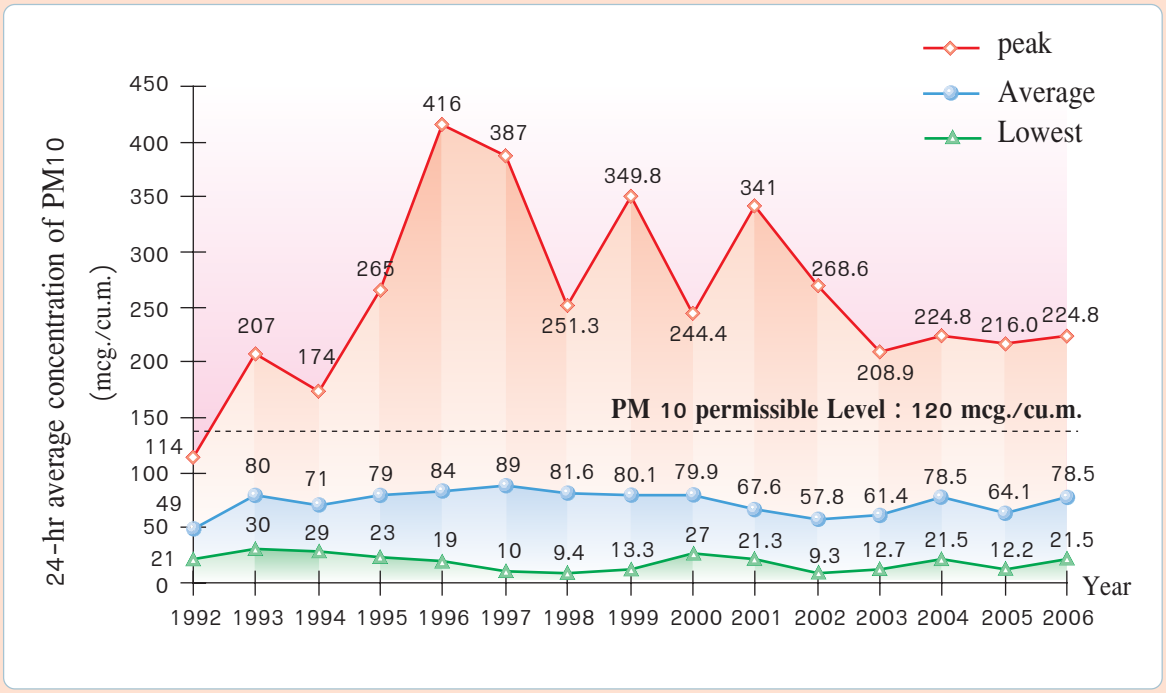
5.3 The Environment

5.3.1 Air Pollution

According to the Air Quality Monitoring programme conducted in Bangkok Metropolis and its vicinity as well as in other major cities, it has been found that dust is still a major problem, and the levels of carbon monoxide and ozone are occasionally higher than the maximum permissible levels. The levels of other pollutants such as lead and sulfur dioxide are within the allowable limits.

As the major cause of air pollution problem in Bangkok, dust or suspended particulate matter is particularly dispersed every where and near the roads; the problem seems to be more serious at places near the sources of pollution, i.e. motor vehicles and construction sites. In 2006, it was found that the 24-hr total average amounts of dust particles on the roadsides in Bangkok had been declining since 1997 due to decreased industrial and construction activities resulting from the economic crisis. During 1992-2006, the 24-hr average concentrations of particulate matter of less than 10 microns (PM10) on the roadsides of Bangkok were higher than the maximum permissible level at all monitoring stations (Figure 4.21), while the levels of carbon monoxide, sulfur dioxide and lead were found to be lower than the maximum allowable levels.

Figure 4.21 24-hr average concentration of <10-micron particulate matter on roadsides in Bangkok, 1992-2006



Source: Pollution Control Department, Ministry of Natural Resources and Environment.

In other provincial cities, the Pollution Control Department conducted the air quality measurement in 36 stations covering 20 provinces nationwide in 2006 and found that the 24-hr average peaks of PM10 detected were higher than the maximum permissible level in almost all areas (maximum permissible concentration for 24-hr average PM10 is 120 mcg./cu.m.). The highest PM10 pollution was detected at 298.2 mcg./cu.m. in Saraburi province, but the concentrations of nitrogen oxide, sulfur dioxide and carbon monoxide were still within the maximum permissible levels.

The major air pollutant in the area of Mae Moh, Lampang Province, is sulfur dioxide from lignite combustion in the electricity generation process. During 1996-1998, the number of times of the 1-hr average sulfur dioxide concentration found over the maximum permissible level declined from 51 to 16. In particular, during 1999-2006 no air samples were found to have the 1-hr average sulfur dioxide concentration over the permissible level, as the sources of pollutant had been under control. However, the PM10 pollution was still a problem, at 252.6 mcg./cu.m. in 2006.

The deteriorating quality of air has negatively affected the people's health as a result of inhaling PM10 dust. A study in six major cities in Thailand (Bangkok, Chiang Mai, Nakhon Sawan,

Khon Kaen, Nakhon Ratchasima and Songkhla) reveals that annually there are 2,330 premature deaths and 9,626 cases of bronchitis, with a health care cost of 28,009.6 million baht, or 2,000 baht/case/year; Bangkok having the highest proportion of healthcare cost, 65.0% of all costs for the six cities.[5]

5.3.2 Water Polution

At present, the quality of various waterways tends to be deteriorating, but the water is still usable for agricultural and industrial purposes, except for the lower stretches of the Chao Phraya and Tha Chin Rivers in the Central Plains, where the water is heavily polluted and the rivers can be used only for transportation purposes.

A report on water quality surveillance on 49 waterways and four stagnant water reservoirs (Kwan Phayao, Boraphet, Nong Han and Songkhla Lakes) in 1992-2006 revealed that overall the water quality was better than before; the proportion of samples with good water quality rose from 6.25% in 1992 to 36.67% in 2002, but fell slightly to 21.0% in 2006; the proportion of those with satisfactory quality rose from 18.75% in 1992 to 53.0% in 2006 - the water from such sources can be used for human consumption after proper treatment and disinfection (Table 4.17).

For the Chao Phraya River, during 1992-2005, the water quality was at the good and satisfactory levels, rising from 11.68% in 1994 to 61.0% in 2005, but in 2006 the proportion of samples with poor and very poor quality rose to 71.0% (Table 4.17). However, the problems encountered were the higher contents of coliform and faecal coliform bacteria, high levels of pollution in terms of organic chemical substances, and low levels of dissolved oxygen.

[5] Quoted in Thailand Health Profile 2002-2004, pp. 109-110.

Table 4.17 Percentage of water samples with various water-quality levels from the Chao Phraya and other rivers, 1992-2006

Year	Quality of other rivers				Quality of Chao Phraya river			
	Good	Satisfactory	Poor	Very poor	Good	Satisfactory	Poor	Very poor
1992	6.25	18.75	75.00	0.00	0.00	5.88	17.65	76.47
1993	8.33	19.44	61.11	11.11	0.00	12.50	50.00	37.50
1994	4.35	32.61	60.87	2.17	3.65	8.03	33.58	54.74
1995	10.87	21.74	56.52	10.87	4.17	15.28	36.11	44.44
1996	9.43	30.19	56.60	3.77	0.00	15.28	31.94	52.78
1997	20.75	35.85	37.74	5.66	3.70	16.67	31.48	48.15
1998	30.19	49.06	15.09	5.66	19.44	26.39	27.78	26.39
1999	20.75	35.85	39.62	3.77	12.04	24.07	34.26	29.63
2000	27.78	38.89	27.78	5.56	15.63	31.25	31.25	21.88
2001	18.52	40.74	33.33	7.41	31.94	22.22	26.39	19.44
2002	36.67	20.00	40.00	3.33	8.33	31.94	27.78	31.94
2003	32.0	31.00	31.0	6.0	25.0	32.0	13.0	30.0
2004	23.0	51.0	21.0	5.0	6.0	17.0	6.8	10.0
2005	17.0	49.0	29.0	5.0	35.0	26.0	35.0	4.0
2006	21.0	53.0	23.0	3.0	3.0	26.0	48.0	23.0

Source: Pollution Control Department, Ministry of Natural Resources and Environment.

Water pollution is detrimental to the public health and results in high healthcare costs. It was estimated that in 1999 the economic cost for the care of patients with diarrhoea, dysentery and typhoid was US$ 23 million or 0.02% GDP; US$ 7.5 million being the hospitalization cost (Table 4.18) including US$ 4.96 million for outpatient care and US$ 2.64 million for inpatient care (Table 4.19).

Table 4.18 Economic and health costs due to diarrhoea, dysentery and typhoid, 1999

Type of cost	Costs in million US dollars			
	Diarrhoea	Typhoid	Dysentery	Total
Total hospital costs	6.97	0.17	0.46	7.59
Loss of wages due to illness	0.45	0.06	0.03	0.53
Loss of wages due to premature deaths	14.34	0.06	0.54	14.94
Total	**21.75**	**0.28**	**1.03**	**23.06**

Source: Siripen Supakankunti, Pirus Pradithavani, and Tanawat Likitkererat. Valuing Health and Economic Costs of Water Pollution in Thailand, May 2001. (Draft in Thailand Environment Monitor: Water Resource Quality. The World Bank, 2001).

Table 4.19 Costs of patient hospitalization, 1999

Disease	Patient hospitalization costs in million US dollars				
	Outpatient, total	Outpatient, per case	Inpatient, total	Inpatient, per case	Inpatient & outpatient, total
Diarrhoea	4.69	4.5	2.28	24.0	6.97
Typhoid	0.03	9.7	0.14	32.5	0.17
Dysentery	0.24	4.5	0.22	31.5	0.46
Total	**4.96**		**2.64**		**7.59**

Source: Siripen Supakankunti, Pirus Pradithavani, and Tanawat Likitkererat. Valuing Health and Economic Costs of Water Pollution in Thailand, May 2001. (Draft in Thailand Environment Monitor: Water Resource Quality. The World Bank, 2001).

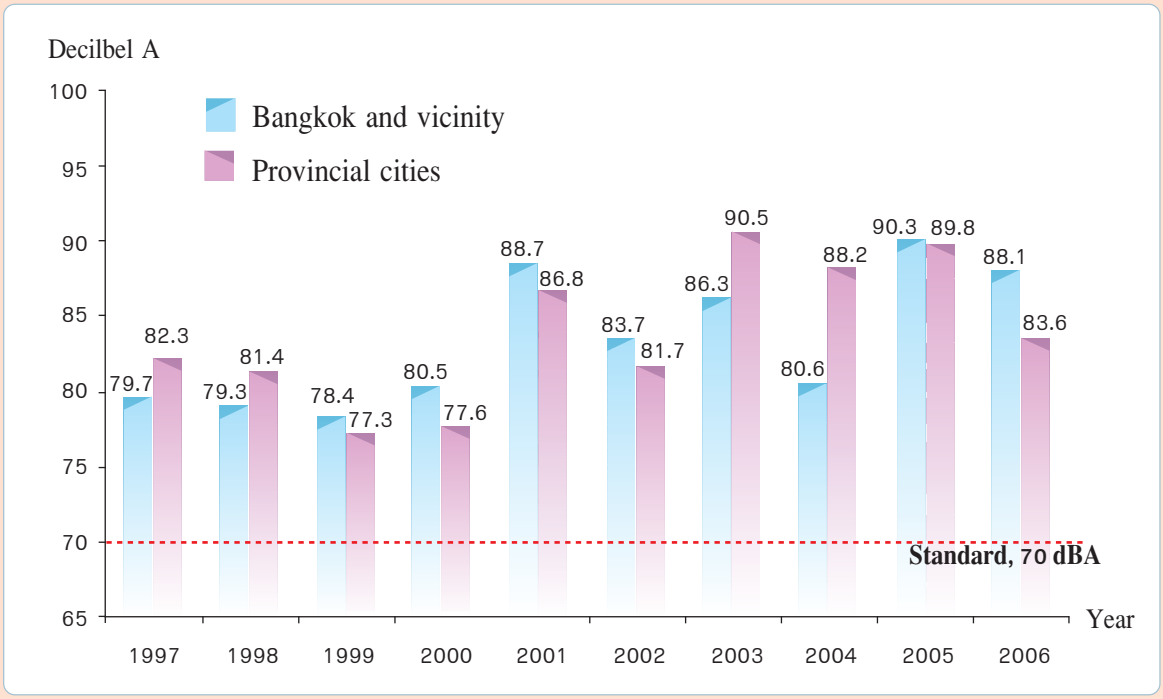
5.3.3 Noise Pollution

The most serious source of noise pollution is road traffic especially on major roads in Bangkok, its vicinity and other major cities with traffic congestions. A report on noise level monitoring in 1997-2006 of the Pollution Control Department revealed that, at 17 air quality and noise monitoring stations in 11 provinces, almost all stations had 24-hr average continuous equivalent noise levels (Leq)[6] higher than the maximum permissible level (Figure 4.22).

[6] Noise level in Leq 24-hr is an average value of continuous noise or sound energy for a 24-hr period.

The rising noise pollution has caused hearing loss among the people. A study conducted by Andrew W. Smith[7] reveals that the noise level exceeding 80 decibels is dangerous to hearing ability and Schuttz (1978)[8] indicates that the noise exceeding 70 decibels will cause severe annoyance in 22% to 95% of the people.

Figure 4.22 Noise levels (Leq 24-hr) on roadsides in Bangkok, its vicinity and major provincial cities, 1997-2006



Source: Pollution Control Department, Ministry of Natural Resources and Environment.

5.3.4 Pollution from Hazardous Substances

Most hazardous substances are imported for use in the industrial and agricultural sectors. In 1994-2003, the proportions of chemical imports for industrial and agricultural uses were 60.3% and 38.5%, respectively; only 1.2% were for household use. In 2006, the amounts of chemical imports for both sectors were 7.4 million tons and 3.7 million tons, respectively (Table 4.20). While there is a lack of good transportation, warehousing and use systems, such chemicals are released to the environment causing pollution and detrimental health effects. The Thailand Environment Monitor for 2004 revealed that there were high levels of cadmium contamination exceeding the maximum permissible level in soil and agricultural products along Mae Tao Creek in Mae Sot district of Tak province. The examination of 9,000 local residents in that area revealed that 13.9% of them had a rather

[7] Quoted in Thailand Health Profile, 1999-2000, pp. 113-114.

[8] Quoted in Thailand Health Profile, 1999-2000, pp. 113-114.

high level of urinary cadmium content, having a high risk of chronic kidney disease related to cadmium poisoning. Besides, there have been a number of frequent and serious chemical accidents, 23 reported in 2006 with a total of 215 injuries and 3 deaths.

Moreover, the health impact of increased chemical use in the industrial and agricultural sectors includes pesticide poisoning mostly among farmers (see Chapter 5, occupational and environmental diseases). In the future, it is likely that there will be more patients with chemical poisoning as the toxic substance will be accumulated in the body of affected people; their symptoms will occur in the long run such as abnormalities in the central nervous, immunology and gastrointestinal systems and cancer.

Table 4.20 Amounts of imported chemical substances, 1994-2006

Chemical substances	Imported amount (tons)											
	1994	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1. For industrial use	4,874,115	5,020,611	4,822,042	4,602,197	5,006,919	6,031,927	5,547,467	6,356,872	6,785,320	6,699,363	7,118,639	7,458,183
• Inorganic chemical	839,228	966,346	1,050,327	836,241	1,080,753	1,777,212	1,200,203	1,331,981	1,527,059	1,623,335	1,786,195	1,797,061
• Organic chemical	2,152,448	2,391,862	2,159,141	2,275,283	2,280,271	2,362,797	2,313,657	2,640,466	2,866,077	3,163,521	3,422,214	3,473,087
• Colouring agents	111,468	99,302	100,151	68,971	87,427	107,855	104,806	125,674	137,679	164,592	155,033	157,177
• Paints and vanishes	47,112	29,628	37,624	21,051	24,866	32,018	133,258	37,672	87,632	64,803	44,873	43,097
• Anti-knock additives	42,843	49,016	44,878	33,058	36,785	34,066	35,157	35,984	38,608	45,335	44,814	42,709
• Plastic pallets	692,895	656,835	622,876	571,376	712,857	787,681	744,459	875,167	947,317	1,054,543	1,071,108	1,072,864
• Films, foils and plastic tapes	54,564	58,399	64,307	51,666	91,401	82,987	80,682	91,422	104,951	113,774	123,589	133,590
• Other chemicals	933,557	769,223	742,738	744,551	692,559	847,311	935,245	1,218,506	1,075,997	469,460	470,799	738,698
2. For agricultural use	3,047,576	3,188,235	3,033,190	2,905,710	3,610,583	3,378,739	3,510,837	3,736,767	4,787,320	3,993,174	3,666,432	3,782,886
• Pesticides	29,718	32,248	42,240	32,197	48,995	50,272	54,428	67,414	69,732	99,841	78,654	101,901
• Fertilizers	3,017,858	3,155,987	2,990,950	2,873,513	3,561,588	3,328,467	3,456,409	3,669,353	4,717,588	3,893,333	3,587,778	3,680,985
3. For household use	90,562	84,515	95,225	68,475	89,595	116,333	139,078	132,490	159,910	n.a	n.a	n.a
• Medicines	7,886	9,732	10,592	6,929	10,574	13,726	13,240	19,239	19,958	n.a	n.a	n.a
• Vitamins and hormones	3,282	3,752	3,763	2,938	3,844	5,223	5,397	5,590	5,783	5,111	6,100	6,526
• Other medical and pharmceutical products	15,747	4,734	5,018	3,253	4,235	6,557	18,043	6,069	6,517	n.a	n.a	n.a
• Soap and detergents	48,934	54,308	55,700	43,010	55,563	67,381	80,376	75,163	94,774	14,895	18,146	30,381
• Cosmetics	14,713	11,989	20,152	12,345	15,379	23,446	22,022	26,429	32,878	22,937	23,952	25,673
Total imports	8,012,253	8,293,361	7,950,457	7,576,382	8,707,097	9,526,999	9,197,382	10,226,129	11,732,550	n.a	n.a	n.a
Increase from previous year (Percent)	n.a	+3.5	- 8.9	- 4.7	+14.9	+9.4	-3.4	+11.2	+14.8	n.a	n.a	n.a

Source: Department of International Trade Negotiations, Ministry of Commerce.

Note: n.a.= Not Available

For 2001, the data were adjusted, according to the most recent report of the Department of Internatinnal Trade Negotiations, Ministry of Commerce.

Since 2004, the data have been adjusted and imported goods under "other chemical products"regrouped as soap and detergents and cosmetics, resulting in data changes.

Since 2004, no data are sailable for imports in the categories of medicines, medical products and other pharmaceutical due different counting units.

5.3.5 Pollution from Hazardous Wastes

The amount of hazardous wastes in Thailand increased from 0.9 million tons in 1990 to 1.8 million tons in 2006; of this amount, 1.4 million tons (77.8%) were released from the industrial sector and 0.4 million tons (22.2%) from residential communities. The amount of such industrial wastes is on the rise, whereas the capacity for hazardous waste treatment according to the sanitation principles has not been efficiently in place. In 2005, only 20% of hazardous wastes were sent for proper disposal, resulting in large amounts of such waste being illegally dumped into the environment with detrimental effects to the public health.

5.4 Environmental Sanitation

5.4.1 Housing Sanitaion

The number of Thailand's slum communities has risen from 1,587 in 1994 to 1,802 in 1997 and 2,696 in 2006, an increase of 13.5% and 49.6%, respectively. In 2006, there were 439,235 slum households, of which 34.1% (919 slums) were located in Bangkok Metropolis, 21.4% (577 slums) in Bangkok's vicinity, and 44.5% (1200 slums) in provincial areas. The number of low-income communities in all regions of Thailand has increased significantly except for Bangkok (Housing Information Division, National Housing Authority).

Regarding rural households, according to the 2006 survey on basic minimum needs (BMN), more households have had a better environmental condition. The number of durable households has risen from 90.6% in 1993 to 98.5% in 2006. The number of households with hygienic conditions has risen from 69.4% in 1992 to 89.3% in 2001, and to 97.3% in 2006.

The rapid increase in the number of slums has resulted in health-related environmental problems such as a lack of safe drinking water. Coupled with unhygienic behaviours, the incidence of diarrhoeal disease has been rising over the past 20 years, particularly among children under 5 years of age, from 3,031.3 per 100,000 population in 1984 to 10,476.55 per 100,000 population in 2006.

5.4.2 Safety in the Workplaces

In 2006, 36.2 million Thais or 55.6% of the nation's population were in the workforce and employed, including 13.7 million (37.8%) in the formal sector and 22.5 million (61.2%) in the non-formal sector.

In the formal sector, most of the workers in business workplaces were employees with only elementary schooling. So they could not protect or take care of themselves from occupational illnesses. The occupational injuries had a tendency to rise from 2% 1976 to 4.7% in 1993; the rate remained steady in the period after 1994 and then dropped to only 2.4% in 2006. But the number of deaths due to occupational injuries dropped steadily from 44.9 per 100,000 workers in 1979 to 11.19

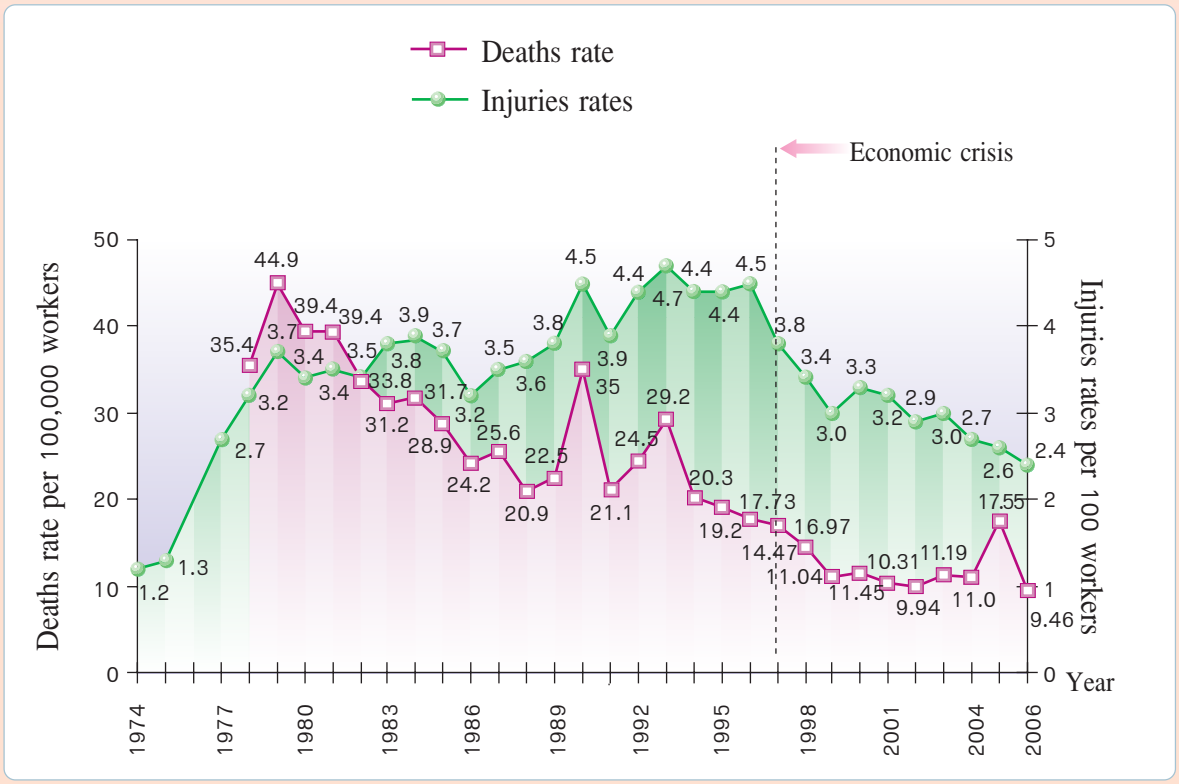
per 100,000 workers in 2003, but rose to 17.55 in 2005 (Table 4.21) and dropped to 9.46 in 2006 (Figure 4.23). The rate is considered to be high, compared with those in developed/industrialized countries such as England with a mortality of 1.3 per 100,000 workers and Finland with 4 per 100,000 workers (Chuchai Supawongse, Environmental Situation and Impact on Health in Thailand, 1996).

Table 4.21 Number and rate of occupational deaths and injuries in the workplaces, 1974-2006

Year	No. of workers covered	Workers injured		Deaths		Disabilities		Loss of some organs		Temporary absenteeism	
		No.	Percent	No.	Rate Per 100,000	No.	Rate Per 100,000	No.	Rate Per 100,000	No.	Rate Per 100,000
1974	272,848	3,200	1.2	95	34.8	-	-	401	146.9	2,704	991.0
1975	349,814	4,605	1.3	← Data not available →							
1976	496,700	10,136	2.0	← Data not available →							
1977	570,000	15,335	2.7	← Data not available →							
1978	590,640	19,134	3.2	209	35.4	9	1.5	1,119	18.9	17,797	3,013.2
1979	659,041	24,370	3.7	296	44.9	8	1.2	1,104	16.8	22,962	3,484.1
1980	745,513	25,334	3.4	294	39.4	13	1.7	1,191	16.0	23,836	3,197.3
1981	797,270	27,723	3.5	314	39.4	10	1.3	1,275	16.0	26,124	3,276.7
1982	824,565	28,323	3.4	279	33.8	14	1.7	1,085	131.2	26,945	3,267.8
1983	873,059	33,213	3.8	272	31.2	5	0.6	514	62.3	32,422	3,713.6
1984	994,190	39,182	3.9	315	31.7	20	2.0	1,305	131.3	37,542	3,776.1
1985	1,091,318	39,119	3.7	315	28.9	18	1.7	1,159	106.2	37,627	3,447.8
1986	1,179,812	37,445	3.2	285	24.2	10	0.8	978	82.9	36,172	3,065.9
1987	1,232,555	42,811	3.5	315	25.6	10	0.8	1,158	93.9	41,328	3,353.0
1988	1,346,203	48,912	3.6	282	20.9	7	0.5	1,179	87.6	47,444	3,524.3
1989	1,661,651	62,766	3.8	373	22.5	15	0.9	1,582	95.2	60,796	3,658.8
1990	1,826,995	80,065	4.5	640	35.0	30	1.6	1,509	82.6	77,886	4,263.1
1991	2,751,868	102,273	3.9	581	21.1	9	0.3	2,141	77.8	99,542	3,617.3
1992	3,020,415	131,800	4.4	740	24.5	15	0.5	2,010	66.5	129,035	4,272.1
1993	3,355,805	156,543	4.7	980	29.2	10	0.3	5,436	161.9	150,122	4,473.5
1994	4,248,414	186,394	4.4	863	20.3	23	0.5	4,548	107.0	180,960	4,259.5
1995	4,903,736	216,525	4.4	940	19.2	17	0.4	5,469	111.5	209,909	4,280.6
1996	5,425,422	245,616	4.5	962	17.73	18	0.3	5,042	92.93	239,574	4,416.1
1997	6,084,822	230,376	3.8	1,033	16.97	29	0.4	5,272	86.64	224,042	3,681.9
1998	5,418,182	186,445	3.4	784	14.47	19	0.3	3,692	68.14	181,956	3,358.1
1999	5,679,567	172,087	3.0	627	11.04	14	0.2	3,437	60.51	168,009	2,958.1
2000	5,417,041	179,566	3.3	620	11.45	16	0.3	3,516	64.91	175,414	3,238.2
2001	5,884,652	189,621	3.2	607	10.31	20	0.3	3,510	59.65	185,484	3,152.0
2002	6,541,105	190,979	2.9	650	9.94	14	0.2	3,424	52.54	186,891	2,857.2
2003	7,033,907	210,673	3.0	787	11.19	17	0.2	3,821	54.32	206,048	2,929.35
2004	7,831,463	215,534	2.7	861	11.00	23	0.3	3,775	48.20	210,875	2,692.66
2005	8,225,477	214,235	2.6	1,444	17.55	19	0.2	3,425	41.64	209,347	2,545.10
2006	8,537,801	204,257	2.4	808	9.46	21	0.2	3,413	39.97	200,015	2,342.70

Source: Workers' Compensation Office, Ministry of Labour.

