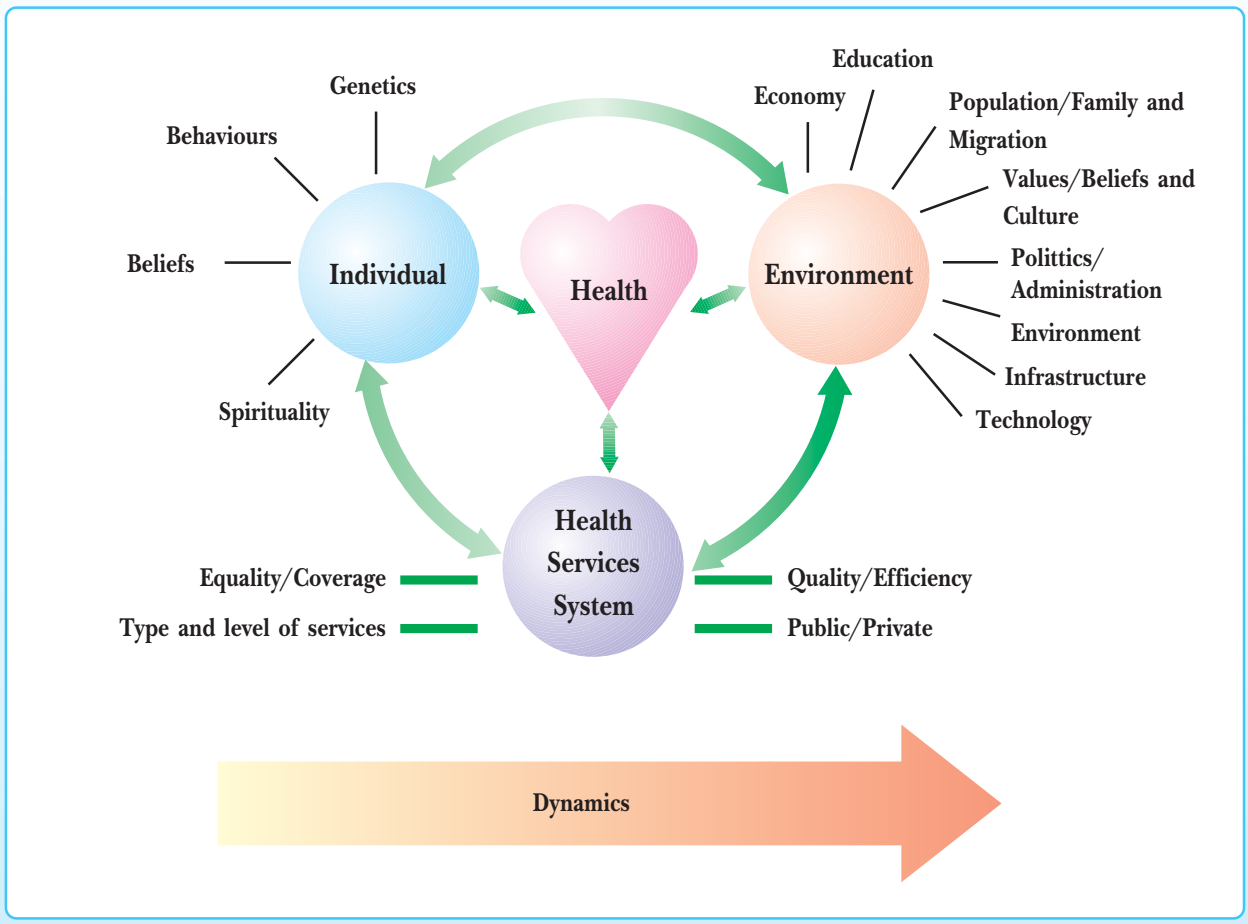
CHAPTER 4

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

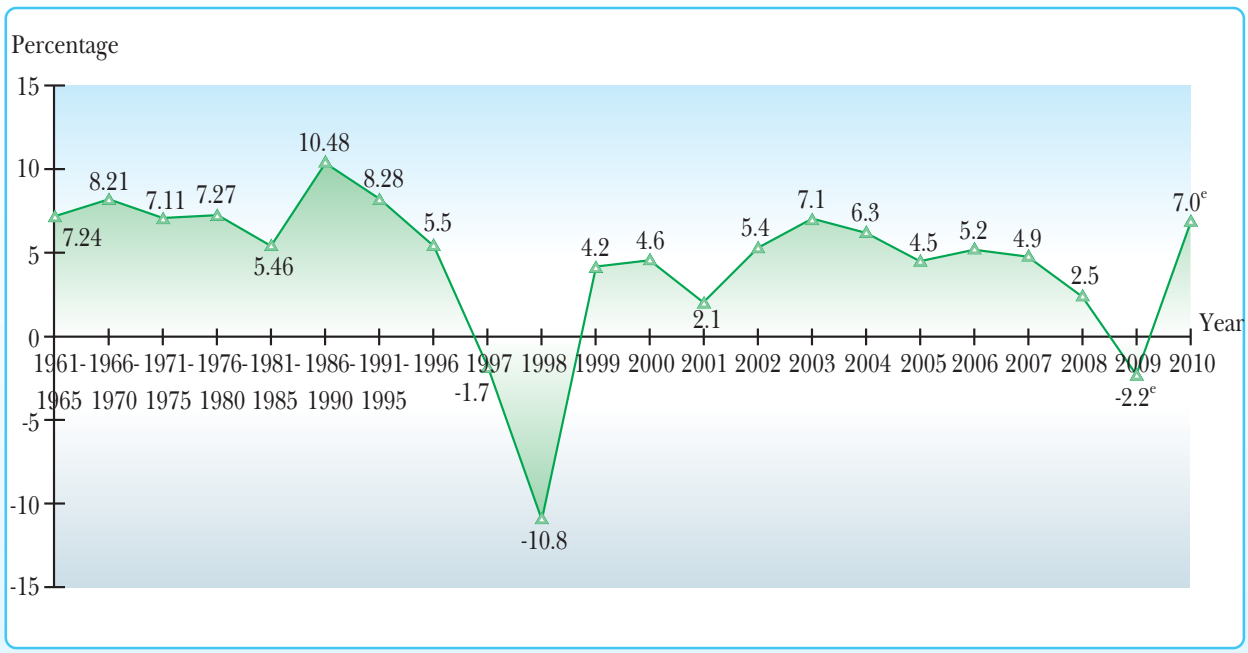


1. Economic Situations and Trends

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 to -2.2% in 2009 due to the 2008 global economic crisis and a recovery to 7% is expected in 2010 as a result of the global recovery.

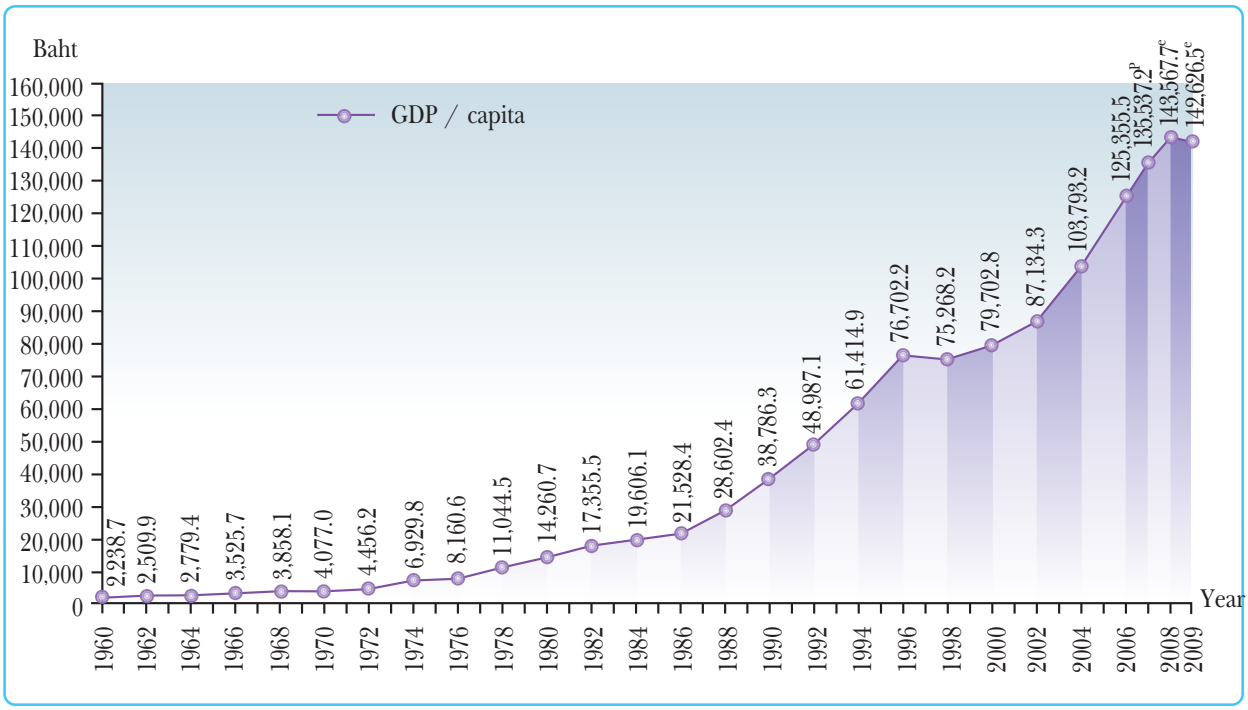
Figure 4.2 Economic growth rate in Thailand, 1961 - 2010



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

Note: [e] Estimated figure.

Figure 4.3 Gross domestic product per capita, 1960-2009 (market prices)



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

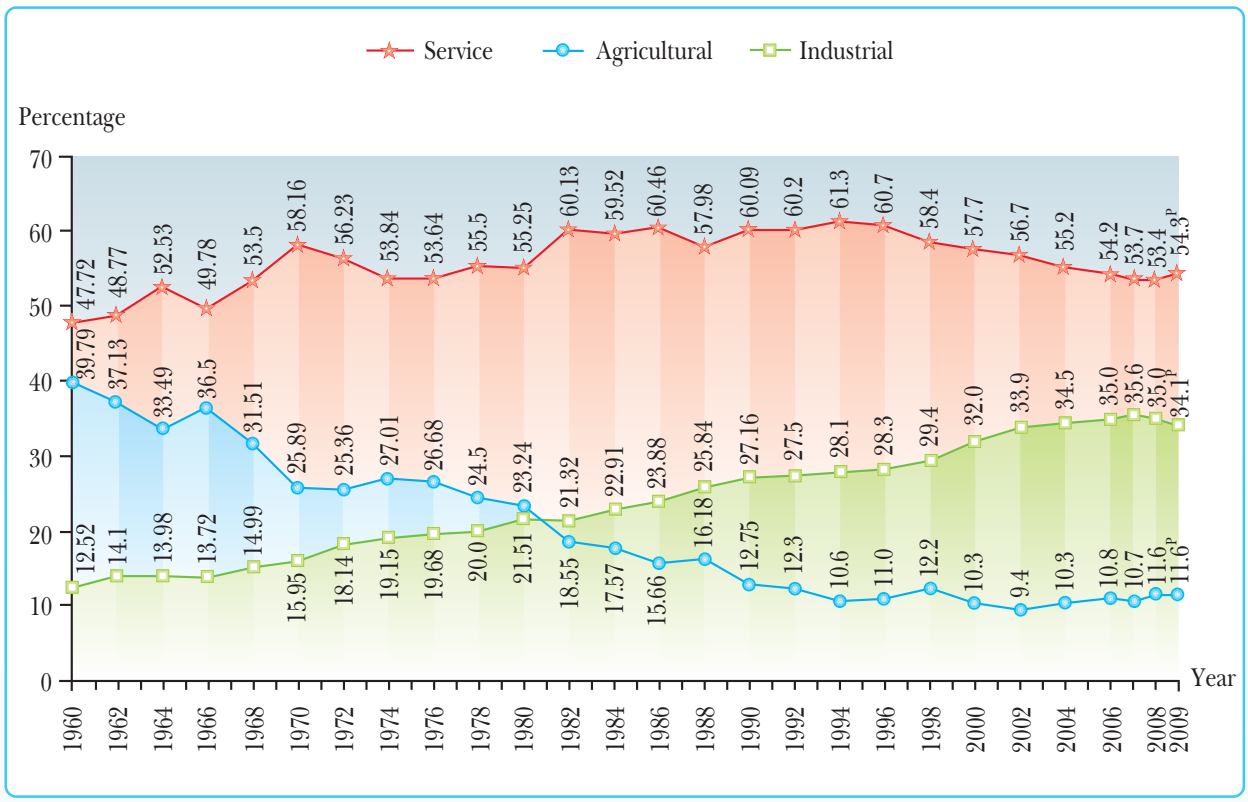
Notes: 1. [P] Preliminary figure; [e] estimated figure.

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

1.2 Economic Structure

The Thai economic structure has been transformed in such a way that the proportions of the industrial and service sectors grow faster than the agricultural sector (Figure 4.4). However, since 1990, the proportions of production in the agricultural, industrial and service sectors have not changed so much.

Figure 4.4 Proportion of economy in the agricultural, industrial and service sectors, as a percentage of GDP, 1960-2009



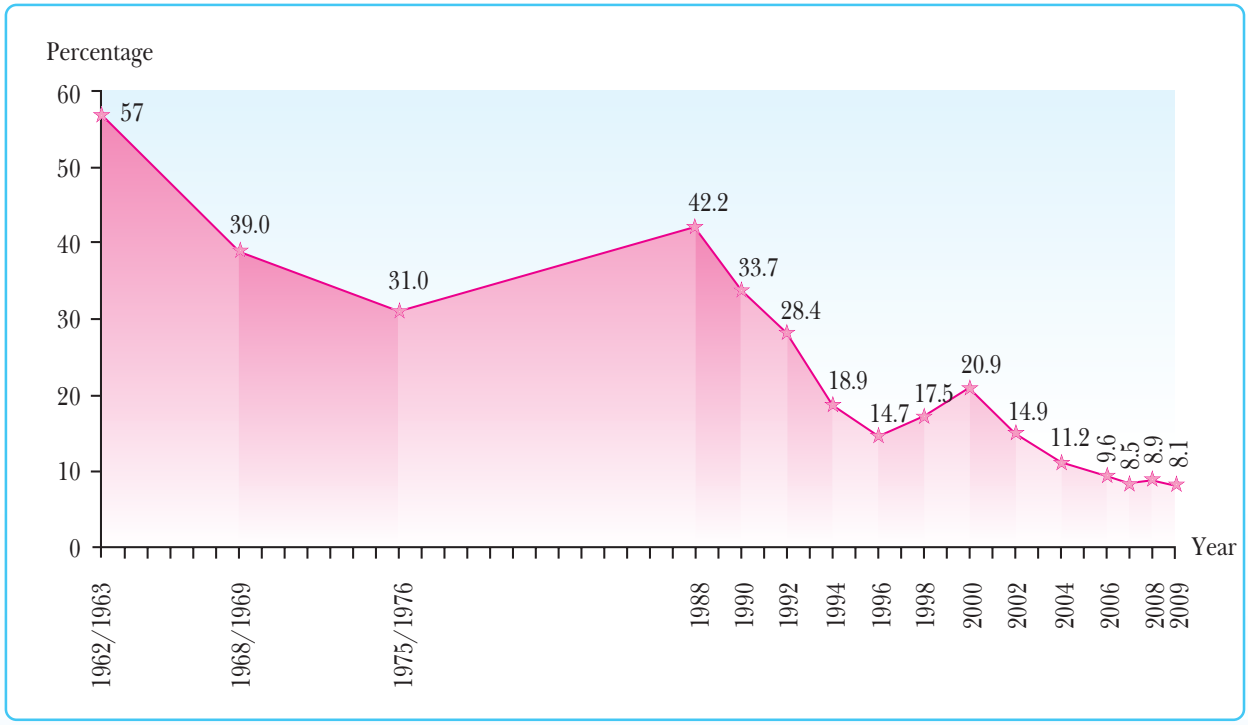
Source: Office of the National Economic and Social Development Board.

Notes: [P] Preliminary figure.

1.3 Income Distribution and Poverty

The poverty situation in Thailand has been on 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 8.1% in 2009 (Figure 4.5) due to the economic recovery. However, even though 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 - 2009



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 1988-2009 were derived from the Household Socio-Economic Survey, analyzed by the Social Database and Indicator Development Office, NESDB.

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

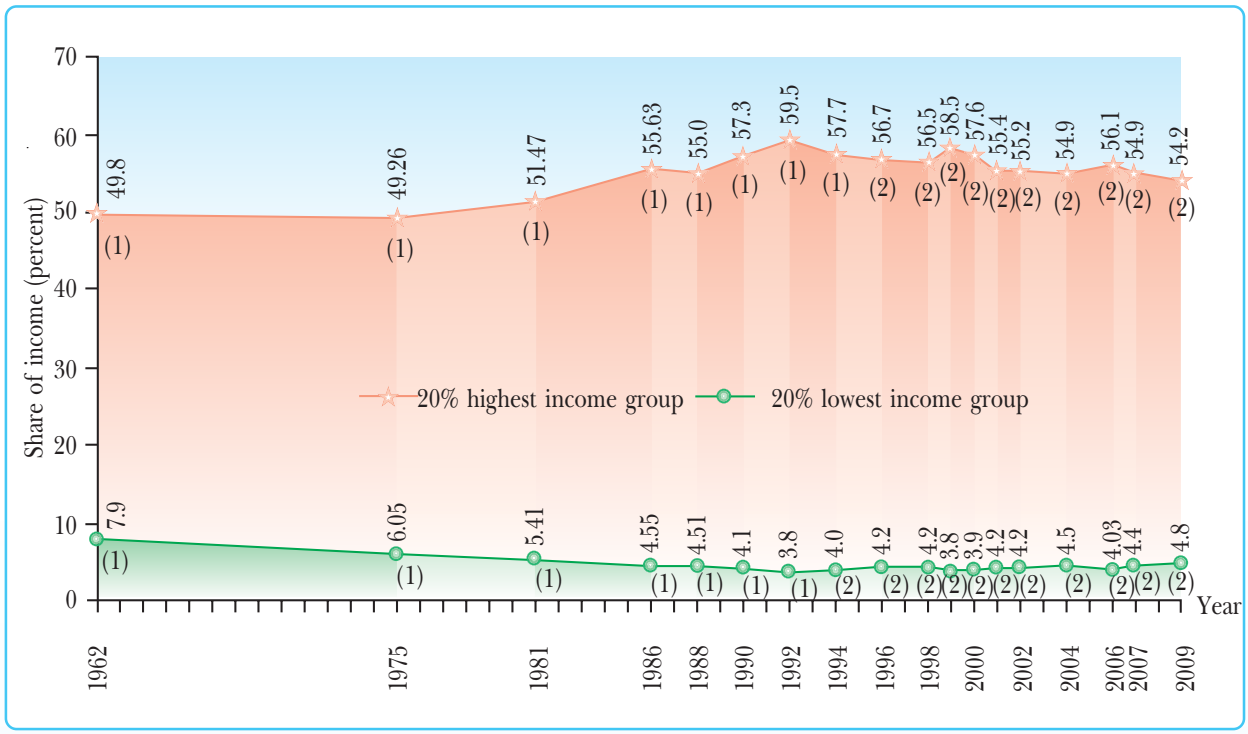
Table 4.1 Proportion of poverty based on expenditure by locality, 1962-2009

Year	Urban area, %	Rural area, %	Whole country, %
1962/63	38	61	57
1968/69	16	43	39
1975/76	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
2007	3.3	10.6	8.5
2008	2.9	11.5	8.9
2009	3.0	10.4	8.1

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 1988-2009 were derived from the Household Socio-Economic Survey, analyzed by the Social Database and Indicator Development Office, NESDB.

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 2001–2009, the trend in income distribution improved slightly (Figure 4.6).

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	2007	2009
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	4.03	4.4	4.8
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	56.1	54.9	54.2
Income disparities (times)	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	13.9	12.5	11.3

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

(2) For 1994-2009, from the Economic and Social Household Survey of the National Statistical Office, analyzed by the Development Evaluation and Dissemination and Social Database and Indicator Development Bureau of the Office of the National Economic and Social Development Board.

Note: For 2006, 2007 and 2009, the negative income figures were adjusted as zero.

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 and human rights.

Such economic changes have affected the Thai health system as follows:

(1) Rising health expenditure. The national health spending rose from 3.8% of GDP in 1980 to 6.48% in 2008 (see Chapter 6, Health Financing).

(2) Roles of the public and private sectors in health-care delivery. Since 2001, when the government began to implement the universal health-care scheme, at public health-care facilities the number of outpatients rose three-fold in 2009, while the number of inpatients changed only slightly.

(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 the rural poor and urban slum dwellers having inadequate health care from the state health system.

(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 578.1 per 100,000 population in 2009 (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 the universal health-care policy and the government health budget, particularly the operating budget, has risen steadily. As a result, the proportion of overall MoPH budget (including that for universal health-care) has risen from 6.7% in 2001 to 9.1% in 2011 (see Chapter 7, MoPH Budget).

(6) Free trade and international economic agreements. Trade competition and discrimination are more widespread with some negative impact on the products and health-care industries. It has also resulted in an increased level of social and health cooperation, for example, in joint efforts for the prevention and control of infections diseases in humans and animals (SARS, avian flu, etc.). If there is no suitable preparedness plan, a transboundary transmission of such diseases among countries may occur.

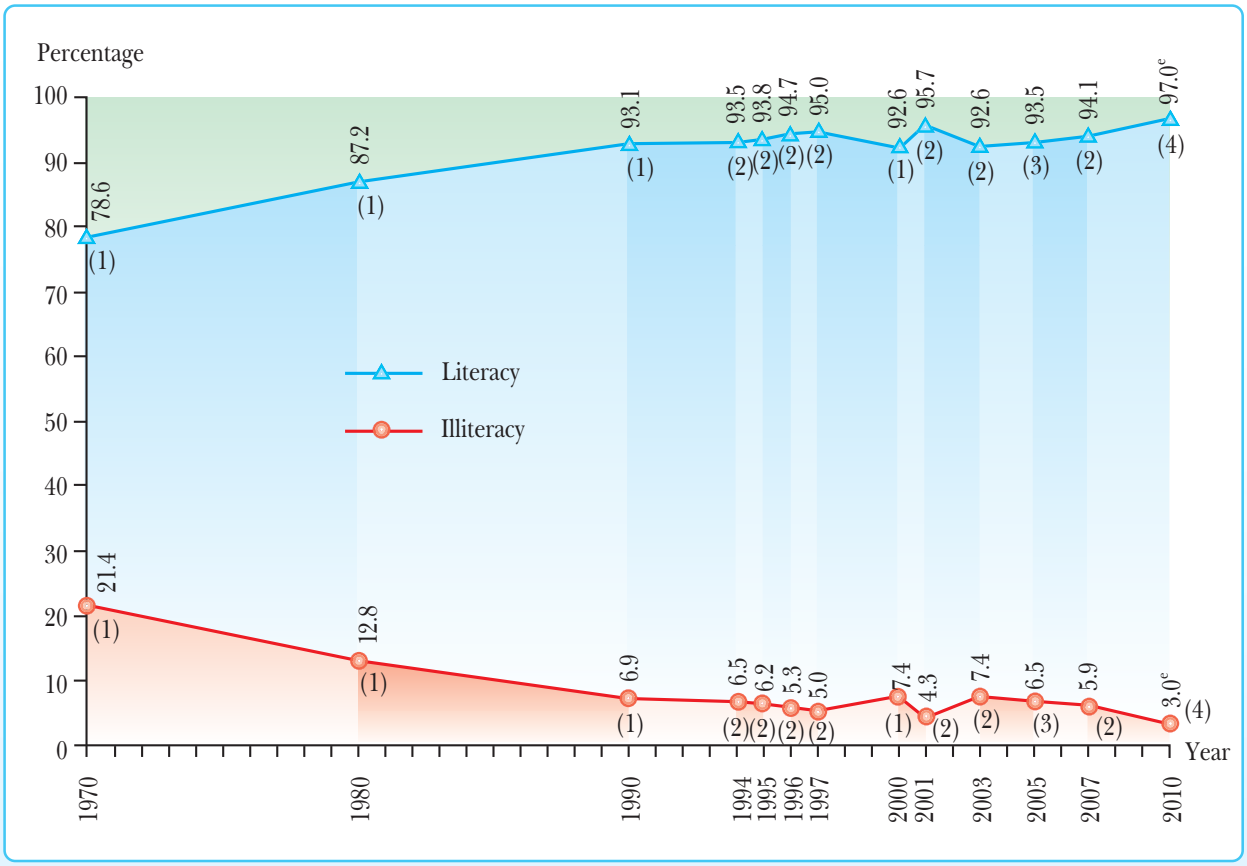
2. Educational Situations and Trends

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 94.1% in 2007 (Figure 4.7), ranking third among 10 ASEAN member countries,[1] after Brunei and Singapore. Its illiteracy rate was recorded at 5.9% in 2007; and it is estimated that the literacy rate will be as high as 97% in 2010.

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, 2003 and 2007 were derived from UNDP, Human Development Reports, 1997-2009.

(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.

[1] UNDP, Human Development Report, 2009.

2.1.2 Learning Rate

The learning rate of Thai people is rather low at only 44.4% (2009) and there are wide disparities between urban and rural residents (Table 4.2).

Table 4.2 Learning rate of Thai people, 2001-2009

Unit: Percent

Region and area	2001	2002	2003	2004	2005	2006	2007	2008	2009
Urban	53.2	52.9	54.9	55.4	56.6	57.2	58.0	58.1	58.1
Rural	27.2	28.7	30.1	32.1	32.2	34.1	35.5	36.7	37.9
Whole country	35.9	36.9	35.5	39.9	39.8	41.3	42.5	43.4	44.4

Source: Data from the Workforce Survey 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 using such skills in resolving daily-life problems among the people aged 15 years and over completing Mathayomsueksa 3 (grade 9) or equivalent in proportion to the total population of the same age group.

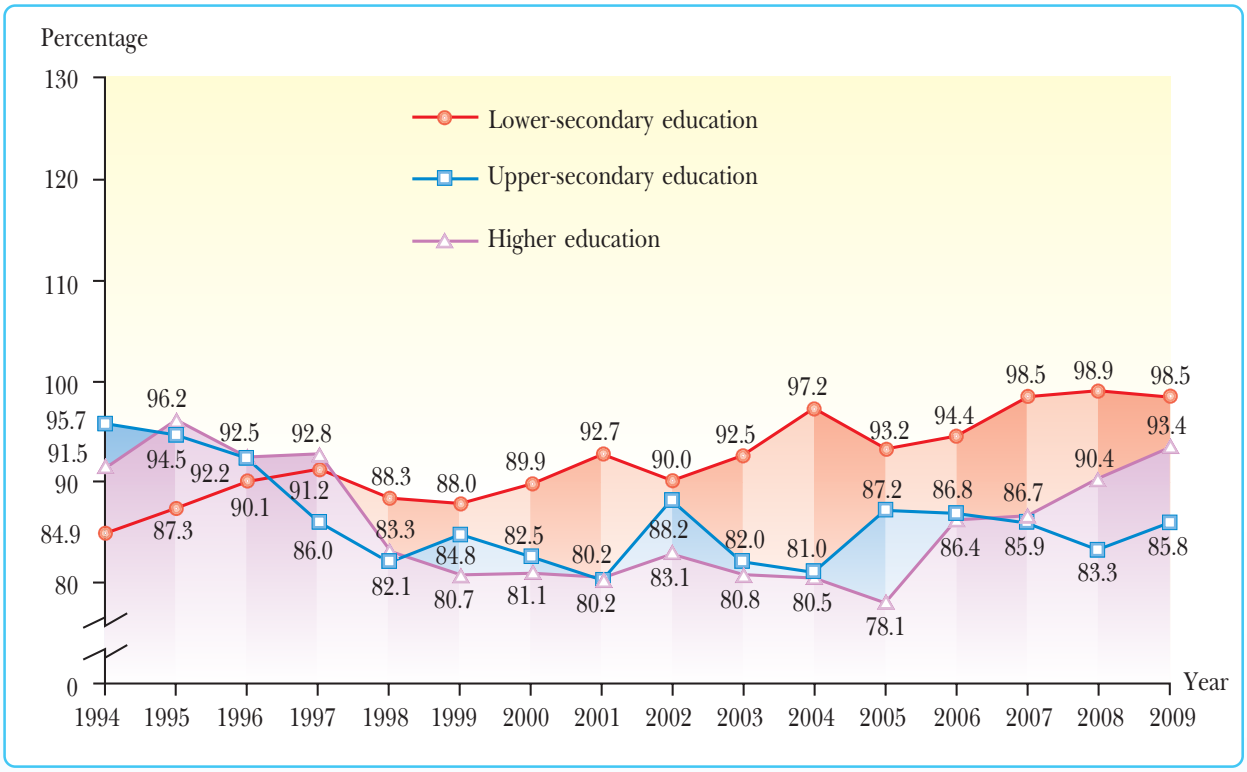
Nevertheless, when considering the reading rate among Thai people, it was found that only 35.4 million (61.2%) read regularly in 2003 and the trend rose to 69.1% in 2005, but dropped slightly to 66.3% in 2008 (Report on Reading of Population Survey, 2008, National Statistical Office).

2.2 Education Opportunities

2.2.1 Educational Continuation

The rates of students continuing their education from primary (Prathomsueksa 1 to 6 or Grades 1 to 6) to lower-secondary (Mathayomsueksa 1 to 3, or Grades 7 to 9), from lower to upper-secondary (Mathayomsueksa 4 to 6, or Grades 10 to 12), 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 – 2009

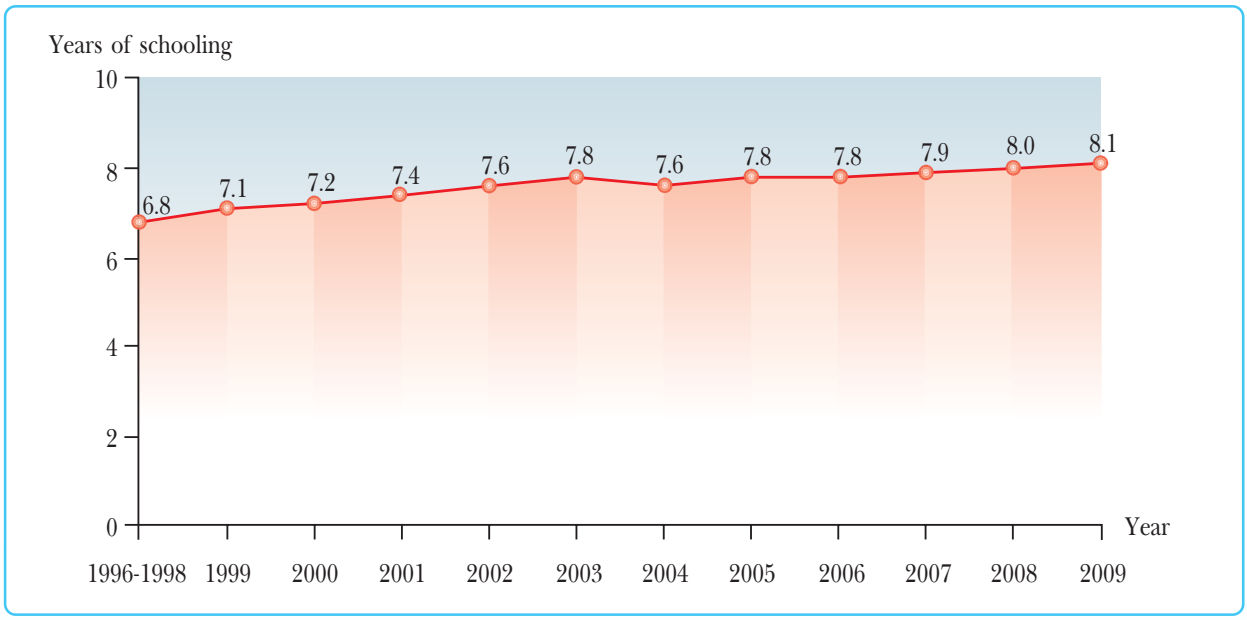


Sources: 1. Office of the Education Council, Ministry of Education.

2. Operations Centre, 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 8.1 years in 2009 (Figure 4.9), the proportion of labour force (2009) with primary schooling has dropped to 56.2%. 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 15.4% in 2009 to 22.5% in 2020 (Table 4.3).

Figure 4.9 Average years of schooling of Thai people, 1996 – 2009



Source: Office of the Education Council.

Table 4.3 Structure (percentage) of labour force by educational level, 1995 – 2020

Educational level	1995[(1)]	1997[(1)]	1999[(1)]	2001[(1)]	2003[(1)]	2005[(1)]	2009[(1)]	2010[(2)]	2020[(2)]
Primary and lower	78.0	75.2	69.8	66.3	63.8	61.4	56.2	55.9	39.9
Lower-secondary	8.9	10.1	12.0	12.7	13.7	13.8	15.2	14.7	14.6
Upper-secondary	3.3	3.6	5.0	6.2	7.2	8.1	9.8	8.7	14.3
Vocational	4.7*	4.8*	5.0*	3.4*	3.3*	3.3*	3.4*	6.6	8.7
Higher	5.1	6.2	8.2	11.3	11.9	13.4	15.4	14.1	22.5
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Sources: [(1)] Data for 1995–2009 were derived from the Report 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 1995-2009.

2.2.2 Education Equalities among Boys and Girls

At present, boys and girls have a better educational opportunity compared with those in 2000/2001. In 2007, the proportion of boys attending primary school was equal to that for girls; on the contrary, at the higher level there were more female students than male students. However, the educational equalities among boys and girls in Thailand are lower than those in some other ASEAN and European countries (Table 4.4).

Table 4.4 Educational inequalities at the primary, secondary, and tertiary levels, 2000-2007

Group/country	2000/2001			2007		
	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	0.97	1.07	NA
Indonesia	0.99	0.96	0.77	0.96	1.01	1.00
Bangladesh	1.02	1.05	0.55	1.08	1.06	0.57
Thailand	0.93	1.01	1.12	1.00	1.10	1.21
India	NA	NA	0.66	0.96	0.83	0.72
Myanmar	0.99	0.95	1.75	NA	NA	NA
Nepal	0.87	NA	0.27	1.01	0.93	NA
Bhutan	NA	NA	NA	1.00	0.93	0.51
North Korea	NA	NA	NA	NA	NA	NA
ASEAN						
Malaysia	1.00	1.11	1.08	0.99	1.10	1.22
Vietnam	0.94	NA	0.74	NA	NA	NA
Philippines	1.01	1.18	1.10	0.98	1.10	1.24
Indonesia	0.99	0.96	0.77	0.96	1.01	1.00
Singapore	NA	NA	NA	NA	NA	NA
Brunei	NA	NA	1.96	0.99	1.04	1.88
Thailand	0.93	1.01	1.12	1.00	1.10	1.21
Cambodia	0.90	0.59	0.38	0.93	0.82	0.56
Laos	0.92	0.81	0.59	0.90	0.79	0.72
Myanmar	0.99	0.95	1.75	NA	NA	NA
Worldwide: Top Ten						
Norway	1.00	1.01	1.52	1.00	1.01	1.57
Australia	1.01	1.03	1.24	1.00	0.96	1.29
Iceland	1.00	1.05	1.74	0.99	1.03	1.86
Canada	1.00	1.01	1.35	1.00	NA	NA
Ireland	1.00	NA	1.27	0.99	1.05	1.27
Netherlands	0.99	1.00	1.07	0.98	1.02	1.09
Sweden	0.99	1.04	1.52	1.03	1.00	1.57
France	1.00	1.02	1.23	0.99	1.02	1.27
Switzerland	0.99	0.95	0.78	1.00	0.96	0.93
Japan	1.00	1.01	0.85	1.00	1.00	0.88

Sources: - Human Development Report 2003, UNDP.
- Human Development Report 2006, UNDP.
- Education for All, Global Monitoring Report 2010, UNESCO.

2.3 Quality of Education

The Thai educational system tends to focus on memorization rather than the strengthening of analytical skills for problem solving and self-study, resulting in low educational achievements, below 50% for both primary and secondary levels (Table 4.5). Besides, the Thai educational quality cannot compete with that in other countries as evidenced in the results of the evaluation of mathematics, science and reading skills under the Programme of International Students Assessment (PISA) for 2003 and 2006 and the study on Trends in International Testing of Mathematics and Science Study (TIMSS) in 2007, which revealed that Thai students had lower scores than those of other neighbouring countries participating in the programme except for Indonesia (Table 4.6). As a result, a lot of Thai people lack analytical skills which are a basis for creating life skills, leading to failure or inability to resolve problems or situations related to health risks.

Table 4.5 Learning achievements of primary and secondary school students, 2001-2009

Average score (%)

Level and subject	2001	2002	2003	2004	2005	2006	2007	2008	2009
Prathom 6	**51.83**	**51.09**	**44.36**	**38.44**	**NA**	**39.82**	**43.09**	**44.03**	**36.22**
Thai	54.35	50.63	46.93	41.59	NA	42.74	36.58	42.02	38.58
English	49.56	47.4	43.1	35.81	NA	34.51	38.67	38.67	31.75
Mathematics	46.95	49.88	43.44	38.47	NA	38.87	47.55	43.76	35.88
Science	56.44	56.44	43.97	37.89	NA	43.17	49.57	51.68	38.67
Mathayom 3	**39.49**	**42.86**	**42.54**	**38.26**	**NA**	**36.32**	**36.66**	**36.91**	**28.28**
Thai	46.27	46.65	55.39	41.59	NA	43.94	48.05	41.04	35.35
English	38.95	45.33	39.56	35.09	NA	30.83	28.68	34.56	22.54
Mathematics	32.36	39.08	36.09	38.47	NA	31.15	34.7	32.64	26.05
Science	40.36	40.36	39.12	37.89	NA	39.37	35.21	39.39	29.16
Mathayom 6	**44.86**	**43.24**	**41.61**	**38.26**	**35.23**	**36.79**	**37.19**	**36.67**	**32.02**
Thai	55.52	50.01	44.49	41.59	48.62	50.33	50.7	46.42	46.47
English	45.76	42.45	39.14	35.09	29.81	32.37	30.93	30.64	23.98
Mathematics	35.21	34.6	33.99	38.47	28.46	29.56	32.49	35.98	28.56
Science	42.96	45.89	48.82	37.89	34.01	34.88	34.62	33.65	29.06
Overall	**45.39**	**45.73**	**42.84**	**38.32**	**37.31**	**37.64**	**38.98**	**39.2**	**32.2**

Sources: 1. Educational Testing Bureau, Office of the Basic Education Commission, Ministry of Education.
2. National Institute for Educational Testing Services, Ministry of Education.

Note: There was no testing for primary and lower-secondary education levels in 2005.

Table 4.6 Average scores in international testing of mathematics, science and reading skills in 2003, 2006 and 2007

Country	PISA 2003			PISA 2006			TIMSS 2007	
	Mathematics	Science	Reading	Mathematics	Science	Reading	Mathematics	Science
Hong Kong	550	540	510	547	542	536	572	530
Singapore	-	-	-	-	-	-	593	567
Taiwan	-	-	-	-	-	-	598	561
Japan	534	548	498	523	531	498	570	554
Korea	542	538	534	547	522	556	597	553
Malaysia	-	-	-	-	-	-	474	471
Thailand	417	429	420	417	421	417	441	471
Indonesia	360	395	382	391	393	393	397	427
Number of participating countries	**40**	**40**	**40**	**57**	**57**	**57**	**48**	**48**

Sources: 1. Programme for International Student Assessment (PISA) 2003 and 2006.
2. Trends in International Testing of Mathematics and Science Study (TIMSS) 2007.

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 Thais consume foods and drinks that are unhealthy such as alcohol, junk food, and tobacco (see Chapter 4, health behaviours).

