

Chapter 2.

## Health Indicators



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## Chapter 2. Health Indicators

Along with increase in national incomes, improvement in living environment and nutrition, advancement in health and medical sciences, and enhancement of medical care standards, the life expectancy at birth has been prolonged. Progresses in health and medical care in Taiwan before and after the implementation of the National Health Insurance are presented as follows in terms of population indicators, vital indicators, and national health expenditures. These are then compared internationally to illustrate changes in the trends.

### Section 1. Population Indicators

At the end of 2005, the total registered population in Taiwan was 22.77 million; of them, 11.56 million were males and 11.21 million were females. The sex ratio (male population to female population/100) was 103; and the annual growth rate was 3.58 per 1,000.

At the end of 2005, the population density in Taiwan was 629 persons per square kilometer of land area. By county and city, Kaohsiung City had the highest density of 9,835 persons; Taipei City the next, at 9,626 persons. Population density on the east coast was low, 75 persons

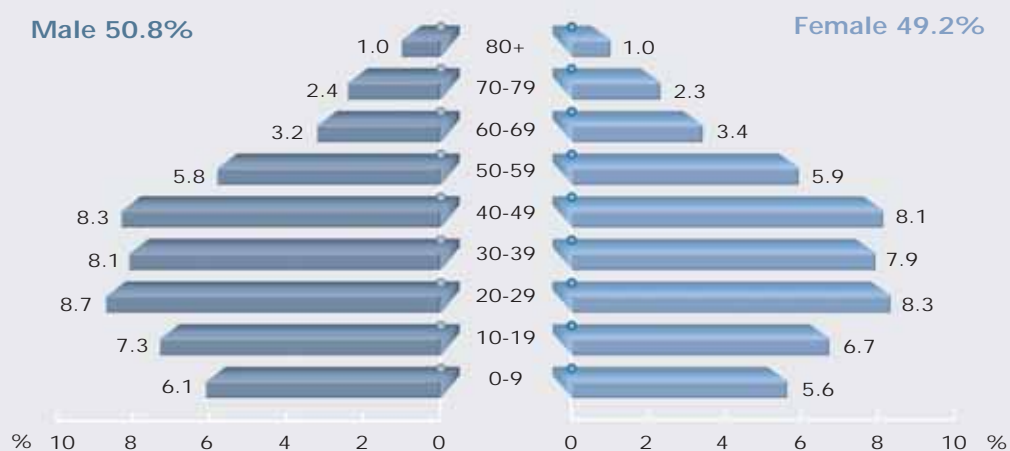
for Taitung County and 68 for Hualien County.

The population reached 20 million at the end of 1989, and reached 22.77 million at the end of 2005. The population growth rate has, however, declined year by year. On the impact of the declining birth rate, the age structure of the population at the end of 2005 presented a static pyramid pattern of low birth rate and low death rate (see Figure 2-1).

By the age structure of population, the aged population to the total population reached 7% in 1993, making Taiwan an aged society. The proportion of the 0-14 age group population had declined from 23.8% in 1995 to 18.7% in 2005, a decline of 5.1 percentage points. In the same period, the 65 and above elderly population had increased from 7.6% to 9.7%; the aging of population is increasingly significant (see Figure 2-2 and Table 2-1).

The dependency ratio (0-14 population + 65 and above population/15-64 population x 100) had declined from 45.8% in 1995 to 39.7% in 2005, primarily due to the rapid decline of the young dependency ratio (0-14 population/15-64 population x 100) and the steady increase of the elderly dependency ratio (65 and above population/15-64 population x 100).

Figure 2-1 Age Structure of Population, 2005



## 2. Births and Deaths

Along with changes of the society and value concepts, fertility rate in Taiwan has declined year by year. The crude birth rate (number of births/mid-year population x 1,000) had declined from 15.5 per 1,000 in 1995 to 9.1 in 2005; a historically low level again after the lower than 10.0 per 1,000 rate first appeared in 2004. The crude death rate (number of deaths/mid-year population x 1,000) had increased slightly from 5.6 per 1,000 in 1995 to 6.1 in 2005, resulting in the decline of the natural increase rate of population (crude birth rate less crude death rate) to 2.92 per 1,000, a historically low again(see Figure 2-3).

