Health Indicators Tasmania 2003

Public and Environmental Health Service,
Department of Health and Human Services, Tasmania.

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Foreword

The Public Health Act 1997 requires that the Director of Public Health submits to the Minister a report on the status of public health in Tasmania at 5 yearly intervals, and that the Minister tables this report in both Houses of Parliament.

In preparation for the first of these parliamentary reports, a major compilation and analysis of epidemiological data has taken place over several years, culminating in the production of Health Indicators Tasmania 2003. This document underpins the State of Public Health Report 2003 which is to be tabled in Parliament.

This is the most comprehensive report of its kind ever produced in Tasmania.

Health Indicators Tasmania 2003 provides detailed information on available measures of health for our population, with a particular focus on those of relevance to disease prevention and health promotion. Health Indicators Tasmania 2003 is intended for interested members of the general public as well as health professionals, government and non-government agencies. It is expected that the report will serve as a resource for evidence-based decision-making across the health sector.

I am particularly appreciative of the work of the many people within the Department of Health and Human Services who have assisted or supported the work in both these documents, and those who carry out the vital – but often invisible – functions of public health on a day-to-day basis. Together we share the hope that the information provided in this report helps to make a difference.

Dr Roscoe Taylor
Director of Public Health
This document should be read in conjunction with the *State of Public Health Report*. The impetus behind these two documents comes from the Tasmanian Legislation, the *Public Health Act 1997*.

This legislation and the inclusion of a requirement for a *State of Public Health Report* was initiated by Dr Mark Jacobs, Director of Public Health from 1992 – 2001.

During the data collection phase, the following people and organizations made valuable contributions:
- The Public and Environmental Health Service for data from the Tasmanian infectious diseases database;
- The Australian Bureau of Statistics for mortality data;
- The Menzies Centre for Population Health Research for cancer incidence data;
- The Hospital & Ambulance Service for the hospital morbidity data and partial data analysis;
- The Health & Well-Being Planning & Information Unit for provision of unit record data of Healthy Communities Survey;
- The many medical coders in public and private hospitals across the state whose careful coding allowed these data to be collected.

The data analysis for this report was performed by Dr Peter Wan, Epidemiologist, using data from various sources.

Many of the staff in the Public and Environmental Health Service, as well as in other areas of the Department of Health and Human Services, contributed analysis, information and comment on their areas of expertise for relevant sections of this document. Contributors to the introductory sections, summaries and editing of the document included Kathy Barnsley, Jenny Ejlak, Helen Townley and Roscoe Taylor.

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Executive Summary

Background

*The first comprehensive health profile, accompanying the first State of Public Health report*

*Health Indicators Tasmania 2003* gives a detailed picture of the health of the Tasmanian population. It is the first time that empirical data have been collected and presented in such a comprehensive fashion in Tasmania.


In recognition of the growing understanding of the web of interrelated factors affecting the health status of the population, *Health Indicators Tasmania 2003* covers a broad range of issues and presents information about underlying determinants of health, risk factors and behaviours that may impact on health, as well as health outcomes themselves in the form of morbidity (rates of disease) and mortality (deaths).

To achieve this, *Health Indicators Tasmania 2003* draws together and analyses health data from a variety of sources, and outlines activities and achievements in the prevention of illness and disease, as well as highlighting priority areas for future action.

The information provided through this linked process of a *Health Indicators Report* and *State of Public Health Report* will provide a useful resource for health planners, researchers, government and non-government agencies, local communities and the general public.

These reports also support both the Department of Health and Human Services (DHHS) Corporate Plan for 2003 - 2006 and the Government’s Tasmania *Together* initiative.

It is hoped that the evidence presented here will be used to inform agencies’ strategic and operational directions so that population health efforts in Tasmania reflect best practice in influencing patterns of health service demand and reducing health disadvantage within the Tasmanian population.
Tasmania at a Glance

**Tasmanians have a high standard of health by world standards....**

This report indicates that in the context of world standards, Tasmanians have a relatively high standard of health. Indeed, in some aspects, such as its high vaccination rates in childhood, Tasmanians have reason to be proud of their achievements.

**...but not compared to the rest of Australia**

However, in comparison to the rest of Australia, particularly related to chronic diseases, Tasmania faces a number of significant health disadvantages. While the gaps are narrowing over time for some key measures such as life expectancy, the situation in many other health indicators is not improving.

**Why isn't Tasmania’s health as good as it could be?**

Smoking, poor nutrition and lack of physical activity are major causes of preventable death and disease in Australia. In Tasmania their impact is particularly significant and contributes to differences in health standards in comparison to the rest of Australia.

**Lung cancer is now the second biggest killer of Tasmanian women...**

For example, one alarming trend is that lung cancer is now the leading cause of cancer death and the second biggest cancer killer of women in Tasmania, after breast cancer. Lung cancer is a disease with a very low survival rate. It is almost entirely preventable.

The very high percentage of younger Tasmanian women in their child-bearing years who smoke has implications for fertility, miscarriages, premature births and other adverse events of pregnancy. Smokers are more likely to have sick babies, who in turn may become disadvantaged throughout life. From a public health perspective, reduction in smoking rates for younger people, particularly women, must be a high priority because of its impact on the health of future generations.
At the time of the 2001 Census, the Tasmanian population was 456,652. This represents 2.4% of Australia’s total population.

Approximately half of Tasmania’s population is located in the south of the State, and one quarter in each of the two northern areas.

Tasmania was the only State in Australia to experience negative population growth to June 2001 and this trend is expected to continue with a projected total population of 319,300 by 2051. Also the State’s population is expected to age rapidly with Tasmania predicted to have the highest proportion nationally of people over the age of 65 by 2016.

According to Census data the number of people in Tasmania identifying as being of indigenous origin has increased slightly to 15,773 in 2001, from 13,873 in 1996. However, the reliability of these data has been a subject of considerable contention.

The median age of Tasmania’s indigenous people is much lower than that of the non-indigenous population, 19 years compared to 37 years. The percentage of indigenous people aged 65 years and over (2.6%) is markedly lower than that of the non-indigenous population (13.2%).

The estimated unemployment rate for Tasmania in June 2003 was 7.9%. Tasmania’s unemployment rate has been traditionally higher than national averages.

In June 2003 the South region had the lowest unemployment rate (6.9%) and the North West the highest (10.5%).

Tasmania has the lowest median weekly individual income of any State or Territory at $314 for those aged 15 years and over.

In 2001 the Greater Hobart Statistical Division had the highest median weekly individual income of $344 and the Southern Statistical Division the lowest at $280.

Males in Tasmania have considerably higher weekly individual incomes than females, and as income levels increase, the proportion of males reporting higher incomes correspondingly increases.
**Education**

- Tasmania has the lowest percentage of people with bachelor or postgraduate degrees, graduate diploma or graduate certificate compared with other States.
- The Southern region has the highest proportion of those with postgraduate degree, graduate diploma or graduate certificate.
- The North West region has the highest proportion of those with advanced diploma, diploma or certificate.
- The highest proportion of those with bachelor degree are females, whilst males have the highest proportion with advanced diploma, diploma or certificate by a significant margin.

**Mortality**

- The age-standardised mortality rate for Tasmanian males in 1995-2000 was 545.6 per 100,000 and the female rate was 341.0 per 100,000, significantly higher than the Australian rates of 505.0 (male) and 308.0 (female).
- The North West region had the highest all-cause mortality rate for males at 566.6 per 100,000.

**Life Expectancy**

- According to calculations made in 1998-2000, Tasmanians have the second shortest life expectancy of all States and Territories, with 75.7 years for males and 81.2 years for females. The national average is 76.6 for males and 82.0 for females.
- Life expectancy increased by 25 years for Tasmanian males and by 29 years for Tasmanian females between the periods 1881-90 to 1998-2000.

**Causes of Death**

- Looking at data up to the years 1999/2000 the most common cause of death in Tasmania was cancer, which accounted for 27.9% of all deaths. The second most common cause of death was ischaemic heart disease (20.2%), followed by cerebrovascular disease (stroke) at 9.3%.
- However, if ischaemic heart disease and stroke deaths are combined as “cardiovascular disease” (because there is a certain degree of commonality in their underlying causes), then cardiovascular deaths are more common than cancer deaths.
- The most common cause of cancer death for males was lung cancer (23.1%) followed by prostate cancer (14.1%).
- The most common cause of cancer death for females was breast cancer (17.4%) followed by lung cancer (13.7%).
• Congenital anomalies and perinatal conditions accounted for the highest number of deaths among those aged less than 14 years of age.

• Road vehicle accidents were the leading cause of death among those aged 15 – 24 years.

• In males aged 25 – 64 years, the leading cause of death was ischaemic heart disease, while for females in the 25-64 year age group, breast cancer was the leading cause.

• Ischaemic heart disease was the biggest killer for both sexes in those aged 65 years and over.

**Incidence of Cancer**

• Tasmania averaged 2,206 new diagnoses of cancer per year between 1993 and 1999.

• For Tasmanian males, the most commonly diagnosed cancer was prostate (27.2%), followed by lung cancer (12.9%) and colon cancer (7.9%).

• For females, the most commonly diagnosed cancer was breast cancer (26.1%), followed by colon cancer (10.7%) and melanoma of skin (9.8%).

• From the age of 60 years onwards, overall rates of cancer were higher for males than females in Tasmania.

**Hospital Admission rates**

• In 2000, there were 131,679 hospital admissions for Tasmanian residents, representing 280 per 1,000 population. Overall hospital admissions were higher for females than for males.

• For both males and females, the highest age-standardised hospital admission rates were recorded in the Southern region of Tasmania and the lowest rates were recorded in the North West region.

• The most common cause of hospitalisation for Tasmanians in 2000 was ‘factors influencing health status and contact with health services’ (organ donation, antenatal screening, orthopaedic aftercare, dialysis, chemotherapy, or follow-up examination) for both males (19.3% of all hospital admissions) and females (13.9% of all hospital admissions).

• Children (<4 years) and older people (75 years and over) had the highest rates of hospitalisation. The lowest rates occurred in the 5-14 year olds, with admissions increasing as age increased.

**Notifiable Infectious Diseases**

• Gastroenteritis due to Campylobacter infection had the highest notification rate of all infectious diseases, representing 27.1% of notifications over the period.
Hepatitis C and Chlamydial infection also had high notification rates and represented 17.4% and 16.7% respectively, of the total number of infectious diseases reported during the seven year period up to 2001.

**Self-reported Health Status and Disability**

- In 2001 most Tasmanians (78.5%) aged 15 years and over classified themselves as having good or excellent health, which was slightly lower than the national average of 81.9%.
- The most common recent health condition (in the two weeks prior to survey) reported by Tasmanians was headache.
- The most common long-term health condition reported by Tasmanians was vision problems, followed by arthritis, hay fever and hypertension.
- Females were more likely than males to report having had a long-term health condition.

**Cigarette Smoking**

- Tasmania has the third highest proportion of current smokers in Australia.
- It was estimated in 2001 that approximately 83,000 persons aged 18 years and over were current smokers in Tasmania, which represents 24.4% of all Tasmanians aged 18 years and over.
- Between 1977 and 2001, the number of current smokers declined significantly among Tasmanian males (from 43.0% in 1977 to 25.0% in 2001) and females (from 29.6% in 1977 to 23.7% in 2001) with a corresponding increase in the numbers of ex-smokers.
- Of particular concern is the increase in the number of current smokers among women of childbearing age (18-34) from 32.6% in 1989 to 39.7% in 2001.

**Alcohol Consumption**

- Alcohol consumption at the risk and high risk levels was the second lowest for Tasmania compared with other states and territories.
- However between 1989 and 2001 there has been a slight increase in the proportion of Tasmanians who consume alcohol at risk and high risk levels.

**Substance Use**

- In 1996 among Tasmanian secondary students aged 12 to 17 years, analgesics (pain relievers) were the most common medication used by students.
- Only about 20% of Tasmanian secondary students had
ever used sedatives in their life up to time of survey.

- Cannabis was the most commonly used illicit substance in Tasmania with 51% of males and 52% of females reporting use by the age of 17 years.

**Physical Activity**

- In 2001 68% of Tasmanians 18 years and over reported engaging in some form of exercise in the two weeks prior to survey. This was comparable to the national average of 68.5%

- In Tasmania this is a slight increase in participation in exercise from the 1995 figure of approximately 64.9%.

**Nutrition**

- Based on self reported data in 1995, only 42% of Tasmanian adults consume the recommended two or more serves of fruit per day, which is lower than the national level of 50%.

- Less than 20% of Tasmanian adults consume four or more serves of vegetables a day, which is similar to the Australian level. Five serves per day is the recommended minimum for adults.

- Tasmanian adults consume more saturated fat (14% of energy intake) than recommended (10%) and more than the national average of 12.5%.

- Tasmanian adults have the second lowest rate (68%) for trimming the fat off meat. The national average is 72%.

**Breastfeeding**

- Tasmanian breastfeeding rates are the lowest of all States and Territories, both at time of discharge from hospital and at six months of age. Breastfeeding rate at discharge is 78.1%, whereas the national average is 81.8%.

**Overweight & Obesity**

- Based on measurements taken in 1995, two thirds of males (67%) and just over half of females (54%) aged 18 years and over, in Tasmania, are considered to be overweight (Body Mass Index greater than 25). These rates are higher than all other States and Territories.

- The proportion of the adult Tasmanian population with abdominal obesity (defined as waist/hip ratio greater than 0.9 for males and 0.8 for females) is 57% for males and 39% for females. The national average is 54% of males and 35% of females.

**Diabetes and impaired glucose metabolism**

- The prevalence of diabetes (8.7%) and impaired glucose metabolism (12.2%) in Tasmania is one of the highest described internationally.
**Sun Protection**

- 82.7% of Tasmanian males and 78.4% of Tasmanian females had used some form of protection against the sun in the month before the 1995 survey.
- The most common skin protection measure used in Tasmania was a hat, followed by sunglasses and sunscreen.

**Immunisation**

- Tasmanian children have high rates of vaccine coverage against diphtheria, pertussis, tetanus, polio, measles and haemophilus influenza type b, compared with other States and Territories.
Regional Variations

Around half of all Tasmanians live in the Southern region, and about one quarter in each of the North and North West regions. Tasmania’s population has been declining and is predicted to continue to decline in the immediate short term.

While there are some regional variations in various diseases, that are briefly discussed below, on the whole Tasmania should be regarded as an area of significant health disadvantage compared with other states and territories, and programs should be developed on a statewide basis to address particular issues. In particular, smoking, nutrition, physical activity and the underlying social determinants of poor health status can be addressed through a range of statewide and local programs and strategies.

The North West has higher mortality than other regions for cancer, diabetes, stroke, artery disease, renal failure and road vehicle accidents, and incidence of colon cancer and cervical cancer. On the other hand, North West females have considerably lower mortality rates from lung cancer than females in the South and North. A possible explanation is that females who have remained living in the North West were less likely to smoke, or be exposed to passive smoking, in the 1970’s and 1980’s (the usual time period for the development of lung cancer is ten to twenty years).

The South however, has higher mortality rates for lung and breast cancers in females, and higher rates of hypertensive disease, influenza and pneumonia and suicide.

The South also has higher incidence rates than the other regions of all cancers for both sexes, and higher incidence of lung cancer, melanoma, breast cancer, brain cancer, thyroid cancer, leukaemias, hepatitis C and Ross River virus infection.

The Northern region has the highest mortality rate for chronic lower respiratory diseases and higher incidence of prostate cancer. For the data selected and on the major population health measurements, such as mortality rates, the Northern region is the healthiest in Tasmania. However, this should not be used as a rationale to “deprive” the Northern region of health care resources.

Any differences across the State are minimal in the face of the overall disadvantages Tasmania faces as a whole, compared to the rest of Australia.
## Areas for Action

**How can we improve Tasmania’s health status?**

To a large extent, many of Tasmania’s significant chronic health problems are preventable, and can be attributed to smoking, poor nutrition and lack of physical activity. A range of social determinants in turn influences these factors. There is potential for significant health gain from comprehensive programs to address all of these issues. In particular, with the support of business, government at all levels, non-government organisations, unions and local communities, the following strategies could substantially improve the health of the Tasmanian community:

### A comprehensive tobacco program

A comprehensive tobacco control program, including a range of measures well documented by the World Health Organisation and other publications such as the National Tobacco Strategy, which includes public education and media campaigns, tighter controls over children’s access to tobacco, and support for cessation programs.

### Improving Tasmanians’ nutrition

Looking at ways of improving healthy eating, including programs to increase the proportion of infants who are breastfed to at least six months of age, increased vegetable and fruit consumption, decreased saturated fat, sugar and salt consumption, and maintenance of a wide variety of food in the Tasmanian diet.

### Physical activity

Developing ways of improving Tasmania’s physical inactivity profile by building programs to encourage and assist Tasmanians of all ages to participate in regular moderate physical activity. Such programs should identify and address practical barriers and provide support to overcome obstacles to participation, such as street safety concerns, transport and child/invalid care arrangements.

### Improving social and environmental factors which impact on health

Given that socioeconomic disadvantage is a powerful determinant of health, government and community attention should be given to enhancing a supportive social environment through actions such as:

- increasing secondary school and college retention rates;
- increasing adult learning and tertiary participation rates, and engaging retired people in volunteer activities;
- enabling increased local government participation in promoting healthy environments, particularly in relation to anti-smoking, healthy eating and physical
activity;

- increased labour force participation (not only reductions in “unemployment rates”) at all age levels.

There are excellent opportunities already available to initiate a public health agenda addressing these areas for action. There is already broad infrastructure that has been in place for some time, encompassing both government and non-government agencies, local government, and national health strategies. More recently the *Tasmania Together* initiative provides a platform for a community-driven public health reform agenda, and should be supported by all. The recently established Premier’s Physical Activity Council, and the *Tasmanian Food and Nutrition Policy* are other strategies that must be supported to achieve far-reaching beneficial change through intersectoral action.

It can take many years before concerted actions to improve health start to flow through into improvements in many of the health indicators reported in this document. The time to start changing our systems to support these long-term public health benefits is now.
**Introduction**

*The first comprehensive health profile, accompanying the first State of Public Health report*

*Health Indicators Tasmania 2003* gives a detailed picture of the health of the Tasmanian population. It is the first time that empirical data have been collected and presented in such a comprehensive fashion in Tasmania.

*Health Indicators Tasmania 2003*, accompanies and informs the inaugural Tasmanian *State of Public Health Report* to Parliament as required under the *Public Health Act 1997*. This Act was introduced in Tasmania to reform and modernise the framework for managing public health issues. It requires the Director of Public Health to submit to the Minister for Health a report on the status of public health in Tasmania (the “*State of Public Health Report*”) as soon as possible after commencement of the Act and then at five yearly intervals. The Minister is required to table the report in both Houses of Parliament. The first *State of Public Health Report* is being tabled in 2003 and is relatively brief, focussing particularly upon preventable conditions and future directions to advance the organised public health effort in Tasmania. Both documents provide an important resource for public health planning and decision-making over the next five years.

This publication draws together information from a variety of sources including death certificates, hospital data, Tasmanian cancer registry, the Australian Bureau of Statistics, and Departmental surveys.

*What is public health?*

Public Health has been defined as “*the science and art of preventing disease, prolonging life, and promoting health through the organised efforts of society*” (Acheson 1988). The World Health Organisation has further defined public health as “*the art of applying science in the context of politics so as to reduce inequalities in health while ensuring health for the greatest number*”

*The history of public health reporting*

In the early decades of the 20th century, the Tasmanian Department of Public Health regularly produced reports. These reports were mainly concerned with public health issues such as infectious diseases, school hygiene, water supplies and sewerage arrangements, and public buildings. This reflected the public health concerns of the time.

*A shift to a focus on determinants of health*

There has been a shift in focus in public health over the last few decades. While longstanding issues such as water quality and infectious disease remain important, there is now a broader focus on a range of factors that influence health, such as poverty,
nutrition, physical activity, education and other social influences that promote resiliency or reduce inequality.

Because the public health movement has achieved so much in reducing the impact of infectious diseases through a focus on sanitation, immunisation and infection control measures, life expectancy has risen and this, together with changing lifestyle patterns, has led to the emergence of chronic diseases as a major public health issue.

Contemporary public health reports such as this must therefore address a much broader range of issues that are relevant to the health status of the population in the light of the current burden of disease.

In recognition of the growing understanding of the web of interrelated factors affecting the health status of the population, this report includes risk factors and behaviours that contribute to either acute or chronic disease, selected systemic measures to prevent illness and disease and (to a limited extent) the social, cultural and economic conditions which affect health. These latter aspects clearly impact on public health, and would benefit from more detailed analysis and inclusion in future reports.

Interpreting the data in this report

It is important that readers attempting to interpret the masses of information in this report have an understanding of the data on which it is based.

As with any statistical data, certain principles must be kept in mind, including:

- Many different sources of data have been used and the time frames for which they are most recently available may be different. For example some data are as recent as 2001 but some are drawn from 1995 surveys, so when comparing one table or figure with another, always compare the source and age of the data as well.

- For many of the self-reported health conditions, the National Health Surveys of 1995 and 2001 are used. These often contain data broken down by state and territory. In the 2001 survey, data was not provided for the Northern Territory, although NT data was included in the Australian average rates.

- Different types of data have been collected in different ways. For some diseases we rely on hospital records, others on pathology laboratory reporting, and some health indicators are based on self-reported data collected during surveys.
Some of these data sources are more reliable than others.

- Some conditions have clear-cut diagnoses, or good screening tests are available, eg for breast cancer, while other conditions can be much harder to define, eg mental health problems. Suicide data are difficult to verify as many cases become subject to coronial inquests, which can take over a year to complete, and so they don’t always appear in the data for the year concerned.

- Two of the main sources of information in this report relate to mortality (deaths) and morbidity (illness or disease). The two do not necessarily run in tandem. For example, some cancers have higher rates of mortality, but a lower incidence rate than other cancers. Apart from differences in the natural history of the different diseases (such as lung cancer versus prostate cancer), this can be because some cancers (such as lung cancer) have continued to have poor survival rates whilst survival rates for others, such as leukaemia, have improved over the years with improvements in treatment.

- With any data for a population the size of Tasmania there can be fluctuations in the number of cases of disease, or deaths, that are just the result of random variation over the years. In this report, trends in data are only statistically significant where specified.

- The mortality and cancer incidence rates have been calculated for several years combined to provide a more stable and reliable measure of the mortality and incidence in the small population of Tasmania. The mortality and incidence rates for several years grouped together should be read as the average annual rate.

- With less common conditions in small populations, random fluctuations of just a few cases can give rise to a false impression of an “outbreak” or major differences in rates between areas. For this reason presentation of data at Local Government Area level has been limited to selected conditions. Even at the Regional level, caution needs to be exercised in drawing comparisons for a number of the health indicators.

- Variations in hospital admission rates between regions must be interpreted cautiously as they can be influenced by many factors apart from whether one population is “sicker” than another. Admitting practices do vary between hospitals and may depend on availability of after-hours or other back-up services, or pressure upon hospital bed capacity.
• There is a serious lack of reliable health data for the Tasmanian indigenous population, partly because of poor system performance in identifying people’s indigenous status on standard data collection forms such as death certificates or hospital admissions forms. All the available evidence suggests that this should be a priority for the future.

• When comparing tables and figures be aware that different scales are used throughout the report. This has been done to make each individual graph easier to read, but means that often they cannot be compared visually due to different scales used.