2. Educational attainment of Thai labour force; in 2009, as many as 56.2% of Thai workers had completed only primary schooling which affects the development of labour and health. A lot of workers are unable to care for and protect their own health resulting in a rise in occupational injuries. In additional, the underprivileged such as rural and urban poor residents have no access to the educational system; a number of them have access to neither primary schooling nor health services; so they are faced with 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 79.4% in 2009, 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 2009, below the level of 0.54% projected for 2030 (Figure 4.10). Such a decrease in the population growth has affected the number and age structure of population. Thailand will have a population of 70.6 million in 2025 (Figure 4.11), while the proportion of children aged 0-14 tends to drop whereas the working-age and elderly proportions are likely to escalate (Figure 4.12). This describes the phenomenon of declining dependency ratio for children but rising for the elderly. Although the overall dependency ratio keeps falling until 2010, it will rise again due to a greater proportion of the elderly (Figure 4.13). 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 4.14). Thailand thus has a tendency to very rapidly become an elderly society within 20 years (from 2010 to 2030). In 2010, Thailand begins to become an elderly society,[2] while other developed countries except Japan spent more than 60 years to be so,[3] resulting in the working-age population bearing a higher burden in taking care of the elderly.

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, 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 or disabled and 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. So the government has to formulate measures to control such health products and services for the elderly which tend to become more widespread in the future.

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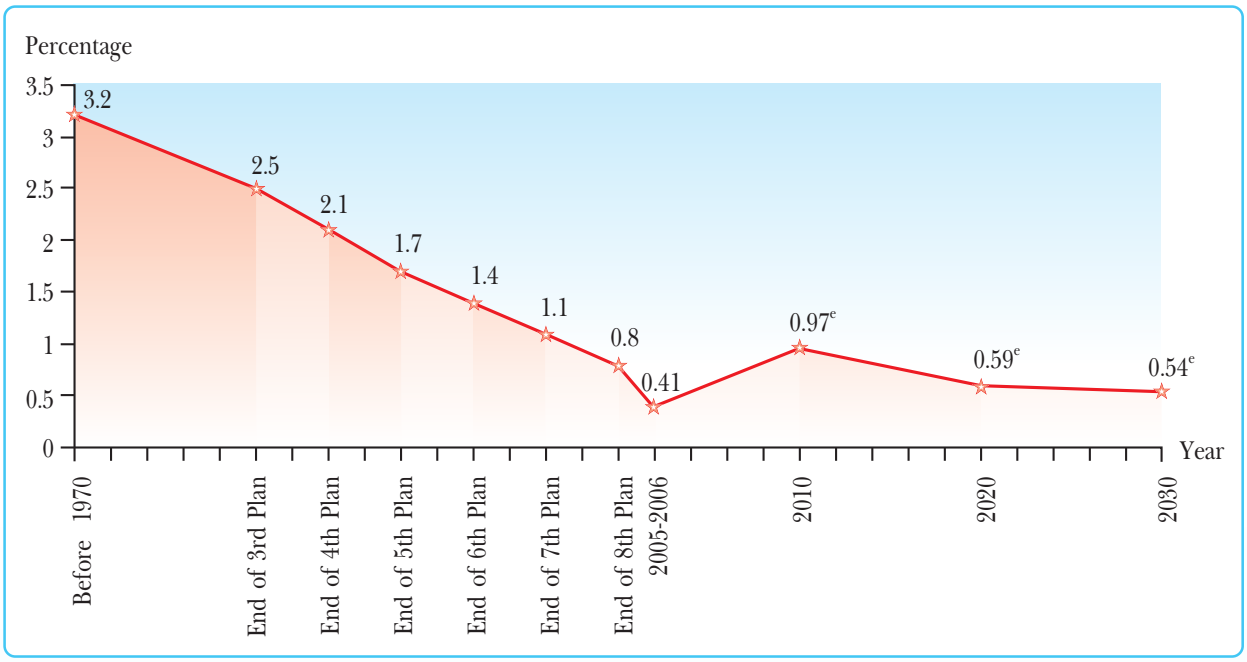
[2] The United Nations has defined that, for a country to become an elderly society, its ratio of population aged 65 years or over to the entire population ranges from 7% to 14% and it fully becomes an elderly society when the ratio exceeds 14%.

[3] World Population Prospects, The 2002 Revision Volume 1: Comprehensive Table, United Nations. In: Suwannee Kamman, "The last chance of Thailand: 6 years in the development of Thai people to be advanced in a sustainable manner", NESDB.

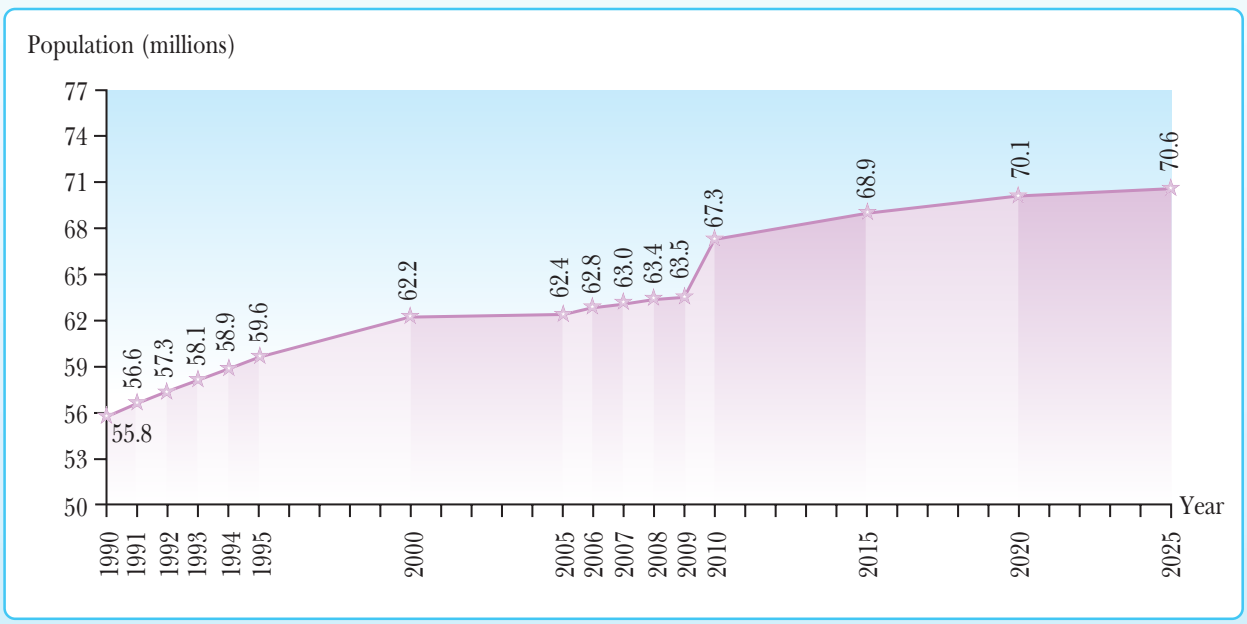
Figure 4.10 Population growth rate and projection, Thailand, 1970–2030



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

2. Data for the 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 2010-2030 were derived from Population Projections, Thailand, 1990-2030, NESDB.

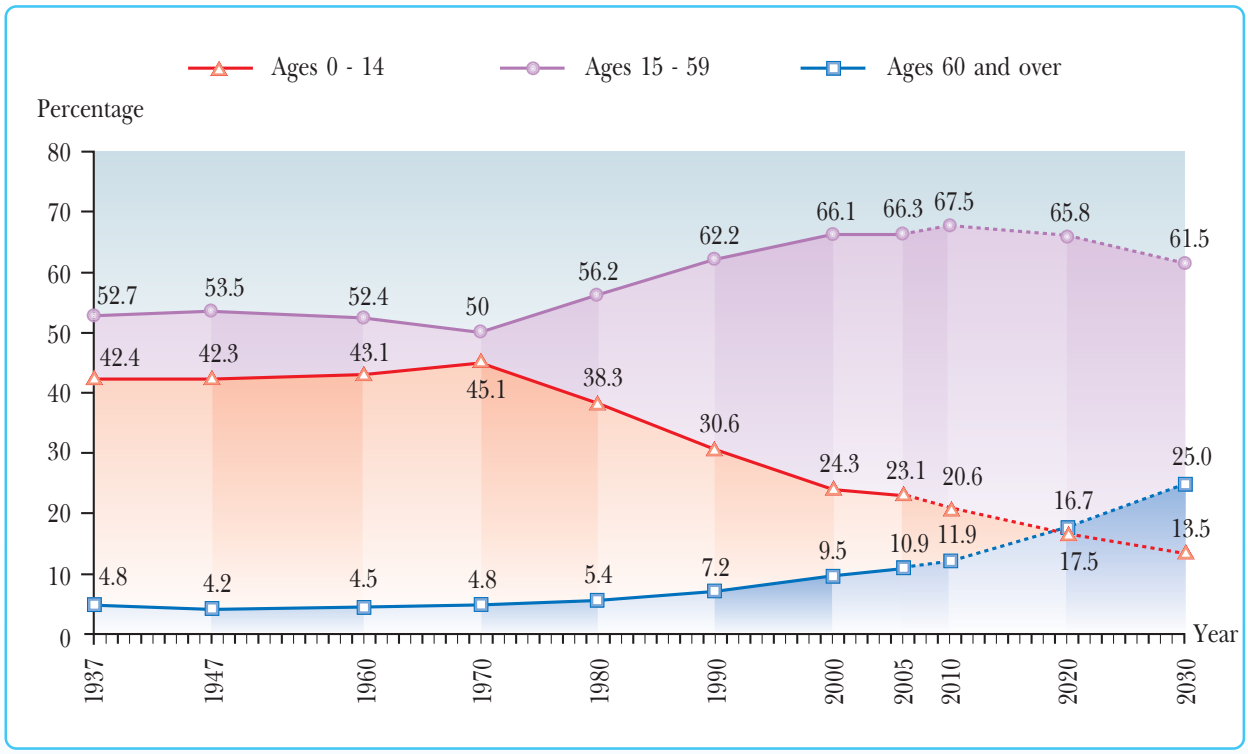
Figure 4.11 Projection of population, Thailand, 1990 - 2025



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

Note: For 1990 and 2009 data were derived from the Bureau of Registration Administration, Ministry of Interior.

Figure 4.12 Proportion of population by major age group, 1937-2030

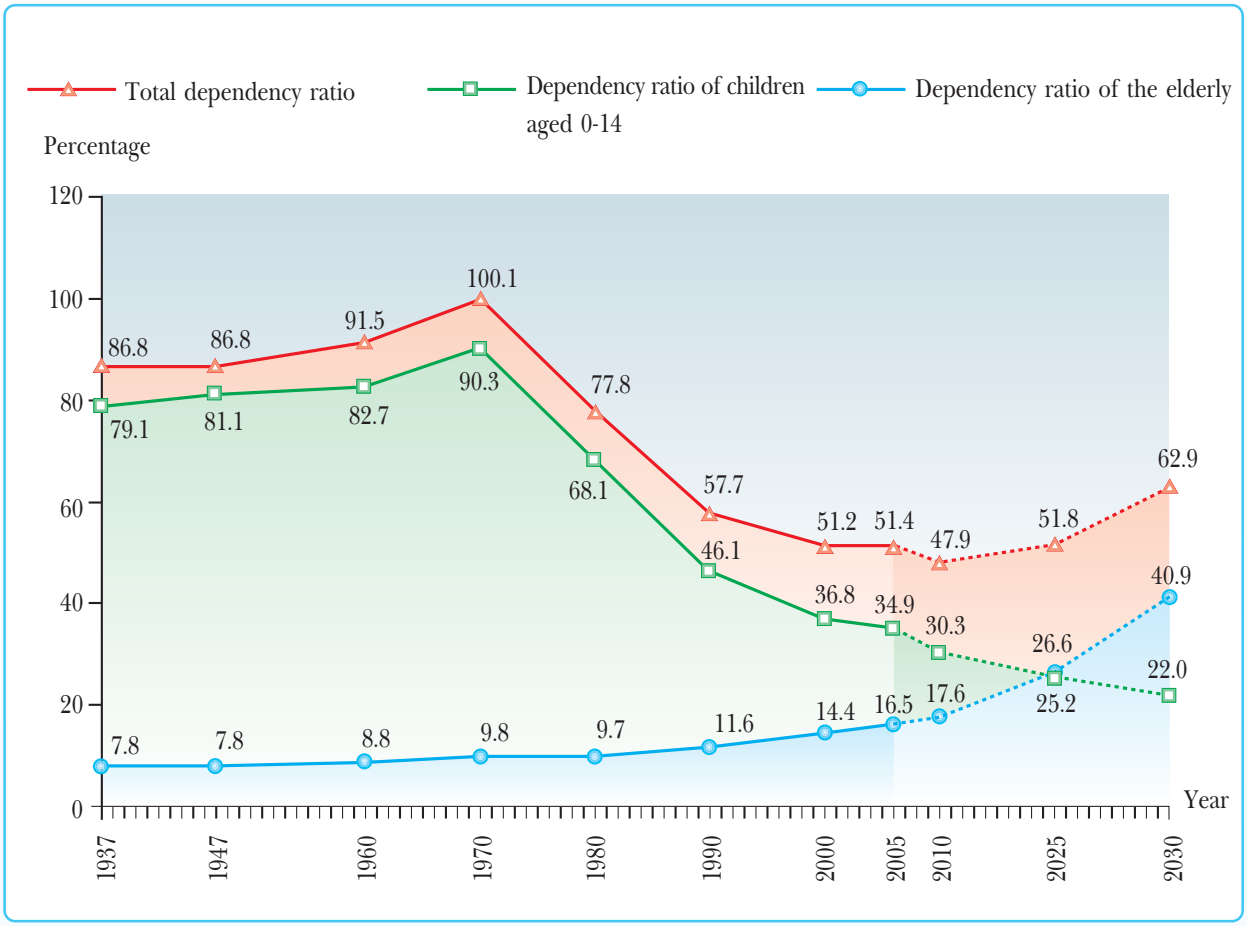


Sources: 1. Data for 1937, 1947, 1960, 1970, 1980, 1990 and 2000 were derived from the Population and Housing Censuses, National Statistical Office.

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

3. Data for 2010, 2020 and 2030 were derived from Population Projections, Thailand, 2000-2030, NESDB.

Figure 4.13 Population dependency ratio, 1937 - 2030



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 2010-2030 were derived from Population Projections, Thailand, 2000-2030, NESDB.

Figure 4.14 Population pyramids of Thailand in 1960, 1990, 2000, 2010, 2020 and 2030 compared to those for Sweden, Denmak, and Japan in 2030

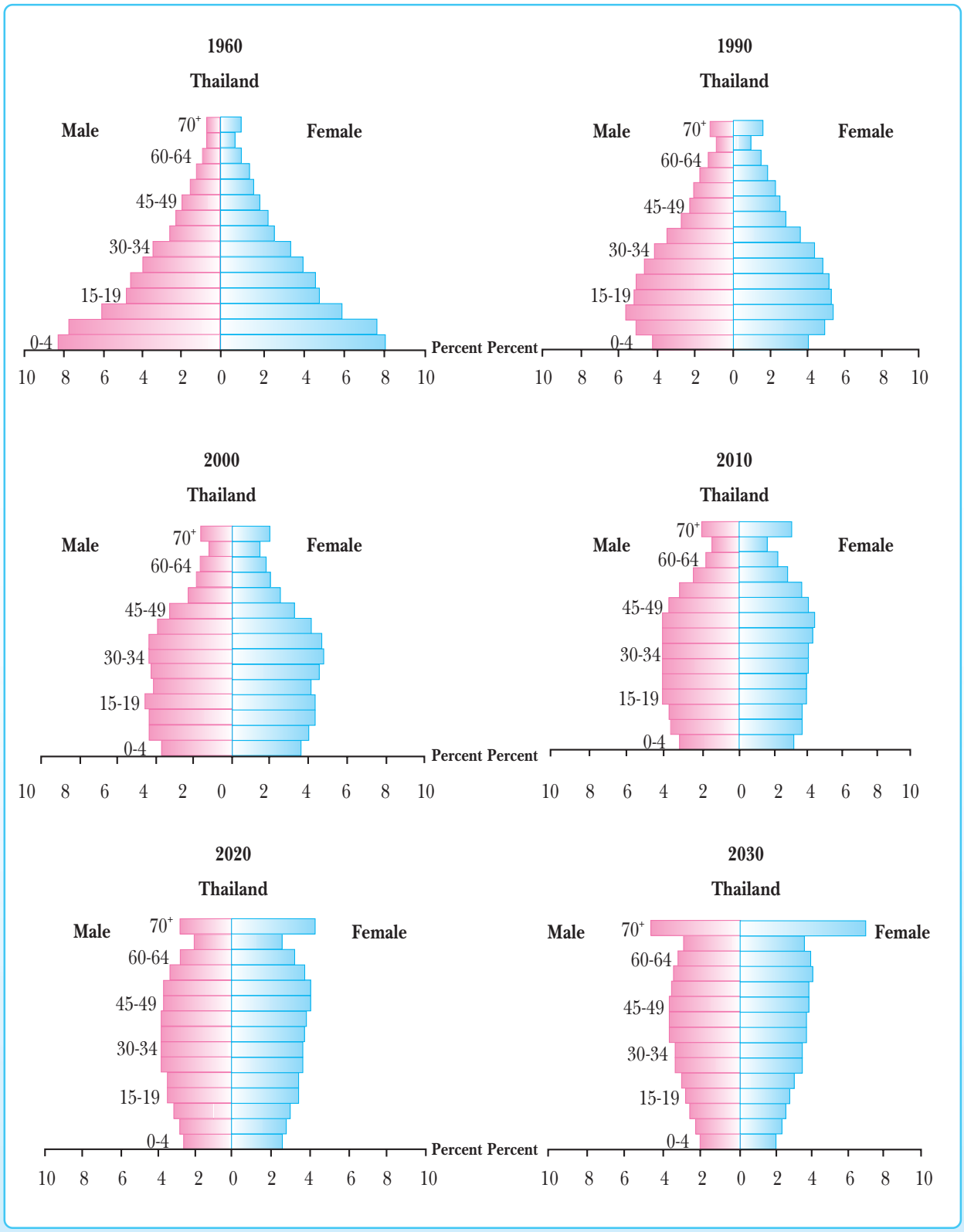
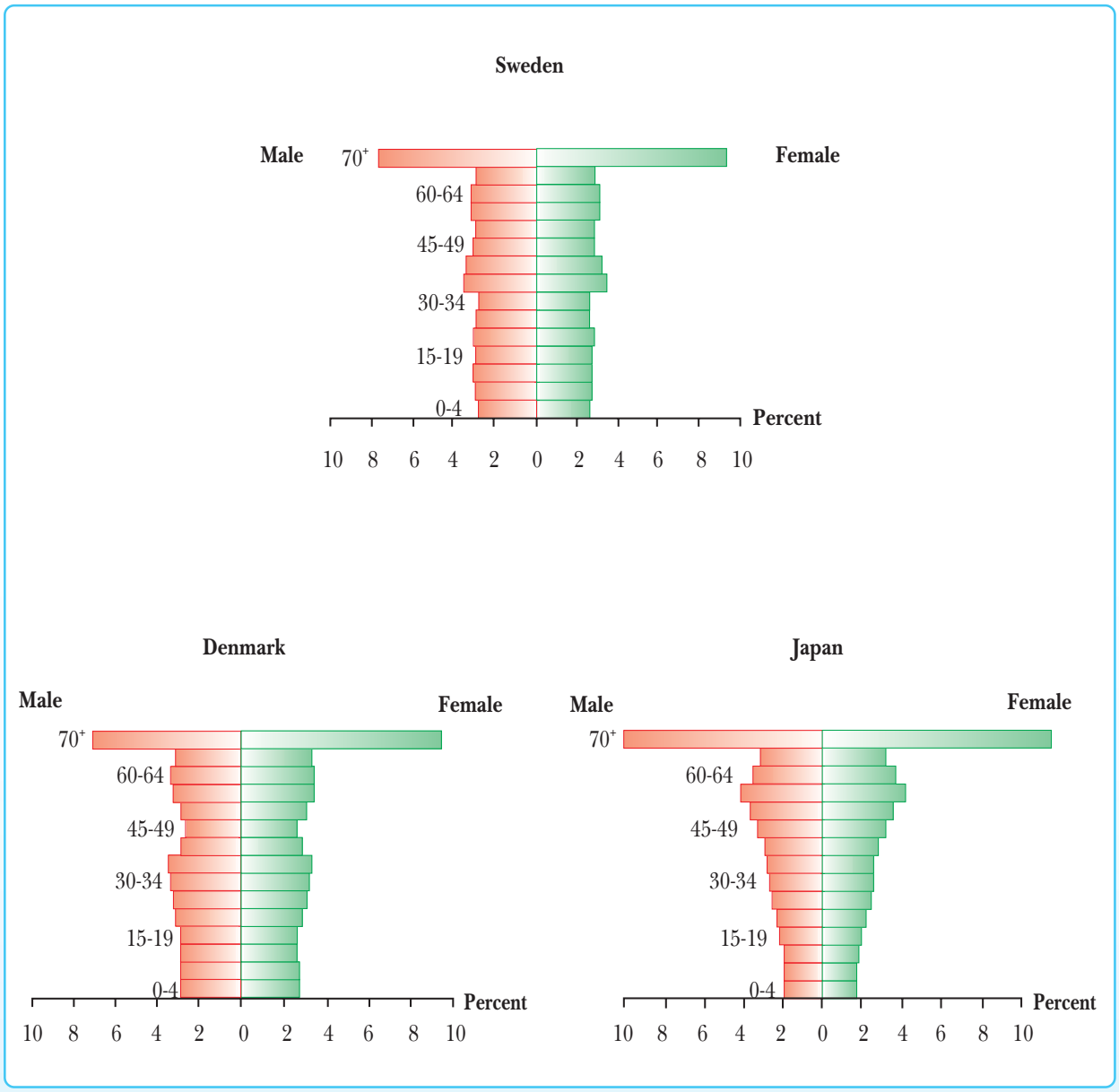


Figure 4.14 Population pyramids of Thailand in 1960, 1990, 2000, 2010, 2020 and 2030 compared to those for Sweden, Denmak, and Japan in 2030 (cont'd)



Sources: 1. Data for 1960, 1990 and 2000 were derived from the Population and Housing Censuses.

2. Data for 2010, 2020 and 2030 were derived from the Population Projections for Thailand, 2000-2030, NESDB.

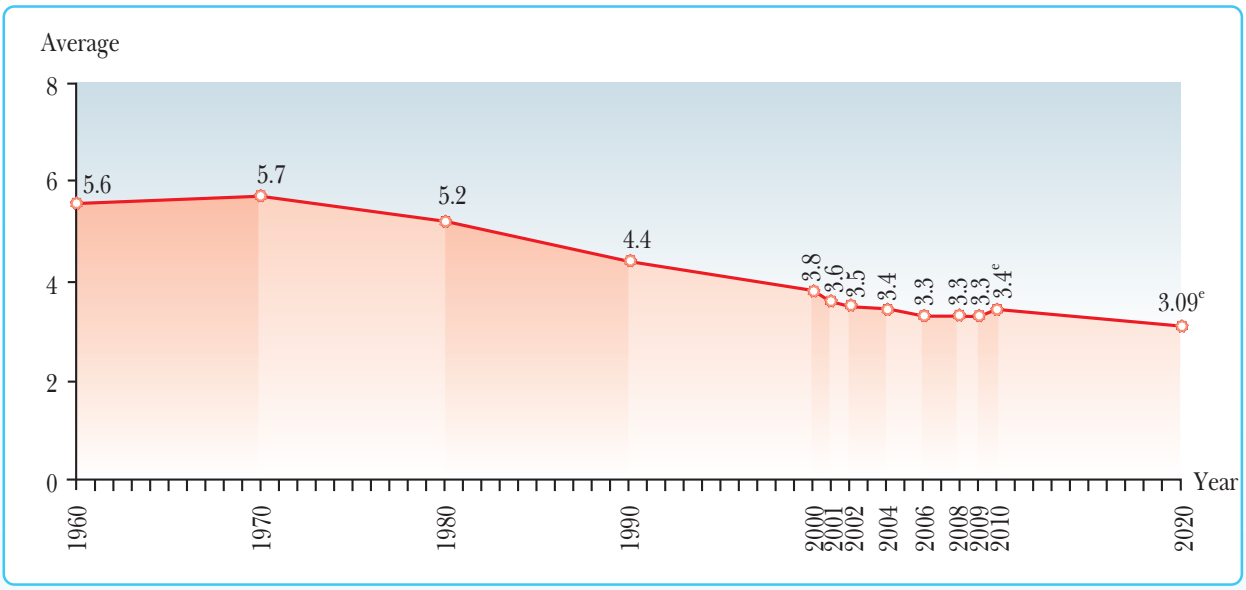
3. Unied Nations (2008). World Population Prospects: The 2008 Revision, http://esa.un.org/unpp

3.2 Thai Families

3.2.1 Family Structure

The Thai 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 whose rate has risen from 2.0% in 1960 to 16.4% in 2010 (Yothin Sawaengdee. Changes in Thai households' population structure, 2005). The average family size has dropped to 3.3 persons in 2009 and is expected to drop further to 3.09 persons in 2020 (Figure 4.15).

Figure 4.15 Average family size and projections, Thailand, 1960-2020

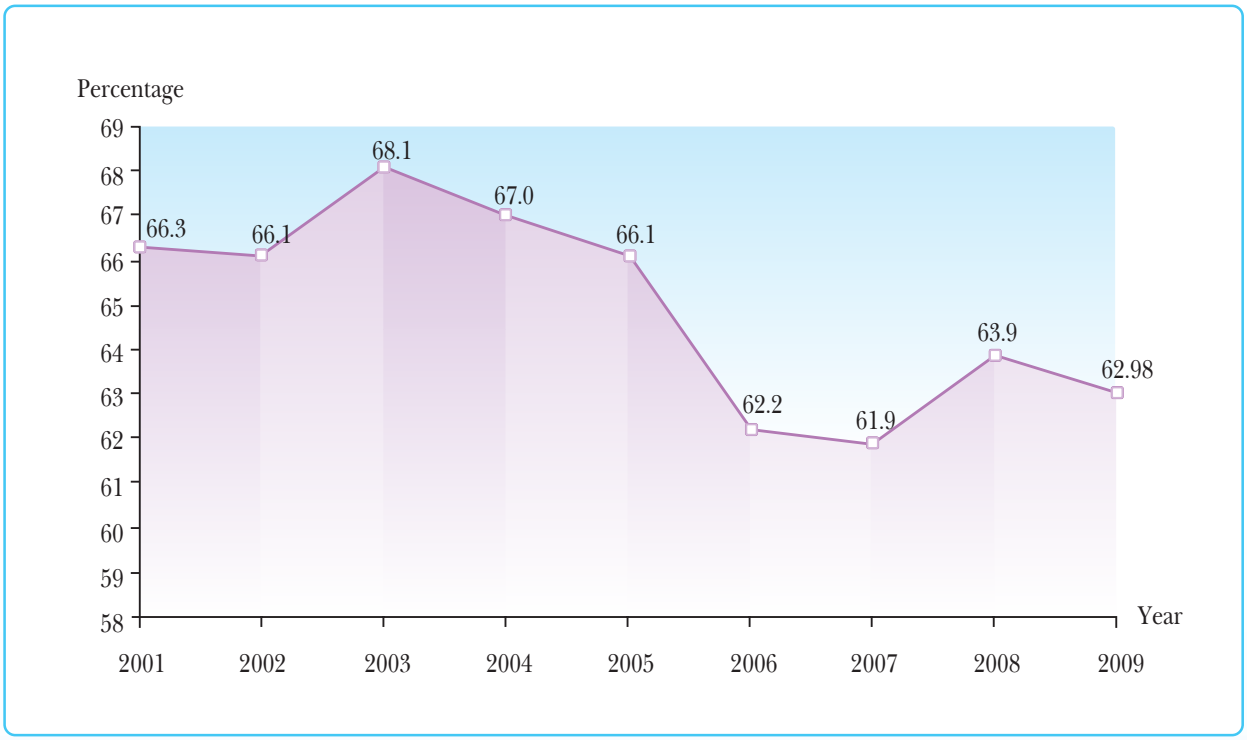


Sources: 1. For 1960–2000, Population and Housing Censuses, National Statistical Office.
2. For 2001–2009, Household Socio-Economic Surveys, National Statistical Office.
3. For 2010–2020, Reports on Trends in Thailand's Economic and Social Status, Thailand Development Research Institute.

3.2.2 Family Relationship: Getting Weaker

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 as evidenced in the decline in the level of family warmth index in the past seven years from 66.3% in 2001 to 62.9% in 2009, which is regarded as low and in need of improvement (Figure 4.16). And such a problem is reflected by the rising rate of divorces, from 10.5% in 1994 to 36.3% in 2009. 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 only 300,878 couples in 2009 (Bureau of Registration Administration, Ministry of Interior). This is due to rising numbers of delayed marriages and cohabitation without wedding registration.

Figure 4.16 Family warmth index, 2001-2009



Source: Bureau of Development Evaluation and Dissemination, NESDB.

Notes: 1. Family warmth index is measured with three elements: role of family, family relationship, and self-reliance.

2. The scores for different levels: very good for 90.0–100%, good for 80.0–89.9%, moderate for 70.0–79.0%, requiring improvement for 60.0–59.9%, and requiring urgent improvement for ≤ 59.9%.

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 weak and fragile family have caused more and more child and elder abandonments. It has been found that the rate of abandoned children has risen from 30.33 per 100,000 population in 1993 to 40.5 per 100,000 in 2009 (Department of Social Development and Welfare, Ministry of Social Development and Human Security). The data, however, did not include a number of other abandoned children. And many elderly persons are left to live alone, the rate rising from 3.6% in 1994 to 7.8% in 2007 and almost half (43.3-55.8%) had a problem when living by themselves as when they get older, their working capacity or health condition may be unfavourable to leading a good life or earning a living. Most of the problems are loneliness (51.2%) and having no caregiver when ill (27.5%) (report on elderly persons' survey in Thailand, 2007, National Statistical Office), resulting a negative physical and mental health impact on children and the elderly as many of them cannot get access to health services.

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 such a problem arises, more people tend to end up with physical or mental assaults and sexual abuse. The 2009 NSO survey on reproductive health among married women aged 15-49 years showed that over the past year, 2.9% of them were abused by this husband; the largest proportion (6.3%) being those aged 15-19 years (Table 4.7). However, it is noteworthy that the reported family violence was lower than actuality. According to be MoPH's Reliable Centre *(Soon Phueng Dai)*, the number of assaulted children and women rose from 6,951 in 2004 to 23,839 in 2009, or from 19 cases per day to 65 cases per day for the same period (Table 4.8), almost half of them were physically and sexually abused.

Table 4.7 Percentage of married women aged 15-49 years physically abused by husbands over the past year by age group, 2009

Age group (years)	Women physically abused by husband in past year (%)
15 - 19	6.3
20 - 24	2.8
25 - 29	2.4
30 - 34	2.7
35 - 39	3.3
40 - 44	2.9
45 - 49	2.3
Total	**2.9**

Source: Report on fertility health survey, National Statistical Office.

Table 4.8 Child and woman abuse, 2004-2009

Type of abuse	2004		2006		2007		2009	
	Number	%	Number	%	Number	%	Number	%
Physical	2,888	41.5	7,961	50.1	8,389	44.0	11,163	46.8
Mental	503	7.2	750	4.7	1,001	5.2	1,486	6.2
Sexual	3,132	45.0	6,799	42.8	7,393	38.8	10,065	42.2
Social (abandoned)	132	1.9	189	1.2	288	1.5	220	0.9
Deceived	-	-	-	-	-	-	225	0.9
Unspecified	296	4.3	183	1.2	1,996	10.5	680	2.9
Total	**6,951**	**100.0**	**15,882**	**100.0**	**19,067**	**100.0**	**23,839**	**100.0**
Average, cases/day	**19**		**44**		**52**		**65**	

Source: Reliance Centre, MoPH, 2007.

Moreover, according to the 2001 survey on health and social conditions of Thai children, among children aged 6–<13 years, 27.9% were physically abused by their family (being hit with a belt or hard object, followed by getting the hair pulled or pinched, being slapped on the face, or being thrown at with an object) and 31.1–45.9% were verbally abused (being hoaxed/scolded with obscene words) (Figure 4.17). For children aged 13–18 years, only 7% were physically abused by the family (being hit with a belt or hard object, or being thrown at) and 32.1–51.5% were verbally abused similar to that for the previous age group (Figure 4.18). This is also reflected in the 2005 report on surveillance of risk factors of Thai children aged 13–18 years, which showed that, among 301,557 children, 10% were abused 1 or 2 times per year by a family member, mostly during the lower-secondary school years (Table 4.9).

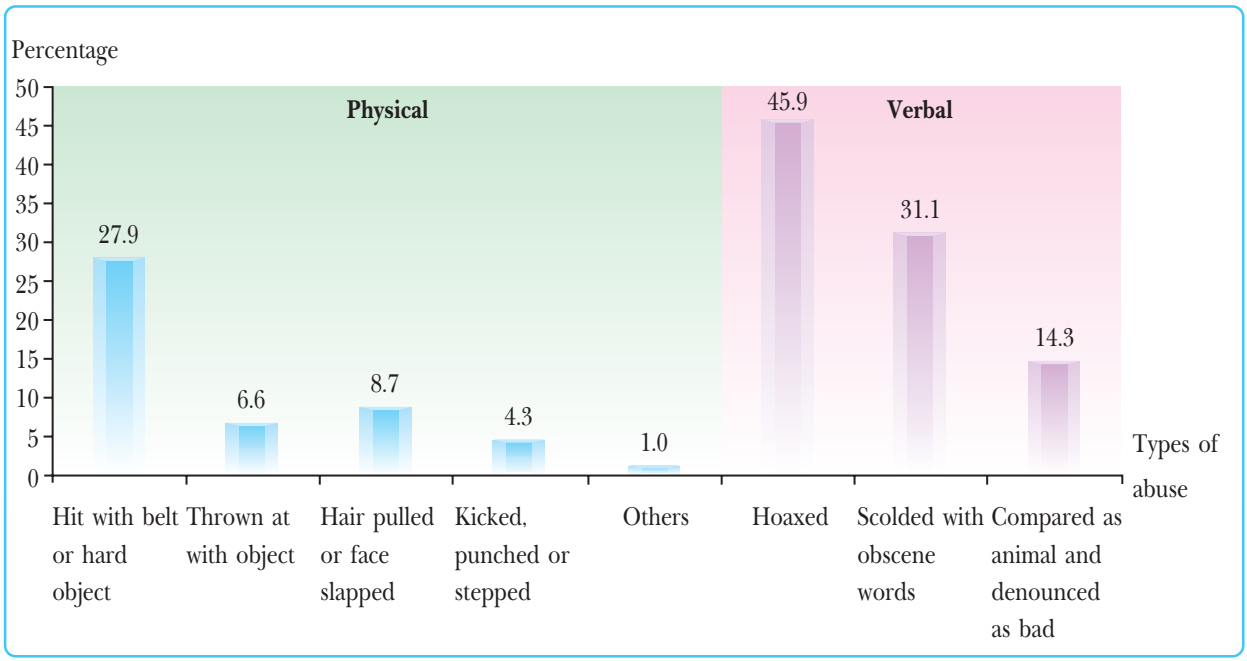
Table 4.9 Percentage of children aged 13–18 years abused by family members

Number of times abused per year	Children abused (%)					
	M. 1	M. 2	M. 3	M. 4	M. 5	M. 6
1–2 times	13.35	11.47	10.62	8.63	7.19	6.00
3–5 times	2.84	2.26	1.83	1.38	1.10	0.91
6–10 times	0.80	0.55	0.46	0.23	0.24	0.20
11 times or more	1.10	0.75	0.60	0.41	0.34	0.25

Source: Report on surveillances of risk factors of Thai children, 2005. National institute of Development Administration.

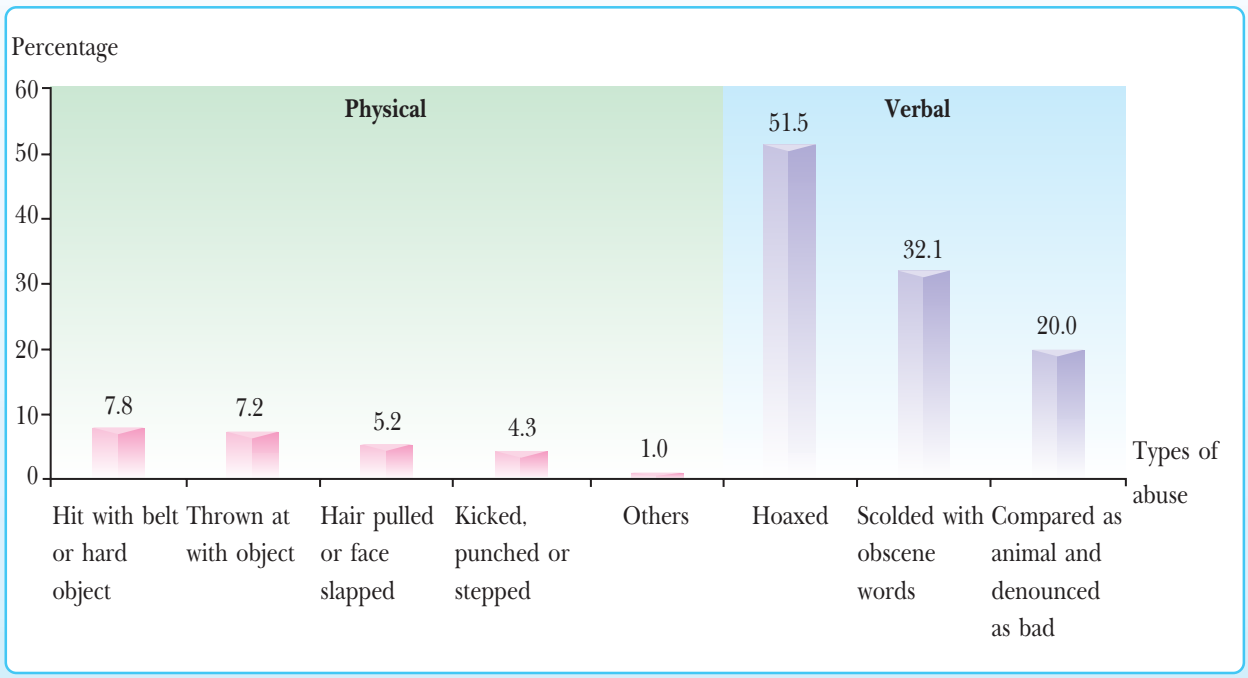
Note: M. = Mathayomsueksa; M. 1–6 means grade 7 through grade 12, respectively.

Figure 4.17 Percentage of children aged 6 to <13 years physically and verbally abused by type, 2001



Source: Ladda Mohsuwan et al., Health and social conditions of Thai children. Thailand Health Fund, 2004.

Figure 4.18 Percentage of children aged 13-18 years physically and verbally abused by type, 2001



Source: Ladda Mohsuwan et al., Health and social conditions of Thai children. Thailand Health Fund, 2004.

3) Economic loss due all types of abuse

When considering the economic loss due to self-inflicted and interpersonal violence in Thailand for 2005, it was found that the cost of injuries was 33,848 million baht, or 0.4% of the 2005 gross domestic product (GDP); 90% of which was due to loss of productivity; and the cost of medical care for such injuries was estimated at 1,948.9 million baht (Table 4.10). But even though there was no clear estimated cost of family violence, it was regarded as part of self-inflicted and interpersonal injuries.

Table 4.10 Economic loss due to self-inflicted and interpersonal injuries in Thailand, 2005

Age, years	Direct medical care cost		Indirect cost: Loss of productivity		Total
	For self-inflicted injuries (million baht)	For interpersonal injuries (million baht)	For self-inflicted injuries (million baht)	For interpersonal injuries (million baht)	
0 – 4	1.8	5.1	-	-	6.9
5 – 14	8.0	18.9	-	-	26.9
15 – 29	334.0	788.6	5,530.2	7,020.2	13,673.0
30 – 44	143.5	395.3	7,155.6	6,674.1	14,368.5
45 +	81.1	172.6	2,719.5	2,799.5	5,772.7
Total	**568.4**	**1,380.5**	**15,405.3**	**16,493.8**	**33,848.0**

Source: Kanitta Boonthamcharren et al. Cost of Injuries Due to Interpersonal and Self-Directed Violence in Thailand, 2005

Note: Loss of productivity means injury or premature death and being unable to work to increase national productivity.