Figure 4.23 Rates of occupational deaths and injuries in the workplaces, 1974-2006



Source: Ministry of Labour.

For non-formal labour force, most of the workers are in the agricultural sector, self-employed, home-based workers, etc., who are not taken care of by the government as expected. Among home-based workers, the problems of unsafe working conditions increased from 2.8% in 1999 to 33.2% in 2002 and 39.9% in 2005, most of which were related to eye-sight, working postures and dust inhalation (Work Surveys, 1999, 2002, and 2005, National Statistical Office).

Although at present the government has expanded the universal healthcare scheme to about 94% of the population, efforts should be rapidly undertaken to ensure that the uncovered sector of the population have access to the state health services.

5.4.3 Food and Water Supply

1) Food Safety

At present, people's food consumption culture has shifted from eating home-cooked food to eating out and eating pre-cooked or semi-cooked or ready-to-eat food. Cooking food rapidly in large quantities may involve unhygienic practices and unsanitary conditions of food establishments. The 2005 survey of 1,035 pre-cooked food samples, undertaken by the Department of Health, from food-stalls and supermarkets in 15 provinces revealed that 44.2 % of the foods were contaminated with

bacteria and did not meet the food standards. The 2006 study on the situation of food establishments revealed that only 60.2% (37,393 out of 62,140) of the restaurants and 65.2% (56,767 out of 87,075) of food-stalls met the "Clean Food Good Taste" criteria, and 59.6% (928 out of 1,557) of fresh markets met the healthy market standards.

Besides, it has been found that more chemicals are used in cooking, some without proper technical information, some even use toxic chemicals as evidenced in the toxic chemical residues being found in some fresh vegetables and fruits and fresh food over the permissible levels. The 2003-2006 food safety project report revealed that before the implementation of the project a lot of chemical residues were found in the food, but after the campaign against the use of 6 chemicals in food, it was found that, among fresh food, the contamination levels have decreased. However, high levels are noticed for meat-reddening substance and insecticides, especially in meats and agricultural products (Table 4.22).

Table 4.22 Chemical contamination of fresh foods in fresh markets nationwide under the Food Safety Project, 2003-2006

Chemical substance	Before project implementation		Project launch (2003)			2004			2006		
	Food samples		Food samples			Food samples			Food samples		
				Contaminated			Contaminated			Contaminated	
	Tested	Contaminated	Tested	No.	%	Tested	No.	%	Tested	No.	%
1. Meat-reddening	2,132	96.0	1,111	115	10.4	8,515	731	8.5	2,997	65	2.2
2. Bleaching agent	3,256	10.0	4,812	83	1.7	46,785	935	2.0	14,338	2	0.01
3. Fungicides	2,099	7.2	4,315	206	4.8	45,614	1,260	2.8	15,378	88	0.6
4. Borax	3,184	42.0	6,695	46	0.7	64,138	538	0.8	31,287	160	0.5
5. Formalin	2,471	10.0	3,800	46	1.2	38,342	735	1.9	13,743	206	1.5
6. Insecticides	2,268	20.3	8,437	508	6.0	80,540	4,383	5.4	82,049	2,580	3.1

Source: Food Safety Operations Centre, Ministry of Public Health.

However, despite the MoPH's stringent monitoring and control measures, the problems of chemical residues are still widespread even in fruits for domestic consumption and for export, 4.0% to 8.2% were found to be contaminated. And in imported fruits and vegetables, 2.9% of them were found to have residues higher than the permissible levels (Table 4.23).

Table 4.23 Monitoring of chemical safety in fresh vegetables and fruits, 2004-2006

Type	Chemical tested for	No. of samples tested	Results	Agency responsible	Year of study
1) Vegetables in Bangkok	Insecticides	903	74 samples (8.2%) exceeding MPL	FDA	2005
2) Vegetables and fruits of vendors	Pesticides, borax, anti-fungals, whitening agent synthetic coloring agents	2,048	677 samples (33.1%) with residues, 40 samples (5.9%) exceeding MPL	National Brain Bank Institute	2005
3) Imported vegetables and fruits	Pesticides	1,746	376 samples (21.5%) with residues, 11 samples (2.9%) exceeding MPL	DOA	2004-2006
4) Twelve vegetables and fruits for export	Pesticides	79,343	18,407 samples (23.2%) with residues, 737 samples (4.0%) exceeding MPL	DOA	2003-2006

Sources: - Food Safety Operations Centre, MoPH.
- Department of Agriculture (DOA), Ministry of Agriculture and Cooperatives.

Note: MPL = maximum permissible level

Such situation had a negative impact on consumer's health. Consuming unsafe unhygienic food resulted in a rising incidence of food poisoning from 4.35 per 100,000 population in 1976 to 216.26 per 100,000 population in 2006. With a high level accumulated toxic chemicals in the body, there will be an increased risk of cancer, mutation and infant deformity.

2) Water Supply Safety

Based on the Survey of Water Supply Situations of Thai People during 1986-2001, most Thais preferred rainwater for drinking, followed by artesian-well water and tap water. And in 2005, a similar preference was also found for rain water but followed by bottled water, which will play a more dominant role in the future, and tap water. Almost half of urban residents preferred bottled water, followed by tap water, whereas half of rural residents preferred rainwater, followed by bottled water (Table 4.24).

Table 4.24 Percentage of drinking water sources of Thai people by residential area, 1986-2005

Source of drinking water*	1986	1995			2000			2001			2005		
	Whole country	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
No. of surveyed households	3,181	809	3,260	4,069	5,291,871	10,645,933	15,937,804	27,183	143,904	171,087	50,000	32,000	82,000
Bottled water	n.a	23.4	8.2	11.2	40.6	9.2	19.5	35.5	9.7	13.7	48.8	20.0	29.0
Tap water	15.8	27.6	9.4	13.0	36.4	16.8	23.2	26.1	16.1	17.7	36.0	15.3	21.7
Rainwater	39.2	42.2	52.2	50.2	16.1	51.0	39.6	27.5	51.3	47.6	10.7	49.6	37.4
Artesian wells/ Private wells	26.2	27.0	52.5	47.4	6.7	21.9	16.9	9.7	21.8	19.9	3.7	14.2	11.0
Artesian wells/ Public wells													
Natural water sources	19.0	0.9	2.7	2.3	0.2	1.1	0.8	0.2	0.6	0.5	0.1	0.4	0.2

Sources: 1. Data for 1986 and 1995 were derived from Reports on the 3rd and 4th National Nutrition Surveys. Department of Health, MoPH.
2. Data for 2000 were derived from the Population and Household Census. National Statistical Office.
3. Data for 2001 were derived from the Provincial Health Status Survey, 2001. Bureau of Policy and Strategy, MoPH.
4. Data for 2005 were derived from the report on Population Change Survey, 2005-2006. National Statistical Office.

Note: * More than one answer can be made.

With regard to the quality of drinking water in Thailand, the survey conducted by the Department of Health, MoPH, during 1995-2005, revealed that most water samples did not meet the drinking water standards, except for those of the Metropolitan Waterworks Authority, about 70% of which met the standard. This is mainly because of contamination with bacteria and chemicals such as cadmium, iron, lead and manganese, including unacceptable physical quality, i.e. turbidity and colour levels being higher than maximum allowable standards (Table 4.25).

Regarding the quality of bottled water, according to a survey conducted by the Food and Drug Administration and some Provincial Public Health Offices during 1995-2006, 71.7% of the water samples tested met the drinking water standards; no differences in terms of contamination were found among the water with and without FDA-licence logo. It was also found that only 57.3% of ice-cube samples tested met the standard (Table 4.24).

Besides, the report on domestic water quality surveillance of the Department of Health on water at restaurants, food-stalls, households and schools reveals that as high as 65% to 93% of water samples do not meet the drinking water standards (Table 4.26).

With this kind of problem, the people who use such unsafe/substandard water will be at risk of gastrointestinal diseases such as diarrhoea, dystery, etc.

Table 4.25 Quality of water for domestic use in Thailand, 1995-2006

Water type	1995		1996		1997		1998		1999		2000		2001		2002		2004		2005		2006	
	Samples tested	Samples meeting standard	Samples tested	Samples meeting standard	Samples tested	Samples meeting standard	Samples tested	Samples meeting standard	Samples tested	Samples meeting standard	Samples tested	Samples meeting standard	Samples tested	Samples meeting standard	Samples tested	Samples meeting standard	Samples tested	Samples meeting standard	Samples tested	Samples meeting standard	Samples tested	Samples meeting standard
Tap water, MWA	45	38 (84.4)	27	NA	75	56 (74.7)	118	81 (68.6)	81	70 (86.4)	-	-			-	-	-	-	-	-	-	-
Tap water, PWA	129	95 (73.6)	547	276 (50.4)	1,470	713 (48.5)	1,568	1,397 (89.1)	532	294 (55.3)					120	92 (76.7)	90	70 (77.8)	230	180 (80.4)	24	11 (45.8)
Tap water, municipality waterworks	8	3 (37.5)	68	10 (14.7)	68	-	51	18 (35.3)	161	89 (55.3)	900	442 (49.1)	570	504 (88.4)	203	171 (84.2)						
Tap water, sanitary district waterworks	43	22 (51.2)	327	90 (27.5)	496	232 (46.8)	370	164 (44.3)	51	18 (35.3)					-	-	-	-	-	-	-	-
Tap water, village waterworks	209	102 (48.8)	1,683	399 (23.7)	465	108 (23.2)	3,925	1,103 (28.1)	5,041	2,039 (40.4)	4,246	1,507 (35.5)	2,673	2,297 (85.9)	1,318	760 (57.7)	-	-	-	-	22	1 (4.5)
Shallow-well water	n.a.	n.a.	365	37 (10.1)	222	28 (12.6)	191	78 (40.8)	125	54 (43.2)	26	7 (26.9)	-	-	-	-	-	-	-	-	-	-
Artesian-well water	65	27 (41.5)	438	377 (86.1)	355	15 (4.2)	258	62 (24.0)	277	112 (40.4)	280	102 (36.4)	-	-	174	50 (28.7)	46	22 (47.8)	54	11 (20.4)	6	-
Rainwater	65	23 (35.4)	495	98 (19.8)	121	6 (5.0)	298	104 (34.9)	90	27 (30.0)	69	19 (27.5)	-	-	-	-	30	4 (13.3)	-	-	15	2 (13.3)
Bottled water	1,462	968 (66.2)	407	286 (70.3)	3,225	2,837 (88.0)	4,496	3,167 (70.4)	3,766	2,329 (61.8)	1,033	788 (76.3)	3,551	2,383 (67.1)	2,996	2,121 (70.8)	2,065	1,543 (74.7)	1,113	926 (83.2)	466	381 (81.7)
Ice cubes	32	9 (28.1)	42	30 (71.4)	187	170 (90.9)	401	203 (50.6)	335	174 (51.9)	285	138 (48.4)	299	156 (52.2)	273	170 (62.3)	380	248 (65.3)	218	121 (48.8)	129	54 (41.9)

Sources: Department of Health, MoPH.
Planning and Technical Administration Division and Food Control Division, FDA, MoPH.

Notes:
1. The figures in ( ) are percentages.
2. For 2006, results form a study of the Department of Health.
3. MWA=Metropolitan Waterworks Authority; PWA=Provincal Waterworks Authority.

Table 4.26 Monitoring of quality of water for domestic use, 2004

Type of water	Analysis type	Samples analyzed	Results = Percentage and no. of samples (in parentheses) and standard meeting	Agency responsible	Year of analysis
1. Drinking water in 950-ml, sealed bottles, and water provided to customers free of charge at restaurants and food-stalls	Chemical, physical, and bacterial	233	6.9% (16) meeting standards 93.1% (217) sub-standard 84.5% (197) with bacterial contamination	DOH	2004
2. Drinking water in 950-ml, sealed bottle, and 20-litre tap water, rainwater, artesian-well water and shallow-well water in households	Chemical, physical, and bacterial	121	14.9% (18) meeting standards 85.1% (103) sub-standard 71.1% (86) with bacterial contamination	DOH	2004
3. Tap water and drinking water in 20-litre sealed bottles in schools in Bangkok	Chemical, physical, and bacterial	44	84.1% (37) meeting standards 15.9% (7) sub-standard, all with bacterial contamination	DOH	2004
4. Tap water, asterian-well water, shallow-well water rainwater and drinking water in 20-litre sealed bottles in schools in provincial areas	Chemical, physical, and bacterial	294	34.7% (102) meeting standards 65.3% (192) sub-standard, all with bacterial contamination	DOH	2004

Sources: - Quality of Water Supply at Restaurants, Foodstalls, and Households, Department of Health, 2004.

- Situation of Water Supply Management and Quality in Schools, Department of Health, 2004.

5.4.4 Solid Waste and Sewage

In 2006, there were an estimated 14.59 million tons of solid wastes nationwide, of which about 3.06 million tons (21.0%) were generated in Bangkok, 4.71 million tons (32.3%) in municipal areas, and 6.82 million tons (46.7%) in non-municipal/sanitary district areas. Between 1992 and 2006, the total amount of solid wastes increased on average by 2.1% each year, mostly in Bangkok Metropolis and municipalities nationwide. Since 2001 the amount of solid wastes in non-municipal

areas has been slightly higher than that in municipal areas (Table 4.27). Solid waste disposal capacity is still limited; the Bangkok Metropolitan Administration is able to collect almost all of its solid wastes, but municipalities and non-municipal areas can collect only half of their wastes. Such conditions have an impact on the quality of life of provincial residents as they are offended by the putrid smell of such wastes; and a lot of such residents have health problems.

Table 4.27 Amount of solid wastes, 1992-2006

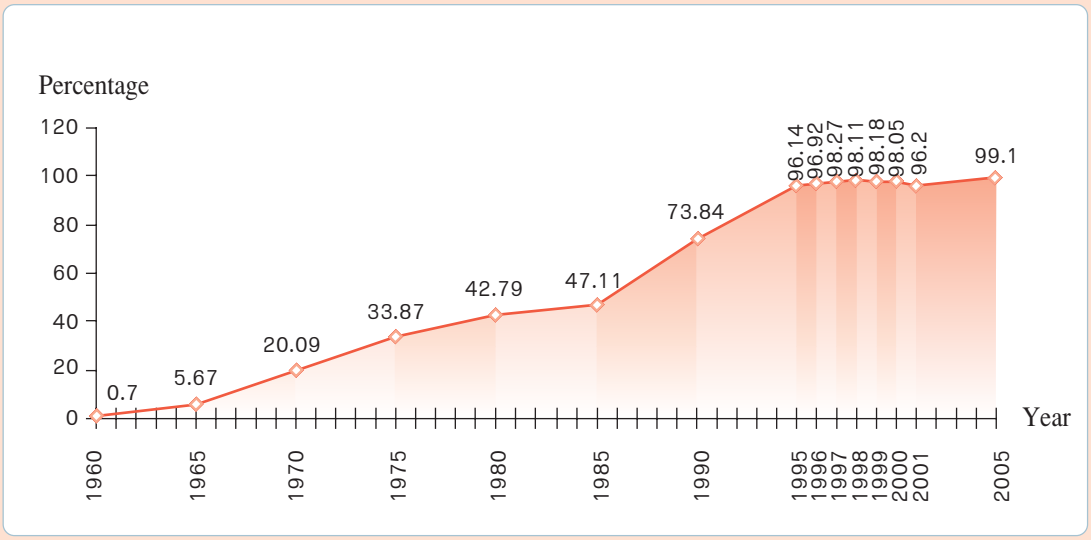
Area / Year	Bangkok		Municipal areas including Pattaya City		Sanitary districts		Outside municipal/sanitary district areas		Total	
	Amount (million tons)	Change (percent)	Amount (million tons)	Change (percent)	Amount (million tons)	Change (percent)	Amount (million tons)	Change (percent)	Amount (million tons)	Change (percent)
1992	2.19	-	1.16	-	1.62	-	5.81	-	10.78	-
1993	2.57	+ 17.3	1.25	+ 7.7	1.51	- 6.8	5.85	+ 0.7	11.18	+ 3.7
1994	2.56	- 0.4	2.05	+ 64.0	1.53	+ 1.3	5.91	+ 1.0	12.05	+ 7.8
1995	2.63	+ 2.7	2.30	+ 12.2	1.69	+ 10.5	5.96	+ 0.8	12.58	+ 4.4
1996	2.95	+ 12.2	2.43	+ 5.6	1.78	+ 5.3	5.97	+ 0.2	13.13	+ 4.4
1997	3.26	+ 10.5	3.0	+ 23.4	1.75	- 1.7	5.5	- 7.9	13.51	+ 2.9
1998	3.10	- 4.9	2.71	- 9.7	1.74	- 0.6	6.04	+ 9.8	13.59	+ 0.6
1999	3.28	+ 5.8	4.50	+ 66.0	-	-	6.04	-	13.82	+ 1.7
2000	3.33	+ 1.5	4.3	- 4.44	-	-	6.3	+ 4.3	13.93	+ 0.8
2001	3.40	+2.1	4.34	+0.9	-	-	6.36	+1.0	14.10	+1.2
2002	3.51	+3.2	4.37	+0.7	-	-	6.43	+1.1	14.31	+1.5
2003	3.41	-2.8	4.42	+1.1	-	-	6.50	+1.1	14.33	+0.1
2004	3.41	-	4.56	+3.2	-	-	6.60	+1.5	14.57	+1.7
2005	3.04	-10.8	4.61	+1.1	-	-	6.67	+1.1	14.32	-1.7
2006	3.06	+0.6	4.71	+2.2	-	-	6.82	+2.2	14.59	+1.9

Source: Waste & Hazardous Substance Management Bureau, Pollution Control Department.

Note: In 1999, all sanitary districts were upgraded to municipalities; since then only the figures for municipal areas appear.

Regarding human waste or night soil from urban households, problems are found to be related to its unsanitary transportation and disposal. In 2006, 99.1% of rural households had sanitary latrines as shown in Figure 4.24. Nationwide, 61.3% (46 provinces) of all 75 provinces had 100% of their households with sanitary latrines (Department of Health, 1999). However, a survey on latrine use of Thai people in 2001 revealed that 97.9% of them regularly used a sanitary latrine while at home; but when using public toilets, only 47.1% had a hygienic behaviour (Table 4.28).

Figure 4.24 Percentage of households with sanitary latrines, 1960-2005



Sources: - 1960-2000 from the Department of Health, MoPH.
- 2001 from the Provincial Health Status Survey, 2001. Bureau of Policy and Strategy, MoPH.
- 2005 from the Report on Population Characteristics from the Population Change Survey, 2005-2006. Bureau of Policy and Strategy, MoPH.

Table 4.28 Latrine use behaviour of Thai people, 2006

Description	Correct use (percent)	Incorrect use (percent)
1. Flushing the toilet	94.9	5.1
2. Disposal of toilet paper	78.3	21.7
3. Handwashing	47.1	52.9
4. Sitting on the toilet	83.0	17.0
Correct behaviour in 4 aspects	**47.1**	**52.9**

Source: Department of Health, MoPH.

6. Political and Administrative Situations and Trends

6.1 Political System

Even though the Constitution of the Kingdom of Thailand, B.E. 2540 (1997) was in force for eight years, good governance in Thai society was not attained as intended due to the unprecedented stability of the mechanism of state administration or government, which had complete control over all civil service system and major agencies of the country. However, the legislative mechanism, which was the core agency responsible for selecting members or commissioners of state's independent agencies, was also influenced by the executive branch, resulting in their lack of independence according to the constitution. The operations of the public and political sectors as well as the examination mechanisms of independent agencies and the public were under the influence of the patronage system including cronyism and nepotism. The groups that were close to the government had benefited from government policies, while the examination process was inefficient and the public was suspicious of the state administration inclining towards the widespread malfeasance and there is no public forum to express their opinions. As a result, the public pressure had built up, society being frustrated and divided, calling for another round of political reform that would lead to politics with morality. Such movement, however, could not stop the conflicts which tended to become violent. Thus, the Council for Democratic Reform with the King as Head of State seized the state power abrogating the 1997 constitution, the Senate, the House of Representatives, the Cabinet and the Constitutional Court, and enacting the 2006 Interim Constitution, under which the interim cabinet was established to undertake the state administration for one year. During that period of time, the drafting of another constitution was expedited with a wide public participation in every step. The draft constitution of 2007 was accepted in the referendum and, upon the endorsement of His Majesty the King, the 2007 constitution has become effective on 24 August 2007. A general election under the new constitution will be held in December 2007.

6.2 Public Administration System

6.2.1 Public Sector Development

It has been found that the personnel cost in the public sector has been rising resulting in very little budget remaining for national development and the civil service system being incapable of responding to the needs of the people as well as being inefficient, slow, and corrupt. Such a situation led to the 2001 major public sector reform; the restructuring of ministries, sub-ministries and departments was undertaken so as to have a clean system with minimized redundancy of roles and missions of public agencies according to the Reorganization of Ministries, Sub-ministries and Departments Act, B.E. 2545 (2002). In addition, a framework for modern administration of state affairs based on the principles of good governance and modern administration was laid down according

to the Procedure for State Administration Act (No. 5), B.E. 2545 (2002). Later on, the public sector development effort has focused on the well-being of people and prosperity of the country as per the Royal Decree on Criteria and Methods for Good Governance, B.E. 2546 (2003), which is regarded as the beginning of development of the modern Thai civil service system so that it will have a higher capacity, in terms of public service quality, optimization of role/mission and size, enhancement of performance capacity and standard, and opening of the civil service system to the democratic process. An evaluation has revealed that overall state agencies have their performance in a "good" level and above, on average. In 2004, their performance was markedly higher than that for 2003; the average score increasing from 2.61 in 2003 to 3.82 in 2004. The results of achievements in various aspects of development are as shown in Table 4.29.

Table 4.29 Achievements of public sector development, 2003-2005

Target	Results of operation		
	2003	2004	2005
1. Development of public service quality			
- Reduce steps and time in providing services to the public by more than 50% on average by 2007	44.1 %	47.8 %	51.8 %
- Satisfaction of service recipients (new indicator, 2004)	-	76.58 %	76.64 %
2. Adjustment of role, mission and size as appropriate			
• **Role and mission**			
- No. of non-core functions is reduced by not less than 80% by 2007	-	-	73.0 %
- Not less than 90% of public agencies have implemented "measure 3/1" of the State Administration Act (No.5) of 2002 or the Royal Decree on Good Governance of 2003 by 2007	68.5 %	-	100.0 %
- Not less than 100 laws that are unnecessary or obstructing national development will be amended or deregulated by 2007	For all agencies: amendment of 194 acts and 447 announcements/ rules/ regulations	For all agencies: amendment of 89 acts, 22 royal decrees; 301 announcements, 1,201 regulations, rules and orders (totalling 1,434)	For all agencies: amendment of 233 acts, and 127 pending submission to the House of Representatives

Target	Results of operation		
	2003	2004	2005
• **State budget** - Maintain the proportion of state budget in relation to GDP at not to exceed 18% on average for the period 2003-2007	17.5 %	18.0 %	17.5 %
• **Public sector workforce** - Reduce the number of government officials by at least 10% by 2007	0.04 % (reduced by 691)	3.84 % (reduced by 45,330)	4.35 % (reduced by 50,000 compared with that in 2002)
3. Enhancement of performance competency and standard to the international levels	25.5 %	All state agencies have evaluation results at the good level or above	-
• Each agency has at least one certification for its quality/standard by 2007 such as PSO and ISO	26.2 %	36 %	60.0 %
• At least 80% of State officials have their competencies enhanced as per specified criteria on average by 2007	55.3 %	100 %	80 %
• At least 90% of state agencies have their service systems improved or operational using the e-government system by 2007	45.6 %	94.7 %	80 %
4. Response to public administration in the democratic system	77.9 %	98.0 %	-
- On average 80% of the people have confidence and faith in the transparency and cleanliness in the public administration by 2007 with the disclosure of information to the public in a systematic manner	75.2 %	94.0 %	Evaluation results in the highest level
- At least 80% of state agencies have measures or activities that are open to public participation by 2007	65.4 %	79.3 %	Evaluation results in the high level
- The number of conflicts or complaints between the administration and the people increases by not to exceed 20% each year on average for the period 2003-2007	-	-	Evaluation results: decreasing or none in the highest level

Sources: 1. Report on progress in the public sector development in the three-year period of the Public Sector Development Commission. In the report on monitoring and evaluation of the 9th National Economic and Social Development Plan (2002-2006). NESDB.
2. Office of the Public Sector Development Commission, 2007.