## 3. Life Expectancy

The overall changes in life expectancy in the last ten

years (1995 to 2005) had been that the life expectancy at birth for both sexes had increased by 2.0 years from 74.5 to 76.5 years. For males, it had increased by 1.9 years from 71.9 to 73.7 years; and for females, by 2.1 years from 77.7 to 79.8 years. The life expectancy at birth of the females is higher than that of the males, as shown in Figure 2-4.

## Section 2. Vital Indicators

### 1. Ten Leading Causes of Death

Along with changes in the socio-economic structures, elevation in living standards and improvement in health and medical care, the major causes of death have shifted from primarily acute communicable diseases in 1952 to chronic diseases such as malignant neoplasms and cardiovascular diseases, and accidents and injuries.

Figure 2-2 Age Structure of Population by Year

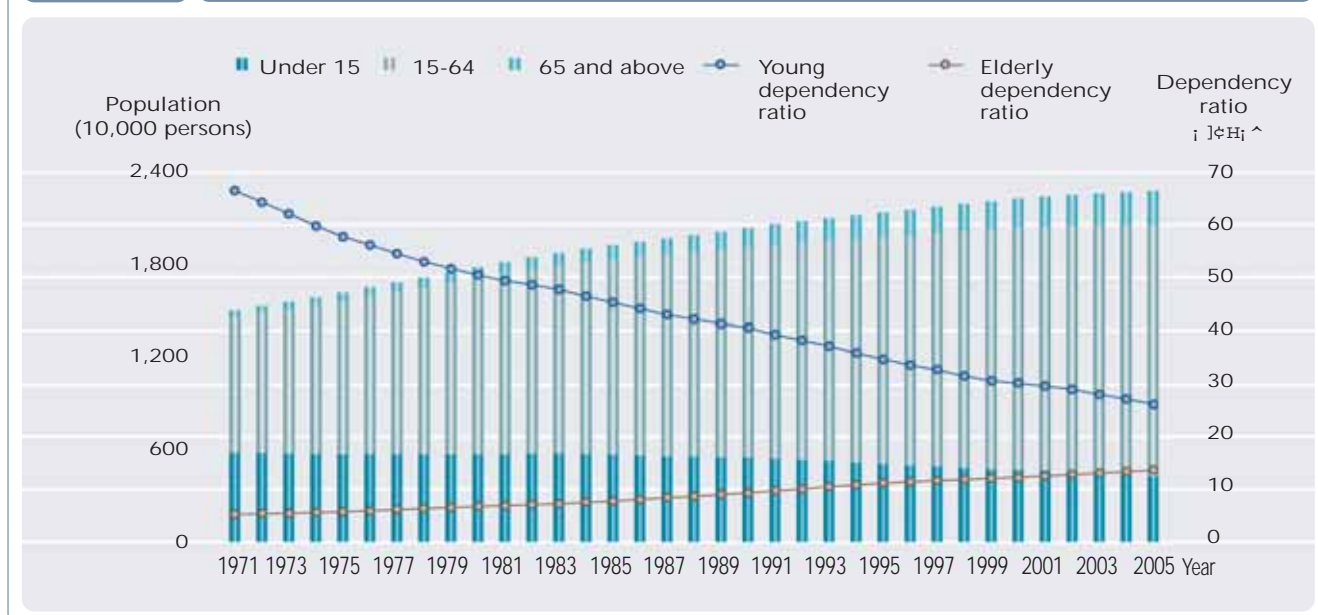


Table 2-1 Age Structure of Population by Year

	Total Population (1,000)	Age Structure			Dependency Ratio	
		Under 15 (%)	15-64 (%)	65 and above (%)	Young (%)	Elderly (%)
		(%)	(%)	(%)	(%)	(%)
End 1975	16,150	35.32	61.18	3.49	57.74	5.71
End 1985	19,258	29.58	65.37	5.05	45.25	7.73
End 1995	21,357	23.77	68.60	7.64	34.65	11.13
End 2005	22,770	18.70	71.56	9.74	26.14	13.60