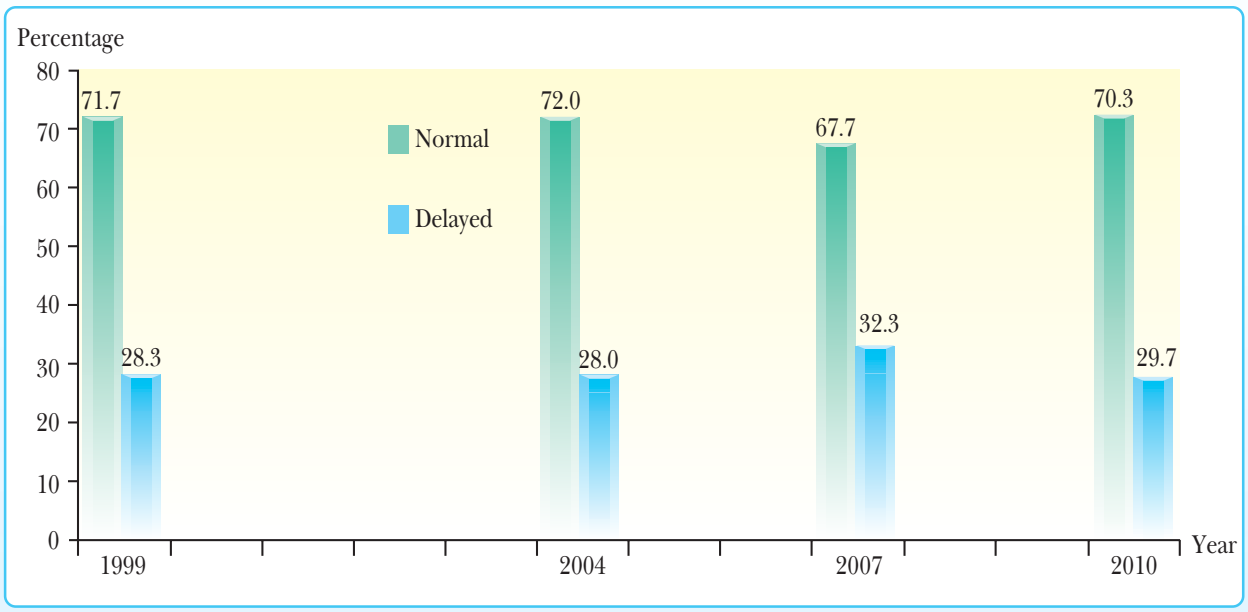
Therefore, the government should develop a medical service system to help more and more women and children who are domestically assaulted and carry out effective measures for creating family well-being.

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 for such a matter. So, more and more parents would take their children to be under the care of non-family members. A survey in 2008 on children and youths of the National Statistical Office revealed that among 1.8 million children aged 3–4 years three-fourths (73.0%) were attendees in a pre-schooling programme at a child development centre, or nursery. The results corresponded to the pre-elementary school attendance rate among children aged 3–5 years, which rose steadily from 39.3% in 1992 to 74.0% in 2008 (statistics on education in school system, Ministry of Education).

As most parents have no time to closely look after their children, they have to take the 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. According to the MoPH's Department of Health, in fiscal year 2009, of all 17,119 child development centres, 8,813 or 51.5% had their standards at the good and very good levels. While the other 8,306 or 48.5% were at the basic level and in need of improvement. And the 2007 evaluation of services system of 30 child development centres under local government organizations, conducted by Sirikul Isaranurak in five provinces (Phrae, Buri Ram, Chon Buri, Suphan Buri and Trang), revealed that child caregivers had to perform many duties, for example, as cooks and cleaners, which were an additional workload in addition to taking care of children. It was found that 56.7% of the centres allowed the children to buy crispy snacks for eating, indicating the inadequate control of nutritional practice,[4] which affected child development. According to the 2010 survey on health status and development of pre-school children (aged 0–5 years), their level overall development (normal or according to age) declined from 71.7% in 1999 to 67.7% in 2007 and rose to 70.3% in 2010 (Figure 4.19).

Figure 4.19 Development of pre-school children aged 0-5 years, 1999, 2004, 2007 and 2010



Source: Survey on Health Status and Development of Pre-school Children (0-5 years of age) 2007 and 2010, Department of Health, MoPH.

Note: Child development is measured by using Denver II.

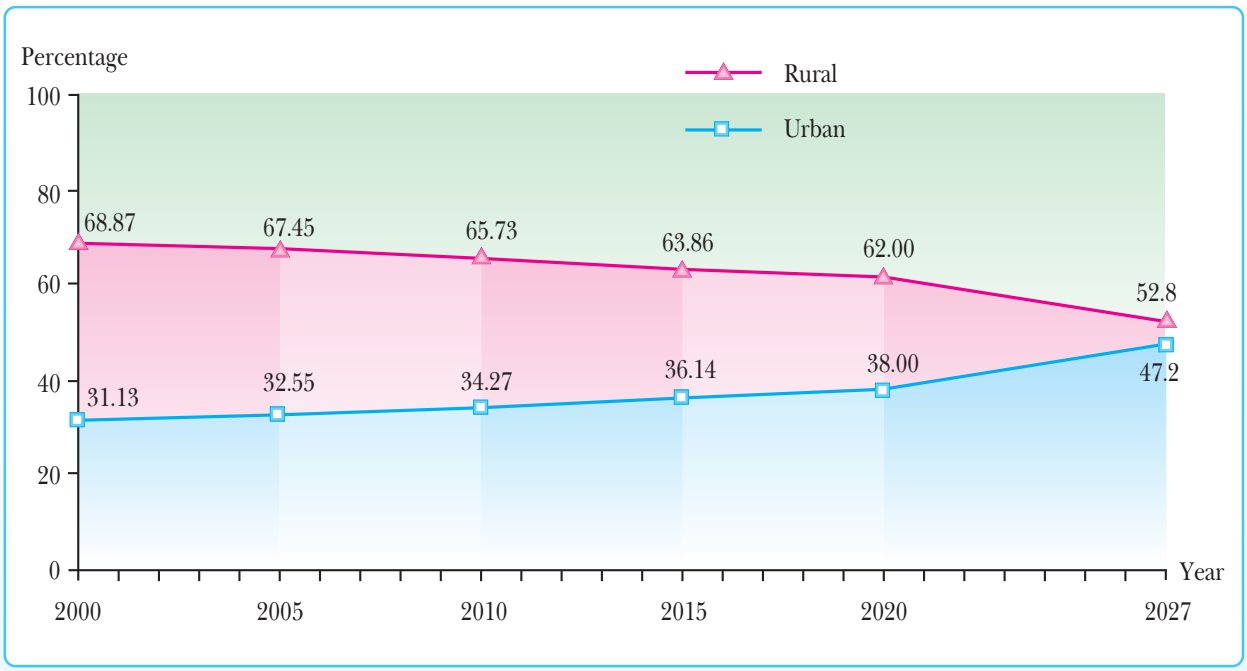
[4] Sirikul lsaranurak et al. Evaluation of services system of 30 child development centres under local goverment organizations, 2007.

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. This situation has resulted in a rapid expansion of suburban communities around major cities and it has been forecasted that, in 2027, 47.2% of the total population will reside in urban areas (Figure 4.20). Most of the migrants will move to Bangkok, followed by to Bangkok's vicinity, as well as to the eastern seaboard area.

Figure 4.20 Projection of urban and rural population, Thailand, 2000-2027



Source: 1. Population Projections, Thailand, 2000-2025, NESDB.
2. Bureau of Area Development Strategy and Planning, NESDB, 2008.

Note: The 2027 population estimate includes residents in all municipal areas and peri-urban communities.

The 1997 economic crisis resulted in the shutdown or downsizing of a lot of business operations, leading to the 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 2008, the urban-to-rural migration was as high as 37.5% while the rural-to-urban migration was only 14.3% (Table 4.11).

Table 4.11 Percentage of migrants by type of migration and current residential region, 1992-2008

Type of migration	Total	Current residential region				
		Bangkok	Central	North	Northeast	South
All migrants	100.0	100.0	100.0	100.0	100.0	100.0
Urban to urban	15.8	30.3	22.7	14.7	8.3	19.7
Rural to urban						
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
2007	13.6	55.1	18.7	10.9	6.4	16.2
2008	14.3	67.3	18.2	10.5	7.5	15.5
Unknown[1] to urban	0.5	2.4	0.4	0.6	0.3	0.5
Rural to rural	30.7	-	35.4	34.9	25.9	36.8
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
2007	36.2	-	24.6	40.8	53.7	15.8
2008	37.5	-	22.9	37.5	56.4	25.7
Unknown[1] ➠ rural	1.2	-	0.4	1.8	1.6	1.8

Sources: Data for 1992, 1994, 1997, 2002, 2007 and 2008 were derived from the Reports on Surveys of Population Migration, 1992, 1994, 1997, 2002, 2007, and 2008. 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 among 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 such workers rose from 61,056 in 1990 to 202,296 in 1995, but after the economic crisis the number dropped to only 147,711 in 2009 (Bureau of Overseas Workers Administration, Department of Employment). The number would be much greater if illegal workers were taken into account. Lately, 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. At present, the government allows the registration of alien workers. In 2009, there were 1,314,382 registered foreign workers: 1,078,767 (82.1%) from Myanmar; 124,761 (9.5%) from Laos; and 110,854 (8.4%) from Cambodia. The provinces with the highest numbers of workers from Myanmar are Bangkok, Samut Sakhon, Chiang Mai, Surat Thani, and Samut Prakan, each having 58,613 to 250,891 workers (Department of Employment). However, 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 child watch report for 2005-2006, 50% of teenagers spent their time hanging out at shopping malls, going to night entertainment places, movies, owning a mobile phone, eating fast-food, and surfing the Internet, chatting and playing games. As a result, they seem to overspend in relation to their economic status; some consume 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 4.12).

Table 4.12 Leisure-time spending of Thai people by administrative region, 2001, 2004 and 2009

Time spending category	Time spent by each person, hours/day								
	Municipal area			Non-municipal area			Whole country		
	2001	2004	2009	2001	2004	2009	2001	2004	2009
- Watching TV or videos	3.2	2.9	2.9	2.7	2.6	2.6	2.9	2.7	2.7
- Getting info from the Internet	2.0	2.0	2.1	1.7	1.8	1.9	1.9	1.9	2.0
- Going to sports, movies, music events	1.7	2.3	2.2	1.8	2.5	2.6	1.8	2.4	2.5
- Socializing with others	1.8	2.6	2.3	1.7	2.0	1.9	1.7	2.2	2.1
- Doing hobbies	1.6	1.9	2.2	1.5	1.9	2.2	1.6	1.9	2.2
- Playing sports	1.5	1.6	1.4	1.5	1.5	1.2	1.5	1.6	1.3
- Listening to music/radio	1.5	1.4	1.5	1.4	1.4	1.5	1.4	1.4	1.5

Source: Reports on Surveys of Leisure-Time Spending among People Aged 10 Years and Over, 2001, 2004 and 2009. National Statistical Office.

Note: The surveys were conducted on population aged 10 years and over.

4.2 Beliefs and Culture

The influx of foreign cultures into Thailand together with globalization, the use of new knowledge and technology in production and livelihood while such technology cannot be created in-country, and the lack of rational screening and selection of such cultures have made most Thai people become under the influence of consumerism, taking advantage of others to be winners, and competing with each other. 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. According to the 2005 cultural participation survey, most of the culture-deteriorating behaviours include open sexual expression, followed by pre-marital sex. 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 with 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 4.13). 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 2010; Thailand's HDI dropped from "high" to "moderate" level (HDI = 0.654–0.784) and the ranking fell from 59th to 66th–92nd among 174 countries and 4th among the 10 ASEAN member states, after Singapore, Brunei and Malaysia (Table 4.13).

Table 4.13 Human development index for Thailand and some other countries, 1990-2010

Group and country	1990			Group and country	1995			Group and country	1998			Group and country	1999			Group and country	2005			Group and country	2007			Group and country	2010		
	Actual rank	Ingroup rank	HDI value		Actual rank	Ingroup rank	HDI value		Actual rank	Ingroup rank	HDI value		Actual rank	Ingroup rank	HDI value		Actual rank	Ingroup rank	HDI value		Actual rank	Ingroup rank	HDI value		Actual rank	Ingroup rank	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	78	1	0.781	Thailand	87	1	0.783	Thailand	92	2	0.654
Sri Lanka	86	2	0.663	Sri Lanka	90	2	0.716	Maldives	86	2	0.751	Maldives	77	2	0.739	Sri Lanka	99	2	0.743	Maldives	95	2	0.771	Sri Lanka	91	1	0.658
Maldives	112	4	0.497	Maldives	95	3	0.683	Sri Lanka	99	3	0.730	Sri Lanka	81	3	0.735	Maldives	100	3	0.741	Sri Lanka	102	3	0.759	Maldives	107	3	0.602
Indonesia	108	3	0.515	Indonesia	96	4	0.679	Indonesia	112	4	0.682	Indonesia	102	4	0.677	Indonesia	107	4	0.728	Indonesia	111	4	0.734	Indonesia	108	4	0.600
Myanmar	123	5	0.390	Myanmar	131	5	0.481	India	127	5	0.590	India	115	5	0.571	Myanmar	132	6	0.583	Bhutan	132	5	0.619	India	119	5	0.519
India	134	6	0.309	India	139	6	0.451	Myanmar	131	6	0.549	Myanmar	118	6	0.551	India	128	5	0.619	India	134	6	0.612	Bangladesh	129	6	0.469
Bhutan	159	9	0.150	Bhutan	155	9	0.347	Bhutan	136	7	0.511	Nepal	129	7	0.48	Bhutan	133	7	0.579	Myanmar	138	7	0.586	Bhutan	-	-	-
Nepal	152	8	0.170	Nepal	152	8	0.351	Bangladesh	139	8	0.502	Bhutan	130	8	0.471	Nepal	142	8	0.534	Bangladesh	146	8	0.543	Myanmar	132	7	0.451
Bangladesh	147	7	0.189	Bangladesh	147	7	0.371	Nepal	143	9	0.499	Bangladesh	132	9	0.47	Bangladesh	140	9	0.547	Nepal	144	9	0.553	Nepal	138	8	0.428
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	25	1	0.922	Singapore	23	1	0.944	Singapore	27	1	0.846
Brunei	44	2	0.847	Brunei	35	2	0.880	Brunei	32	2	0.848	Brunei	32	2	0.857	Brunei	30	2	0.894	Brunei	30	2	0.920	Brunei	37	2	0.805
Malaysia	57	3	0.790	Malaysia	60	4	0.834	Malaysia	61	3	0.772	Malaysia	56	3	0.774	Malaysia	63	3	0.811	Malaysia	66	3	0.829	Malaysia	57	3	0.744
Thailand	74	4	0.715	Thailand	59	3	0.838	Thailand	74	4	0.768	Thailand	66	4	0.757	Thailand	78	4	0.781	Thailand	87	4	0.783	Thailand	92	4	0.654
Philippines	92	5	0.603	Philippines	98	6	0.677	Philippines	77	5	0.744	Philippines	70	5	0.749	Philippines	90	5	0.771	Philippines	105	5	0.751	Philippines	97	5	0.638
Vietnam	115	7	0.472	Vietnam	122	7	0.560	Vietnam	108	6	0.671	Vietnam	101	6	0.682	Vietnam	105	6	0.733	Indonesia	111	6	0.734	Indonesia	108	6	0.600
Indonesia	108	6	0.515	Indonesia	96	5	0.679	Indonesia	109	7	0.670	Indonesia	102	7	0.677	Indonesia	107	7	0.728	Vietnam	116	7	0.725	Vietnam	113	7	0.572
Myanmar	123	8	0.390	Myanmar	131	8	0.481	Myanmar	125	8	0.585	Myanmar	118	8	0.551	Myanmar	132	9	0.583	Laos	133	8	0.619	Laos	122	8	0.497
Cambodia	148	10	0.186	Cambodia	140	10	0.422	Cambodia	136	9	0.512	Cambodia	121	9	0.541	Cambodia	131	8	0.598	Cambodia	137	9	0.593	Cambodia	124	9	0.494
Laos	141	9	0.246	Laos	136	9	0.465	Laos	140	10	0.484	Laos	131	10	0.476	Laos	130	10	0.601	Myanmar	138	10	0.586	Myanmar	132	10	0.451
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	Iceland	1	1	0.968	Norway	1	1	0.971	Norway	1	1	0.938
Canada	2	2	0.982	France	2	2	0.946	Norway	2	2	0.934	Australia	2	2	0.936	Norway	2	2	0.968	Australia	2	2	0.970	Australia	2	2	0.937
Norway	3	3	0.979	Norway	3	3	0.943	U.S.A.	3	3	0.929	Canada	3	3	0.929	Australia	3	3	0.962	Iceland	3	3	0.969	New Zealand	3	3	0.907
Switzerland	4	4	0.978	U.S.A.	4	4	0.943	Australia	4	4	0.929	Sweden	4	4	0.936	Canada	4	4	0.961	Canada	4	4	0.966	U.S.A.	4	4	0.902
Sweden	5	5	0.977	Iceland	5	5	0.942	Iceland	5	5	0.927	Belgium	5	5	0.935	Iceland	5	5	0.959	Iceland	5	5	0.965	Iceland	5	5	0.895
U.S.A.	6	6	0.976	Finland	6	6	0.942	Sweden	6	6	0.926	U.S.A.	6	6	0.934	Sweden	6	6	0.956	Netherlands	6	6	0.964	Lichtenstein	6	6	0.891
Australia	7	7	0.972	Netherlands	7	7	0.941	Belgium	7	7	0.925	Iceland	7	7	0.932	Switzerland	7	7	0.955	Sweden	7	7	0.963	Netherlands	7	7	0.890
France	8	8	0.971	Japan	8	8	0.940	Netherlands	8	8	0.925	Netherlands	8	8	0.931	Japan	8	8	0.953	France	8	8	0.961	Canada	8	8	0.888
Netherlands	9	9	0.970	New Zealand	9	9	0.939	Japan	9	9	0.924	Japan	9	9	0.928	Netherlands	9	9	0.953	Switzerland	9	9	0.960	Sweden	9	9	0.885
UK	10	10	0.964	Sweden	10	10	0.936	UK	10	10	0.918	Finland	10	10	0.925	France	10	10	0.952	Japan	10	10	0.960	Germany	10	10	0.885

Source: Human Development Report, 1993-2010.

5. Situation and Trends of Environment and Livelihood

5.1 Infrastructure

5.1.1 Transportation

1) Land Transportation

In 2009, Thailand had a road network of approximately 393,906.7 km, of which 51,625.9 km was under the highway network and 342,280.8 km under the rural road network leading to all four regions of the country. It is considered that the road network has covered all localities nationwide.

In Bangkok, there are expressways of 198.4 km in length and another 80.8 km under construction expected to be completed by 2012. Two lines of electric rail mass transit system have been operational and another five lines are expected to be completed in the near future to help ease the traffic problems in the city.

Besides, there is a railway system with a combined length of 4,428.8 km.

2) Waterway Transportation

In 2009, Thailand had 7 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 six international airports Suvarnabhumi, Bangkok, Chiang Mai, Hat Yai, Phuket and Chiang Rai. However Suvarnabhumi Airport needs to be expanded to cope with the much larger number of passengers in the future.

5.1.2 Telecommunications

Thailand's telecommunications have rapidly expanded, especially during the past decade. In 2009, there were 6,582,548 fixed-line telephone numbers and 63,610,376 mobile phones nationwide, a rate of 104.1 fixed-line phones per 1,000 population and 1,006.3 mobile phones per 1,000 population and the rate of computer possession was 96 sets per 1,000 population (Table 4.14). The access to the Internet has increased from 30 persons in 1991 to 10.96 million persons in 2008, a use rate of 17.3% or 18,169.2 users per 100,000 population. The number of Internet users in Bangkok is highest among all regions nationwide (Table 4.15). But in comparison with other countries, such as Singapore and Malaysia, Thailand's telecommunication infrastructure and Internet uses are lower (Tables 4.14 and 4.16).

Table 4.14 Telecommunication infrastructure in some countries, 1996–2007

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	2007	1996	1997	1999	2002	2007	1996	1997	1999	2002	2007
Singapore	498.4	529.0	484.1	472	420	147.5	229	381.45	761.1	1,335	233	316	390.9	596	676
Malaysia	192.5	192.5	219.3	206	164	88.4	101.9	145.05	372.9	879	53	65	94.5	137	286
Thailand	78.6	85.5	101.9	99*	104.1**	27.8	34.5	138.6	346.8*	1,006.3**	22	28	40.4	43	96
Philippines	30.7	42.7	37.9	46	45	12.9	17.7	36.97	189.1	589	11	13	19.5	25	65
Indonesia	17.8	24.7	29.1	34	77	3.0	5.4	9.83	48.5	353	6	9	13.4	13	31
Sweden	684.1	685.4	694.5	750	604	281.8	358.1	590.08	900.3	1,137	286	353	510.4	687	880
U.S.A.	636.6	625.6	709.8	701	533	161.9	205.6	314.87	496.9	835	403	450	538.9	739	869
Norway	564.9	609.1	711.9	754	424	296.1	383.0	627.03	787.0	1,105	307	363	506.8	657	857

Source: IMD. The World Competitiveness Yearbook, 1996 and 2009.

Notes: 1. * Data for 2003.

2. ** Data for 2009.

3. Data on computer use per 1,000 population are data for 2008.

Table 4.15 Internet access by administrative jurisdiction and region in Thailand, 2001, 2003, and 2006–2008

Administrative jurisdiction and region	2001(1)		2003(2)		2006(2)		2007(2)		2008(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	8,465,823	14,226.2	9,320,126	15,540.4	10,964,243	18,169.2
- Municipal areas	2,341,433	12,361.5	3,807,900	19,897.3	4,242,901	23,370.9	4,564,814	24,821.5	5,369,342	28,966.4
- Non-municipal areas	1,194,568	3,108.7	2,223,400	5,750.2	4,222,921	10,211.6	4,755,312	11,435.7	5,594,901	13,382.1
Bangkok Metropolis	1,234,542	16,774.1	2,005,700	26,862.3	1,774,375	27,961.7	1,917,348	29,945.7	2,323,439	36,023.3
Central Plains	830,389	6,322.6	1,336,300	10,077.3	2,028,575	13,906.6	2,317,222	15,661.2	2,689,064	17,974.2
North	516,114	4,988.6	1,003,200	9,682.4	1,581,412	14,656.7	1,685,343	15,629.7	1,923,015	17,838.5
Northeast	559,193	2,937.4	1,070,100	5,586.5	2,103,780	10,599.5	2,382,704	11,937.8	2,778,257	13,859.1
South	395,763	5,283.3	616,000	8,147.4	977,680	12,316.2	1,017,509	12,667.1	1,250,469	15,422.5
Internet use rate (%)	**5.7**		**9.5**		**13.5**		**14.8**		**17.3**	

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), 2008. National Statistical Office.

Notes: (1) Population aged 11 years and over.

(2) Population aged 6 years and over.

Table 4.16 Comparison of the Internet usage in Asia-Pacific countries, 1998, 2002, 2005, and 2009

Country	No. of Internet users (millions)				Internet use rate (percent)			
	1998	2002	2005	2009	1998	2002	2005	2009
Australia	4.0	10.63	14.66	17.0	22.2	54.4	71.8	80.1
Singapore	0.55	2.31	2.42	3.4	18.3	51.9	53.9	72.4
Hong Kong	1.1	4.35	4.88	4.88	18.3	59.6	70.3	69.2
New Zealand	0.55	2.06	3.20	3.4	15.3	52.7	78.4	79.7
Taiwan	3.0	11.6*	13.21	15.1	14.3	51.8	59.9	65.9
Japan	14.0	56	86.3	95.9	10.8	44.1	67.7	75.5
Korea	2.0	25.6	33.9	37.5	4.6	53.8	69.4	77.3
Thailand	0.67	4.8	8.46	16.1	1.1	7.7	13.5	24.4
Malaysia	0.4	5.7*	11.02	16.9	2.0	25.1	41.2	65.7
Philippines	0.2	4.5	7.82	24.0	0.3	7.7	8.7	24.5
China	1.5	45.8	123.0	360.0	0.1	3.5	9.3	26.9
Indonesia	0.1	4.4	16.0	30.0	0.1	1.9	7.3	12.5
India	0.4	7.0*	60.6	81.0	< 0.1	0.6	4.6	7.0
Vietnam	0.15	0.4*	13.10	21.9	< 0.1	0.5	15.4	24.8

Sources: 1. Internet Users Worldwide, 2001-2002.
2. The World Fact Book, 2006-2007.
3. Internet World Stats, 2009.

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

2. * Data for 2001.
3. Data for Thailand in 2009 were obtained from Internet World Stats, 2009.

Besides, Thailand has got its own Thaicom satellites, which make communication via cable TV and free TV systems more expansive.

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 as the main source. The 2008 media survey conducted by NSO revealed that there were as many as 57.0 million TV viewers (94.6%), compared with only 18.7million radio listeners (31.1%). Among urban people, a greater number of them were more interested in the information about economic, social, political and health conditions, while, previously viewing only entertainment programmes. In particular, new popular programmes such as live phone-in and discourse programmes result 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 2009, approximately 98.6% (70,186 villages) of all villages across the country had moderate and good levels of electricity supply. Only 944 villages (1.3%) had not yet had access to the electricity system (Table 4.17).

Table 4.17 Villages with electricity, 1992–2009

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
2007	69,730	66,867	95.9	1,868	2.7	995	1.4
2009	71,130	68,520	96.3	1,666	2.3	944	1.3

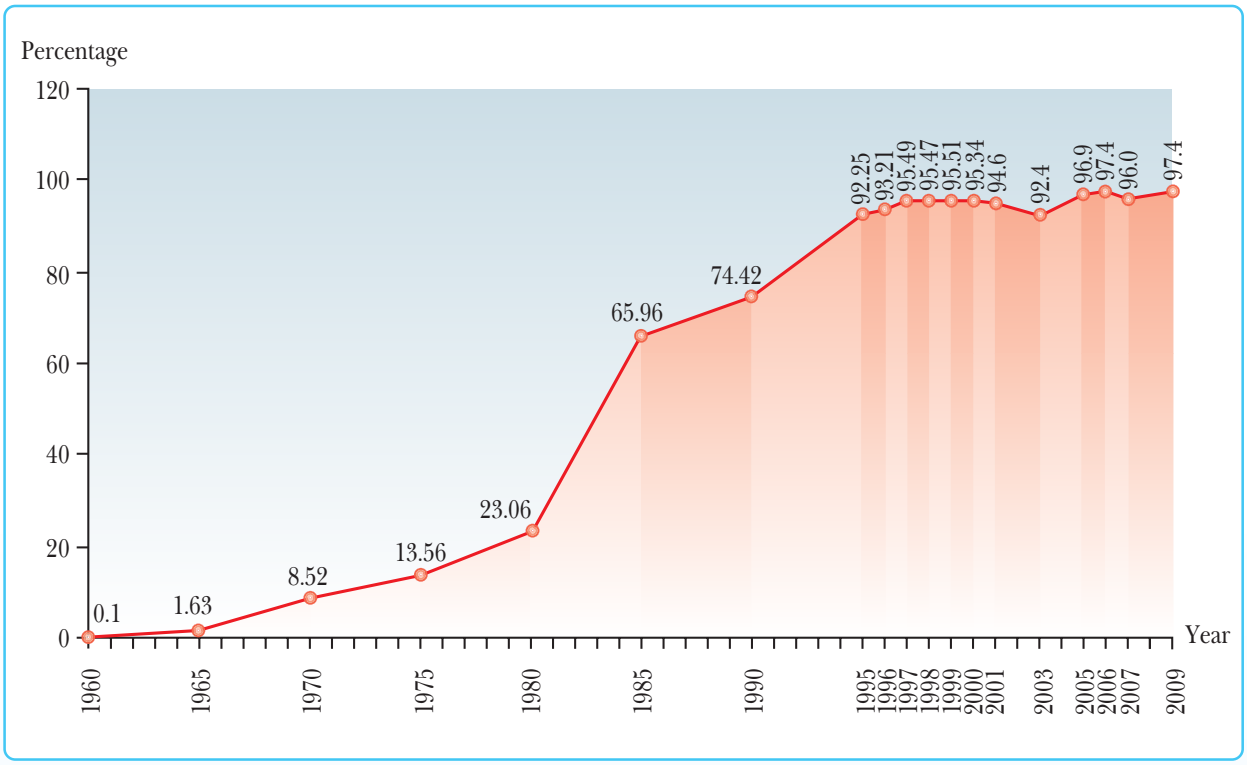
Source: Thai Rural Villages, 1992-2009, from Ko Cho Cho 2 Kho Database. Information Centre for Rural Development, Ministry of Interior.

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 2009, 97.4% of households had adequate and safe drinking water (Figure 4.21) and 97.2% of them had adequate water for domestic use all year round.

Figure 4.21 Proportion of households with adequate and safe drinking water, 1960–2009



Sources: Data for 1960–2000 were derived from the Department of Health, MoPH.
Data for 2001, 2003, 2005 and 2007 were derived from Thai Rural Villages in 2001, 2003, 2005, 2007 and 2009. Information Centre for Rural Development, Ministry of Interior.

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

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

(1) More problems of traffic accidents and higher numbers of vehicles as a result of transportation expansion with more roads and vehicles (see Chapter 5, section 5.2.6 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, 25,000 species of animals, and 7,800 species of bacteria, fungi and other microorganisms, in 15 ecosystems (National Resources and Environment Capital for Sustainable Development in the 10th National Development Plan, NESDB). So they have been exploited lavishly without effective management and control measures. As a result, natural resources and biodiversity have been deteriorated rapidly resulting in the extinction of as many as 14 animal species and the near-extinction of 684 animal/plant species, as well as in the deterioration of some ecosystems.

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 Global Warming

Scientific evidence has confirmed that there is the problem of global warming resulting from the emission of greenhouse gas from the energy and transport sectors. According to the 2006 report from the World Bank, Thailand ranks 31st in emitting the large amount of green house gas (ranks 1st–5th are the U.S.A., China, Indonesia, Brazil and Russia, respectively) and ranks 4th among ASEAN members after Indonesia, Malaysia and Myanmar. A comparison of the amounts of greenhouse gas emitted between 1994 and 2003 showed that the amount for Thailand increased by 20% (Table 4.18).

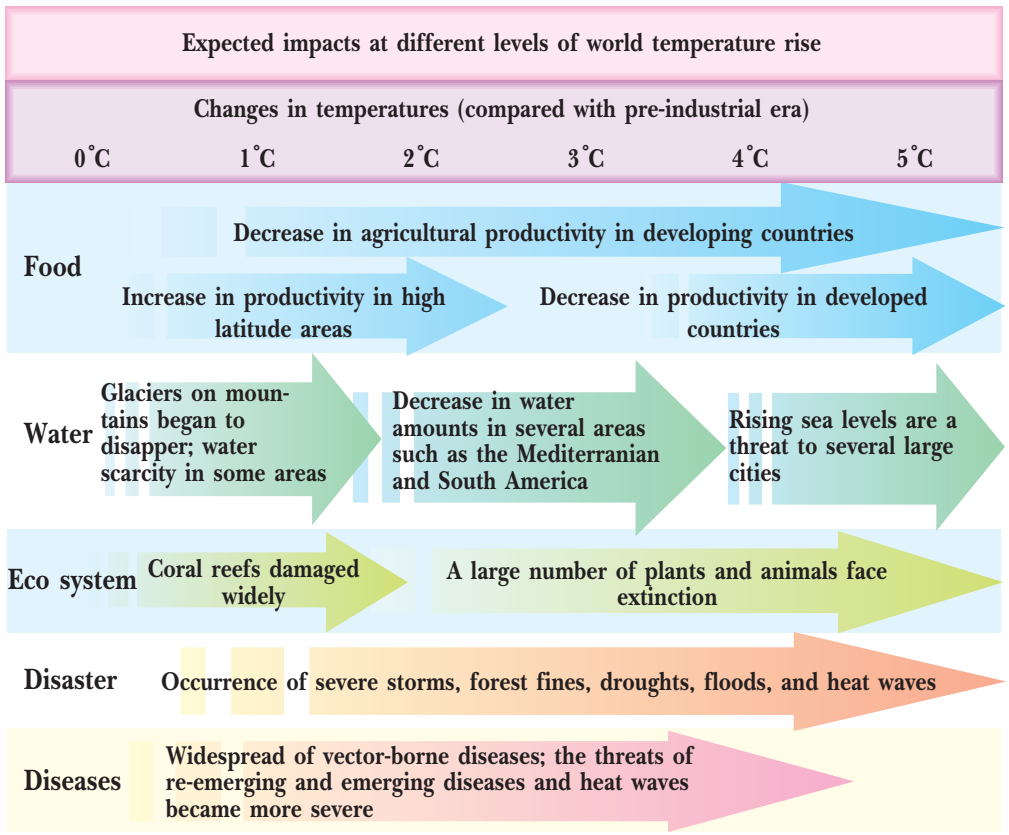
Table 4.18 Amount of greenhouse gas emitted by various sectors in Thailand, 1994 and 2003

Sector	Amount of greenhouse gas emitted (Million tons)		
	1994	2003	Change (± %)
Energy	129.87	193.2	+48.7
Agriculture	77.39	82.78	+7.0
Waste	0.74	26.87	+353.1
Forest and land use	61.85	22.61	-63.4
Total	**269.85**	**325.46**	**+20.6**

Source: Committee on National Climate Change, 2007. Referred to in Thai Health Report 2008, Institute of Population and Social Research. Mahidol University.

For the impacts expected to occur if the temperatures rise, see Figure 4.22.

Figure 4.22 Impacts expected to occur if the world's temperatures rise



Source: Thai Health Report, 2008. Institute of Population and Social Research, Mahidol University.

Global warming has had an impact on the health system as follows:

1. Deaths of Thai people from disasters and floods over the past 20 years, causing an economic loss to the country, totaling 85,000 million baht. In 2006, there were floods in 47 provinces resulting in more than 100 deaths and 4.2 million people suffering (Report on Vision 2027: Towards the 11th National Development Plan, NESDB).

2. The outbreaks of communicable diseases including emerging and re-emerging diseases tend to be more severe. The warm weather causes the rapid rise in the number of vectors of communicable diseases, especially mosquitoes, flies and rats, and the wider spread of such diseases such as dengue haemorrhagic fever (DHF), whose incidence was rising in 2006–2008, with 89,626 cases in 2008. Moreover, in some mountainous areas, where there was no outbreak of DHF before, have found the spread of the disease with about 50 cases each day in Ban Saje, an Akha hill-tribe village in Mae Rai subdistrict, Mae Chan district, Chiang Rai province, the patients overcrowding the hospital (Thai Health Report, 2008)

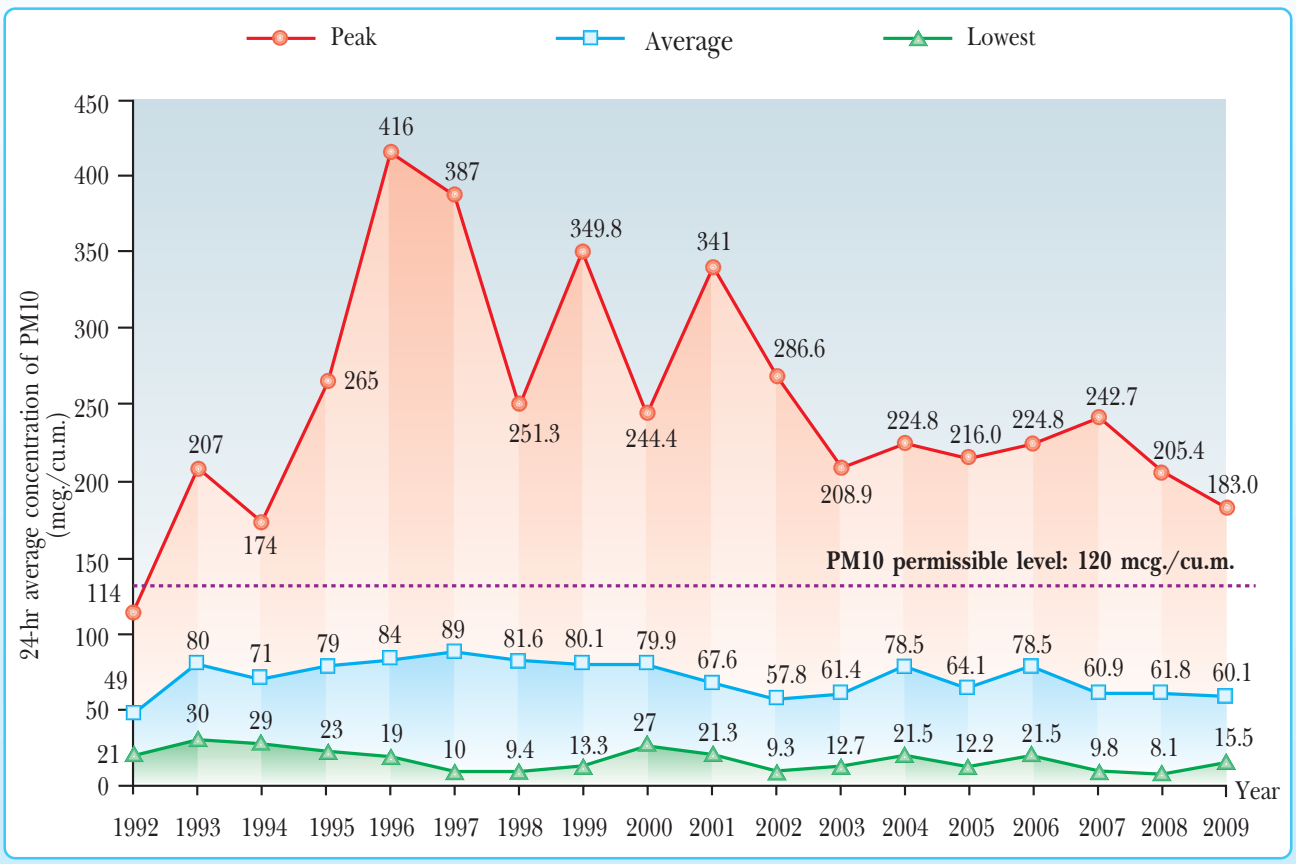
3. Unhealthy environment, rising temperatures, droughts or heavy rainfalls have caused imbalanced environmental conditions. The drought also causes severe forest fires resulting in "smog" dangerous to the respiratory system and causing eye initiation. For instance, the 1997–1998 fires in Indonesia caused thick smoke clouds as well as respiratory and eye diseases among a great number of people in southern Thailand.

5.3.2 Air Pollution

According to the Air Quality Monitoring programme conducted in Bangkok and its vicinity as well as in other major cities, dust is still a major problem and the levels of carbon monoxide and ozone are occasionally higher than the maximum permissible levels, while 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 everywhere 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 2009, 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 1992–2009, 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 4.23), while the levels of carbon monoxide, sulfur dioxide and lead were found to be lower than the maximum allowable levels.

Figure 4.23 24-hr average concentration of <10-micron particulate matter on roadsides in Bangkok, 1992–2009



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

In other provincial cities, the Pollution Control Department conducted the air quality measurement in 25 stations covering 18 provinces nationwide in 2009 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 292.8 mcg./cu.m. in Lampang province, but the concentrations of nitrogen oxide, sulfur dioxide and carbon monoxide were still within the maximum permissible levels.

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 health-care cost, 65.0% of all costs for the six cities. [5]

5.3.3 Water Pollution

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 4 stagnant water reservoirs (Kwan Phayao, Boraphet, Nong Han and Songkhla Lakes) in 1992–2009 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 dropped to 31.0% in 2009; the proportion of those with satisfactory quality rose from 18.75% in 1992 to 54.0% in 2008, but dropped to 36.0% in 2009. The water from such sources can be used for human consumption after proper, regular or special treatment and disinfection in certain places (Table 4.19).

For the Chao Phraya River, during 1992–2004, the water quality was at the satisfactory level, but after 2005 the proportion of samples with poor and very poor quality rose to 76.0% in 2009 (Table 4.19). However, the problems encountered were the high contents of coliform and faecal coliform bacteria exceeding the maximum permissible concentration, higher levels of pollution in terms of organic chemical substances, and lower levels of dissolved oxygen in relation to the allowable standards.