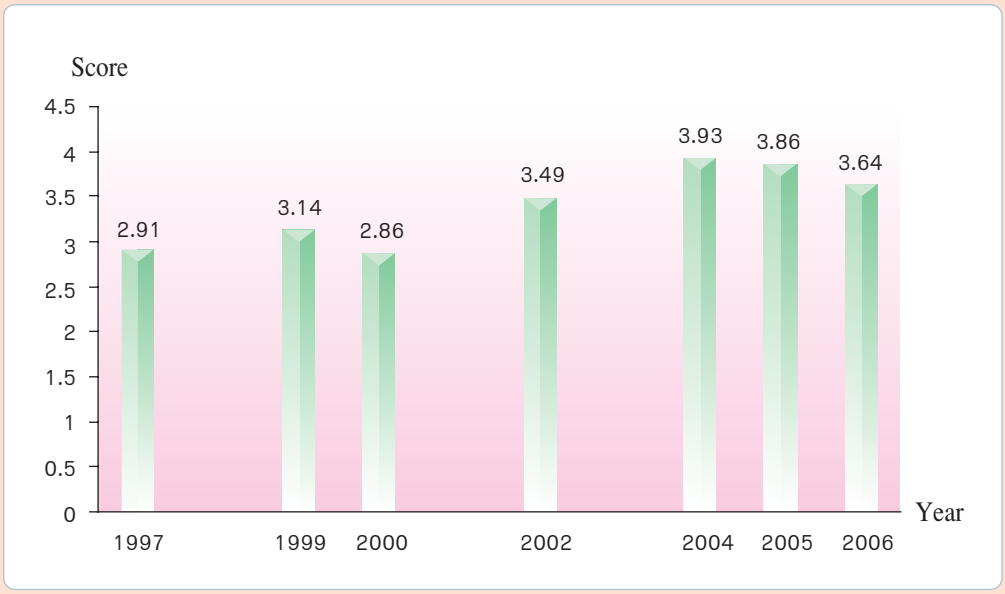
The transform of the public administration system according to the modern administration principles has caused all state health facilities to accelerate the improvement of public service quality in a more efficient manner.

6.2.2 Efficiency of the Public Administration System in the Thai Business Sector Development: A Comparison with Other Countries

Low efficiency in the public sector results in a higher operating cost in the private sector. A study conducted by Saowanee Thairungroj and colleagues revealed that business operators had to spend a lot of time when dealing with public agencies. On average they spent 14% of their time each year, small-size businesses spending more than medium and large-scale businesses.[9] For this reason, they had to pay bribes to state officials to expedite transactions, resulting in a higher cost in business operations. However, after the 2001 public sector reform, the situation is getting better; a study on international competition conducted by the International Institute for Management Development (IMD) for the period 1997-2005 revealed that the efficiency score of the Thai public sector in the development of the business sector has increased from 2.91 in 1997 to 3.86 in 2005, or from rank 28th in 1997 to rank 16th in 2005, and dropped slightly to 3.64 or rank 21st in 2006 (Figure 4.25). Nevertheless, the efficiency level in Thailand is lower than those in developed countries or certain ASEAN countries, i.e. Singapore and Malaysia (Table 4.30).

[9] Saowanee Thairungroj et al. The Business Environment and Attitudes of Business Operators towards Public Sector Services. Faculty of Economics. University of the Thai Chamber of Commerce, 1999.

Figure 4.25 Ability and ranking of Thai public sector's competitiveness for business sector development, 1997-2006



	1997	1999	2000	2002	2004	2005	2006
Rank of the Thai public sector's competitiveness for business sector development	28	24	31	24	19	16	21

Source: IMD. The World Competitiveness Yearbook, 1997-2006.

Table 4.30 Efficiency of the state service system in the business sector development in various countries, 1997-2006

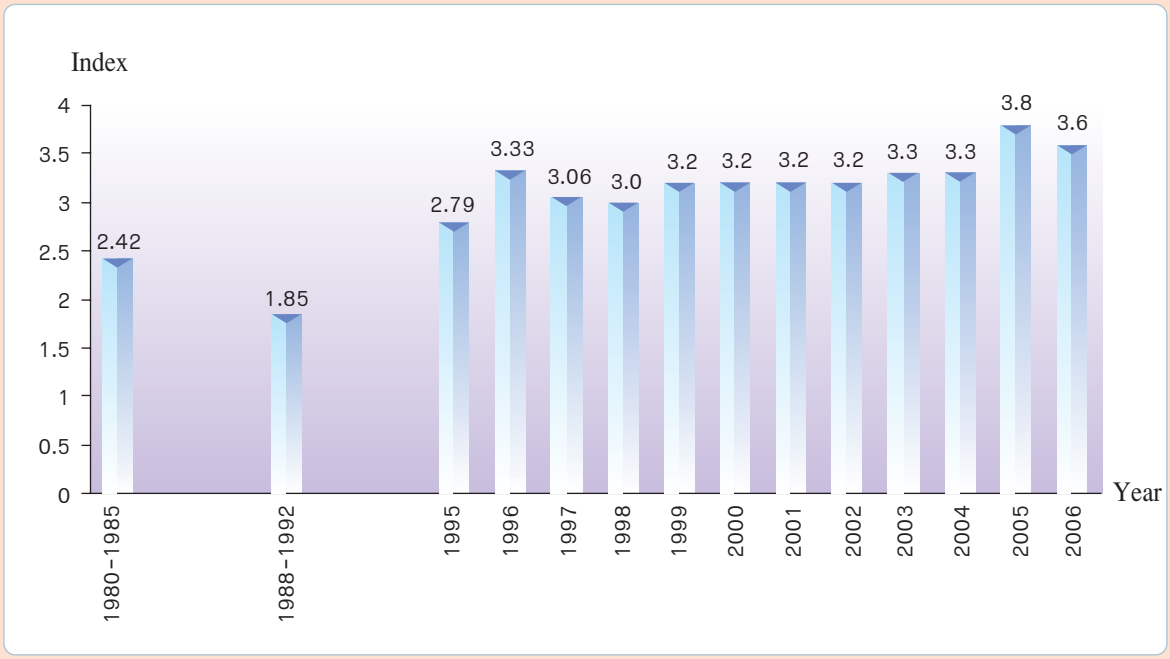
Group and country	1997 Actual rank	1997 In-group rank	1997 Score	Group and country	1999 Actual rank	1999 In-group rank	1999 Score	Group and country	2002 Actual rank	2002 In-group rank	2002 Score	Group and country	2004 Actual rank	2004 In-group rank	2004 Score	Group and country	2006 Actual rank	2006 In-group rank	2006 Score
ASEAN				**ASEAN**				**ASEAN**				**ASEAN**				**ASEAN**			
Singapore	1	1	6.88	Singapore	1	1	7.45	Singapore	1	1	7.46	Singapore	4	1	5.95	Singapore	2	1	6.67
Malaysia	15	2	4.69	Malaysia	16	2	4.20	Malaysia	13	2	4.59	Malaysia	10	2	4.82	Malaysia	11	3	4.87
Thailand	28	4	2.91	Thailand	24	3	3.14	Thailand	24	3	3.49	Thailand	19	3	3.93	Thailand	21	2	3.64
Philippines	27	3	2.96	Philippines	34	4	2.32	Philippines	41	5	2.00	Philippines	49	4	1.86	Philippines	53	4	1.67
Indonesia	32	5	2.67	Indonesia	39	5	1.80	Indonesia	32	4	2.83	Indonesia	56	5	1.50	Indonesia	48	5	1.83
Brunei	-	-	-	Brunei	-	-	-	Brunei	-	-	-	Brunei	-	-	-	Brunei	-	-	-
Vietnam	-	-	-	Vietnam	-	-	-	Vietnam	-	-	-	Vietnam	-	-	-	Vietnam	-	-	-
Myanmar	-	-	-	Myanmar	-	-	-	Myanmar	-	-	-	Myanmar	-	-	-	Myanmar	-	-	-
Cambodia	-	-	-	Cambodia	-	-	-	Cambodia	-	-	-	Cambodia	-	-	-	Cambodia	-	-	-
Laos	-	-	-	Laos	-	-	-	Laos	-	-	-	Laos	-	-	-	Laos	-	-	-
World (top ten)				**World (top ten)**				**World (top ten)**				**World (top ten)**				**World (top ten)**			
Singapore	1	1	6.88	Singapore	1	1	7.45	Singapore	1	1	7.46	Denmark	1	1	6.41	Iceland	1	1	6.74
Hong Kong	2	2	6.63	Finland	2	2	7.03	Finland	2	2	6.83	Iceland	2	2	6.40	Singapore	2	2	6.67
Finland	3	3	6.49	Hong Kong	3	3	6.28	Iceland	3	3	6.09	Finland	3	3	6.09	Hong Kong	3	3	6.62
Denmark	4	4	6.09	Denmark	4	4	5.87	Luxembourg	4	4	5.95	Singapore	4	4	5.95	Finland	4	4	6.54
New Zealand	5	5	6.08	Switzerland	5	5	5.54	Denmark	5	5	5.77	Hong Kong	5	5	5.45	Denmark	5	5	6.54
Iceland	6	6	5.89	Luxembourg	6	6	5.33	Switzerland	6	6	5.71	Australia	6	6	5.11	Norway	6	6	5.66
Ireland	7	7	5.80	Iceland	7	7	5.19	Sweden	7	7	5.70	Canada	7	7	4.89	Estonia	7	7	5.22
Norway	8	8	5.67	Ireland	8	8	5.16	Ireland	8	8	5.32	Sweden	8	8	4.85	Ireland	8	8	5.07
Netherlands	9	9	5.41	Netherlands	9	9	4.98	Hong Kong	9	9	5.21	Estonia	9	9	4.84	Australia	9	9	5.02
Switzerland	10	10	5.38	Australia	10	10	4.97	Netherlands	10	10	5.06	Malaysia	10	10	4.82	Sweden	10	10	4.97

Source: IMD. The World Competitiveness Yearbook, 1997-2006.

6.2.3 Transparency and Corruption in Public Sector Agencies

As the government has monopolized public services, it is hard to examine such systems and results in wastages. Most state officials have low salaries with a lot of debts and thus they tend to adopt malpractice that leads to illegally taking kickbacks, which is a problem of transparency and corruption in the public service system. The inspection systems of the State Audit Office and the National Counter Corruption Commission are not strong enough to cope with such problems. Surveys conducted by the Transparency International in 1980-2005 revealed that Thailand is getting better in terms of transparency and corruption, its corruption perceptions index has risen from 2.42 during the period 1980-1985 to 3.8 in 2005, but dropped slightly to 3.6 in 2006, ranking 63rd among 163 countries under survey (Figure 4.26). Such a ranking was, however, rather low in terms of transparency, with a high level of corruption, compared with developed countries and certain ASEAN countries, i.e. Singapore and Malaysia (Table 4.31).

Figure 4.26 Corruption perceptions index, Thailand, 1980-2006



Source: Transparency International, 1998-2006.

Table 4.31 Corruption perceptions indexes in various countries, 1998-2006

Group and country	1998 Actual rank	1998 In-group rank	1998 CPI value	Group and country	2000 Actual rank	2000 In-group rank	2000 CPI value	Group and country	2002 Actual rank	2002 In-group rank	2002 CPI value	Group and country	2004 Actual rank	2004 In-group rank	2004 CPI value	Group and country	2005 Actual rank	2005 In-group rank	2005 CPI value	Group and country	2006 Actual rank	2006 In-group rank	2006 CPI value
ASEAN				**ASEAN**				**ASEAN**				**ASEAN**				**ASEAN**				**ASEAN**			
Singapore	7	1	9.1	Singapore	6	1	9.1	Singapore	5	1	9.3	Singapore	5	1	9.3	Singapore	5	1	9.4	Singapore	5	1	9.4
Malaysia	29	2	5.3	Malaysia	36	2	4.8	Malaysia	33	2	4.9	Malaysia	39	2	5.0	Malaysia	39	2	5.1	Malaysia	44	2	5.0
Thailand	61	4	3.0	Thailand	60	3	3.2	Thailand	64	3	3.2	Thailand	64	3	3.6	Thailand	59	3	3.8	Thailand	65	3	3.6
Philippines	55	3	3.3	Philippines	69	4	2.8	Philippines	77	4	2.6	Philippines	102	4	2.6	Philippines	117	5	2.5	Philippines	126	5	2.5
Indonesia	80	6	2.0	Indonesia	85	6	1.7	Indonesia	96	6	1.9	Indonesia	133	6	2.0	Indonesia	137	7	2.2	Indonesia	134	6	2.4
Brunei	-	-	-	Brunei	-	-	-	Brunei	-	-	-	Brunei	-	-	-	Brunei	-	-	-	Brunei	-	-	-
Vietnam	74	5	2.5	Vietnam	76	5	2.5	Vietnam	85	5	2.4	Vietnam	102	4	2.6	Vietnam	107	4	2.6	Vietnam	118	5	2.6
Myanmar	-	-	-	Myanmar	-	-	-	Myanmar	-	-	-	Myanmar	142	7	1.7	Myanmar	155	8	1.8	Myanmar	162	8	1.9
Cambodia	-	-	-	Cambodia	-	-	-	Cambodia	-	-	-	Cambodia	-	-	-	Cambodia	130	6	2.3	Cambodia	152	7	2.1
Laos	-	-	-	Laos	-	-	-	Laos	-	-	-	Laos	-	-	-	Laos	-	-	-	Laos	114	4	2.6
World (top ten)				**World (top ten)**				**World (top ten)**				**World (top ten)**				**World (top ten)**				**World (top ten)**			
Denmark	1	1	10.0	Finland	1	1	10.0	Finland	1	1	9.7	Finland	1	1	9.7	Iceland	1	1	9.7	Finland	1	1	9.6
Finland	2	2	9.6	Denmark	2	2	9.8	Denmark	2	2	9.5	New Zealand	2	2	9.6	Finland	2	2	9.6	Iceland	2	2	9.6
Sweden	3	3	9.5	New Zealand	3	3	9.4	New Zealand	2	2	9.5	Denmark	3	3	9.5	New Zealand	2	2	9.6	New Zealand	3	3	9.6
New Zealand	4	4	9.4	Sweden	3	3	9.4	Iceland	4	4	9.4	Iceland	3	3	9.5	Denmark	4	4	9.5	Denmark	4	4	9.5
Iceland	5	5	9.3	Canada	5	5	9.2	Singapore	5	5	9.3	Singapore	5	5	9.3	Singapore	5	5	9.4	Singapore	5	5	9.4
Canada	6	6	9.2	Iceland	6	6	9.1	Sweden	5	5	9.3	Sweden	6	6	9.2	Sweden	6	6	9.2	Sweden	6	6	9.2
Singapore	7	7	9.1	Norway	6	6	9.1	Canada	7	7	9.0	Switzerland	7	7	9.1	Switzerland	7	7	9.1	Switzerland	7	7	9.1
Netherlands	8	8	9.0	Singapore	6	6	9.1	Luxembourg	7	7	9.0	Norway	8	8	8.9	Norway	8	8	8.9	Norway	8	8	8.8
Norway	8	8	9.0	Netherlands	9	9	8.9	Netherlands	7	7	9.0	Australia	9	9	8.8	Australia	9	9	8.8	Australia	9	9	8.7
Switzerland	10	10	8.9	U.K.	10	10	8.7	U.K.	10	10	8.7	Netherlands	10	10	8.7	Austria	10	10	8.7	Netherlands	10	10	8.7

Sources: Transparency International and Dr. Johann Graf Lambsdarff Gottingen University, Germany, 1998-2006

Notes:
1. Corruption perceptions index were computed based on the perception of businesses, risk analysts and the general public; scores range form 1 to 10, "0" meaning highly corrupt and "10" meaning "highly clean"
2. Surveys used refers to the number of surveys that assessed a country's performance and expert assessments were used and at least 3 were required for a country to be included in the CPI.

In addition, the Global Competitiveness Report 2001/2002-2005/2006 of the World Economic Forum (WEF) stated that, in the perspectives of chief executive officers (CEOs) and senior executives of private businesses in Thailand, briberies or illegal payments (seven types) had a tendency to decline in all aspects. However, the most commonly found type of illegal payment was the payment for setting a policy for self-benefit and for winning a concession contract, while those rarely found were payments for setting up public utility services. Thus, it means that executives perceive that the corruption in this aspect has declined which might be due to the fact that the public utility services in Thailand has been much expanded and there is no need for the business sector to make any payment for such services (Table 4.32).

Table 4.32 Images of bribery in Thailand, 2001-2006

Image	2001-02	2002-03	2003-04	2004-05	2005-06
1. Bribery for winning a contract on state investment project	3.7 (-)	3.8 (-)	4.1 (+)	4.3	4.5 (+)
2. Bribery for obtaining an import/ export permit	3.7 (-)	4.3 (-)	4.3 (-)	4.1 (-)	4.8 (+)
3. Bribery for setting policy for self-benefit	- -	4.3 (-)	4.4 (+)	4.1 (-)	- -
4. Bribery for favoured lawsuit proceedings	- -	4.7 (-)	5.0 (+)	4.7	5.2 (+)
5. Bribery for tax avoidance	4.2 (-)	4.8 (-)	5.1 (+)	5.2 (+)	5.4 (+)
6. Bribery for getting a loan	4.6 (-)	5.1 (+)	5.3 (+)	5.3 (+)	- -
7. Bribery for receiving public utility services	4.7 (-)	5.5 (+)	5.8 (+)	5.7 (+)	5.6 (+)

Source: World Economic Forum 2001-2006. In the report on monitoring and evaluation of the 9th National Economic and Social Development Plan (2002-2006). NESDB.

Note: (-) or (+) means an image of bribe taking and corruption; (-) worse than the national average and (+) better than the national average.

6.3 Decentralization

Even through the Planning and Steps of Decentralization to Local Administration Organizations Act of B.E. 2542 (1999) is not abrogated like the 1997 Constitution, the Act might need to be amended to correspond with the new constitution, which might take another 1 or 2 years at least. This would delay or obstruct the process of decentralization particularly that related to health, which as a matter of fact has made no progress to date.

7. Situations and Trends of Technology

7.1 Technology Development

Advances in technology have been rapidly made resulting in innovations being developed and having an impact on health development as modern technologies have been used freely in the treatment and prevention of diseases, namely:

7.1.1 Information and communication technology (ICT). For health programmes, ICT has been used for medical and health consultation including diagnoses and medical treatment with telemedicine and diagnostic imaging technology.

7.1.2 Genetics and biotechnology. Rapid developments have been made in this area such as digital-genomics convergence that integrates computer technology into biology. This might be a new dimension of curative care, moving from treatment to prevention: adding disease-prevention elements to food, soap or cosmetics, rather than taking medication orally for treatment of illness; organ transplantation (such as for bone marrow); stem-cell treatment for patients with heart disease and leukemia; using recombinant DNA, polymerase chain reaction (PCR) and genomics for producing a new vaccine and medicine; and farming of genetically modified plants.

7.1.3 Material technology. New materials have been produced in response to needs in a more efficient manner. In the field of public health, the technology has been used in producing medical materials and equipment such as artificial leg/foot bones for more efficient medical care of patients which also helps improve their quality of life.

7.1.4 Nanotechnology. A more active role has been played by this kind of technology which is believed to be used in producing a molecular machine comprising atoms to be inserted into the human body for destroying cancerous cells or eliminating blood vessel-clogging lipids without surgery, or in producing a small particle for carrying medication to the diseased part of the body without affecting other parts.

Such technological changes have resulted in Thailand freely importing medical and healthcare technologies with no limitation or any mechanism for screening or inspecting the appropriateness of imported high-cost technologies. Moreover, policy-makers lack evidence-based information for making decisions on various technologies resulting in a lack of suitable selection process. And there is

no law related to the monitoring and control of the appropriate use of medical and health technologies, causing a rapid rise in healthcare spending, particularly for curative care for hospitalized patients. It was found that the costs of medical supplies/equipment imports rose from 2,493.2 million baht in 1991 to 15,799.1 million baht in 2005.

7.2 Utilization Efficiency, Diffusion and Equality, and Access to Technology

The weakness of the public sector is in controlling the use of high-cost technologies in a cost effective manner, doctors prescribing a diagnosis and treatment without due consideration for its worthiness which negatively affects professional ethics and for clients' confidence. Moreover, an investment is needed for personnel development and monitoring of the adverse effects of the utilization of high-cost technologies. Unequal distribution of medical equipment has also been noted, mostly clustered in major cities and more in the private sector, not the public sector (see Chapter 6, section 3 on health technologies). This has affected the access to high-cost health technologies of the poor and uninsured; for example, the poor (who have terminal stage of chronic renal failure) are not entitled to kidney dialysis service while the insured under the social security scheme or the civil servants medical benefit scheme have such entitlement.

8. Health Behaviours

Risk factors of Thai people have an impact on their lives and are a national problem affecting the country's economic and social security. It is noteworthy that in all groups of countries, risk factors related to behaviour are clearly a burden of diseases. In the group of developing countries with high mortality rates the top risk factor is malnutrition, while the group of more advanced developing countries face other risk behaviours of alcohol and tobacco use, and in the group of developed countries all risk factors are related to behaviour (Table 4.33).

Table 4.33 Top ten risk factors: percentage of disability-adjusted life years (DALYs) in three groups of countries, 2000

Order	Developing countries with high mortality rates	Percent	Developing countries with low mortality rates	Percent	Developed countries	Percent
1	Underweight	14.9	Alcohol	6.2	Smoking	12.2
2	Unsafe sex	10.2	Blood pressure	5.0	Blood pressure	10.9
3	Unsafe water, sanitation and hygiene	5.5	Smoking	4.0	Alcohol	9.2
4	Indoor smoke from solid fuels	3.6	Underweight	3.1	Cholesterol	7.6
5	Zinc deficiency	3.2	Overweight	2.7	Overweight	7.4
6	Iron deficiency	3.1	Cholesterol	2.1	Low fruit and vegetable intake	3.9
7	Vitamin A deficiency	3.0	Low fruit and vegetable intake	1.9	Physical inactivity	3.3
8	Blood pressure	2.5	Indoor smoke from solid fuels	1.9	Illicit drugs	1.8
9	Smoking	2.0	Iron deficiency	1.8	Unsafe sex	0.8
10	Cholesterol	1.9	Unsafe water, sanitation and hygiene	1.8	Iron deficiency	0.7
	Top 10 risk factors	49.9		30.5		57.8

Source: World Health Report 2002.

A study on major burdens of diseases of Thai people conducted in 1999 and 2004 by the International Health Policy Programme, using 15 leading risk factors for males and females, revealed that alcohol abuse and unsafe sex were the cause of burden of disease among males and unsafe sex and high body mass index were the cause of burden of disease among females (Table 4.34).

Table 4.34 DALYs from risk factors among Thai people, 1999 and 2004

Order	Risk factor	DALYS in males				Order	Risk factor	DALYs in females			
		2004		1999				2004		1999	
		DALYs		DALYs				DALYs		DALYs	
		($X10^5$)	Percent	($X10^5$)	Percent			($X10^5$)	Percent	($X10^5$)	Percent
1	Alcohol abuse	7.6	13	5.1	9	1	Unsafe sex	3.9	9	4.5	11
2	Unsafe sex	5.4	9	8.6	16	2	Hypertension	2.5	6	2.4	6
3	Smoking	5.0	9	4.4	8	3	High body mass index	2.5	6	2.3	6
4	Non-use of helmet	3.6	6	3.3	6	4	High Cholesterol	1.1	3	1.1	3
5	Hypertension	2.9	5	2.6	5	5	Non-use of helmet	0.8	2	0.7	2
6	High body mass index	1.4	2	1.3	2	6	Physical inactivity	0.7	2	0.6	2
7	High Cholesterol	1.2	2	1.1	2	7	Smoking	0.7	2	0.5	1
8	Low fruit and vegetable intake	1.1	2	0.9	2	8	Low fruit and vegetable intake	0.7	2	0.5	1
9	Substance abuse	0.7	1	3.3	6	9	Alcohol abuse	0.4	1	0.4	1
10	Physical inactivity	0.5	1	0.6	1	10	Air pollution	0.4	1	0.7	2
11	Air pollution	0.5	1	0.5	1	11	Unsafe water and sanitation	0.3	1	0.3	1
12	Unsafe water and sanitation	0.2	0	0.3	1	12	Substance abuse	0.2	0	0.4	1
13	Non-use of safety belt	0.2	0	0.3	1	13	Malnutrition, international standard	0.1	0	0.3	1
14	Malnutrition, international standard	0.2	0	0.4	1	14	Malnutrition, Thai standard	0.1	0	0.1	0
15	Malnutrition, Thai standard	0.1	0	0.2	0	15	Non-use of safety belt	0.0	0	0.1	0

* Male DALYs: N = 5.3 Million, Female DALYs: N = 3.9 Million

Source: Working Group on Burden of Disease and Risk Factors in Thailand. Office of the International Health Policy Programme, 2006.