Figure 2-3

Crude Birth Rate, Crude Death Rate and Natural Increase Rate of Population by Year



Figure 2-4

Life Expectancy at Birth



The number of deaths in 2005 was 138,957 persons, at a death rate of 611.3 persons per 100,000 population, an increase of 27.4% over 1981. The ten leading causes of death in 2005 were: 1) malignant neoplasms, 2) cerebrovascular disease, 3) heart disease, 4) diabetes, 5) accidents and adverse effects, 6) pneumonia, 7) chronic liver disease and cirrhosis, 8) nephritis, nephritic syndrome and nephrosis, 9) suicide, and 10) hypertensive disease. As compared to those of 1981, tuberculosis was no longer on the list; malignant

neoplasms had been the first leading cause since 1982, and the mortality rate had been increasing, the largest increase in all causes of death; and accidents and injuries, for effective prevention and control, showed the largest decline of all causes (see Figure 2-5).

## 2. Ten Leading Causes of Cancer Death

The total number of deaths due to cancer in 2005 was 37,222 persons, at a death rate of 163.8 persons per

100,000 population, an increase of 113.8% over 1981. The ten leading causes of cancer death in 2005 were: 1) trachea, bronchus and lung cancer, 2) liver and intrahepatic bile cancer, 3) colon and rectum cancer, 4) female breast cancer, 5) stomach cancer, 6) oral cavity cancer (including oropharynx and hypopharynx), 7) prostate cancer, 8) cervix uteri cancer, 9) oesophagus cancer, and 10) pancreas cancer. As compared to those of 1981, nasopharynx cancer and leukemia were no longer on the list, whereas female breast cancer, oral cavity cancer and prostate cancer had become major

causes of cancer death. For effective screening, cervix uteri cancer had, the only one of all, declined (see Figure 2-6).

### 3. Neonatal, Infant and Maternal Mortality Rates

With the advancement in public health, the infant mortality rate (deaths of infants under one year of age/number of live births x 1,000) and neonatal mortality rate (deaths of infants under four weeks of age/number of live births x 1,000) had in general, except a slight