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

Table 4.19 Percentage of water samples with various water-quality levels from the Chao Phraya and other rivers, 1992–2009

Year	Water quality of other rivers				Water 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
2007	19.0	35.0	44.0	2.0	2.0	22.0	57.0	19.0
2008	22.0	54.0	24.0	0.0	7.0	24.0	49.0	20.0
2009	31.0	36.0	33.0	0.0	3.0	21.0	46.0	30.0

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

Water pollution is detrimental to the public's health and results in high health-care 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$ 7.59 million being the hospital-based medical care cost including US$ 4.96 million for outpatient care and US$ 2.64 million for inpatient care. [6]

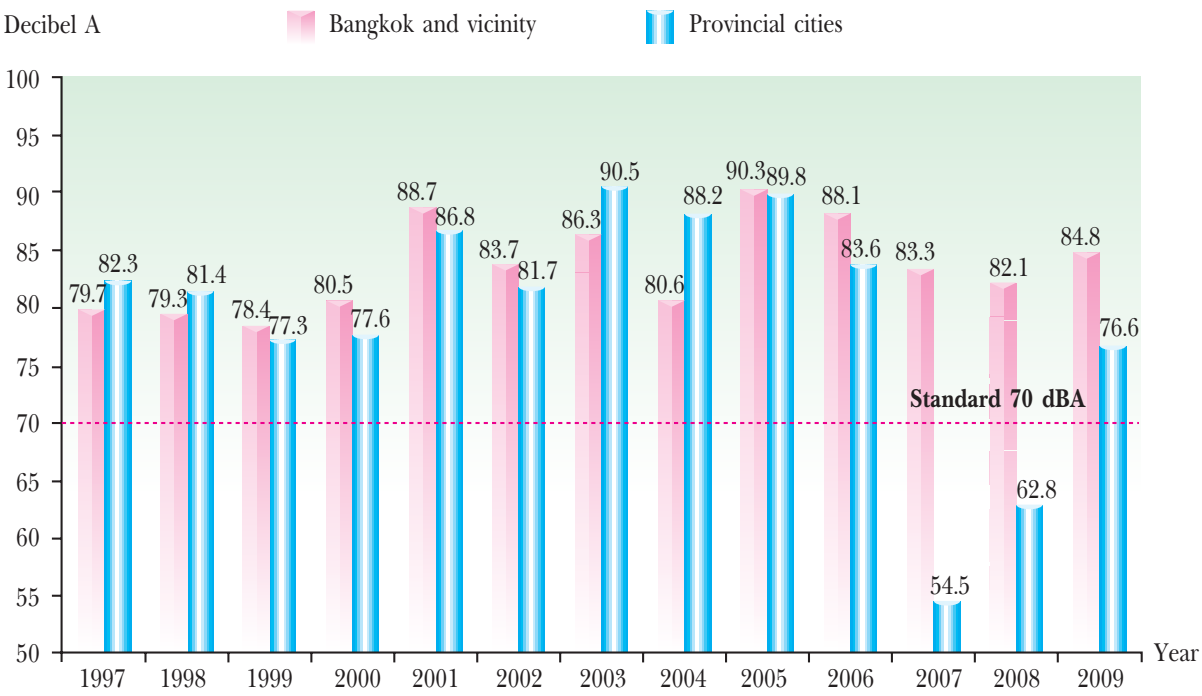
[6] Quoted in Thailand Health Profile 2005 - 2007,pp. 79

5.3.4 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 1997–2009 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)[7] higher than the maximum permissible level (Figure 4.24).

The rising noise pollution has caused hearing loss among the people. A study conducted by Andrew W. Smith[8] reveals that the noise level exceeding 80 decibels is dangerous to hearing ability and Schuttz (1978)[9] indicates that the noise exceeding 70 decibels will cause severe annoyance in 22% to 95% of the people.

Figure 4.24 Noise levels (Leq 24-hr) on roadsides in Bangkok, its vicinity and major provincial cities, 1997-2009



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

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

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

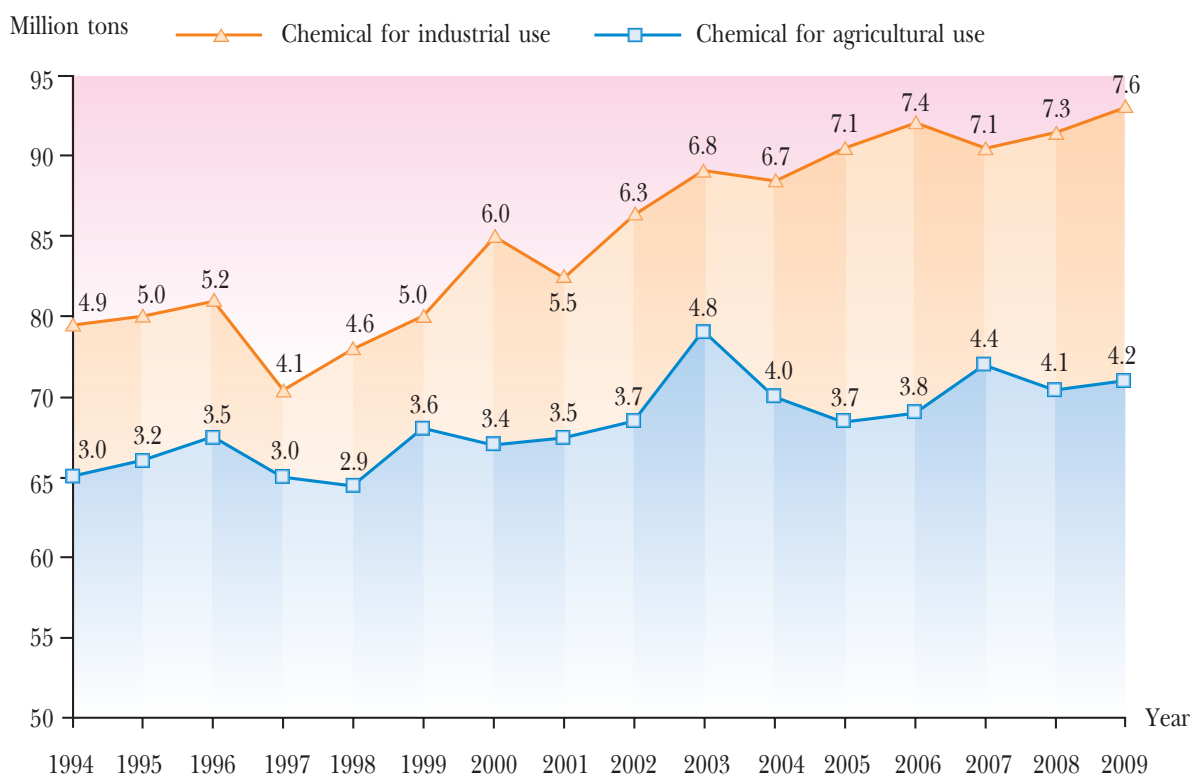
[9] Quoted in Thailand Health Profile 1999- 2000,pp. 113 - 114

5.3.5 Pollution from Hazardous Substances

In 1994-2009, the amounts of chemical imports for industrial and agricultural uses increased from 4.9 million tons to 7.6 million tons and 3.0 million tons to 4.2 million tons, respectively (Figure 4.25). While good transportation, warehousing and use systems were lacking, there were frequent and serious chemical accidents, i.e. 119 incidents in 2007–2009, causing 990 injuries and 10 deaths.

Moreover, the health impact of increased chemical use in the industrial and agricultural sectors includes pesticide poisoning among farmers and chemical poisoning among industrial workers (see Chapter 5, section 2.7, occupational and environmental diseases). In the future, it is likely that there will be more patients with chemical poisoning as the toxic substances will be accumulated in the bodies of affected people; their symptoms or illnesses will occur in the long run such as cancer and abnormalities in the central nervous, immunological and gastrointestinal systems.

Figure 4.25 Amounts of chemical imports, 1994–2009



Source: Information and Communication Technology Centre, Office of the Permanent Secretary, Ministry of Commerce, in cooperation with the Customs Department.

Notes: Chemicals for agricultural use mean fertilizers and pesticides.
Chemicals for industrial use mean inorganic and organic chemical products as well as other chemical products.

5.3.6 Pollution from Hazardous Wastes

The amount of hazardous wastes in Thailand increased from 0.9 million tons in 1990 to 3.15 million tons in 2009; of this amount, 2.45 million tons (77.8%) were released from the industrial sector and 0.7 million tons (22.2%) from residential communities. The amount of such industrial wastes is on the rise, whereas the capacity for efficient treatment of such wastes according to the sanitation principles has not been in place. In 2009, only 75% of hazardous wastes were for properly disposed of, resulting in large amounts of such wastes being illegally dumped into the environment with detrimental effects to the public health.

5.4 Environmental Sanitation

5.4.1 Housing Sanitation

The number of Thailand's slum communities has risen from 1,587 in 1994 to 1,802 in 1997 and 2,453 in 2008, an increase of 13.5% and 36.1%, respectively. In 2008, there were 270,764 slum households, of which 44.8% (1,098 slums) were located in Bangkok, 18.9% (463 slums) in Bangkok's vicinity, and 36.3% (892 slums) in provincial areas. The number of low-income communities in all regions of Thailand has increased in Bangkok and its vicinity (Housing Information Division, National Housing Authority).

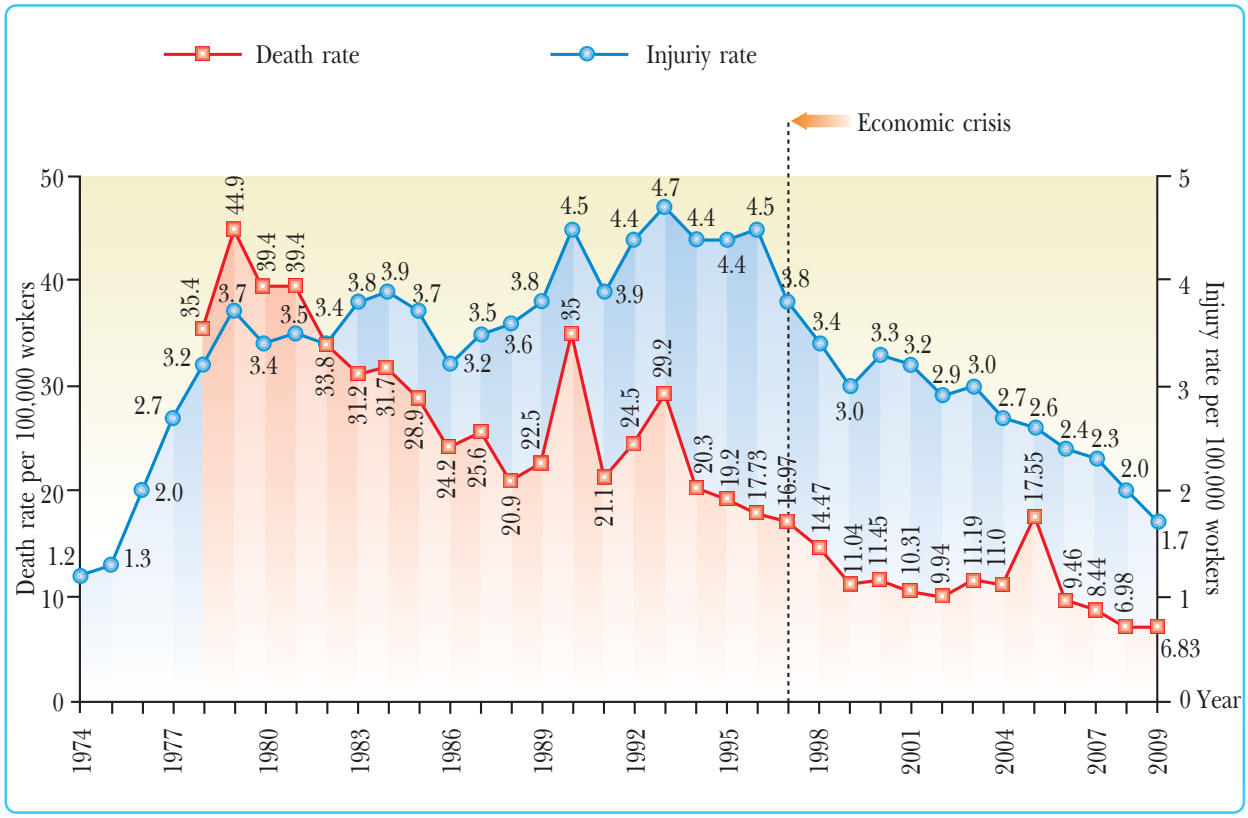
Regarding rural households, according to the 2008 survey on basic minimum needs (BMN), more households have had a better environmental condition. The number of durable households has risen from 90.6% in 1993 to 98.9% in 2008. The number of households with hygienic conditions has risen from 69.4% in 1992 to 98.0% in 2008. 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 10,000 per 100,000 population in 2009.

5.4.2 Safety in the Workplaces

In 2009, 38.3 million Thais or 60.4% of the nation's population were in the workforce and employed, including 14.0 million (36.6%) in the formal sector and 24.3 million (63.4%) 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 1.7% in 2009. But the number of deaths due to occupational injuries (per 100,000 workers) dropped steadily from 44.9 in 1979 to 11.19 in 2003, but rose to 17.55 in 2005 and dropped to 6.83 in 2009 (Figure 4.26). The rate is considered to be very high, compared with those in developed/industrialized countries such as England with the rate 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).

Figure 4.26 Rates of occupational deaths and injuries in the workplaces, 1974-2009



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 8.8% in 2006 to 10.7% in 2009 and the incidence of environmental problems in the workplaces also increased from 12.9% in 2007 to 14.0% in 2009. Most of the unsafe conditions in the workplaces are chemical poisoning and hazardous machinery, while the problems of environmental conditions are mostly related to the working positions or ergonomics and inadequate lighting (Reports on non-formal workers surveys, 2006, 2007 and 2009, National Statistical Office).

Thus, although at present the government has expanded the universal health-care scheme to about 95% of the population, efforts should be rapidly made to ensure that the uncovered sector of the population has 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. A survey on a sample of 4,344 pre-cooked/bagged foods at food-stalls and supermarkets revealed that as high as 35.0% of such foods had bacterial contamination and did not meet the food standards despite the efforts of MoPH and local agencies to improve such places according to the food establishment standards. The 2009 study on the situation of food establishments revealed that only 85.3% (121,963 out of 143,042) of the establishments met the "Clean Food Good Taste" criteria, and 77.4% (1,189 out of 1,536) of fresh markets met the healthy market standards.

Besides, it has been found that more chemicals are used in cooking, some chemicals are without proper technical information and some are 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 2003–2009 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 six chemicals in food, it was found that, among fresh food, the contamination levels have decreased. However, high levels are detected for meat-reddening substance and insecticides, especially in meats and agricultural products (Table 4.20).

Table 4.20 Chemical contamination of fresh foods in fresh markets nationwide under the Food Safety Project, 2003–2009

Chemical substance	Before project implementation		Project launch (2003)			2004			2009		
	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	2,997	65	2.2	1,356	42	3.1
2. Bleaching agent	3,256	10.0	4,812	83	1.7	14,338	2	0.01	14,246	19	0.1
3. Fungicides	2,099	7.2	4,315	206	4.8	15,378	88	0.6	15,695	73	0.5
4. Borax	3,184	42.0	6,695	46	0.7	31,287	160	0.5	24,995	135	0.5
5. Formalin	2,471	10.0	3,800	46	1.2	13,743	206	1.5	9,974	232	2.3
6. Insecticides	2,268	20.3	8,437	508	6.0	82,049	2,580	3.1	54,140	1,760	3.2

Source: Food and Drug Administration, MoPH.

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, 6.9% to 17.2% were found to be contaminated, with residues higher than the permissible levels (Table 4.21).

Table 4.21 Monitoring of chemical safety in fresh vegetables and fruits, 2007–2009

Type of food	Chemical tested for	No. of samples tested	Results exceeding MPL (%)	Agency responsible	Year of study
1) General foods: vegetables, fruits and meat products	Pesticides	1,521	9.4	DMSc	2007–2009
2) Vegetables and fruits: 6 kinds for local consumption	Pesticides	295	6.9	DOA	2007–2009
3) Vegetables and fruits: 12 kinds for export	Pesticides	49,150	17.2	DOA	2007–2009

Sources: - Food Quality and Safety Bureau, DMSc, MoPH.
- Department of Agriculture (DOA), Ministry of Agriculture and Cooperatives.

Notes: MPL = maximum permissible level

Such situation has a negative impact on consumer's health due to consuming unsafe or unhygienic food resulting in a rising incidence of food poisoning from 4.35 per 100,000 population in 1976 to 162.98 per 100,000 population in 2009. With a high level of 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 1986-2000, most Thais preferred rainwater for drinking, followed by artesian-well water and tap water. And in 2005, a similar preference was also found for rainwater 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 4.22).

Table 4.22 Percentage of drinking water sources of Thai people by residential area, 1986-2009

Source of drinking water*	1986	2000			2005			2007			2008			2009		
	Whole country	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Bottled water	NA	40.6	9.2	19.5	48.8	20.0	29.0	48.6	19.4	28.7	46.6	22.3	30.1	47.0	23.9	31.6
Tap water	15.8	36.4	16.8	23.2	36.0	15.3	21.7	25.1	36.7	15.6	39.1	15.0	22.7	39.9	15.9	23.9
Rainwater	39.2	16.1	51.0	39.6	10.7	49.6	37.4	10.5	49.3	37.0	10.3	48.7	36.4	9.5	47.0	34.6
Artesian wells / private wells	26.2	6.7	21.9	16.9	3.7	14.2	11.0	3.9	14.2	11.0	3.3	13.0	9.9	2.2	8.7	9.3
Artesian wells / public wells																
Natural water sources	19.0	0.2	1.1	0.8	0.1	0.4	0.2	0.1	0.8	0.6	0	0.6	0.4	0	0.4	0.3

Sources: 1. Data for 1986 were derived from Reports on the 3rd National Nutrition Survey. Department of Health, MoPH.
2. Data for 2000 were derived from the Population and Household Census. National Statistical Office.
3. Data for 2005 were derived from the report on Population Change Survey, 2005–2006. National Statistical Office.
4. Data for 2007–2009 were derived from the Survey on Economic and Social Conditions of Households, National Statistical Office.

Note: * More than one answer can be made.

With regard to the quality of drinking water in Thailand, the surveys conducted by the Department of Health, MoPH, during 1995–2009, revealed that most water samples of rainwater, deep/shallow well water, and tap water did not meet the drinking water standards, except for those of the Metropolitan Waterworks Authority, about 70% of which met the standards. 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 4.23).

Regarding the quality of bottled water, according to a survey conducted by the Food and Drug Administration and some Provincial Public Health Offices during 1995–2009, 72.4% 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 59.4% of ice-cube samples tested met the standards (Table 4.23).

Besides, the report on domestic water quality surveillance of the Department of Health on water at households and "diamond" health–promoting schools in 2008–2009 revealed that as high as 14% to 22.4% of household water samples and 31.4% to 52.3% of school water samples did not meet the drinking water standards (Table 4.24).

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

Table 4.23 Quality of water for domestic use in Thailand, 1995-2009

Water type	1995		1996		1997		1998		1999		2000		2001		2003		2007		2008		2009	
	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)	-	-	213	110 (51.6)	161	54 (33.5)
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)	110	23 (20.9)	162	39 (24.1)	221	29 (13.1)
Shallow-well water	NA	NA	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)	-	-	-	-	-	-
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)	-	-	-	-	-	-	-	-	-	-
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)	232	209 (90.1)	218	194 (89.0)	420	362 (86.2)
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)	155	106 (68.4)	157	115 (73.2)	164	122 (74.4)

Source: 1. Department of Health, MoPH.
2. Food Control Division, FDA, MoPH

Note: The figures in ( ) are percentages.
MWA=Metropolitan Waterworks Authority; PWA = Provincial Waterworks Authority.

Table 4.24 Monitoring of Quality of water for domestic use in urban and rural households and "diamond" health promoting schools, 2008-2009

Type of water	Water samples, 2008		Water samples, 2009	
	No.	Met stsndards(%)	No.	Met stsndards(%)
1. Water for domestic use in urban and rural households	383	86 (22.4)	264	37 (14.0)
2. Water for use at"diamond" health-promoting schools	360	113 (31.4)	132	69 (52.3)

Source: Department of Health, MoPH.

Note: "Diamond" health-promoting school means a health-promoting school at the best level as measured by the health outcome and health behaviours of students.

5.4.4 Solid Waste and Sewage

In 2009, there were an estimated 15.11 million tons of solid wastes nationwide, of which about 3.22 million tons (21.3%) were generated in Bangkok, 5.97 million tons (39.5%) in municipal areas, and 5.92 million tons (39.2%) in non-municipal/sanitary district areas. Between 1992 and 2009, the total amount of solid wastes increased on average by 2.0% each year, mostly in Bangkok and municipalities nationwide (Table 4.25). In general, solid waste disposal capacity is still limited; the Bangkok Metropolitan Administration (BMA) 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 4.25 Amount of solid wastes, 1992-2009

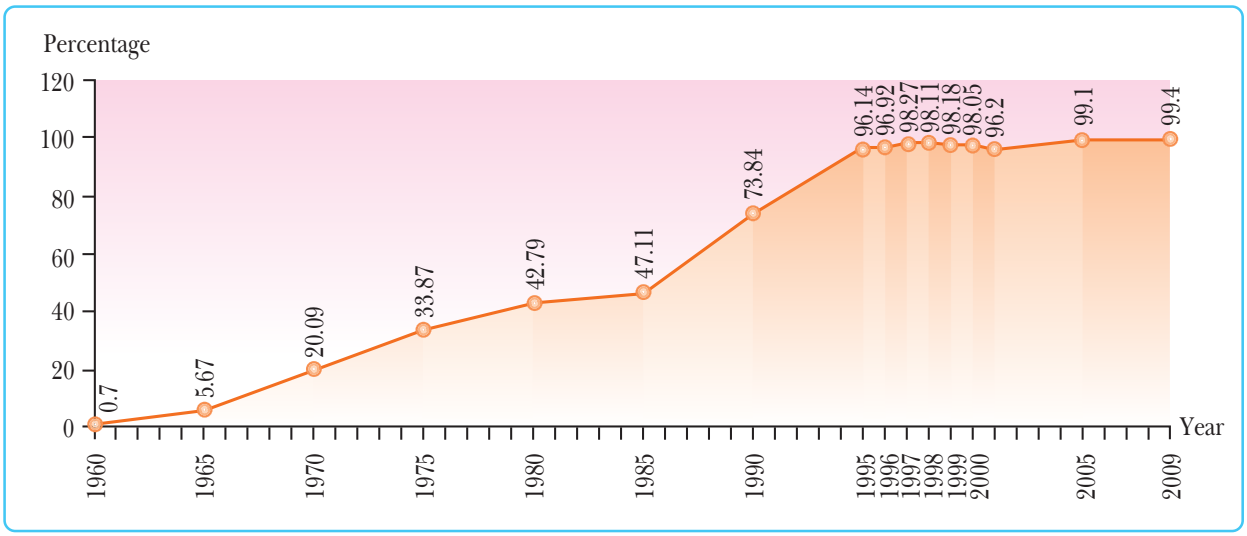
Area / Year	Bangkok		Municipal areas including Pattaya City		Sanitary districts		Outside municipal/ sanitary district areas		Total	
	Amount (million tons)	Change (percent)	Amount (million tons)	Change (percent)	Amount (million tons)	Change (percent)	Amount (million tons)	Change (percent)	Amount (million 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
2007	3.11	+1.6	4.97	+5.5	-	-	6.64	-2.6	14.72	+0.9
2008	3.20	+2.9	5.44	+9.4	-	-	6.34	-4.5	14.98	+1.8
2009	3.22	+0.6	5.97	+9.7	-	-	5.92	-6.6	15.11	+0.8

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

Note: In 1999, all sanitary districts were upgraded as 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 2009, 99.4% of rural households had sanitary latrines as shown in Figure 4.27. As the people's lifestyles have changed, mostly going to work outside the home, the use of public toilets has become very important. According to the public toilet survey in Thailand in 2006–2009 in 11 target premises, less than half of the public toilets in such places did not met the standards (Table 4.26). Most of the problems found were related to the lack of cleanliness and safety. Regarding the toilet use behaviours only 47.1% had correct behaviours (Table 4.27).

Figure 4.27 Percentage of households with sanitary latrines, 1960-2009



Sources: 1. 1960–2000 from the Department of Health, MoPH.

2. 2001 from the Provincial Health Status Survey, 2001. Bureau of Policy and Strategy, MoPH.
3. 2005 from the Report on Population Characteristics from the Population Change Survey, 2005-2006. Bureau of Policy and Strategy, MoPH.
4. 2009 from the Survey on Households' Economic and Social Conditions, National Statistical Office.

Table 4.26 Public toilets survey in Thailand: Proportion of public toilets meeting the standards,2006–2009

Target premises	Toilets meeting the standards (%)			
	2006 (N = 6,149)	2007 (N =64,328)	2008 (N = 51,025)	2009 (N = 38,909)
Religious places	20.6	9.36	6.91	11.75
Public parks	0.6	24.79	40.26	60.06
Petrol stations	12.8	21.75	32.33	44.07
Fresh markets	3.1	25.54	39.90	48.6
Bus terminals	0.5	14.16	44.21	41.4
Government offices	4.0	21.91	39.07	47.28
Hospitals	3.2	48.91	65.73	83.11
Schools	24.4	15.29	38.38	48.6
Tourist sites	2.4	21.88	51.34	62.91
Restaurants	28.3	22.68	26.24	36.15
Roadside toilets	0	12.35	46.81	67.02
Average	**9.08**	**20.16**	**30.85**	**40.37**

Source: Bureau of Environmental Health, Department of Health, MoPH.

Table 4.27 Latrine use behaviours 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 behaviours 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. 2550 (2007) has been in force since late 2007, the results of the general elections cannot resolve the political conflicts as certain groups of people in society have different opinions on the government's righteousness in the administration of the country. This actually caused the widespread of political conflicts and social divide in 2008–2009 in all regions of the country even at the family and community levels. Despite the government's effort to create national reconciliation, the problem has not been resolved, resulting in Thailand's image of political stability dropping from a score of 59.1 in 2002 to 12.9 in 2008, from the 4th rank among ASEAN countries to the 8th rank for the period (Table 4.28). This is because there have been cases of human rights violation and the use of forces in ending the problem rather than using a peaceful method under the democratic system.

Table 4.28 Political stability scores of ASEAN countries, 2002–2008

Country	2002		2003		2004		2005		2006		2007		2008	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Brunei	2	63.2	1	87.0	1	95.7	1	90.9	2	93.3	1	92.8	2	93.3
Singapore	1	95.7	2	84.6	2	89.9	2	89.4	1	94.2	2	91.8	1	96.2
Vietnam	5	57.2	4	52.4	4	55.3	4	59.1	3	60.6	3	56.3	3	56.5
Malaysia	3	60.1	3	56.7	3	57.2	3	62.5	4	56.7	4	52.4	4	50.2
Laos	6	36.1	7	17.8	7	27.4	5	37.0	5	46.2	5	40.4	5	43.5
Cambodia	8	24.5	6	25.0	6	30.3	6	30.8	6	31.3	6	26.9	6	34.4
Thailand	4	59.1	5	47.1	5	31.7	7	28.4	8	19.7	7	17.3	8	12.9
Indonesia	10	8.7	10	3.8	10	7.2	10	12.0	9	13.5	8	15.9	7	15.8
Myanmar	9	13.0	9	13.0	8	18.8	8	20.2	7	21.6	9	13.0	10	9.1
Philippines	7	26.0	8	14.4	9	12.5	9	17.8	10	12.0	10	11.5	9	10.5

Source: Worldwide Governance Indicators for 1996-2008.

Such changes have an impact on the national administration resulting in the lowliness in implementing different policies, the loss of opportunity for economic development, and the decline in people's quality of life and livelihood in society with higher levels of stress and suspicion causing decreased happiness and poor physical and mental health of Thai people.

Table 4.29 Gross Domestic Happiness (GDH) index of Thai people in various aspects, December 2009 – January 2010

Order	Group of factors	Average GDH index	
		Dec 2009	Jan 2010
1	Relationship of family members	8.96	8.01
2	Physical health	7.72	7.61
3	Mental health	7.96	7.58
4	Occupation and responsibility	7.58	7.15
5	Current Thai culture and tradition	6.91	6.99
6	Environment, roads, electricity, soil, air and water	7.03	6.92
7	Access to medical care	7.53	6.78
8	Relationship of community numbers	7.58	6.67
9	Families' economic and social conditions	7.09	5.87
10	Social justice and injustice received	7.07	5.19
11	Overall political situation	5.58	4.06
	Thais' GDH for Dec. 2009 and Jan. 2011	**7.26**	**6.52**

Source: GDH for Thai people in Jan 2010, Community Happiness Centre, 2010

Note: Full score is 10.

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 good governance and a modern public sector administration system according to the Royal Decree on Criteria and Methods for Good Governance, B.E. 2546 (2003), which aims to enhance the capacity of the public sector. As a result, the capacity and performance of the civil service system has been found to be higher plan before; and 80.2% of the people are satisfied with the services provided by various state agencies. The details of development achievements in various sectors are shown in Table 4.30.

Besides, many state agencies have successfully improved their services systems and received international recognition. For instance, the Revenue Department has received the eASIA Award for public sector's electronic transaction and Yasothon Hospital got into the final round of the United Nations Public Service Awards for 2008 of the U.N. Economic and Social Council (ECOSOC) and received a certificate of appreciation as an agency that provided public services in a professional manner.

Table 4.30 Achievements of public sector development

Major goal	Indicator	Results of operation
1. Development of public service quality	1. Service recipients: 80% of the people, on average, are satisfied with improved public services	80.25%
	2. Steps and time in providing services to the public reduced by more than 50% on average by 2007	50.31%
2. Adjustment of role, mission and size as appropriate	**Role and mission**	
	1. No. of non-core functions is reduced by not less than 80% by 2007	73%
	2. Not less than 90% of public agencies have implemented "Measure 3/1" of the State Administration Act (No.5) of 2002 or the 2003 Royal Decree on Good Governance	100%
	3. Not less than 100 laws that are unnecessary or obstructing national development will be amended or deregulated by 2007	More than 100 laws
	State budget	
	- Maintain the proportion of state budget in relation to GDP at not to exceed 18% on average for the period 2003-2007	17.80%

Table 4.30 Achievements of public sector development

Major goal	Indicator	Results of operation
	Public sector workforce - Reduce the number of government officials by at least 10% by 2007 and/or enhance the capacity of workforce at the same level	9.72%
3. Enhancement of performance competency and standards to the international levels	1. Each agency has got at least one certificate for its quality/standard by 2007, especially in reducing steps for service provision	Certified by all agencies
	2. At least 80% of state officials have their competencies enhanced as per specified criteria on average by 2007	80%
	3. At least 90% of state agencies have their service systems improved or operational using the e-government system by 2007	Operational in all agencies
4. Response to public administration in the democratic system	1. On average 80% of the people have confidence and faith in the transparency and fairness in the public administration (especially regarding public services) by 2007	80%
	2. At least 80% of state agencies have measures or activities that are open to public participation by 2007	Operational in all agencies
	3. The number of conflicts or complaints between the administration and the people does not increase by more than 20% each year on average for the period 2003-2007 (emphasizing the readiness of both parties to jointly resolve the conflict)	Not less than 81% of both parties

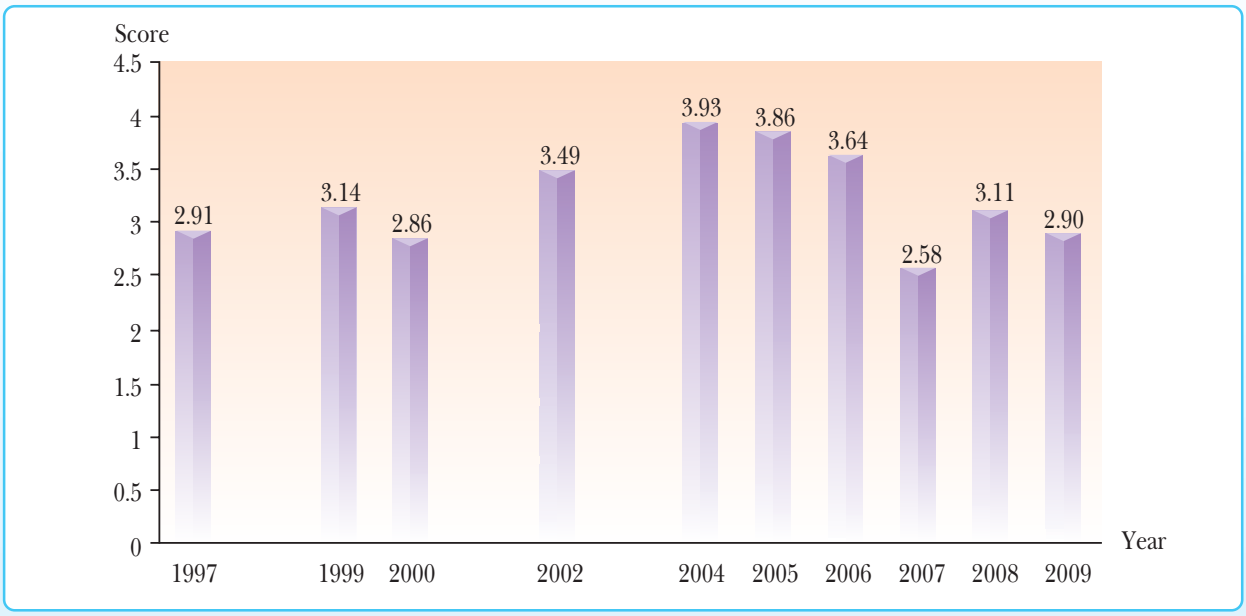
Source: Strategic Plan for Thai Public Sector Development (2008–2012), Office of the Public Sector Development Commission.

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[10] spending more than medium- and large-scale businesses.[10] 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 2000-2006 revealed that the efficiency score of the Thai public sector in the development of the business sector increased from 2.86 in 2000 to more than 3.5 in 2006 or from rank 31st in 2000 to rank 21st in 2006, during the administration of an elected government under the 1997 constitution, and after the 2006 military coup the score dropped slightly to 2.90 or rank 20th in 2009 (Figure 4.28). Nevertheless, the efficiency level in Thailand is lower than those in developed countries or certain ASEAN countries, i.e. Singapore and Malaysia (Table 4.31).

Figure 4.28 Ability and ranking of Thai public sector's competitiveness for business sector development, 1997–2009



	1997	1999	2000	2002	2004	2005	2006	2007	2008	2009
Rank of the Thai public sector's competitiveness for business sector development	28	24	31	24	19	16	21	34	21	20

Source: IMD. The World Competitiveness Yearbook, 1997-2009.

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

Table 4.31 Efficiency of the state service system in the business sector development in various countries, 1997-2009

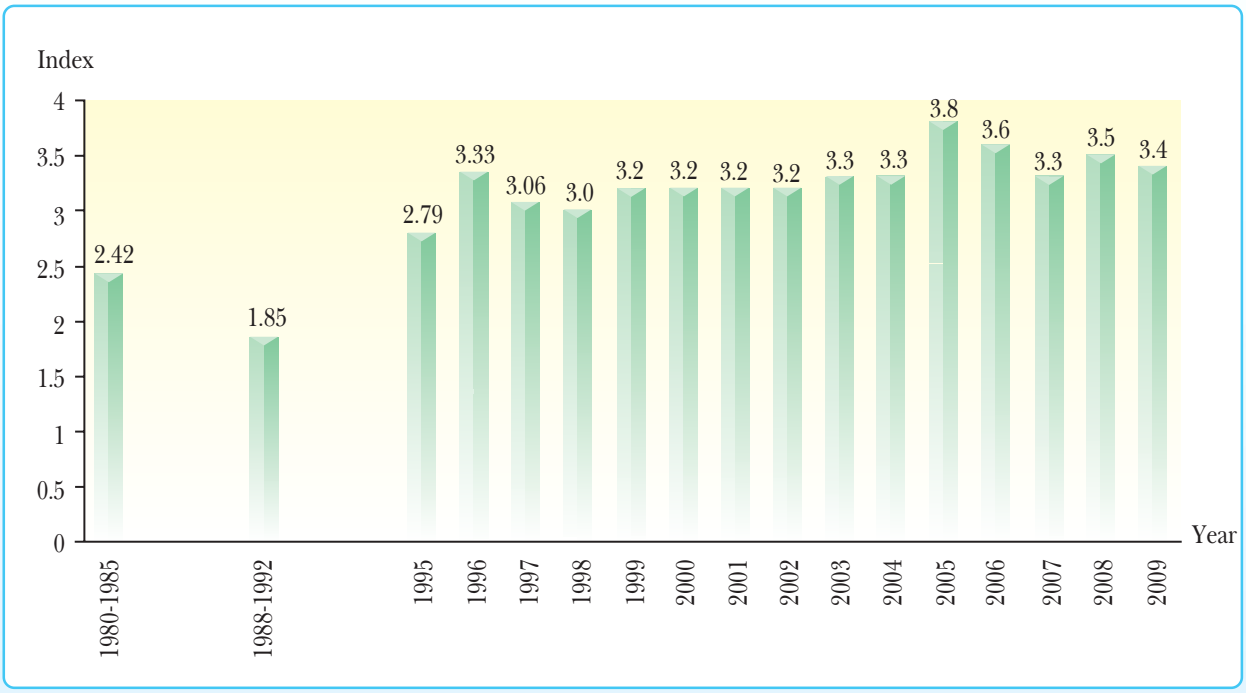
Group and Country	1997			Group and Country	1999			Group and Country	2002			Group and Country	2004			Group and Country	2009		
	Actual rank	in-group rank	Score		Actual rank	in-group rank	Score		Actual rank	in-group rank	Score		Actual rank	in-group rank	Score		Actual rank	in-group rank	Score
ASEAN				**ASEAN**				**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	5.83
Malaysia	15	2	4.69	Malaysia	16	2	4.20	Malaysia	13	2	4.59	Malaysia	10	2	4.82	Malaysia	15	3	3.37
Thailand	**28**	**4**	**2.91**	**Thailand**	**24**	**3**	**3.14**	**Thailand**	**24**	**3**	**3.49**	**Thailand**	**19**	**3**	**3.93**	**Thailand**	**20**	**2**	**2.90**
Philippines	27	3	2.96	Philippines	34	4	2.32	Philippines	41	5	2.00	Philippines	49	4	1.86	Philippines	46	4	1.30
Indonesia	32	5	2.67	Indonesia	39	5	1.80	Indonesia	32	4	2.83	Indonesia	56	5	1.50	Indonesia	34	5	2.09
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				**World**				**World**				**World**				**World**			
(top ten)				**(top ten)**				**(top ten)**				**(top ten)**				**(top ten)**			
Singapore	1	1	6.88	Singapore	1	1	7.45	Singapore	1	1	7.46	Denmark	1	1	6.41	Denmark	1	1	6.12
Hong Kong	2	2	6.63	Finland	2	2	7.03	Finland	2	2	6.83	Iceland	2	2	6.40	Singapore	2	2	5.83
Finland	3	3	6.49	Hong Kong	3	3	6.28	Iceland	3	3	6.09	Finland	3	3	6.09	Finland	3	3	5.83
Denmark	4	4	6.09	Denmark	4	4	5.87	Luxembourg	4	4	5.95	Singapore	4	4	5.95	Hong Kong	4	4	5.17
New Zealand	5	5	6.08	Switzerland	5	5	5.54	Denmark	5	5	5.77	Hong Kong	5	5	5.45	Sweden	5	5	5.05
Iceland	6	6	5.89	Luxembourg	6	6	5.33	Switzerland	6	6	5.71	Australia	6	6	5.11	Switzerland	6	6	4.77
Ireland	7	7	5.80	Iceland	7	7	5.19	Sweden	7	7	5.70	Canada	7	7	4.89	Australia	7	7	4.65
Norway	8	8	5.67	Ireland	8	8	5.16	Ireland	8	8	5.32	Sweden	8	8	4.85	Norway	8	8	4.4
Netherlands	9	9	5.41	Netherlands	9	9	4.98	Hong Kong	9	9	5.21	Estonia	9	9	4.84	Ireland	9	9	4.36
Switzerland	10	10	5.38	Australia	10	10	4.97	Netherlands	10	10	5.06	Malaysia	10	10	4.82	Canada	10	10	4.09

Source: IMD. The World Competitiveness Yearbook, 1997-2009

6.2.3 Transparency and Corruption in Public Sector Agencies

As the government has monopolized public services, it is hard to examine such systems, resulting in wastages. Most state officials have low salaries with a lot of debts and thus they tend to commit 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 Anti-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 to 3.4 in 2009, ranking 84th among 180 countries under survey (Figure 4.29). 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 4.32).