It is noteworthy that most of the risks for disease burden are health behaviors which are further elaborated as follows:

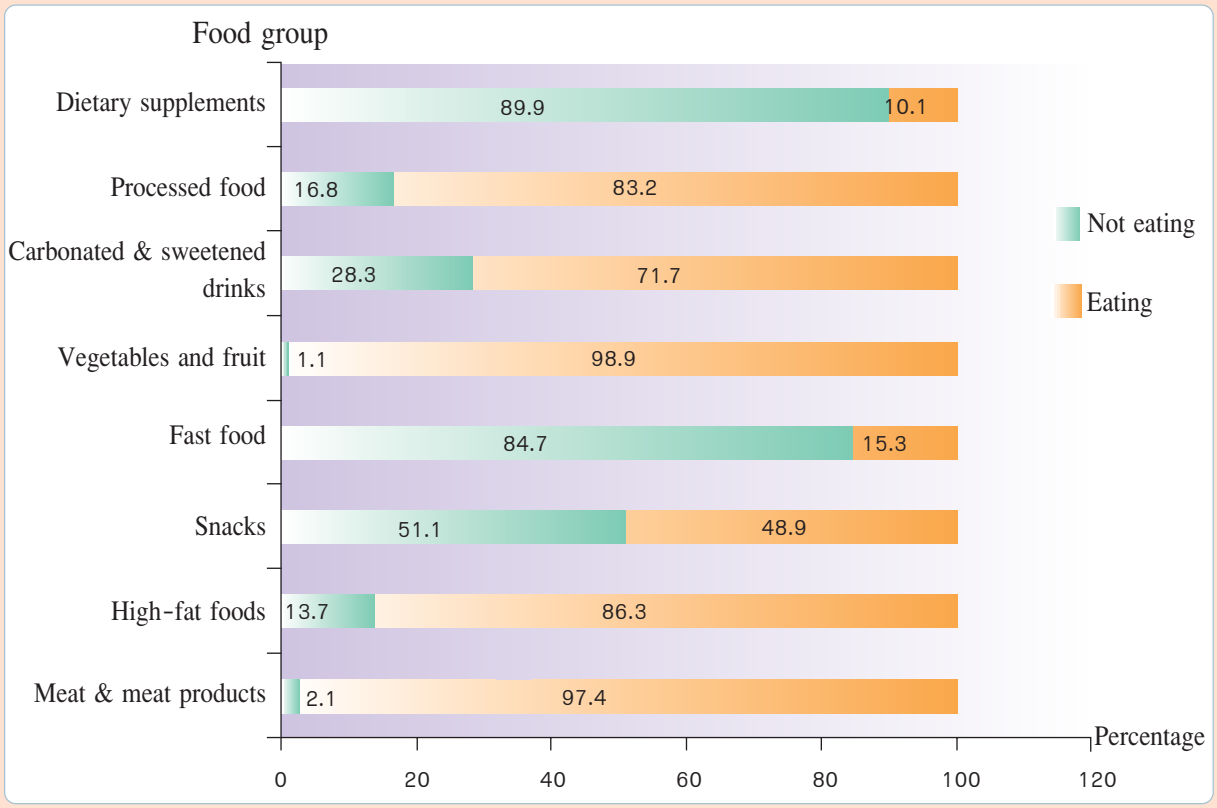
8.1 Food Consumption

The food consumption behaviors of Thai people have changed according to changing lifestyles and are different in urban and rural residents. Urban residents tend to take more meat and fat, while taking less vegetables and fruit. Teenagers prefer western foods to local or Thai food. More rushing lifestyles have pushed them to take ready-to-cook or semi-cooked food. The trend is rising in both urban and rural areas. Regarding food expenditures, Bangkok residents have 50% of their food spending on ready-to-eat or pre-cooked food while rural residents spend only 20% for such food.[10]

The 2005 survey on the types of food consumed by people aged 6 years and over conducted by the National Statistical Office revealed that the food groups that over 80% of respondents consumed were vegetables and fruit (98.9%), meat and meat products (97.4%), high-fat foods (86.3%), and processed foods (83.2%), followed by carbonated and sweetened drinks (71.7%), snacks (49.0%), while other groups were consumed in lower proportions, i.e. fast foods (15.3%) and dietary supplements (10.1%) (Figure 4.27).

[10] Patthanee Vinijjakul and Wongsawat Kosalwat. Food and Nutrition in Review and Revision of Strategic Plan for Health Research in Thailand, 2003.

Figure 4.27 Percentage of population aged six years and above and food consumption behaviour by food group



Source: Report on Thai People's Health Behaviour Survey, 2005: Food Consumption Behaviour. National Statistical Office.

However, the third round of the Thai people's health examination survey conducted in 2003-2004 revealed that Thais aged 15 years and over, both male and female, had a vegetable and food intake lower than the recommended daily requirement levels for health promotion and disease prevention (400-800 grams per day), i.e. 268 grams/day among males and 283 grams/day among females. The amounts consumed were found to be decreasing as they got older, lowest among the age group 80 and over at about 200 grams per day (Table 4.35).

Table 4.35 Amounts of daily fruit and vegetable intake in Thai people aged 15 years and above, by age and sex

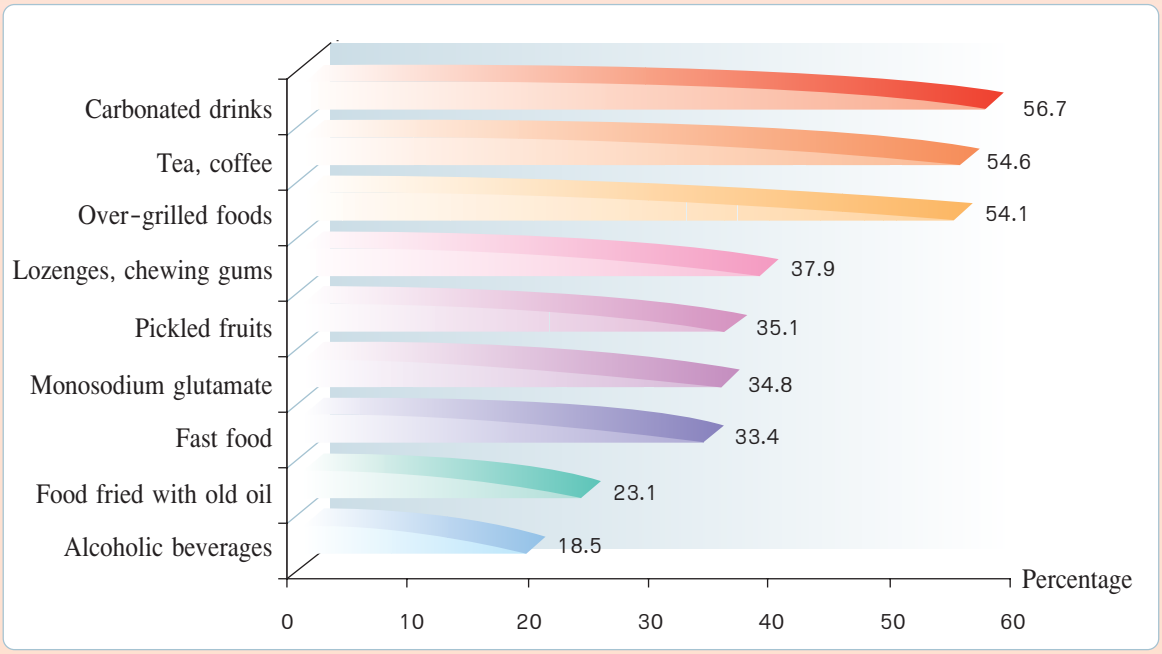
Age (years)	Average fruit and vegetable intake (grams/day)	
	Males	Females
15-29	285	300
30-44	272	293
45-59	261	283
60-69	238	245
70-79	216	215
80 years and over	203	193
Total	**268**	**283**

Source: Report on National Health Examination Survey, Third Round, Thailand (2003-2004). Ministry of Public Health.

A Cheevajit poll conducted on Bangkok residents in 2006 revealed that while the body was normal 38.7% of respondents had an eat-as-you-wish behaviour, eating the food that was not essential to health; indispensable items regularly consumed were carbonated drinks, tea, coffee, followed by over-grilled foods (Figure 4.28).

It was found that most people would change their food consumption behaviour when they got sick by avoiding spicy, fried and high-cholesterol foods and some meat but took more fruits and vegetables, some people would also take dietary supplements, vitamin C, vitamin B-complex, calcium and some medicinal herbs such as Fa Ta Lai Jone (green chiretta or Andrographis paniculata), Dok Kham Foi (safflower or Carthamus tinctorius), Ma Kham Khaek (senna or Cassia angustifolia) and Chinese traditional medicines. However, it is worrisome that 37.5% of respondents would revert to the food they liked with no nutritional consideration after they had recovered.

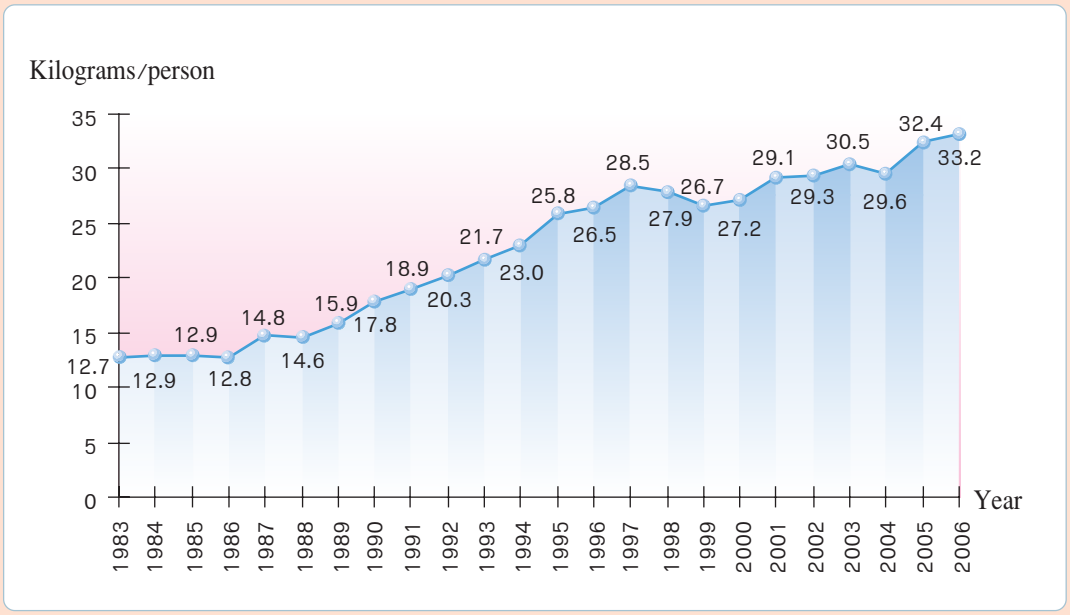
Figure 4.28 Food items that had to be regularly consumed



Source: Cheevajit Poll, Third Project. Amarin Printing & Publishing (Public Limited Company).

Besides, it was found that Thai people tended to consume more sugar and food prepared from flour and sugar. The sugar consumption rate during the past two decades has risen 2.6-fold from 12.7 kg/person/yr in 1983 to 33.2 kg/person/yr in 2006 (Figure 4.29).

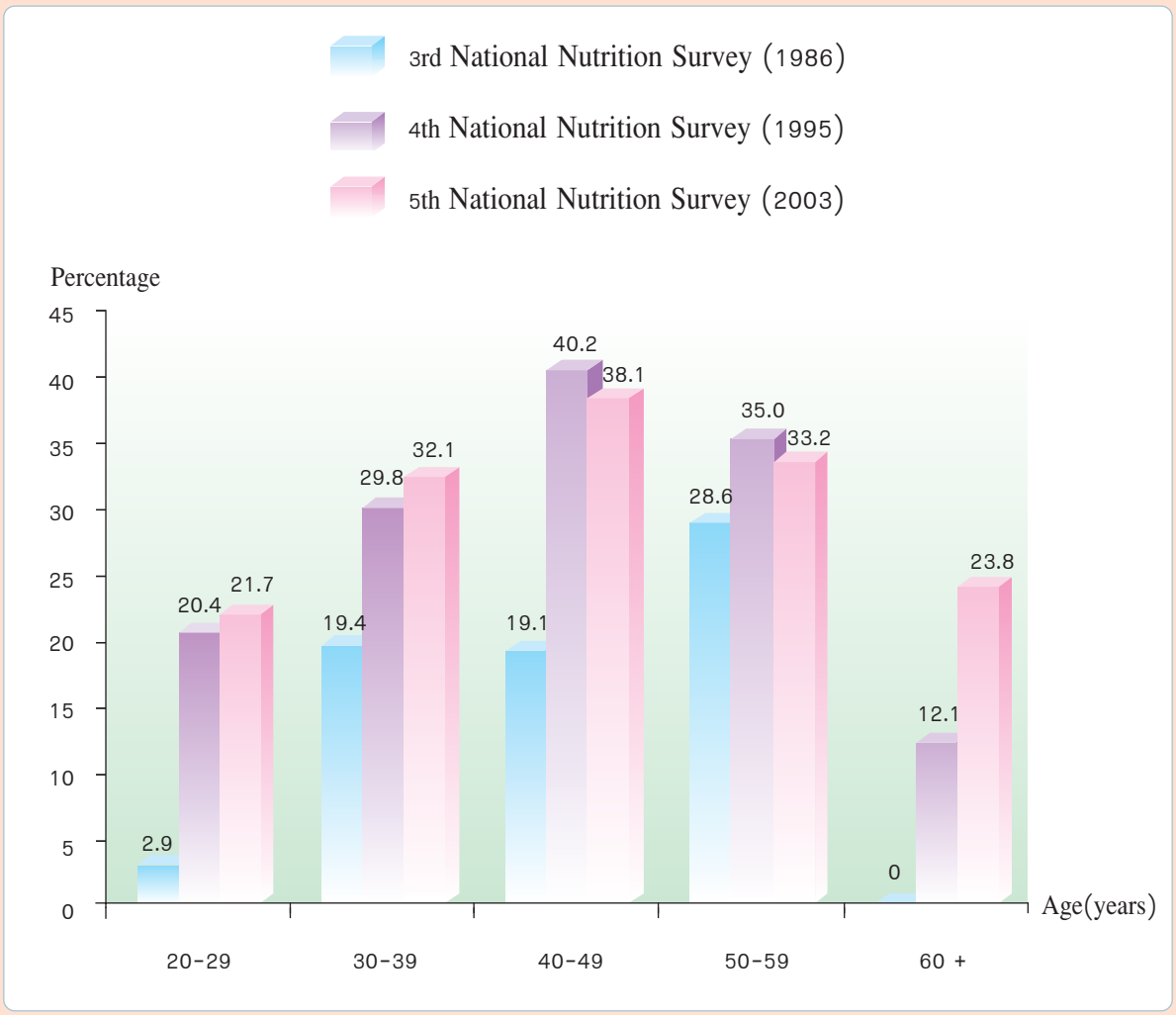
Figure 4.29 Quantity of sugar intake in Thailand, 1983-2006



Source: Production Management Centre. Office of the Sugar Cane and Sugar Commission.

Consuming food rich in fat content and calorie is a risk factor of cardiovascular diseases. According to the third through fifth national nutrition surveys in Thailand, the prevalence of obesity has been on the rise particularly in the age groups 20-29, 30-39 and 60 and over (Figure 4.30). An analysis of risk factors for cardiovascular diseases among Thai people aged 35-59 revealed a rising prevalence of people with high blood cholesterol, high blood sugar, overweight and obesity (Table 4.36). Bangkok residents, both males and females, had a highest prevalence of overweight and obesity, while the northern people had the lowest. The residents in municipal areas had a higher overweight/obesity prevalence, compared with rural residents.[11]

Figure 4.30 Prevalence rate of obesity in Thailand by age group, 1986, 1995, and 2003



Source: Department of Health, MoPH.

Note: Obesity in population aged >20 years: BMI ≥ 25 kilograms/square meter.

[11] Piyamit Srithara et.al. Cardiovascular Research Group in Review and Revision of Strategic Plan for Health Research in Thailand, 2003.

Table 4.36 Changes and prevalence of cardiovascular disease risk factors in Thai people aged 35-59 years

Risk factor	1st health survey (1991-1992)	2nd health survey (1996-1997)	Inter-Asia study (2000-2001)	3rd health survey (2003-2004)
Cholesterol (mg/dl)	189	198	201	207
Blood sugar (mg/dl)	87	92	99	100
Body mass index (BMI) (kg/m^2)	22.8	23.8	24.4	24.6
Overweight (percent)	20	25	30	38
Obesity (percent)	5	8	9	10

Sources: 1. Piyamit Srithara et al. Cardiovascular Research Group in Review and Revision of Strategic Plan for Health Research in Thailand, 2003.

2. Report on National Health Examination Survey, Third Round, Thailand (2003-2004). Ministry of Public Health.

Note: Population adjustment for 2000.

Snack consumption tends to be rising among Thai children under 5 and primary schoolchildren, resulting in a high dental health prevalence. During 2000-2001, 87.4% of 6-year-old children entering the schooling system had on average 6.0 decayed, missing and filled teeth (DMFT) per child, compared with only 71.6% with 4.9 DMFT per child in 1984 (Tables 4.37 and 4.38). And during 1995-2001, the DoH's dental health survey revealed that only 6% to 15% of children aged 5-6 had no tooth decay and that on average 12-year-old children had 1.6 to 2 DMFT per child. Besides, a survey on sweetened food consumption behaviour of Thai children under 5 in 2006 revealed that 61.7% of the underfives preferred high-sugar snacks and drinks, the average sugar content in snacks and drinks was 40.4 grams/day, which is higher than the suitable sugar consumption level (not exceeding 24 gm/d). This has resulted in a poor child health status: 46.1% with caries and 10.6% overnourished.[12] Another survey on child and youth situation conducted in 2004-2005 revealed that 26.95% and 20.28% of primary schoolchildren consumed crispy snacks and carbonated drinks regularly, respectively.[13]

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[12] Sunee Wongkongkathep et al. Sweetened Food Consumption Behaviour in Thai Children Under 5, 2006.

[13] Ramjitti Institute. Child and Youth Situation Reports, 2004-2005, 2006.

Table 4.37 Percentage of people with caries by age group, according to National Dental Surveys, 1984, 1989, 1994 and 2000-2001

Age group (years)	Percentage			
	1984	1989	1994	2000-2001
3*	-	66.5	61.7	65.7
6*	71.6	83.1	85.1	87.4
6**	74.4	82.8	85.3	87.5
6	30.3	19.2	11.1	-
12	45.8	49.2	53.9	57.3
18	63.1	63.3	63.7	62.1
35 - 44	80.2	76.8	85.7	85.6
60 and over	95.2	93.9	95.0	95.6

Sources: Reports on the 2nd, 3rd, 4th, and 5th National Dental Health Surveys. Department of Health, MoPH.

Notes: * Baby or deciduous teeth ** Mixed (permanent and baby teeth)
Other age groups - only permanent teeth

Table 4.38 Average DMFT in various age groups according to National Dental Surveys, 1984, 1989, 1994 and 2000-2001

Age group (years)	Average DMFT (teeth/person)			
	1984	1989	1994	2000-2001
3*	-	4.0	3.4	3.6
6*	4.9	5.6	5.7	6.0
6**	0.5	0.3	0.3	-
12	1.5	1.5	1.6	1.6
18	3.0	2.7	2.4	2.1
35 - 44	5.4	5.4	6.5	6.1
60 and over	16.3	16.2	15.8	14.4

Sources: Reports on the 2nd, 3rd, 4th, and 5th National Dental Health Surveys. Department of Health, MoPH.

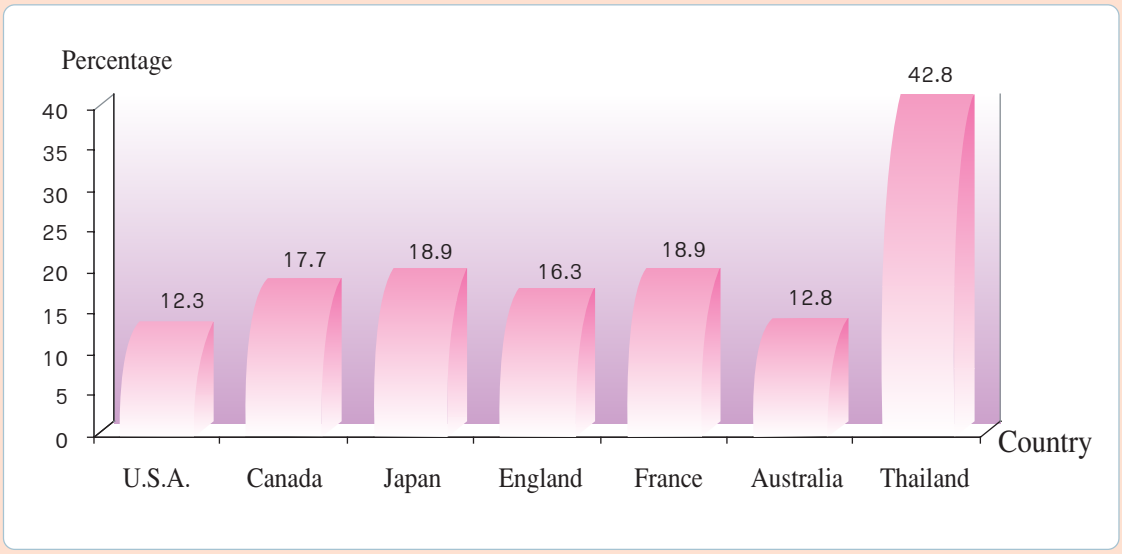
Notes: * Baby or deciduous teeth ** Mixed (permanent and baby teeth)
Other age groups - only permanent teeth.

8.2 Drug Consumption

In 2005, drug consumption of Thai people accounted for approximately 103,517 million baht in wholesale prices or 186,331 million baht in retail prices, or 42.8% of the overall national health expenditure (see Chapter 6, item 3, health technologies). This proportion is rather high, compared with only 10% to 20% in developed countries (Figure 4.31). During the period 1988-2005, the rising rates of drug consumption exceeded the increasing rates of national health spending and economic growth.

In general, an analysis of drug consumption patterns of Thai people revealed that about two-thirds of the consumption was done according to the decision or advice of professionals, such as doctors, pharmacists and other health personnel; the remainder was done as suggested by relatives, friends, or advertisements. Nevertheless, medication use according to the advice of health professionals is escalating (Table 4.39).

Figure 4.31 Proportion of expenditure on drugs and health in Thailand and other countries



Source: OECD Health Data 2006

Note: From OECD are data on OTC drug dispensary and outpatients, but for Thailand the data cover outpatient, inpatient and OTC drug use.

Table 4.39 Drug distribution in Thailand: percentage of drug values distributed through drug outlets

Type	1994 (Percent)	1995 (Percent)	1996 (Percent)	1997 (Percent)	1998 (Percent)	1999 (Percent)	2000 (Percent)	2001 (Percent)	2002 (Percent)	2003 (Percent)	2004 (Percent)	2005 (Percent)	2006 (Percent)
Drugstores	40	34	34	34	34	32	32	30	30	26	26	26	24
Public and private hospitals	43	46	52	52	52	58	58	60	60	64	64	64	66
Private clinics	10	15	9	9	9	} 7	} 7	} 8	} 8	} 9	} 9	} 9	} 8
GPO	2	2	2	2	2								
Others	5	3	3	3	3	3	3	2	2	1	1	1	2

Source: IMS Company Thailand.

No matter through whom the people get medication, it is evident that irrational use and over-use of drugs, particularly antibiotics, are found at all levels. A study on drug use in children with respiratory infections hospitalized nationwide revealed that 38.6% of the patients had ever taken antibiotics before coming to hospital. Other studies also indicated antibiotic use prior to visiting a doctor or health official, particularly for cases with respiratory and gastrointestinal tract diseases. Most of the cases had used drugs unnecessarily or inadequately.[14] Some inpatients with infectious diseases were given antibiotics without suitable indications (Table 4.40), partly due to advertising influence (Figure 4.32) while very little effort has been made to disseminate drug information to the public though various media including newspaper, radio, television and magazines. Although such efforts have been made more intensively, most people get drug information from drug business operators.

Besides, the third round health examination survey in Thailand (2003-2004) revealed that 8 to 9 million Thai people aged 15 years and above were on a certain kind of medication for at least a month. The proportion of people with regular drug use were found to increase with age, a higher proportion in females than in males. In addition, it was found that among people of all ages, the most commonly used medicine was "painkillers" (the older the more was used), followed by "health tonics" whose prevalence also rose with age (Table 4.41).

Table 4.40 Use of antibiotics without appropriate indications, compiled from 11 reports

Drug group	Study site (hospital)	Study period	No. of patients	Inappropriate use (percent)
Ceftriaxone	Phra Pokklao	Oct 98 - Sep 99	9	77.8
Parenteral antibiotics	Ban Mi	June - Nov 97	203	39.4
Ciprofloxacin	Lampang	Nov - Dec 95	24	50.0
Parenterala antibiotics	Chainat	Jan - June 93	219	44.7
Ceftazidime	Yasothon	July - Sep 99	48	60.4
Ceftazidime	Lampang	July - Sep 96	49	40.0
Cephalosporins	Taksin	Mar 91 - Feb 92	144	13.2-15.3
Ceftazidime	Nakhon Ratchasima	May - Aug 96	114	25.0
Ceftazidime	Phra Phutthachinnarat	Mar - Apr 2000	59	37.5
Ceftriaxone	Lampang	Oct 94	17	41.0
Cephalosporins	Uttaradit	Oct 95 - Sep 96	258	70.2

Source: Drug System in Thailand, 2002.

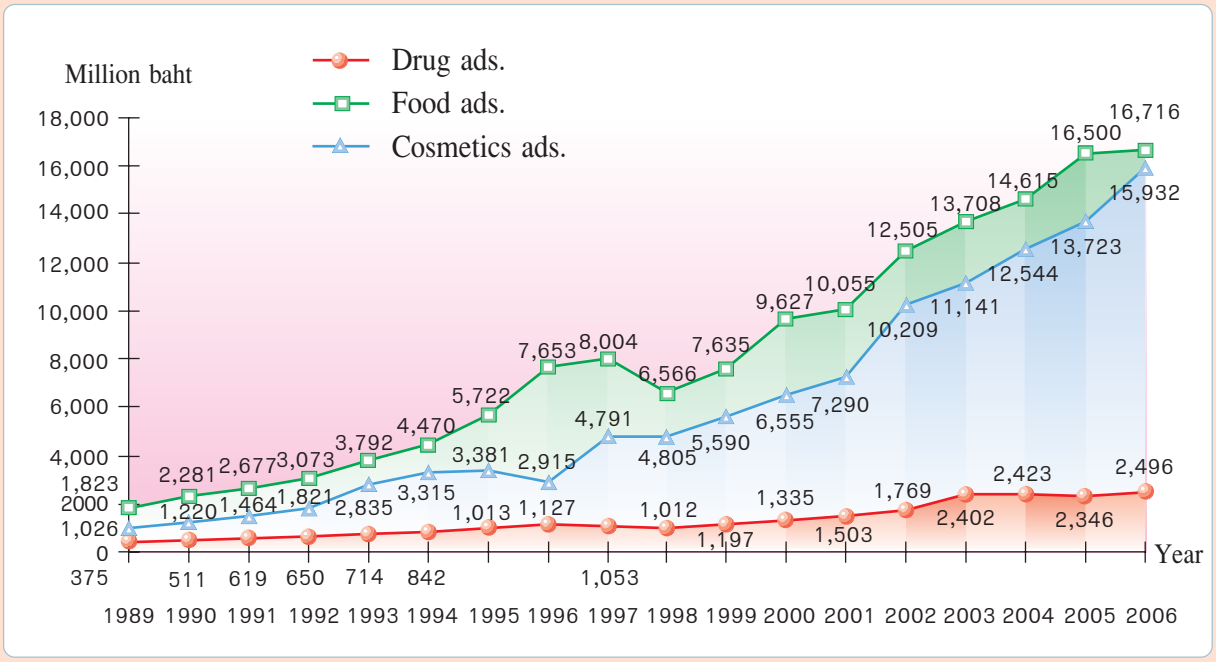
[14] Committee on Drug System Study Project in Thailand. Drug System in Thailand, 2002

Table 4.41 Percentage of people regularly taking medication by age, sex and type of medicine

Age (years)	Percentage of people on medication					
	Painkillers	Tranquilizers	Sedatives	Anti-obesity	Tonics	Others
Males						
15-29	1.4	0.4	0.4	0.2	1.5	3.3
30-44	3.6	0.4	0.8	0.1	0.8	7.8
45-59	5.2	0.5	0.7	0.2	1.5	15.8
60-69	7.9	0.5	1.3	0.0	4.0	27.6
70-79	8.0	0.6	1.8	0.1	6.2	29.8
80+	8.4	0.3	2.7	0.2	6.6	34.4
All ages	**3.8**	**0.4**	**0.7**	**0.1**	**1.7**	**10.6**
Females						
15-29	2.2	0.1	0.1	0.3	2.6	8.9
30-44	3.8	0.4	0.5	0.1	2.1	14.4
45-59	6.5	0.8	2.1	0.1	3.3	26.1
60-69	10.0	1.5	2.9	0.2	6.7	33.3
70-79	12.7	1.1	2.7	0.1	8.4	36.7
80+	10.6	0.5	2.2	0.0	10.6	30.2
All ages	**4.9**	**0.5**	**1.0**	**0.2**	**3.4**	**18.1**

Source: Report on National Health Examination Survey, Third Round, Thailand (2003 -2004). Ministry of Public Health.