Figure 2-5 Changes in Ten Leading Causes of Death

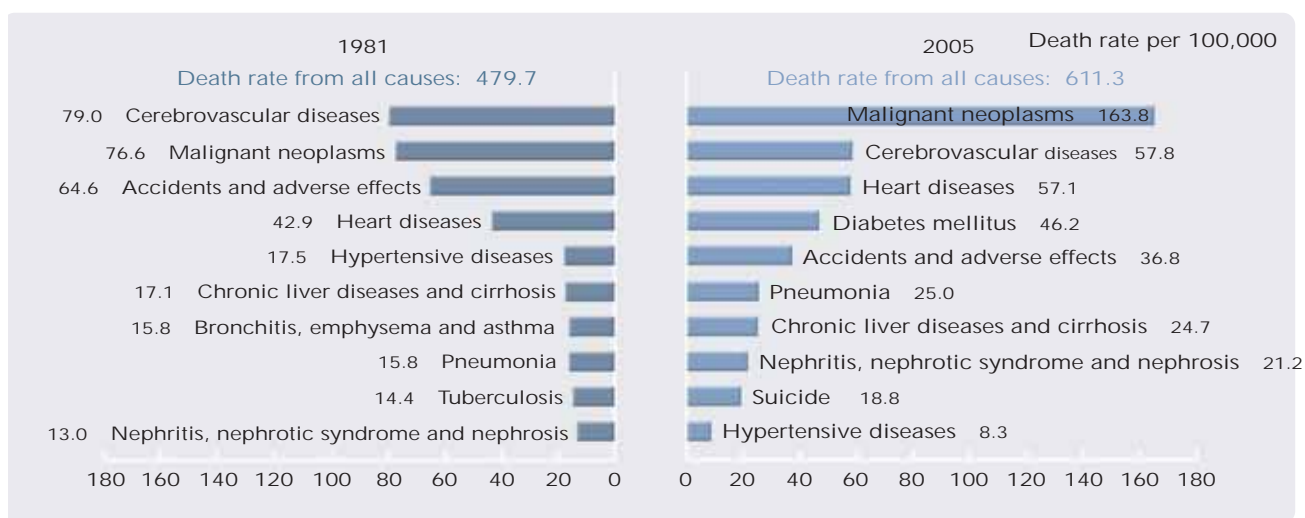
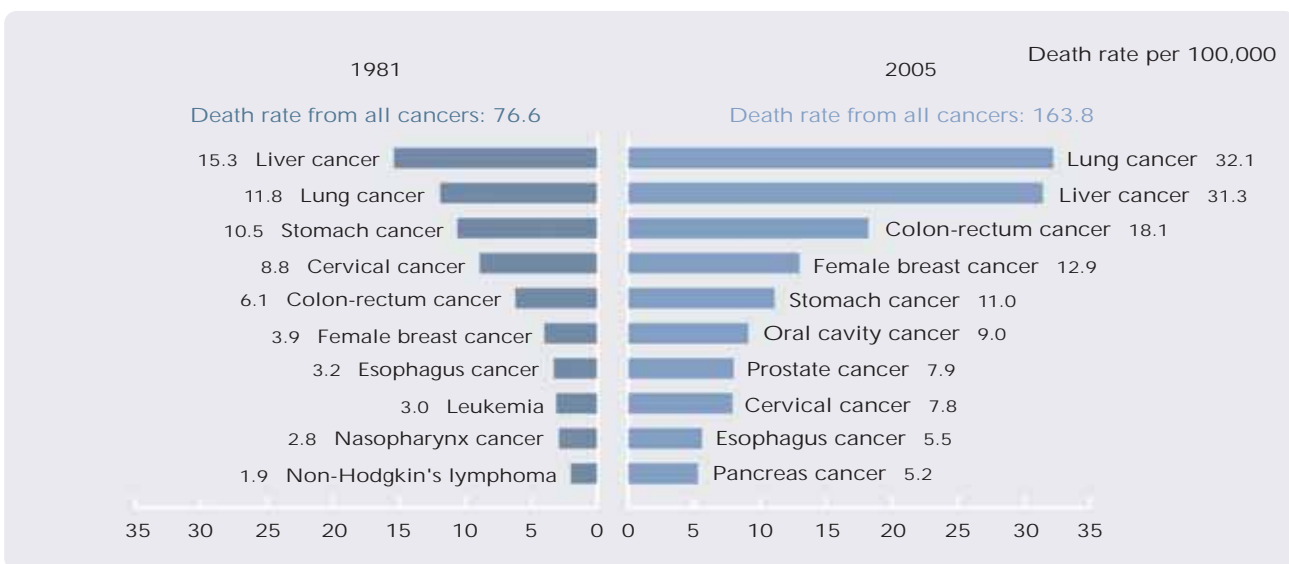
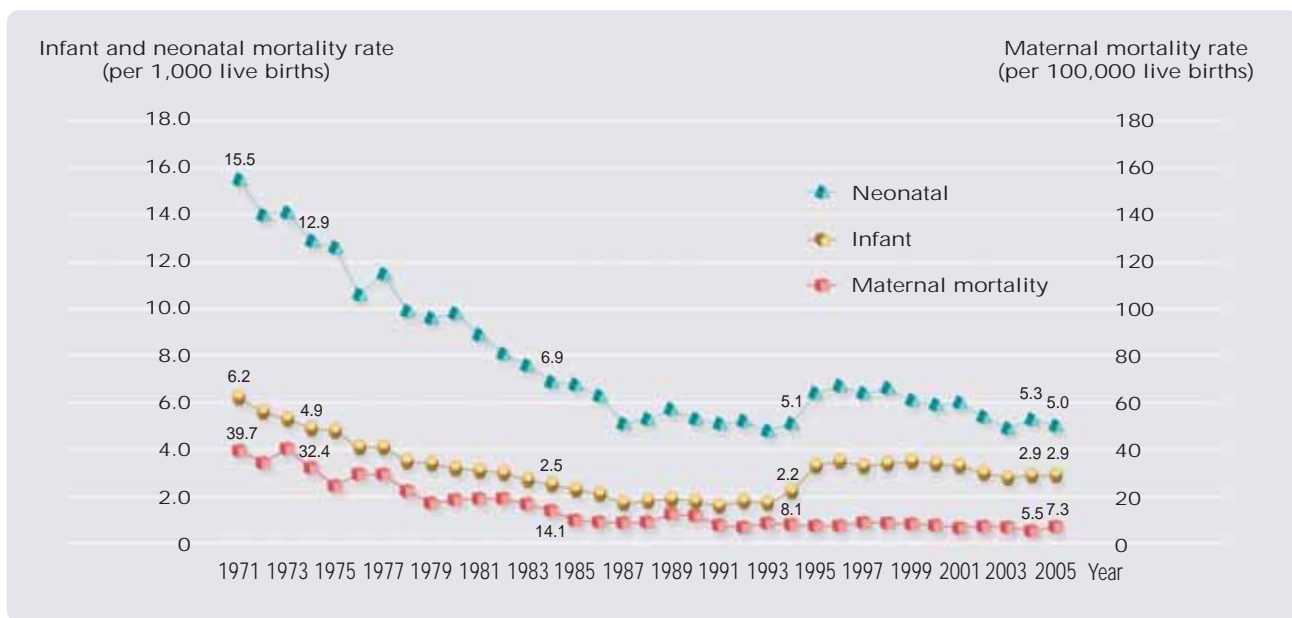