Figure 4.29 Corruption perceptions index, Thailand, 1980-2009



Source: Transparency International, 1998-2009.

Table 4.32 Corruption perceptions index in various countries, 1998–2009

1998				2000				2002				2004				2006				2009			
Group and country	Actual rank	In-group rank	Score	Group and country	Actual rank	In-group rank	Score	Group and country	Actual rank	In-group rank	Score	Group and country	Actual rank	In-group rank	Score	Group and country	Actual rank	In-group rank	Score	Group and country	Actual rank	In-group rank	Score
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	3	1	9.2
Malaysia	29	2	5.3	Malaysia	36	2	4.8	Malaysia	33	2	4.9	Malaysia	39	2	5.0	Malaysia	44	2	5.0	Malaysia	56	2	4.5
Thailand	61	4	3.0	Thailand	60	3	3.2	Thailand	64	3	3.2	Thailand	64	3	3.3	Thailand	65	3	3.6	Thailand	84	3	3.4
Philippines	55	3	3.3	Philippines	69	4	2.8	Philippines	77	4	2.6	Philippines	102	4	2.6	Philippines	126	5	2.5	Philippines	139	6	2.4
Indonesia	80	6	2.0	Indonesia	85	6	1.7	Indonesia	96	6	1.9	Indonesia	133	6	2.0	Indonesia	134	6	2.4	Indonesia	111	4	2.8
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	118	5	2.6	Vietnam	120	5	2.7
Myanmar	-	-	-	Myanmar	-	-	-	Myanmar	-	-	-	Myanmar	142	7	1.7	Myanmar	162	8	1.9	Myanmar	178	8	1.4
Cambodia	-	-	-	Cambodia	-	-	-	Cambodia	-	-	-	Cambodia	-	-	-	Cambodia	152	7	2.1	Cambodia	158	7	2.0
Laos	-	-	-	Laos	-	-	-	Laos	-	-	-	Laos	-	-	-	Laos	114	4	2.6	Laos	-	-	-
World				**World**				**World**				**World**				**World**				**World**			
(top ten)				**(top ten)**				**(top ten)**				**(top ten)**				**(top ten)**				**(top ten)**			
Denmark	1	1	10.0	Finland	1	1	10.0	Finland	1	1	9.7	Finland	1	1	9.7	Finland	1	1	9.6	New Zealand	1	1	9.4
Finland	2	2	9.6	Denmark	2	2	9.8	Denmark	2	2	9.5	New Zealand	2	2	9.6	Iceland	2	2	9.6	Denmark	2	2	9.3
Sweden	3	3	9.5	New Zealand	3	3	9.4	New Zealand	2	2	9.5	Denmark	3	3	9.5	New Zealand	3	3	9.6	Singapore	3	3	9.2
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	Sweden	3	3	9.2
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	Switzerland	5	5	9.0
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	Finland	6	6	8.9
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	Netherlands	6	6	8.9
Netherlands	8	8	9.0	Singapore	6	6	9.1	Luxembourg	7	7	9.0	Norway	8	8	8.9	Norway	8	8	8.8	Australia	8	8	8.7
Norway	8	8	9.0	Netherlands	9	9	8.9	Netherlands	7	7	9.0	Australia	9	9	8.8	Australia	9	9	8.7	Canada	8	8	8.7
Switzerland	10	10	8.9	United Kingdom	10	10	8.7	United Kingdom	10	10	8.7	Netherlands	10	10	8.7	Netherlands	10	10	8.7	Iceland	8	8	8.7

Source: Transparency International and Dr. Johann Graf Lambsdarff Gottingen University, Germany, 1998-2009

Notes: 1. Corruption Perceptions Index is computed based on the perceptions of businesses, risk analysts and the general public; scores range from 1 to 10, "0" meaning highly corrupt and "10" meaning "very clean".

2. At least three surveys were used to calculate each country's CPI.

6.3 Decentralization

According to the Planning and Steps of Decentralization to Local Administration Organizations Act of B.E. 2542 (1999), only 180 out of 244 missions have been transferred to local government organizations (LGOs). Such missions are those related to the promotion of quality of life including education and public health. The transfer process is undertaken rather slowly as there are a number of practical problems such as voluntarism to transfer, unreadiness of personnel to transfer, the kinds of personnel to be transferred do not meet LGO's needs, and the concept for supervising the public health system as a single one for the entire province, resulting in arguments against such a transfer. Regarding the financial decentralization, the LGOs' revenues have increased from 159 billion baht in 2001 to 414 billion baht in 2009, or the proportion of LGOs' revenue in relation to the government revenue has risen from 11.1% to 26.1% for the same period.

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 diagnosis 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 towards 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 bones, legs and feet 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 health-care 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 health-care 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 22,654.3 million baht in 2009.

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

The weakness of the public sector in controlling the use of high-cost technologies in a cost-effective manner results in doctors prescribing diagnoses and treatments without due consideration for their worthiness which negatively affects professional ethics and 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 devices 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.

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 clearly create a high burden of disease. In developing countries with high mortality rates, the top risk factor is malnutrition; while more advanced developing countries (high income) face other risk behaviours of alcohol and tobacco use, and over-nutrition (Table 4.33).

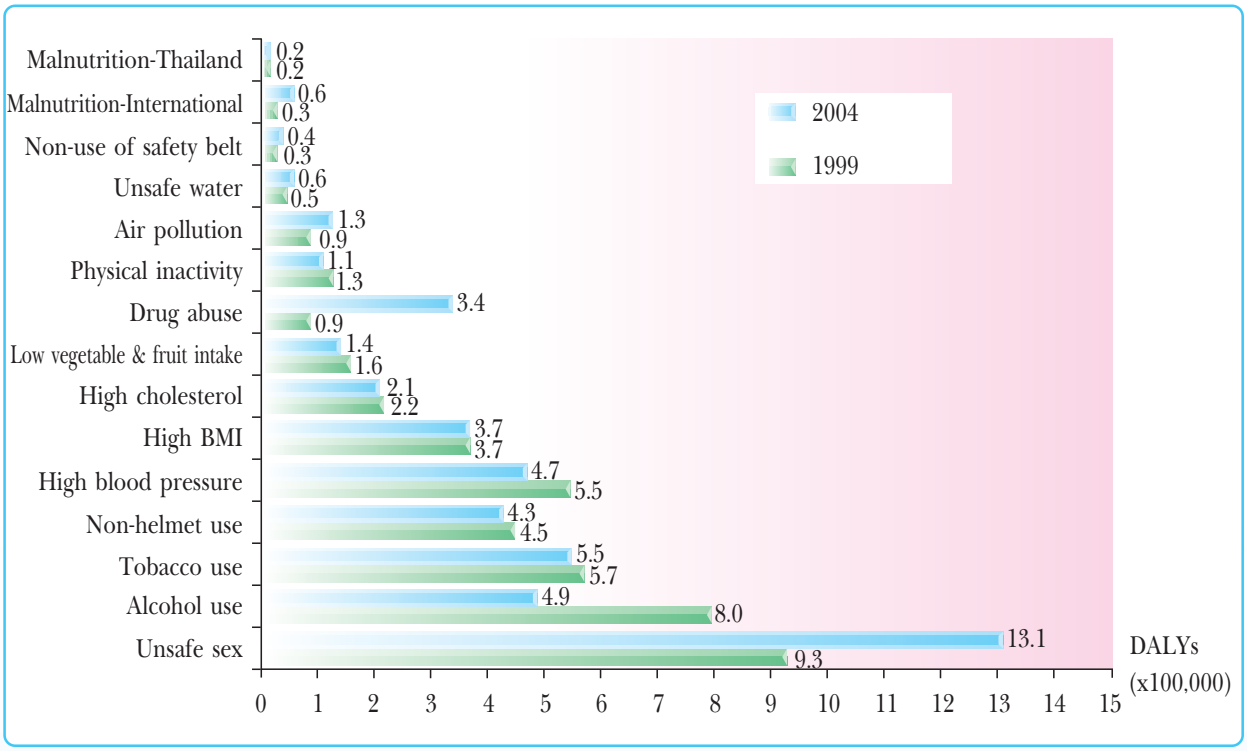
Table 4.33 Top ten risk factors: percentage of disability-adjusted life years (DALYs) in three groups of countries by income level, 2004

Order	Low-income countries	Percent	Middle-income countries	Percent	High-income countries	Percent
1	Childhood underweight	9.9	Alcohol use	7.6	Tobacco use	10.7
2	Unsafe water sanitation and hygiene	6.3	High blood pressure	5.4	Alcohol use	6.7
3	Unsafe sex	6.2	Tobacco use	5.4	Overweight and obesity	6.5
4	Suboptimal breastfeeding	4.1	Overweight and obesity	3.6	High blood pressure	6.1
5	Indoor smoke from solid fuels	4.0	High blood sugar	3.4	High blood sugar	4.9
6	Vitamin A deficiency	2.4	Unsafe sex	3.0	Physical inactivity	4.1
7	High blood pressure	2.2	Physical inactivity	2.7	High cholesterol	3.4
8	Alcohol use	2.1	High cholesterol	2.5	Illicit drug use	2.1
9	High blood sugar	1.9	Occupational risks	2.3	Occupational risks	1.5
10	Zinc deficiency	1.7	Unsafe water sanitation and hygiene	2.0	Low fruit and vegetable intake	1.3
	Top 10 risk factors	**40.8**		**37.9**		**47.3**

Source: Global Health Risks: Mortality and burden of disease attributable to selected major risks, World Health Organization, 2009

A study on major burdens of diseases of Thai people conducted in 1999 and 2004 by the International Health Policy Programme (IHPP), using 15 leading risk factors for males and females, revealed that alcohol use and unsafe sex were the cause of highest burden of disease among males, while unsafe sex and high body mass index (BMI) were the cause of highest burden of disease among females. However, when considering some risk factors, such as low vegetable and fruit intake, high BMI, high cholesterol and high blood pressure, it is noted that they are all related to food consumption behaviour resulting in a high burden of disease. A comparison of burden of disease for 1999 and 2004 shows that high BMI, high cholesterol, and low vegetable and fruit intake result in high levels of DALYs as all of such risk factors are associated with cardiovascular disease (Figure 4.29).

Figure 4.30 Patterns of burden of disease among Thai people, 1999 and 2004



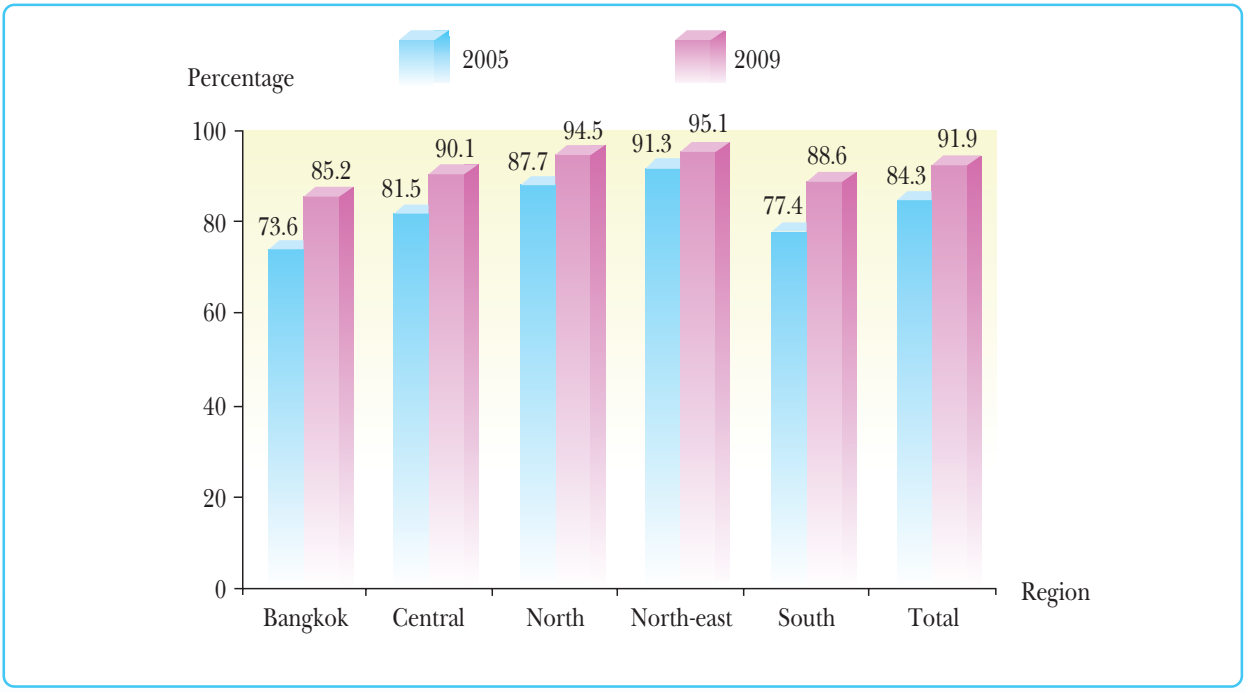
Source: Working Group on Burden of Disease and Risk Factors in Thailand, IHPP, 2006.

8.1 Food Consumption

8.1.1 Pattern of Food Consumption among Thai People

The food consumption behaviors of Thai people have changed according to changing lifestyles and differences in urban and rural residences. Surveys conducted by the National Statistical Office reveal that most Thais consume 3 meals a day; the trend is rising in all regions (Figure 4.31). For the food groups that are consumed by more than 80% of the people are vegetables/fruit, meat/meat products, and high-fat foods, followed by carbonated/sweetened drinks, while fast foods and dietary supplements are less consumed (Figure 4.32).

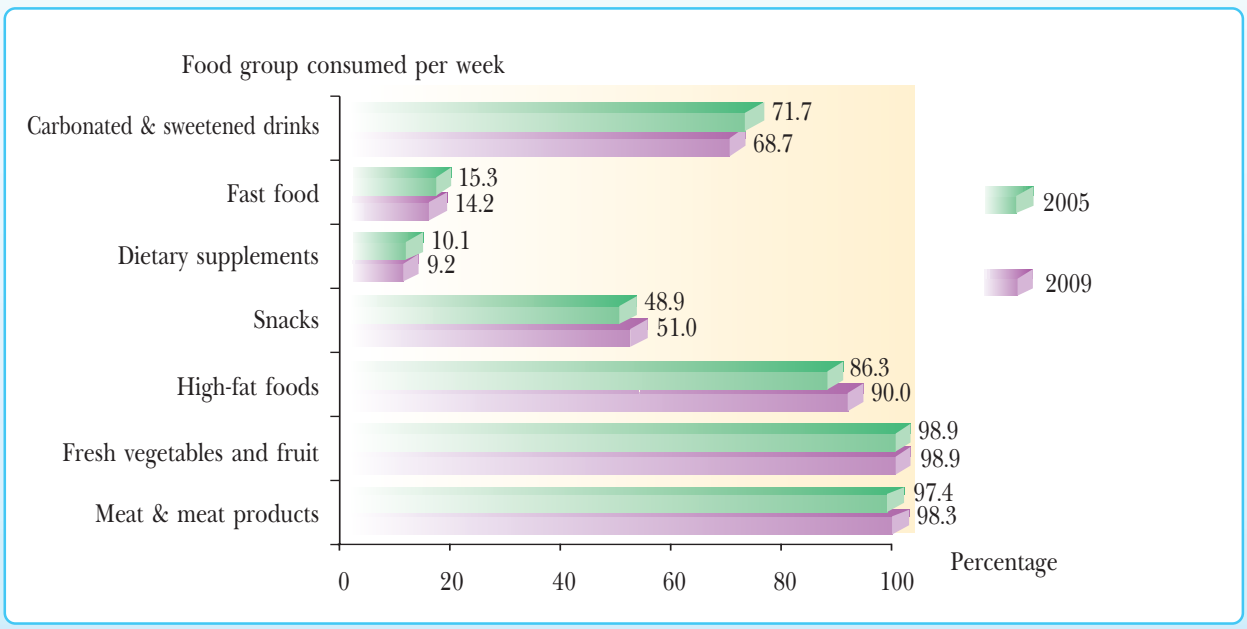
Figure 4.31 Proportion of population aged 6 years and above consuming 3 major meals by region, 2005 and 2009



Sources: 1. Report on Thai People's Health Behaviour Survey, 2005 (Food Consumption Behaviour), National Statistical Office.

2. Report on Health, Welfare and Food Consumption of Thai People Survey, 2009, National Statistical Office.

Figure 4.32 Proportion of population aged 6 years and above and food consumption behaviour by food group consumed per week, 2005 and 2009



Sources: 1. Report on Thai People's Health Behaviour Survey, 2005 (Food Consumption Behaviour), National Statistical Office.

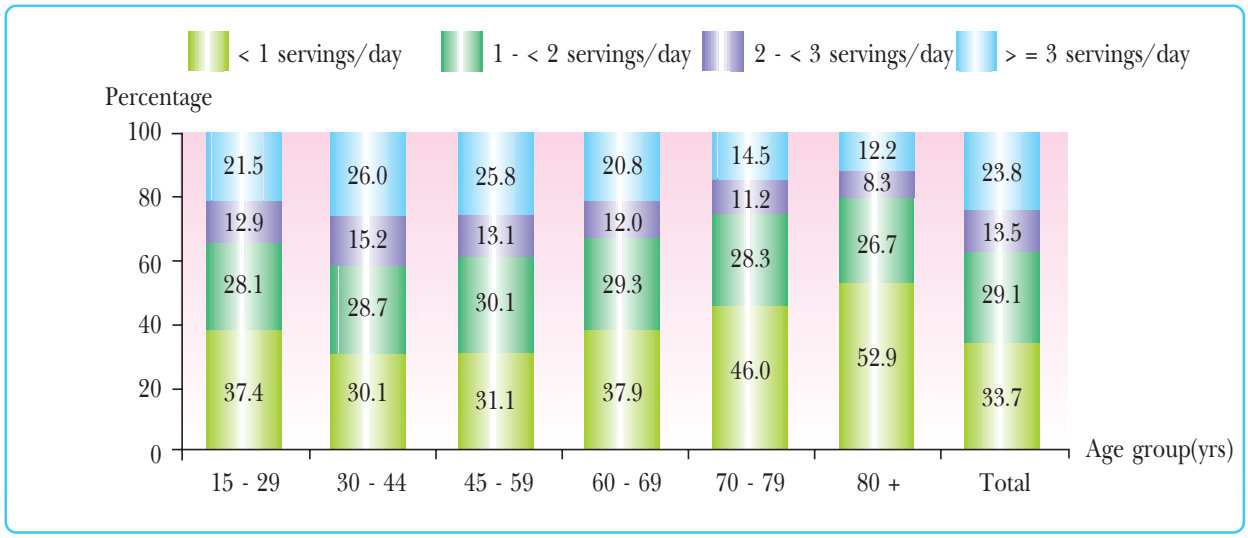
2. Report on Health, Welfare and Food Consumption of Thai People Survey, 2009, National Statistical Office.

8.1.2 Groups and Types of Food Consumed

1) Vegetable and fruit consumption

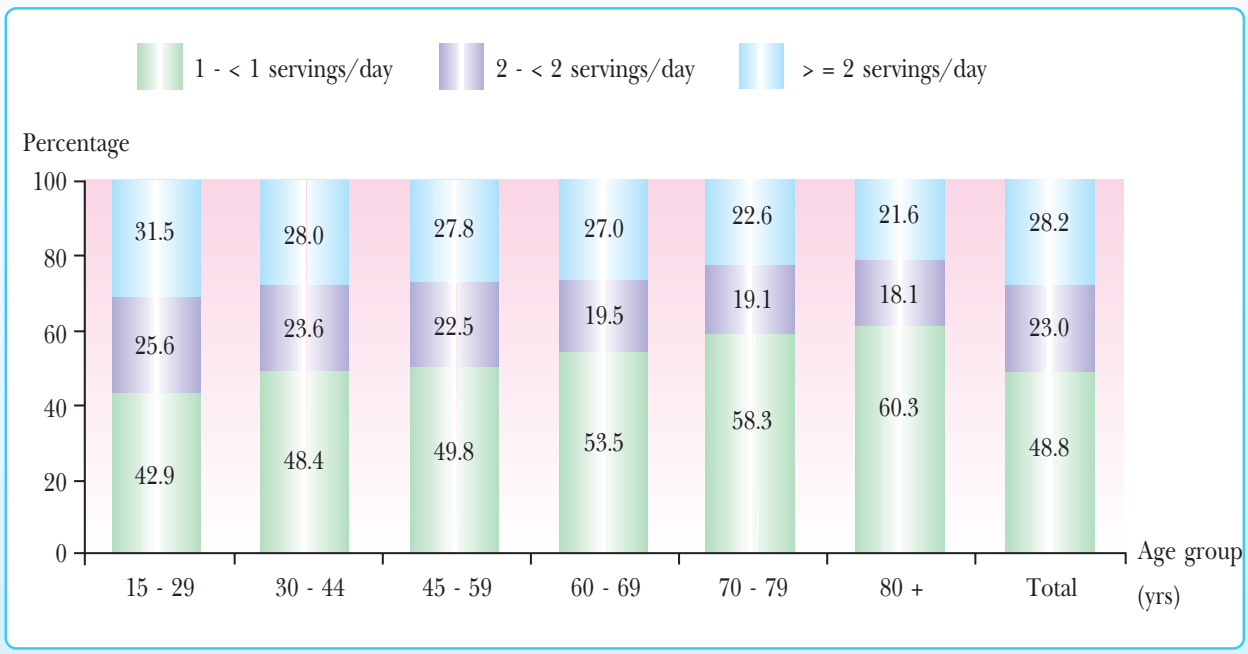
The data from NSO's survey on food consumption behaviours show only frequency of consumption. But when considering the amount of food consumed per day, especially vegetables and fruit, based on the WHO criteria (vegetable and fruit intake of at least 600 grams/person/day), the third health examination survey on Thai people in 2003-2004 showed that **both male and female Thais aged 15 years and over consumed a low amount of vegetables and fruit**; males consumed about 268 grams/day, while females consumed about 283 grams/day. By age group, Thais aged 80 years and over consumed the least, about 200 grams/day (Table 4.34). Besides, the fourth health examination survey of Thai people, 2008-2009, based on the adequacy according the recommended daily intake (RDI), revealed that Thais aged 15 years and over, on average, consumed 1.7 servings of vegetables, compared with RDI of 3 servings, and only 23.8% had 3 or more portions of vegetables per day (Figure 4.33). Regarding fruit consumption, on average, Thais consumed only 1.5 portions/day which was lower than the RDI of 2 servings, only 28.2% had 2 or more of fruit per day (Figure 4.34). And it was found that Thais aged 15 year and over consumed only 3 servings of vegetables and fruit on average which was lower than the RDI of 5 servings per day overall, 17.7% of Thais (16.9% for males and 18.5% of females) consumed adequate amount of vegetables and fruit as recommended (5 or more serving). The proportion of people taking adequate amount of vegetables and fruit decreased in older age groups. For those taking 5 or more servings of vegetables and fruit, less than 10% of the 70 and over age group had such an amount. According to the third and fourth health examination surveys (2004 and 2009, respectively), the proportion of Thais eating adequate amounts of vegetables and fruit (5 portions or more) was higher in the fourth survey, the percentage being 20% for males and 24% for females, while in the fourth survey, the percentage dropped to 16.9% and 18.5% respectively. Moreover, the 2007 trimesterly social opinion survey on obesity and Thai society, conducted by NESDB, revealed that only one-third of Thais aged 15–74 years eat one meal of vegetables and fruit per day, more females taking than males (Table 4.35).

Figure 4.33 Percentage of Thais aged 15 year and over consuming vegetables each day by age group, 2008–2009



Source: Report on the Fourth National Health Examination Survey, 2008–2009, Office of the Thai People's Health Survey, HSRI, MoPH.

Figure 4.34 Percentage of Thais aged 15 years and over consuming fruit each day by age group, 2008–2009



Source: Report on the Fourth National Health Examination Survey, 2008–2009, Office of the Thai People's Health Survey, HSRI, MoPH.

Table 4.34 Amount of vegetables and fruit consumed by each of Thais aged 15 years and over by age and sex

Age (years)	Average amount of vegetables/fruit consumed (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 and over	203	193
Total	**268**	**283**

Source: Report on the third National Health Examination Survey, 2003–2004, MoPH.

Table 4.35 Proportion of Thais consuming vegetables and fruit each week

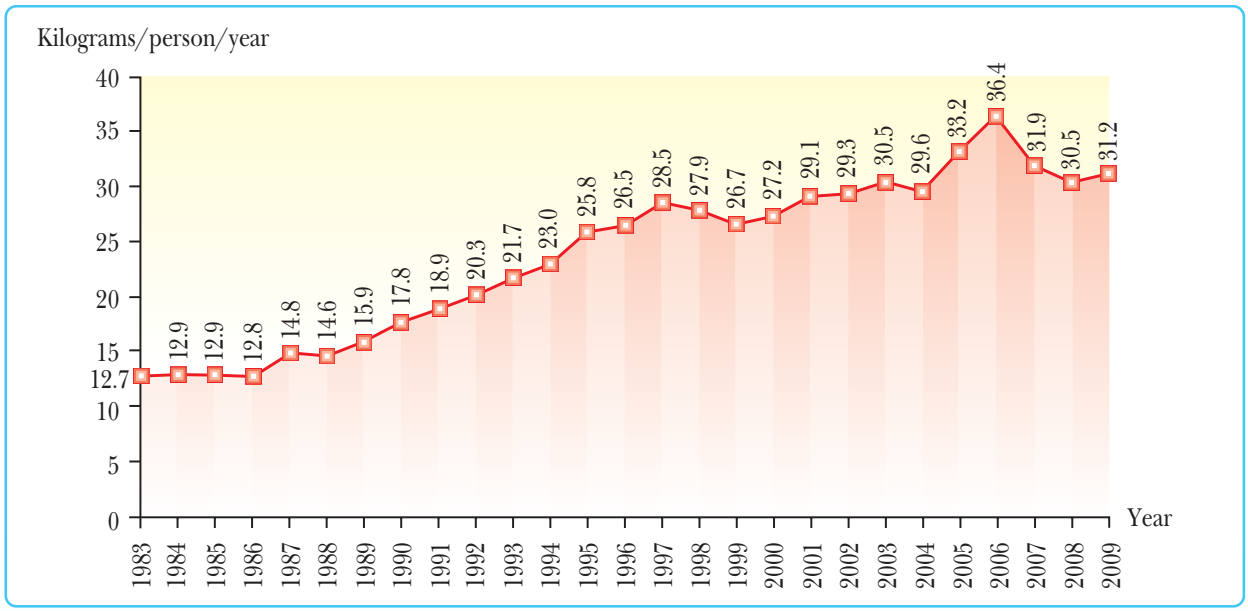
Frequency of consumption	Thais consuming vegetables/fruit					
	Males		Females		Total	
	No.	Percent	No.	Percent	No.	Percent
Fewer than 1 meal/week	87	3.6	87	3.2	174	3.4
Fewer than 1 meal/day	381	15.8	343	12.6	724	14.1
1 meal/day	848	35.1	896	33.0	1,744	34.0
2 meals/day	684	28.3	849	31.3	1,533	29.9
3 meals/day	417	17.2	539	19.9	956	18.6
Total	**2,417**	**100.0**	**2,714**	**100.0**	**5,131**	**100.0**

Source: Report on Trimesterly Social Opinion Survey on Obesity and Thai Society, 2007, NESDB.

2) Consumption of carbohydrates and sugar

Thais have a tendency to consume more and more sugar and carbohydrate foods as evidenced in the fact that, over the past 2 decades the rate of sugar consumption increased nearly threefold from 12.7 kg/person/year in 1983 to 31.2 kg/person/year in 2009; whereas the Dietary Guidelines for Thais' Good Health specify that sugar consumption should not exceed 14.6 kg/person/year (Bureau of Nutrition, Department of Health) (Figure 4.35). And it was found that the production of candies is on the rise (Table 4.36) corresponding to a survey conducted by Child Watch in 2006-2007 which revealed that almost one-fifth of children and youth liked to eat sweet foods (Table 4.37).

Figure 4.35 Quantity of sugar intake in Thailand, 1983-2009



Source: Office of the Sugar Cane and Sugar Commission.

Table 4.36 Amount of sugar used in industries, 2008–2009

Unit: sack (100 kg)

Type of industries	2008	2009	Increase/decrease	
			Amount	Percent
• Drinks	3,639,320.11	3,817,897.73	+ 178,577.62	+ 4.91
• Bakery (including liquor and beer plants)	231,903.00	149,684.30	- 82,218.70	- 35.45
• Foods (canned food and fish sauce)	1,950,505.20	1,880,350.49	- 70,154.71	- 3.60
• Milk products	1,505,286.34	1,653,290.60	+ 148,004.26	+ 9.83
• Candies	219,764.87	612,726.16	+ 392,961.29	+ 178.81
• Pharmaceuticals and others	89,347.50	206,620.55	+ 117,273.05	+ 131.25
Total	**7,636,127.02**	**8,320,569.83**	**+ 684,442.81**	**+ 8.96**

Source: Office of the Sugar Cane and Sugar Commission.

Table 4.37 Percentage of people who like to consume sweet foods

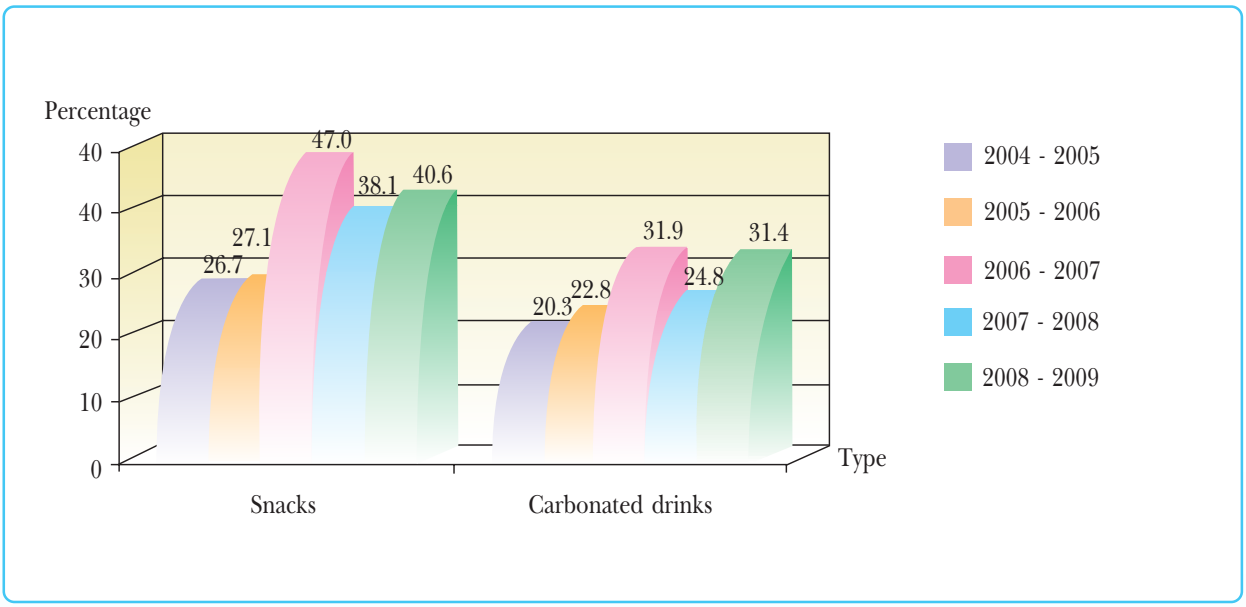
Age group	People who like sweet foods (%)
6–14 years	18.3
15–24 years	9.9
25–59 years	7.2
60 years and over	5.8

Source: Child Watch 2006–2007 Project, Ramajitti Institute.

3) Consumption of snacks and carbonated drinks

Thai people's consumption of snacks and carbonated drinks tends to be rising with the convenience in purchasing and the rise in their types and varieties. The survey on child and youth situation, conducted in 2004–2009, revealed that the proportions of primary school children regularly eating snacks and carbonated drinks increased from 26.7% and 20.3% in 2004–2005 to 40.6% and 31.4% in 2008–2009, respectively (Figure 4.36). The increased consumption is a result of more diversity in brands and varieties as well the influence of consumption-inducing advertisements. The data from Media Spending Company showed that the total value of food advertisements in Thailand is on the rise, particularly for carbonated drinks and snacks, whose proportion rose to one-third of the food advertisement value (Table 4.38). Besides, according to the snacks consumption survey, conducted in four provinces of Chiang Mai, Khon Kaen, Songkhla and Bangkok in 2004, showed that advertisements via various media had the highest influence in deciding to buying snacks among youth. Thus, it can be concluded that there is an association between the stimulation of consumption and the advertisement of such foods and drinks.

Figure 4.36 Proportion of primary school children regularly consuming snacks and carbonated drinks, 2004–2009



Source: Report on Child and Youth Situation, 2004–2009, Child Watch Project, 2010.

Table 4.38 Advertisement values of carbonated drinks and snacks, 2006–2009

Unit: thousand baht

Item	2006	2007	2008	2009
Carbonated drinks	2,107,214	2,242,832	2,062,776	2,403,077
Snacks	2,707,511	2,508,990	2,442,873	2,430,742
• Biscuits	1,622,136	1,535,150	1,506,151	1,640,632
• Candies	712,953	680,538	652,262	441,443
• Chocolates/wafers	372,422	293,302	284,460	348,667
Advertisement values of drinks/snacks	4,814,725	4,751,822	4,505,649	4,833,819
Advertisement values of foods	16,716,291	16,432,446	16,448,422	17,761,223
Proportion in relation to all food advertisements (%)	**28.8**	**28.9**	**27.4**	**27.2**

Source: Media Spending Company.

4) Consumption of fast food

Globalization has caused consumerism and imitation of western lifestyles, one of which is eating fast food that has become a people's way of life.[11] A Cheewajit poll conducted on Bangkok residents in 2006 revealed that one-third of them regularly ate fast food. That was consistent with the 2005-2006 survey conducted by Child Watch which found that about one-third of children and youth regularly consumed fast food; the proportion would be higher on weekends (Table 4.39). The 2005 and 2009 surveys on food consumption behaviours conducted by the National Statistical Office also found that teenagers had a higher frequency in consuming fast food than other age groups (Table 4.40).

Table 4.39 Percentage of children and youth regularly consuming fast food

Educational level	Percent consuming at least 1 day/week	
	Weekdays	Weekends
Primary school	36.9	48.4
Lower-secondary school	36.1	43.8
Higher-secondary school	34.0	40.2
Vocational school	32.1	34.2
Higher education	35.6	36.8

Source: Child Watch 2005-2006 Project, Ramajitti Institute.

Table 4.40 Percentage of people consuming fast food by consumption frequency, 2005 and 2009

Frequency	Age group consuming fast food (%)									
	Total		6-14 yrs.		15-24 yrs.		25-59 yrs.		60+ yrs.	
	2005	2009	2005	2009	2005	2009	2005	2009	2005	2009
1-2 days/wk.	12.3	11.8	17.1	18.9	20.0	19.3	10.0	9.6	3.1	3.0
3-4 days/wk.	2.0	1.6	3.5	2.9	3.2	2.7	1.3	1.1	0.7	0.3
5-6 days/wk.	0.5	0.6	0.8	1.2	0.9	1.0	0.4	0.4	0.1	0.1
Every day	0.5	0.3	0.8	0.5	0.7	0.3	0.4	0.3	0.2	0.1

Sources: 1. Report on Thai People's Health-Care Behaviours Survey, 2005 (Food Consumption), National Statistical Office.
2. Report on People's Health, Welfare and Food Consumption Survey, 2009, National Statistical Office.

[11] Rangsan Thanapornpan. Globalization and Thai Food. In: Sungsidh Piriyarangsan and Pasuk Phongpaichit(ed.).Globalization and Thai Society and Economy, 1995.

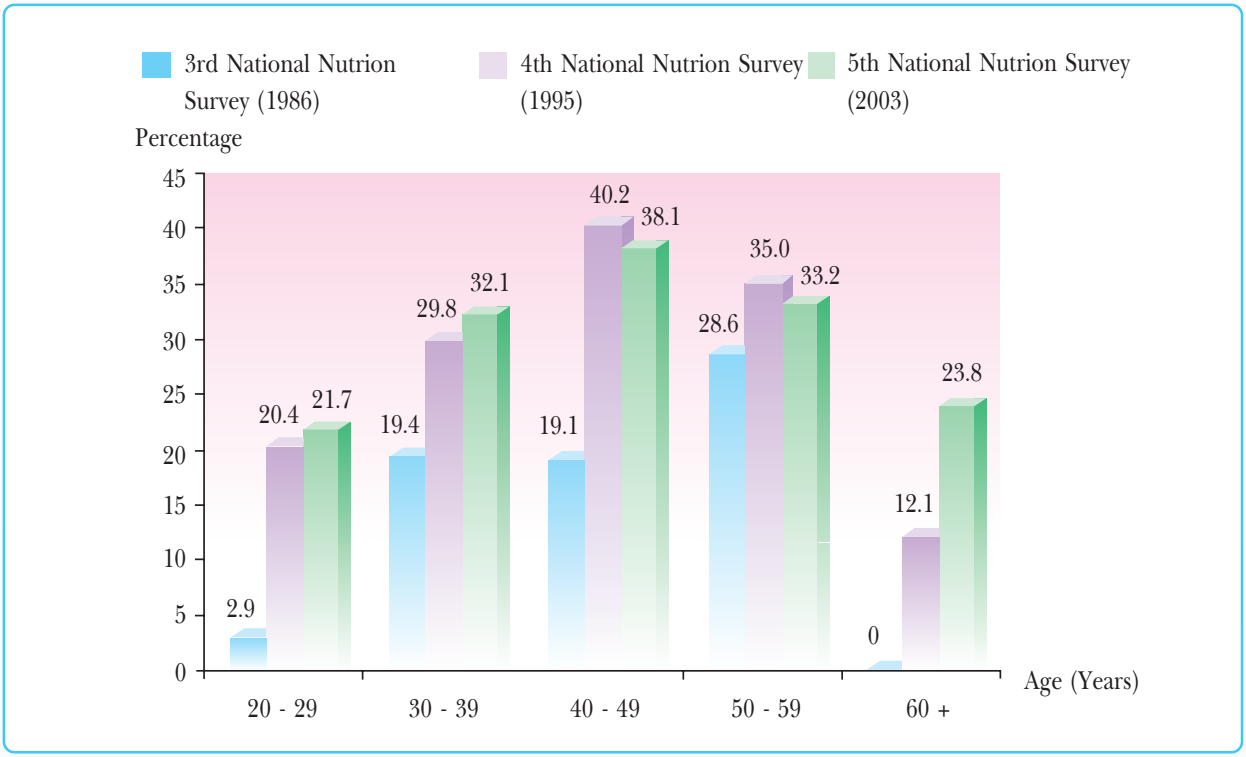
Besides, it has been found that a more hectic lifestyle for both urban and rural residents has caused them to consume more ready-to-cook or semi-cooked food. In terms of spending on food, Bangkok residents spend 50% of their food expenditure on pre-cooked food, while only 20% of rural residents do so.[12]

8.1.3 Consequences of Consuming Health-Affecting Foods

Consuming food rich in fat content and calorie results in an increased risk for cardiovascular diseases. According to the trimesterly social opinion and attitude survey focusing on obesity in Thai society in 2007, conducted by NESDB, Thais aged 15–74 years consumed 2–5 meals of foods related to risk factors for obesity per week. Such foods mostly included snacks and fried foods (5 meals/wk.), sweets, foods with coconut cream, beef/pork steak, grilled fatly pork, and fast foods such as fried chicken, burger, pizza, rice and stewed pork leg, respectively (Table 4.41). That means one-fourth of the major meals consumed are the cause of high risk for obesity. Besides, a survey on health behaviours in preventing hypertension, conducted by the Department of Health Service Support on people aged 35 years and over in 8 provinces in all 4 regions of the country in April 2008, revealed that most of the respondents consumed fried foods (96.2%), foods and desserts with coconut cream (918%), and salty foods (91.8%) (Table 4.42). So there are risk factors for ill health including five diseases, namely hypertension, diabetes, heart disease, cardiovascular disease and cancer. It was also found that the prevalence of obesity is on the rise, particularly among the 20-29, 30–39 and 60+ age groups (Figure 4.37). And a study on risk factors for cardiovascular diseases among Thais aged 35–59 years revealed rising trends in high cholesterol, blood sugar, overweight and obesity (Table 4.43).