• Indicators of disease outcomes and risk behaviours do not attempt to provide a picture of the health “needs” of a community. The public health focus can be quite different to that required for health care services. While this report may contribute toward a greater understanding of health needs, it should not be used in isolation for planning health care services.
Chapter 1

Demography and Socioeconomic Indicators

Introduction:

This Chapter provides population-based data on various social and economic factors that are associated with the health of individuals. Demographic data illustrates the size, composition and expected growth for the Tasmanian population. Socioeconomic indicators are also provided for a number of variables including income, education level and unemployment.

In this Chapter:

- Tasmanian Population Statistics
- Unemployment
- Income
- Education
The Australian Bureau of Statistics conducts a national census every five years to estimate Australia’s population. The most recent census survey was performed in August 2001, which estimated the population for Tasmania as 456,652 people (224,038 males and 232,614 females) as shown in Fig 1.1. This figure represents 2.4% of Australia’s total population of 18,972,350 people (ABS 2002a).

Tasmania’s population can be divided into three regional areas – South, North, and North West. The 2001 Census estimated the 109,796 males and 114,929 females in the South region, 63,139 males and 65,510 females in the North region and 50,523 males and 51,829 females in the North West region. Approximately half of Tasmania’s population is located in the south of the State, and one quarter in each of the two North regions.
Tasmania’s Population by Region:

The 2001 census showed a population in the South Region of 224,725 representing 49.2% of Tasmania’s population (Fig 1.2).

There were 128,649 people living in the North region (28.2% of the population), and 102,352 people in the North West region (22.4% of Tasmania’s population).

Tasmania’s Population by Age Group and Sex:

Figure 1.3 illustrates the age and sex distribution of Tasmania’s population. The largest age groups are 10 – 14 year olds and 35 – 39 year olds. The estimated proportion of women in the population increases with age, with almost twice as many women as men in the over 80 years age group.
The latest Australian Demographic Statistics show that the estimated resident population of Tasmania was 470,272 persons at 30 June 2001 (ABS 2002b).

The residents in Tasmania have decreased by 4,171 persons since the 1 July 1996. This gave Tasmania an average annual rate of decline of 0.2% during the period 1996-2001. As shown in Figure 1.4, all States and Territories except Tasmania experienced positive population growth from 1996 to 2001.
Population Growth in Tasmania, 1981-2001:

Table 1.1 shows the population growth in Tasmania over the last two decades. Population growth is determined by four factors; births, deaths, immigration and emigration. The difference between births and deaths is termed the natural increase (ABS 1997a, ABS 2002c). The difference between the number of immigrants and emigrants is known as the net migration (ABS 2002c). When the natural increase and the net migration are positive, this gives an increase in the population.

As shown in Table 1.1, population growth in Tasmania has fluctuated over the 20 year period 1981 – 2001, with the highest growth occurring in 1989-1990 at 1.52%. Since this time, Tasmania has experienced a steady fall in population growth.

In 1996-1997, a negative population growth was recorded in Tasmania for the first time. Negative population growth increased between 1996-1997 and 1997-1998, which recorded a decrease of 1,593 persons from 473,478 to 471,885. This decrease was due to the record low natural increase (2,133 persons) and negative interstate migration (3,966 persons). The negative interstate migration resulted from 14,856 Tasmanians leaving the State, and only 10,890 persons arriving (ABS 1999a). During this period, the population growth was –0.34%, which was the lowest on record.
Average Rate of Population Growth by Region in Tasmania, 1996-2001:

Figure 1.5 illustrates the estimated resident population of Tasmania decreased by 4,171 (0.2%) persons from 1996-1997 to 2000-2001. All regions of Tasmania experienced a loss of population, with the highest loss recorded in the North West region at 2,299 persons (0.4%). The population decrease for the South and North West regions was 931 (0.1%) and 941 (0.1%) respectively.
Projected Population for Tasmania, 2006 – 2051:

The Australian Bureau of Statistics has published a series of projected populations for the States and Territories of Australia over the period 1999 to 2051 (ABS 2002d). There are three projection series in this publication, based on various assumptions of future births, deaths and migration (interstate and overseas). The Series II projection is a relatively conservative projection model, and assumes low migration and low fertility rates.

According to Series II, Tasmania’s population is projected to continue declining in the next five decades. By the year 2051, the projected population in Tasmania is expected to be 319,300, comprising 156,500 males and 162,800 females.

Projection models from the ABS show that Tasmania and South Australia are the only States that will experience an estimated reduction in population during the period 1999 to 2051. All other States and Territories are expected to increase in population size over the same period.
The 2001 Census estimated the proportion of Tasmania’s population aged 0-14 years at 21.4%. This was higher than any other States or Territory with the exception of the Northern Territory (Figure 1.7). Tasmania’s figure was also higher than the national average estimated at 20.7%.
Projected Population Aged 0 – 14 Years by State and Territory, 2006 – 2051:

Table 1.2  Proportion (%) of projected population aged 0-14 years (Series II) by State/Territory, Australia, 2006-51

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Source: ABS Cat. No. 3222.0

According to the ABS Series II projections for 0-14 year olds, the proportion of Tasmania’s population in this cohort is expected to be 18.9% in 2006.

The proportion of the population aged 0-14 years in Tasmania is expected to decrease rapidly over subsequent years.

By 2036, Tasmania is expected to have the lowest proportion (13.6%) of population aged 0-14 years in Australia (Table 1.2).
Proportion of People Aged 65 Years and Over, by State and Territory:

![Bar chart showing the proportion of people aged 65 years and over by State/Territory, Australia, 2001 Census.](chart.png)

Figure 1.8 illustrates the proportion of people aged 65 years and over by State and Territory in Australia (ABS Census, 2002a).

The proportion of people 65 years and over in Tasmania was the second highest (13.4%) in the Australia, which is above the national average of 12.6%.

South Australia had the highest proportion, 14.4% and the Northern Territory the lowest, 5.3%.
Projected Population Aged 65 Years and Over by State and Territory, 2006 – 2051:

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Source: ABS Cat. No. 3222.0

The number of people aged 65 years and over in Tasmania is projected to be 69,000 in 2006 according to the Series II projection model of the Australian Bureau of Statistics (ABS 2002d). This represents 14.8% of total Tasmanian population of 464,900 people.

This figure is the second highest proportion for elderly people in 2006 for Australia (Table 1.3).

South Australia will have the highest estimated proportion of 65 year olds and over in 2006.

Tasmania’s population is expected to age relatively rapidly over the subsequent fifty years with this State having the highest national proportion of those over 65 years by 2021.

Tasmania is expected to maintain the highest proportion of people over the age of 65 years between 2021 and 2051.
Median Population Age by States and Territories:

The median age of a population is defined as “the age at which half the population is older and half is younger” (ABS 2002a).

Figure 1.9 demonstrates the median age for States and Territories in Australia (ABS 2002a). It shows that South Australia had a median age of 37 years, which was older than that of any other State or Territory.

The median age in Tasmania was 36 years, which was the second highest in Australia.
Projected Median Age by State and Territory, 2006 - 2051:

Table 1.4  Median age (years) of projected population (Series II) by State/Territory, Australia, 2006-51

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Source: ABS Cat. No. 3222.0

The median age of Tasmania’s projected population will be 39.0 years by 2006.

This median age is lower than that for South Australia (39.2 years) but higher than the national average of 36.9 years (Table 1.4).

The ageing of Tasmania’s population will continue over the projected period, with the median age increasing from 39.0 years in 2006 to 53.2 years in 2051.

From 2011, Tasmania’s projected median age for the population will be 41.1 years. This will be the highest median age in the country, which will remain the highest nationally until the end of the period analysed (Table 1.4).
In 2001 Census, it was estimated that Tasmania had an indigenous population of 15,773 people, which represents 3.5% of the total Tasmanian population of 456,652 people (ABS 2002a).

The number of people in Tasmania identifying as being of indigenous origin increased by 13.7% between 1996 and 2001 Censuses (Figure 1.10). However, the number of indigenous Australians residing in Tasmania is comparatively small compared to other States and Territories.

Tasmania’s indigenous people account for only 3.8% of the total estimated number of indigenous people in Australia, approximately 410,000 people.
Demographic Profile of Tasmania’s Indigenous Population:

In 2001 Census, the median age of Tasmania’s Indigenous population was 19 years (ABS Website). This is much lower than the median age for Tasmania’s non-Indigenous population of 37 years (ABS Website).

Figure 1.11 illustrates the demographic profile for indigenous Australians living in Tasmania.

The demographic profile for Tasmanians of Indigenous origin differs greatly from Tasmania’s non-Indigenous demographic profile. The Indigenous population has a much higher proportion of people aged 0-14 years (39.7%), compared with that of the non-Indigenous population (20.8%) in Tasmania (ABS Website). However, the proportion of people aged 65 year and over in the Indigenous population was much lower (2.6%) compared with that for the non-Indigenous population (13.2%).

The age-sex population pyramid for indigenous people is suggestive of a population with higher birth rates and also higher death rates, than the overall Australian population.
Unemployment Rate by State and Territory:

The unemployment rate is defined as the percentage of unemployed people in the total number of civilian population aged 15 and over in the labor force (ABS 2002e).

The estimated unemployment rate for Tasmania in June 2003 was 7.9%. This was the highest rate in Australia (Figure 1.12). The Tasmanian rate is traditionally higher than other states and territories.
Unemployment Rate by Year and Sex:

The unemployment rate in Tasmania has historically been higher than the Australian average (ABS 1996a).

In the 1970s, there were similar patterns in the unemployment rate between Tasmania and Australia as a whole (Figure 1.13).

During the 1980s, the unemployment rate in Tasmania, was higher than the national average.

In the 1990s, unemployment reached a record high level in Australia. Whilst national unemployment rates have decreased significantly from all time highs of 10.6% in 1992 down to 6.3% in mid 2002, Tasmania’s unemployment rate has not decreased nearly so markedly. In 1993, Tasmania’s unemployment rate was 12.9% and in June 2003 it was 7.9%.
Unemployment rate by Tasmanian Region:

Figure 1.14 shows that as at June 2003, the South region had the lowest unemployment rate (6.9%) in Tasmania while the North West region had the highest rate at 10.5%.

It is important to note that regional rates vary markedly from year to year.
Income

Median Weekly Income by State and Territory:

According to the 2001 Census, the median weekly individual income for Tasmanians was estimated as $314 for those aged 15 years and over. This represents the lowest median income for any Australian State or Territory.

Median weekly individual income in Tasmania increased from $257 in 1996, to $314 in 2001.

Fig 1.15  Median weekly individual income by State/Territory  1996 and 2001

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Source: ABS Cat. No. 2015.0; Note: Includes persons aged 15 years and over.
Figure 1.16 presents median weekly individual income by statistical division in Tasmania for 1996 and 2001 Censuses (ABS 2002a).

People aged 15 years and over from Greater Hobart in Tasmania had the highest personal weekly income of $344 in 2001. This represents an increase of $61 above the 1996 figure of $283. In contrast, the South statistical division had the lowest median weekly income levels in 1996 and 2001, of $221 and $288 respectively.

Median weekly individual income in all statistical divisions of Tasmania was higher in 2001 than in 1996 (Fig 1.16).
Weekly Individual Income by Sex, Tasmania:

As shown in Figure 1.17, a significant difference in weekly individual income exists between males and females in Tasmania.

Males had considerably higher weekly individual incomes as compared to females at all income levels.

Approximately 52.6% of Tasmanian females aged 15 years and over reported weekly income of less than $300 in 2001, as compared to males (37.7%), whereas more males reported higher weekly individual incomes in both the $300 to $699 category and over $700 categories than females.

Of note, as individual weekly income level increases, the proportion of males reporting higher incomes correspondingly increases.
Education

Level of Education by State and Territory:

The 2001 Census revealed that 8,116 persons had a postgraduate degree, graduate diploma or graduate certificate in Tasmania which equates to 2.3% of total population aged 15 years and over.

The 2001 figure represents an increase of 14% in this category, compared to that (7,119) from the 1996 Census.

As shown in Table 1.5, people from the Australian Capital Territory had the highest proportions of postgraduate degree, graduate diploma or graduate certificate (8.5%) and bachelor degree (17.4%) in the country. Conversely, Tasmanians reported the lowest proportions of postgraduate degree, graduate diploma or graduate certificate (2.3%), bachelor degree (7.6%) and advanced diploma, diploma or certificate (20.2%) compared with other States or Territories.

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<td>Tas.</td>
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<tr>
<td>Aust.</td>
<td>3.2%</td>
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<td>21.8%</td>
</tr>
</tbody>
</table>

Source: ABS Website; Note: Includes persons aged 15 years and over (excluding overseas visitors); Excludes schooling up to Year 12.
Level of Education by Region, Tasmania:

The South region had the highest proportion of those aged 15 years and over who had a postgraduate degree, graduate diploma or graduate certificate (3.1%) and bachelor degree (9.2%).

Overall, there was a similar proportion of people with advanced diploma, diploma or certificate in the three regions (Fig 1.18).

Level of Education by Sex:

Source: ABS Website; Note: Includes persons aged 15 years and over (excluding overseas visitors). Excludes schooling up to Year 12.
In 2001, 27.6% of Tasmanian males aged 15 years and over reported having an advanced diploma, diploma or certificate, while the corresponding proportion for Tasmanian females was 13.2% (Fig. 1.19).

There were similar proportions between males and females for postgraduate degree, graduate diploma or graduate certificate (2.4% and 2.1%, respectively). However, more females (8.5%) than males (6.7%) possessed a bachelor degree in 2001.

**Apparent retention rate (%) of secondary school students.**

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<td>2001</td>
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</table>

Education levels of populations impact on health of communities and education is associated with raised health awareness and improved self-care (WHO 1998).

The fact that Tasmania has over a long period, had lower secondary retention rates than other States impacts on the health of the population (ABS 2002h).
Chapter 2

Mortality

Introduction:

Very common diseases and those that have public health importance have been presented in this Section.

Age-standardised mortality rate was calculated using the direct method with the “World Standard Population” as the reference. This process enables direct rate comparison between different populations by avoiding the effect of different age distributions in different populations.

In this Chapter:

LIFE EXPECTANCY
CAUSES OF DEATH
MORTALITY RATES BY SPECIFIC DISEASE
Life expectancy at birth refers to the average number of years a newborn baby could expect to live if the current mortality rates remain the same in his or her lifetime (ABS 2001).

Life expectancy at birth by State/Territory in Australia is given in Figure 2.1 and shows that females generally live about five or six years longer than males.

This difference can be explained as a result of biologic and behavioural factors. Females have a genetic determinant prolonging about two years of life compared with males (Hugo 1986). In addition, cigarette smoking is still more common in males than females overall (ABS 1978; ABS 1992; ABS 1997b, ABS 2002g). It has been estimated that smoking contributes to an average reduction of life expectancy of five to eight years (Fielding 1992). Other factors including alcohol consumption, diet and physical activity may also play a role in the difference of life expectancy between males and females.

The latest data obtained from the ABS show marked differences in longevity by State/Territory in Australia (ABS 2001). The longest life expectancy for males occurs in the Australian Capital Territory (78.3 years), whereas the longest life expectancy for females occurs in Western Australia (82.6 years).

Tasmanians had the second shortest life expectancy, with 75.7 years for males and 81.2 years for females. These life expectancies were less than the national averages of 76.6 years for males and 82.0 for females.
Life expectancy in Australia has been recorded since the late nineteenth century (ABS 1997a).

Life expectancy at birth for Australian males increased from 47.2 years in the period 1881-90 to 76.6 years in 1998-2000 (ABS 1997a, ABS 2001). Similarly, life expectancy for Australian females increased from 50.9 years to 82.0 years over the same period (ABS 1997a; ABS 2001).

People living in the Northern Territory had the shortest life expectancy for both males and females in Australia (70.3 and 75.2 years respectively) (See Figure 2.1 previous page).

Information on life expectancy in Tasmania has been available from the ABS since 1881-90 (51.1 years for males and 52.3 years for females) (ABS 1997a). The historical comparison shows that life expectancy at birth has increased by 25 years for Tasmanian males and 29 years for Tasmanian females from 1881-1890 to 1998-2000 (ABS 1997a; ABS 2001). It should be noted that life expectancy has remained shorter for Tasmanians as compared to the Australian average in all years.
Infant Mortality rate by State/Territory:

Infant mortality rate is defined as the number of deaths of infants (≤ 1 year old) in a given year per 1,000 live births in the same year (ABS 2001). This rate is often used as an indicator for measuring and monitoring health status in a community.

Figure 2.3 presents the latest ABS data on infant mortality rate by State/Territory.

In 2000, the highest infant mortality rate was seen in the Northern Territory (11.7 per 1,000 live births), and the lowest rate occurred in the Australia Capital Territory (4.2 per 1,000 live births). The infant mortality rate in Tasmania in 2000 was 5.8 per 1,000 live births. This rate exceeded the national average of 5.2 per 1,000 live births. That year in Tasmania there were approximately 5,692 live births.

In 2000, the infant mortality rates were consistently higher in males for all States and Territories in Australia except for Tasmania and Queensland (ABS 2001). The infant mortality rate for females was slightly higher than that for males in Tasmania, at 5.9/1,000 live births and 5.7/1,000 live births respectively.
Infant Mortality Rate, 1901 – 2000:

As shown in Table 2.1, the infant mortality rate has been in decline throughout Australia over the last century. The greatest decrease in the infant mortality rate was seen from 89.0/1,000 in 1901 to 40.6/1,000 in 1939, a decrease of approximately 50% over 40 years. From the 1940s through to 1990s, the infant mortality rate decreased by approximately 50% every 20 years.

In 1996, the infant mortality rate in Tasmania (4.5 per 1,000 live births) was recorded at its lowest level and for the first time, was lower than the national average of 5.8 per 1,000 live births.

The steady fall in the infant mortality rate in Tasmania and Australia reflects the continuing improvements of sanitation, nutrition and living standards in the community over the last century. In addition, further decreases in infant mortality can be attributed to public health programs such as mass immunization and health education.

The introduction of the diphtheria vaccine in the 1920s (CSL 1979), whooping cough vaccine in the 1940s (Moxon 1990) and polio vaccine in 1956 (CSL 1979) has been protecting infants from communicable illnesses for the latter half of the 20th Century.

More recently, the fall in infant mortality might be related to sophisticated technology in neonatal care that has dramatically improved the survival rate of premature newborn babies (Jakobi et al 1993). There has also been a reduction in the rate of Sudden Infant Death Syndrome (SIDS) across Australia following groundbreaking research in Tasmania showing that sleeping position affects the risk of SIDS (Dwyer et al 1991, Ponsonby et al 1993). Maternal smoking remains a risk factor for SIDS.

<table>
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<th>Year</th>
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<tr>
<td>1925</td>
<td>55.2</td>
<td>53.4</td>
<td>1950</td>
<td>23.8</td>
<td>24.5</td>
<td>1975</td>
<td>18.8</td>
<td>14.3</td>
<td>2000</td>
<td>5.8</td>
<td>5.2</td>
</tr>
</tbody>
</table>

Source: ABS Cat. No. 3302.0.
Causes of Death

Top Ten Causes of Death in Tasmania:

Table 2.2 Top ten causes of death in Tasmania, 1999-2000

<table>
<thead>
<tr>
<th>Rank</th>
<th>Disease ICD-10*</th>
<th>% of all deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cancer (all types) C00-C97</td>
<td>27.9</td>
</tr>
<tr>
<td>2</td>
<td>Ischaemic heart disease I20-I25</td>
<td>20.2</td>
</tr>
<tr>
<td>3</td>
<td>Cerebrovascular disease I60-I69</td>
<td>9.3</td>
</tr>
<tr>
<td>4</td>
<td>Injury and poisoning V01-Y98</td>
<td>6.0</td>
</tr>
<tr>
<td>5</td>
<td>Chronic lower respiratory diseases J40-J47</td>
<td>5.8</td>
</tr>
<tr>
<td>6</td>
<td>Other forms of heart disease I30-I52</td>
<td>5.4</td>
</tr>
<tr>
<td>7</td>
<td>Diseases of arteries, arterioles and capillaries I70-I79</td>
<td>2.8</td>
</tr>
<tr>
<td>8</td>
<td>Influenza and pneumonia J10-J18</td>
<td>2.1</td>
</tr>
<tr>
<td>9</td>
<td>Diabetes mellitus E10-E14</td>
<td>1.9</td>
</tr>
<tr>
<td>10</td>
<td>Ill-defined R95-R99</td>
<td>1.5</td>
</tr>
</tbody>
</table>

*International Classification of Diseases, 10th Revision. Source: ABS Mortality Database.

Mortality data obtained from the ABS has been used to identify the most common diseases occurring in Tasmania. Table 2.2 illustrates the top ten causes of death in Tasmania.

For the period 1999-2000, 7,494 deaths were registered in Tasmania, at an average of 3,747 deaths per year (ABS mortality database).

For the period 1999-2000, the most common cause of death in Tasmania was cancer, which accounted for 27.9% of all deaths. The second most common cause of death was ischaemic heart disease (20.2%), followed by cerebrovascular disease (stroke) (9.3%). ‘External causes’ refers to injury and poisoning.

The ranking of causes of death in Tasmania has changed over the last three decades with cancer replacing ischaemic heart disease as the most common cause of death.
Leading Causes of Death by Age Group and Sex:

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Disease ICD-10*</th>
<th>Male % of all deaths</th>
<th>Disease ICD-9*</th>
<th>Female % of all deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td>Perinatal P00-P96</td>
<td>39.1</td>
<td>Perinatal P00-P96</td>
<td>29.6</td>
</tr>
<tr>
<td></td>
<td>Congenital malformations Q00-Q99</td>
<td>15.9</td>
<td>Ill-defined R95-R99</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td>Ill-defined R95-R99</td>
<td>7.3</td>
<td>Congenital malformations Q00-Q99</td>
<td>10.5</td>
</tr>
<tr>
<td>15-24</td>
<td>Road vehicle accidents V01-V67</td>
<td>28.4</td>
<td>Road vehicle accidents V01-V67</td>
<td>30.8</td>
</tr>
<tr>
<td></td>
<td>Suicide X60-X84, Y87.0</td>
<td>27.0</td>
<td>Suicide X60-X84, Y87.0</td>
<td>19.2</td>
</tr>
<tr>
<td></td>
<td>Motor or nonmotor vehicle accidents V89</td>
<td>8.1</td>
<td>Ill-defined R95-R99</td>
<td>11.5</td>
</tr>
<tr>
<td>25-64</td>
<td>Ischaemic heart dis. I20-I25</td>
<td>15.8</td>
<td>Breast cancer C50</td>
<td>19.2</td>
</tr>
<tr>
<td></td>
<td>Suicide X60-X84, Y87.0</td>
<td>9.1</td>
<td>Lung cancer C33-C34</td>
<td>7.8</td>
</tr>
<tr>
<td></td>
<td>Lung cancer C33-C34</td>
<td>7.9</td>
<td>Ischaemic heart dis. I20-I25</td>
<td>7.0</td>
</tr>
<tr>
<td>65+</td>
<td>Ischaemic heart dis. I20-I25</td>
<td>23.3</td>
<td>Ischaemic heart dis. I20-I25</td>
<td>22.2</td>
</tr>
<tr>
<td></td>
<td>Cerebrovascular dis. I60-I69</td>
<td>9.1</td>
<td>Cerebrovascular dis. I60-I69</td>
<td>12.4</td>
</tr>
<tr>
<td></td>
<td>Chronic low respiratory J40-J47</td>
<td>8.1</td>
<td>Other forms of heart dis. I30-I52</td>
<td>7.1</td>
</tr>
</tbody>
</table>

*International Classification of Diseases, 10th Revision.
Source: ABS Mortality Database.