Figure 2-6 Changes in Ten Leading Causes of Cancer Death



**Figure 2-7 Neonatal, Infant and Maternal Mortality Rates by Year**



increase in 1995 due to the new practice of birth reporting, declined. By 2005, the neonatal mortality had declined to 2.9 per 1,000, which was about 47% of that of 1971. In the same period, infant mortality rate had dropped from 15.5 to only 5.0 per 1,000. Maternal mortality rate had also declined from 39.7 per 100,000 live births in 1971 to 7.3 in 2005 (see Figure 2-7).

from 5.1% in 1994 to 5.5% in 1995 and to 6.2% in 2004, indicating that the accessibility to medical care has been significantly improved since the inception of the National Health Insurance. In the last ten years, per capita health expenditures have increased year by year, from NT\$ 10,828 in 1991 to NT\$ 29,351 in 2004, an increase of 171.1% (see Figure 2-8).

### Section 3. National Health Expenditures

Access to adequate medical care is one of the basic needs of the people of modern society; it is also an indicator of the level of development of a nation. In the year the National Health Insurance program began in March 1995 in Taiwan, the annual increase of the national health expenditures had reached 18.0%, and the increase was even higher than that of the GDP of that year. Ever since, the proportion of the national health expenditures to GDP has increased significantly. The total national health expenditures for the year 2005 were NT\$ 664.7 billion.

The per capita health expenditures have shown steady increase since 1991. After the implementation of the National Health Insurance in 1995, the national health expenditures as percent of GDP had increased

### Section 4. International Comparison

#### 1. Natural Increase Rate of Population

The world population in 2005, by the 2005 World Population Data Sheet, was 6.477 billion; and estimates are that, by the year 2050, it would reach 9.262 billion, at an increase rate of 43%. The world population in general though is increasing, in some countries there has been negative growth, and their population continues to decrease by size (see Table 2-2).

