

# CANCER REGISTRATION IN TAIWAN

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## History of Cancer Registration in Taiwan

The Taiwan Cancer Registry was founded in 1979 by the National Department of Health with an aim to estimate the cancer incidence in Taiwan. It is a population-based cancer registry with the collection of information on cancer patients newly diagnosed in hospitals with 50 or more beds throughout the country. The registry is financially supported by the government agency. Registration fees are paid to the reporting hospitals on the basis of case number reported. Since 1994, the registry has been contracted to and run by the Taiwan Public Health Association. The registry center has an epidemiologist as the director, a postdoctoral research fellow and eight cancer registrars. The registry has an advisory board including 18 members with specialties in pathology, oncology, radiotherapy, cancer registry, and public health. The first volume of *Cancer Registry Annual Report* for the 1980 incidence data was published in 1982.

Taiwan has a main island and several small islets including Penghu, Kinmen, Matzu, and Orchid Islet as shown in Figure 1. It has an area of 36,000 km<sup>2</sup> located at the latitude of 24°N and the longitude of 121°E. At the end of 1999, the total population in Taiwan was 22,092,387 including 11,312,728 males and 10,779,659 females.

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## Incidence Data

### *Secular trend of reported cancer cases*

The number of newly diagnosed cancer cases reported to the Taiwan Cancer Registry from 1979 to 1998 is shown in Figure 2. There has been a steady increase in the number of reported cancer cases. This may be due to the aging of the population, the improvement in cancer diagnosis and reporting, as well as the increase in cancer incidence.

### *The National Estimate, 1993-1997*

The numbers of newly diagnosed cancer cases in Taiwan from 1993 to 1997 were 102,462 for males and 77,909 for females. The age-standardized (1976 world population) incidence rate per 100,000 person-years was 179.3 for males and 151.8 for females. The most common cancers were cancers of the liver (17,222 cases), lung (14,986 cases), and colon & rectum (12,777 cases) for males; and cancers of the breast (13,650 cases), cervix uteri (11,676 cases), and colon & rectum (9,509 cases) for females.

Figure 3 shows age-specific cancer incidence rates for males and females in Taiwan from 1993 to 1997. In general, the age-specific cancer incidence rates showed a bimodal pattern with one peak in the early childhood and another peak for the elderly. Females had higher incidence rates than males at ages from 20 to 49 year old.

Age-standardized incidence rates of ten leading cancers in Taiwan from 1993 to 1997 are shown in Figure 4. Ten leading cancers for males included cancers of the liver, lung, colon

and rectum, stomach, oral cavity, prostate, nasopharynx, urinary bladder, esophagus and skin; while cancers of the breast, cervix uteri, lung, liver, stomach, thyroid gland, skin, ovary, and kidney were ten leading cancers for females.

Age-specific incidence rates of major cancers in Taiwan from 1993 to 1997 for males and females are shown in Figure 5. Most cancers had an increasing incidence with age except for cancers of the oral cavity and nasopharynx of males and