There were a total of 3,880 male deaths and 3,614 female deaths in Tasmania for the period 1999-2000, at an average of 1,940 deaths for males and 1,807 deaths for females each year (ABS mortality database).

Table 2.3 presents the leading causes of deaths for children, youth, adults and elders by sex. Different age groups and sexes have different ranks for leading causes of deaths. The percentages shown beside each age group bracket do not add up to 100% because only the top three causes of death are shown. Because numbers of deaths in the 0-14 age group are so small, it was not possible to provide a reliable breakdown into smaller age brackets.

The second most common cause of death in boys aged 0-14 years was congenital malformations whereas girls in the same age group had ill-defined and unknown causes of mortality as the second cause of death.

In the youth age group, 15 – 24 years old, road vehicle accidents were the leading cause of death for both sexes, whereas the leading cause of death amongst the elderly was ischaemic heart disease. There was a gender difference in leading cause of death among adults, 25 – 64 years old, with the primary cause among males being ischaemic heart disease, and among females, breast cancer.
Top Ten Causes of Death by Area:

Table 2.4  Top ten causes of death by area, Tasmania, 1999-2000

<table>
<thead>
<tr>
<th>Rank</th>
<th>Metropolitan Disease ICD-10*</th>
<th>% of all deaths</th>
<th>Regional Disease ICD-9*</th>
<th>% of all deaths</th>
<th>Rural Disease ICD-9*</th>
<th>% of all deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cancer C00-C97</td>
<td>27.6</td>
<td>Cancer C00-C97</td>
<td>29.2</td>
<td>Cancer C00-C97</td>
<td>28.0</td>
</tr>
<tr>
<td>2</td>
<td>Ischaemic heart dis. I20-I25</td>
<td>20.5</td>
<td>Ischaemic heart dis. I20-I25</td>
<td>18.7</td>
<td>Ischaemic heart dis. I20-I25</td>
<td>20.5</td>
</tr>
<tr>
<td>3</td>
<td>Cerebrovascular dis. I60-I69</td>
<td>9.6</td>
<td>Cerebrovascular dis. I60-I69</td>
<td>9.2</td>
<td>Cerebrovascular dis. I60-I69</td>
<td>8.3</td>
</tr>
<tr>
<td>5</td>
<td>Other heart dis. I30-I52</td>
<td>4.8</td>
<td>Other heart dis. I30-I52</td>
<td>6.7</td>
<td>Other heart dis. I30-I52</td>
<td>6.2</td>
</tr>
<tr>
<td>6</td>
<td>Dis. of arteries, arterioles &amp; capillaries I70-I79</td>
<td>2.9</td>
<td>Dis. of arteries, arterioles &amp; capillaries I70-I79</td>
<td>2.9</td>
<td>Dis. of arteries, arterioles &amp; capillaries I70-I79</td>
<td>2.7</td>
</tr>
<tr>
<td>7</td>
<td>Influenza and pneumonia J10-J18</td>
<td>2.4</td>
<td>Diabetes mellitus E10-E14</td>
<td>1.8</td>
<td>Diabetes mellitus E10-E14</td>
<td>2.3</td>
</tr>
<tr>
<td>8</td>
<td>Diabetes mellitus E10-E14</td>
<td>1.8</td>
<td>Influenza and pneumonia J10-J18</td>
<td>1.5</td>
<td>Influenza and pneumonia J10-J18</td>
<td>1.5</td>
</tr>
<tr>
<td>9</td>
<td>Ill-defined R95-R99</td>
<td>1.6</td>
<td>Renal failure N17-N19</td>
<td>1.4</td>
<td>Road vehicle accidents V01-V87</td>
<td>1.7</td>
</tr>
<tr>
<td>10</td>
<td>Suicide X60-X84, Y87.0</td>
<td>1.5</td>
<td>Ill-defined R95-R99</td>
<td>1.3</td>
<td>Influenza and pneumonia J10-J18</td>
<td>1.5</td>
</tr>
</tbody>
</table>

*International Classification of Diseases, 10th Revision. 
Source: ABS Mortality Database.

The top ten causes of deaths for metropolitan, regional and rural areas are shown in Table 2.3.

For the period 1999-2000, the most common cause of death in metropolitan areas was cancer, followed by ischaemic heart disease and cerebrovascular disease (stroke).

During the same period, the top three causes of death in the regional and rural areas were the same as those in the metropolitan area. For other causes of death, there were different rankings in the regional and rural areas, compared to those in the metropolitan area as shown in Table 2.4.
Age-Standardised Mortality Rate per 100,000 for Selected Diseases:

Table 2.5  Age-standardised mortality rate per 100,000 for selected diseases by State/Territory, Australia, 1999-2000

<table>
<thead>
<tr>
<th>Disease</th>
<th>ICD-10*</th>
<th>NSW</th>
<th>Vic.</th>
<th>QLD</th>
<th>SA</th>
<th>WA</th>
<th>Tas.</th>
<th>NT</th>
<th>ACT</th>
<th>Aust.</th>
</tr>
</thead>
<tbody>
<tr>
<td>All causes</td>
<td>A00-Y98</td>
<td>382.7</td>
<td>361.8</td>
<td>382.5</td>
<td>371.5</td>
<td>363.4</td>
<td>416.4</td>
<td>621.7</td>
<td>337.1</td>
<td>376.7</td>
</tr>
<tr>
<td>Cancer</td>
<td>C00-C97</td>
<td>110.7</td>
<td>111.9</td>
<td>114.3</td>
<td>110.1</td>
<td>112.4</td>
<td>127.1</td>
<td>146.5</td>
<td>105.5</td>
<td>112.2</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>E10-E14</td>
<td>6.8</td>
<td>10.2</td>
<td>8.7</td>
<td>8.8</td>
<td>8.6</td>
<td>7.0</td>
<td>28.0</td>
<td>5.4</td>
<td>8.4</td>
</tr>
<tr>
<td>Ischaemic heart disease</td>
<td>I20-I25</td>
<td>72.9</td>
<td>63.3</td>
<td>77.1</td>
<td>70.3</td>
<td>63.6</td>
<td>72.0</td>
<td>95.6</td>
<td>60.7</td>
<td>70.1</td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>I60-I69</td>
<td>31.3</td>
<td>26.2</td>
<td>29.5</td>
<td>27.8</td>
<td>26.5</td>
<td>30.5</td>
<td>34.1</td>
<td>28.9</td>
<td>28.9</td>
</tr>
<tr>
<td>Road vehicle accidents</td>
<td>V01-V87</td>
<td>8.9</td>
<td>8.3</td>
<td>8.9</td>
<td>10.4</td>
<td>10.5</td>
<td>8.2</td>
<td>20.9</td>
<td>5.1</td>
<td>9.1</td>
</tr>
<tr>
<td>Suicide</td>
<td>X80-X84, Y87.0</td>
<td>10.6</td>
<td>9.6</td>
<td>12.6</td>
<td>11.5</td>
<td>11.8</td>
<td>12.6</td>
<td>16.3</td>
<td>10.0</td>
<td>11.0</td>
</tr>
</tbody>
</table>

*International Classification of Diseases, 10th Revision.
Source: ABS Mortality Database.

Table 2.5 illustrates that age-standardised mortality rates for selected causes vary by State/Territory. In Australia, differences in mortality between State/Territory may be explained by differentials in socioeconomic status and behavioural determinants. According to the 2001 census, Tasmanians had the lowest individual weekly income as compared to their interstate counterparts (ABS 2002a). It has been demonstrated that lower income is strongly related to higher mortality rates (Jerrett et al 1998; Marmot and McDowall 1986)

The level of education was relatively lower in Tasmania than in other States and Territories (ABS Website). Poor educational attainment is linked to an increase in the risk of mortality (NCHS 2000). Studies conducted in the USA show that people who completed 12 years, or fewer, of education, experienced the highest mortality rate (NCHS 2000).

Suicide in Tasmania and Queensland (12.6/100,000) was the second highest after the Northern Territory (16.3/100,000). Diabetes mellitus was lower than the national average in Tasmania.

High rates of smoking, less engagement in regular exercise and obesity are apparent in Tasmania. See the Chapter on Risk Factors for further information and discussion.
Percentage of Cancer Deaths By Site, Tasmanian Males:

For the period 1999-2000, 2,091 Tasmanians died of cancer, consisting of 1,144 male deaths and 947 female deaths (ABS mortality database).

It has been estimated that cancer claims approximately three lives every day in the Tasmanian community.

In 1978 in Tasmania, approximately 20% of all deaths in males were due to cancer. This percentage increased to approximately 29% for the period 1999-2000. This increase mainly reflects an aging population due to the fall in the mortality from heart disease, stroke and other competing diseases.

In terms of cancer mortality, lung cancer was the most common in Tasmanian males for the period 1999-2000, which accounted for about 23% of all cancer deaths. All other common cancers have been shown in Figure 2.4 by descending order of occurrence.
In 1978 in Tasmania, cancer was responsible for about 20% of all female deaths. This percentage increased to about 26% in the period 1999-2000. The change of disease pattern in Tasmanian females may be explained by an aging population and the fall in the mortality due to heart disease, stroke and other competing diseases.

Figure 2.5 presents the top ten causes of cancer deaths in Tasmanian females for the period 1999-2000. This graph shows that breast cancer was the top cause of cancer deaths and was responsible for 17% of all cancer deaths. After breast cancer, lung cancer was the second common site for Tasmanian females (13.7%), followed by colon cancer (11.3%). Other common cancers are shown.
Age-Standardised Mortality Rates for all Deaths by Region and Sex:

For the period 1995-2000, there were marked differences in the overall age-standardised mortality rate between males and females in Tasmania.

The male rates are approximately 40% higher than the female rates (Figure 2.6). This difference can be seen in all regions and Tasmania as a whole.

For the period 1995-2000, males (566.6/100,000) in the North West region and females (341.8/100,000) living in the South region of Tasmania had the highest age-standardised mortality rate for all causes. The lowest rate for all causes was found among those living in the North region of the State.

The age-standardised mortality rate for all causes in males and females was significantly higher in all regions and Tasmania as compared to the Australian average (Figure 2.6).
The mortality trends by sex for Tasmania and Australia have been examined from 1979-80 to 1999-2000 in two year intervals. (Figure 2.7).

During this period, age-standardised mortality rates in Tasmania steadily decreased by an annual average of 2.3% for males and 1.7% for females. These downward trends were statistically significant ($p<0.01$).

The mortality rate for Tasmanian males was about twice as high as for Tasmanian females around 1979-80 but this gap has narrowed over time.

Age-standardised mortality rate for all causes in Tasmanians was higher than that for Australia as a whole. This difference was seen in all 11 periods from 1979-80 to 1999-2000.

There have been significant decreases in the mortality rates in Tasmania and Australia since 1979. This may be due to advances in medical technology, treatment regimes, and public education programs to reduce drinking and smoking, and improvements in balancing diet, traffic regulation (such as reducing drink driving) and improved screening for earlier detection of treatable cancers.
Standardised Mortality Ratio (SMR) for all Causes of Death by Local Government Area in Tasmania, 1995-2000:

Map 2.0

The standardised mortality ratio (SMR) was used for comparing the mortality by local government area to the mortality in Tasmania as a whole. Standardised Mortality Ratio is the ratio of number of observed deaths in a study population (local government area) to the number of expected deaths that are calculated according to the age-specific mortality rates in the reference population (Tasmania as a whole), using the indirect method of age standardisation.

For the period 1995-2000, high SMR for all causes of death was found in West Coast (140), Brighton (128), George Town (125), Derwent Valley (121) and Glenorchy (105), which were all statistically significant (P<0.01).

There was significantly low SMR in Sorell (81), West Tamar (82), Meander Valley (90) and Clarence (92).

The differentials of the mortality may reflect variations in socio-economic, environmental and behavioural factors in different local government areas. These factors, as well as more specific breakdowns of causes of death in different areas are investigated further in this report.
Cancer has been the leading cause of death in Tasmania since 1991. The assessment of the cancer burden on the community is important for planning public health programs in cancer control and prevention. Cancer increases in frequency with age and as the average population age increases it can be expected that there will be an increased number of cancer cases.

The regional variations and comparison with the national average in cancer mortality rate are shown in Figure 2.8.

For the period 1995-2000, both males (156.4/100,000) and females (107.0/100,000) in Tasmania had significantly higher rates of cancer than the national averages (P<0.01).

Epidemiological studies have identified that behaviour and lifestyle factors are responsible for the development of approximately 80% of cancers (Doll 1988). The regional variations in cancer mortality may reflect regional differentials in the prevalence of risk factors including tobacco smoking, alcohol consumption, unbalanced diet, physical inactivity and intensive and prolonged sun exposure.
Age-Standardised Mortality Rate for all Cancers by Sex and Year:

Figure 2.9 shows that cancer mortality rates for males and females in Tasmania have been higher than that in Australia as a whole for the past 22 years, except for the periods 1978-79, 1985-86 and 1991-92.

Between 1979-80 and 1999-2000, decreases in age-standardised mortality rates in Tasmania averaged of 0.3% for males and 0.04% for females, however, the trends were not statistically significant.

During that period, age-standardised mortality rate for cancer in Australia decreased at an average of 0.7% per year for males and 0.4% per year for females. The change of cancer mortality rate in Australian males was statistically significant (P<0.01).

Despite considerable efforts being made to prevent and treat cancer over the past several decades, cancer mortality rates have not declined markedly overall. We still face serious challenges in fully understanding the etiology of cancer and its prevention, and in curing the most common cancers that threaten human beings.
Standardised Mortality Ratio (SMR) for all Cancers by Local Government Area, Tasmania, 1995-2000:

Map 2.1

Map 2.1 for shows Standardised Mortality Ratios (SMR) for all cancers in Tasmania over the period 1995 – 2000. A higher SMR means a higher rate of cancer incidence in that area. The ratios as calculated here are only comparable to the whole (Tasmanian) population, and should not be compared directly with each other.

Whether an SMR for an area differs significantly from the standard depends not only on the size of the ratio but also on the population size and the overall rate for the particular event (eg cause of death).

West Coast (154) and Glenorchy (110) were found to be significantly above the Tasmanian average.

Low SMR was recorded in West Tamar (84), which was statistically significant (P<0.01).
Mortality Rates by Specific Disease

Please Note: the following section is sequenced according to ICD code number, not in order of priority.

Age-Standardised Mortality Rate for Stomach Cancer by Region and Sex:

Figure 2.10 shows sex and regional variations of age-standardised mortality rate for stomach cancer for the period 1995-2000.

The rate for males was consistently higher than that for females in all areas, and the rates for Tasmania were slightly higher than the national average.

For females the rates of stomach cancer are consistent across the state, there was slight variation between regions in the rates for males, however these differences were not statistically significant.

Stomach cancer is considered to be largely dietary in origin. A raised consumption of salt and a low intake of fruit and vegetables are the biggest dietary risk factors.

*International Classification of Diseases, 9th & 10 Revisions.
Source: ABS Mortality Database.
Age-Standardised Mortality Rate for Stomach Cancer by Year and Sex:

Figure 2.11 shows the age-standardised mortality rate for stomach cancer in Tasmania over the time period 1979 - 2000.

The rate of decline in age-standardised mortality rate for stomach cancer in Tasmania was not as rapid as in Australia as a whole. Between 1979-80 and 1999-2000, the mortality for stomach cancer decreased at an annual average of 3.6% for Australian males and 3.4% for Australian females. These falls were statistically significant (p<0.01).

Males have generally had a higher than the national average. Between 1979-80 and 1999-2000, there was a downward trend in age-standardised mortality rate with an average decrease of 3.0% per year. This downward trend for males was found to be statistically significant (P<0.01).

The rate for stomach cancer in females was lower than the national average for the period 1979-84. After 1985-86, Tasmanian female rates exceeded the national averages. Between 1979-80 and 1999-2000, a downward trend occurred, with an annual average decrease of 2.2%. However, this trend was not statistically significant (P=0.056).

*International Classification of Diseases, 9th & 10th Revisions.
Source: ABS Mortality Database.
Age-Standardised Rate for Colon Cancer by Region and Sex:

Figure 2.12 presents sex and regional variations in age-standardised mortality rate for colon cancer for the period 1995-2000. Risk factors for colon cancer include insufficient fibre in the diet and insufficient physical activity.

For this period, the male rate was slightly higher than the female one in all regions, and Tasmania, as well as Australia as a whole.

For the period 1995-2000, age-standardised mortality rate for colon cancer was higher in Tasmania than in Australia as a whole (Figure 2.11). However, only the female rate (11.4/10,000) in Tasmania was significantly different from the national average (9.5/100,000).
Age-Standardised Mortality Rate for Colon Cancer by Year and Sex:

Figure 2.13 shows the age standardised mortality rate for colon cancer for the period 1979 – 2000.

Age-standardised mortality rate for colon cancer among females has followed a similar trend to the national average over the past 22 years, and has been fairly close to the national rate. The rate among males, however, has generally exceeded the national average except in the years 1989-92 and 1999-2000 (Figure 2.13).

Trend analysis indicates that the age-standardised mortality rates for colon cancer decreased at an annual average of 1.5% for both males and females in Tasmania between 1979-80 to 1999-2000. These trends were statistically significant for males (P<0.01) and for females (P<0.05).

For the same period, age-standardised mortality rates for colon cancer decreased at an average of 0.6% per year for Australian males and 1.6% per year for Australian females. These downward trends were found to be statistically significant (P<0.01).
Age-Standardised Mortality Rate for Rectal Cancer by Region and Sex:

Figure 2.14 shows the age-standardised mortality rate for rectal cancer for the period 1999-2000.

For the period 1995-2000, both males (6.9/100,000) and females (5.1/100,000) in Tasmania had a significantly higher mortality rate for rectal cancer, compared with the national averages (5.4/100,000 for males and 2.9/100,000 for females respectively).

The deaths caused by rectal cancer are more common in males than in females, both Tasmania and nationally. For the period 1995-2000, the age-standardised mortality rate for rectal cancer in males was approximately twice as high as the rate for females (Figure 2.14).
Age-Standardised Mortality Rate for Rectal Cancer by Year and Sex:

Figure 2.15 shows the age-standardised mortality rate for rectal cancer over the period 1979 – 2000.

Between 1979-80 and 1999-2000, the age-standardised mortality rate for rectal cancer declined at an average of 1.0% per year for Australian males and 1.3% per year for Australian females. The falls were statistically significant (P<0.01).

As the trend analysis shows, there was great variation in the rates for both males and females in Tasmania, and this is partly due to the small number of cases and small population size.

Overall, between 1979-80 and 1999-2000, the age-standardised mortality rate for rectal cancer in Tasmanian males increased by 0.9% per year. However, this trend was not statistically significant (P=0.334).

There was little difference in age-standardised mortality rate for rectal cancer in females, between Tasmanian and Australia as a whole from 1979-80 to 1991-92. However, the mortality rate for rectal cancer in Tasmanian females increased to 6.4/100,000 in the period 1997-98, which was twice as high as the national average (3.0/100,000).

Over the period 1979-80 and 1999-2000, there was an increase in age-standardised mortality rate for rectal cancer in Tasmanian females, with an annual average increase of 2.5%. This trend was found to be statistically significant (P<0.05).
Age-Standardised Mortality Rate for Pancreatic Cancer by Region and Sex:

Figure 2.16 shows the age standardised mortality rate for pancreatic cancer for the period 1993 – 1998.

There were some regional variations in age-standardised mortality rate for pancreatic cancer in Tasmania for the period 1995-2000. The highest rate for pancreatic cancer occurred in males living in the South region (7.5/100,000), which was not significantly different from the national average (6.1/100,000). Males from the North region (4.0/100,000) had the lowest age-standardised mortality rate for pancreatic cancer for the period 199-2000. This rate was lower than that in Australian males (6.1/100,000).

In females, the highest mortality rate for pancreatic cancer in Tasmania was seen in the North West region (5.9/100,000), which was not significantly different from the national average (4.5/100,000). The age-standardised mortality rate for pancreatic cancer in the North West region was slightly higher in females than in males (Figure 2.16).

For the period 1999-2000, there was little difference in age-standardised mortality rate for pancreatic cancer in both sexes between Tasmania and Australia as a whole. No statistically significant difference was found.
The age-standardised mortality rate for pancreatic cancer fluctuated over time for both Tasmanian males and females (Figure 2.17). The highest rates were seen in 1983-84 for both Tasmanian males and females.

From 1979-80 to 1999-2000, age-standardised mortality rate for pancreatic cancer in Tasmanian males declined an average of 1.3% per year, while the rate in Tasmanian females decreased 0.1%. These decreasing trends were found to be not statistically significant.

Between 1979-80 and 1999-2000, age-standardised mortality rate for pancreatic cancer decreased at an annual average of 1.2% for Australian males. The fall was statistically significant (P<0.01). The rate for pancreatic cancer increased by an average of 0.1% per year for Australian females. This upward trend was not statistically significant (P=0.475).
Age-Standardised Mortality Rate for Lung Cancer by Region and Sex:

Lung cancer is the leading cause of cancer death for Tasmanian males and females (Figure 2.18).

The magnitude of lung cancer in the community is an important public health concern and requires strengthened prevention strategies, as there are limited benefits from clinical treatments.

For the period 1999-2000, the age-standardised mortality rate for lung cancer was significantly higher in both sexes in Tasmania than in Australia as a whole.

Figure 2.18 shows that the age-standardised mortality rate for lung cancer in Tasmanian males was about 2.5 times as high as the rate in Tasmanian females. Sex differentials in the mortality rate of lung cancer have reduced, from 4 times in the period 1979-80 to 2 times in the period 1999-2000 (Figure 2.19).

Males in the North region and females in the South region had the highest age-standardised mortality rate for lung cancer for the period 1995-2000. Compared to the national averages, it was found that the rates in the South region were significantly higher. However, the age-standardised mortality rate for lung cancer was significantly lower for females in the North West region than the national average (Figure 2.18).
Mortality

Age-Standardised Mortality Rate for Lung Cancer by Year and Sex:

Figure 2.19 demonstrates the different trends in lung cancer mortality over time.

It appears that the fall in age-standardised mortality rate for lung cancer in Tasmania is not as rapid as that for Australia as a whole. Between 1979-80 and 1999-2000, the age-standardised mortality rate decreased at an annual average of 1.5% for Tasmanian males and 1.9% for Australian males. These downward trends were found to be statistically significant (P<0.01).

The Tasmanian male lung cancer rate declined from 46.9 in 1979-80 to 34.9/100,000 in 1999-2000, and the Australian male rate fell from 48.4 in 1979-80 to 32.7/100,000 in 1999-2000.

In contrast, the age-standardised mortality rate for lung cancer continued increasing for Australian females over the reported period. The trend analysis shows that age-standardised mortality rate for lung cancer increased at annual average of 1.7% for both Tasmanian and Australian females. These increased trends were found to be statistically significant (P<0.01).