The birth rate for the world as a whole in 2005 was 21 per 1,000, and the death rate was 9 per 1,000. Germany has a birth rate lower than the death rate. Looking at the year as a whole, all developed countries in the world have developed a low birth low death rate population structure.

Figure 2-8 NHE/GDP Ratios and Average Per Capita NHE by Year

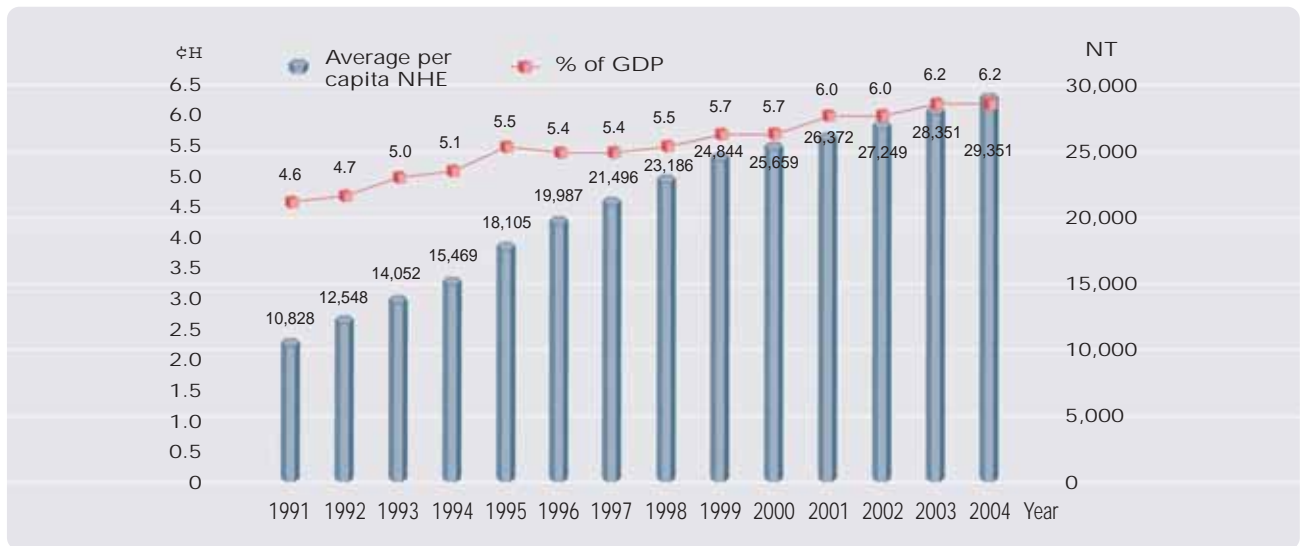


Table 2-2 Population of Selected Countries

	Mid-year Population (million persons)	Population Projection (million persons)		Difference: 2005-2050 %	Crude Birth Rate ‰	Crude Death Rate ‰	Natural Increase Rate %
	2005	2025	2050				
World	6477.0	7952.0	9262.0	43	21	9	1.2
Taiwan	22.7	23.6	19.8	-13	9	6	0.4
Singapore	4.3	5.1	5.2	21	10	4	0.6
Japan	127.7	121.1	100.6	-21	9	8	0.1
South Korea	48.3	49.8	42.3	-12	10	5	0.5
Canada	32.2	36.0	36.9	14	10	7	0.3
USA	296.5	349.4	419.9	42	14	8	0.6
UK	60.1	64.7	67.0	12	12	10	0.2
France	60.7	63.4	64.0	5	13	8	0.4
Germany	82.5	82.0	75.1	-9	9	10	-0.1