Figure 4.32 Billings of drug, food and cosmetic advertisements, 1989-2006



Source: Media Data Resources (MDR).

Notes: 1. Food means alcoholic beverages, milk, energy drinks, snacks, soft drinks, candies, seasonings, instant noodles, coffee, food, cooking oil, canned food, dairy products, chocolates and cigarettes, liquid foods and others.

2. Cosmetic means shampoo, soap, general cosmetic, body powder and skin moisturizing cream.

8.3 Tobacco Consumption

Although Thailand has got laws related to tobacco products control, including laws on protection of health of non-smokers, the number of smokers is still high. In 2006, Thai people totally smoked 36,367 million cigarettes or an average of 87.6 packs/person/year (Table 4.42), rising from 71 packs/person/year for 2001-2002. The proportion of cigarette smokers changed slightly, decreasing from 20.5% in 1999 to 20.3% in 2006, the increase was noted for both males and females. It is noteworthy that although the smoking rate among youths (aged 15-24 years) is lower than those among the working-age group (aged 25-59 years) and the elderly (aged 60 and older), it was found that their smoking rate for 2001-2006 was higher than that for 1999-2001 in both males and females. This has indicated that smoking has more widely spread among youths.

However, when considering the age of first smoking, males started smoking at a younger age then did females, but there is a tendency that males would start later while females would start earlier (Tables 4.43 and 4.44). This is consistent with the WHO forecast which indicates that the

smoking rate among females in developing countries in 2025 will increase from 8% to 20%, but the rate among males will drop from 60% to 45%. A survey conducted the Kasikorn Research Centre[15] revealed that, in 2003, the motivation for smoking among Bangkok residents included stress, alcohol use, anger, uneasiness, visiting night spots and seeing movies with smoking scene. It was also found that one-third of youths aged under 13 years indicated seeing a movie with a smoking scene was the cause of their smoking desire. A regular male smoked 9.0-10.6 cigarettes per day on average; males smoking more than females (Figure 4.33). Regarding the type of cigarettes smoked the most, it was found that after the economic crisis a number of smokers shifted from using local brands to foreign brands and self-rolled cigarettes (Table 4.45). The market share of imported cigarettes has increased from 4.1% in 1997 to 22.6% in 2006; vice versa the market share of cigarettes produced by the Tobacco Monopoly of Thailand has dropped from 95.9% in 1997 to 77.4% in 2006 (Table 4.46). The smoking of self-rolled cigarette might result from people's lower income after the economic crisis; and more people turned away from factory-produced cigarettes to self-rolled ones.

Tobacco use has also had an impact on the economy. A study conducted by the Kasikorn Research Centre[15] found that, for Bangkok residents, spending on cigarettes was 15.07% of total monthly income. On average a Bangkok resident spent about 150 baht a month on cigarettes, the value of cigarette market in Bangkok was about 500 million baht for 2003. Despite intensive campaigns against smoking during the past two decades, the cigarette spending has been rising steadily. According to a World Bank report, tobacco causes an economic loss worth 200,000 million US dollars worldwide each year, which is higher than the revenue from tobacco sales; one-third of which occurred in developing countries.[16]

In Thailand, approximately 42,000 people die each year from smoking-related illnesses or 115 deaths per day (6 deaths per hour).[17] Research studies have revealed that smoking is the cause of serious illnesses; 90% of male cancer patients, 82% of larynx cancer patients, and 80% of pharynx cancer patients had ever smoked.

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[15] Kasikorn Research Centre. Smoking Behaviours of Bangkok's Residents, 2003.

[16] Prakit Vateesatogkit. What Will Occur With Tobacco in the Future. In New Generations Do Not Smoke Journal, 7: Jan-Feb 2000.

[17] Based on the estimates calculated by Prof. Dr. Prakit Vateesatogkit. Statistics on Smoking among Thai People. Action on Smoking and Health Foundation (photocopied document).

Table 4.42 Tobacco consumption of Thai people, 1988-2006

Description	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total tobacco consumption (million cigarettes)	34,090	38,718	38,887	38,825	40,068	42,245.2	44,849.6	45,755.3	47,235.9	48,336.6	39,057.1	36,166.1	36,469.7	29,502	29,682	31,366	34,174	34,237	36,367
consumption (packs/person/year)	91.5	100.6	98.4	95.8	96.5	101.7	108.0	110.2	113.8	116.4	98.8	87.1	87.8	71.0	71.5	75.5	82.3	82.4	87.6
Quantity imports (million packs)	-	-	-	12	51	60	71	71	77	99	172	261	239	261	262	293	508	574	454
Value of imports (million bath) Cigarettes domestically produced	-	-	-	-	716.8	968.5	787.0	1,032.1	952.2	907.3	2,755.6	4,289.8	4,586.3	6,151.9	6,136	6,472	8,698.7	9,810.3	9,548.8
Million cigarettes	32,505.41	37,198.47	38,235.21	39,719.55	39,591.40	41,219.63	44,542.46	43,183.83	47,751.79	47,125.75	34,568.73	32,023.63	31,796.45	29,742.35	29,598.67	31,498.95	33,685.42	34,030.0	29,148.80
Million packs	1,625.27	1,859.92	1,911.76	1,986.0	1,979.57	2,060.98	2,227.12	2,159.19	2,387.59	2,356.28	1,728.44	1,601.18	1,589.82	1,487.12	1,479.93	1,574.95	1,684.27	1,701.50	1,457.44
Sales value (million bath)	18,674	20,996	23,640	26,910	27,613	28,890	35,117	34,869	40,340	46,977	44,670	40,700	42,600	42,617	45,219	46,739	45,062	44,541	42,273
Tobacco tax (million bath)	11,467	12,989	14,785	17,060	16,991	17,439	22,375	22,911	26,134	28,296	25,816	23,100.6	23,540.2	23,912.2	25,641	26,349	33,922	34,936	32,250
Profits sent to Ministry of Finance(million bath)	1,069	2,595	2,064	2,244	3,202	2,802	2,954	3,588	3,445	3,600	4,657	5,000	5,310	5,232	4,958	5,948	6,232	6,090	5,211
Excise tax (percent)	35-56.5	35-56.5	35-56.5	55	55	60	60	62	68	70	70	71.5	71.5	75	75	75	75	79	79

Sources : - Thailand Tobacco Monopoly and the Excise Department, Ministry of Finance

- Statistics on Trade and Economic Indicattors of Thailand, Department of Business Economics.

Table 4.43 Number and proportion of smokers, 1976-2006

Year	Population (millions)	No. of smokers			Proportion of smokers (percent)		
		Total	Males	Females	Total	Males	Females
1976	28.7[1]	8.6	7.7	0.9	30.1	54.7	6.1
1981	35.1[1]	9.8	9.0	0.8	27.8	51.2	4.4
1986	38.0[2]	10.4	9.6	0.8	27.4	50.4	4.2
1988	40.5[2]	10.1	9.4	0.7	25.0	46.7	3.5
1991	43.3[2]	11.4	10.6	0.8	26.3	49.0	3.8
	38.3[3]	11.3	10.5	0.8	29.7	55.3	4.3
1993	45.7[2]	10.4	9.8	0.6	22.8	43.2	2.5
	40.7[3]	10.4	9.8	0.6	25.5	48.5	2.8
1996	48.0[2]	11.2	10.6	0.6	23.4	44.6	2.5
1999	49.9[2]	10.2	9.6	0.6	20.5	38.9	2.4
2001	51.2[2]	10.5	10.0	0.5	20.6	39.3	2.2
2003	35.8[2]	7.7	7.1	0.6	21.6	44.1	2.9
2004	49.4[3]	11.3	10.7	0.6	21.1	40.1	2.4
2006	54.5[2]	11.0	10.3	0.7	20.3	38.8	2.6

Sources: 1. Health and Welfare Surveys. National Statistical Office.

2. Preliminary Results of Survey on Population's Tobacco and Liquor Consumption, 2001. National Statistical Office.

Notes: 1. [1]Population aged 10 and over.

[2]Population aged 11 and over.

[3]Population aged 15 and over.

2. In the 2003 Health and Welfare Survey, the interview was undertaken only when the interviewee was present; thus, the total population surveyed was smaller than the overall population of the country.

Table 4.44 Proportion of regular smokers in population aged 11 years and over by age group and gender, 1999, 2001, 2003, 2004 and 2006

Age group (years)	Proportion of smokers (percent)															Change in regular smoking rates					
	1999			2001			2003			2004			2006			1999-2001			2001-2006		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
11-14	0.2	0.5	-	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.3	0.0	0.4	0.6	0.2	-0.1	-0.3	+0.1	+0.3	+0.4	+0.1
15-24	12.3	24.0	0.3	13.5	26.0	0.6	15.2	32.1	0.9	15.1	29.0	0.8	14.1	26.4	1.3	+1.2	+2.0	+0.3	+0.6	+0.4	+0.7
25-59	26.3	49.8	3.0	26.2	49.9	2.6	25.3	51.8	3.4	26.3	49.6	3.0	25.0	48.3	3.0	-0.1	+0.1	-0.4	-1.2	-1.6	+0.4
60 and over	23.3	45.1	4.8	21.1	40.9	4.3	21.5	43.3	4.6	20.6	40.3	3.9	19.2	38.1	4.0	-2.2	-4.2	-0.5	-1.9	-2.8	-0.3
Total	20.5	38.9	2.4	20.6	39.3	2.2	21.6	44.1	2.9	21.1	40.1	2.4	20.3	38.8	2.6	+0.1	+0.4	-0.2	-0.3	-0.5	+0.4
Age at first smoking	18.2	17.9	22.2	18.5	18.3	21.9	18.4	18.2	21.5	18.4	18.2	21.7	18.3	18.2	20.2						

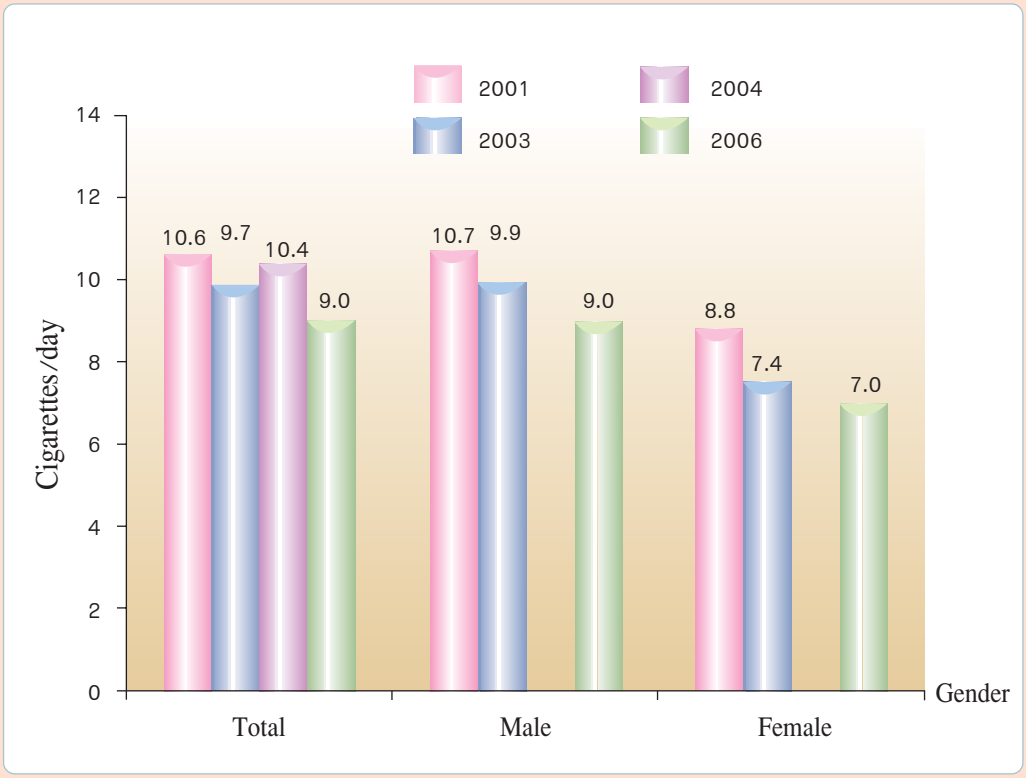
Sources: 1. Report on Survey of Population's Tobacco Use Behaviours, 1999. National Statistical Office.

2. Report on Survey of Population's Tobacco and Liquor Consumption, 2001. National Statistical Office.

3. Reports on Health and Welfare Surveys, 2003 and 2006. National Statistical Office.

4. Report on Survey of Population's Tobacco and Liquor Consumption, 2004. National Statistical Office.

Figure 4.33 Average number of cigarettes smoked per day by a regular smoker aged 11 years and over by gender, 2001, 2003, 2004 and 2006



Sources: 1. Preliminary Results of Population's Smoking and Drinking Behaviours Survey, 2001. National Statistical Office.

2. Health and Welfare Surveys, 2003 and 2006. National Statistical Office.

3. Report on Population's Smoking and Drinking Behaviours Survey, 2004. National Statistical Office.

Note: For 2004, survey on population aged 15 years and over; no analysis by sex.

Table 4.45 Percentage of population aged 11 and over using tobacco products regularly by product category most frequently used

Product category (most frequently used)	Before the crisis		After the crisis		
	1993	1996	1999	2001	2004
Local cigarettes	44.9	55.6	44.3	46.0	46.2
Imported cigarettes	0.9	1.1	1.3	1.2	1.3
Self-rolled cigarettes	54.0	42.5	54.1	52.7	50.0
Cigars	< 0.1	0.2	0.1	} 0.1	} 2.5
Pipe	0.1	0.2	0.2		
Unknown	0.1	0.4	-		

Sources: 1. Report on Health and welfare Survey. National Statistical Office.

2. Report on Survey of Population's Tobacco Use Behaviours, 1999. National Statistical Office.
3. Preliminary Results of Population's Tobacco and Liquor Consumption Survey, 2001. National Statistical Office.
4. Report on Population's Tobacco and Liquor Consumption Survey, 2004. National Statistical Office.

Table 4.46 Market shares of domestic and imported cigarettes, 1991-2006

Fiscal year	Market share (percent)	
	Local cigarettes	Imported cigarettes
1991	99.4	0.6
1992	97.4	2.5
1993	97.2	2.8
1994	97.0	3.0
1995	96.7	3.2
1996	96.8	3.1
1997	95.9	4.1
1998	91.5	8.4
1999	86.4	13.5
2000	86.7	13.3
2001	85.0	15.0
2002	84.7	15.3
2003	85.9	14.1
2004	80.1	19.9
2005	77.7	22.3
2006	77.4	22.6

Source: Thailand Tobacco Monopoly, Ministry of Finance.

8.4 Alcoholic Beverage Consumption

Alcohol abuse is number one cause of burden of disease among males and number nine among females in Thailand (Table 4.34). Thai people tend to consume more alcoholic beverages. In the past decade, alcohol use rose from 721.8 million litres in 1988 to 1,604.3 million litres in 1997, a two-fold increase. After the economic crisis, alcohol consumption had a declining trend from 1,689.8 million litres in 1998 to 1,340.9 million litres in 1999. However, after the economic recovery in 2006, alcohol use appears to rise to 2,479.7 million litres. The Food and Agriculture Organization estimated that the amount of alcohol consumed per capita per day of Thai people in 2000 was ranked fifth, compared with those in France, the U.S.A., Japan and the Philippines[18] (Figure 4.34).

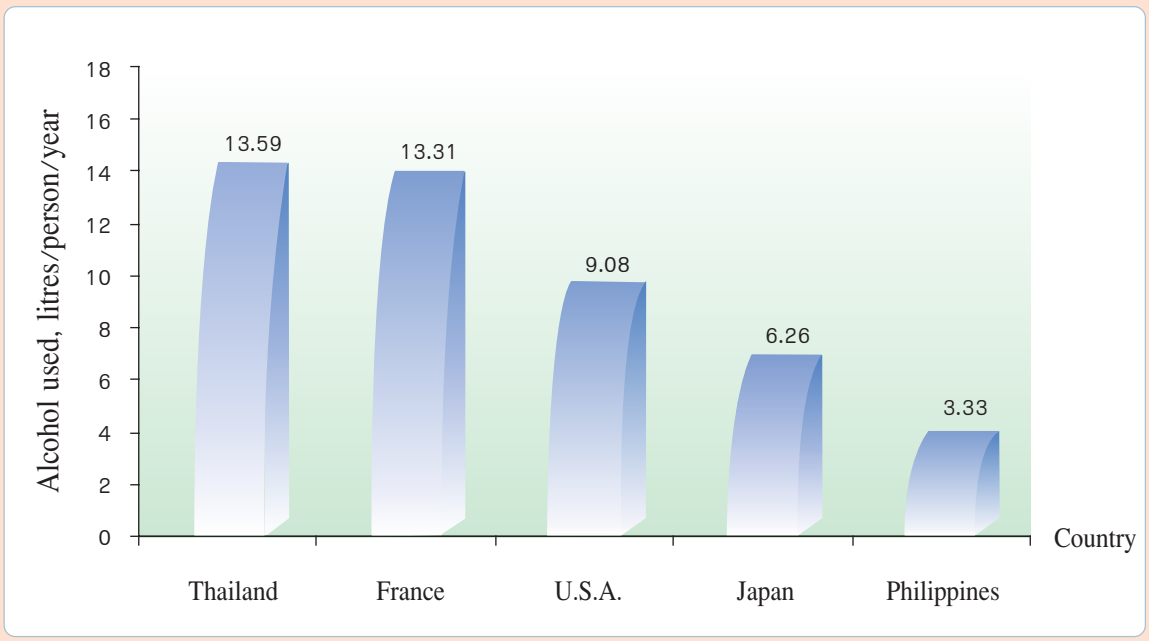
By type of alcoholic beverages, the rate of liquor consumption seemed to be stable while those for beer and wine were rising (Table 4.47 and Figure 4.35) as a result of the government's free trade policy beginning in 1992. After that many more beer brewery and winery plants have been operational (Figure 4.36); coupled with lower prices, the sales volumes and amounts of beer consumed were higher than those for liquor.

[18] Yongyout Kachondham. Advertisements of Alcoholic Drinks and Losses. Thai Health Promotion Foundation, 2004.

A survey conducted by the NSO revealed a similar result, i.e. the proportion of drinkers increased from 31.5% in 1991 to 35.3% in 2004, but dropped to 29.2% in 2006 (Table 4.48). It is noteworthy that during the ten-year period (1996-2006), the proportion of female drinkers has risen in all age groups, particularly those aged 15-19 years, increasing from 1.0% to 2.9% (Table 4.49).

Regarding drinking frequency among drinkers, it was found that about half of them drank occasionally, but the proportion of regular drinkers was rising from 8.6% in 1996 to 13.0% in 2006 (Table 4.50). The 2003/2004 health examination survey revealed that, among the population aged 15 years and above, 16.6% of males and 2.1% of females drank alcohol at a dangerous level, on overage 39.7 gm/d for males and 6.3 gm/d for females. A future study conducted by Dr. Virasakdi Chongsuvivatwong of the Faculty of Medicine, Prince of Songkla University, revealed that alcohol use has been rising in both sexes and all age groups, females having a chance to drink more alcohol, more than 3-4 times per week. The reasons are socializing, following friends' behaviour, testing and being influenced by advertisements. The values or billings of alcohol advertisements have been rising, particularly during 2000-2006, to more than 2000 million baht each year (Table 4.51). Thus, in 2006 the government proposed an alcohol consumption control law to the National Legislative Assembly so as to ban alcohol advertisements in all kinds of media and to ban the sale of alcohol to any one aged less than 20 years.

Figure 4.34 Comparison of alcohol consumption per person, 2000



Source: WHO Alcohol Consumption Database, referred to in Yongyout Kachondham. "Advertisements and Consumption of Alcohol and Losses." Thai Health Promotion Foundation, 2003.

Table 4.47 Alcohol consumption in Thailand, 1988-2006

Category	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2004	2005	2006
Total liquor consumption (million litres)	561.85	499.61	611.92	681.76	670.92	678.01	557.63	743.82	795.63	736.61	734.87	666.27	641.48	760.55	711.28	616.93	595.57	477.95
Average liquor consumption per person (litres)	15.7	13.9	16.3	17.6	17.0	16.7	13.8	17.4	18.4	16.7	16.5	14.7	14.0	16.4	14.7	12.6	12.2	9.7
Total beer consumption (million litres)	157.80	178.53	260.80	278.47	320.15	419.75	509.36	616.38	714.89	863.91	950.69	666.27	1,148.40	1,149.18	1,248.55	1,535.99	1,620.68	1,983.67
Average beer consumption per person (litres)	4.4	5.0	6.9	7.2	8.1	10.3	12.1	14.4	16.5	19.6	21.3	14.7	25.1	24.8	25.8	31.5	33.3	40.3
Total wine consumption (million litres)	2.14	0.89	0.83	1.49	1.52	1.51	1.39	2.39	4.40	3.85	4.30	8.39	12.91	16.34	19.20	27.04	26.50	18.80
Average wine consumption per person (litres)	0.06	0.03	0.02	0.04	0.04	0.04	0.03	0.06	0.10	0.09	0.10	0.20	0.30	0.35	0.40	0.55	0.54	0.38
Total alcohol consumption (million litres)	721.80	679.04	873.56	961.73	992.59	1,099.28	1,088.39	1,362.60	1,514.93	1,604.38	1,689.87	1,340.94	1,802.81	1,926.08	1,979.03	2,170.95	2,242.76	2,479.70
Average alcohol consumption per person (litres)	20.2	18.9	23.3	24.8	25.2	27.1	25.9	31.9	35.0	36.4	37.9	29.5	39.3	41.6	40.9	44.7	46.1	50.3
Amount of imported liquor(thousand litres)	-	-	-	-	12,783.3	14,801.3	18,165.9	20,700.4	33,334.5	32,749.2	17,467.4	28,728.5	39,728.3	48,921.7	57,154.1	NA	NA	NA
Taxes on imported liquor(million bath)	-	-	-	-	1,105.5	1,227.2	1,671.1	1,603.3	2,536.6	2,525.0	1,959.9	2,998.5	3,358.3	5,377.7	6,146.1	7,918.24	7,741.39	8,245.50

Source: The Excise Department, ministry of Finance.

Note: Average consumption per person aged 15 and over.

Table 4.48 Number and proportion of alcoholic beverage drinkers, 1991-2006

Year	Population (millions)	No. of drinkers (millions)			Proportion of drinkers (percent)		
		Total	Males	Females	Total	Males	Females
1991	39.5	12.4	10.5	1.8	31.5	53.7	9.5
1996	43.4	13.7	11.9	1.7	31.6	55.4	8.1
2001	46.9	15.3	13.0	2.3	32.6	55.9	9.8
2003	35.8	12.7	9.8	2.8	35.5	60.8	14.5
2004	49.4	16.1	13.6	2.5	35.3	59.3	11.7
2006	54.5	15.9	13.3	2.6	29.2	50.3	9.1

Sources: 1. Reports on Health and Welfare Surveys, 1991, 1996, 2001, 2003 and 2006. National Statistical Office.
2. Report on Smoking and Drinking Survey, 2004. National Statistical Office.

Note: In the 2003 Health and Welfare Survey, the interview was undertaken only when the interviewee was present; thus, the total population surveyed was smaller than the overall population of the country.

Table 4.49 Alcohol drinking rate among population aged 11 and over by age and sex

Age group (years)	1991		1996		2001		2003		2004		2006	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
11-14	-	-	0.2	0.05	-	-	0.5	0.4	0.5	0.3	0.9	0.4
15-19	21.7	2.1	20.8	1.0	19.9	1.9	33.5	5.6	25.5	3.3	24.2	2.9
20-24	59.5	5.4	56.0	5.7	55.8	7.2	70.4	11.8	59.7	10.1	58.1	8.2
25-29	66.7	9.2	67.6	6.9	68.1	10.2	75.7	16.8	72.8	13.1	64.2	9.8
30-34	68.6	11.9	67.7	9.5	67.0	12.3	76.5	20.0	72.9	13.5	66.1	12.0
35-39	66.2	15.3	69.0	12.2	69.2	14.2	73.3	19.2	73.6	17.6	64.8	14.3
40-49	65.1	15.6	65.8	12.9	67.5	14.2	73.0	21.7	73.7	17.4	64.6	13.2
50-59	56.1	14.2	59.9	10.1	58.7	11.5	64.5	14.4	70.2	13.5	56.3	10.0
60 and over	38.0	8.5	36.8	6.3	37.0	5.7	41.9	8.6	62.7	10.4	33.2	5.9
Total	**53.7**	**9.5**	**50.1**	**7.4**	**55.9**	**9.8**	**60.8**	**14.5**	**59.3**	**11.7**	**50.3**	**9.1**

Source: A reanalysis of the Health and Welfare Survey Database. National Statistical Office.