The decline in rate for males and the increase in rate for females corresponds with a decrease in rates of smoking in males and an increase in rates of smoking in females.
Age-Standardized Mortality Rate for Melanoma of the Skin:

For the period 1995-2000, age-standardised mortality rate for melanoma of skin was significantly lower in males residing in the South and North-West regions than in Australia as a whole. However, the rate in Tasmanian females was similar to the national average.
Age-Standardised Mortality Rate for Melanoma of the Skin 1979 - 2000

In Tasmanian males, age-standardised mortality rate for melanoma of skin fluctuated by year, showing the highest rate in 1987-88 (5.3/100,000) the lowest rate in 1991-92 (2.3/100,000). The mortality rate also varied with year in Tasmanian females, with the highest rate in 1983-84 (4.2/100,000) and the lowest rate recorded in 1993-94 (1.3/100,000).

Trend analysis shows that age-standardised mortality rate for melanoma of skin decreased at an annual average of 0.8% for males and 1.7% for females in Tasmania between 1979-80 and 1999-00. However, the trends were not statistically significant (P=0.49 for males and P=0.25 for females).
Breast cancer is a major cause of cancer death in Tasmanian women. The age-standardised mortality rate for breast cancer by region is given in Figure 2.22.

The age-standardised mortality rate for breast cancer in Tasmanian females (17.9/100,000) was similar to the rate in Australian females (18.0/100,000) for the period 1999-2000.

The graph shows females in the South region had the highest rate at 18.2/100,000 in Tasmania for the period 1995-2000. In contrast, the lowest mortality rate for breast cancer in Tasmania was seen in the North West region (17.5/100,000), which was slightly lower than the national average of 18.0/100,000. This difference is not statistically significant.
Age-Standardised Mortality Rate For Breast Cancer in Females by Year:

Figure 2.23 shows the age-standardised mortality rate for breast cancer for the period 1979 – 2000.

Age-standardised mortality rate for breast cancer has changed appreciably for Australian females over the last 22 years. The trend analysis shows that the rate decreased at an average of 0.6% annually in Australian females. The trend is statistically significant (P<0.01).

Improved early detection through screening programs and improvements in treatment for breast cancer have led to this decline.

Variations in the rates for Tasmanian women are not statistically significant.
In recent decades, prostate cancer has emerged as one of the most commonly diagnosed cancers and has become the second leading cause of cancer deaths after lung cancer in Tasmanian males.

For the period 1995-2000, age-standardised mortality rate for prostate cancer varied between regions in Tasmania. The rate in the South (20.3/100,000) and North West (23.8/100,000) regions as well as the Tasmanian average (20.5/100,000) were significantly higher than the national average (16.9/100,000).
Age-Standardised Mortality Rate For Prostate Cancer in Males by Year:

Figure 2.25 shows the trends in age-standardised mortality rate for prostate cancer for the period 1979 – 2000.

In this period in Tasmania, the age-standardised mortality rate for prostate cancer increased at an average of 2.6% per year. This trend was statistically significant (P<0.01).

Age-standardised mortality rate for prostate cancer rose steadily in Australian males between 1979-80 and 1983-84 and then decreased in 1993-94 (Figure 2.25).
Age-Standardised Mortality Rate For Brain Cancer by Region and Year:

Both Tasmanian males (5.6/100,000) and females (3.8/100,000) had a slightly higher mortality rate for brain cancer compared with Australia as a whole (5.0/100,000 for males and 3.3/100,000 for females), which is not statistically significant.

Figure 2.26 shows some regional variation in male and female rates, however these are largely due to the small number of cases and population size and the differences are not statistically significant with the exception of the rate for males in the North region which was significantly (P<0.05) lower than the national average.
Age-Standardised Mortality Rate For Brain Cancer by Year and Sex:

Figure 2.27 shows the age standardised mortality rate for brain cancer over the period 1979 – 2000.

Over the period 1979-80 and 1999-2000, there was a very slight increase in age-standardised mortality rate for brain cancer in Australian males and females (Figure 2.27).

The Tasmanian rates varied over the period for both males and females but the changes were not statistically significant.
Age-Standardised Mortality Rate For Lymphomas by Region and Sex:

Figure 2.28 presents sex and regional variations in the age-standardised mortality rate for lymphomas in Tasmania for the period 1995-2000.

During that period, a higher mortality rate for lymphomas was seen in males from all regions, and in Australia as a whole, compared with females.

Age-standardised mortality rate for lymphomas in both males (6.8/100,000) and females (5.2/100,000) from Tasmania was similar to the national averages (6.2/100,000 for males and 4.5/100,000 for females respectively).
Age-Standardised Mortality Rate For Lymphomas by Year and Sex:

Figure 2.29 shows that age-standardised mortality rate for lymphomas over the period 1979 – 2000.

Age-standardised mortality rate for lymphomas increased at an annual average of 0.6% for Australian males and 0.9% for Australian females between 1979-1980 and 1999-2000. These increased trends were statistically significant (P<0.01).

In general, an increased trend in age-standardised mortality rate for lymphomas was found in Tasmanian males with an average of 1.4% per year between 1979-80 and 1999-2000. This increased trend was not statistically significant (P=0.142).

For Tasmanian females, the lowest age-standardised mortality rate for lymphomas was recorded in 1979-80 (2.0/100,000) and the highest rate occurred in 1997-98 (6.8/100,000). Between 1979-80 and 1999-2000, there was an upward trend in age-standardised mortality rate for lymphomas in Tasmanian females, giving an average increase of 2.3% per year. This increased trend was found to be statistically significant (P<0.05).
Age-Standardised Mortality Rate For Leukemias by Region and Sex:

Leukemias listed in this report include lymphoid leukaemia, myeloid leukaemia, monocytic leukaemia, other specified leukaemia and leukaemia of unspecified cell type.

Figure 2.30 presents age-standardised mortality rate for leukaemias for the period 1995-2000.

There was some regional variation in age-standardised mortality rate for leukaemias in Tasmania. The male rate in the North region (3.4/100,000) was significantly lower than the national average (5.8/100,000).

The highest female rate (4.6/100,000) for leukaemias was found in the North West region of Tasmania. Although the rate in the North West region was higher than the national average (3.5/100,000), there was no significant difference between these rates.
Age-Standardised Mortality Rate For Leukemias by Year and Sex:

Figure 2.31 shows that the age-standardised mortality rate for leukaemias in Tasmania over the period 1979 – 2000.

From 1979-80 to 1999-2000, downward trends were found at an average of 0.5% for Australian males and 0.8% for Australian females. These decreased trends were statistically significant (P<0.01).

Generally, there was a downward trend in age-standardised mortality rate for leukaemias in Tasmanian males between 1979-80 and 1999-2000, giving an average decrease of 1.6% per year. This trend was not statistically significant (P=0.096).

For Tasmanian females, in general, a downward trend in age-standardised mortality rate for leukaemias was found between 1979-80 and 1999-2000, averaging a decrease of 0.3% per year. This trend was not statistically significant (P=0.829).
Age-Standardised Mortality Rate For Diabetes Mellitus by Region and Sex:

Diabetes mellitus is defined as a disease in which “blood glucose levels remain high because the body produces little or no insulin or cannot use insulin properly” (AIHW 2000).

This data includes both types I and II diabetes mellitus.

Death certificates have been used as a primary source of data for determining mortality patterns by specific disease nationally and internationally. This method underestimates diabetes mortality because the disease is not always recorded as an underlying cause of death.

Diabetes surveillance is needed in order to measure more accurately the magnitude of the disease burden.

As diabetes has emerged as an important public health problem, further diabetes research and interventions are urgently needed.
Age-Standardised Mortality Rate For Diabetes Mellitus by Year and Sex:

The age-standardised mortality rate for diabetes in Tasmanian males varied by year, with the lowest in 1979-80 at 5.7/100,000 and highest in 1993-94 at 12.6/100,000 (Figure 2.33).

In general, there was an upward trend in age-standardised mortality rates for diabetes among Tasmanian males between 1979-80 and 1999-2000, averaging an increase of 1.4% per year. This trend, however, was not statistically significant (P=0.067).

For Tasmanian females, age-standardised mortality rates for diabetes decreased from 1979-80 (Figure 2.33). Trend analysis shows that the rate for diabetes in Tasmanian females decreased by 0.8% per year between 1979-80 to 1999-2000. The trend was found to be not statistically significant (P=0.376).

Between 1979-80 and 1999-2000, age-standardised mortality rates for diabetes increased at an average of 1.0% per year for Australian males. This increased trend was statistically significant (P<0.01).

For the same period, a minor downward trend in the mortality rate was found for Australian females, but this decreasing trend was not statistically significant.
Hypertension is defined as a systolic blood pressure greater than 140 mmHg or a diastolic blood pressure greater than 90 mmHg (WHO 1996). The individuals who have hypertension are at increased risk of mortality from stroke, coronary heart disease, peripheral arterial disease and renal failure. Hypertensive disease in this Report consists of a group of diseases that includes essential hypertension, hypertensive heart disease, hypertensive renal disease, hypertensive heart and renal disease and secondary hypertension.

Figure 2.34 illustrates the difference in age-standardised mortality rates for hypertensive diseases between males and females in all regions of Tasmania, and Australia as a whole for the period 1995-2000.
Age-Standardised Mortality Rate For Hypertensive Disease by Year and Sex:

The age-standardised mortality rates for males and females in Tasmania and Australia are very similar (Figure 2.35).

Age-standardised mortality rate for hypertensive diseases in Tasmanian males declined substantially from 7.2 in 1979-80 to 2.7/100,000 in 1999-2000. The trend analysis shows that the rate for hypertensive diseases decreased at an average of 4.3% per year for Tasmanian males between 1979-80 and 1999-2000. This trend was found to be statistically significant (P<0.01).

The age-standardised mortality rate for hypertensive diseases in Tasmanian females fell from 7.7/100,000 in 1979-80 to 3.4/100,000 in 1999-2000. A downward trend in age-standardised mortality rate for hypertensive diseases was found in Tasmanian females, averaging a decrease of 4.4% per year. This trend was found to be statistically significant (P<0.01).

Australian males and females also experienced a substantial fall in age-standardised mortality rate for hypertensive diseases from 1979-80 to 1999-2000. Trend analysis shows that there was an average decrease of 4.7% per year for Australian males and 3.81% for Australian females. These decreased trends were statistically significant (P<0.01).
Age-Standardised Mortality Rate For Ischaemic Heart Disease by Region and Sex:

Figure 2.36 shows that the age-standardised mortality rate for ischaemic heart disease in males was about twice as high as that for females. This sex difference in the rate was seen in all regions of Tasmania, and Australia as a whole.

For the period 1995-2000, there was little regional difference in age-standardised mortality rates for ischaemic heart disease in Tasmania (Figure 2.36). However the difference between the age-standardised mortality rates for ischaemic heart disease in males in Tasmania as a whole (114.2/100,000), compared to the national average (107.8/100,000), was found to be statistically significant (P<0.05).

For Tasmanian females, there was no significant regional variation in age-standardised mortality rate for ischaemic heart disease in Tasmania for the period 1995-2000. The rate in Tasmanian females was similar to the national average (54.3/100,000), yielding no significant difference (Figure 2.36).
Figure 2.37 shows that the age-standardised mortality rate for ischaemic heart disease was more common in Tasmanians than among Australians for the period 1979-1998.

In eleven two-yearly periods, from 1979-80 to 1999-2000, the rates for males and females from Tasmania exceeded those for Australia as a whole. However, there was a substantial reduction in the age-standardised mortality rate for ischaemic heart disease for Tasmanians, particularly amongst males.

Trend analysis indicates that a downward trend in age-standardised mortality rate for ischaemic heart disease was found in Tasmanian males between 1979-80 and 1999-2000, averaging a decrease of 4.3% per year. This decreased trend was statistically significant (P<0.01).

Tasmanian females also had a considerable fall in age-standardised mortality rate for ischaemic heart disease in the reported period. There was a downward trend in the rate found at an annual average decrease of 3.4% between 1979-80 and 1999-2000. This decreased trend was statistically significant (P<0.01).

Overall, Australian males and females experienced a significant reduction in age-standardised mortality rates for ischaemic heart disease between 1979-80 and 1999-2000, giving an annual average fall of 4.3% for males and 3.7% for females.
Standardised Mortality Ratio (SMR) for Ischaemic Heart Disease by Local Government Area, Tasmania, 1995-2000:

Map 2.2

Only Southern Midlands (153), George Town (143) and Glenorchy (112) had significantly high SMR for ischaemic heart disease, although there were a number of areas with SMR above the average of Tasmania as a whole.
Cerebrovascular disease is commonly known as stroke. Figure 2.38 illustrates the age-standardised mortality rates for males and females within Tasmania. The figure shows that the rate for stroke was slightly higher among males than females. This difference was seen in all regions of the State, and in Australia as a whole.

For the period 1995-2000, a minor difference existed in age-standardised mortality rates for stroke between regions in Tasmania (Figure 2.37). The highest rate for stroke occurred in both sexes from the North West region (40.4/100,000 for males and 35.8/100,000 for females). The rate for stroke in males from the South region and the North West region was significantly higher than that in Australia as a whole.

Age-standardised mortality rate for stroke in females was significantly higher in the North West region (35.8/100,000) when compared to the national average of 29.3/100,000.
Age-Standardised Mortality Rate for Cerebrovascular Disease by Year and Sex:

Figure 2.39 shows that the age-standardised mortality rates for stroke in Tasmanian males were lower than the national averages in the periods 1979-86 and 1989-90. From 1991-92, the rate for stroke in Tasmanian males exceeded the rate experienced by Australian males in general.

Between 1979-80 and 1999-2000, a downward trend in age-standardised mortality rates for stroke was found in Tasmanian males, averaging a fall of 2.7% per year. This trend was statistically significant (P<0.01).

For females, across all periods, there was no significant difference in the age-standardised mortality rate for stroke between Tasmania and Australia as a whole.

Age-standardised mortality rate for stroke continued falling in Tasmanian females between 1979-80 and 1999-2000. There was a significant average reduction of 3.9% per year during that period (P<0.01).

In Australia as a whole a significant decline in the rate for stroke was observed in both males and females (4.2% per year).
Age-Standardised Mortality Rate for Diseases of the Arteries, Arterioles, and Capillaries by Year and Sex:

For this report, the diseases of arteries, arterioles and capillaries relates to a number of diseases including atherosclerosis, aortic aneurysm, arterial embolism and thrombosis and hereditary haemorrhagic telangiectasia.

The age-standardised mortality rate for the diseases of arteries, arterioles and capillaries varied by sex, and was nearly twice as common among males than among females for all regions, and Australia as a whole (Figure 2.40).

When a regional comparison was made, age-standardised mortality rate for the diseases of arteries, arterioles and capillaries in males was found to be the highest in the North West region and the lowest in the North region. Compared to the national average (10.0/100,000), the mortality rate was significantly higher in males from the South region, the North West region and Tasmania as a whole (Figure 2.40).

Age-standardised mortality rate for the diseases of arteries, arterioles and capillaries in females was the highest in the South region (8.4/100,000), and the lowest in the North region (6.6/100,000). Compared to the national average (5.6/100,000), regional rates were found to be significantly different for females from the South and North West regions, and in Tasmania as a whole, but not for females from the North region.
Age-Standardised Mortality Rate for Diseases of the Arteries, Arterioles, and Capillaries by Year and Sex:

Both males and females in Tasmania experienced higher mortality from the diseases of arteries, arterioles and capillaries when compared to the national averages (Figure 2.41). This difference existed in all eleven two-yearly periods.

Figure 2.41 presents age-standardised mortality rates for the diseases of arteries, arterioles and capillaries, which decreased among Tasmanian males over the past 22 years. Trend analysis indicates that the mortality rate decreased at an average of 2.6% per year between 1979-80 and 1999-2000. This decreased trend was statistically significant (P<0.01).

For Tasmanian females, age-standardised mortality rate for the diseases of arteries, arterioles and capillaries decreased from 15.7/100,000 in 1979-80 to 12.4/100,000 in 1985-86, and then increased to 14.6/100,000 in 1989-90. By the period 1999-2000, the rate fell to 6.7/100,000. Between 1979-80 and 1999-2000, there was a downward trend in the rate with an average decrease of 3.8% per year. This decreased trend was statistically significant (P<0.01).

Age-standardised mortality rate for the diseases of arteries, arterioles and capillaries has fallen steadily among Australian males and females over the past 22 years. The trend analysis indicates that the mortality rate decreased at an average of 3.9% per year for Australian males and 4.4% for Australian females. The falls were statistically significant (P<0.01).
Age-Standardised Mortality Rate for Influenza and Pneumonia by Region and Sex:

Figure 2.42 shows the age standardized mortality rate for influenza and pneumonia over the period 1995-2000. Deaths from these illnesses usually occur among older people, and in recent years influenza and pneumococcal vaccine programs have been introduced to prevent some of these deaths.

The highest rate for Tasmanian males was in the South region (11.1/100,000). The lowest rate among males was in the North region (8.6/100,000).

Age-standardised mortality rate for influenza and pneumonia in males was significantly higher in the South region than in Australia as a whole.

For Tasmanian females, the South region (8.3/100,000) had the highest age-standardised mortality rate for influenza and pneumonia in Tasmania, while the lowest rate was seen in the North West region (6.6/100,000).

The rate for females from the South region (8.3/100,000) was found to be significantly higher than that in Australia as a whole (6.6/100,000).
Age-Standardised Mortality Rate for Influenza and Pneumonia by Year and Sex:

The age-standardised mortality rate for influenza and pneumonia in Tasmanian males varied with time. The peak male rate was recorded in 1979-80 at 23.9/100,000, whilst the lowest rate in 1995-96 was 6.9/100,000.

In general, for Tasmanian males, there was a downward trend in age-standardised mortality rate for influenza and pneumonia between 1979-80 and 1999-2000, giving an average decrease of 1.8% per year. This decreased trend was statistically significant (P<0.01).

For Tasmanian females, the age-standardised mortality rate for influenza and pneumonia fluctuated with time (Figure 2.43). The highest rate (13.3/100,000) was recorded in 1979-80 whilst the lowest rate (4.8/100,000) occurred in 1985-86.

Age-standardised mortality rates for influenza and pneumonia continued falling in Australian males and females from 1979-80. For the reported period, age-standardised mortality rate for influenza and pneumonia decreased at an average of 2.2% per year for Australian males and 1.1% for Australian females. These decreased trends were found to be statistically significant (P<0.01).
Age-Standardised Mortality Rate for Chronic Lower Respiratory Diseases by Region and Sex:

Chronic lower respiratory diseases consist of a number of chronic pulmonary conditions, which includes chronic bronchitis, emphysema, asthma, bronchiectasis, chronic airways and obstruction.

Figure 2.44 shows that Tasmanian males had higher mortality rates from chronic lower respiratory diseases than females. The age-standardised mortality rate for chronic lower respiratory diseases in males was about twice as high as the rate in females for all regions and Tasmania as a whole.

There were minor regional variations in age-standardised mortality rates for chronic lower respiratory diseases in Tasmania. The rate for chronic lower respiratory diseases in males was slightly higher in the North region (35.0/100,000), than in the South (31.2/100,000) and North West (31.7/100,000) regions. Compared to the national average (25.7/100,000), the rate for chronic lower respiratory diseases was significantly higher in males from all regions and Tasmania as a whole (Figure 2.44).

For Tasmanian females, age-standardised mortality rate for chronic lower respiratory diseases was highest in the North region (22.8/100,000), and the lowest in the South region (15.6/100,000). Compared to the national average (13.4/100,000), there was significant difference for females from the North region and Tasmania as a whole (Figure 2.44).
**Age-Standardised Mortality Rate for Chronic Obstructive Pulmonary Disease by Year and Sex:**

Figure 2.45 illustrates males in Tasmania, and Australia as a whole, experienced higher mortality from chronic lower respiratory diseases than females in all eleven two-yearly periods.

The age-standardised mortality rate for chronic lower respiratory diseases among Tasmanian males fell over the past 22 years. Trend analysis indicates that age-standardised mortality rate for chronic lower respiratory diseases decreased at an average of 3.4% per year between 1979-80 and 1999-2000. This downward trend was statistically significant (P<0.01).

For Tasmanian females, the age-standardised mortality rate for chronic lower respiratory diseases fluctuated with time. The highest rate (18.9/100,000) was recorded in 1997-98, and the lowest rate (14.8/100,000) in 1983-84.

Between 1979-80 and 1999-2000, age-standardised mortality rate for chronic lower respiratory diseases decreased at an average of 3.0% per year for Australian males. However, an upward trend in the rate was found in Australian females with an average increase of 0.5% during the reported period. Both trends for Australian males and females were statistically significant (P<0.01).
There was substantial regional variation in age-standardised mortality rates for renal failure in Tasmania. The highest rate was recorded in males from the North West region (7.0/100,000) and the lowest rate occurred in those from the South region (3.7/100,000). Compared with the national average (4.4/100,000), age-standardised mortality rate for renal failure in males was found to be significantly higher for the North West region (Figure 2.46).

Females in the South region, the North region, and Tasmania as a whole, experienced similar age-standardised mortality rates for renal failure when compared with Australian females (Figure 2.46).
Age-standardised mortality rate for renal failure in Tasmanian males varied over time. The rate for Tasmanian males was the highest (6.5/100,000) in 1993-94 and the lowest (2.0/100,000) in 1989-90. Trend analysis shows that age-standardised mortality rates for renal failure increased at an average of 3.4% per year in Tasmanian males between 1979-80 and 1999-2000. This trend was statistically significant (P<0.01).

For Tasmanian females, the highest age-standardised mortality rate for renal failure was recorded in 1993-94 (4.7/100,000) and the lowest rate occurred in 1981-82 (1.5/100,000). During the reported period, there was an upward trend in the rate for Tasmanian females, with an average increase of 2.8% per year. This trend was statistically significant (P<0.05).

Between 1979-80 and 1999-2000, age-standardised mortality rate for renal failure increased at an average of 1.9% per year for Australian males and 2.2% for Australian females. These trends were found to be statistically significant (P<0.01).
Major Causes of Death due to Injury and Poisoning by Age Groups:

Figure 2.48 illustrates major causes of death resulting from external causes. These injuries, resulting from external causes, are the fourth leading cause of death for all Tasmanians, and the leading cause of death among young people aged 15 to 24 years, hence injury is a major contributor to potential years of life lost (Table 2.2, Table 2.3).

The nature and proportion of different types of injury deaths vary according to age, due in part to the different social and environmental hazards faced in life, and changes in physical abilities relative to age. Road vehicle accidents and drowning were prominent in the childhood years, suicide and road vehicle accidents have high rates among young adults and falls accounted for a large proportion of deaths among the elderly.

It is important to note that numbers of cases have not been given here because due to our population size, the numbers are quite small. For example rates for suicide and road vehicle accidents are almost the same in some age groups, and although the top three causes would remain the same, the rank order may vary from year to year over a longer time period.
Overall, for Tasmania, the male rate of 55.0 injury deaths per 100,000 population recorded for the period 1995-2000 was similar to the Australian national average of 52.6 per 100,000 for the same period. The rate for Tasmanian females of 19.5 injury deaths per 100,000 for the period 1995-2000 was slightly higher than the national average of 18.6 injury deaths per 100,000.