Source: 2005 World Population Data Sheet, Population Reference Bureau

## 2. Life Expectancy

In 2003, the life expectancy at birth for males in most major countries in the world was more than 73 years. Japan, at 78.4 years, was the highest; Australia came next at 77.8 years, and Taiwan had 73.4 years, about the level of Japan in 1980. Differences in life expectancy in the period 1960-2000 are that, Japanese males ranked the first to have an increase of 12.4 years in 40 years;

and Taiwan had an increase of 10.4 years in the same period. The life expectancy for females was around 80 years; Japan, at 85.3 years, was the highest; Australia came next at 82.8 years; and Taiwan had 79.3 years, about the level of Japan in 1985. Differences in the period 1960-2000 are that, Japanese females ranked the first to have an increase of 14.4 years in 40 years; and Taiwan had an increase of 12.0 years in the same period (see Table 2-3).

### 3. Leading Causes of Death

When death rates of selected developed countries are adjusted against the standardized world population of the year 1976 and compared with that of Taiwan, it is noted that in many countries, malignant neoplasms comes as the first cause of death. Death rates of heart diseases are higher in the European countries and the USA; Japan shows a high death rate of suicide and Korea comes next. Korea and Taiwan have higher death rates of diabetes, accidents and adverse effects, and chronic liver diseases and cirrhosis (see Table 2-4).

### 4. National Health Expenditures

Taiwan though is not a member of the OECD, when the national health expenditures of Taiwan in 2003 are compared with those of 30 OECD member states, the national health expenditures as percent of the GDP of Taiwan was relatively low at 6.2%, ranking the 26<sup>th</sup>. This is higher than that of Korea, but is lower than that of the US, Switzerland, Germany, France, Canada, Australia, Japan and the UK. The per capita GDP and per capita health expenditures of Taiwan at US\$ 13,327 and US\$ 824 respectively rank the 24<sup>th</sup> among these countries. (see Table 2-5)

**Table 2-3 Life Expectancy at Birth, Selected Countries**

Unit: years

	1960	1970	1980	1990	2000	2003
Male						
Taiwan	62.3	66.7	69.6	71.3	72.7	73.4
UK	67.9	68.7	70.2	72.9	75.5	75.7
USA	66.6	67.1	70.0	71.8	74.1	74.4
France	67.0	68.4	70.2	72.8	75.3	75.8
Germany	66.9	67.2	69.6	72.0	75.0	75.5
Canada	68.4	67.4	71.7	74.4	76.7	iK
Norway	71.3	71.0	72.3	73.4	76.0	77.0
The Netherlands	71.5	70.8	72.5	73.8	75.5	76.2
Australia	67.9	67.4	71.0	73.9	76.6	77.8
New Zealand	68.7	68.3	70.0	72.4	76.3	iK
Japan	65.3	69.3	73.4	75.9	77.7	77.6
Female						
Taiwan	66.4	71.6	74.6	76.8	78.4	79.3
UK	73.7	75.0	76.2	78.5	80.2	80.7
USA	73.1	74.7	77.4	78.8	79.5	80.1
France	73.6	75.9	78.4	80.9	82.7	82.9
Germany	72.4	73.6	76.1	78.4	81.0	81.4
Canada	74.2	76.4	78.9	80.8	81.9	iK
Norway	75.8	77.3	79.2	79.8	81.4	81.9
The Netherlands	75.4	76.5	79.2	80.9	80.5	80.9
Australia	73.9	74.2	78.1	80.1	82.0	82.8
New Zealand	73.9	74.6	76.3	78.3	81.1	iK
Japan	70.2	74.7	78.8	81.9	84.6	84.4

Notes: 1. The average life expectancy at birth for Taiwan in 2004 is 73.5 years for males and 79.7 years for females.