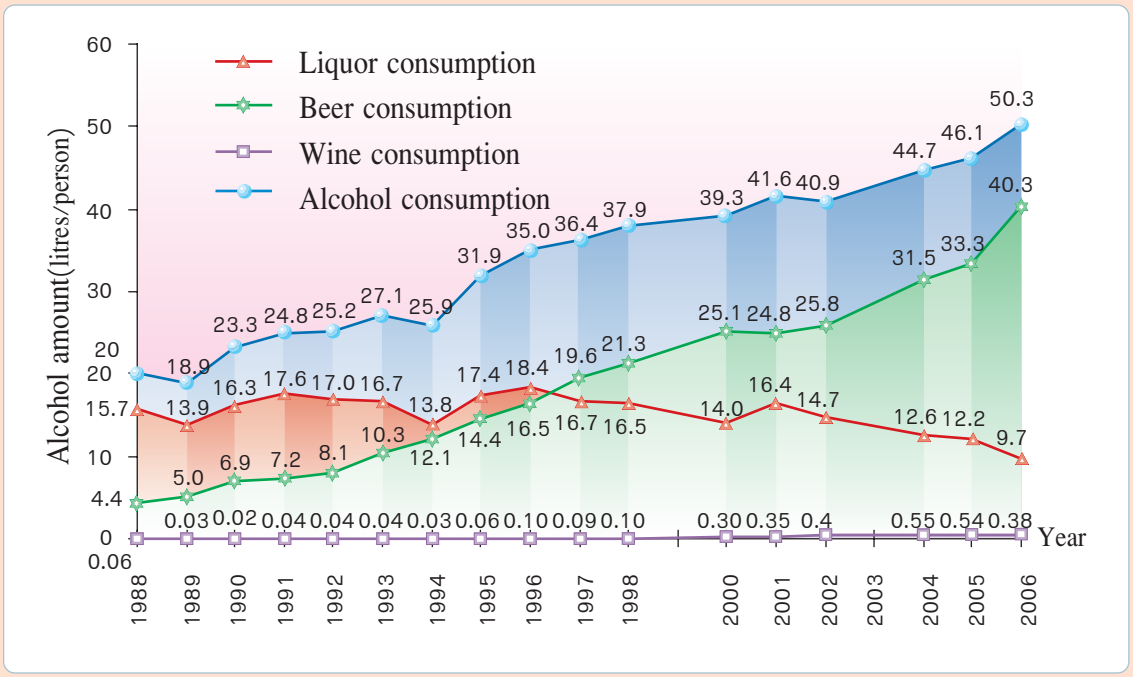
Table 4.50 Percentage of drinking population by frequency of drinking, 1996, 2001, 2003, 2004 and 2006

Drinking frequency	1996[1]	2001[2]	2003[1]	2004[2]	2006[2]
Every day	8.6	7.9	9.4	9.5	13.0
Quite frequent (3-4 times/wk.)	10.7	9.9	10.7	10.2	11.2
Some day (1-2 times/wk.)	17.4	17.2	17.7	18.6	21.1
1-2 times/month	16.4	15.3	12.2	16.3	13.2
Occasionally	46.2	49.4	50.0	45.5	41.5
Unknown	0.6	0.3	-	-	-

Sources: 1. Reports on Health and Welfare Surveys, 1996, 2003 and 2006. National Statistical Office.
2. Report on Population's Smoking and Drinking Behaviours Survey, 2001. National Statistical Office.

Notes: [1]Population aged 15 years and over.
[2]Population aged 11 years and over.

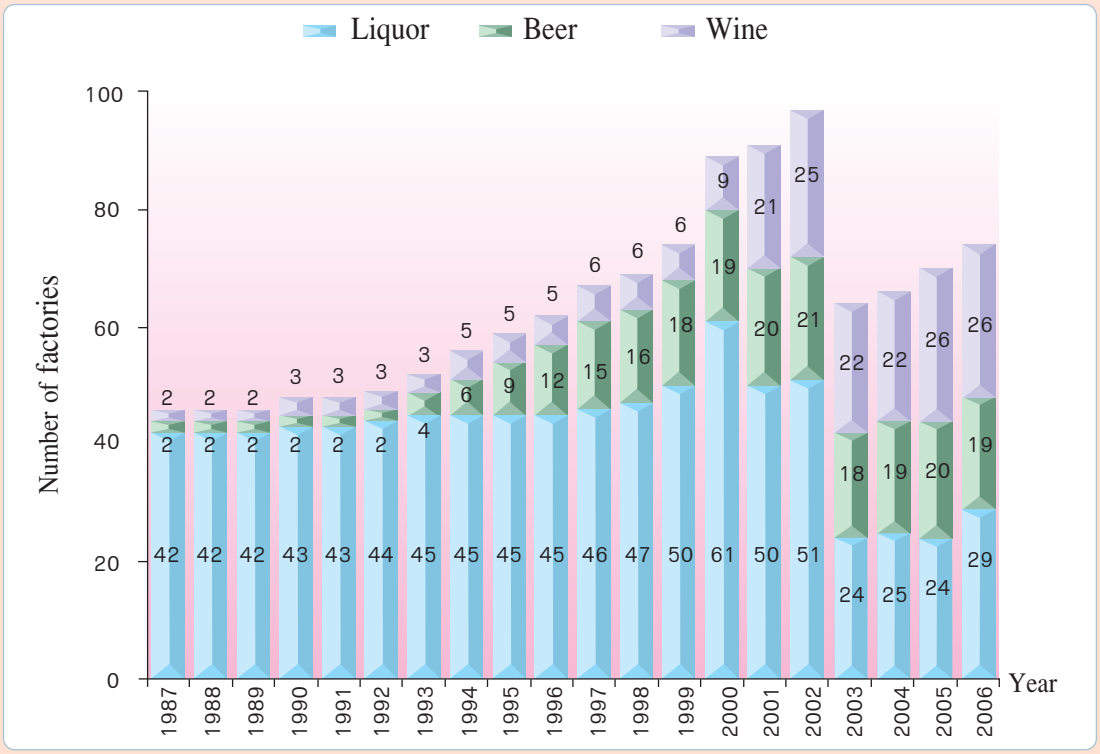
Figure 4.35 Sales quantities of liquor, beer and wine, and amount of alcohol consumed per person aged 15 years and over, 1988-2006



Source: The Excise Department, Ministry of Finance.

Note: Average consumption per person aged 15 years and over.

Figure 4.36 Numbers of liquor, beer and wine factories, 1987-2006



Source: Department of Industrial Works, Ministry of Industry.

Note: In 2003-2006, the number of liquor factories decreased due to factory closure and merger.

Table 4.51 Alcohol advertisements billings, 1989-2006

Year	Advertisement billings (million baht)	Increase (percent)
1989	255	-
1990	347	+36.1
1991	460	+32.6
1992	514	+11.7
1993	705	+37.2
1994	772	+9.5
1995	1,318	+70.7
1996	2,169	+64.6
1997	1,859	-14.3
1998	1,264	-32.0
1999	1,812	+43.4
2000	2,522	+39.2
2001	1,910	-24.3
2002	2,180	+14.1
2003	2,025	-7.1
2004	2,007	-0.9
2005	2,302	+14.7
2006	2,000	-13.1

Source: Media Data Resources (MDR).

8.5 Consumption of Caffeine Drinks

As a result of all kinds of sales promotion, the volume of caffeine drinks consumed rose from 131.10 million litres in 1992 to 310.05 million litres in 1997. During the economic crisis, the consumption of such drinks dropped markedly, but after the economic recovery, the consumption rose again to 991.06 million litres in 2006 (Table 4.52).

Table 4.52 Volumes of caffeine drinks (energy drinks) in Thailand, 1992-2006

Year	Production volume (million litres)	Sales volume (million litres)	Per capita consumption (litres/yr.)	Change in per capita consumption (percent)
1992	138.40	131.10	3.32	-
1993	173.75	329.26	8.10	+144.0
1994	183.62	181.84	4.33	-46.5
1995	209.31	217.08	5.08	+17.3
1996	180.87	182.92	4.22	-16.9
1997	308.08	310.05	7.03	+66.6
1998	134.73	126.12	2.82	-59.9
1999	174.59	155.44	3.42	+21.3
2000	337.56	332.47	7.25	+112.0
2001	364.84	355.14	7.66	+5.6
2002	366.30	433.59	8.95	+16.8
2003	445.47	433.21	8.90	-0.6
2004	741.35	786.80	16.14	+81.3
2005	1,020.81	968.07	19.88	+23.2
2006	1,003.80	991.06	20.12	+1.2

Source: The Excise Department, Ministry of Finance.

Note: Per capita consumption among population aged 15 years and over.

In 2000, the Food and Drug Administration, the Institute of Nutrition of Mahidol University, and the Health Systems Research Institute jointly conducted a survey on consumption behaviour of caffeine drinks among Thai people aged 12 years and over. It was found that approximately two-fifths of respondents (38.6%) drank caffeine drinks, approximately two-thirds (66.6%) drank coffee or tea, and approximately three-fourths (77.0%) drank carbonated caffeine drinks. Moreover, it was found that the prevalence of Thais drinking all three kinds of drinks was 23.7% of respondents, 36.6% for males and 11.1% for females, four times higher in males (Table 4.53); the reasons being for sleepiness prevention, refreshment and favouring their good taste.

Table 4.53 Number and prevalence of caffeine drinkers aged 13-70 years by sex

Drinking behaviour	Caffeine drinkers			Coffee and tea drinkers			Carbonated caffeine drinkers		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Drinking	1,257	442	1,699	1,541	1,592	3,133	1,656	1,925	3,581
Used to drink	266	192	458	202	209	411	175	200	375
Never drink	648	1,830	2,478	428	663	1,091	338	337	675
Total	2,171	2,464	4,635	2,171	2,464	4,635	2,169	2,462	4,631
Prevalence									
Drinking	57.9%	17.9%	36.7%	71.0%	64.6%	67.6%	76.3%	78.2%	77.3%
Used to drink	12.3%	7.8%	9.9%	9.3%	8.5%	8.9%	8.1%	8.1%	8.1%
Never drink	29.8%	74.3%	53.5%	19.7%	26.9%	23.5%	15.6%	13.7%	14.6%
Adjusted Prevalence*									
Drinking	59.8%	17.8%	38.6%	70.1%	63.1%	66.6%	76.3%	77.6%	77.0%
Used to drink	10.9%	7.5%	9.2%	9.1%	8.3%	8.7%	7.6%	7.7%	7.6%
Never drink	29.3%	74.7%	52.3%	20.8%	28.6%	24.8%	16.1%	14.7%	15.4%

Sources: Food and Drug Administration, Institution of Nutrition of Mahidol University and Health Systems Research Institute. Report on Consumption Behaviours of Thai Drinking Caffeine Drinks, 2000.

Note: *Adjusted prevalence was calculated based on the proportion of the population by sex.

8.6 Substance Abuse

The narcotic problem is getting more and more complex in relation to economic and social changes by ramifying into communities, business facilities or even educational institutions. In Thailand, despite the fact that there are numerous legal measures and continuos campaigns for drug control and suppression, the illicit drug problem is still prevalent. Currently, the major narcotic widely used is methamphetamine or “ya ba” in Thai. Although the country is encountering the economic crisis, drug trafficking is on the rise. Significant examples include a rising number of methamphetamine-crime arrests, especially in northern border areas where the proportion of arrests has risen from 16.7% in 1995 to 46.0% in 2006 (Table 4.54).

Table 4.54 Statistics of methamphetamine seizures, 1993-2006

Year	Whole country (tablets)	The North	
		Tablets	Percent
1993	7,000,000	40,000	0.6
1994	4,000,000	600,000	15.0
1995	6,000,000	1,000,000	16.7
1996	9,000,000	3,500,000	38.9
1997	15,000,000	9,000,000	60.0
1998	31,770,127	17,689,136	55.7
1999	49,887,050	33,137,431	66.4
2000	83,000,000	34,000,000	41.0
2001	93,800,000	55,670,540	59.3
2002	95,900,000	37,810,500	39.4
2003	71,400,000	33,227,800	46.5
2004	31,169,919	10,021,603	32.1
2005	17,225,511	7,375,668	42.8
2006	13,480,000	6,195,800	46.0

Source: Office of the Narcotics Control Board.

In 2003 the number of new drug abuse treatment admissions to drug dependence treatment facilities was highest as the government stepped up efforts to send drug addicts into treatment facilities more than those in 2001-2002 (Table 4.55). The serious concern, however, is a remarkable increase in the number of students taking drugs, specially stimulant or methamphetamine, escalating from 0.2% in 1985 to 1.5% in 1999 or a 7.5-fold increase (Table 4.56).

Table 4.55 Number of substance abuse treatment admissions at dependence treatment facilities in Thailand, 1987-2006

Year	No. of all admissions	No. of readmissions	New admissions	
			No.	Percentage of total admissions
1987	57,874	42,748	14,895	25.7
1988	61,218	46,766	13,779	22.5
1989	60,000	44,048	13,723	22.9
1990	58,327	41,942	13,984	24.0
1991	66,465	46,253	18,398	27.7
1992	63,978	44,816	19,162	30.0
1993	82,620	51,053	29,468	35.7
1994	80,618	49,644	30,189	37.4
1995	101,145	61,490	38,565	38.1
1996	81,050	50,774	29,223	36.1
1997	62,362	39,075	21,956	35.2
1998	73,079	45,001	28,060	38.4
1999	64,232	37,150	27,082	42.2
2000	67,155	38,778	28,377	42.3
2001	72,646	41,265	31,381	43.2
2002	68,623	32,772	35,851	52.2
2003	319,748	n.a.	n.a.	n.a.
2004	41,499	n.a.	n.a.	n.a.
2005	43,343	n.a.	n.a.	n.a.
2006	49,772	11,323	38,449	77.2

Sources: 1. Department of Medical Services, MoPH.
2. Department of Health Service Support, Ministry of Public Health.

Note: During 2003-2005, there was a change in the system for drug abuse monitoring, no data were collected on the type of drug abuse treatment admissions.

Table 4.56 Percentage of secondary school students with substance abuse, 1985-1999

Types of drug/ narcotic	1985 (n=155,541)	1987 (n=30,097)	1989 (n=4,986)	1996 (n=15,306)	1999 (n=24,110)
Tobacco	9.16	6.73	7.62	7.60	5.28
Liquor	9.79	5.96	7.97	14.00	13.56
Marijuana	1.05	0.92	1.78	1.18	0.80
Inhalants	0.52	1.78	2.38	0.85	0.44
Stimulants or methamphetamines	0.18	0.73	0.60	1.64	1.52
Dry liquor (LSD)	0.19	0.28	0.28	0.55	0.37
Tranquilizers	0.12	0.26	0.40	0.92	0.42
Heroin	0.74	0.12	0.46	0.33	0.19

Source: Survey on Substance Abuse among Secondary School Students. Department of General Education and Office of the Narcotics Control Board, 1999.

According to the estimates on the number of students with illicit drug use nationwide by the ABAC-KSC Internet Research Institute (ABAC Poll) in 2001, about 6.2% of students had drug use behaviour. Methamphetamine was the drug that they used the most (58.5%; Table 4.57).

Table 4.57 Estimated number of students using drugs by drug category, 2001

Rank	Narcotic category	Estimated number of students	Percent
1	Methamphetamines	219,284	58.5
2	Marijuana	158,065	42.2
3	Tranquilizers, e.g. Domicum, Valium	125,918	33.6
4	Inhalants, rubber glue, lacquer	62,354	16.6
5	"Ecstasy" drug	42,443	11.3
6	"Love" drug	39,349	10.5
7	"K" drug (ketamine)	32,655	8.7
8	Heroin	28,402	7.6
9	Opiates	20,807	5.6
10	Cocaine	18,249	4.9
11	Morphine	18,231	4.9

Source: Estimation of Students Using Drugs: A Case Study of Students from All Educational Institutions Nationwide. ABAC-KSC Internet Research Institute (ABAC Poll), 2001.

Note: There were totally 374,653 students using drugs.

However, after the government implemented the war on drug policy in 2001, the Office of the Narcotics Control Board estimated that the proportion of drug users had declined from 16.4% in 2001 to 6.9% in 2003, a more-than-50% decrease (Table 4.58).

Table 4.58 Number of substance abusers nationwide by type of use duration, 2001 and 2003

Substance	2001			2003		
	Abusers in thousands (and percent)			Abusers in thousands (and percent)		
	Ever used	Ever used in 1 year	Ever used in 30 days	Ever used	Ever used in 1 year	Ever used in 30 days
Any kind of drug	**7,312.2(16.4)**	**1,942.1(4.3)**	**998.7(2.2)**	**3,155.5(6.9)**	**455.5(1.0)**	**257.8(0.6)**
Methamphetamines	3,491.6(7.8)	1,092.5(2.4)	490.3(1.1)	1,094.0(2.4)	83.8(0.2)	34.1(0.1)
Drug E or Love	360.1(0.8)	46.5(0.1)	17.7(0.0)	19.7(0.3)	13.3(0.0)	7.4(0.0)
Ketamine	40.7(0.1)	7.2(0.0)	1.2(0.0)	23.4(0.1)	1.0(0.0)	0.04(0.0)
Cocaine	52.8(0.1)	4.9(0.0)	1.1(0.0)	29.4(0.1)	7.4(0.0)	1.0(0.0)
Marijuana	5,425.3(12.1)	667.2(1.5)	210.0(0.5)	2,019.1(4.4)	83.4(0.2)	18.7(0.0)
Krathom (Mitragyna speciosa)	2,105.8(4.7)	643.8(1.4)	364.2(0.8)	1,160.0(2.6)	344.7(0.8)	221.6(0.5)
Opium	907.0(2.0)	38.6(0.1)	12.3(0.0)	323.7(0.7)	0.6(0.0)	0.3(0.0)
Heroin	274.2(0.6)	22.7(0.1)	9.4(0.0)	192.6(0.4)	1.4(0.0)	-
Thinner, glue, benzene	933.9(2.1)	199.7(0.4)	101.2(0.2)	447.9(1.1)	21.2(0.1)	13.2(0.0)

Source: Office of the Narcotics Control Board. Report on Estimation of Drug Users in Thailand, 2003.

8.7 Physical Activity and Relaxation

8.7.1 Physical Activity

The 2004 survey of the National Statistical Office revealed that **approximately 29.1% of Thai people regularly exercised**[19] (Table 4.59). However, when considering the trend in regular exercise for 1987-2004, it was found that **Thai people had a fluctuating rate of exercise**, ranging from 20 to 30% on average (Table 4.59), **males exercising more than females** (Figure 4.37) and more than half of the people exercising were under 15 years of age; the prevalence of exercise decreased with age (Figure 4.37).

[19] Exercise or physical activity means any movement of the body or part of body for health promotion, entertainment, and socialization, using simple activities or simple rules, such as walking, running, rope-jumping, body-stretching, and weight-lifting (except for exercise while working or body movement in daily life activities).

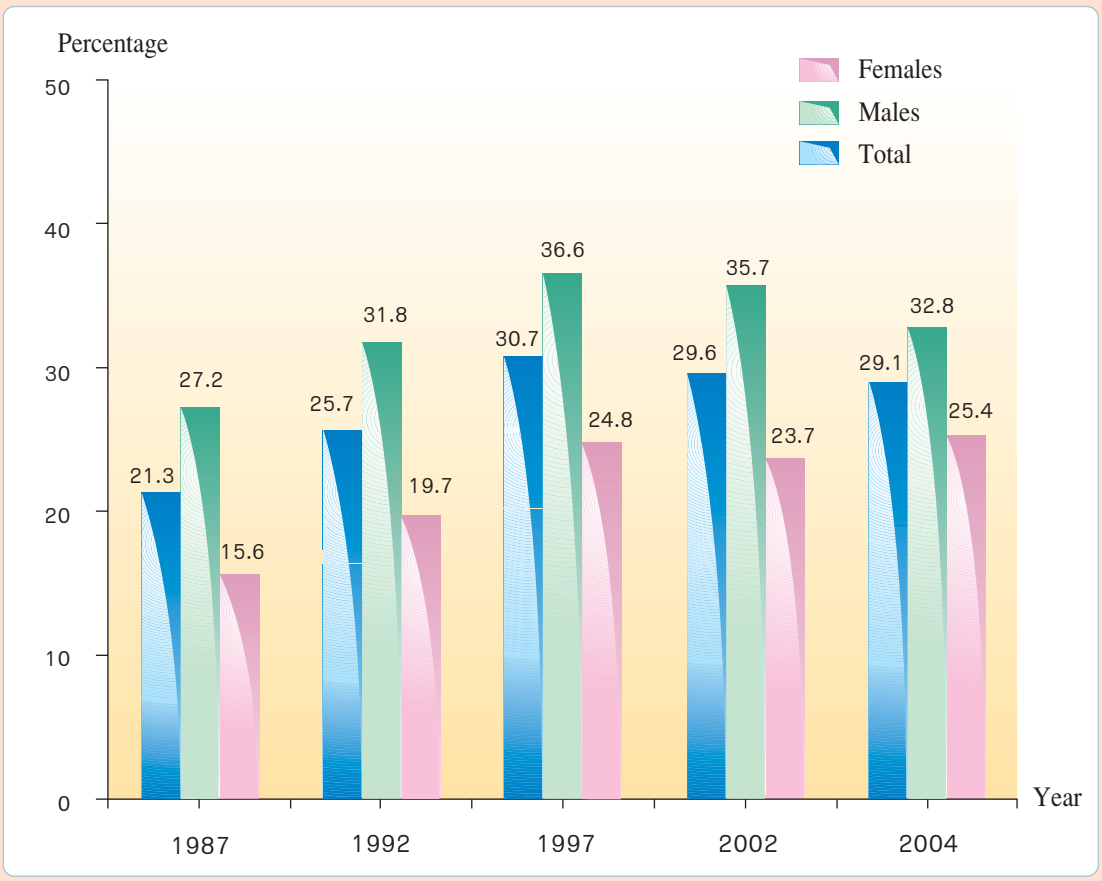
Table 4.59 Percentage of Thai people who regularly exercised, 1987-2004

Year	People regularly exercising	
	Percent	Change (percent)
1987	21.3	-
1992	25.7	+20.7
1997	30.7	+19.5
2002	29.6	-3.6
2004	29.1	-1.7

Sources: 1. Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992, 1997 and 2002. National Statistical Office.

2. Report on Exercise Behaviour of People Aged 11 Years and Above, 2004. National Statistical Office.

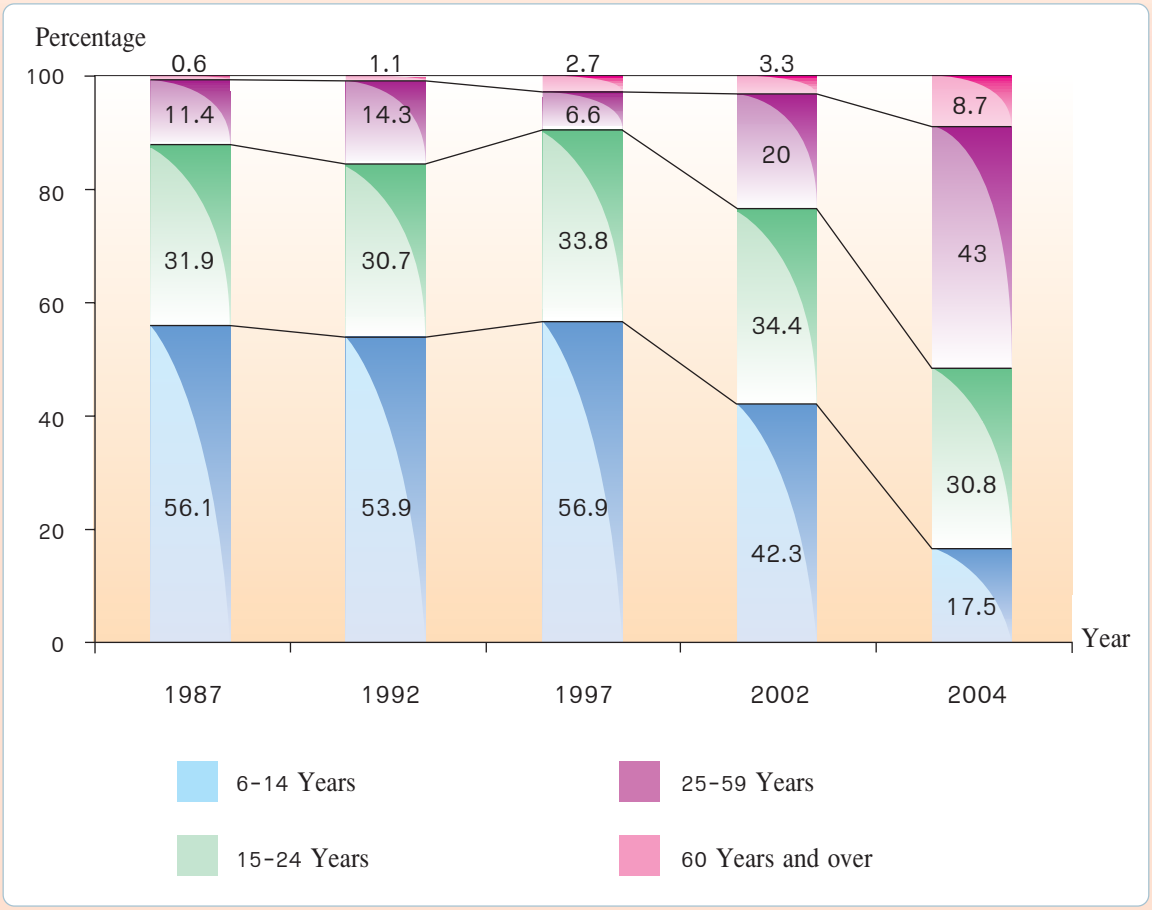
Figure 4.37 Percentage of Thai people who regularly exercised, by sex, 1987-2004



Sources: 1. Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992, 1997 and 2002. National Statistical Office.