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

Figure 4.37 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 metre.

Table 4.41 Frequency in consuming obesity-causing foods among Thais by sex

Type of food	Frequency (average), meals/week		
	Males	Females	Total
• Snacks	5	5	5
• Fried foods	5	5	5
• Desserts	3	3	3
• Food containing coconut cream	3	3	3
• Steak, fatty grilled beef/pork	2	2	2
• Fast foods such as fried-chicken, burger, pizza	2	2	2
• Rice with stewed pork leg	2	2	2
Total	**5**	**4**	**5**

Source: Report on Trimesterly Social Opinion and Attitude Survey Focusing on Obesity and Thai Society, 2007, NESDB.

Table 4.42 Percentage of Thais aged 35 years and over with different food consumption behaviours

Type of behavior	Thais with such behaviour (%)
• Consuming fried foods such as fried beef, fried chicken, fried fish, fried eggs, fried bananas	96.2
• Eating food containing coconut cream	91.8
• Eating salty foods such as salted beef, salted fish, salted eggs, pickled mustard, pickled garlic	91.8
• Adding sugar in foods	86.1
• Eating rice with stewed pork knuckle/leg, chicken rice, fried mussels, Thai fried noodles	85.1
• Adding fish sauce or soy sauce in food prior to eating it	82.5
• Eating extremely sweet desserts such as egg drop sweet (thong-yod), sweet egg-serpentine (foi-thong), and wax gourd in syrup	75.8

Source: Report on Surveillance of Behaviours for Prevention of Hypertension, Department of Health Service Support.

Table 4.43 Changes and prevalence of cardiovascular disease risk factors among Thais aged 35-59 years

Risk factor	1st health survey (1991–1992)	2nd health survey (1996–1997)	Inter-ASIA (2000–2001)	3rd health survey (2003–2004)	4th health survey (2008–2009)
Cholesterol (mg/dl)	189	198	201	207	204
Blood sugar (mg/dl)	87	92	99	100	89
Body mass index (BMI) (kg/m^2)	22.8	23.8	24.4	24.6	23.8
Overweight (%)	20	25	30	38	34.7
Obesity (%)	5	8	9	10	Female = 6.0 Male = 11.6

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 the Third National Health Examination Survey, Thailand (2003–2004), HSRI, MoPH.
3. Report on the Fourth National Health Examination Survey, Thailand (2008–2009), National Health Examination Survey Office, HSRI, MoPH.

Note: For 2008–2009, survey on population aged 15 years and over.

Snack consumption tends to be rising among Thai children under 5 and primary schoolchildren, resulting in a high dental health prevalence. During 2000-2007, 80.6% of 5-year-old children entering the schooling system had on average 5.4 decayed, missing and filled teeth (DMFT) per child, (Tables 4.44 and 4.45). And during 1995-2008, the DoH's dental health surveys revealed that only 40% of 12-year-old children in various provinces had dental caries.[13]

Table 4.44 Percentage of people with dental caries by age group, according to National Dental Surveys, 1984, 1989, 1994, 2000–2001, and 2006–2007

Age group (years)	People with dental caries (%)				
	1984	1989	1994	2000-2001	2006-2007
3*	-	66.5	61.7	65.7	61.4
5	-	-	-	-	80.6
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	56.9
15	-	-	-	-	66.3
18	63.1	63.3	63.7	62.1	-
35–44	80.2	76.8	85.7	85.6	89.6
60 and over	95.2	93.9	95.0	95.6	96.1

Sources: 1. Reports on the 2nd, 3rd, 4th, 5th, National Dental Health Surveys. Department of Health, MoPH
2. Report on the 6th Oral Health Survey at the Country Level, 2006–2007, Department of Health, MoPH.

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

[13] Dental Health Division, Department of Health. Reports on Provincial Dental Health Surveys, 2005-2008,2008.

Table 4.45 Average DMFT in various age groups according to National Dental Surveys, 1984, 1989, 1994, 2000-2001, and 2006–2007

Age group (years)	Average DMFT (teeth/person)				
	1984	1989	1994	2000–2001	2006–2007
3*	-	4.0	3.4	3.6	3.2
5	-	-	-	-	5.4
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	1.6
15	-	-	-	-	2.2
18	3.0	2.7	2.4	2.1	-
35–44	5.4	5.4	6.5	6.1	6.7
60 and over	16.3	16.2	15.8	14.4	15.8

Sources: 1. Reports on the 2nd, 3rd, 4th, 5th, National Dental Health Surveys. Department of Health, MoPH
2. Report on the 6th Oral Health Survey at the Country Level, 2006–2007, Department of Health, MoPH.

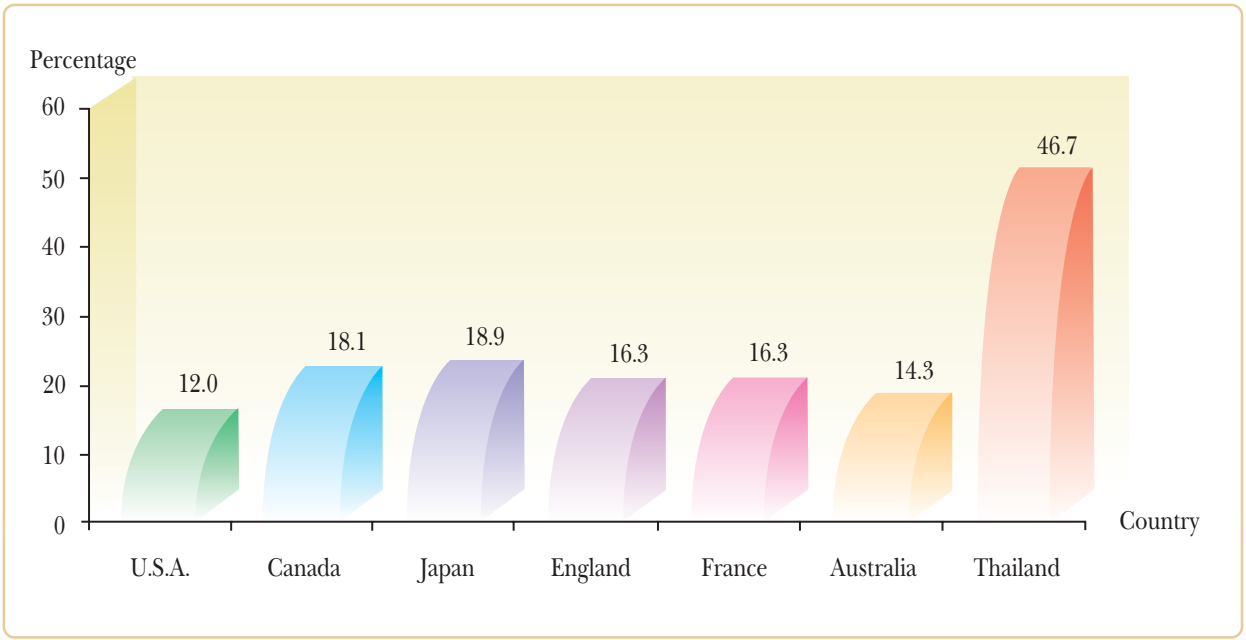
Notes: * Baby or deciduous teeth ** Mixed (permanent and baby teeth)
Other age groups – only permanent teeth.

8.2 Drug Consumption

In 2008, drug consumption of Thai people accounted for approximately 151,578 million baht in wholesale prices or 272,841 million baht in retail prices, or 46.4% 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 4.38). During the period 1988–2008, 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 has been rising (Table 4.46).

Figure 4.38 Proportion of drug to health expenditures in Thailand and other countries



Source: OECD Health Data 2008.

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

Table 4.46 Drug distribution in Thailand: percentage of drug values distributed through drug outlets (as percentage of total drug value)

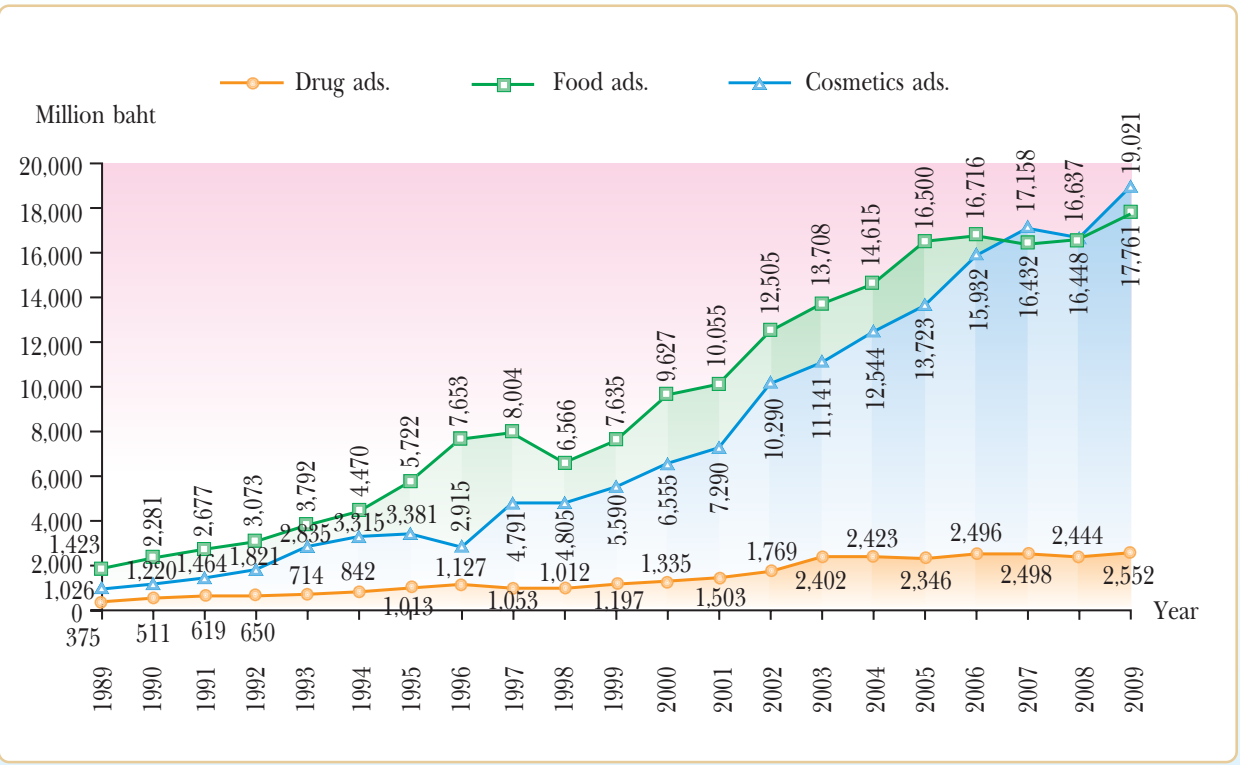
Type	1994 (%)	1995 (%)	1996 (%)	1997 (%)	1998 (%)	1999 (%)	2000 (%)	2001 (%)	2002 (%)	2003 (%)	2004 (%)	2005 (%)	2006 (%)	2007 (%)	2008 (%)	2009 (%)
Drugstores	40	34	34	34	34	32	32	30	30	26	26	26	24	22	22	20
Public and private hospitals	43	46	52	52	52	58	58	60	60	64	64	64	66	70	70	72
Private clinics	10	15	9	9	9	} 7	} 7	} 8	} 8	} 9	} 9	} 9	} 8	} 7	} 7	} 7
GPO	2	2	2	2	2											
Others	5	3	3	3	3	3	3	2	2	1	1	1	2	1	1	1

Source: IMS Company Thailand.

No matter through whom the people get medication, it is evident that irrational use and over-use of drugs, are found at all levels, partly due to advertising influence (Figure 4.39), while very little effort has been made to disseminate drug information to the public through various media including newspaper, radio, television, and magazine from drug business operators.

Besides, the 3rd and 4th National Health Examination Surveys in Thailand for 2003/04 and 2008/09, respectively, revealed that the daily use of pain killers among Thai males and females was declining, but the use of tranquilizers and sleeping pills was rising in both sexes, the older the more of such drugs were used, while the use of anti-obesity drugs was more prevalent in female adolescents (15–29 years) with the use rate of 4.9% (Table 4.47); the sources of anti-obesity drugs were drug stores (27.8%), hospitals (27.0%); shops (19.4%), direct sales persons (11.4%) and relatives/acquaintances (9.5%).

Figure 4.39 Billings of drug, food and cosmetic advertisements, 1989-2009



Source: Media Spending Company.

Notes: 1. Food means an alcoholic beverage, milk, energy drink, snack, soft drink, candy, seasoning, instant noodle, coffee, food, cooking oil, canned food, dairy product, chocolate and cigarette, liquid food and any other food item.

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

Table 4.47 Percentage of people regularly taking medication by age, sex and type of medicine

Age (years)	People on medication (%)					
	Painkillers		Tranquilizers and sedatives		Anti-obesity	
	2003	2008–2009	2003	2008–2009	2003	2008–2009
Males						
15 – 29	1.4	0.6	0.4	1.7	0.2	0.1
30 – 44	3.6	1.1	0.8	1.4	0.1	0.3
45 – 59	5.2	2.6	0.7	2.0	0.2	0.4
60 – 69	7.9	3.2	1.3	3.1	0.0	0.4
70 – 79	8.0	3.2	1.8	4.2	0.1	0.3
80+	8.4	3.2	2.7	6.5	0.2	0.2
All ages	3.8	1.8	0.7	2.0	0.1	0.3
Females						
15 – 29	2.2	1.2	0.1	1.1	0.3	4.9
30 – 44	3.8	2.2	0.5	3.4	0.1	1.9
45 – 59	6.5	3.2	2.1	5.7	0.1	1.1
60 – 69	10.0	4.9	2.9	8.3	0.2	0.2
70 – 79	12.7	5.1	2.7	8.4	0.1	0.1
80+	10.6	4.3	2.2	8.5	0.0	0.2
All ages	**4.9**	**2.3**	**1.0**	**4.5**	**0.2**	**1.9**

Sources: 1. Report on the Third National Health Examination Survey, Thailand (2003–2004). Ministry of Public Health

2. Report on the Fourth National Health Examination Survey, Thailand (2008–2009), Thai Health Examination Survey Office, HSRI, MoPH.

8.3 Cigarette Smoking

As a result of the intensive tobacco consumption control with two laws since 1992 and tax measures, the prices of cigarettes have increased almost four-fold over the past 15 years; and the smoking rate among Thais has dropped from 30.1% in 1976 to 20.7% in 2009 even though the number of smokers remains stable or does not increase. Obviously, cigarette sales have constantly dropped from 2,328 million packets in 1994 to 1,790 million packets in 2009, while the cigarette tax revenue has risen from 15,345 million baht in 1993 to 44,167 million baht in 2009, a nearly three-fold increase (Table 4.48). However, despite the drop in the use rate of locally produced cigarettes, the use of imported cigarettes has increased from 3.0% in 1994 to 24% in 2009 (Table 4.50). All this success has been a good example for other countries worldwide.

Besides, the 2009 Global Adult Tobacco Survey (GATS) revealed that there were 14.3 million current users of tobacco (smoke and smokeless), or 27.2% of the population (46.4% male and 9.1% female) (Table 4.51). Among the users, 6 of 10 smokers had thought about quitting and 5 of 10 tobacco users (including current users and those who had just quit for less than 12 months) used to quit using it during the past 12-month period (Table 4.52). Besides, it was found that 3.3 million people (27.2%) received second-hand smoke in the workplace and 20.5 million people (39.1%) received second-hand smoke in the home (Table 4.53).

Table 4.48 Excise tax rate, cigarette sales, taxes collected and number of smokers, 1989–2009

Year	Tax rate (%)	Sales volume (million packets)	Cigarette tax collected (million baht)	No. of smokers (million)	Cigarette price, baht per packet
1989	35-55	1,843	14,664		
1990	55	1,941	15,461		15
1991	55	1,942	15,898	11.3	
1992	55	2,035	15,438		
1993	55	2,135	15,345	10.4	15
1994	60	2,328	20,002		18
1995	62	2,171	20,736		21
1996	68	2,463	24,092	11.2	24
1997	68	2,415	29,755	10.2	28
1998	70	1,951	28,691		
1999	70	1,810	26,708	10.2	28
2000	71.5	1,826	28,110		32
2001	75	1,727	29,627	10.5	36
2002	75	1,716	31,247		
2003	75	1,904	33,582	7.7	38
2004	75	2,110	36,326	11.3	
2005	75	2,187	39,690		38
2006	79	1,793	35,646	11.0	42
2007	80	1,958	41,528	10.8	45
2008	80	1,837	40,489		45
2009	85	1,790	44,167	10.9	58

Sources: 1. Excise Department, Ministry of Finance.
2. Action on Smoking and Health Foundation.

Table 4.49 Number and proportion of smokers, 1976-2009

Year	Population (millions)	No. of smokers (millions)			Proportion of smokers (%)		
		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
2007	51.2[3]	10.8	10.3	0.5	21.2	41.7	1.9
2009	52.7[3]	10.9	10.4	0.5	20.7	40.4	2.0

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.

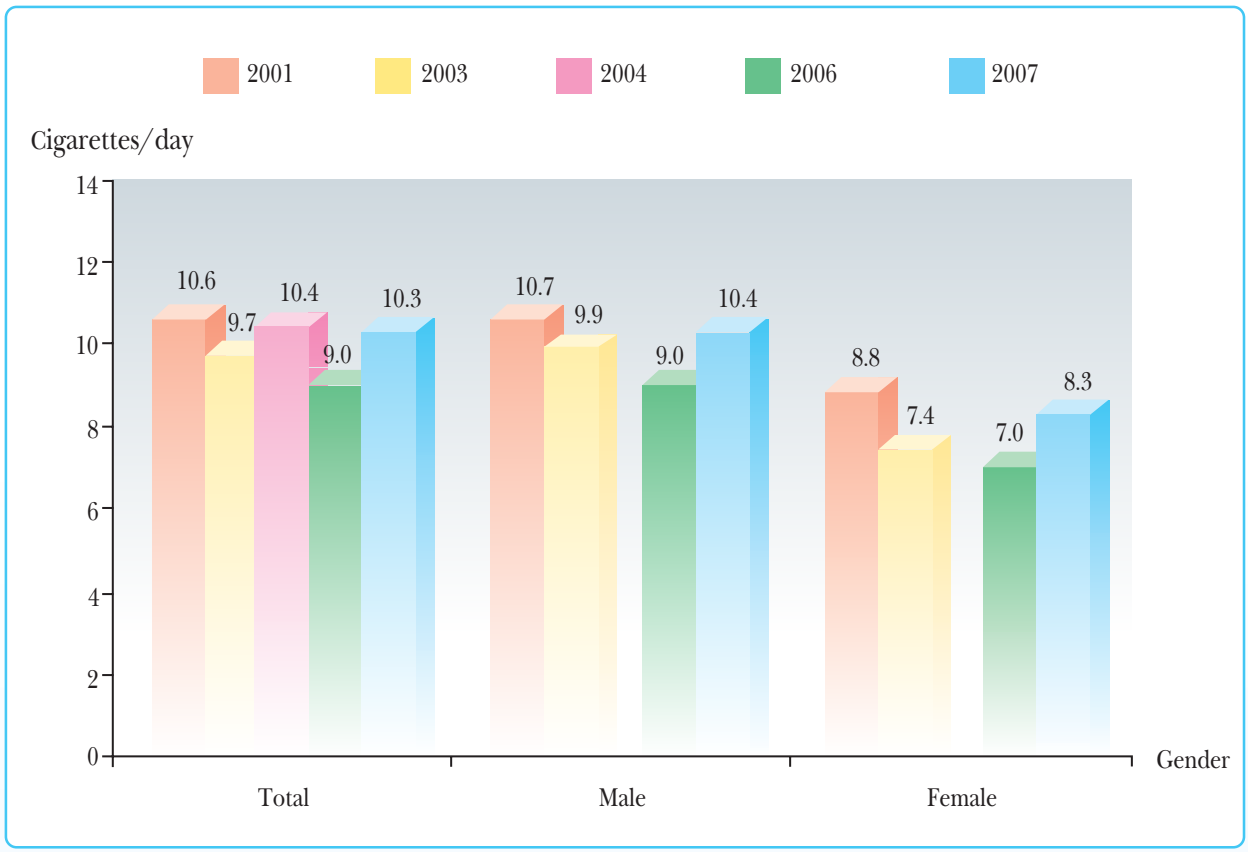
3. Population's Smoking and Drinking Behaviours Surveys, 2004 and 2007, National Statistical Office.

Notes: [1] Population aged 10 and over.

[2] Population aged 11 and over.

[3] Population aged 15 and over.

Figure 4.40 Average number of cigarettes smoked per day by a regular smoker aged 11 years and over by gender, 2001, 2003, 2004, 2006 and 2007



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. Reports on Population's Smoking and Drinking Behaviours Surveys, 2004 and 2007. National Statistical Office.

Note: For 2004 and 2007, survey on population aged 15 years and over; no analysis by sex.

Table 4.50 Market shares of locally produced and imported cigarettes, 1991–2009

Fiscal year	Market share (%)	
	For cigarettes produced by the Thailand Tobacco Monopoly	For 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	73.2	26.8
2007	77.4	22.6
2008	76.0	24.0
2009	76.0	24.0

Source: Excise Department, Ministry of Finance.

Table 4.51 Percentage of tobacco product users (in adults ≥15 years old), 2009

Tobacco product users	Total (%)	Males (%)	Females
Smoked product users			
Current smokers	23.7	45.6	3.1
Daily smokers	20.3	39.2	2.4
Current smokers – manufactured cigarettes	15.0	29.6	1.1
Daily smokers – manufactured cigarettes	11.3	22.4	0.8
Current smokers – hand-rolled cigarettes	14.1	27.0	1.8
Daily smokers – hand-rolled cigarettes	12.4	24.0	1.4
Former daily smokers[1] (of total population)	8.9	16.7	1.4
Former daily smokers[1] (% of current daily and occasional smokers)	28.8	28.4	34.4
Smokeless tobacco users			
Current smokeless tobacco users	3.9	1.3	6.3
Daily smokeless users	3.4	0.9	5.8
Former daily smokeless users[2] (of total population)	0.6	0.4	0.7
Former daily smokeless users[2] (of daily and occasional users)	13.8	27.8	11.0
Total smoked and smokeless tobacco			
Current users	27.2	46.4	9.1

Source: Global Adult Tobacco Survey, 2009 (Thailand).

Notes: [1] Those who do not currently use smoked tobacco product.

[2] Those who do not currently use smokeless tobacco product.

Table 4.52 Percentage of tobacco users with cessation experience (in adults ≥15 years old)

Tobacco use cessation	Total (%)	Males (%)	Females (%)
Current smokers who ever made a quit attempt	**60.0**	**60.5**	**52.9**
Smokers who ever made a quit attempt[1*]	49.8	49.9	47.4
Smokers who were advised to quit by a health-care provider[1,2*]	51.9	52.3	48.7
Current smokeless tobacco users who thought of quitting	24.0	37.4	21.3
Current smokeless tobacco users who made a quit attempt[3*]	21.5	31.6	19.5
Smokeless tobacco users advised to quit by a health-care provider[2,3*]	18.7	14.1	19.4

Source: Global Adult Tobacco Survey, 2009 (Thailand).

Notes: [1] Includes current and former tobacco smokers who have been abstinent for less than 12 months.

[2] Among current and recent former smokers who visited a health-care provider during the past 12 months.

[3] Includes current and former smokeless tobacco users who have been abstinent for less than 12 months.

[*] During the past 12 months.

Table 4.53 Percentage of adults exposed to second-hand smoke (SHS)

Thais aged 15 years and over	Total (%)	Males (%)	Females (%)
Workers exposed to SHS in index workplaces [1*]	27.2	34.9	18.9
Adults exposed to SHS at home[2]	39.1	43.4	35.1
Adults exposed to SHS in public transport[1*]	6.3	5.1	7.5
Adults exposed to SHS in restaurants[*]	9.0	10.8	7.2
Adults exposed to SHS in outside markets[*]	53.5	54.4	52.7

Source: Global Adult Tobacco Survey, 2009 (Thailand).

Notes: [1] Among those who work outside of home and usually work within a building or equally within and outside the building.

[2] Includes smoking in the homes that occurs daily, weekly, or less than monthly.

[*] During the past 30 days.

8.4 Alcoholic Beverage Consumption

Alcohol abuse is number one cause of burden of disease among males and number nine among females in Thailand. Thai people tend to consume more alcoholic beverages; during the past decade, alcohol use rose from 37.9 litres/person/year in 1997 to 45.7 litres/person/year in 2008, a 1.2-fold increase. By type of alcohol used, it was found that liquor consumption seemed to be stable while beer consumption was on the rise (Table 4.54). As evidenced in the market share structure for 1997–2008, beer had the largest market share (52.4–69.0%), followed by clear liquor (19.4–27.3%) and mixed liquor for the period 1997–2001, after which it was imported liquor until 2008 (Table 4.55). As a result of the 1992 free trade policy of the government, many more beer brewery plants have been operational, coupled with beer's lower prices, the sales volumes and consumption of beer have been higher than those for liquor. However, in 2008, the Thais' consumption of all kinds of alcohol dropped probably due to the country's economic recession together with other measures undertaken by the government and communities such as alcohol tax increase, the enactment of the 2008 Alcoholic Beverage Control Act, and anti-alcohol drinking campaigns.

Table 4.54 Alcohol consumption and excise tax levied on local and imported alcoholic beverages, Thailand, 1997–2008

Year	Amount sold (million litres)						Amount produced/imported (million litres)		Total, distilled liquor (million litres)	Total, all types of alcoholic beverages (million litres)	Population aged 15 years and over	Alcohol consumption per capita (litres/person/yr.)				Excise tax (million baht)		
	Clear liquor	Mixed liqour	Specially mixed liquor	Special liquor	Beer	Wine	Indigenous	Imported liquor				Distilled liquor	Beer	Wine	All types	Local liquor	Imported liquor	All types
1997	449.7	204.1	72.6	10.2	863.9	3.9	NA	45.2	781.8	1,649.6	43,537,586	18.0	19.8	0.09	37.9	4.7	2,915.6	41,983.6
1998	389.9	315.1	52.4	16.9	950.3	4.3	0.08	17.6	791.9	1,746.6	44,235.024	17.9	21.5	0.10	39.5	330.3	2,098.7	43,391.6
1999	419.7	116.7	44.4	17.8	1,032.2	7.2	0.30	24.5	623.1	1,662.8	44,755,436	13.9	23.1	0.17	37.2	440.0	2,365.0	47,749.8
2000	395.3	167.1	19.3	27.2	1,092.2	15.4	0.76	34.7	643.6	1,752.0	45,163,700	14.3	24.2	0.36	38.8	118.5	3,033.7	34,670.5
2001	404.8	130.3	31.1	83.5	1,158.7	11.0	2.29	54.6	704.3	1,876.3	45,726,748	15.4	25.3	0.29	41.0	24.3	4,728.4	38,852.5
2002	421.6	99.1	34.0	84.2	1,195.6	21.3	3.97	101.1	740.0	1,960.9	46,323,539	16.0	25.8	0.55	42.3	27.2	5,675.8	53,890.4
2003	495.5	39.3	19.9	71.3	1,506.7	22.6	3.55	138.7	764.7	2,297.6	46,788,017	16.3	32.2	0.56	49.1	35.9	7,437.4	62,618.2
2004	489.6	21.7	19.0	69.2	1,531.7	32.6	5.61	161.8	761.3	2,331.2	47,152,370	16.1	32.5	0.81	49.4	34.6	7,864.1	68,868.4
2005	507.1	24.2	17.6	78.6	1,468.7	3.3	0.34	176.7	804.2	2,276.5	47,731,109	16.8	30.8	0.08	44.7	41.2	8,587.2	74,029.7
2006	527.1	39.9	18.9	55.2	1,621.1	1.7	0.42	159.9	801.0	2,424.2	48,290,398	16.6	33.6	0.04	50.2	40.3	7,770.0	72,871.5
2007	480.1	75.3	9.9	48.0	1,711.0	1.6	0.11	152.3	765.6	2,478.3	48,615,243	15.7	35.2	0.03	51.0	43.2	7,401.6	84,863.3
2008	441.2	112.7	8.5	44.6	1,477.1	1.5	0.17	156.2	763.2	2,242.0	49,075,757	15.6	30.1	0.03	45.7	39.5	7,589.0	90,186.1

Source: Excise Department, Ministry of Finance.

Note: Alcoholic beverages mean all types of liquor, beer and wine.

Table 4.55 Structure of market shares of alcoholic beverages, 1997–2008

Year	Market share (%)							
	Beer	Clear liquor	Imported liquor	Mixed liquor	Special liquor	Specially mixed liquor	Wine	Indigenous liquor
1997	52.4	27.3	2.7	12.4	0.6	4.4	0.2	NA
1998	54.4	22.3	1.0	20.1	1.0	3.0	0.2	0.0
1999	62.1	25.2	1.5	7.0	1.1	2.7	0.4	0.0
2000	62.3	22.6	2.0	9.5	1.3	1.1	0.9	0.0
2001	61.7	21.6	2.9	6.9	4.5	1.7	0.6	0.1
2002	61.0	21.4	5.2	5.1	4.3	1.7	1.1	0.2
2003	65.5	21.6	6.0	1.7	3.1	0.9	1.0	0.2
2004	65.7	21.0	6.9	0.9	3.1	0.8	1.4	0.2
2005	64.5	22.2	7.8	1.1	3.5	0.8	0.1	0.0
2006	66.8	21.7	6.7	1.6	2.3	0.8	0.1	0.0
2007	69.0	19.4	6.1	3.0	1.9	0.4	01	0.0
2008	65.9	19.7	7.0	5.0	2.0	0.4	0.1	0.0

Source: Excise Department, Ministry of Finance.

A survey conducted by the NSO revealed a similar result, i.e. the proportion of alcoholic beverage drinkers increased from 31.5% in 1991 to 35.3% in 2004, but dropped slightly to 32.0% in 2009 (Table 4.56). It is noteworthy that during the 12-year period (1996–2007), **the proportion of female drinkers rose in all age groups, particularly teenagers (15–19 years)** (Table 4.57).

Regarding drinking frequency among drinkers, it was found that about half of them drank occasionally, but the proportion of regular drinkers (every day) was rising from 8.6% in 1996 to 13.0% in 2006 and dropped to 11.7% in 2009. It was noted that, the number of those who drank only once or twice a month almost doubled in 2007 (Table 4.58). The reasons for drinking were to socialize with friends and just to try it; some drank due to the influence of continual advertisements as evident in the rising trends in advertisement billings, especially during the period 2000–2006, being higher than 2,000 million baht per year on average. But after the alcohol advertisement ban, according to the 2008 Alcoholic Beverage Control Act, the advertisement bills were declining (Table 4.59).

Table 4.56 Number and proportion of alcoholic beverage drinkers, 1991–2009

Year	Population (millions)	No. of drinkers (millions)			Proportion of drinkers (%)		
		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
2007	51.1	14.9	12.6	2.3	29.3	51.0	8.8
2009	52.7	16.8	13.9	2.9	32.0	54.4	10.8

Sources: 1. Reports on Health and Welfare Surveys, 1991, 1996, 2001, 2003, 2006, and 2009. National Statistical Office.

2. Reports on Smoking and Drinking Surveys, 2004 and 2007. 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 4.57 Alcohol drinking rate among population aged 11 and over by age and sex, 1991–2009

Age group (years)	1991		1996		2001		2003		2004		2006		2007		2009	
	Males	Females	Males	Females	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	0.7	0.1	-	-
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	23.2	1.8	41.0	6.7
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	55.3	6.0		
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	59.8	8.3	62.8	13.4
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	60.7	10.1		
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	63.7	12.1		
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	61.0	13.4		
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	50.5	10.2		
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	29.4	4.6	34.2	4.9
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**	**51.0**	**8.8**	**54.4**	**10.8**

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

Table 4.58 Percentage of drinking population by frequency of drinking, 1996, 2001, 2003, 2004, 2006, 2007 and 2009

Drinking frequency	1996[1]	2001[2]	2003[1]	2004[2]	2006[2]	2007[1]	2009[1]
Every day	8.6	7.9	9.4	9.5	13.0	8.9	11.7
Quite frequent (3-4 times/wk.)	10.7	9.9	10.7	10.2	11.2	8.9	12.3
Some day (1-2 times/wk.)	17.4	17.2	17.7	18.6	21.1	14.5	20.2
1-2 times/month	16.4	15.3	12.2	16.3	13.2	26.0	19.3
Occasionally	46.2	49.4	50.0	45.5	41.5	41.7	36.3
Unknown	0.6	0.3	-	-	-	-	0.2

Sources: 1. Reports on Health and Welfare Surveys, 1996, 2003, 2006 and 2009. National Statistical Office.
2. Reports on Population's Smoking and Drinking Behaviours Surveys, 2001 and 2007. National Statistical Office.

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

Table 4.59 Alcohol advertisement billings, 1989–2009

Year	Advertisement billings (million baht)	Increase (%)
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
2007	1,440	-2.8
2008	1,429	-0.8
2009	1,294	-9.4

Source: Media Spending Company.

Besides, the implementation of free trade agreement has resulted in the tax decrease for imported alcohol from other ASEAN countries from 60% to only 5%, a 12-fold decline; and as a result, the market share of the alcohol imports rose from 99.25 million baht in 2002 to 787.39 million baht in 2003, a 693.3% increase (Table 4.60). In 2010, the import tax for alcoholic beverages from other ASEAN countries was 0%, i.e. there has been no import, tax imposed on alcohol from such countries since then.

Table 4.60 Values of imported liquor by source of origin

Source	Import value, million baht							
	2001	2002	2003	2004	2005	2006	2007	2008
ASEAN countries	102.80	**99.25**	**787.39**	1,016.34	821.03	872.29	642.96	551.71
Australia	162.67	180.31	59.61	2.55	3.48	2.23	27.73	7.51
European Union	3,389.21	3,844.22	4,312.94	3,980.85	4,485.75	4,718.79	4,173.99	5,305.70
USA	123.19	85.38	205.53	169.99	178.46	258.83	129.66	173.60
Others	310.10	373.61	121.22	123.05	138.70	155.25	101.69	213.33
Total, worldwide	**4,087.98**	**4,582.77**	**5,486.69**	**5,292.78**	**5,627.41**	**6,007.39**	**5,076.03**	**6,251.85**

Source: Information Technology and Communication Centre, Office of the Permanent Secretary, Ministry of Commerce, in cooperation with the Customs Department.

The economic cost due to alcohol drinking for Thais was as high as 150.7 billion baht in 2006, which included direct costs (health-care cost, 5,263.3 million baht; loss of properties due to land transport accidents, 779.4 million baht; and law enforcement and litigation cost, 247.6 million baht) and indirect costs (decreased productivity due to premature death, 98.9 billion baht and decreased productivity due to lower efficiency, 45.5 billion baht). The total economic cost was 1.92% of GDP (Table 4.61). It should be noted that the economic cost due to alcohol use was higher than the excise tax revenue collected by the government. Thus, the government needs to have measures to deal with the negative impact of alcohol drinking on society, to reduce alcohol consumption, and to appropriately strike a balance between the state revenue and social welfare spending.

Table 4.61 Social and economic costs of alcohol consumption in Thailand, 2006

Cost	Million baht
1. Direct cost	
Health-care cost	5,263.3
- Outpatient care cost	2,294.5
- Inpatient care cost	2,968.8
Law enforcement cost	247.6
- Court cost	154.5
- Police cost	93.1
Cost of property damage due to traffic accident	779.4
2. Indirect cost	
Cost of productivity loss	
- Cost of productivity loss due to premature death	98,922.5
- Cost of productivity loss due to reduced productivity	45,464.6
Total cost (million baht)	**150,677.4**
Total cost as % of GDP	**1.92**
Total cost per capita (baht)	**2,398.21**

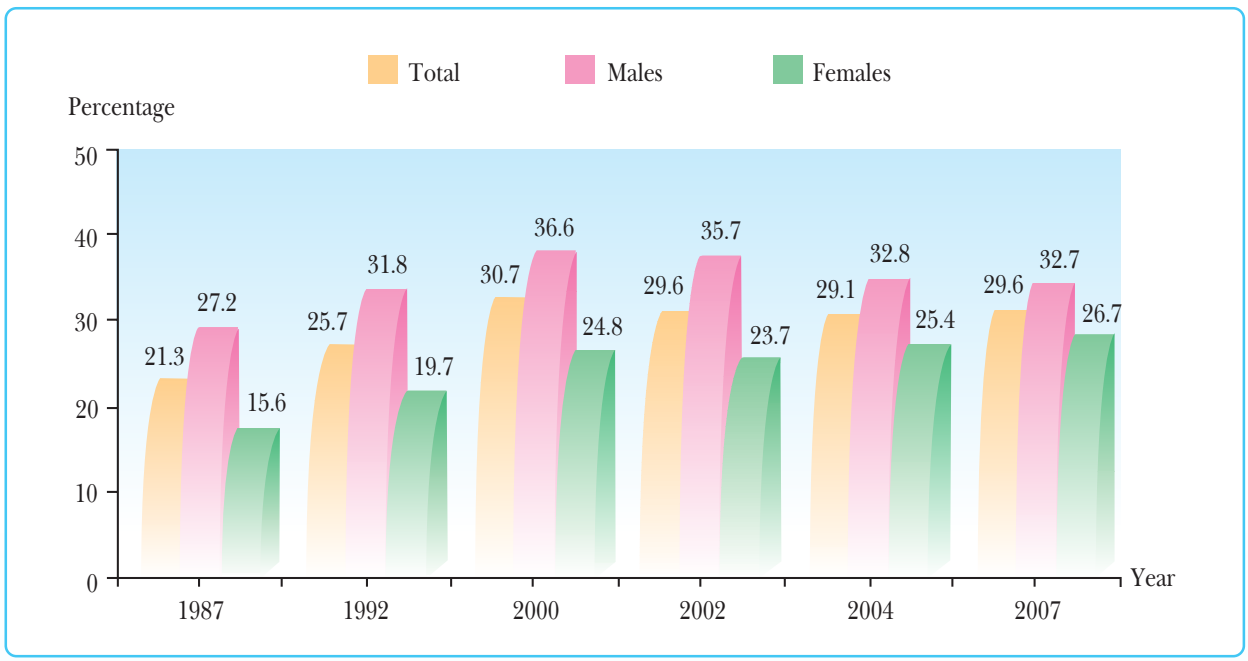
Source: The economic costs of alcohol consumption in Thailand, under the Health Intervention and Technology Assessment Programme, Ministry of Public Health; Department of Pharmacy, Faculty of Pharmacy, Mahidol University; and the Centre for Alcohol Studies, 2007.

8.5 Physical Activity

The 2007 survey conducted by the National Statistical Office revealed that approximately **29.6% of Thai people regularly exercised**[14] (Figure 4.41). However, when considering the trend in regular exercise for 1987-2007, it was found that **Thais had a fluctuating rate of exercise**, ranging from 20% to 30% on average (Table 4.62), males exercising more than females (Figure 4.41) and about one-third of the people exercising were 15-24 years of age; the prevalence of teenagers exercising had a declining trend while those in the working age (25–59 years) tended to take more exercise (Figure 4.42).

[14] 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).

Figure 4.41 Percentage of Thai people who regularly exercised, 1987–2007



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. Reports on Exercise Behaviour of People Aged 11 Years and Above Surveys, 2004 and 2007. National Statistical Office.