Male injury death rates were also much higher than female rates for all regions, with male rates around 2 to 3 times the female rate, which was consistent with the national male to female rate ratio.
Age-Standardised Mortality Rate for Injury and Poisoning by Year and Sex:

From Figure 2.50, it can be seen that male injury mortality rates for injury and poisoning in Tasmania were higher than the rates in Australian males for the years 1979-1996 and 1999-2000.

Male mortality rates for Tasmania, and Australia, have steadily declined. Overall, the mortality rates fell at an average of 2.3% per year for Tasmanian males and 2.0% for Australian males. These downward trends were found to be statistically significant (P<0.01).

For females, the downward trend in the mortality rates for injury was less marked. There was little difference between injury mortality rates for Tasmanian females and the national average. The trend analysis shows that the mortality rates decreased at an annual average of 2.0% for Tasmanian females and 2.4% for Australian females. These trends were statistically significant (P<0.01).

A major contributing factor to these declines, for both sexes, would be the reduction in road accident deaths over this time period (see Figure 2.52).
Age-Standardised Mortality Rate for Road Vehicle Accidents by Region and Sex:

Figure 2.51 demonstrates the age-standardised mortality rate for road vehicle accidents, which is one of the major causes of injury death. This includes motor vehicle traffic accidents (E810-E819) and other road vehicle accidents (E826-E829).

As seen in the national figures, the mortality rate for road vehicle accidents is two to three times higher for males than for females across all regions. The highest rate for males was in the North West region (13.4/100,000), while for females the highest rate was in the North region (5.7/100,000). The mortality rates from road vehicle accidents in Tasmania were not significantly different from national averages.
Mortality

Age-Standardised Mortality Rate for Road Vehicle Accidents by Year and Sex:

Figure 2.52 shows age-standardised mortality rates for road vehicle accidents for Tasmania compared with national averages. Tasmanian rates were fairly consistent against national rates for males and females, although Tasmanian rates were slightly lower in specific years.

The downward trends are also consistent with national trends. This downward trend has been statistically significant for Tasmanian rates with an annual average decrease of 5.4% per year for males and 4.5% for females.

National decreases have been, on average, 5.1% per year for males and 4.5% per year for females.

Over the decades, seat belt and drink-driving legislation combined with various road safety measures, have had a significant effect in reducing the number of road deaths.
Age-Standardised Mortality Rate for Suicide by Region and Sex:

Figure 2.53 illustrates age-standardised mortality rates for suicide, which is also a leading cause of injury death. The rate for males from the South region (22.7/100,000) was significantly higher than the national average for males (18.8/100,000). In contrast, for females, regional and State mortality rates for suicide were not significantly different to Australian rates. In both the North and North West regions the mortality rates were below the national average.

Consistent with national figures, the rate of suicide deaths among males was four to five times higher than the rate for females.
Age-Standardised Mortality Rate for Suicide by Year and Sex:

Figure 2.54 shows that the rate of suicide among Tasmanian males was higher than the national average for males for the periods 979-96 and 1999-2000. For females, the rates were similar to national averages before 1995-96. For 1997-98, both males and females in Tasmania had lower rates for suicide than those in Australia as a whole.

For Tasmanian males, there was an overall increase in the suicide rate averaging 0.2% per year. This was not statistically significant (P=0.699), unlike the national trend for males that showed an increase of 1.0% per year over the same time period (P<0.01).

For Tasmanian females, the mortality rate from suicide fell by an average of 1.7% per year, which was not statistically significant (P=0.089), unlike the national decrease for females of 0.8% per year, which was statistically significant (P<0.01).
Deaths Caused by Smoking, Alcohol Consumption and Other Selected Causes:

Both tobacco smoking and alcohol drinking are two important public health problems nationally and internationally. For tobacco smoking alone it is estimated that about three million people die each year of smoking related illnesses worldwide, killing one person every ten seconds (WHO 1997). The global costs due to tobacco are US$200,000 million per year, including medical costs, lost earnings and productivity (WHO 1998).

For the period 1995-2000, a total of 3,427 Tasmanians died from causes related to tobacco smoking, representing an average of 571 deaths each year\(^1\). Male deaths (2,419) due to tobacco smoking were 2.4 times as many as female deaths (1,008). During that period, this figure exceeded the total number of deaths caused by alcohol (565), suicides (368), road vehicle accidents (251), homicides (45) other types of injuries and poisoning (552) and fires (30) combined.

Smoking-caused deaths accounted for 15% of all deaths in Tasmania. This is lower than the figure of 24% reported in the United States of America (WHO 1997) and the same as in Western Australia (Unwin and Codde 1998). An estimated 3% (565 deaths) of all deaths in Tasmania were attributable to alcohol for the period 1995-2000. This percentage is the same as that (3%) reported in Western Australia (Unwin and Codde 1998).

\(^1\) An estimate has been made of the number of deaths caused by alcohol and tobacco in Tasmania. This estimate was made using aetiological fraction method developed by Holman et al, in 1990 (Holman et al. 1990) and updated by English et al, in 1995 (English et al. 1995).
In Tasmania, the age-standardised mortality rate attributed to tobacco smoking has appeared to be consistently higher among males than females over the last 22 years (Figure 2.56). However, the difference in smoking-caused mortality rates between Tasmanian males and females reduced from a fourfold difference in 1979-80 to a threefold difference in 1999-2000.

Figure 2.56 shows that Tasmanians consistently had higher age-standardised mortality rates due to tobacco smoking than Australians in general did in all eleven two-yearly periods.

The age-standardised mortality rate due to tobacco smoking decreased rapidly in Tasmanian males from 1979-80 to 1999-2000, averaging a fall of 3.2% per year. This trend was statistically significant (P<0.01). During the same period, Australian males experienced an average decrease of 3.3% per year. The rate of fall in age-standardised mortality rates due to tobacco smoking in Tasmanian males was similar to that in Australian males.

From 1979-80 to 1999-2000, Tasmanian females also experienced a fall in age-standardised mortality rate due to tobacco smoking, at an average decrease of 1.5% per year. This decreasing trend was found to be statistically significant (P<0.01). The percentage of fall in the rate for Tasmanian females was similar to that in Australian females (1.9% per year).
Age-Standardised Rate for Alcohol-Caused Deaths by Sex:

There was a considerable difference in age-standardised mortality rates between Tasmanian males and females due to alcohol consumption over the period 1979-2000 (Figure 2.57). It is estimated that the rate for alcohol-caused deaths in Tasmanian males was at least twice as high as that in Tasmanian females in 1979-80. This relationship has not changed over time, with twice as many alcohol-related deaths still occurring among males as compared with females in 1999-2000.

The age-standardised mortality rate due to alcohol consumption in Tasmanian males was lower than that in Australian males from 1979-80 to 1989-90. Among females, the age-standardised mortality rate due to alcohol consumption was similar between Tasmania and Australia as a whole, for all eleven two-yearly periods (Figure 2.57).

Between 1979-80 and 1999-2000, the age-standardised mortality rate due to alcohol consumption decreased at an average of 2.7% per year for Tasmanian males and 3.0% per year for Tasmanian females. The decreased trends were statistically significant (P<0.01).

The trends in age-standardised mortality rate due to alcohol consumption revealed a decline for Australian males and females in the reported period, giving an average fall of 3.0% per year and 3.4% per year respectively. The rates of fall in age-standardised mortality rate due to alcohol consumption in Australian females were faster than those found in Tasmanian females.
Age-Standardised Mortality Rate per 100,000 population for Selected Diseases by Area:

Table 2.6 presents age-standardised mortality rates for selected diseases by area in Tasmania. For the period 1995-2000 people living in rural areas experienced significantly higher age-standardised mortality rates for all causes of death, acute myocardial infarction, cerebrovascular disease, renal failure, injury and road vehicle accidents, compared with metropolitan dwellers. In contrast, metropolitan areas had the highest rates of lung cancer and leukaemias compared to regional or rural areas.

The inequality in mortality between rural and metropolitan areas in Tasmania may be related to their differences in the utilization of health care services, socioeconomic status, transport options and lifestyle. People living in rural areas are less likely to use primary and secondary health care services that are available in urban areas, due to geographical isolation and travel time and costs. In addition, rural people experience higher unemployment rates, lower incomes, higher smoking rates and less participation in physical exercise, compared with metropolitan counterparts (Dunne et al 1994; Mackin 1992). There has been limited research that focuses on the mortality differentials between rural and metropolitan populations in Tasmania and Australia. Therefore, more research is needed to identify risk factors that contribute to the poorer health status in rural people.

Table 2.6 Age-standardised mortality rate per 100,000 population for selected diseases by area, Tasmania, 1995-2000

<table>
<thead>
<tr>
<th>Disease</th>
<th>Metropolitan</th>
<th>Regional</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>All deaths (ICD-9 153, ICD-10 C16)</td>
<td>429.8</td>
<td>450.0^</td>
<td>431.7</td>
</tr>
<tr>
<td>Colon cancer (ICD-9 162, ICD-10 C33-C34)</td>
<td>12.9</td>
<td>13.6</td>
<td>11.2</td>
</tr>
<tr>
<td>Lung cancer (ICD-9 174, ICD-10 C50)</td>
<td>27.7</td>
<td>22.6^</td>
<td>27.8</td>
</tr>
<tr>
<td>Breast cancer (ICD-9 185, ICD-10 C61)</td>
<td>18.6</td>
<td>17.5</td>
<td>16.3</td>
</tr>
<tr>
<td>Prostate cancer (ICD-9 195, ICD-10 C65)</td>
<td>19.1</td>
<td>24.0</td>
<td>19.2</td>
</tr>
<tr>
<td>Lymphomas (ICD-9 200-202, ICD-10 C81-C88)</td>
<td>5.7</td>
<td>5.9</td>
<td>6.5</td>
</tr>
<tr>
<td>Leukaemias (ICD-9 204-208, ICD-10 C91-C93)</td>
<td>4.7</td>
<td>3.5</td>
<td>2.9^</td>
</tr>
<tr>
<td>Diabetes mellitus (ICD-9 250, ICD-10 E10-E14)</td>
<td>6.9</td>
<td>9.2^</td>
<td>7.8</td>
</tr>
<tr>
<td>Acute myocardial infarction (ICD-9 410, ICD-10 I21)</td>
<td>45.3</td>
<td>51.6^</td>
<td>50.9</td>
</tr>
<tr>
<td>Cerebrovascular disease (ICD-9 430-438, ICD-10 I60-I68)</td>
<td>32.8</td>
<td>39.4^</td>
<td>33.6</td>
</tr>
<tr>
<td>Renal failure (ICD-9 584-586, ICD-10 I17-N19)</td>
<td>3.1</td>
<td>5.6^</td>
<td>4.9^</td>
</tr>
<tr>
<td>Injury (ICD-9 E800-E999, ICD-10 V01-Y98)</td>
<td>34.2</td>
<td>35.0</td>
<td>47.8#</td>
</tr>
<tr>
<td>Road vehicle accid. (ICD-9 E810-E819, E826-E829, ICD-10 V01-V87)</td>
<td>6.7</td>
<td>8.8</td>
<td>14.3#</td>
</tr>
<tr>
<td>Suicide (ICD-9 E950-E959, ICD-10 X60-X84)</td>
<td>11.3</td>
<td>10.8</td>
<td>12.9</td>
</tr>
</tbody>
</table>

Source: ABS Mortality Database.  ^Significantly different from metropolitan area at the 5% level; #Significantly different from metropolitan area at the 1% level.

2 See appendices Section 2.8 for a detailed explanation of the rural/metropolitan split.
Chapter 3

Morbidity

Introduction:

This chapter presents morbidity data in four critical areas; incidence of cancer, hospital admissions, notifiable infectious diseases and self-reported health conditions from the 1995 national health survey.

Cancer incidence relates to newly diagnosed cases of the more frequent cancer types that occur in Tasmania.

For hospital morbidity, the diagnoses were made and recorded for inpatients using the International Classification of Diseases, 9th Revision, Clinical Modification (NCC 1996) before 1 July 1999 and 10th Revision, Australian Modification (NCC 1998) since then.

The reported hospital admissions in this chapter were grouped by principal diagnosis, which was the main illness responsible for a patient’s episode of care in hospital. However, hospital admissions due to injury and poisoning caused by external causes were grouped by additional diagnoses, where the principal diagnosis was an injury or poisoning (ICD-9-CM 800-999 and ICD-10-AM S00-T98).

For hospital morbidity, we present those medical conditions that have public health importance and are considered as Tasmanian and national priority areas.

Self-reported health conditions presented in this chapter are based on the information of the national health survey conducted by the ABS. The results should be interpreted with caution, as the information collected from the national health survey was based on people’s own perceived health status, as opposed to objectively measured conditions.

5 Hospital Separations are used for data collection however the term hospital ‘admissions’ is used in this document as it is a more commonly understood term.

In this Chapter:

- Incidence of Cancer
- Hospital Admission Rates
- Notifiable Infectious Diseases
- Self-Reported Health Status and Disability
Incidence of Cancer

Most Common Cancers by Age and Sex:

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Sex</th>
<th>Rank</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ages</td>
<td>Male</td>
<td></td>
<td>Prostate (27.2%)</td>
<td>Lung (12.9%)</td>
<td>Colon (7.9%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td>Breast (26.1%)</td>
<td>Colon (10.4%)</td>
<td>Melanoma (9.8%)</td>
</tr>
<tr>
<td>0-14</td>
<td>Male</td>
<td></td>
<td>Leukaemias (26.5%)</td>
<td>Brain (12.2%)</td>
<td>Lymphomas (10.2%)/Kidney (10.2%)/Soft tissues (10.2%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td>Brain (32.1%)</td>
<td>Leukaemias (30.4%)</td>
<td>Kidney (7.1%)</td>
</tr>
<tr>
<td>15-29</td>
<td>Male</td>
<td></td>
<td>Melanoma (36.9%)</td>
<td>Lymphomas (17.1%)</td>
<td>Testis (12.6%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td>Melanoma (33.8%)</td>
<td>Lymphomas (12.4%)</td>
<td>Cervix (9.7%)</td>
</tr>
<tr>
<td>30-39</td>
<td>Male</td>
<td></td>
<td>Melanoma (30.1%)</td>
<td>Testis (16.0%)</td>
<td>Lip (11.2%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td>Breast (26.3%)</td>
<td>Melanoma (26.1%)</td>
<td>Cervix (12.7%)</td>
</tr>
<tr>
<td>40-49</td>
<td>Male</td>
<td></td>
<td>Melanoma (20.3%)</td>
<td>Lung (8.4%)</td>
<td>Lymphomas (8.1%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td>Breast (38.4%)</td>
<td>Melanoma (16.5%)</td>
<td>Thyroid (5.3%)</td>
</tr>
<tr>
<td>50-59</td>
<td>Male</td>
<td></td>
<td>Prostate (15.8%)</td>
<td>Lung (15.2%)</td>
<td>Melanoma (9.7%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td>Breast (40.0%)</td>
<td>Melanoma (9.7%)</td>
<td>Lung (7.7%)</td>
</tr>
<tr>
<td>60-69</td>
<td>Male</td>
<td></td>
<td>Prostate (30.0%)</td>
<td>Lung (13.9%)</td>
<td>Colon (9.7%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td>Breast (27.4%)</td>
<td>Colon (11.5%)</td>
<td>Lung (9.8%)</td>
</tr>
<tr>
<td>69+</td>
<td>Male</td>
<td></td>
<td>Prostate (34.3%)</td>
<td>Lung (13.2%)</td>
<td>Colon (7.1%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td>Breast (17.5%)</td>
<td>Colon (14.8%)</td>
<td>Lung (8.0%)</td>
</tr>
</tbody>
</table>

Source: Tasmanian Cancer Registry Database.
Note: Figures in brackets represent % of all cancers in corresponding age and sex.

For the period 1993-99, 15,439 new cases of cancer were registered in Tasmania. This is an average of 2,206 new diagnoses of cancer per year (Tasmanian Cancer Registry Database). For Tasmanian males, the most common cancer was prostate (27.2%), followed by lung cancer (12.9%) and colon cancer (7.9%). For females, the most common cancer diagnosed was breast cancer (26.1%), followed by colon cancer (10.7%) and melanoma of skin (9.8%).

The rank order of primary sites of cancer by age and sex is given in Table 3.1, which shows that the site of cancer is related to age and sex. Leukaemias and brain cancer were the most common cancers in children for both boys and girls. Melanoma of skin was the most common cancer for males aged 15 to 49 years and for females aged 15 to 29 years. Breast cancer was the most common cancer for females aged 30 to 70 years and over whereas prostate cancer was most commonly diagnosed for males aged 50 to 70 years and over.
Age-specific Incidence Rate for Cancer by Age and Sex:

As shown in Figure 3.1, the incidence rates for cancer significantly increase with age for both males and females.

Among Tasmanian males, the incidence rates were higher than those for Tasmanian females in all age cohorts above 55-59 years.

Female incidence rates exceed the male rates between the ages of 20 and 54 years because of the incidence of female cancers such as breast cancer and cervical cancer.

In contrast, the increased incidence of prostate cancer and lung cancer among males over the age of 55 years account for the steep rise in age-specific incidence rates compared to females.
Age-standardised Incidence Rate for Cancer by Region and Sex:

Figure 3.2 presents regional variation in age-standardised incidence rates for cancer in Tasmania for the period 1993-99. The rates for both males and females in the South region were slightly higher than those in the rest of Tasmania.

There was gender difference in age-standardised incidence rate for cancer, which shows the rates for males were much higher than those for females. This difference was seen in all three regions and in Tasmania as a whole.
Age-Standardised Incidence Rate for Cancer by Year and Sex:

As shown in Figure 3.3, age-standardised incidence rates for cancer generally continued increasing for both males and females in Tasmania from 1978-79 to 1994-95. There was a marked fall after 1994-95 for males. During the 22-year period, age-standardised incidence rates for cancer increased by an average of 1.9% per year for males and 1.8% per year for females. These upward trends were found to be statistically significant (P<0.01).

After 1986-97, the marked increase in cancer for both males and females can be associated with the introduction of screening programs and new techniques for early detection of cancers such as breast cancer, cervical cancer and prostate cancer.
Age-standardised Incidence Rate for Lip Cancer by region and Sex:

Figure 3.4 presents regional variation in age-standardised incidence rates for lip cancer in Tasmania for the period 1993-99. For Tasmanian males, the highest rate was found in the North West region (14.9/100,000) and the lowest rate was seen in the North region (8.4/100,000). Females in the North West region (3.0/100,000) had slightly higher rates than those from the South region (2.5/100,000) and the North region (2.6/100,000).

Age-standardised incidence rates for lip cancer in males were at least four times as common as rates in females. This gender difference can be seen in all three regions and Tasmania as a whole.
Age-standardised incidence rates for lip cancer have fluctuated in both males and females between 1978-79 and 1998-99 (Figure 3.5).

For Tasmanian males, the rates were high in 1994-95 (11.7/100,000) and 1996-97 (10.0/100,000), and low in 1988-89 (5.7/100,000). In general, an upward trend in age-standardised incidence rates for lip cancer was detected in males, increasing by an average of 2.3% yearly between 1978-79 and 1998-99. This increase was statistically significant (P<0.01).

Age-standardised incidence rates for lip cancer in Tasmania females continued rising after a fall between 1982-83 and 1984-85 (Figure 3.5). Between 1978-79 and 1998-99, there was an annual increase by an average of 12.1% in female rates, which was found to be statistically significant (P<0.01).

As shown in Figure 3.5, age-standardised incidence rates for lip cancer were much higher in males than in females over all biennial periods from 1978-79 to 1998-99.
Age-standardised Incidence Rate for Oesophageal Cancer by Region and Sex:

<table>
<thead>
<tr>
<th>Region</th>
<th>South</th>
<th>North</th>
<th>North-West</th>
<th>Tasmania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate per 100,000 population</td>
<td>7.5</td>
<td>6.1</td>
<td>7.1</td>
<td>7.0</td>
</tr>
<tr>
<td><em>Sex</em></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>South</td>
<td>2.9</td>
<td>2.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>4.1</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North-West</td>
<td>1.3</td>
<td>1.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tasmania</td>
<td>2.9</td>
<td>2.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*International Classification of Diseases, 9th Revision.
Source: Tasmanian Cancer Registry Database.

There was little regional variation in age-standardised incidence rates for oesophageal cancer in Tasmanian males for the period 1993-99 (Figure 3.6). Males residing in the South region (7.5/100,000) had slightly higher rates than those living in the North region (6.1/100,000) and the North West region (7.1/100,000).

For females, the highest rate (4.1/100,000) was recorded in the North region whilst the lowest rate was found in the North West region (1.3/100,000).

Figure 3.6 shows that age-standardised incidence rates for oesophageal cancer in males were higher than in females.
**Age-standardised Incidence Rate for Oesophageal Cancer by Year and Sex:**

Between 1978-79 and 1998-99, the age-standardised incidence rates for oesophageal cancer increased substantially among Tasmanian males despite a decline in 1982-85 and 90-91 (Figure 3.7). Over the 22-year period analysed, there was an overall increase by an average of 3.2% per year for males, which was statistically significant (P<0.01).

Age-standardised incidence rates for oesophageal cancer in Tasmanian females were relatively stable between 1978-79 and 1998-99 (Figure 3.7). Overall, the rate increased by an average of 0.1% in females during 22-year period. This increased trend not statistically significant (P>0.05).

Age-standardised incidence rates for oesophageal cancer in males were much higher than those in females. This difference was seen in all two-yearly periods from 1978-79 to 1998-99 (Figure 3.7).
Age-standardised Incidence Rate for Stomach Cancer by Region and Sex:

Figure 3.8 presents regional variation in age-standardised incidence rates for stomach cancer in Tasmania for the period 1993-99. Males from the North region (10.7/100,000) had higher rates than those from the South region (9.5/100,000) and the North West region (9.9/100,000).

For females, the highest rate was recorded in the South region (4.9/100,000) and the lowest rate was found in the North West region (3.3/100,000).

As depicted in Figure 3.8, age-standardised incidence rates for stomach cancer in Tasmanian males were at least twice as high as rates in Tasmania females. This gender difference occurred in all three regions and Tasmania as a whole.
Age-standardised incidence rates for stomach cancer generally declined in both males and females in Tasmania over the period 1978-79 to 1998-99 (Figure 3.9). During this period, the rates decreased by an average of 2.1% for males and 1.8% for females. The falls were only statistically significant (P<0.01) for males, but not females (P>0.05).

Tasmanian males had substantially higher rates than Tasmanian females, which can be seen over the period from 1978-79 to 1998-99 (Figure 3.9).
Age-standardised Incidence Rate for Colon Cancer by Region and Sex:

Regional variation in age-standardised incidence rates for colon cancer are given in Figure 3.10. The age-standardised incidence rates for both males and females from the North West region were slightly higher than those from the South region and the North region of Tasmania.

The age-standardised incidence rates for colon cancer in males were marginally higher than those among females. The difference between males and females existed in all three regions and Tasmania as a whole (Figure 3.10).
Age-standardised Incidence Rate for Colon Cancer by Year and Sex:

The age-standardised incidence rates for colon cancer among males and females in Tasmania are shown in Figure 3.11. Between 1986-87 and 1990-91, the rates for males increased, while a fall occurred after 1994-95. The trend analysis showed that the rates for males increased by an average of 1.1% yearly between 1978-79 and 1998-99. The increase in male rates was found to be statistically significant (P<0.05).