2. Source: 2005 OECD Health Data



Table 2-4 Standardized Mortality Rates of Leading Causes, International Comparison

—Calculated on the 2000 WHO world standard population — Unit: per 100,000

1975 ICD Code	Cause of Death	Taiwan (2002)		Japan (2002)	USA (2000)	Germany (2001)	UK (2002)	Singapore (2001)	South Korea (2002 f→)
		Mortality Rate	Standardized Mortality Rate						
	All causes	565.1	539.8	375.8	576.3	520.0	534.0	467.8	556.6
08-14	Malignant neoplasms	152.9	144.2	119.3	139.2	137.1	146.8	130.7	136.6
29	Cerebrovascular diseases	53.5	50.5	45.4	35.6	43.7	51.9	45.5	85.3
250,251,27,28 <sup>1,2</sup>	Heart diseases	50.9	48.5	55.4	152.1	151.8	122.9	114.5 <sup>#</sup>	41.1
181	Diabetes mellitus	39.3	37.1	4.8	16.7	12.6	6.1	16.0	27.1
E47-E53	Accidents and adverse effects	37.8	36.3	19.5	31.3	17.9	14.9	10.3	37.7
321	Pneumonia	20.2	19.4	28.3	13.2	9.8	26.7	50.5	6.5
347	Chronic liver diseases and cirrhosis	21.3	19.9	6.2	8.5	13.8	9.4	3.1	20.3
350	Nephritis, nephrotic syndrome and nephrosis	18.6	17.7	6.6	8.4	4.7	3.4	8.1	6.2
E54	Suicide	13.6	12.5	18.0	9.5	10.5	6.3	8.9	17.1
26	Hypertensive diseases	8.7	8.2	1.8	10.1	11.4	3.2	11.9	12.3

Source: Calculated from Table 1. Mortality Database, of the WHO website (www.who.int)

Notes: 1. For Japan, USA, Germany, UK and South Korea, the ICD-10 is used.

2. \* indicates that the disease is only part of the disease under the code; 28\* includes ICD Detailed Codes 420-429

3. The ICD-9 Basic Code used for heart diseases (#) includes 250, 251, 270 and 28 (used by Singapore)

Table 2-5 National Health Expenditures, Selected OECD Countries and Taiwan, 2003

Rank	Country	NHE as % of GDP (%)	Per Capita NHE (US\$)	Per capita GDP (US\$)	Rank	Country	NHE as % of GDP (%)	Per Capita NHE (US\$)	Per capita GDP (US\$)
	Medium	8.1	2,139	27,067	16	Italy	8.4	2,139	25,375
1	USA	15.0	5,635	37,658	17	UK	7.7	2,031	30,314
2	Switzerland	11.5	5,041	43,741	18	Austria <sup>2002</sup>	7.6	1,961	25,793
3	Norway	10.3	4,976	48,383	19	Australia <sup>2002</sup>	9.3	1,960	20,978
4	Iceland	10.5	3,827	36,510	20	New Zealand	8.1	1,611	19,982
5	Denmark	9.0	3,534	39,315	21	Greece	9.9	1,549	15,624
6	Germany	11.1	3,204	28,973	22	Spain	7.7	1,535	19,984
7	The Netherlands	9.8	3,088	31,458	23	Portugal	9.6	1,348	14,045
8	France	10.1	2,967	29,275	24	Taiwan	6.2	824	13,327
9	Luxemburg <sup>2002</sup>	6.1	2,950	48,219	25	South Korea	5.6	705	12,651
10	Belgium	9.6	2,796	29,188	26	Czechoslovakia	7.5	668	8,858
11	Canada	9.9	2,670	27,075	27	Hungary <sup>2002</sup>	7.8	496	6,390
12	Sweden <sup>2002</sup>	9.2	2,494	27,067	28	Mexico	6.2	372	6,031
13	Japan <sup>2002</sup>	7.9	2,450	31,181	29	Slovakia	5.9	360	6,073
14	Finland	7.4	2,297	30,855	30	Poland <sup>2002</sup>	6.0	303	5,008
15	Ireland <sup>2002</sup>	7.3	2,255	30,711	31	Turkey <sup>2002</sup>	6.6	194	2,933

Notes: 1. Source: OECD Health Data, 2005

2. Ranks arranged by average per person health expenditures