Table 4.62 Percentage of Thai people who regularly exercised, 1987–2007

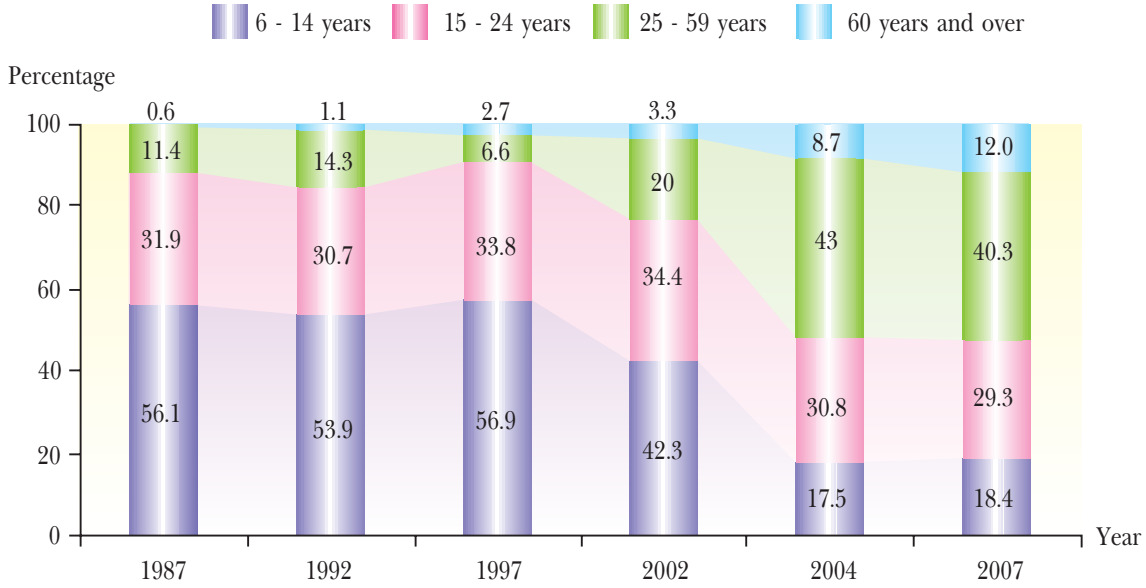
Year	People regularly exercising	
	Percent	Change (%)
1987	21.3	-
1992	25.7	+20.7
1997	30.7	+19.5
2001	24.2	-21.2
2002	29.6	+22.3
2003	29.0	-2.0
2004	29.1	+0.3
2007	29.6	+1.7

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 Health and welfare Survey, 2001, National Statistical Office.

3. Reports on Exercise Behaviour of People Aged 11 Years and Above Surveys, 2003, 2004 and 2007. National Statistical Office.

Figure 4.41 Percentage of Thai people who regularly exercised by age group, 1987-2007

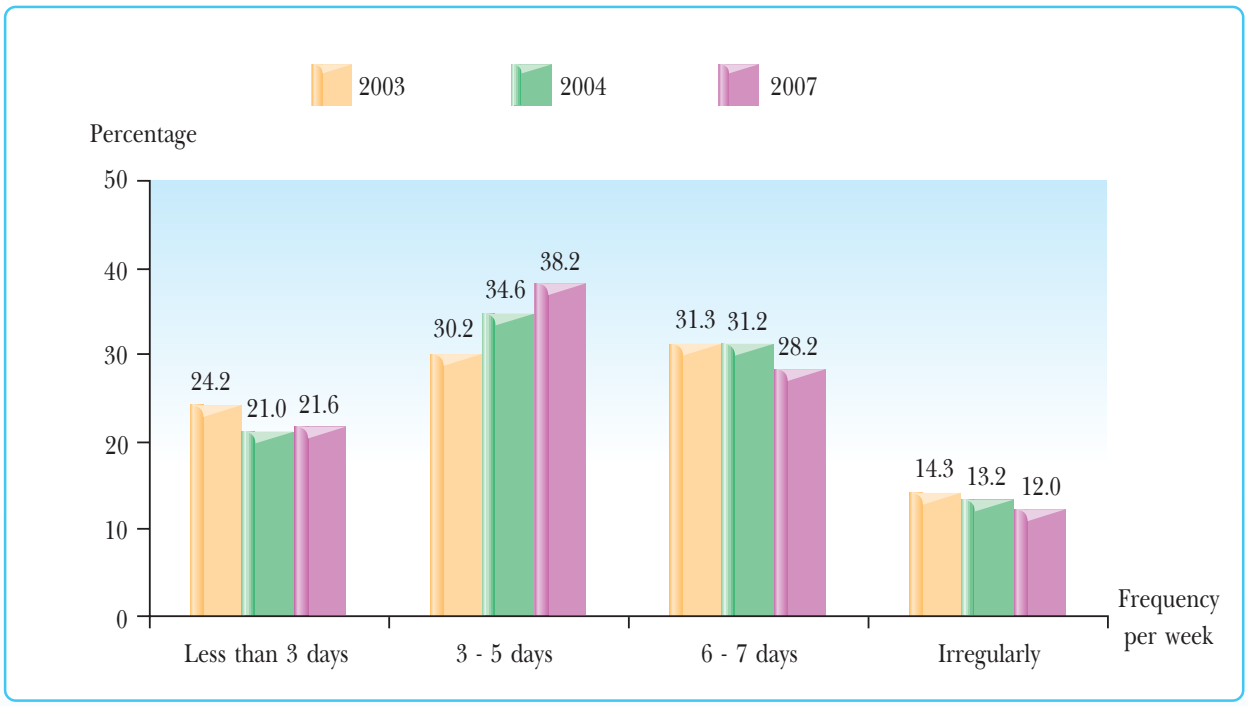


Sources: 1. Reports on Surveys of People Aged 6 Years and Above Playing or Watching Sports, 1987, 1992, 1997 and 2002. National Statistical Office.

2. Report on Surveys of Exercise Behaviour of People Aged 11 Years and Above, 2004 and 2007. National Statistical Office.

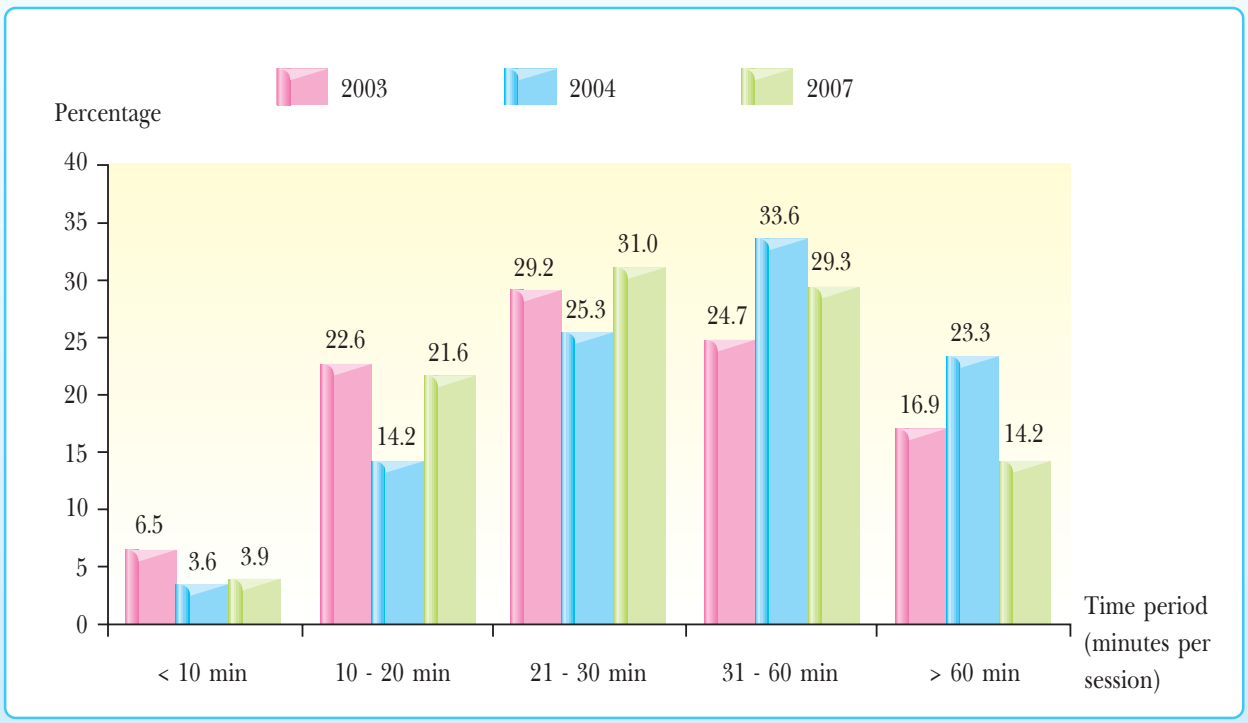
When considering people's exercise behaviours, based on the exercise for health criteria, it was found that more than 60% of Thais (aged 11 years and over) exercised **more than 3 days per week** and more than half of them spent about the same time period of 21–30 minutes and 31–60 minutes taking exercise (31.0% and 29.3%, respectively); 14.2% exercised more than 60 minutes, and only 3.9% exercised for less than 10 minutes. It is noteworthy that, in 2004, the proportions of people exercising for 31–60 minutes and more than 60 minutes were as high as 33.6% and 23.3% respectively, probably resulting from the influence of exercise campaigns (Figures 4.43 and 4.44). Regarding their continuity of exercise, most of them had exercised continually for more than 7 months, rising from 67.5% in 2004 to 83.4% in 2007 (Figure 4.45).

Figure 4.43 Percentage of Thais aged 11 years and over exercising by frequency per week, 2003, 2004 and 2007



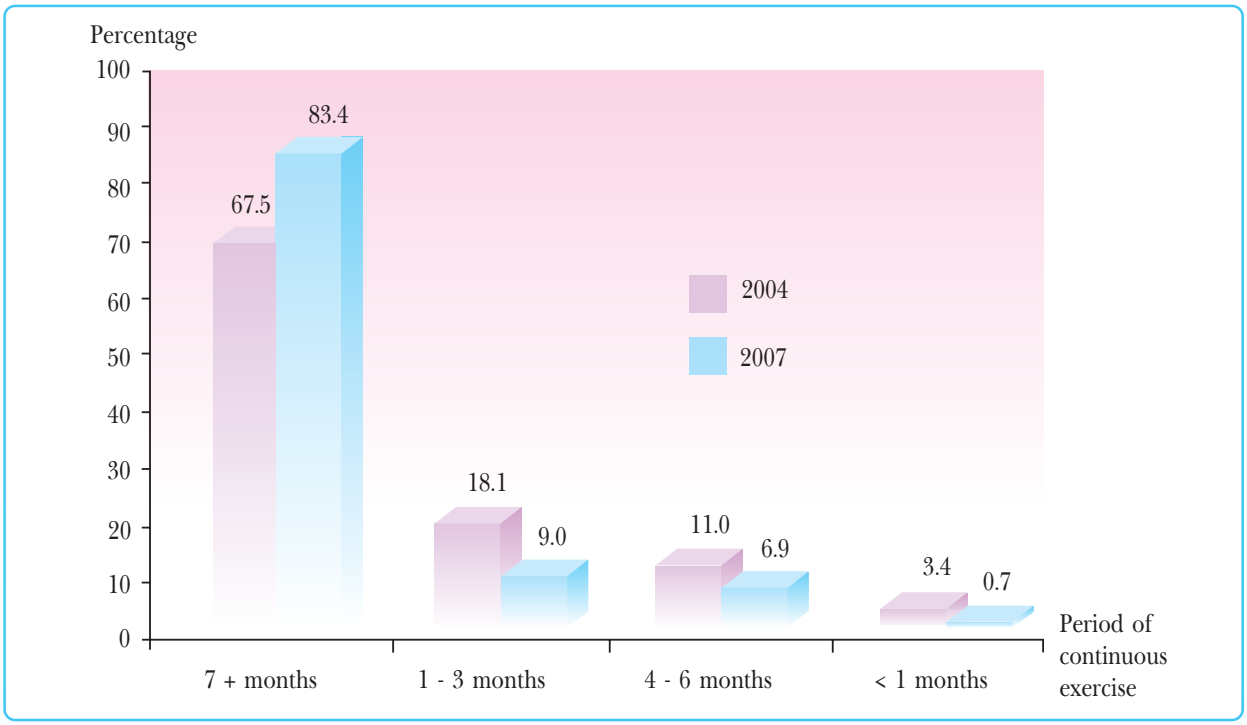
Source: Reports on Exercise Behaviour Surveys among People Aged 11 Years and Over, 2003, 2004 and 2007, National Statistical Office.

Figure 4.44 Percentage of Thai aged 11 years and over exercising by exercising period, 2003, 2004 and 2007



Source: Reports on Exercise Behaviour Surveys among People Aged 11 Years and Over, 2003, 2004 and 2007, National Statistical Office.

Figure 4.45 Percentage of Thai people regularly exercising by period of time of continuous exercise, 2004 and 2007



Source: Reports on Exercise Behaviour Surveys among People Aged 11 Years and Over, 2004 and 2007. National Statistical Office.

The types of exercise most favored are jogging and aerobics while other sports and walking are less popular (Table 4.63); where they want to play or exercise depends on the type of exercise and the venue's readiness and 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.

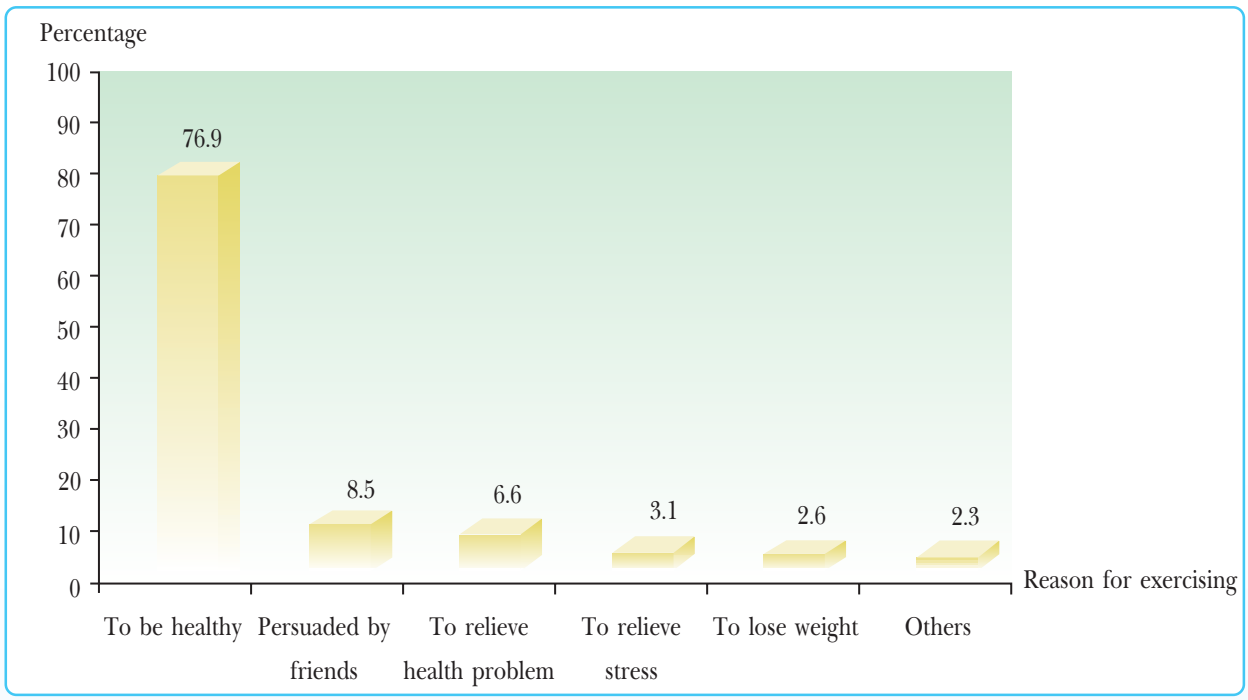
Table 4.63 Percentage of people that exercised by type of exercise, 2001, 2004, and 2007

Type	2001 (%)	2004 (%)	2007 (%)
Playing sports	55	51	48
Jogging	16	18	18
Aerobics	4	14	8
Walking	16	12	19
Others	8	5	7

Source: Reports on Exercise Behaviour Surveys among People Aged 11 Years and Over, 2004 and 2007. National Statistical Office.

With regard to the reasons for exercising, most of them (76.9%) wanted to be healthy, followed by being persuaded by friends (8.5%).

Figure 4.46 Percentage of Thai aged 11 years and over exercising by reason, 2007



Source: Report on Exercise Behaviours Survey in Thais Aged 11 years and over, 2007, National Statistical Office.

Effects of People's Exercise and Their Health Status

An analysis of the association between people's exercise and their health status (morbidity and hospitalization) revealed that, among Thais aged 11 years and over who did not exercise, 16.3% were ill during the past month and 6.4% were hospitalized (Table 4.64).

Table 4.64 Thais aged 11 years and over classified by illness, hospitalization and exercise behaviours, 2007

Exercising	Thais aged 11+ years					
	Total		Ill		Hospitalized	
	Number (thousands)	Percent	Number (thousands)	Percent	Number (thousands)	Percent
Total	**55,031.0**	**100.0**				
Exercising	16,318.9	29.7	2,897.4	17.7	861.6	5.3
Non exercising	38,712.1	70.3	6,301.3	16.3	2,478.6	6.4

Source: Modified from the Report on Health and Welfare Survey, 2007, National Statistic Office.

The analysis of the association between exercise and morbidity revealed that those who had exercised for 3 months or more would be less likely to get sick or hospitalized during the past month than those who exercised for a shorter period of time (less than 1 month). It was found that, among the people who exercised for 3+ months, the proportions of those who were ill and hospitalized were only 17.4% and 5.2%, respectively; whereas those who exercised for less than 1 month had higher proportions at 24.1% and 8.2%, respectively (Table 4.65).

Table 4.65 Thais aged 11 years and over who exercised and their incidence of morbidity and hospitalization, 2007

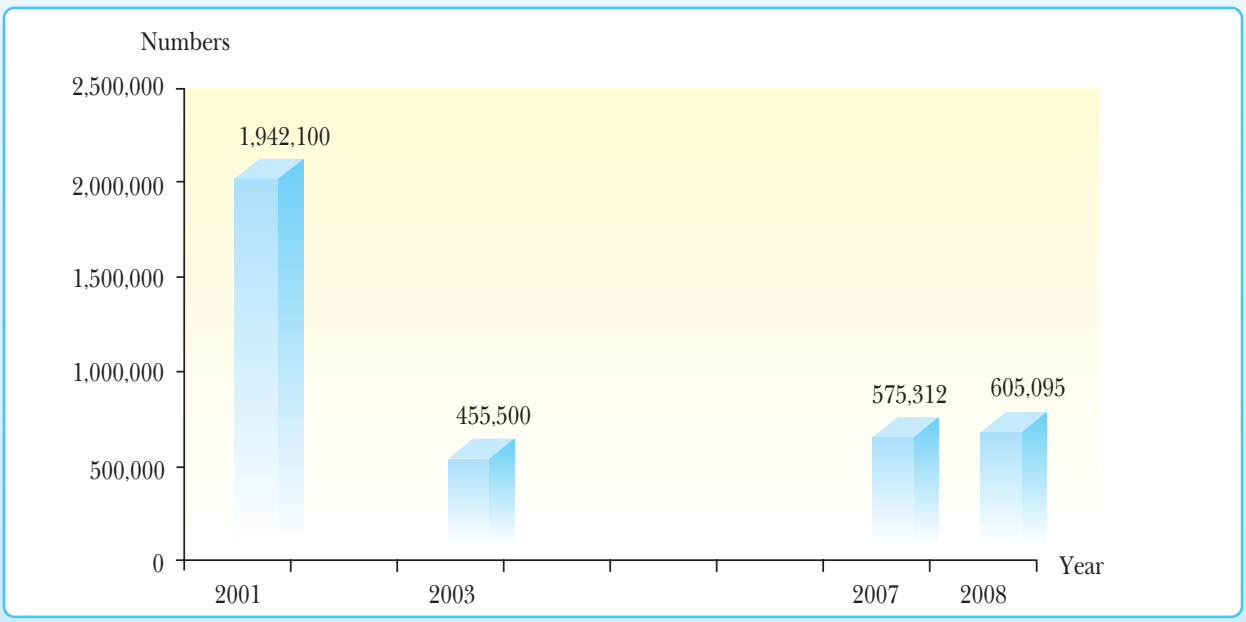
Duration of exercise	Thais aged 11+ years who exercised		
	Total (thousands)	Ill (%)	Hospitalized (%)
Total	**16,318.9**	**17.7**	**5.3**
1 month and less	424.7	24.1	8.2
2^{+} months	435.0	22.7	6.2
3^{+} months	15,459.1	17.4	5.2

Source: Report on Health and Welfare Survey, 2007, National Statistic Office.

8.6 Substance Abuse

The trends in substance or drug abuse for 2009 were still on the rise. The estimated number of substance abusers in 2008 was 605,095, compared with that for 2007 of 575,312 (Figure 4.47).

Figure 4.47 Estimated numbers of substance abusers in Thailand, 2001, 2003, 2007 and 2008



Source: Office of the Narcotics Control Board.

Regarding the types of substances, most of the abusers use marijuana, kra-tom (Mitragyra speciosa) and methamphetamine (ya ba). In 2007, the number of former ya ba users was as high as 788,900 (Table 4.66), indicating that the use of ya ba is widespread.

Table 4.66 Number of substance abusers in Thailand by type of substance and use duration, 2001, 2003 and 2007

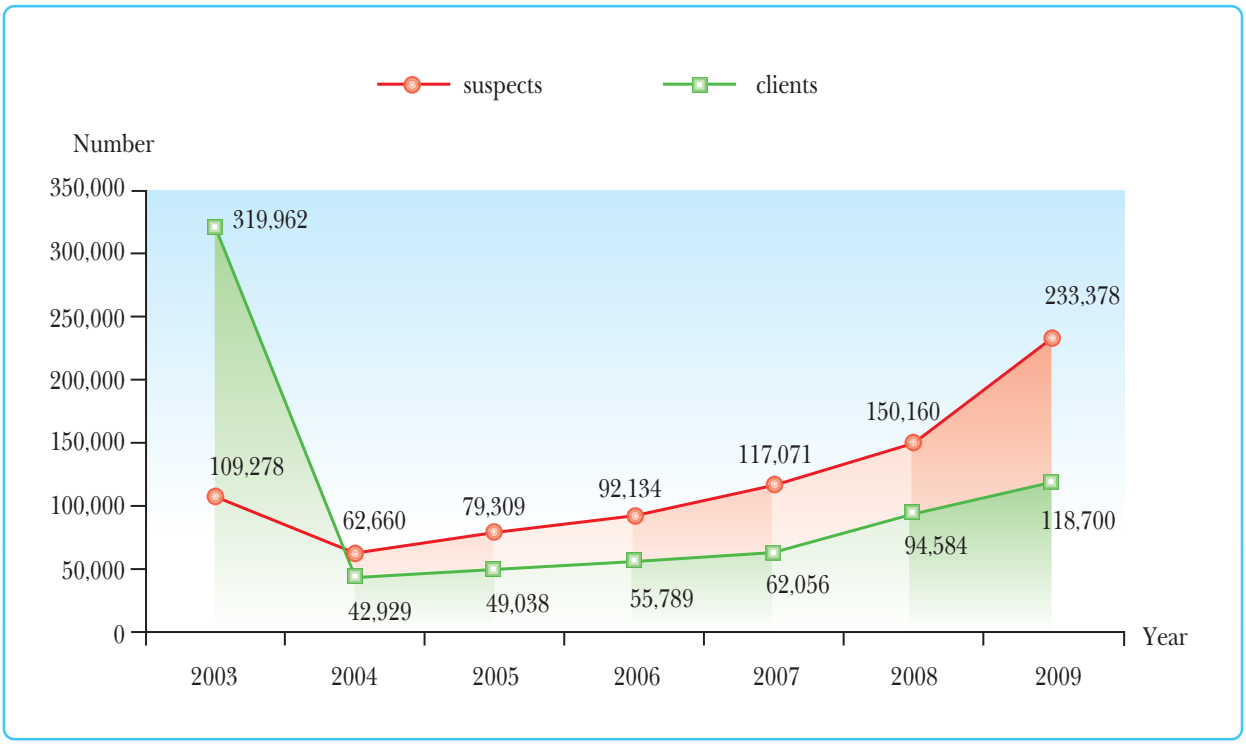
Substance	No. of abusers in thousands (percent)								
	2001			2003			2007		
	Ever used	Ever used in 1 year	Ever used in 30 days	Ever used	Ever used in 1 year	Ever used in 30 days	Ever used	Ever used in 1 year	Ever used in 30 days
Any substance	7,312.2(16.4)	1,942.1 (4.3)	998.7 (2.2)	3,155.5 (6.9)	455.5 (1.0)	257.8 (0.6)	2,521.5 (5.4)	575.3 (1.2)	335.8 (0.7)
Methamphetamines (ya ba)	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)	788.9 (1.7)	66.3 (0.1)	22.8 (0.1)
E or ecstasy drug	360.1 (0.8)	46.5 (0.1)	17.7 (0.0)	119.7 (0.3)	13.3 (0.0)	7.4 (0.0)	124.3 (0.3)	15.2 (0.0)	3.3 (0.0)
K or ketamine drug	40.7 (0.1)	7.2 (0.0)	1.2 (0.0)	23.4 (0.1)	1.0 (0.0)	0.04 (0.0)	30.3 (0.1)	-	-
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)	28.3 (0.1)	-	-
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)	1,506.3 (3.2)	57.5 (0.1)	13.5 (0.0)
Kratom (Mytragyna spp.)	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)	1,078.1 (2.3)	378.2 (0.8)	264.5 (0.6)
Opiates	907.0 (2.0)	38.6 (0.1)	12.3 (0.0)	323.7 (0.7)	0.6 (0.0)	0.3 (0.0)	228.9 (0.5)	3.0 (0.0)	-
Heroion	274.2 (0.6)	22.7 (0.1)	9.4 (0.0)	192.6 (0.4)	1.4 (0.0)	-	151.0 (0.3)	3.9 (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)	NA	NA	NA

Sources: - Reports on Estimates of Substance Abusers in Thailand, 2001 and 2003, Office of the Narcotics Control Board.

- Situation of Substance Abuse in 2007, Office of the Narcotics Control Board.

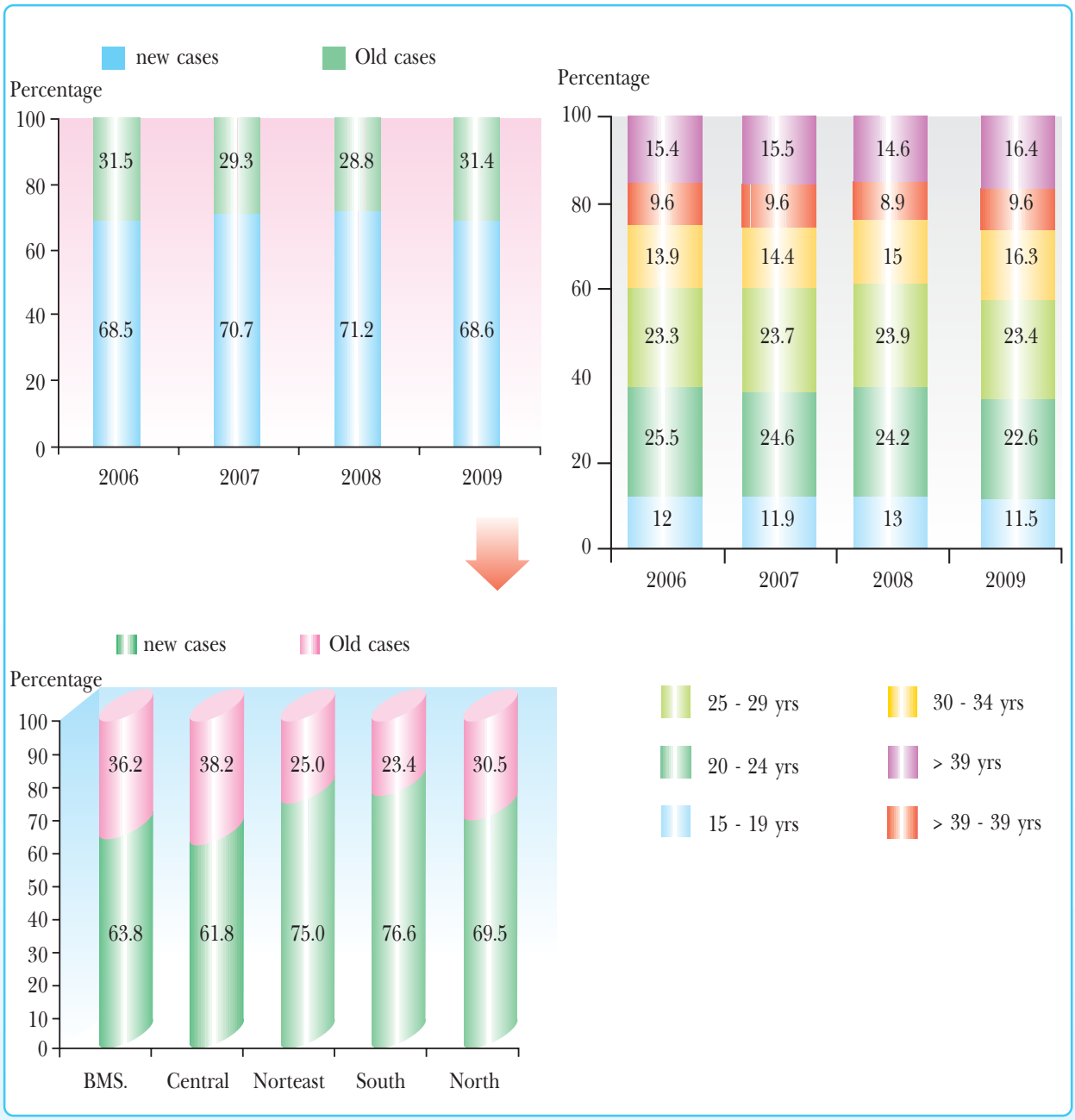
During the period 2008–2009, the numbers of drug-related crime suspects arrested and drug rehabilitation clients or patients in creased from 150,160 to 233,378 and 94,584 to 118,700, respectively (Figure 4.48). Among the drug abusers, most of them are in the 15-24 age group, 70% of whom are new abusers, mostly involving methamphetamine, followed by marijuana and inhalants (Figure 4.49).

Figure 4.48 Number of arrested drug-related crime suspects and drug clients, 2003–2009



Source: Report on Narcotics Situation for Planning Purposes, Fy 2010. Office of the Narcotics Control Board.

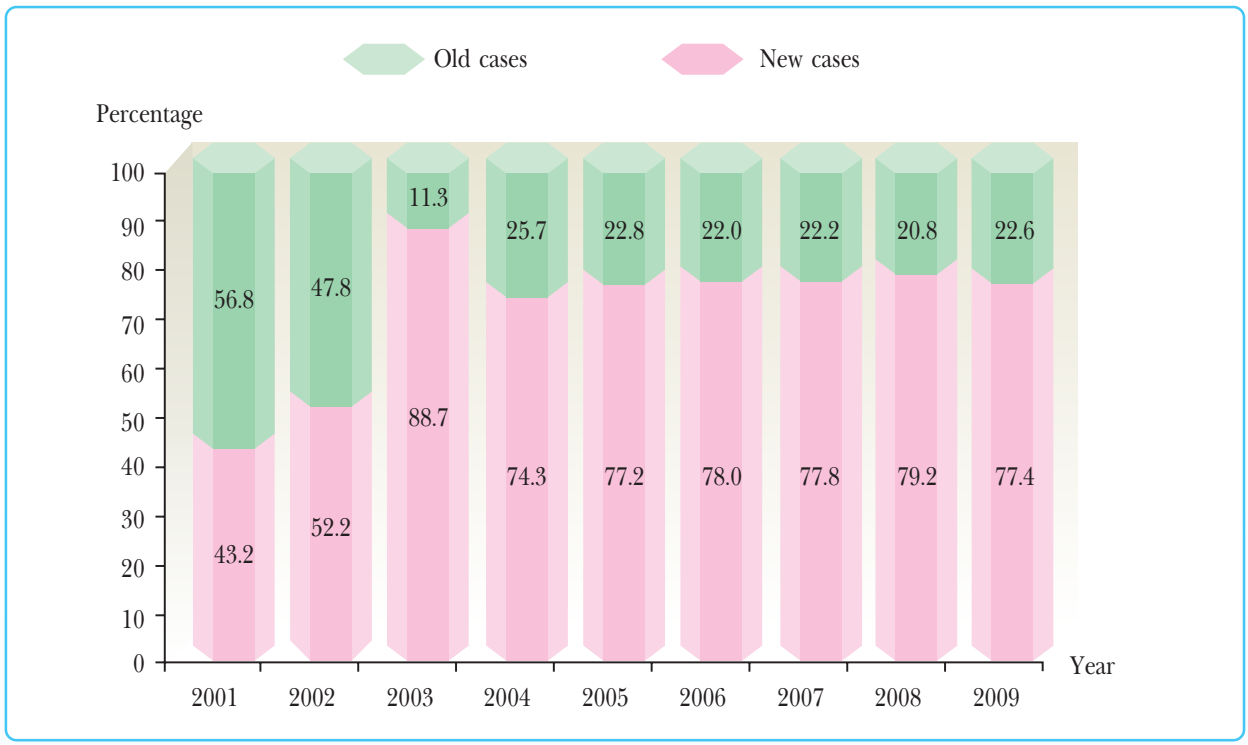
Figure 4.49 Proportions of new and old drug-related crime suspects, 2006–2009



Source: Report on Narcotics Situation for Planning Purposes, FY 2010. Office of the Narcotics Control Board.

When considering the number of drug rehab clients during the period 2001–2009, it was found that the proportion of new cases increased considerably from 43.2% in 2001 to 77.4% in 2009. In particular, when the government issued the war on drug policy in 2003, strict measures were taken to have substance addicts undergo rehabilitation, resulting the rise in the proportion of new rehab clients to as high as 88.7% (Figure 4.50).

Figure 4.50 Proportions of drug rehab clients at drug rehabilitation facilities in Thailand, 2001–2009



Source: Bureau of Health Administration, Office of the Permanent Secretary, MoPH.

With regard to the type of narcotic users by the first-time clients attending rehabilitation facilities, no difference was noted compared with the previous period; the most commonly used narcotic was methamphetamine or ya ba (79–84%), followed by marijuana (7–10%), and inhalants (4–5%). The proportion of ya ba clinets was on the rise (Table 4.67).

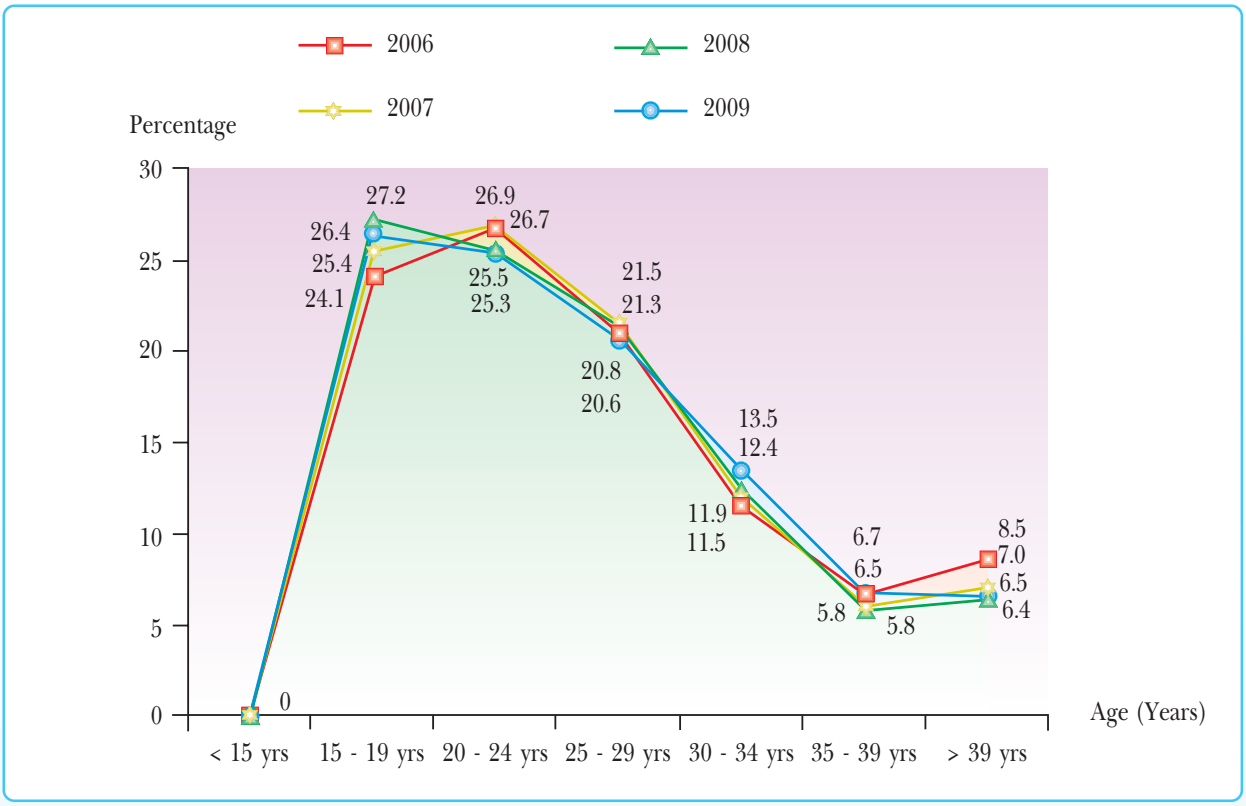
Table 4.67 Proportions of drug rehab clients by type of drug used, 2006–2008

Drug	Drug rehab clients (%)		
	2006	2007	2008
Methamphetamine (ya ba)	78.9	80.2	84.5
Heroin	1.2	0.9	0.5
Marijuana	10.2	9.9	6.9
Inhalants	5.0	4.3	4.1
Club drugs	0.9	1.1	1.0
Kratom	1.3	1.4	1.1
Dpiates	1.6	1.4	1.5
Others	0.9	0.8	0.4

Source: Report on Narcotics Situation for Planning Purposes, FY 2010. Office of the Narcotics Control Board.

Among the first-time rehab clients, the major group among all the clients, previously they were in the 20–24, 15–19, and 25–29 age groups, respectively. But since 2008, larger numbers of them have been found in the 15–19, 20–24 and 25–29 age groups (Figure 4.51).

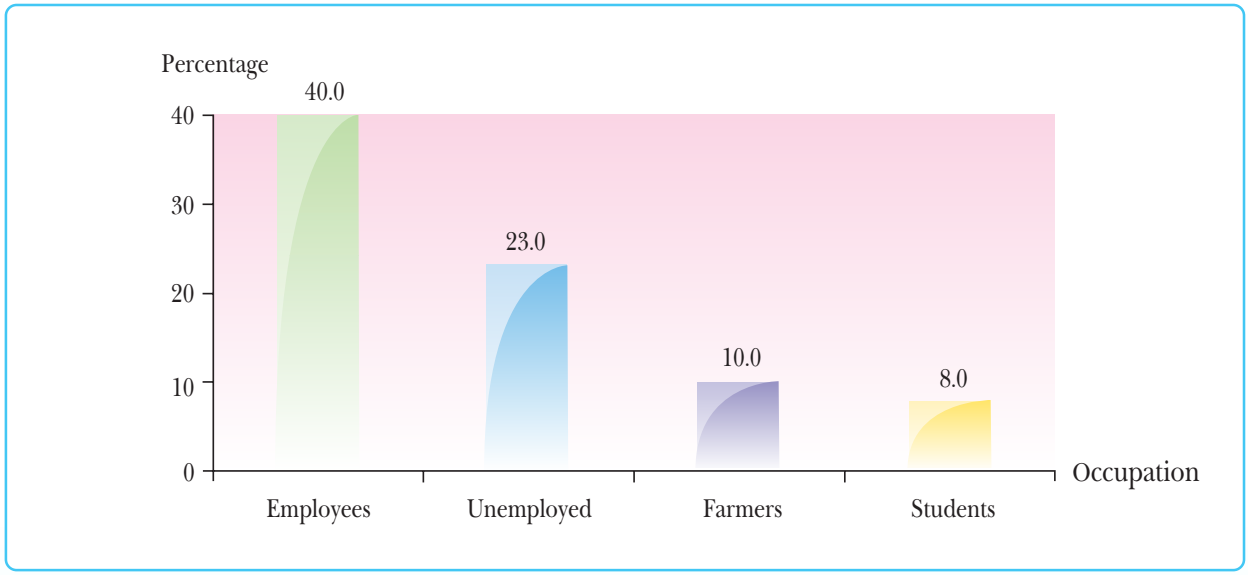
Figure 4.51 Proportions of first-time drug rehab clients by age group, 2006–2009



Source: Report on Narcotics Situation for Planning Purposes, FY 2010. Office of the Narcotics Control Board.