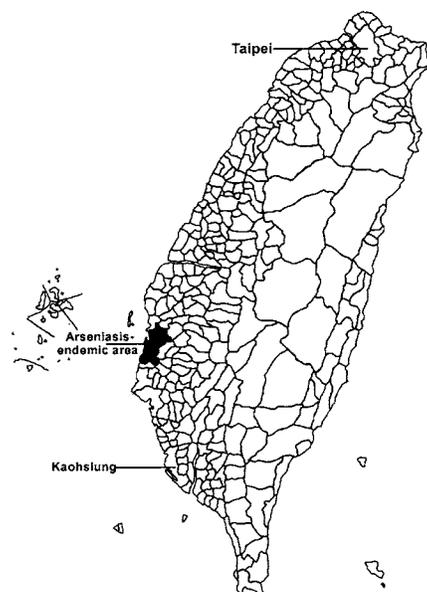


Figure 1. Map of Taiwan

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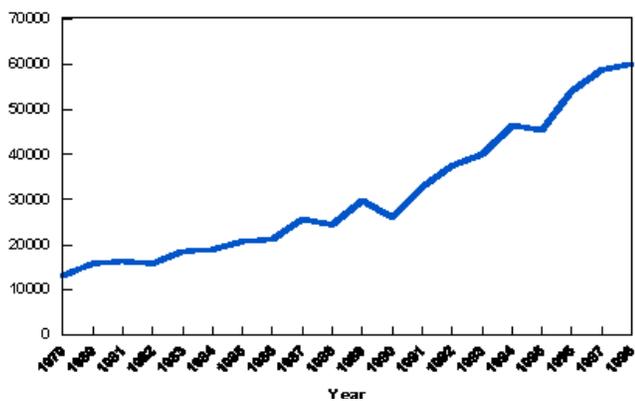


Figure 2. Reported Cancer Cases in Taiwan, 1979-1998

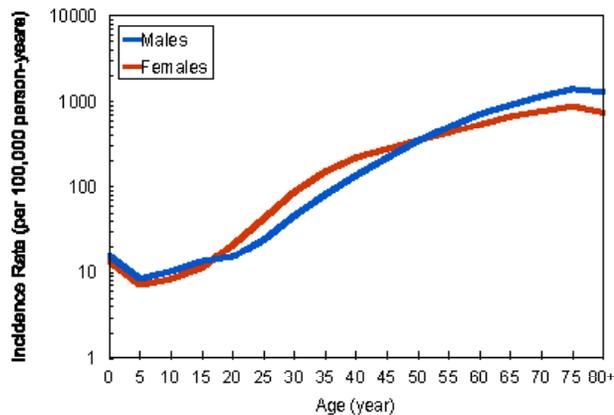


Figure 3. Age-specific Cancer Incidence Rates by Sex in Taiwan, 1993-1997

breast cancer of females. The peak age varied from cancer to cancer. It was 50-54 years for oral cavity cancer and nasopharyngeal cancer, and 70+ years for other cancers of males. The peak age was 45-49 years for breast cancer, and 70+ years for other cancers of females.

*Geographical variation*

*Intra-national comparison*

The comparison of age-standardized incidence rates of major cancer sites in various administrative areas of Taiwan is shown in Figure 6. Highest age-standardized incidence rates of all cancer sites combined were observed in metropolis and cit-

ies for both males and females. The lowest age-standardized incidence rates of all cancer sites combined were observed in villages. The male highest age-standardized incidence rates of liver cancer were found in cities for both males and females. The highest age-standardized incidence rate of lung cancer was observed in towns for males, and in the metropolis for females. Highest age-standardized incidence rate of skin cancer for both males and females were found in metropolis. The highest age-standardized incidence rate of urinary bladder cancer was observed in cities for males, and in towns for females.

**Epidemiology of the Principal Cancers**

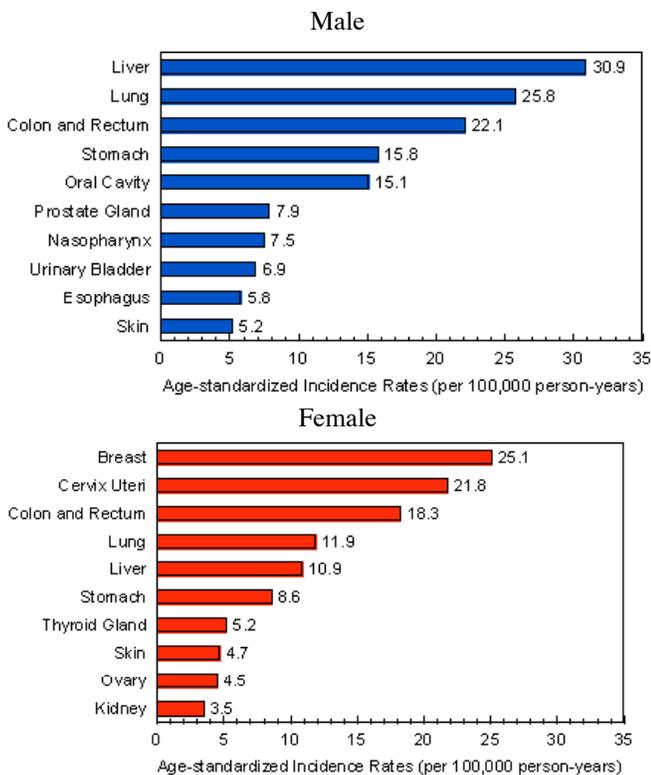


Figure 4. Age-adjusted Incidence Rates of the Ten Leading Cancers for Males and Females in Taiwan, 1993-1997