2. Report on Exercise Behaviour of People Aged 11 Years and Above, 2004. National Statistical Office.

Figure 4.38 Percentage of Thai people who regularly exercised by age group, 1987-2004

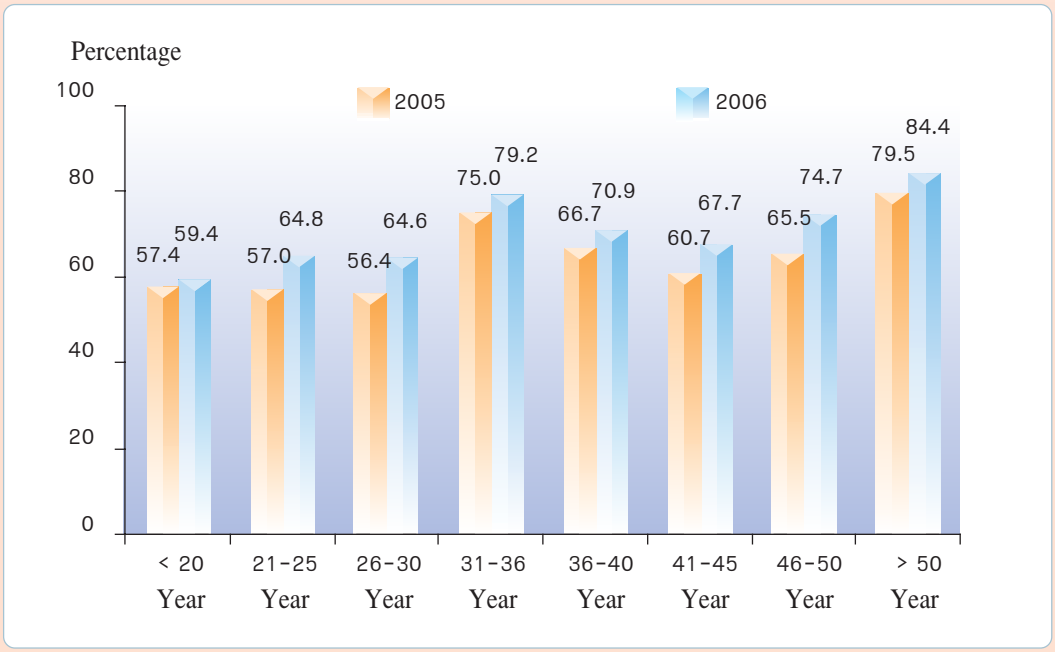


Sources: 1. Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992, 1997 and 2002. National Statistical Office.

2. Report on Exercise Behaviour of People Aged 11 Years and Above, 2004. National Statistical Office.

Besides, exercise bahaviour surveys on Bangkok residents conducted by Cheewajit Poll in 2005 and 2006 revealed that the prevalence of exercise increased by 4.2% on average and the time spent was 2.44 hrs per session, a two-fold increase. By age group, teenagers were the laziest to exercise, an increase of only 2.0% (Figure 4.39). Most students tend to overlook self-healthcare as they deem that they are already healthy and thus do not pay any attention to exercise as expected. This is different from the working-age group who are specially interested in exercise, always getting themselves fit as a way to get relieved from stress.

Figure 4.39 Proportion of Bangkok residents regularly exercising, 2005-2006



Source: Cheewajit Poll, third Project. Amarin Printing and Publishing (Public Limited Company).

Considering the exercise behaviour based on the criteria of **physical activity for health, it was found that more than 60% of the people exercise more than three days a week and approximately 80% to 90% exercise for 30 minutes or longer each day** (Tables 4.60 and 4.61). Regarding the continuity of exercise, it was found that 67.5% of the people had exercised continuously for over seven months and 18.1% for 1 to 3 months (Figure 4.40).

Table 4.60 Percentage of population aged 6 years and over exercising each week, 1987-2004

Days exercised	1987	1992	2002	2004
<3 days/wk	38.4	37.0	31.8	34.2
3+ days/wk	61.6	62.9	68.2	65.8
Total	**100.0**	**100.0**	**100.0**	**100.0**

Sources: 1. Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992 and 2002. National Statistical Office.

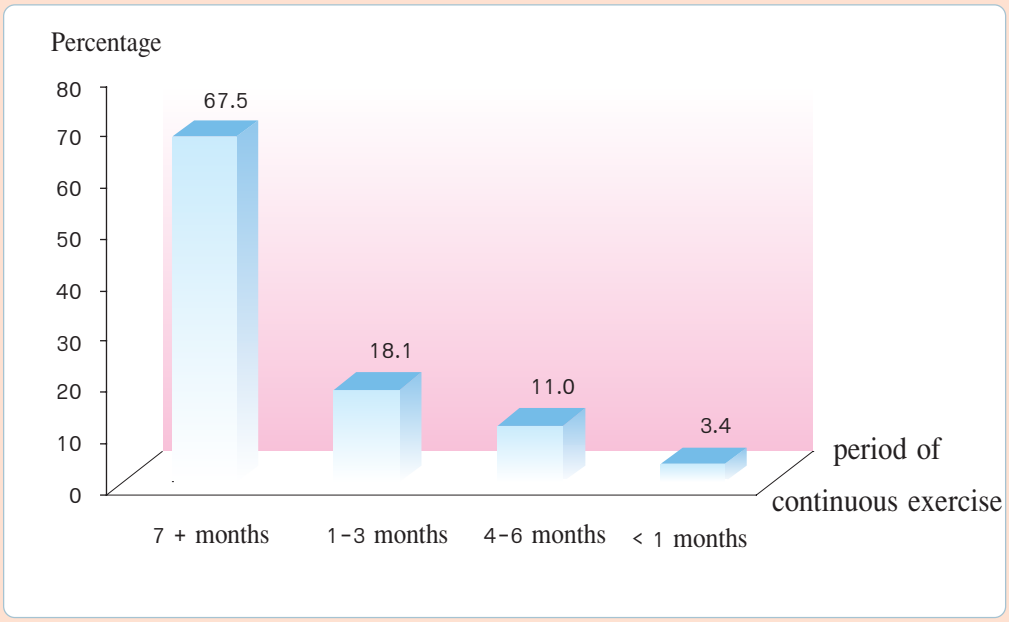
2. Report on Exercise Behaviour of People Aged 11 Years and Above, 2004. National Statistical Office.

Table 4.61 Percentage of population aged 6 years and over exercising each day, 1987-2002

Time period Exercised each day	1987			1992			1997			2002		
	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females
< 30 minutes	25.8	21.3	34.9	21.1	17.7	26.5	12.0	10.3	14.7	4.1	3.0	5.7
≥ 30 minutes	74.2	78.7	65.1	78.8	82.2	73.5	87.9	89.6	85.2	95.9	97.0	94.3
Unspecified	-	-	-	0.1	0.1	-	0.1	0.1	0.1	-	-	-
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Sources: Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992, 1997 and 2002. National Statistical Office.

Figure 4.40 Percentage of Thai people regularly exercising by period of time of continuous exercise, 2004



Source: Report on Exercise Behaviour Survey on People Aged 11 Years and Over, 2004. National Statistical Office.

The types of exercise most favored are jogging and aerobics while other sports and walking are less popular (Table 4.62). Where they want to play or exercise depends on the type of exercise, their own readiness and venue's convenience. However, it was found that **sports playgrounds of educational institutions** are mostly used for exercising, followed by empty spaces in a community and residential compounds.

Table 4.62 Percentage of people that exercised by type of exercise, 2001 and 2004

Type	2001	2004
Playing sports	55	51
Jogging	16	18
Aerobics	4	14
Walking	16	12

Source: Report on Exercise Behaviour Survey on People Aged 11 Years and Over, 2004. National Statistical Office.

The Ministry of Public Health has set a policy to promote and support the people to exercise simultaneously across the country and organized four major campaigns on exercise for health. Continuous support has also been provided to organize sports and exercise events, resulting in an increase in the number of people taking exercise from 0.3 million in 2002 to 8.6 million in 2003 and 43.1 million in 2004. As the MoPH set the target of the people participating in the third power of exercise for health campaign at 33 million, but in 2005 the number decreased to only 8.8 million (Table 4.63).

Table 4.63 Number of people participating in power of exercise for health campaigns

Region of campaign	No. of people participating			
	1st campaign (2002)	2nd campaign (2003)	3rd campaign (2004)	4th campaign (2005)
Central	46,894	76,986	290,100	83,719
Provincial	271,873	8,584,103	42,820,543	8,717,208
Total	**318,767**	**8,661,089**	**43,110,643**	**8,801,017**

Sources: 1. Bureau of Health promotion, Department of Health.
2. Health Education Division, Department of Health Service Support.
3. Office of the Secretary, Department of Disease Control.

8.7.2 Relaxation

A survey on health status of working-age population in 1996-1997 demonstrated that the average sleeping time period was 7.6 hours. Half the working-age population spent 7-8 hours on sleeping. It was also found that when they got older, the proportion of people sleeping for more than eight hours would decrease. A sleeping time around that range was also noted in the 2004 survey conducted by the National Statistical Office: males and females aged 10 years and older on average slept for 8.3 hours, children slept on average as long as 9.3 hours, followed by the elderly, youths and working-age people, respectively (Tables 4.64 and 4.65).

With regard to time spending for recreation, it was found in 2004 that each person spent 3.6 hours on average, a 1.8-fold increase compared with that for 2001, males spending more time than females (Table 4.65).

Table 4.64 Proportion of working-age population by daily sleeping time, 1996-1997

Age, years	Less than 6 hrs		6-7 hrs		8 hrs and over	
	Males	Females	Males	Females	Males	Females
13-19	1.8	2.0	17.8	23.6	80.4	74.5
20-34	6.3	6.7	37.5	34.1	56.2	59.2
35-44	7.6	8.2	39.5	41.1	52.9	50.7
45-59	9.9	13.8	36.6	43.4	53.5	42.8

Source: Data reanalyzed from the database of Survey on Health Status of Working-age Population, 1996-1997. Thailand Health Research Institute and Bureau of Policy and Strategy, MoPH, 1998.

Table 4.65 Average time periods (hours) spent on sleeping and recreation each day by sex and age group, 2001 and 2004

Activity	10-14		15-24		25-59		60+		Total	
	2001	2004	2001	2004	2001	2004	2001	2004	2001	2004
Males										
Sleeping	9.2	9.3	8.4	8.5	8.4	8.2	10.6	8.8	8.7	8.4
Recreation*	2.2	4.6	2.4	4.4	2.0	3.3	2.4	4.3	2.2	3.8
Females										
Sleeping	9.2	9.1	8.4	8.2	8.4	7.9	10.6	8.8	8.7	8.2
Recreation*	1.7	4.2	1.6	3.5	1.8	3.1	2.4	4.1	1.8	3.4
Total										
Sleeping	9.3	9.2	8.6	8.4	8.5	8.0	10.4	8.8	8.8	8.3
Recreation*	2.0	4.4	2.1	4.0	1.9	3.2	2.4	4.2	2.0	3.6

Source: Reports on the Time Spending of the People Surveys, 2001 and 2004. National Statistical Office.

Note: * Including social and cultural activities.

8.8 Driving Behaviours

8.8.1 Use of Safety Belt

A survey on safety-belt use among all driver categories reveals that, even through the law requires that all drivers and passengers use safety belts at all times, the safety-belt use rate has dropped from 35.8% in 1996 to only 31.3% in 2006 (Table 4.66).

8.8.2 Use of Helmet

The rate of constant use of helmet among motorcyclists was found to be declining, similar to that for safety belt, i.e. helmet use rate has declined from 29.0% in 1996 (the year in which the Helmet Use Royal Decree was first in effect) to only 18.6% in 2006 (Table 4.67).

Table 4.66 Proportion of drivers aged 14 years and over using safety belts

Use of safety belt	1991[1]	1996[1]	1997[2]	2000[3]	2001[1]	2003[1]	2004[4]	2006[1]
Vehicles with safety belts								
- Constant use	4.3	35.8	35.7	25.9	27.1	23.5	30.4	31.3
- Occasional use	11.7	28.0	29.6	32.2	44.2	39.7	16.9	45.2
- Non-use	12.6	6.3	34.7	13.9	12.1	32.2	11.5	21.9
Vehicles without safety belts	64.6	29.9	-	-	4.4	2.4	-	1.6

Sources: (1) Data for 1991, 1996, 2001, 2003 and 2006 were derived from Health and Welfare Surveys. National Statistical Office.

(2) Data for 1997 were derived from Prapapen Suwan et al. Study on Behaviours and Environmental Conditions for Health Promotion among Youths, Housewives and Factory Workers, 1997. Faculty of Public Health, Mahidol University.

(3) Data for 2000 were derived from the Survey of Health Behaviour of Working-age Population (15-59 years). Health Education Division, Department of Health Service Support.

(4) Data for 2004 were derived from the Smoking and Drinking Behaviour Survey, 2004. National Statistical Office.

Note: Data for 2001 were derived from a survey on safety-belt use of drivers and passengers aged 15 and over in front seats.

Table 4.67 Proportion of motorcyclists aged 14 years and over using helmets while driving

Use of helmets	1991[1]	1996[1]	2000[2]	2001[1]	2003[1]	2004[3]	2006[1]
- Constant use	7.2	29.0	32.0	16.1	16.0	34.4	18.6
- Occasional use	21.7	55.4	44.2	64.3	49.5	31.0	59.7
- Non-use	11.0	6.0	15.8	10.3	32.8	15.9	21.7
- No helmet	59.8	9.3	-	9.1	-	-	-

Sources: (1) Data for 1991, 1996, 2001, 2003 and 2006 were derived from Health and Welfare Surveys. National Statistical Office.

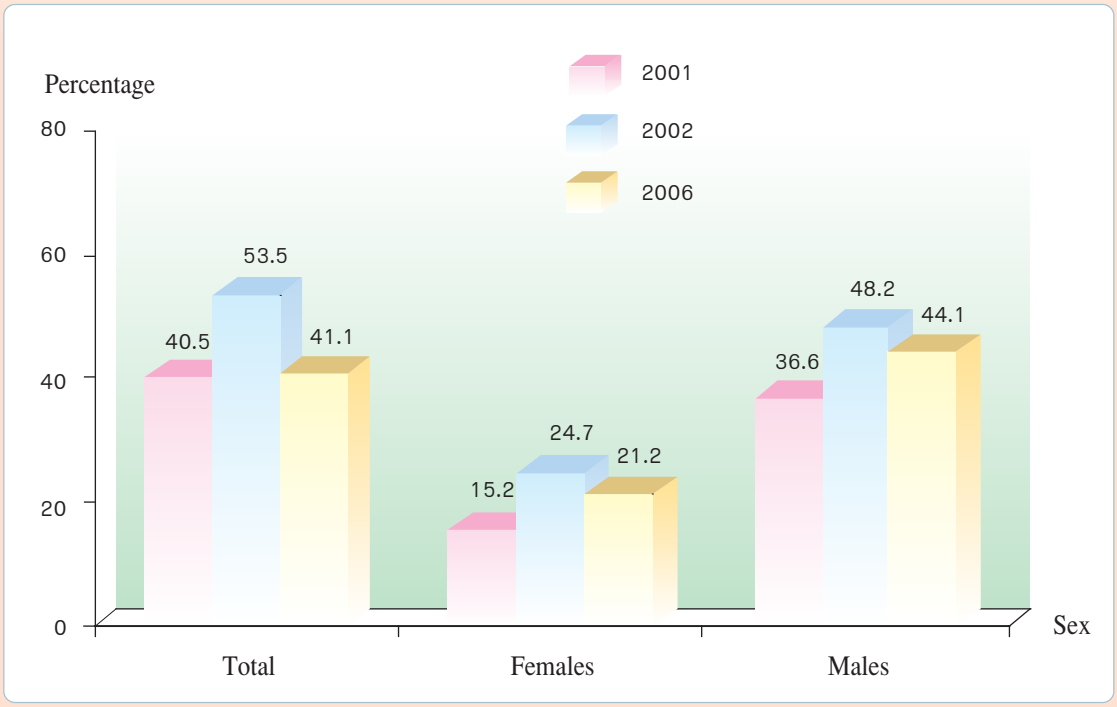
(2) Data for 2000 were derived from the Survey of Health Behaviours of Working-age Population (15-59 years). Health Education Division. Department of Health Service Support.

(3) Data for 2004 were derived from the Smoking and Drinking Behaviour Survey, 2004. National Statistical Office.

Note: Data for 2001 were derived from a survey on helmet use among motorcyclists and passengers aged 15 and over.

Alcohol drinking and drunk driving are a major factor causing road traffic accidents/injures. Even though Thailand has launched campaigns against drunk driving, having law prohibiting driving for any person with a blood alcohol concentration exceeding the specified limit, the number of drunk drivers has risen by 30%, i.e. rising from 40.5% in 2001 to 41.1% in 2006; males being twice more likely to do so than females (Figure 4.41).

Figure 4.41 Proportion of drunk drivers by sex, 2001, 2002 and 2006



Source: Reports on Health and Welfare Surveys, 2001, 2003 and 2006. National Statistical Office.

8.9 Sexual Behaviours

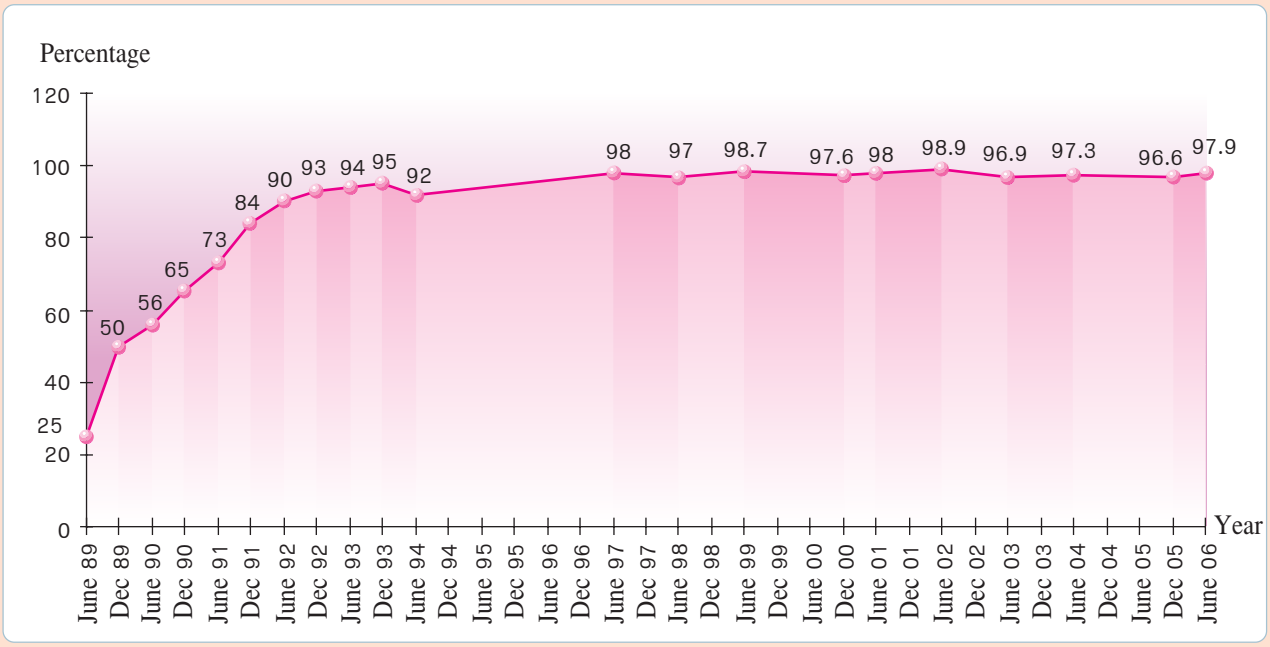
Unsafe sex is a primary health risk in spreading sexually transmitted infections (STIs), especially HIV/AIDS. Thanks to intensive campaigns, people are more aware of self-protection when having sex with a female commercial sex worker (CSW). This brings about a higher condom use rate in CSWs from 25% in 1989 to 97.9% in 2006 (Figure 4.42). However, it has been recently discovered that people are more likely to have sex with other women who are not CSWs. In particular, youths tend to have first sex at a younger age and practise unsafe sex.

According to Thailand's surveillance of HIV/AIDS risk behaviours in the past 12 years (1995-2006), the proportions of military recruits and male industrial workers having sex with CSWs and other women were **declining** except for a slightly rising rate in 2003 and a rising trend of military recruits having sex with other women (Figures 4.43 and 4.44). The constant condom use rate among military recruits having sex with CSWs was higher than with other women they superficially knew (Figures 4.45 and 4.46). Regarding female industrial workers and pregnant women attending an antenatal clinic (ANC), there was a **reduction** in sexual relation with several partners (Figures 4.47 and 4.48). And the rate of constant condom use when having sex with other males was increasing except for 2003 when the rate decreased markedly (Figures 4.49 and 4.48).

For male teenagers, it was revealed that there was a reduction in sexual relations with various groups of females, girlfriends, lovers, close friends, CSWs and others (Figure 4.50). They were

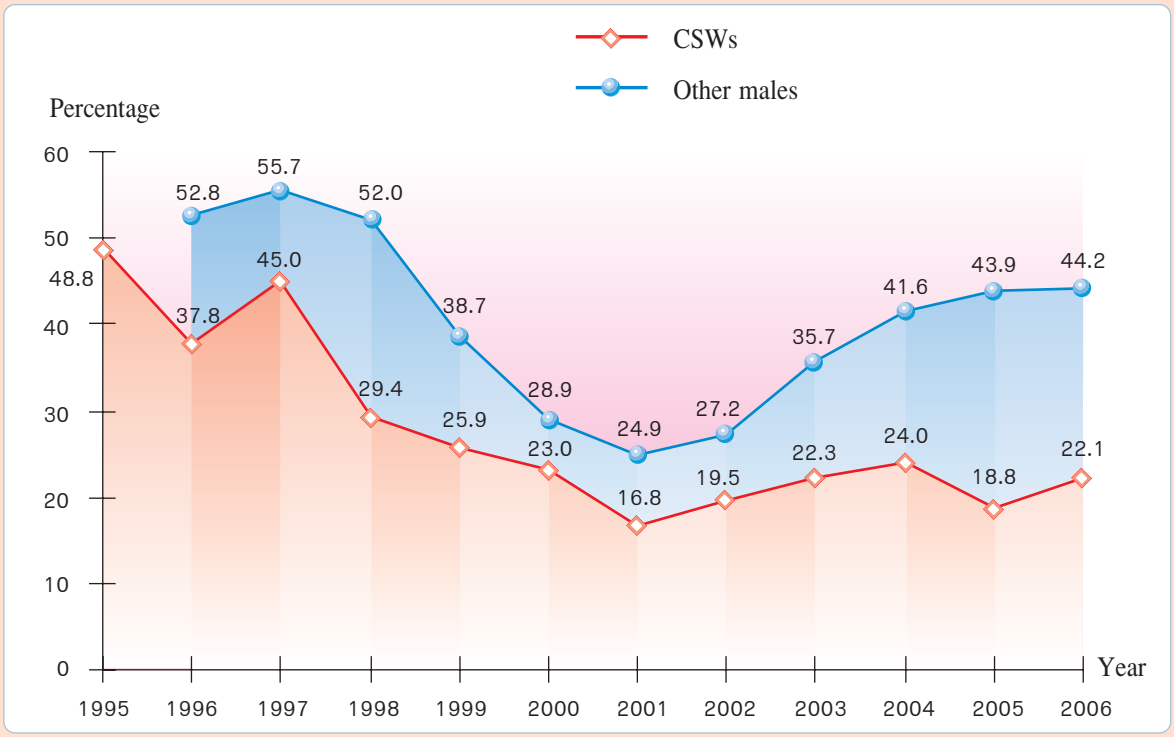
more likely to use a condom when having sex with CSWs than with other kinds of sex partners (Figure 4.51). But a survey conducted by the ABAC Poll Research Centre of Assumption University (2006) on pre-mature sex among youths (aged 15-24) in Bangkok and its vicinity reveals that two-thirds (45.0%) of respondents have ever had sex before and 55.0% have not. Among those with sexual experience, most of them (85%) have had their first sexual encounter with their lovers, followed by schoolmates (7.5%) and friends in other schools/institutions (3.5%), citing sex-stimulating situations such as love (66.9%), followed by intimacy (34.2%), desire to experiment (28.8%), alcohol drinking (9.9%), watching sex movie or obscene media (7.1%) and friend's persuasion (4.9%) as the reasons for having sex. Besides, another survey conducted by the Institute for Population and Social Research (2006) reveals that 67% of male teenagers and 44% of female teenagers (18-19 years old) in Bangkok have ever had sex before; their age with the first sex encounter was 15.5 years in males and 16.5 years in females (Figure 4.52)

Figure 4.42 Condom use rate among female commercial sex workers, 1989-2006



Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

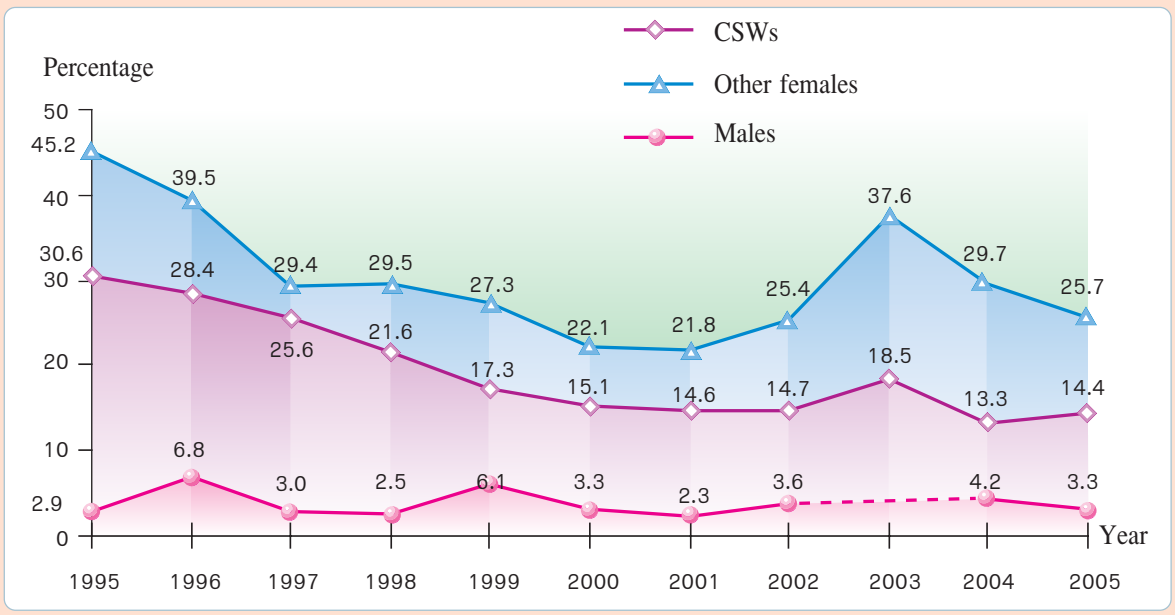
Figure 4.43 Proportion of military recruits' sex partners in the past year according to survey on HIV/AIDS risk behaviours in Thailand, 1st-12th rounds, 1995-2006



Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st-12th rounds of survey (1995-2006).