Overall, there was an increase in age-standardised incidence rates for colon cancer in Tasmanian females between 1978-79 and 1998-99, giving an average of 0.8% per year. The increase in female rates was not statistically significant (P>0.05).
Age-standardised Incidence Rate for Rectal Cancer by Region and Sex:

Regional variation in age-standardised incidence rates for rectal cancer are provided in Figure 3.12, with the highest rate for males in the South region (19.2/100,000) and the lowest rate from the North region (17.4/100,000).

Females in the North West region (12.1/100,000) had slightly higher rates than those who were from the South region (10.2/100,000) and the North region (11.6/100,000).

As shown in Figure 3.12, age-standardised incidence rates for rectal cancer in males were higher than those in females. This gender difference occurred in all three regions and Tasmania as a whole.
Age-standardised incidence rates for rectal cancer varied over two-yearly periods for both males and females in Tasmania (Figure 3.13).

Overall, an upward trend in age-standardised incidence rates for rectal cancer was found in males between 1978-79 and 1998-99, increasing by an average of 0.7% per year, however this increase was not statistically significant (P>0.05).

Age-standardised incidence rates for rectal cancer in Tasmanian females were the highest in 1996-97, while the rates for other year periods were relatively stable (Figure 3.13). Between 1978-79 and 1998-99, age-standardised incidence rates for rectal cancer in females increased marginally by an average of 0.1% yearly. This increase was not statistically significant (P>0.05).

Males consistently had higher rates than females, over all two-yearly periods from 1978-79 to 1998-99.
Age-standardised Incidence Rate for Lung Cancer by Region and Sex:

The lung cancers comprise cancers of the trachea, bronchus and lung.

Figure 3.14 presents regional variation in age-standardised incidence rates for lung cancer in Tasmania for the period 1993-99. There were similar rates in regions among males; however, the rate among females from the North West region was markedly lower than rates for those who were from either the North or South region.

There was gender difference in age-standardised incidence rates for lung cancer in Tasmania, whereby the incidence rate for males was 2-3 times as high as the rate for females.
The age-standardised incidence rates for lung cancer among males and females varied over a 22-year period (Figure 3.15). During the period analysed, the highest rate for males was recorded in the early years, 1980-81, but the highest rate for females occurred in relatively later years, 1996-97. The gap in the rates between males and females has narrowed with time.

Trend analysis shows that age-standardised incidence rates for lung cancer in males decreased by 0.7% per year between 1978-79 and 1998-99. However, an upward trend in the rates was found in females during this period, increasing by 2.1% yearly. Both trends in males and females were statistically significant (P<0.05 for males and P<0.01 for females).

Age-standardised incidence rates for lung cancer in males were at least twice as high as rates for females over all two-yearly periods from 1978-79 to 1998-99 (Figure 3.15).

The primary causes of lung cancer are smoking and passive exposure to tobacco smoke.
Age-standardised Incidence Rate for Melanoma of the Skin by Region and Sex:

There were regional variations in age-standardised incidence rates for melanoma of the skin in Tasmania for the period 1993-99 (Figure 3.16). Both males and females from the South region had the highest rates, whereas males and females from the North region had the lowest rates in Tasmania.

In the South region, age-standardised incidence rates for melanoma of the skin were slightly higher among males than females, where the gender relationship was reversed in the North region. None of these differences were statistically significant.
Age-standardised Incidence Rate for Melanoma of the Skin by Year and Sex:

As shown in Figure 3.17, the age-standardised incidence rates for melanoma of the skin increased markedly for both males and females, in Tasmania, over the period 1978-79 to 1998-99. During this period, the rates increased by an annual average of 5.9% for males, and 4.1% for females. Both increased trends were statistically significant (P<0.01).

Males had lower rates than females for the years from 1978-79 to 1986-87, whereas the rates in males were higher than those in females for the periods 1992-93 and 1996-97 (Figure 3.17).

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978-79</td>
<td>8.9</td>
<td>11.7</td>
</tr>
<tr>
<td>1980-81</td>
<td>13.2</td>
<td>15.5</td>
</tr>
<tr>
<td>1982-83</td>
<td>12.5</td>
<td>16.9</td>
</tr>
<tr>
<td>1984-85</td>
<td>12.7</td>
<td>15.8</td>
</tr>
<tr>
<td>1986-87</td>
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<td>23.5</td>
</tr>
<tr>
<td>1988-89</td>
<td>22.6</td>
<td>22.3</td>
</tr>
<tr>
<td>1990-91</td>
<td>24.9</td>
<td>26.4</td>
</tr>
<tr>
<td>1992-93</td>
<td>23.3</td>
<td>20.6</td>
</tr>
<tr>
<td>1994-95</td>
<td>29.7</td>
<td>26.6</td>
</tr>
<tr>
<td>1996-97</td>
<td>30.7</td>
<td>29.7</td>
</tr>
<tr>
<td>1998-99</td>
<td>27.5</td>
<td>30.3</td>
</tr>
</tbody>
</table>

*International Classification of Diseases, 9th Revision.
Source: Tasmanian Cancer Registry Database.
Age-standardised Incidence Rate for Breast Cancer by Region:

Age-standardised incidence rates for breast cancer in females are given in Figure 3.18, which shows that there were similar rates among the regions of Tasmania.

The rate from the South region (82.4/100,000) was higher than rate from the North region (79.2/100,000) and the North West region (73.5/100,000).
The age-standardised incidence rates for breast cancer in Tasmanian females were stable from 1978-79 to 1988-89 and then increased markedly from 1990-91 (Figure 3.19). Overall, an upward trend in the rates was found in Tasmania between 1978-80 and 1996-98, which increased by an average of 2.6% per year. This increase was statistically significant (P<0.01).

The substantial increase in age-standardised incidence rates for breast cancer from 1992-93 in Tasmanian females was mainly due to increased detection of breast cancer through mammography screening as it was introduced in Tasmania in February 1993.
As shown in Figure 3.20, there was significant regional variation in age-standardised incidence rates for cervical cancer in Tasmania for the period 1993-99.

The rate in the North West region (10.5/100,000) was higher than rates in the South region (8.6/100,000) and the North region (7.7/100,000), however these differences are not statistically significant.
Age-standardised incidence rates for cervical cancer continued decreasing from 1978-79 through to 1998-99 (Figure 3.21).

Trend analysis indicates an annual decrease by an average of 2.4% between 1978-79 and 1998-99, which was statistically significant (P<0.01).

A major contributor to the decrease in incidence is the cervical cancer screening (pap smear) program, which can detect pre-cancerous lesions that can be treated before they progress to cancer.
There are suggestions of regional variation in age-standardised incidence rates for prostate cancer in Tasmania for the period 1993-99 (Figure 3.22), however the differences may also reflect patterns of attendance and diagnosis rather than true variations in incidence.

It is noted that prostate cancer may remain relatively asymptomatic in some men, and that they may eventually die with, rather than from, their prostate cancer.

The rate in males residing in the North region (98.7/100,000) exceeded that of those for Tasmania as a whole (92.6/100,000).
Age-standardised incidence rates for prostate cancer remained stable in Tasmanian males from 1978-79 to 1988-89 and then a substantial increase occurred between 1990-91 and 1994-95 (Figure 3.23).

A marked fall in the rate was found after 1994-5. Overall, there was an annual increase by an average of 6.3% between 1978-79 and 1998-99, which was statistically significant (P<0.01).

The significant increase in the incidence of prostate cancer in the later years is most likely associated with the introduction of a serum prostate-specific antigen test for the early detection of this cancer. However there is considerable doubt as to the overall benefit of this test in any form of public screening program.
Age-standardised Incidence Rate for Brain Cancer by Region and Sex:

There was regional variation in age-standardised incidence rates for brain cancer in Tasmania for the period 1993-99 (Figure 3.24). The lowest rates occurred in both males (4.2/100,000) and females (4.5/100,000) from the North region of Tasmania.

The most notable difference for incidence rates occurred in the South region where the male rate was 1.5 times as great as that for females.
Age-standardised Incidence Rate for Prostate Cancer by Year and Sex:

The age-standardised incidence rates for brain cancer fluctuated for both Tasmanian males and females (Figure 3.25). Overall, an upward trend in the rates for Tasmanian males was found during the study period, giving an annual increase by an average of 0.4%. This increase was not statistically significant (P>0.05).

For Tasmanian females, age-standardised incidence rates for brain cancer were low for the period from 1984-85 to 1986-87 and yet relatively high for years 1992-93 and 1994-95 (Figure 3.25). The trend analysis indicated that the rates increased by an average of 2.2% per year in Tasmanian females between 1978-79 and 1998-99. This upward trend was statistically significant (P<0.05).

As shown in Figure 3.25, age-standardised incidence rates for brain cancer among males were higher than those for females in Tasmania. This difference was seen over the two-yearly periods from 1978-79 to 1998-99, except for the years 1994-95.
Age-standardised Incidence Rate for Thyroid Cancer by Region and Sex:

There was regional variation in age-standardised incidence rates for thyroid cancer among Tasmanians for the period 1993-99 (Figure 3.26). The highest rate was recorded in females from the South at 8.3/100,000. The highest male rate occurred in the South region at 2.3/100,000.

There was a particularly large gender difference in overall age-standardised incidence rates for thyroid cancer in Tasmania, with the female incidence rate being almost three times as high as the male rate.
Age-standardised incidence rates for thyroid cancer in Tasmanian males fluctuated from 1978-79 to 1992-93 and then peaked in 1998-99 (Figure 3.27). Overall, an upward trend in the rates was found in males between 1978-79 and 1998-99, with an annual increase by an average of 5.6%. This increase was statistically significant (P<0.01).

As shown in Figure 3.27, age-standardised incidence rate for thyroid cancer in Tasmanian females was low in 1978-79 and remained stable from 1988-89 to 1992-93. In 1998-99, the rate reached the highest level of 7.8/100,000. The trend analysis showed that the rates in females increased by an average of 6.9% yearly between 1978-79 and 1998-99. This increased trend was found to be statistically significant (P<0.01).

Age-standardised incidence rates for thyroid cancer in Tasmanian females were higher, compared with Tasmanian males (Figure 3.27). This difference occurred in all biennial periods from 1978-79 to 1998-99.
Age-standardised Incidence Rate for Lymphomas by Region and Sex:

![Bar Chart](image)

The term lymphoma usually refers to malignantly neoplastic transformations of the lymphoid tissue (Stedman’s Medical Dictionary 1984).

Lymphomas presented in this Report include non-Hodgkin’s lymphoma (ICD-9 200 and 202) and Hodgkin’s lymphoma (ICD-9 201).

There was regional variation in age-standardised incidence rates for lymphomas in Tasmania for the period 1993-99 (Figure 3.28). For males, the highest rates were recorded in the South region while the highest rate for females occurred in the North West region (Figure 3.28).
Age-standardised Incidence Rate for Lymphomas by Year and Sex:

Age-standardised incidence rates for lymphomas varied over biennial periods in Tasmania between 1978-79 and 1998-99 (Figure 3.29). The rates for Tasmanian males declined between 1980-81 and 1984-1985, then increased from 1986-87 to 1992-93. The highest rate for males was recorded in the period 1998-99 (17.4/100,000). Overall, there was an annual increase of average of 2.4% in Tasmanian males between 1978-79 and 1998-99. This upward trend was found to be statistically significant (P<0.01).

For Tasmanian females, age-standardised incidence rates for lymphomas generally decreased between 1980-81 and 1984-85 (Figure 3.129). The trend analysis indicated that the rates in females increased by an average of 2.3% per year during the period. This increase was statistically significant (P<0.01).

Males had slightly higher rates than females in Tasmania, which was seen over all two-yearly periods from 1978-79 and 1998-99, except for the period 1986-87 (Figure 3.29).
Age-standardised Incidence Rate for Leukemias by Region and Sex:

Leukaemias are malignant diseases of the blood-forming organs, which are characterized by a large amount of abnormal white blood cells in the peripheral blood (Stedman’s Medical Dictionary 1984).

Age-standardised incidence rates for leukaemias in Tasmanian males were the highest in the South region and the lowest in the North West region (Figure 3.30). For Tasmanian females, the rate in the North region was higher than rates in the North region and the North West region.

As shown in Figure 3.30, females had slightly higher rate than males in the North West region.
Age-standardised Incidence Rate for Leukemias by Year and Sex:

The age-standardised incidence rates for leukemias fluctuated with yearly periods in both males and females, in Tasmania, between 1978-79 and 1998-99 (Figure 3.31).

The rates in Tasmanian males peaked in 1988-89 at 13.1/100,000 and reduced to the lowest level in 1998-99 at 7.0/100,000. Overall, a downward trend was found in males between 1978-79 and 1998-99, giving a decrease by an average of 0.6% per year. This decrease was not statistically significant (P>0.05).

For Tasmanian females, age-standardised incidence rates for leukemias increased by an average of 1.2% per year between 1978-79 and 1998-99. This upward trend was not statistically significant (P>0.05).
Hospital Admission Rates

Hospital Admissions and Age-standardised Rate for all Diagnoses by Region and Sex:

In 2000, there were 131,679 hospital admissions for Tasmanian residents, representing 280 per 1,000 population. Overall hospital admissions were higher for females than for males, with age-standardised hospital admission rates of 25,801 per 100,000 for the female population and 22,341 per 100,000 for the male population (Table 3.2).

For both males and females, the highest age-standardised hospital admission rates were recorded in the South region of Tasmania and the lowest rates were recorded in the North West region (Table 3.2). However, regional variations can reflect differences in admitting and clinical practices throughout the state, and do not necessarily indicate local differences in prevalence or severity of diseases.

### Table 3.2 Hospital admissions and age-standardised rate (ASR) for all diagnoses by region and sex, Tasmania, 2000

<table>
<thead>
<tr>
<th>Region</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of admissions</td>
<td>ASR per 100,000</td>
</tr>
<tr>
<td>South</td>
<td>32331</td>
<td>25009.8</td>
</tr>
<tr>
<td>North</td>
<td>18097</td>
<td>23678.1</td>
</tr>
<tr>
<td>North-West</td>
<td>9681</td>
<td>15249.5</td>
</tr>
<tr>
<td>Tasmania</td>
<td>60109</td>
<td>22341.4</td>
</tr>
</tbody>
</table>

Source: Statewide Morbidity Database, Tasmania (Public & Private Hospitals).
Number and Percentage of Hospital Admissions by ICD Category and Sex:

Table 3.3  Number and percentage of hospital admissions by ICD-10-AM* Chapter and sex, Tasmania, 2000

<table>
<thead>
<tr>
<th>ICD-10-AM Chapter</th>
<th>No. Admissions</th>
<th>Male %</th>
<th>No. admissions</th>
<th>Female %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors Z00-Z99</td>
<td>11572</td>
<td>19.3</td>
<td>9929</td>
<td>13.9</td>
</tr>
<tr>
<td>Digestive K00-K93</td>
<td>6999</td>
<td>11.7</td>
<td>8075</td>
<td>11.3</td>
</tr>
<tr>
<td>Circulatory I00-I99</td>
<td>5821</td>
<td>9.7</td>
<td>4432</td>
<td>6.2</td>
</tr>
<tr>
<td>Injury S00-T98</td>
<td>5157</td>
<td>8.6</td>
<td>3727</td>
<td>5.2</td>
</tr>
<tr>
<td>Musculoskel. M00-M99</td>
<td>4699</td>
<td>7.8</td>
<td>5324</td>
<td>7.4</td>
</tr>
<tr>
<td>Neoplasms C00-D48</td>
<td>4446</td>
<td>7.4</td>
<td>4843</td>
<td>6.8</td>
</tr>
<tr>
<td>Respiratory J00-J99</td>
<td>3171</td>
<td>5.3</td>
<td>2816</td>
<td>3.9</td>
</tr>
<tr>
<td>Mental F00-F99</td>
<td>3020</td>
<td>5.0</td>
<td>3732</td>
<td>5.2</td>
</tr>
<tr>
<td>Symptoms R00-R99</td>
<td>2848</td>
<td>4.7</td>
<td>3701</td>
<td>5.2</td>
</tr>
<tr>
<td>Genitourinary N00-N99</td>
<td>2807</td>
<td>4.7</td>
<td>5550</td>
<td>7.8</td>
</tr>
<tr>
<td>Skin L00-L99</td>
<td>1912</td>
<td>3.2</td>
<td>1730</td>
<td>2.4</td>
</tr>
<tr>
<td>Nervous G00-G99</td>
<td>1776</td>
<td>2.9</td>
<td>1454</td>
<td>2.0</td>
</tr>
<tr>
<td>Eye and adnexa H00-H59</td>
<td>1509</td>
<td>2.5</td>
<td>2218</td>
<td>3.1</td>
</tr>
<tr>
<td>Endocrine E00-E90</td>
<td>1127</td>
<td>1.9</td>
<td>1249</td>
<td>1.8</td>
</tr>
<tr>
<td>Perinatal P00-P96</td>
<td>1088</td>
<td>1.8</td>
<td>814</td>
<td>1.1</td>
</tr>
<tr>
<td>Infectious A00-B99</td>
<td>726</td>
<td>1.2</td>
<td>707</td>
<td>1.0</td>
</tr>
<tr>
<td>Blood D50-D89</td>
<td>480</td>
<td>0.8</td>
<td>757</td>
<td>1.1</td>
</tr>
<tr>
<td>Congenital Q00-Q99</td>
<td>475</td>
<td>0.8</td>
<td>308</td>
<td>0.4</td>
</tr>
<tr>
<td>Eye H60-H95</td>
<td>459</td>
<td>0.8</td>
<td>445</td>
<td>0.6</td>
</tr>
<tr>
<td>Pregnancy O00-O99</td>
<td>0</td>
<td>0.0</td>
<td>9725</td>
<td>13.6</td>
</tr>
<tr>
<td>Total</td>
<td>60092</td>
<td>100.0</td>
<td>71536</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*International Classification of Diseases, 10th Revision, Australian Modification.
Source: Statewide Morbidity Database, Tasmania (Public & Private Hospitals).

The International Classification of Diseases groups all diseases into 21 chapters that represent major and broad categories of the illnesses (NCC 1998). Additional Z-codes in the International Classification of Diseases are used to indicate hospital admissions resulting from organ donation, antenatal screening, orthopaedic aftercare, dialysis, chemotherapy, or follow-up examination. Z-codes do not necessarily reflect a disease that would have been classified from code A00 to code T98 under the International Classification of Diseases.

Table 3.3 shows the number and percentage of hospital admissions for all ages in 2000 in Tasmania. The most common cause of hospitalisation for Tasmanians in 2000 was Z-codes for males and females (19.3% and 13.9% of all hospital admissions).

For Tasmanian males, diseases of the digestive system (11.7%) were the second most frequent cause for hospitalisation, followed by diseases of the circulatory system (9.7%) and injury (8.6%) (Table 3.3).

Pregnancy, childbirth and the puerperium were ranked as the second common cause of hospitalisation for females (13.6%), followed by diseases of the digestive system (11.3%) and diseases of the genitourinary system (7.8%).
Hospital Admissions Rate for all Diagnoses by Age and Sex:

Age-specific hospital admission rate for Tasmanians in 2000 are provided in Figure 3.32, which shows children (0-4 years) and older people (75 years and over) had the highest rates of hospitalisation. The lowest rates occurred in the 5-14 year olds, with admissions increasing as age increased.

There was gender difference in age-specific hospital admission rate in 2000, with males having higher hospital admission rates than females for all ages except among those aged 15 to 54 years. Hospital admission rates for females 15-49 are higher than males due to female hospital admissions for childbirth.

![Fig 3.32](image-url)

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male Rate per 1,000 population</th>
<th>Female Rate per 1,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>348.3</td>
<td>285.3</td>
</tr>
<tr>
<td>5-14</td>
<td>70.8</td>
<td>58.4</td>
</tr>
<tr>
<td>15-24</td>
<td>110.4</td>
<td>217.0</td>
</tr>
<tr>
<td>25-34</td>
<td>153.2</td>
<td>360.7</td>
</tr>
<tr>
<td>35-44</td>
<td>184.1</td>
<td>245.5</td>
</tr>
<tr>
<td>45-54</td>
<td>235.4</td>
<td>273.6</td>
</tr>
<tr>
<td>55-64</td>
<td>367.9</td>
<td>348.8</td>
</tr>
<tr>
<td>65-74</td>
<td>632.7</td>
<td>482.6</td>
</tr>
<tr>
<td>75+</td>
<td>977.7</td>
<td>707.3</td>
</tr>
</tbody>
</table>

Source: Statewide Morbidity Database, Tasmania (Public & Private Hospitals).
Average Length of Stay (ALOS) by Age and Sex:

The average length of stay in hospitals was estimated by dividing the total number of bed days occupied by a group of patients during the study period, by the number of separations aggregated for that period. The average length of stay in hospitals is expressed by days.

The average length of stay in hospitals fluctuated with age, as shown in Figure 3.33. The longest average length of stay in hospitals was seen in children aged 0-4 years and old people for both sexes. Children aged 5-14 years for both sexes had the shortest average length of stay in hospitals.

In 2000, there was a similar average length of stay in hospitals found between males and females for the ages 0-4 and 5-14 years (Figure 3.33). For the 15-24 age group, males had longer average length of stay in hospitals than females. For those aged 75+, the average length of stay in hospitals for males (6.4 days) was much shorter than that for females (8.7 days).
Age-standardised Hospital Admission Rate for Infectious and Parasitic Diseases by Region and Sex:

There was some regional difference in age-standardised hospital admission rates for infectious and parasitic diseases in Tasmanian for 2000. The highest rate was recorded in the North region of Tasmania and the lowest rate was found in the North West region (Figure 3.34).

*International Classification of Diseases, 10th Revision, Australian Modification.
Source: Statewide Morbidity Database, Tasmania (Public & Private Hospitals).
Age-standardised hospital admission rate for infectious and parasitic diseases increased in Tasmania from 1991 to 1996. The lowest rate for both males and females occurred in 1992 (Figure 3.35).

Generally, admission rates for males were lower than the rates for females in Tasmania, except for the years 1992, 1999 and 2000.
Age-standardised Hospital Admission Rate for all Cancers by Region and Sex:

There was a regional variation in age-standardised hospital admission rates for all cancers in Tasmania for 2000 (Figure 3.36). Among both males and females, the highest rates were found in the South region, and the lowest rates were recorded in the North West region.

For Tasmania as a whole, there was a substantial difference in the admission rates between males (982.3/100,000) and females (736.3/100,000).
Age-standardised hospital admission rate for all cancers increased in Tasmania from 1991 to 2000 (Figure 3.7). The rate for males increased from 718.4/100,000 in 1991 to 982.3/100,000 in 2000. An increase in the rate was also found for females, from 517.0/100,000 in 1991 to 736.3/100,000 in 2000.

Age-standardised hospital admission rates for all cancers were markedly higher for males than females between 1991 and 1996. However, the gap in the rate by sex narrowed in 1998, showing 947.05/100,000 for males and 930.7/100,000 for females, before diverging again in the following two years.
Age-standardised Hospital Admission Rate for Diabetes Mellitus Type I by Region and Sex:

There was apparent regional variation in age-standardised hospital admission rates for diabetes mellitus Type I in Tasmania for 2000 (Figure 3.38). For Tasmanian males, the highest rate was recorded in the South region of Tasmania at 67.9/100,000 and the lowest rate was recorded in the North region at 48.8/100,000.