However, with regard to the occupations of drug rehab clients, most first-time clients were employees, unemployed persons and farmers. During the past three years, they were mainly employees (40%), followed by unemployed persons (23%) and farmers (10%), while students accounted for only 7–8% of the clients and the proportion tends to be gradually rising (Figure 4.52).

Figure 4.52 Proportions of drug rehab clients by occupation, 2009



Source: Report on Narcotics Situation for Planning Purposes, FY 2010. Office of the Narcotics Control Board.

The analysis of drug rehabilitation costs in 10 agencies revealed that, on average, the cost per capita was 15,597 baht for 2007. So, based on a total of 62,056 clients, the total cost would be nearly 1 billion baht and would be steadily rising proportional to the number of clients of 94,584 for 2008 and 118,700 for 2009, or an increase by 34.4% and 20.3% respectively (Table 4.68).

Table 4.68 Costs of drug rehabilitation by agency in fiscal year 2007

No.	Rehabilitation facility	Cost (baht/yr)	No. of clients
1	Ban Metta Juvenile Detention Centre	11,138,855	430
2	Probation Office for Dusit District Court	7,431,553	1,018
3	Khlong Phai Community Rehabilitation	10,758,301	400
4	Nakhon Ratchasina Rajanagarindra Psychiatric Hospital	25,914,461	1,063
5	Central Detention Centre, Pathum Thani	4,350,697	4,061
6	Drug Rehabilitation Centre, Lat LumKaeo	28,764,103	360
7	Thanyarak Institute	181,136,030	8,668
8	Children and Youth Training Centre, Ayutthaya	12,032,093	360
9	Drug Rehabilitation Centre, Air Force Wing 46	6,676,737	180
10	Ratchaburi Regional Hospital	,714,682	2,112
	Total	**290,917,513**	**18,652**
	Average rehab cost per person	15,597 baht	

Source: Report on the Cost-Effective Analysis of Drug Rehabilitation System, Health Economics Centre, Faculty of Economics, Chulalongkorn University (June 2009).

8.7 Driving Behaviours

8.7.1 Use of Safety Belt while Driving

A survey on safety-belt use among all driver categories reveals that, even though the law has required since 1996 that all drivers and passengers use safety belts at all times, the safety-belt use rate remained at around 30% for the period 1996–2006 (Table 4.69).

8.7.2 Use of Helmet while Riding a Motorcycle

Despite the enforcement of the helmet use law since 1996, the actual helmet use rate among Thai people has got no rising trends, i.e. not exceeding 20% for constant use and only around 50% occasional use (Table 4.70).

Table 4.69 Proportion (%) of drivers aged 14 years and over using safety belts by type of use

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 4.70 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.

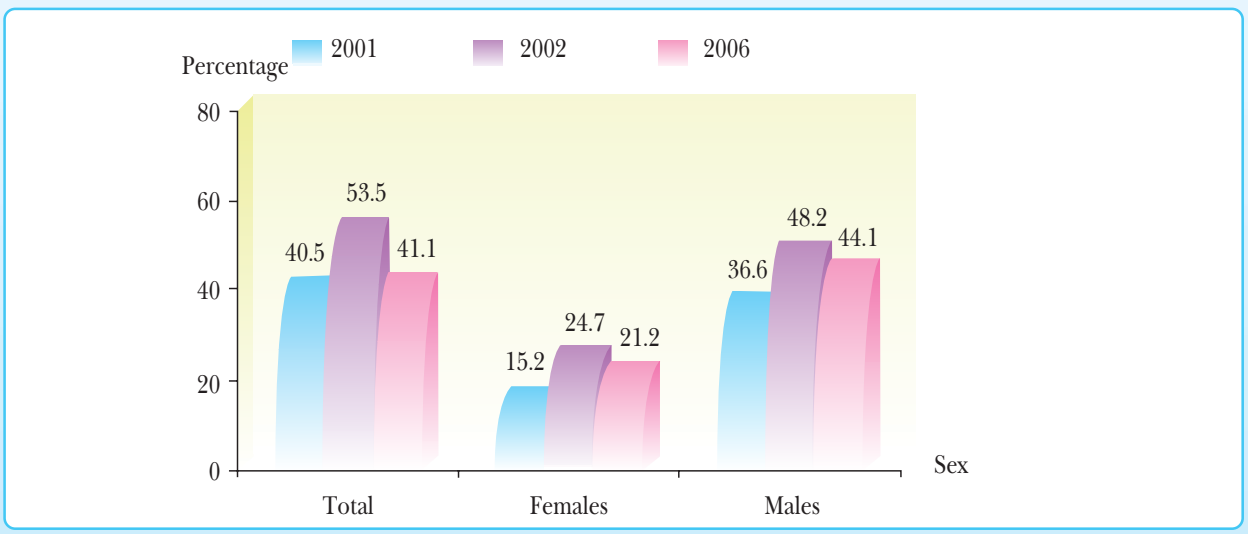
(2) Data for 2000 were derived from the Survey of Health Behaviours of Working-age Population (15-59 years). Health Education Division. Department of Health Service Support.

(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 andpassengers 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, there has been no downward trend for drunk driving; the proportion being 40–50% during the period 2001–2006 and males being twice more likely to do so than females (Figure 4.53).

Figure 4.53 Proportion of drunk drivers by sex, 2001, 2002 and 2006



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

8.8 Sexual Behaviours

Unsafe sex is the 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 96.0% in 2009 (Figure 4.54). 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.

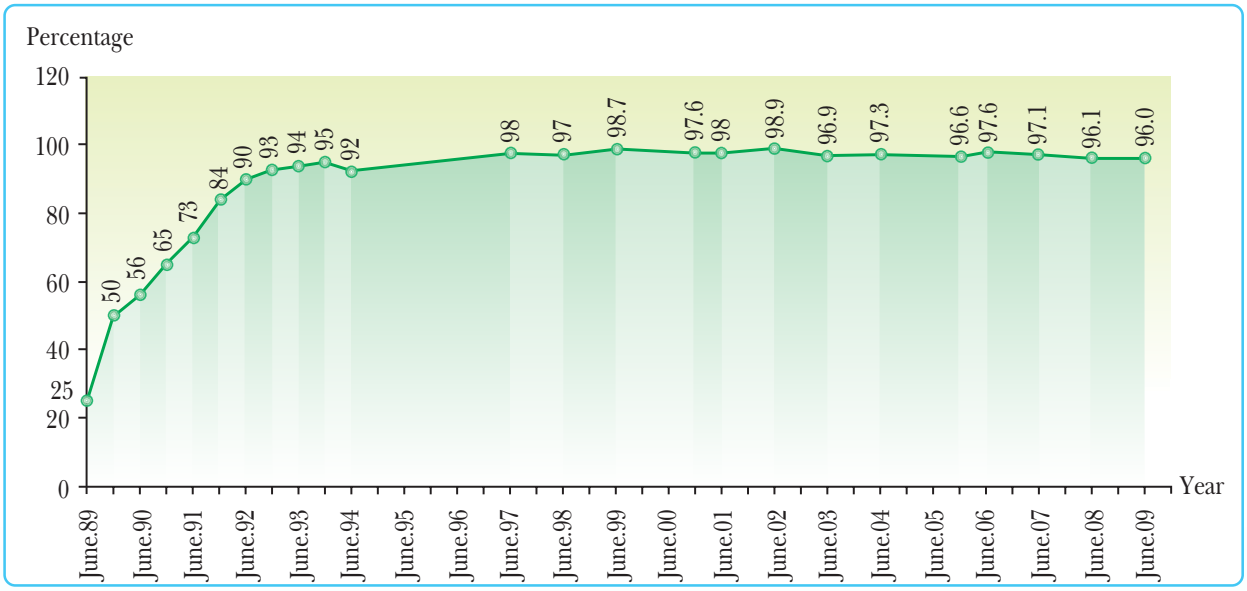
According to Thailand's surveillance of HIV/AIDS risk behaviours over the past 15 years (1995-2009), the proportions of military recruits and male industrial workers having sex with CSWs and other women were **declining** except for a slightly rising rate in 2003 and a rising trend of military recruits having sex with other women (Figures 4.55 and 4.56). However, the constant condom use rate among military recruits having sex with CSWs was higher than with other women they superficially knew (Figures 4.57 and 4.58). Regarding female industrial workers and pregnant women attending an antenatal clinic (ANC), there was a **reduction** in sexual relation with other males (Figures 4.59 and 4.60), and the rate of constant condom use when having sex with other males was increasing except for 2003 when the rate decreased markedly (Figures 4.60 and 4.61).

For male teenagers, it was revealed that there was an increase in sexual relations with various groups of females including, girlfriends, lovers, close friends, CSWs and others (Figure 4.62). They were more likely to use a condom when having sex with CSWs than with other kinds of sex partners (Figure 4.63).

But a survey conducted by the ABAC Social Innovation Research Centre of Assumption University (2007) on pre-mature sex among youths (aged 12–24) in Bangkok and its vicinity reveals that one-third (30.9%) of respondents have ever had sex before, a higher proportion in males (37.0%) than in females (24.8%). The 2006 survey conducted by the Centre among a similar age group revealed that two-thirds (45.0%) of them had ever had sex (Table 4.71). Among those with sexual experience, the partners they had first sex with were similar for both surveys, i.e. with lovers (83.1% and 85%, respectively), followed by students at the same or different institution (Table 4.72), and citing similar sex-stimulating situations such as love (68.8% and 66.9% respectively), followed by intimacy and desire to experiment (Table 4.73).

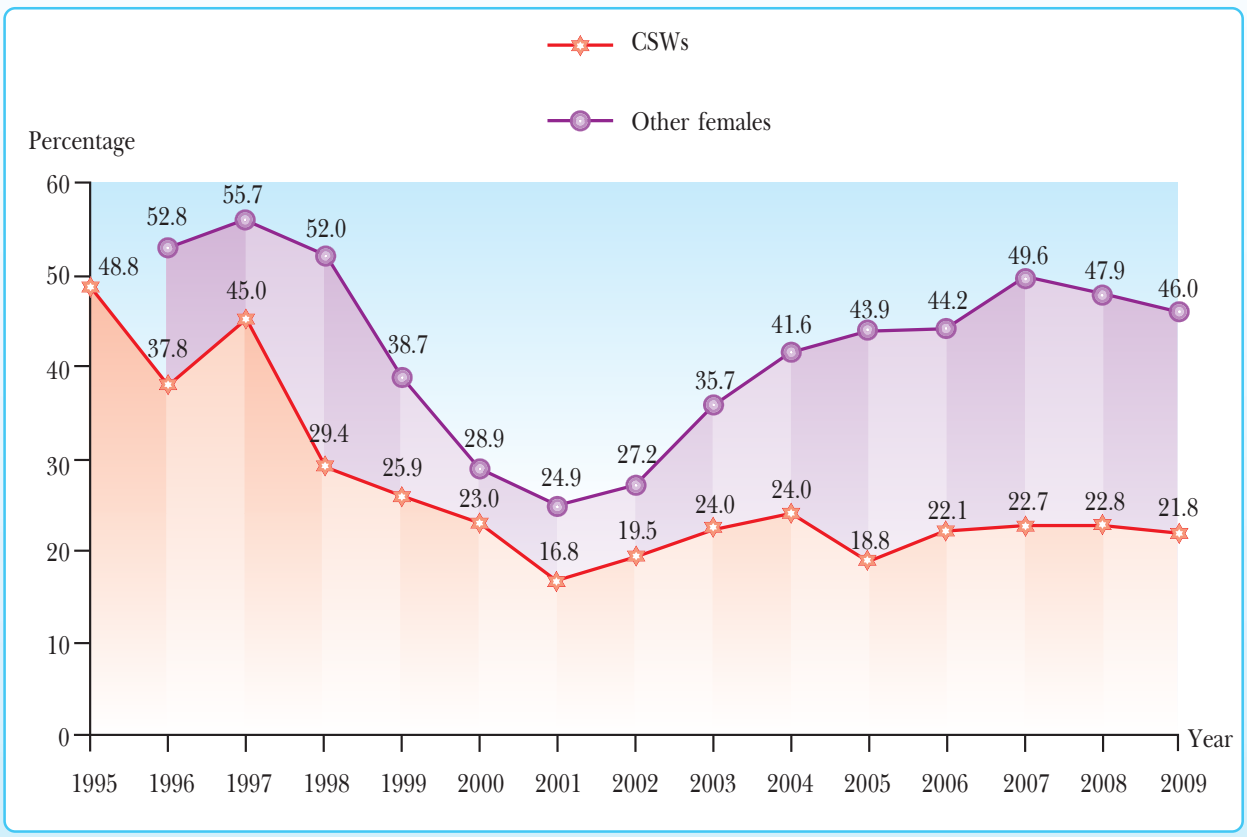
The aforementioned situations have indicated that Thai youths are in a delicate situation with regard to sexual relation, many of them having had pre-mature sex. Thus, if there are no suitable preventive measures, they are at risk of contracting HIV and sexually transmitted infactions, resulting in other social problems.

Figure 4.54 Condom use rate among female commercial sex workers, 1989-2009



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

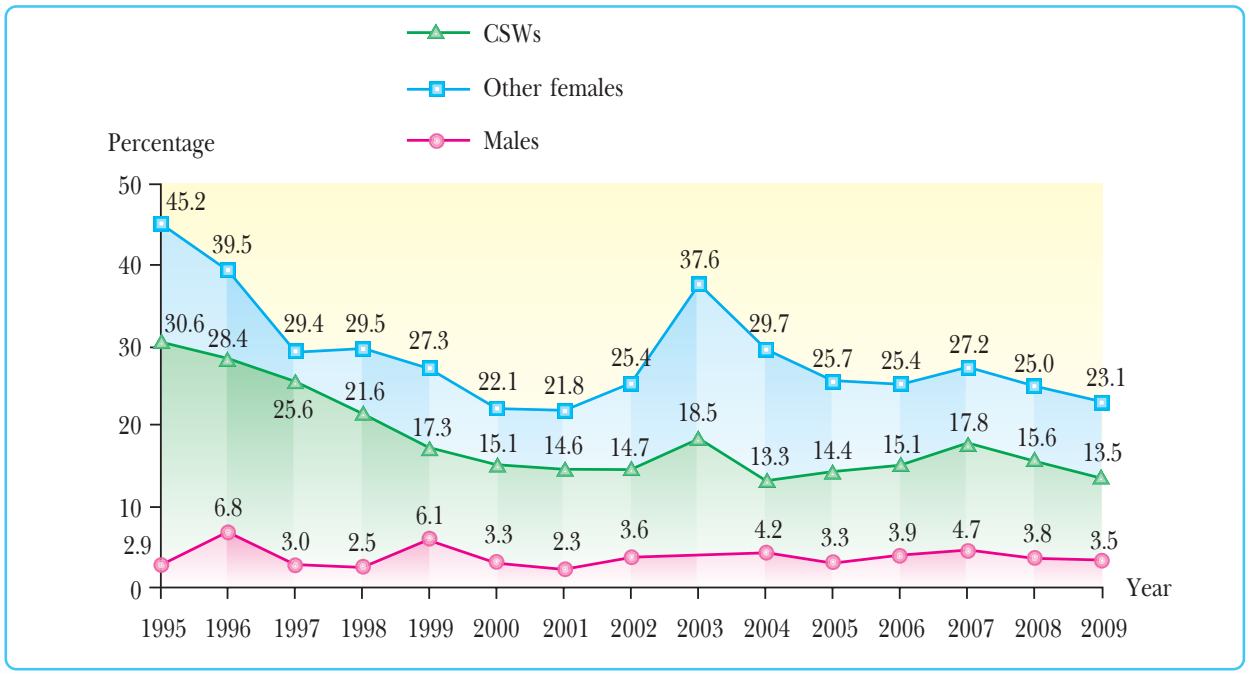
Figure 4.55 Proportion of military recruits' sex partners in the past year according to survey on HIV/AIDS risk behaviours in Thailand, 1st–15th rounds, 1995–2009



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

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st–15th rounds of survey (1995–2009).

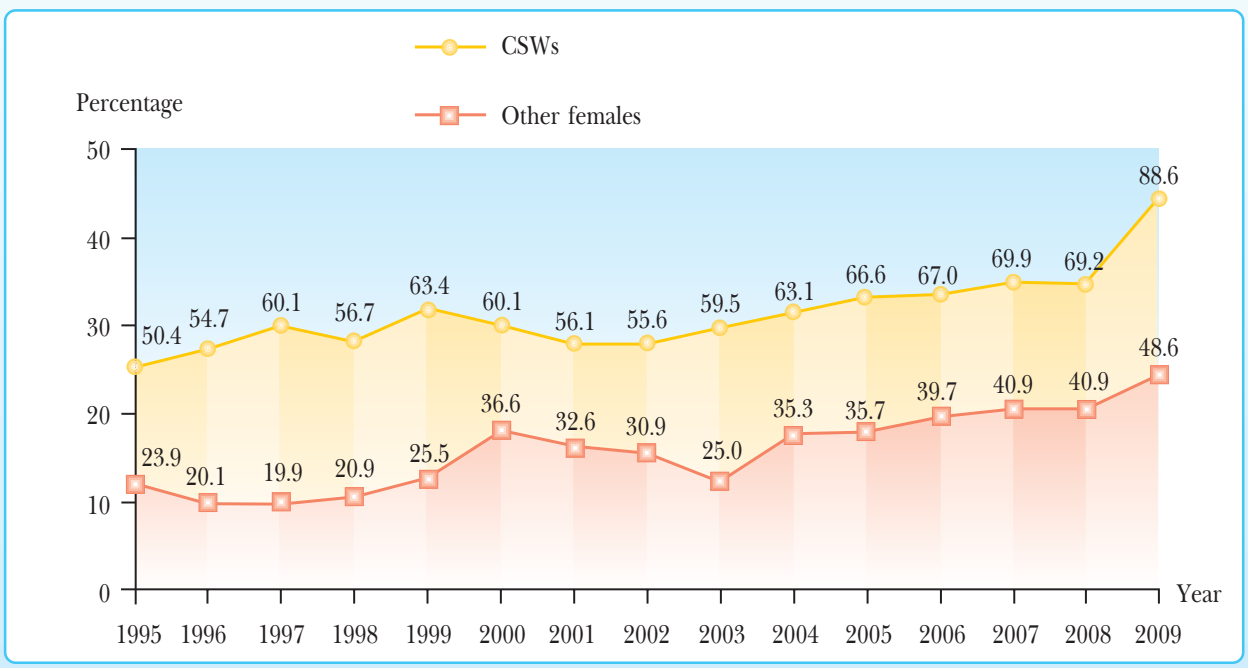
Figure 4.56 Proportion of male industrial workers' sex partners in the past year according to survey on HIV/AIDS risk behaviours in Thailand, 1st–15th rounds, 1995–2009



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

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st–15th rounds of survey (1995–2009).

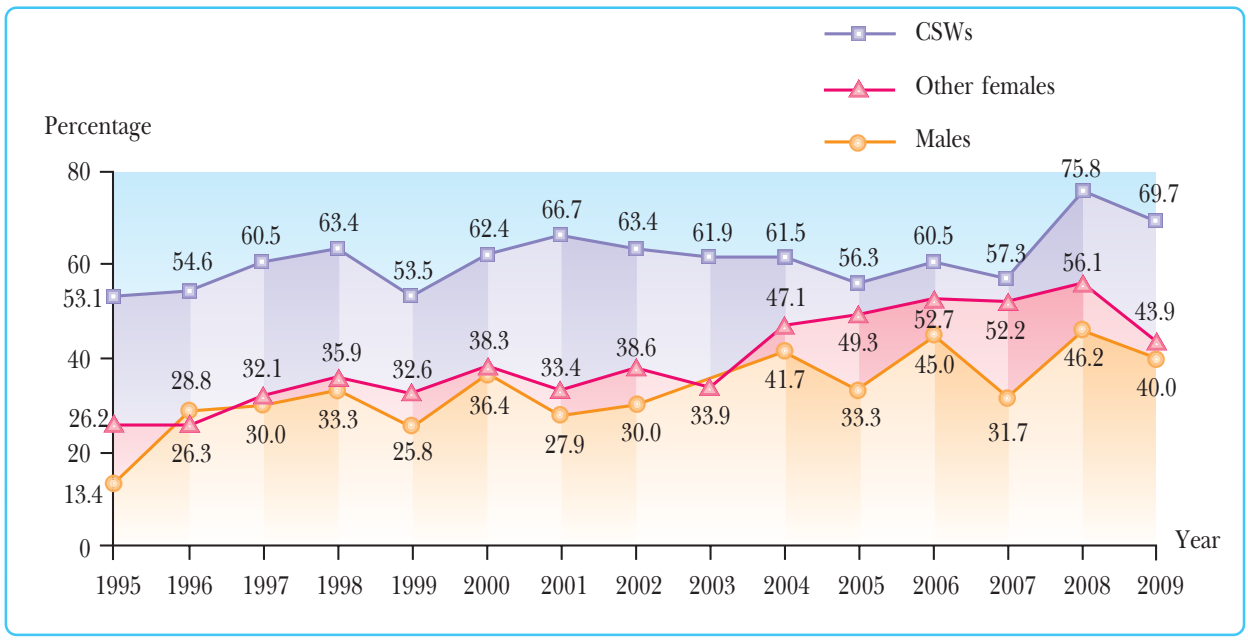
Figure 4.57 Rate of constant condom use during sexual encounters in the past year of military recruits according to survey on HIV/AIDS risk behaviours in Thailand, 1st–15th rounds, 1995–2009



Source: Bureau of Epidemiology, Department of Disease Control.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st–15th rounds of survey (1995-2009).

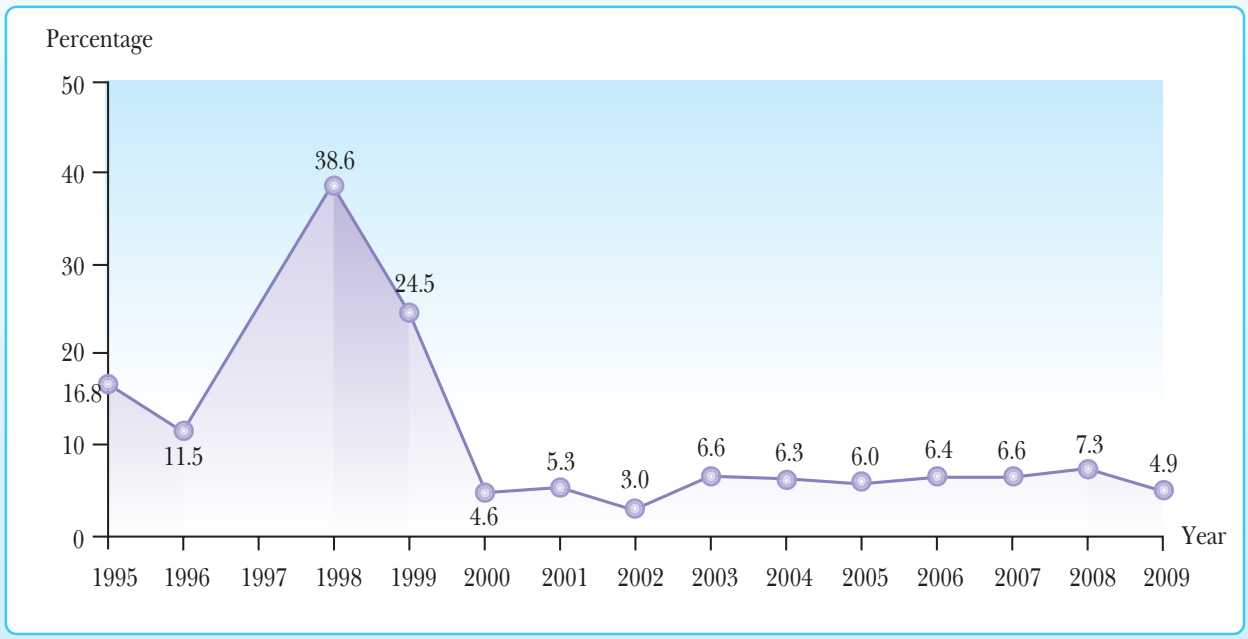
Figure 4.58 Rate of constant condom use during sexual encounters in the past year of male industrial workers according to survey on HIV/AIDS risk behaviours in Thailand, 1st–15th rounds, 1995–2009



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

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st–15th rounds of survey (1995–2009).

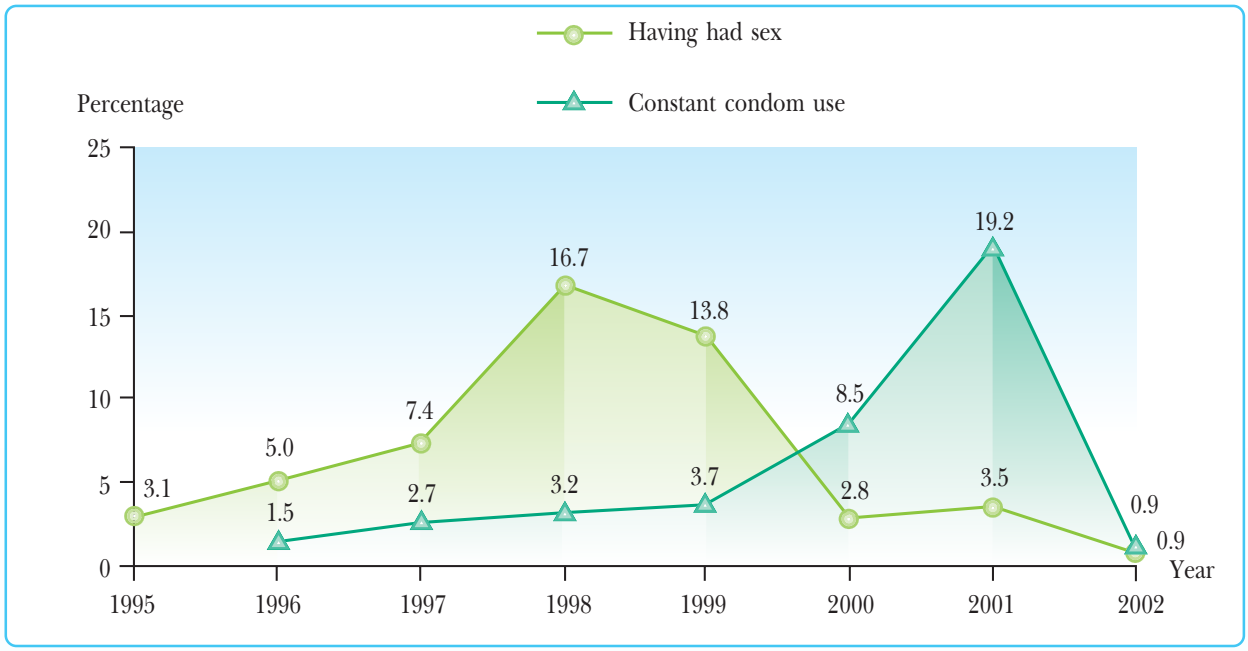
Figure 4.59 Proportion of female industrial workers having sexual encounters with other males in the past year according to survey on HIV/AIDS risk behaviours in Thailand, 1st–15th rounds, 1995–2009



Source: Bureau of Epidemiology, Department of Disease Control.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st–15th rounds of survey (1995–2009).

Figure 4.60 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

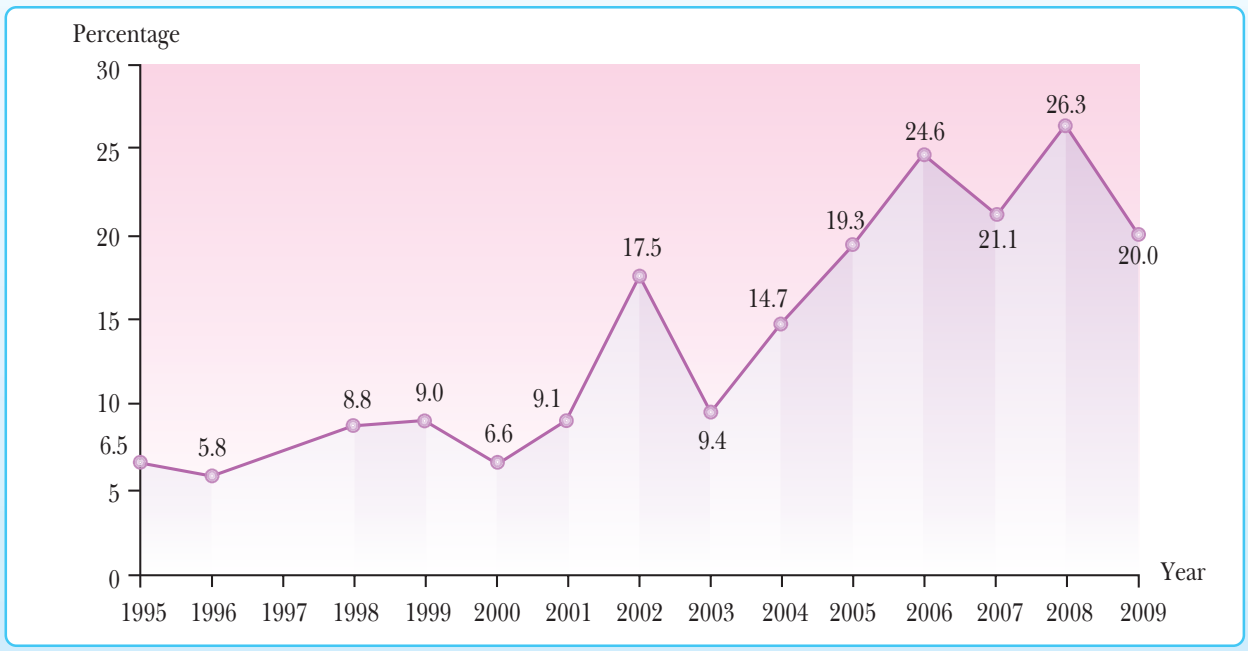


Source: Bureau of Epidemiology, Department of Disease Control, MoPH.

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

2. There has been no survey in ANC clients since 2003.

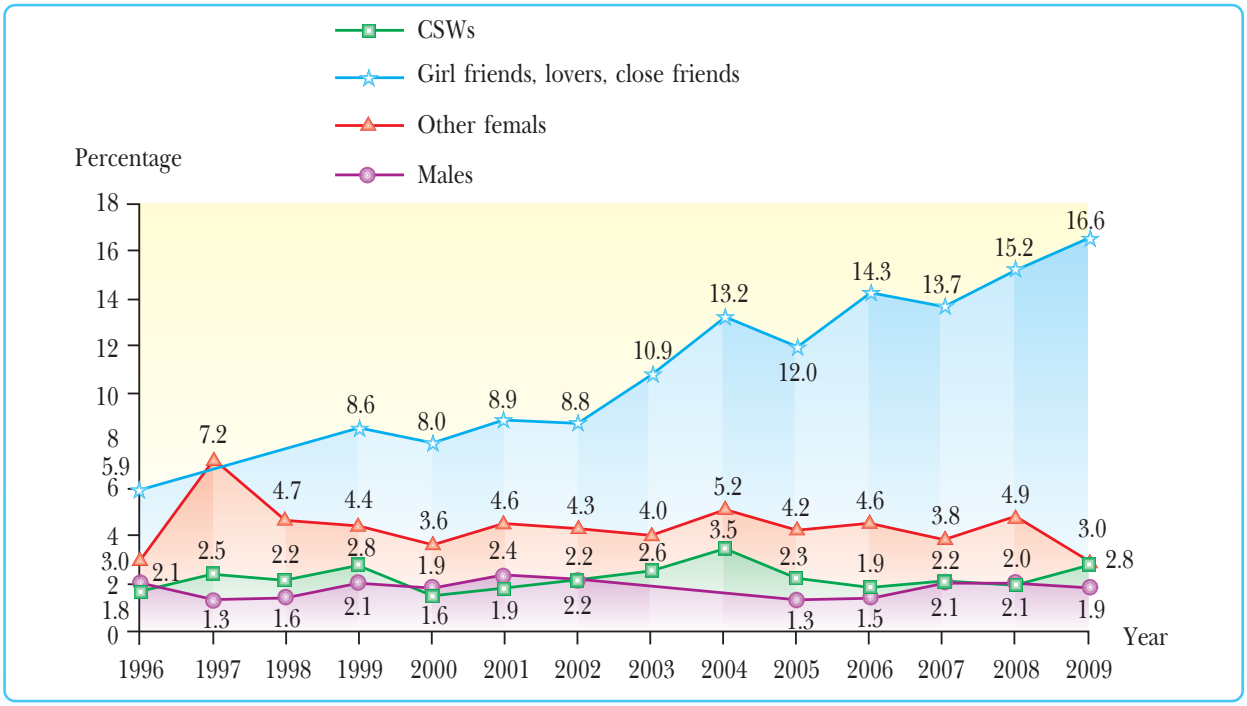
Figure 4.61 Rate of constant condom use during sexual encounters with other males in the past year of female industrial workers according to survey HIV/AIDS risk behavior, 1st–15th rounds, 1995–2009



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

Note: The Bureau of Epidemiology deployed the new data analysis method for the 1st–15th rounds of survey (1995–2009).

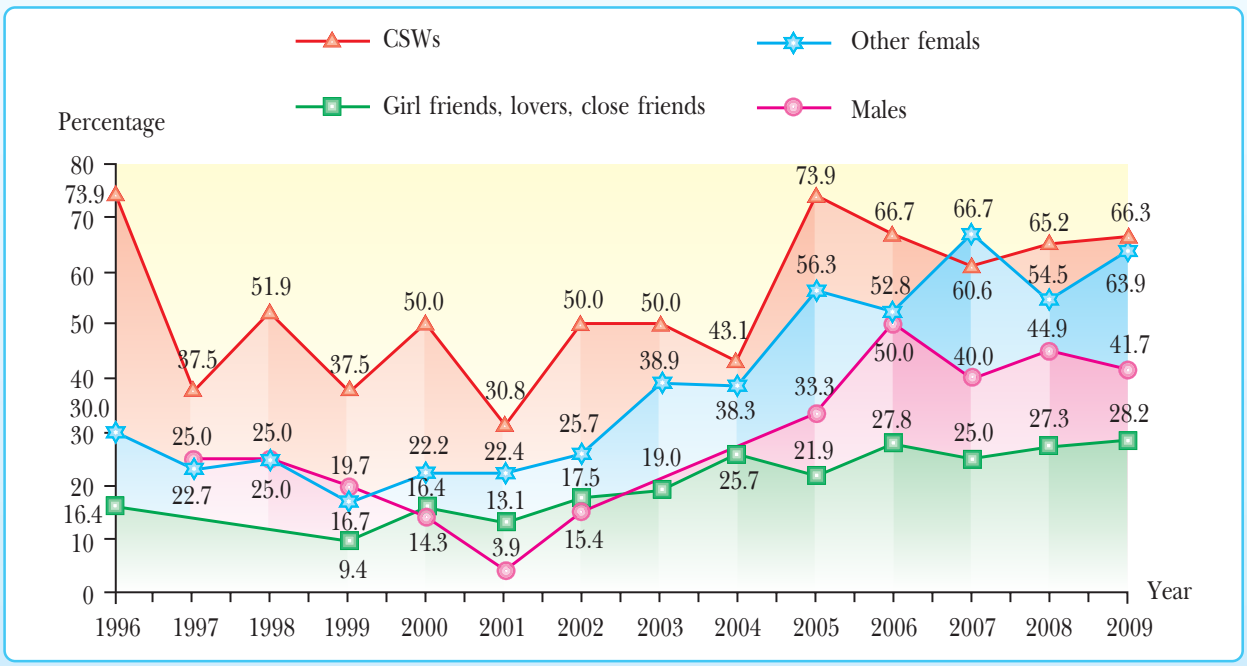
Figure 4.62 Proportion of male secondary school students (Mathayomsueksa 5 or grade 11) having sex in the past year according to surveys on HIV/AIDS risk behaviours in Thailand, 2nd–15th rounds, 1996–2009



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

Note: The Bureau of Epidemiology deployed the new data analysis method for the 2nd–15th rounds of survey (1996-2009).

Figure 4.63 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–15th rounds, 1996–2009



Source: Bureau of Epidemiology, Department of Disease Control.

Note: The Bureau of Epidemiology deployed the new data analysis method for the 2nd–15th rounds of survey (1996–2009).

Table 4.71 Percentage of youths having had sexual experience, 2006–2007

Sex experience	Aged 12–24 yrs (2007)	Aged 15–24 yrs (2006)
Having ever had sex	30.9	45.0
Having never had sex	69.1	55.0

Source: ABAC Social Innovation Research Centre, Assumption University.

Table 4.72 Percentage of youths' first sex partners, 2006–2007.

First sex partners	Aged 12–24 yrs (2007)	Aged 15–24 yrs (2006)
Lovers	83.1	85.0
Friends at the same or different institutions	11.3	11.0
Friends met via the Internet	-	0.8
Sex workers	1.5	0.6
Others	4.1	2.6

Source: ABAC Social Innovation Research Centre, Assumption University.

Table 4.73 Percentage of situations leading to youths' first sex, 2006–2007

Situation	Aged 12–24 yrs (2007)	Aged 15–24 yrs (2006)
Feeling of love/like	68.8	66.9
Intimacy with the opposite sex	33.3	34.2
Desire to experiment	28.5	28.8
Alcohol drinking	10.9	9.9
Watching obscene media	6.1	7.1
Friend's persuasion	3.8	4.9
Others (being forced/deceived, drug taking)	5.3	6.8

Source: ABAC Social Innovation Research Centre, Assumption University.

8.8 Self-Healthcare and Healthcare Seeking Behaviour

People's healthcare seeking behaviours have been changing. Overall, the proportion of people seeking care at state 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 healthcare seeking at private clinics and hospitals slightly fell from 22.7% in 1970 to 18.7% in 1996. Nonetheless, after the universal coverage of health-care 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 53.9% in 2009, while the self-medication rate has dropped from 37.9% to 23.4% for the same period (Table 4.74).

Table 4.74 Pattern of healthcare seeking behaviours among Thai people when ill (percent)

Care or health facility attended when ill	1970 IPSR	1979 IPSR	1985 IPSR	1991 HWS	1996 PHS	1996 HWS	2001 HWS	2003 HWS	2004 HWS	2006 HWS	2007 HWS	2009 HWS
Both rural and urban areas												
Nothing	2.7	4.2		15.9	0.5	6.9	5.4	5.9	5.3	5.1	4.4	7.7
Traditional care or others	7.7	6.3	2.4	5.7	4.2	2.8	2.5	2.9	4.4	3.3	1.2	0.7
Self-medication	51.4	42.3	28.6	38.3	17.1	37.9	24.2	21.5	20.9	25.0	25.4	23.4
Health centres/primary care units	4.4	16.8	14.7	14.8	34.5	20.8	17.4	23.9	24.6	16.2	15.4	18.9
Public hospitals	11.1	10.0	32.5	12.9	19.4	12.9	34.8	33.1	30.2	30.0	26.4	35.0
Private clinics/hospitals	22.7	20.4	21.8	12.4	24.2	18.7	15.0	19.4	22.7	26.4	25.3	14.3
Rural areas												
Nothing				15.6	0.4	6.7	5.8	6.0	5.0	4.6	4.1	7.8
Traditional care or others				5.8	6.2	2.5	2.6	3.0	4.4	3.5	1.4	0.6
Self-medication				38.6	11.6	38.4	22.1	19.9	18.7	23.8	23.0	22.0
Health centres/primary care units				17.0	49.6	24.6	22.3	29.5	30.8	20.0	19.6	22.7
Public hospitals				12.8	20.0	13.8	35.2	34.4	31.0	31.3	26.5	34.3
Private clinics/hospitals				10.2	12.3	14.0	11.4	15.4	19.5	23.4	23.4	12.5
Urban areas												
Nothing				17.9	0.7	7.5	4.4	5.4	6.1	6.4	5.1	7.3
Traditional care or others				4.7	1.3	4.3	2.1	2.6	4.7	2.5	0.8	0.9
Self-medication				36.9	25.2	36.0	29.4	25.6	27.0	28.4	31.4	27.4
Health centres/primary care units				2.7	12.8	3.5	5.5	9.6	7.1	5.7	4.8	9.1
Public hospitals				13.1	18.5	8.9	33.9	30.2	28.3	26.5	25.9	36.8
Private clinics/hospitals				24.7	41.6	39.8	24.0	29.8	32.0	34.4	30.2	18.9

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, 2006, 2007, and 2009.
3. PHS: Provincial Health Survey, BHPP 1996.

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