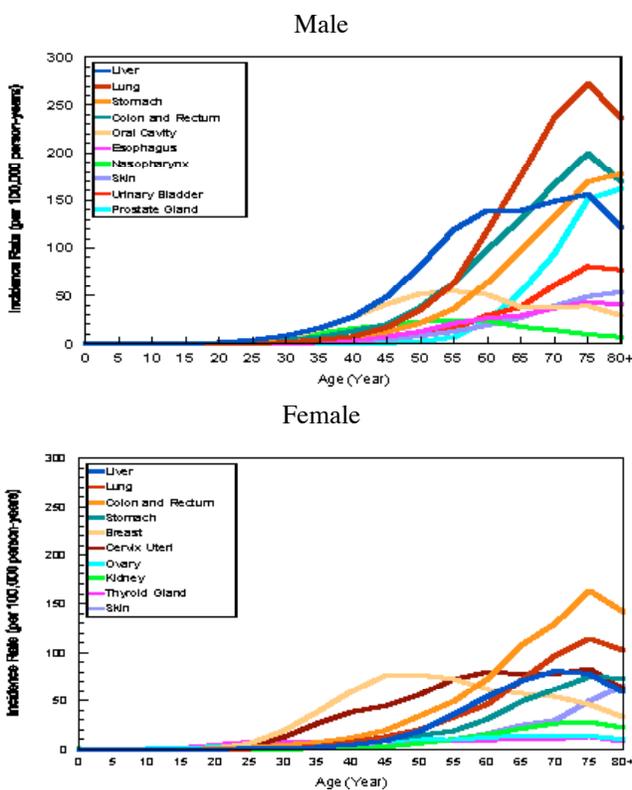


Figure 5. Age-specific Incidence Rates of the Ten Leading Cancers for Males and Females in Taiwan, 1993-1997