Age-standardised hospital admission rates for diabetes mellitus Type I for females was higher in the South region than in the North and North West regions.

Type 1 diabetes results from the body destroying its insulin-producing cells in the pancreas. People with this form of diabetes require daily insulin therapy to survive. It is the most common form of childhood diabetes and accounts for 10-15% of all people with diabetes.
Age-standardised Hospital Admission Rate for Diabetes Mellitus Type I by Year and Sex:

The age-standardised hospital admission rate for diabetes mellitus Type I in Tasmania fluctuated yearly from 1991 to 2000 (Figure 3.39). The rates were the highest for males (92.5/100,000) in 1998, and highest for females (94.4/100,000) in 1997.

Females had higher rates than males in Tasmania for the all years except for 1993 and 1998. In 2000, the age-standardised hospital admission rate for diabetes mellitus Type I in females (81.5/100,000) was nearly twice as high as that for males (59.3/100,000).
Regional variation in age-standardised hospital admission rates for diabetes mellitus Type II in Tasmania occurred in 2000 (Figure 3.40). The highest rate was found in the South region compared with the rates in the rest of Tasmania.

The age-standardised hospital admission rate for diabetes mellitus Type II was found to be significantly higher in males than in females for the South region. However, the rates between males and females were similar in the North West region (Figure 3.40). Males also had higher rates than females for Tasmania as a whole (135.3/100,000 and 81.0/100,000 respectively).

Type 2 diabetes is marked by reduced levels of insulin, or the inability of the body to use insulin properly (insulin resistance). This form of diabetes is more common in people aged 40 years and over and accounts for 85-90% of all people with diabetes.
Age-standardised Hospital Admission Rate for Diabetes Mellitus Type II by Region and Sex:

There was annual variation in age-standardised hospital admission rates for diabetes mellitus Type II in Tasmania between 1991 and 2000 (Figure 3.41). Male rates increased from 1991 to 1995. The rate for males decreased to 33.3/100,000 in 1996, then increased considerably to 135.3/100,000 in 2000.

For Tasmanian females, age-standardised hospital admission rates for diabetes mellitus Type II fluctuated over the years, with low rates from 1993 to 1996, and high rates in 1997 and 2000 (Figure 3.41).

Fig 3.41  Age-standardised hospital admission rate for diabetes mellitus Type II (ICD*-9-CM 250, ICD-10-AM E11) by year and sex, Tasmania, 1991-2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Male (Rate per 100,000)</th>
<th>Female (Rate per 100,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>31.9</td>
<td>39.9</td>
</tr>
<tr>
<td>1992</td>
<td>40.8</td>
<td>34.8</td>
</tr>
<tr>
<td>1993</td>
<td>32.8</td>
<td>23.8</td>
</tr>
<tr>
<td>1994</td>
<td>36.3</td>
<td>23.9</td>
</tr>
<tr>
<td>1995</td>
<td>38.7</td>
<td>28.3</td>
</tr>
<tr>
<td>1996</td>
<td>33.3</td>
<td>27.4</td>
</tr>
<tr>
<td>1997</td>
<td>47.4</td>
<td>51.0</td>
</tr>
<tr>
<td>1998</td>
<td>64.1</td>
<td>33.2</td>
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<tr>
<td>1999</td>
<td>62.3</td>
<td>61.2</td>
</tr>
<tr>
<td>2000</td>
<td>135.3</td>
<td>81.0</td>
</tr>
</tbody>
</table>

*International Classification of Diseases, 9th Revision, Clinical Modification and 10th Revision, Australian Modification.
Source: Statewide Morbidity Database, Tasmania (Public & Private Hospitals).
The term ‘mental disorders’ refers to a disturbance of mood or thought that can affect behaviour and distress the person or those around them, so that the person cannot function normally. Mental disorders such as depression, anxiety and schizophrenia are common in Australia.

There were regional differences in the age-standardised hospital admission rate for mental disorders in Tasmania for 2000 (Figure 3.42). Among Tasmanian males, the highest rate was found in the South region (1545.4/100,000) and the lowest in the North West region (701.2/100,000).

Females living in the South region had higher rates than their male counterparts, whereas the reverse was found in the North and the North West regions (Figure 3.42). The rate in females (1312.4/100,000) was higher than that in males (1138.1/100,000) for Tasmania as a whole.
Age-standardised Hospital Admission Rate for Mental Disorders by Year and Sex:

As shown in Figure 3.43, the age-standardised hospital admission rate for mental disorders continued rising in Tasmania from 1991 to 2000. For males, the rate increased from 463.8/100,000 in 1991 to 1138.1/100,000 in 2000. A similar pattern occurred in females with an increase from 537.8/100,000 in 1991 to 1312.4/100,000 in 2000.

Age-standardised hospital admission rate for mental disorders in males was lower than that in females for all the years from 1991 to 2000 (Figure 3.43).
Age-standardised Hospital Admission Rate for Circulatory Diseases by Region and Sex:

There was a regional variation in the age-standardised hospital admission rate for circulatory diseases in Tasmania for 2000 (Figure 3.44). For both males and females, the highest rates were noted in the South region and the lowest rates were recorded in the North West region of Tasmania.

Gender difference in the age-standardised hospital admission rate for circulatory diseases was recorded in all three regions, and Tasmania as a whole. The rates for males were nearly twice as high as those for females (Figure 3.44).
Age-standardised Hospital Admission Rate for Circulatory Diseases by Year and Sex:

There was an increase in the age-standardised hospital admission rate for circulatory diseases in Tasmania from 1991 to 1996 (Figure 3.45).

The rate for males rose from 1549.9/100,000 in 1991 to 1907.4/100,000 in 1996, and then decreased to 1670.5/100,000 in 2000.

The female rate increased from 1082.1/100,000 in 1991 to 1199.0/100,000 in 1997. For both sexes, the rates started falling from 1997.

Age-standardised Hospital Admission Rate for Ischaemic Heart Disease by Region and Sex:

There was little regional difference in age-standardised hospital admission rates for ischaemic heart disease in Tasmania for 2000 (Figure 3.46). For males, it was found that the rate in the North region was slightly higher than those in the rest of Tasmania. For females, the highest rate was recorded in the South region (Figure 3.46).

Age-standardised hospital admission rate for ischaemic heart disease for males was more than twice as high as the rate for females in Tasmania. This gender difference was seen in all three regions and Tasmania as a whole (Figure 3.46).
Age-standardised Hospital Admission Rate for Ischaemic Heart Disease by Year and Sex:

Figure 3.47 presents age-standardised hospital admission rates for ischaemic heart disease in Tasmania from 1991 to 2000. The rate for Tasmanian males increased from 681.3/100,000 in 1991 to 897.7/100,000 in 1996 and then decreased to 751.1/100,000 in 2000.

For Tasmanian females, age-standardised hospital admission rate for ischaemic heart disease rose from 1991 to 1996. However, from 1996 onwards, there was a decrease in the rate (Figure 3.47). By 2000, age-standardised hospital admission rates for ischaemic heart disease had decreased to 294.4/100,000 in females.

Males had substantially higher rate than females in Tasmania and this gender difference was seen in the all years from 1991 to 2000 (Figure 3.47).
Age-standardised Hospital Admission Rate for Cerebrovascular Disease by Region and Sex:

Figure 3.48 presents regional variation in age-standardised hospital admission rates for cerebrovascular disease (stroke) in Tasmania for 2000. For Tasmanian males, the rates were similar across regions. For females, the highest rate was recorded in the North region (118.6/100,000) and the lowest rate was seen in the North West region (73.2/100,000).

The age-standardised hospital admission rate for cerebrovascular disease was substantially higher in males than in females. This gender difference existed in all three regions and Tasmania as a whole (Figure 3.48).
The age-standardised hospital admission rate for cerebrovascular disease (stroke) fluctuated over years in Tasmania (Figure 3.49). For Tasmanian males, the rate rose from 156.2/100,000 in 1991 to 191.7/100,000 in 1997 and then decreased to 137.6/100,000 in 2000. However, the rate for Tasmanian females decreased from 132.7/100,000 in 1991 to 99.9/100,000 in 2000.

Males had significantly higher rates than females in Tasmania for the period 1991-2000 (Figure 3.39).
Age-standardised Hospital Admission Rate for Respiratory Diseases by Region and Sex:

There was regional variation in the age-standardised hospital admission rate for respiratory diseases in Tasmania for 2000 (Figure 3.50). The North region had the highest rates for both males and females at 1696.4/100,000 and 1327.3/100,000 respectively.

The age-standardised hospital admission rate for respiratory diseases in males was higher than that in females in all three regions and Tasmania as a whole (Figure 3.50).
Respiratory diseases include infections such as influenza, pneumonia, and other infections of the upper or lower respiratory system.

The age-standardised hospital admission rate for respiratory diseases varied each year in Tasmania from 1991 to 2000 (Figure 3.51). The rates fluctuated slightly in both sexes from 1991 to 1995 and fell to the lowest record for both sexes (1274.3/100,000 for males and 1029.7/100,000 for females) in 1999.

As shown in the graph, there has been an overall decline in admission rates for respiratory diseases over the past 10 years.

Age-standardised hospital admission rate for respiratory diseases was higher in males than in females. This gender difference was noted in Tasmania for the period 1991-2000 (Figure 3.51).
Age-standardised Hospital Admission Rate for Asthma by Region and Sex:

Figure 3.52 presents regional variation in age-standardised hospital admission rates for asthma in Tasmania for 2000. It was found that the rate in the North region was markedly higher than rates in the rest of Tasmania.

The rates in males were similar to those for females in the North and the North West regions, while females had a higher rate than males in the South region (Figure 3.52). For Tasmania as a whole, the rate was a little higher in females (146.5/100,000), compared with males (144.6/100,000).
Age-standardised Hospital Admission Rate for Asthma by Year and Sex:

The age-standardised hospital admission rate for asthma varied over the years in Tasmania for the period 1991-2000 (Figure 3.53). The rate in Tasmanian males rose from 274.5/100,000 in 1991 to 306.9/100,000 in 1992 and then declined from 275.9/100,000 in 1993 to 144.6/100,000 in 2000.

For Tasmanian females, age-standardised hospital admission rates for asthma increased from 1991 to 1992 and then declined from 1993 onwards, with a slight increase in 1996 (Figure 3.53).

The rate in males was slightly higher than that in females and this gender difference was seen in Tasmania for the all reported years except for 1996, 1998 and 2000 (Figure 3.53). Overall, there was a decrease in hospital admission rates for asthma between 1991 and 2000.
**Age-standardised Hospital Admission Rate for Injury and Poisoning by Region and Sex:**

![Graph showing age-standardised hospital admission rate for injury and poisoning by region and sex, Tasmania, 2000.](image)

Injury includes many types of wound and can be defined as intentional or unintentional damage to body tissue resulting from contact with physical, chemical, mechanical, thermal or electrical forces or the absence of essential elements (e.g. oxygen, heat).

Figure 3.54 shows age-standardised hospital admission rates for injury and poisoning for Tasmania by region. While rates were highest overall in the South, there were no substantial differences from the state average. Rates were considerably higher for males than for females, which was consistent with all regions and Tasmania as a whole.
Age-standardised Hospital Admission Rate for Injury and Poisoning by Year and Sex:

Figure 3.55 shows that age-standardised hospital admission rates from injury and poisoning rose in Tasmania from 1991 to 1996 and then fell from 1997, in both males and females. There was an overall trend that shows a slight increase in admission rates for both males and females over the 10-year period.
Age-standardised Hospital Admission Rate for Transport Injury by Region and Sex:

<table>
<thead>
<tr>
<th>Region</th>
<th>Rate per 100,000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>South</td>
<td>352.9</td>
</tr>
<tr>
<td>North</td>
<td>394.7</td>
</tr>
<tr>
<td>North-West</td>
<td>326.0</td>
</tr>
<tr>
<td>Tasmania</td>
<td>358.5</td>
</tr>
</tbody>
</table>

*International Classification of Diseases, 10th Revision, Australian Modification.
Source: Statewide Morbidity Database, Tasmania (Public & Private Hospitals).

Road vehicle accidents are one of the major causes of injury morbidity and mortality both in Tasmania and nationally. Figure 3.56 illustrates regional and gender based variation in age-standardised hospital admission rates for road vehicle accidents in Tasmania.

For males, the rate was the highest in the North region (394.7/100,000) and the lowest in the North West region (326.0/100,000). For females, the highest rate was noted in the North region, while the lowest rate was found in the South region. The rate was consistently much higher for males than for females.
Age-standardised Hospital Admission Rate for Transport Injury by Year and Sex:

Figure 3.57 shows the trend for age-standardised hospital rates from road vehicle accidents has increased for both males and females in the period 1991-2000.

There is a considerable gender difference between males and females, with males being almost twice as likely to be hospitalised for road vehicle accidents as females. This gender ratio, although varying slightly, existed for the entire the 10-year period.
Age-standardised Hospital Admission Rate for Accidental Falls among those aged 70 years and over, by Region and Sex:

Figure 3.58 illustrates the rate of admissions from falls in those aged 70 years and over. This is one of the few areas of injury where females outnumber males.

The highest rates of admissions from falls for males were in the North region, the highest rates for females were in the South region.
Age-standardised Hospital Admission Rate for Accidental Falls among those Aged 70 Years and Over, by Year and Sex:

Figure 3.59 shows the trend for hospitalisations from falls in older Tasmanians have been rising since about 1994.
Figure 3.60 displays the admission rates for injury caused by fire, burns and scalds among children 0-4 years. There was a substantial difference in patterns by region, with the highest rate in the South region and the lowest rate in the North region.
Age-standardised Hospital Admission Rate for Injury Caused by Fire, Burns and Scalds in Children Aged 0 – 4 Years, by Year and Sex:

The trends for burns and scalds in the 0-4 age group show considerable year to year variation (Figure 3.61).

In general, the rates rose between 1991 and 1993 and then began to drop again. The rate for males tends to be higher than for females, although this can vary in some years.
Age-standardised Hospital Admission Rate for Poisoning in Children Aged 0 – 4 Years, by Region and Sex:

Figure 3.62 shows the rates of unintentional poisoning for children 0-4 years. The rate tended to be higher for males than for females in the South and the North West regions, particularly in the North West region where the gender difference was greatest.
Age-standardised Hospital Admission Rate for Poisoning in Children Aged 0 – 4 Years, by Year and Sex:

The trend for unintentional poisoning related admissions shows variation over time, with a slight overall decrease in admissions since 1991 (Figure 3.63). The rate for boys tends to be higher than for girls, but this was varied from year to year.
Age-standardised Hospital Admission Rate by ICD-9 Chapter and Area:

Table 3.4 presents age-standardised hospital admission rates by area in Tasmania for selected diseases.

For the period 1998-2000, people living in rural area experienced significantly higher age-standardised hospital admission rates for a number of medical conditions, compared with metropolitan dwellers.

However, as indicated earlier, some caution is required in interpreting regional variations in the data.
Notifiable Infectious Diseases

Top Ten Infectious Diseases, Tasmania:

Under the Public Health Act 1997 and associated regulations, a number of communicable (infectious) diseases must be notified to the Director of Public Health when found by either the pathology laboratory or the attending clinician.

Campylobacteriosis, a food borne infection that causes gastroenteritis had the highest notification rate in Tasmania among the infectious diseases group for the period 1995-2001, (Figure 3.64). This is consistent with the rest of Australia.

Hepatitis C, both in Tasmania and the rest of Australia, also has one of the highest notification rates. Hepatitis C causes inflammation of the liver and a high percentage of affected persons can be expected to develop chronic liver disease. The highest risk group for transmission of hepatitis C is injecting drug users.

Chlamydial infection is a sexually transmitted disease has a high notification rate that is consistent with the National trend. In some cases, this infection causes no symptoms, but infertility in females is a significant complication if the infection is not identified early and treated.

It is important to note that many of these diseases go undiagnosed in the community and therefore are not recorded in data. This is particularly true of food borne illness.
Number of Notifications for Selected Infectious Diseases compared to Historical Data, Tasmania:

“Historical data” means the average yearly number of cases over the period 1990 – 2000. These rates are used as a reference point against which notifications in 2001 can be compared.

There has been a decline in the notification of H.influenzae type b, measles, pertussis and tuberculosis in Tasmania between 1990 and 2001 (Figure 3.65). However, there has been a significant increase in notifications of campylobacterosis, chlamydial infections, gonococcal infection, hepatitis C-unspecified and meningococcal infection.

There remains a need for increased community and health professional awareness about these infections together with prompt follow up and implementation of preventative measures. A range of immunisation initiatives has led to an increased coverage against measles and rubella infection using the measles-mumps-rubella vaccine, and it remains to be seen whether the recently introduced meningococcal vaccination programs will reduce rates of meningococcal infection.
Campylobacteriosis is an infection that occurs in all age groups, but predominates in the 0–4 age group (Figure 3.66).

The Tasmanian pattern is similar to other parts of Australia, where the highest rates are seen in the 0-4 age group, with males being infected more frequently than females.
Crude Notification Rate for Campylobacteriosis by Year:

Notification rates for Campylobacteriosis have varied considerably over the last decade between Tasmania and the rest of Australia (Figure 3.67). However, since 1990, the Tasmanian rate has usually been higher than the National rate.

This highlights the need for ongoing effective food safety programs and other preventative measures.
Standardised Incidence Ratio (SIR) for Campylobacteriosis by Local Government Area, Tasmania, 1997-2001:

Map 3.1 illustrates the variation in standardised incidence ratio (SIR) for campylobacteriosis by local government area in Tasmania for the period 1997-2001.

Significant above average SIRs (Tasmania as a whole) were found in Flinders (284), the Meander Valley (161), George Town (156), the North Midlands (151) and Launceston (122).

A number of areas had significantly low SIRs as compared to the State average. These were Waratah/Wynyard (35), West Coast (41), Burnie (64), and Central Coast (73).
Age-specific Notification Rate for Chlamydial Infection by Sex:

Figure 3.68 shows notification rates for chlamydia by sex in Tasmania for the period 1997-2001. The highest rates were seen among those aged 15 to 29 years of age, particularly in the 15 to 24 years of age groups. This is similar to National trends.

There are also marked gender differences, with notification rates for females being between two and five times higher than for males, depending on the age group. Differences between males and females probably reflect access to services, diagnostic and treatment practices.
Crude Notification Rate for Chlamydial Infection by Year:

Figure 3.69 compares notification rates for chlamydia over the last 11 years for Tasmania and Australia as a whole.

Whilst the National notification rate appears to have increased generally, the overall rate in Tasmania declined from a high in 1990 of 93.5/100,000 to 52.4/100,000 in 1997, then increased steadily from 1998.
Standardised Incidence Ratio (SIR) for Chlamydial Infection by Local Government Area, Tasmania, 1997-2001:

Map 3.2

For the period 1997-2001, significantly high SIRs occurred in Hobart (173) and Launceston (126) as compared to the State average (P<0.01). Significantly low SIRs were recorded in Kentish (34), Waratah/Wynyard (49) and West Tamar (50).
Age-specific Notification Rate for Gonococcal Infection by Sex:

Figure 3.70 shows age-specific notification rates for gonococcal infections for the period 1997 to 2001 in Tasmania.

There was a significant difference between notifications for males when compared to females. Notification rates were highest for males between 20 – 34 years of age. The highest rates for females occurred in the 15 – 19 years of age.

These data give cause for concern in that there may be significant under-diagnosis amongst females, in whom this infection can be asymptomatic.

Additionally, amongst men who have sex with men, gonococcal infection may be seen as an indicator of unsafe sex practices, with associated potential risk of HIV transmission.
Crude Notification Rate for Gonococcal Infection by Year:

Figure 3.71 shows the notification rate for gonococcal infection in Tasmania compared to the rest of Australia.

Tasmania has been consistently lower than the national rate for the last three decades. Tasmanian rates have been cyclical in nature, with the highest gonococcal rates reported in the mid 1920s, late 1930s and mid 1940s. Extremely low rates were recorded in the 1950s and 1990s.

These data give cause for concern in that there may be significant under-diagnosis amongst females, in whom this infection can be asymptomatic.
Age-specific Notification Rate for *Haemophilus influenzae* type b by Sex:

*Fig 3.72 Age-specific notification rate for haemophilus influenzae type b by sex, Tasmania, 1997-2001*

<table>
<thead>
<tr>
<th>Age group</th>
<th>Rate per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>Male: 0.0, Female: 6.8</td>
</tr>
<tr>
<td>1-4</td>
<td>Male: 1.5, Female: 1.6</td>
</tr>
<tr>
<td>5-9</td>
<td>Male: 0.0, Female: 0.0</td>
</tr>
<tr>
<td>&gt;10</td>
<td>Male: 0.1, Female: 0.0</td>
</tr>
</tbody>
</table>

Source: Tas. Notifiable Disease Surveillance Database.

*Haemophilus influenza* type b (Hib) infection is predominantly a childhood disease affecting children under 5 years of age.

In Tasmania, over the time period 1997-2001, there have only been a small number of cases: two females aged less than one year, and a male and female in the age range 1-4. Case numbers are too small for any statistical analysis.
Figure 3.73 illustrates the crude notification rates for *Haemophilus influenza* type b infections over the last decade in Tasmania and nationally. Both Tasmanian and Australian rates have declined dramatically since the introduction of free Hib vaccine for all children under 5 years of age in 1993.
**Age-specific Notification Rate for Hepatitis A by Age and Sex:**

Figure 3.74 shows age-specific notification rates for Hepatitis A by sex and age in Tasmania for 1997-2001. Generally, the highest rates were found among those 20–29 years of age and those age 80 years and over. Infection was more common among males than in females.

Hepatitis A is a disease transmitted from person to person or by eating food or drinking water that has been contaminated by an infected person. Infection in children is usually mild with little or no observable illness.

Improved food safety and general sanitation has resulted in a significant decline in this Hepatitis A in the last few decades. Many adults who have not been exposed during childhood are therefore more susceptible, hence the high rates amongst at risk adult groups.
Age-specific Notification Rate for Hepatitis A by Year:

As shown in Figure 3.75, there has been a significant decline in the notification rates of hepatitis A over the last few decades.

Notification rates for hepatitis A in Tasmania were higher than the national average during the 1960s and 1970s. Since the early 1980s, the Tasmanian rate has been similar to the national average, and significantly below the national average during the 1990s.
Age-standardised Notification Rate for Hepatitis C-unspecified by Region:

Figure 3.76 shows age-standardised notification rates for Hepatitis C-unspecified in Tasmania for the period 1997-2001. The highest rate occurred in the South region at 80.9/100,000, which is approximately double the rate for the North Region (39.2/100,000).

The most at risk group for transmission of hepatitis C is injecting drug users, and the high rates recorded in southern Tasmania suggest that perhaps testing procedures may be more common in the south, in addition to the possibility that intravenous drug usage may be more prevalent in the south, in addition to the possibility that intravenous drug usage may be more prevalent in the south.
Age-standardised Notification Rate for Hepatitis C-unspecified by Sex and Age:

Figure 3.77 shows the age-specific notification rates for Hepatitis C-unspecified in Tasmania for 1997-2001. Notification rates were considerably higher for males and elevated rates were reported in the 20-44 years of age groups.

Hepatitis C is most efficiently transmitted from blood to blood and is commonly found in persons who were or are injecting drug users. This figure partly reflects the 20-44 age group of current or past injecting drug users.