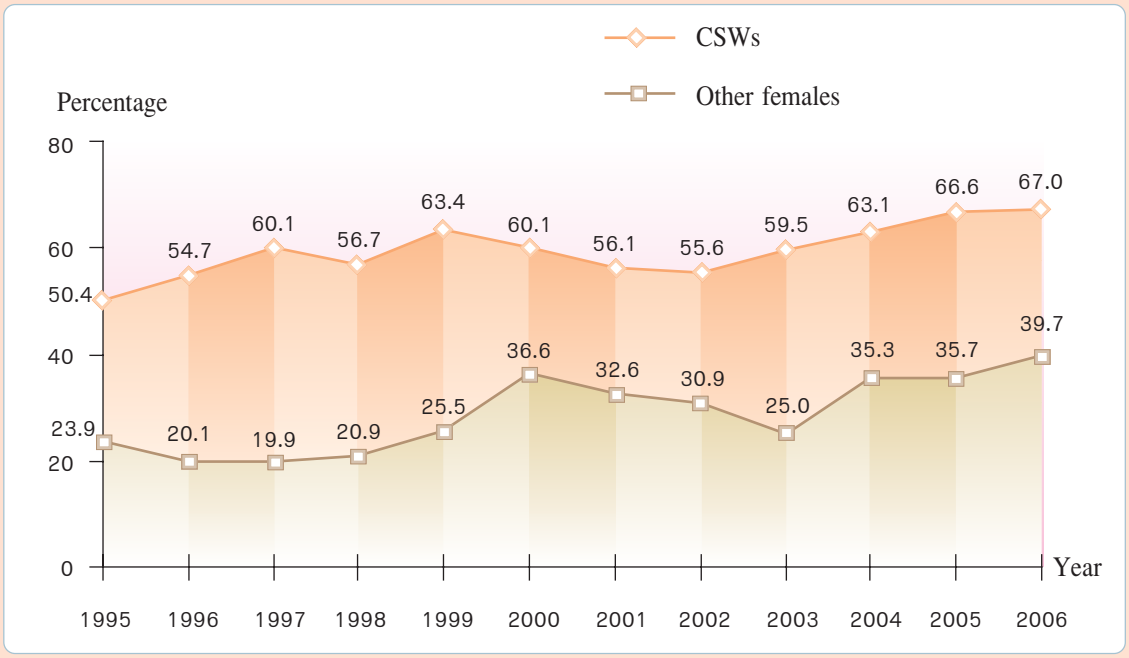
Figure 4.44 Proportion of male industrial workers' sex partners in the past year according to survey on HIV/AIDS risk behaviours in Thailand, 1st-11th rounds, 1995-2005



Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st-11th rounds of survey (1995-2005).

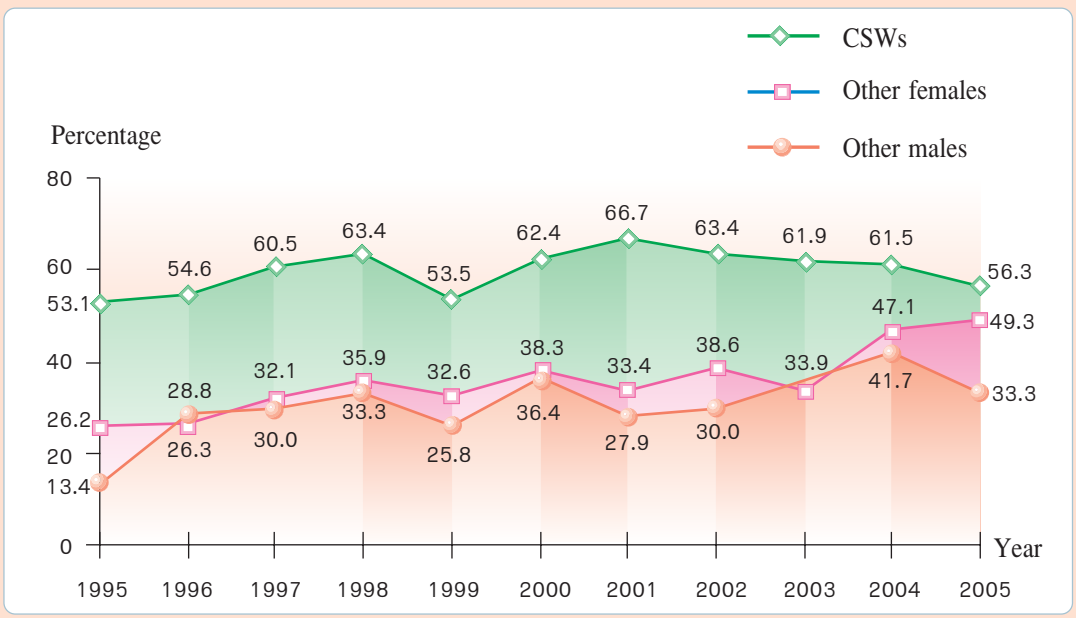
Figure 4.45 Rate of constant condom use during sexual encounters in the past year of military recruits according to survey on HIV/AIDS risk behaviours in Thailand, 1st-12th rounds, 1995-2006



Source: Bureau of Epidemiology, Department of Disease Control.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st-12th rounds of survey (1995-2006).

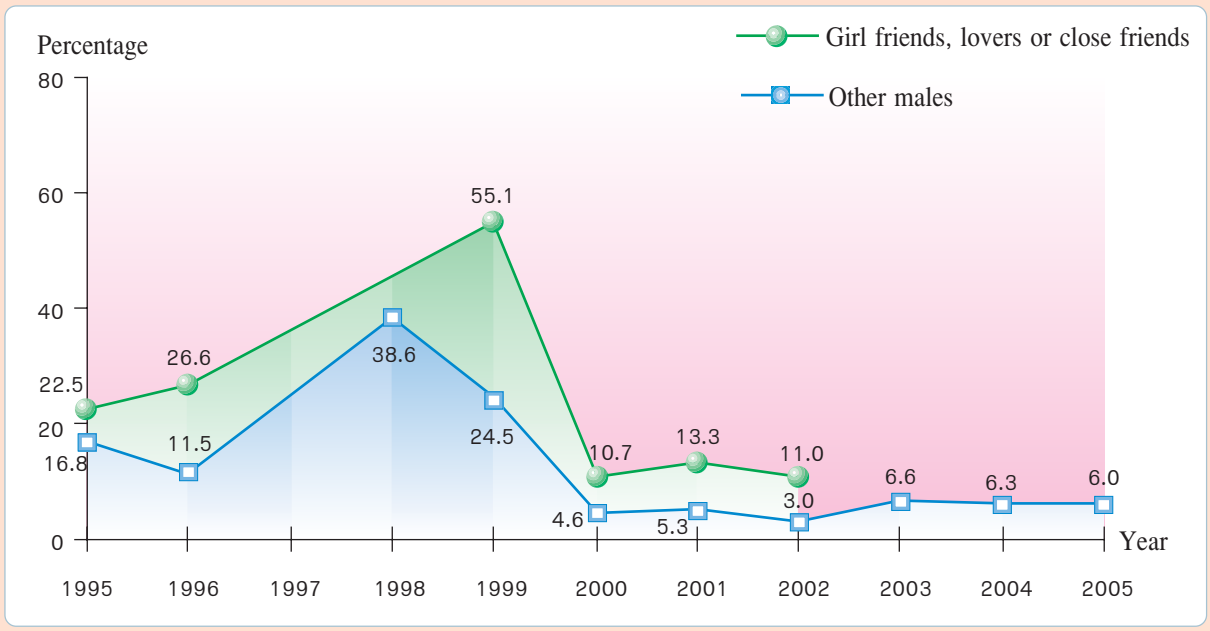
Figure 4.46 Rate of constant condom use during sexual encounters in the past year of male industrial workers according to survey on HIV/AIDS risk behaviours in Thailand, 1st-11th rounds, 1995-2005



Source: Bureau of Epidemiology Division, Department of Disease Control.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st-11th rounds of survey (1995-2005).

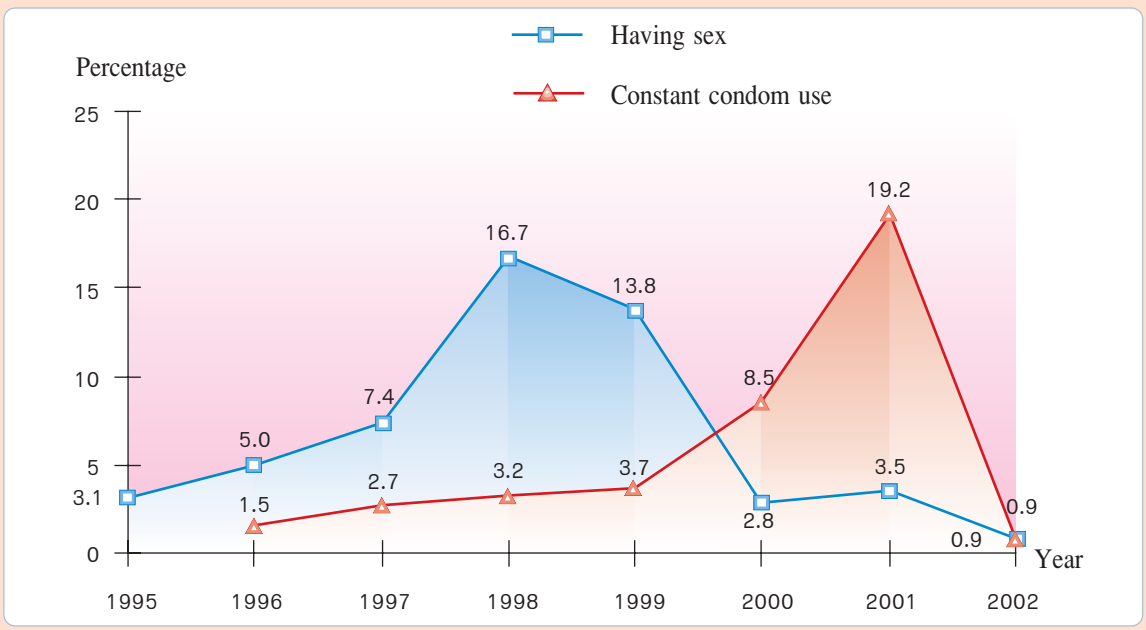
Figure 4.47 Proportion of female industrial workers having sexual encounters in the past year according to survey on HIV/AIDS risk behaviours in Thailand, 1st-11th rounds, 1995-2005



Source: Bureau of Epidemiology, Department of Disease Control.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st-11th rounds of survey (1995-2005).

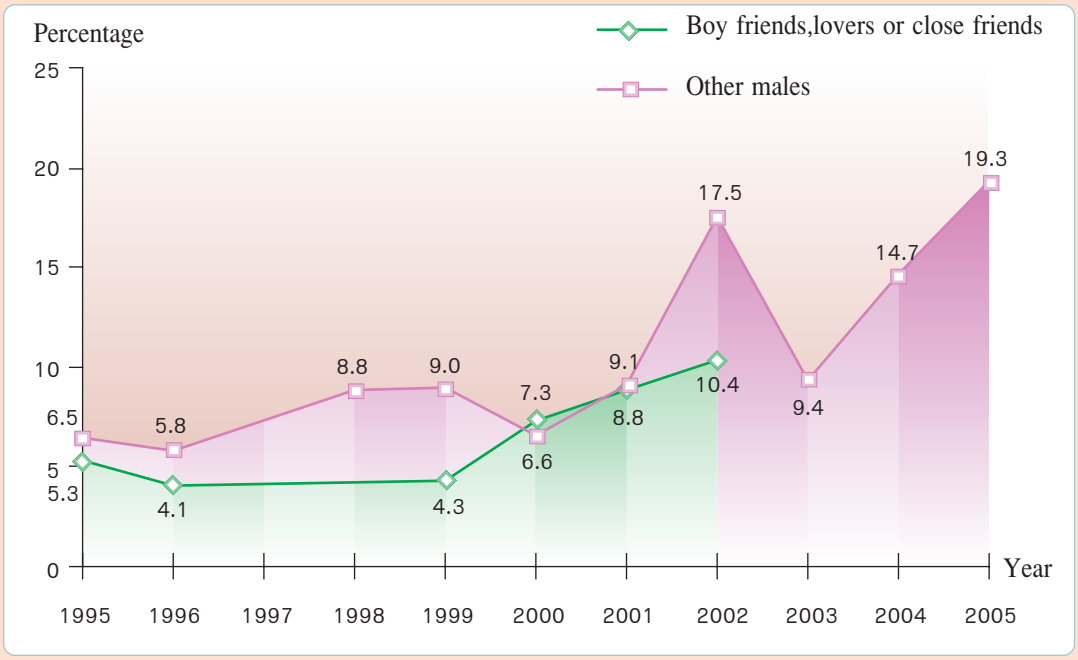
Figure 4.48 Proportion of pregnant women attending ANC having sex with other males and constant condom use rate according to survey on HIV/AIDS risk behaviour in Thailand, 1st -8th rounds, 1995-2002



Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st-8th rounds of survey (1995-2002)

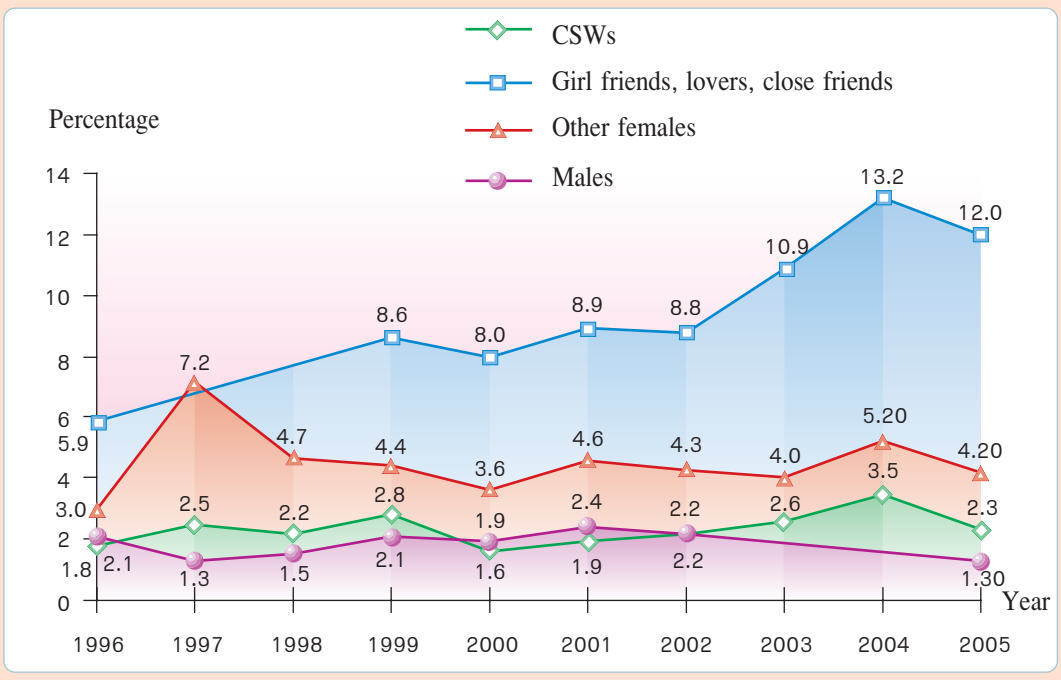
Figure 4.49 Rate of constant condom use during sexual encounters in the past year of female industrial workers according to survey HIV/AIDS risk behaviour, 1st-11th rounds, 1995-2005



Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st-11th rounds of survey (1995-2005).

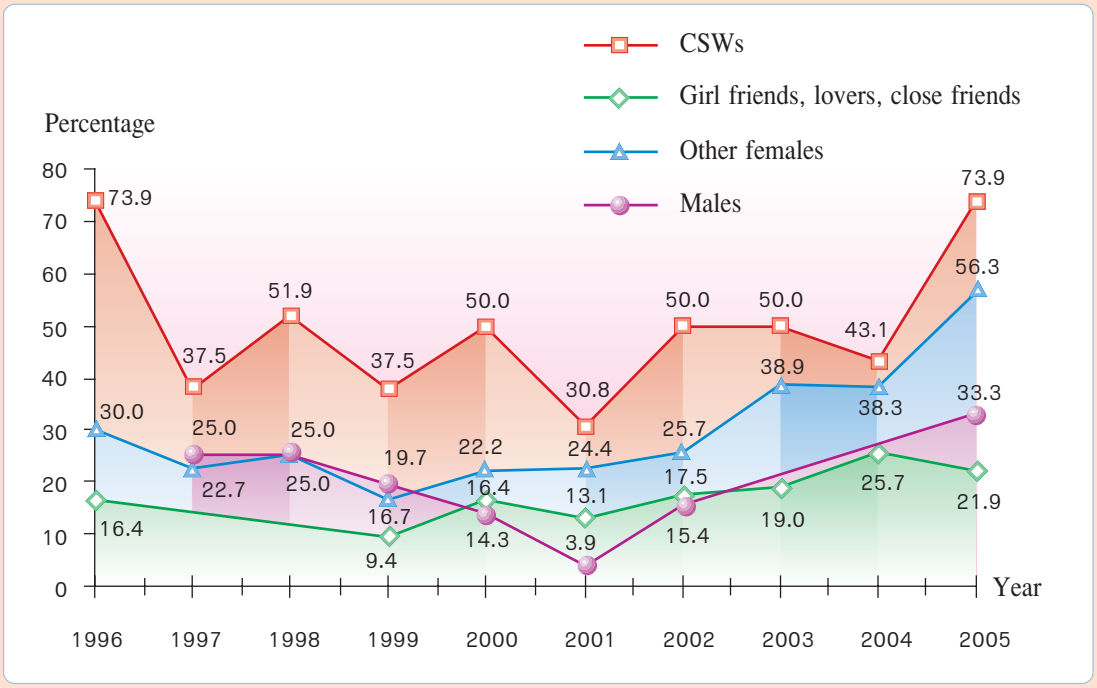
Figure 4.50 Proportion of male secondary school students (mathayomsueksa 5 or grade 11) having sex in the past year according to surveys on HIV/AIDS risk behaviours in Thailand, 2nd-11th rounds, 1996-2005



Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 2nd-11th rounds of survey (1996-2005).

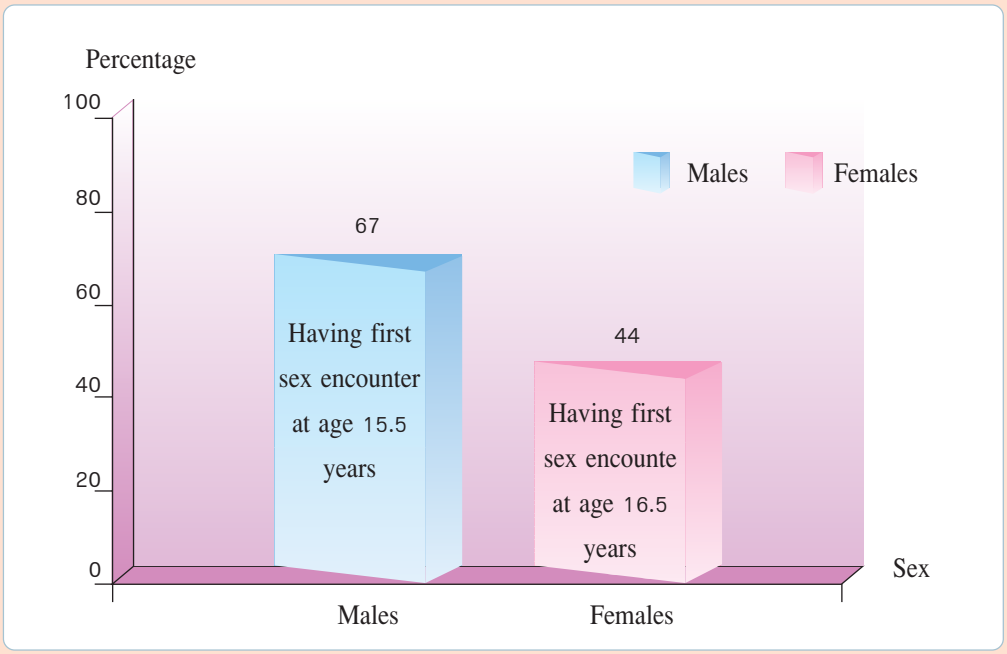
Figure 4.51 Rate of constant condom use during sexual encounters in the past year of male secondary school students (mathayomsueksa 5 or grade 11) according to survey on HIV/AIDS risk behaviours in Thailand, 2nd-11th rounds, 1996-2005



Source: Bureau of Epidemiology, Department of Disease Control.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 2nd-11th rounds of survey (1996-2005).

Figure 4.52 Percentage of teenagers (18-19 yrs) having had sex experience and average age at first sex encounter in Bangkok by sex, 2006



Source: Survey on HIV/AIDS Risk Factors and Knowledge about Antiretrovirals in Thailand, 2006.

8.10 Self-Healthcare and Healthcare Seeking Behaviour

People's healthcare seeking behaviours have been changing. Overall, the proportion of people seeking care at public health facilities rose from 15.5% in 1970 to 33.7% in 1996, while the rate of self-medication decreased from 51.4% in 1970 to 37.9% in 1996; and the rate of health care seeking at private clinics and hospitals slightly fell from 22.7% in 1970 to 18.7% in 1996. Nonetheless, after the universal coverage of healthcare scheme was launched, there has been a change in the health service delivery system; the proportion of people seeking treatment at state-run health facilities has risen from 33.7% in 1996 to 46.2% in 2006, while the self-medication rate has dropped from 37.9% to 25.1% for the same period (Table 4.68).

Table 4.68 Pattern of healthcare seeking behaviours among Thai people when ill (percent)

Care or health facility attendedwhen ill	1970 IPSR	1979 IPSR	1985 IPSR	1991 HWS	1996 PHS	1996 HWS	2001 HWS	2003 HWS	2004 HWS	2006 HWS
Both rural and urban areas										
Nothing	2.7	4.2	15.9	15.9	0.5	6.9	5.4	5.9	5.3	5.1
Traditional care or others	7.7	6.3	2.4	5.7	4.2	2.8	2.5	2.9	4.4	2.3
Self-medication	51.4	42.3	28.6	38.3	17.1	37.9	24.2	21.5	20.9	25.1
Health centres	4.4	16.8	14.7	14.8	34.5	20.8	17.4	23.9	24.6	16.3
Public hospitals	11.1	10.0	32.5	12.9	19.4	12.9	34.8	33.1	30.2	29.9
Private clinics/hospitals	22.7	20.4	21.8	12.4	24.2	18.7	15.0	19.4	22.7	26.3
Rural areas										
Nothing				15.6	0.4	6.7	5.8	6.0	5.0	
Traditional care or others				5.8	6.2	2.5	2.6	3.0	4.4	
Self-medication				38.6	11.6	38.4	22.1	19.9	18.7	
Health centres				17.0	49.6	24.6	22.3	29.5	30.8	
Public hospitals				12.8	20.0	13.8	35.2	34.4	31.0	
Private clinics/hospitals				10.2	12.3	14.0	11.4	15.4	19.5	
Urban areas										
Nothing				17.9	0.7	7.5	4.4	5.4	6.1	
Traditional care or others				4.7	1.3	4.3	2.1	2.6	4.7	
Self-medication				36.9	25.2	36.0	29.4	25.6	27.0	
Health centres				2.7	12.8	3.5	5.5	9.6	7.1	
Public hospitals				13.1	18.5	8.9	33.9	30.2	28.3	
Private clinics/hospitals				24.7	41.6	39.8	24.0	29.8	32.0	

Sources: 1. IPSR: Institute for Population and Social Research, Mahidol University, 1988.
2. HWS: The Health and Welfare Survey, NSO, 1991, 1996, 2001, 2003, 2004 and 2006.
3. PHS: Provincial Health Survey, BHPP 1996.

Notes: 1. Different definition of illness in different sources.
2. More than one answer could be mentioned.

8.11 Trends in Health Behaviour of Thai People

When considering Thai people's health behaviours based on the framework of risk factors and burden of disease, i.e. food consumption, drug consumption, tobacco use, alcohol drinking, caffeinated beverage drinking, substance abuse, exercise and relaxation, driving behaviour, sex behaviour, self-health care and healthcare seeking behaviour, the trends of such factors are as follows:

Food consumption: Thai people have low fruit and vegetable intake in relation to the recommended level of fruit and vegetable consumption for health promotion and disease prevention purposes (400-800 grams/day), but have a tendency to take more high-carbohydrate and high-sugar food as well as more snacks, especially among children.

Drug consumption: Thai people tend to use medications irrationally, particularly antibiotics (overconsumption and underconsumption), and use certain medicines such as painkillers for a long period of time.

Tobacco use. The smoking prevalence of Thai people is on the rise in both males and females, the age at smoking initiation for females being lower than before.

Alcohol consumption: The rates of alcohol drinking among Thai males and females are on the rise, particularly those for beer and wine; the rapidly rising rate of caffeinated beverage consumption is also noted.

Substance abuse: The trends have been on the rise, especially for methamphetamines among youths; but after the government's strong drug suppression measures, the number of any abusers tend to be declining.

Exercise: The proportion of Thai people regularly taking exercise is unstable; however, two-thirds of regular exercisers have had such practice for more than seven months.

Relaxation: About half of the working-age population have 7-8 hours of sleep each day and the sleeping periods decline when they get older.

Rood safety: The trends in the use of safety belts (for automobile drivers) and helmets (for motorcyclists) are declining, while the rising trends are noted for drunk driving.

Sex behaviour: The rate of condom use among commercial sex workers is on the rise, but such rates among conscripts as well as male and female industrial workers when having sex with partners (other than sex workers) are unstable, essentially among teenagers who have had sex prematurely.

Self-healthcare and healthcare seeking: When sick, more Thai people tend to seek medical treatment at state health facilities, and fewer people will go to private clinics/hospitals or seek self-medication.