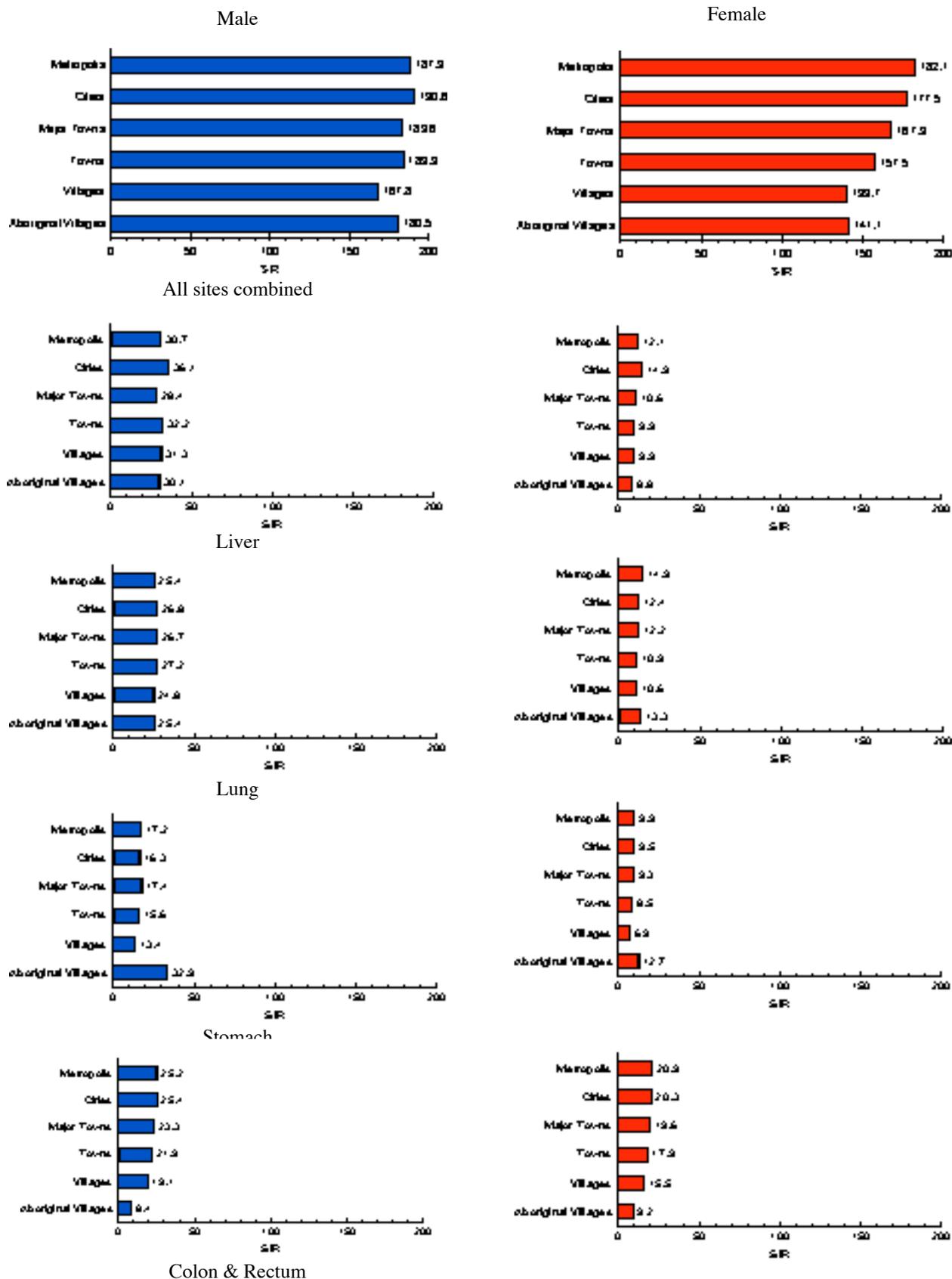


Figure 6. Age-standardized Incidence Rate (SIR) of Major Cancers for Males and Females by Administrative Area in Taiwan, 1993-1997

The four principal cancers in Taiwan (liver and lung for both males and females, and breast and cervix uteri for females) are responsible for 31.4 % of all cancers in males and 47.6% in females.

#### *Liver Cancer*

**Incidence:** The age-adjusted incidence rate (per 100,000 person-years) was 30.9 for males and 10.9 for females from 1993 to 1997. Both hepatitis B and C viruses have been documented as major causes of liver cancer in Taiwan. Nation-wide hepatitis B vaccination program has reduced 75% incidence of childhood liver cancer.

**Survival:** The five-year survival was 12.7% for males and 15.6% for females.

#### *Lung Cancer*

**Incidence:** The age-adjusted incidence rate (per 100,000 person-years) was 25.8 for males and 11.9 for females. The most common histological type was adenocarcinoma for females and squamous cell carcinoma for males. Active cigarette smoking and exposure to cooking fumes have been documented as major cause of lung cancer for males and females, respectively.

**Survival:** The five-year survival was 10.2% for males and 11.6% for females.

#### *Breast Cancer*

**Incidence:** The age-standardized incidence rate was 25.1 per 100,000 person-years. The age-specific incidence rates peaked at ages 45-49 years. The increase in breast cancer incidence rates was most striking among younger birth cohorts.

**Survival:** The five-year survival was 72.5%.

#### *Cervix Cancer*

**Incidence:** The age-standardized incidence rate was 21.8 per 100,000 person-years. Human papilloma virus infection has been documented as the major cause of cervical cancer in Taiwan. The early detection rate of cervical neoplasia by pap smear remained as low as 28.0%.

**Survival:** The five-year survival for invasive cancer was 70.6%.

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