Other risk factors include blood transfusions prior to the introduction of screening in 1990 and this explains the increased rate of persons 60 years and over who are most likely to have received blood or blood products during medical care. This figure is similar to the Australian pattern with more males than females affected.
Crude Notification Rate for Hepatitis C-unspecified by Year:

Tasmanian notification rates for Hepatitis C-unspecified have been consistently lower than the national rate from 1992 to 2000 (Figure 3.78). There has been a slight increase in notification rates over the time period, both nationally and at the State level.

The increased rates of Hepatitis C relate to increased transmission and improved detection and reporting associated with increased awareness about this infection.

Counter-measures put in place in Tasmania include to the introduction of screening of blood and blood products (1990) enhanced control of skin penetration activities (tattooing, body piercing 1997), introduction of needle and syringe availability programs (1992) and improved surveillance and management of hepatitis C.

Ongoing efforts are required to reduce the risk of Hepatitis C transmission to new young drug users in particular.
Age-standardised Notification Rate for Measles by Region, 1993 Outbreak:

The last time a significant outbreak of measles occurred in Tasmania was in 1993. Since then, major vaccination campaigns have almost eliminated the disease from the state. The data are presented here to indicate the consequences if vaccination coverage is allowed to fall.

Figure 3.79 illustrates the regional distribution of notification rates for measles in 1993. Overall, 834 cases of measles were reported and 35 children were admitted to hospitals during this period. By far the highest notification rates were reported in the Southern region, which were three times as high as the rates in the Northern region and eight times as high as the North West region.
Measles is predominantly a childhood disease and similar to national data the highest notification rates were for those aged less than 19 years of age (Figure 3.80). The high rates among those aged 10 – 14 years suggested low levels of immunisation in these age groups, at the time of the 1993 outbreak.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male Rate</th>
<th>Female Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>662.7</td>
<td>521.9</td>
</tr>
<tr>
<td>5-9</td>
<td>768.5</td>
<td>685.2</td>
</tr>
<tr>
<td>10-14</td>
<td>79.4</td>
<td>886.4</td>
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<tr>
<td>15-19</td>
<td>29.5</td>
<td>51.0</td>
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<tr>
<td>20-24</td>
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<td>6.5</td>
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<td>11.8</td>
<td>9.4</td>
</tr>
<tr>
<td>30-34</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>35-39</td>
<td>6.7</td>
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<td>40-44</td>
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<td>45-49</td>
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<td>50-54</td>
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<td>55-59</td>
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<td>65-69</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>70-74</td>
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<td>0.0</td>
</tr>
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<td>75-79</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>80-84</td>
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<td>0.0</td>
</tr>
<tr>
<td>85+</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Source: Tas. Notifiable Disease Surveillance Database.

**Fig 3.80** Age-specific notification rate for measles by sex, Tasmania, 1993 outbreak
Crude Notification rate for Measles by Year, 1993 Outbreak:

In 1993, Tasmania experienced an outbreak of measles as evidenced by the 7-fold increase in notification rates for measles as compared to the national average (Figure 3.81).

Although the notification rates were also elevated in 1993 nationally signifying an outbreak, Tasmania’s notification rate far exceeded the national average during the outbreak.

![Crude notification rate for measles by year, Tasmania and Australia, 1990-2001](image)
During the 1993 measles outbreak in Tasmania, significantly high SIRs were recorded in the Central Highlands (560), Huon Valley (417), Dorset (354), Sorell (284), Derwent Valley (272), the Southern Midlands (224), Brighton (170), Clarence (139) and Glenorchy (136) (Map 3.3).
Age-specific Notification Rate for Meningococcal Infection by Age and Sex:

Figure 3.82 shows age-specific notification rates for meningococcal infection by age and sex in Tasmania for 1997-2001. The highest notification rate occurred in those aged less than four years of age. There was also a significantly elevated rate among those aged 15-24 years of age.
Crude Notification Rate for Meningococcal Infection by Year:

Figure 3.83 displays the crude notification rate for meningococcal infection in Tasmania for 1990-2001. The rate in Tasmania fluctuated over time, whereas the national rate has been increasing over time.

In 2001 and 2002 a group C strain of meningococcal infection has caused around two-thirds of cases, and led to the introduction during 2002 of a state-based meningococcal vaccine access program for health care card holding families. A more extensive national program is to be implemented in 2003.
Age-standardised Notification Rate for Pertussis by Region:

There have been a number of Pertussis (Whooping Cough) outbreaks in Tasmania, and Australia, since 1992.

In 1999, a significant outbreak occurred, predominantly in the south of the State (Figure 3.84). In the South region, the age-standardised rate was 275.7/100,000 compared to 34.9/100,000 and 11.0/100,000 for the North and North West regions respectively.
Age-specific Notification Rate for Pertussis by Age and Sex, 1999 Outbreak:

Figure 3.85 shows the age-specific notification rate for Pertussis during the 1999 Tasmanian outbreak.

The highest rates were recorded equally among males and females aged 10–14 years. Generally, the notification rates were higher in females than males with the exception of those in the 75-79 years of age group.
**Age-standardised Notification Rate for Pertussis by Year:**

![Crude notification rate for pertussis by year, Tasmania and Australia, 1990-2001](chart.png)

Notification rates for pertussis have been increasing, in both Tasmania and nationally, since 1992 (Figure 3.86).

Tasmanian notification rates have generally been below the national average until the 1999 outbreak, which saw the notification rate in Tasmania increase six fold over the national rate.
Tasmania experienced an outbreak of Pertussis in 1999, receiving 631 notifications statewide.

Significantly high SIRs for Pertussis were found in Sorell (301), Clarence (235), Southern Midlands (217), Kingborough (209), Huon Valley (185), Glenorchy (168) and Brighton (167).
Age-standardised Notification Rate for Ross River Virus Infection by Region:

Figure 3.87 shows the notification rate for Ross River virus in Tasmania for 1997-2001. The South region had the highest rate at 5.7/100,000. The lowest rate was in the North West region at 1.3/100,000.

The high rates for Ross River virus in the South region are associated with the warmer climates of the east and southeast coasts of Tasmania where transmission rates are higher.
Age-specific Notification Rate for Ross River Virus Infection by Age and Sex:

The highest age-specific notification rate for Ross River virus occurred in the 30-54 year age group with a slightly higher rate in males overall (Figure 3.88).
Crude Notification Rate for Ross River Virus Infection by Year:

Figure 3.89 illustrates the notification rates for Ross River virus in Tasmania for the period 1991-2001.

Tasmania’s rate has increased slightly over time, with peak rates occurring in 1996 and 1999. Higher rates are often associated with climatic factors such as above average temperatures and rainfall.
During the 1997-2001 period, the South region reported the highest notification rate for Rubella (Figure 3.90).
Age-specific Notification Rate for Rubella by Age and Sex:

Similar to national figures for 1997-2001, the highest notification rate for Rubella occurred among males in the 0-4 year age group (Figure 3.91).

Source: Tas. Notifiable Disease Surveillance Database.
Figure 3.92 compares crude notification rates for Rubella in Tasmania and nationally, between 1991 and 2001.

The Tasmanian rate has been consistently lower than the national rate except in 1995, following a major disease outbreak.
Age-specific Notification Rate for Salmonella (NEC) by Age and Sex:

Figure 3.93 shows the notification rates for Salmonella in Tasmania by age and sex for 1997-2001. By far the highest rates were reported among those aged less than four years of age.

There was an also increasing notification rate as age increased past 70 years of age.

There was little difference between the sexes in report rates.
Crude Notification Rate for Salmonella (NEC) by Year:

Figure 3.94 illustrates that, over the last three decades, the notification rates for Salmonella (NEC) have been increasing both in Tasmania and nationally (Figure 3.94). Although the national and State trends fluctuate, the notification rates in Tasmania have been lower than national rates since 1992.

Outbreaks of salmonella infection reveal a general increase over the last three decades. This represents improved methods of detection against a background of increased exposure.

Changes in food production and food distribution systems have potentially increased the rapid spread of contaminated food. In addition, changes in food technology and greater reliance on ready to eat foods together with foods eaten away from home have also created changes linked to outbreaks.

The introduction of food hygiene and food safety reforms and improved public health surveillance and action should help to moderate and possibly reduce this incidence of infection.
Age-specific Notification Rate for Tuberculosis by Age and Sex:

Figure 3.95 shows the age-specific notification rates for tuberculosis in Tasmania for 1997-2001.

Notification rates significantly increased among those aged 60 years and over, and were more common in males than females.
Crude Notification Rate for Tuberculosis by Year:

During the last three decades, Tasmania has consistently had one of the lowest rates of tuberculosis in Australia (Figure 3.96).

The steady downward trend that has occurred throughout Australia during this century are due to improved living conditions, improved health care services and State and national tuberculosis campaigns.
Age-standardised Notification Rate for Selected Notifiable Infectious Diseases by Area:

Figure 3.97 depicts notification rates for selected notifiable infectious diseases in Tasmania by area for 1997-2001. There are several clear urban and rural differences for specific diseases.

Hepatitis C and Chlamydial infections are more commonly seen in urban areas reflecting the larger number of “at-risk” groups (certain age groups with particular patterns of behaviour) living in urban areas.

Vaccine preventable diseases such as measles are more likely to occur in rural and remote areas because of insufficient immunisation coverage. This is often a result of geographical and social barriers to accessing immunisation providers.

The higher rates of salmonella in rural areas probably represent increased exposure to farm animals, and poorer food hygiene practices. The high rates of Ross River Virus infection in rural areas reflect the increased prevalence of infecting mosquitoes where other domestic animals act as hosts in the mosquito life cycle.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Metropolitan</th>
<th>Regional</th>
<th>Rural</th>
<th>Tas. as a whole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campylobacteriosis</td>
<td>112.4</td>
<td>81.7#</td>
<td>106.5</td>
<td>106.6</td>
</tr>
<tr>
<td>Chlamydia infection (NEC)</td>
<td>81.4</td>
<td>52.8#</td>
<td>45.6#</td>
<td>70.2</td>
</tr>
<tr>
<td>Hepatitis C unspecified</td>
<td>67.8</td>
<td>55.7#</td>
<td>45.2#</td>
<td>61.4</td>
</tr>
<tr>
<td>Measles</td>
<td>4.7</td>
<td>9.9^</td>
<td>7.1</td>
<td>6.1</td>
</tr>
<tr>
<td>Meningococcal infection</td>
<td>4.4</td>
<td>7.2</td>
<td>1.9^</td>
<td>4.3</td>
</tr>
<tr>
<td>Ross River virus infection</td>
<td>3.6</td>
<td>0.9#</td>
<td>7.6#</td>
<td>4.0</td>
</tr>
<tr>
<td>Salmonella (NEC)</td>
<td>30.8</td>
<td>23.8^</td>
<td>47.7#</td>
<td>33.5</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>2.3</td>
<td>0.9^</td>
<td>1.3</td>
<td>1.8</td>
</tr>
</tbody>
</table>

*Significantly different from metropolitan area at the 5% level; #Significantly different from metropolitan area at the 1% level.
Source: Tas. Notifiable Disease Surveillance Database. NEC=Not elsewhere classified.
Self-reported Health Status and Disability

Self-Reported Health Status in Persons Aged 15 Years and Over in Tasmania and Australia

In 2001, the Australian Bureau of Statistics conducted a National Health Survey to measure health and well being in the community. Figure 3.98 illustrates self-reported health status of Tasmanians and Australians for 2001.

There were minor variations between Tasmania and Australia. Tasmanian rates were not markedly different from the national averages.

Source: ABS (personal communication). *Age-standardised percentages.
Self-Reported Health Status for Persons Aged 15 years and Over by Age Group:

Results from the 2001 National Health Survey showed that the proportion of Tasmanians who considered themselves as having good or excellent health decreased with age (Figure 3.99).

For example, 67.6% of Tasmanians aged 15-24 years reported good or excellent compared to only 27.9% of those aged 65 years and over.

The proportion of those who self-reported fair and poor health increased with age from 12.1% among those aged 15–24 to 40.6% among those aged 65 years and over.
Self-Reported Health Status for All Indigenous Australians by State/Territory:

In 1994, The ABS conducted its first national health survey for Indigenous Australians. The results obtained from this survey provided information on attitudes and perceptions concerning health, health conditions, health professionals, services and facilities and several risk factors. For this survey, 1,300 Indigenous people from Tasmania were interviewed (ABS Darwin Office, personal communication).

Indigenous people living in Tasmania had the highest proportions of self-reported excellent (33.3%) and very good (34.0%) health. The lowest proportion of self-reported excellent health was recorded in Queensland (20.2%), (Figure 3.100).

The proportion of self-reported poor health varied markedly between States and Territories, with the highest in Victoria (3.2%) and the lowest in the Northern Territory (1.1%).
Top Five Self-Reported Recent Health Conditions by Sex:

In the 1995 National Health Survey, the most common recent health condition (two weeks prior to survey) reported by Tasmanians was headache, which was reported by 10.0% of males and 12.7% of females.

Other recent health conditions experienced by Tasmanians in descending order were hypertension, arthritis, asthma and common cold (Figure 3.101). Females were more likely than males to report that they had recent health conditions.
Top Five Self-Reported Long-term Health Conditions by Sex:

The most common long-term health condition reported by Tasmanians was vision problems, followed by arthritis, hay fever and hypertension (Figure 3.102). Females were more likely than males to report having had a long-term health condition.

A long-term health condition refers to medical conditions that individuals have experienced in the last six months or expect to last for six months or more at the time of the interview (ABS 1997c).
Top Five Self-Reported Recent Illness for Indigenous Australians by Sex:

The results from the 1994 National Aboriginal and Torres Strait Islander Survey (NATSIS) showed that 53.9% of indigenous people of all ages from Victoria reported having been ill in the two weeks prior to survey (ABS 1996b). This figure accounted for the highest proportion in the country.

Tasmania (48.1%) had the second highest proportion, followed by South Australia (44.0%), New South Wales (43.6%), the Northern Territory (38.3%), Queensland (38.0%) and Western Australia (37.8), (Figure 3.103)

Female indigenous people were more likely than males to report that they had a recent illness, in all States or Territories except for Victoria.
**Self-Reported Hypertension and Heart Disease**

For the National Health Survey (ABS 2002g), heart disease refers to a group of diseases including rheumatic fever with heart involvement (ICD-9 391), chronic rheumatic heart disease (ICD-9 393-398), ischaemic heart disease (ICD-9 410-414), pulmonary heart disease (ICD-9 415-417), other forms of heart disease (ICD-9 420-426) and heart failure (ICD-9 428).

As shown in Figure 3.104, people from Tasmania were relatively more likely to report heart disease (2.2%) and hypertension (11.9%) than their counterparts from the rest of Australia. Western Australia had the lowest proportion of self-reported heart disease (1.5%) and hypertension (9.8%) in the country.
Self-Reported Hay fever and Asthma by State/Territory:

The 2001 National Health Survey showed that 16.2% of Tasmanians experienced hay fever, which was lower than that for the Australian Capital Territory (25.3%), South Australia (20.0%), Western Australia (18.3%) and Victoria (17.4%) (ABS 2002g).

There was a slight difference in self-reported asthma between States and Territories in Australia, with the highest proportion in South Australia (12.6%) and the lowest proportion in Western Australia (10.5%) (Figure 3.105).
### Self-Reported Diabetes by State/Territory:

![Bar chart showing self-reported diabetes by State/Territory, Australia, 2001](image)

The age-standardised percentages of self-reported diabetes varied markedly between States and Territories in Australia (ABS 2002g), with the highest rate reported in the Australian Capital Territory and Victoria (3.1%) and the lowest in Tasmania (2.1%) (Figure 3.106).
Prevalence of Diabetes Mellitus, Tasmania

Table 3.5 Prevalence (%) of impaired fasting glycaemia (IFG), impaired glucose tolerance (IGT), known and newly diagnosed diabetes in Tasmanians aged 25 years and over, 1999.

<table>
<thead>
<tr>
<th>Sex</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65-74</th>
<th>75+</th>
<th>Total*</th>
<th>Persons#</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7.1 (6)</td>
<td>9.1 (17)</td>
<td>9.5 (21)</td>
<td>6.8 (9)</td>
<td>8.5 (12)</td>
<td>6.3 (4)</td>
<td>8.2 (69)</td>
<td>5.3 (97)</td>
</tr>
<tr>
<td>Female</td>
<td>1.5 (2)</td>
<td>3.1 (7)</td>
<td>1.6 (4)</td>
<td>3.1 (5)</td>
<td>6.3 (9)</td>
<td>1.5 (1)</td>
<td>2.7 (28)</td>
<td></td>
</tr>
<tr>
<td>IGT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0 (0)</td>
<td>8.0 (15)</td>
<td>12.2 (27)</td>
<td>14.4 (19)</td>
<td>17.0 (24)</td>
<td>20.6 (13)</td>
<td>10.1 (98)</td>
<td>12.2 (235)</td>
</tr>
<tr>
<td>Female</td>
<td>10.7 (14)</td>
<td>10.2 (23)</td>
<td>11.8 (30)</td>
<td>17.8 (29)</td>
<td>17.6 (25)</td>
<td>23.9 (16)</td>
<td>14.0 (137)</td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus (DM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.2 (1)</td>
<td>3.2 (6)</td>
<td>8.1 (18)</td>
<td>13.6 (18)</td>
<td>20.6 (29)</td>
<td>25.4 (16)</td>
<td>9.0 (88)</td>
<td>8.7 (174)</td>
</tr>
<tr>
<td>Female</td>
<td>0.8 (1)</td>
<td>3.1 (7)</td>
<td>7.5 (19)</td>
<td>9.2 (15)</td>
<td>21.1 (30)</td>
<td>20.9 (14)</td>
<td>8.4 (86)</td>
<td></td>
</tr>
<tr>
<td>Known DM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0 (0)</td>
<td>2.1 (4)</td>
<td>2.3 (5)</td>
<td>6.1 (8)</td>
<td>12.1 (17)</td>
<td>17.5 (11)</td>
<td>4.5 (45)</td>
<td>4.7 (96)</td>
</tr>
<tr>
<td>Female</td>
<td>0.8 (1)</td>
<td>2.2 (5)</td>
<td>3.9 (10)</td>
<td>5.5 (9)</td>
<td>13.4 (19)</td>
<td>10.4 (7)</td>
<td>4.9 (51)</td>
<td></td>
</tr>
<tr>
<td>Newly diagnosed DM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.2 (1)</td>
<td>1.1 (2)</td>
<td>5.9 (13)</td>
<td>7.6 (10)</td>
<td>8.5 (12)</td>
<td>7.9 (5)</td>
<td>4.4 (43)</td>
<td>3.9 (78)</td>
</tr>
<tr>
<td>Female</td>
<td>0 (0)</td>
<td>0.9 (2)</td>
<td>3.5 (9)</td>
<td>3.7 (6)</td>
<td>7.7 (11)</td>
<td>10.4 (7)</td>
<td>3.5 (35)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Figures in brackets represent number of cases. Source: Dunstan et al 2000

*Age standardised prevalence (%) by gender.
#Age and gender standardised prevalence (%).
IFG=fasting plasma glucose ≥6.1 and <7.0mmol/l & 2 hour plasma glucose <7.8mmol/l.
IGT=fasting plasma glucose <7.0mmol/l & 2 hour plasma glucose ≥7.8 and <11.1mmol/l.
DM=fasting plasma glucose ≥7.0 & 2 hour plasma glucose ≥11.1mmol/l.
Known cases=those taking tablets or insulin plus those who have been told they have diabetes, and have fasting or 2 hour measurements within the DM cut-off range.
Newly diagnosed cases=those who had not been told they were diabetic prior to the study, and were found to have fasting or 2 hour plasma glucose measurements within the DM cut-off range.

In 1999, a total of 1,847 Tasmanians aged 25 years and over participated in the first ever national study on the prevalence and impact of diabetes mellitus in Australia, which was coordinated by the International Diabetes Institute, Melbourne.

The study results show that the total age and gender standardised prevalence of diabetes (both known and newly diagnosed) among the Tasmanians aged 25 years and over was 8.7%. The age standardised prevalence rate for diabetes was 9.0% for males and 8.4% for females. The prevalence of diabetes increased with age in both sexes (Table 3.5).

As shown in (Table 3.5), there was approximately 0.8 newly diagnosed cases for every known case of diabetes. The overall standardised prevalence of glucose abnormalities (combined diabetes and impaired glucose metabolism) in the Tasmania sample tested was 26.2%. It is estimated that more than 1 in 4 Tasmanians, aged 25 years and over, either has diabetes or a condition of impaired glucose metabolism that is associated with substantial increased risk of both future diabetes and heart disease.
Self-Reported Injury in Tasmania and Australia:

A injury is defined as an accident, harmful incident, exposure to harmful factors or other incident, which occurred in the 4 weeks prior to interview in the 2001 National Health Survey (ABS 2002g).

The rate of self-reported injury in Tasmania was 11.6%, being slightly lower than that in Australia as a whole (12%).
Since 1981, the ABS has conducted four surveys to enumerate the types of disability and level of severity of handicap in the Australian community (ABS 1999b).

For these surveys, a disability was defined as “any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being” (ABS 1999b). The disability reported in the ABS publications referred to the presence of the limitations, restrictions or impairments that had lasted or was likely to last six months or more (ABS 1999b).

The 1998 ABS Survey of Disability, Ageing and Carers reported that 105,100 residents from Tasmania had a disability, representing 22.3% of Tasmanian population. This figure was higher than for the previous 1993 Tasmanian survey that estimated 18.5% of the population had a disability.

After adjustment of age differences, the proportion of people with a disability in 1998 was 21.7% in Tasmania, being the higher than that in any other States and Territories in the country (Figure 3.108).
Self-Reported Mental Health Indicators, Tasmania and Australia

Reliable indicators for mental health are difficult to find due to problems in defining mental health and wellbeing, and while there is variability associated with any self-reported data, the stigma and lack of understanding around mental health and mental illness make data collection more difficult.

The 2001 National Health Survey asked respondents about long term health conditions (at least 6 months duration), and in response 10.1% of Tasmanians (all age groups combined) reported experiencing long term ‘mental or behavioural problems’ which was slightly above the national rate of 9.6%.

For adults, the survey also included ten questions from a standard psychological questionnaire measuring psychological distress (Kessler 10 Scale). The respondents were asked to rate levels of anxious and depressive feelings and the scores were calculated to form a level of ‘psychological distress’.

Tasmanian rates were similar to national averages, with 64% of Tasmanians having low levels of distress, 22% moderate levels, and 14.1% having high or very high levels.
Chapter 4

Risk Factors, Behaviours and Determinants of Health

Introduction:

The determinants of health are the factors that are capable of influencing the level of health in the community. This chapter covers important risk factors experienced by Tasmanians according to the results of health surveys conducted by the ABS and other organisations.

In this Chapter:

CIGARETTE SMOKING
ALCOHOL CONSUMPTION
SUBSTANCE USE
PHYSICAL ACTIVITY
NUTRITION
BREASTFEEDING
OVERWEIGHT/OBESITY
CANCER SCREENING
SUN PROTECTION
IMMUNISATION
PERCEPTIONS OF HIGH HEALTH RISK - ENVIRONMENT
ORAL HEALTH
Cigarette smoking has been recognised as increasing risk for the development of a great number of diseases, including cardiovascular diseases and cancer and other diseases. Therefore smoking status in the community is closely monitored by public health professionals.

The latest 2001 National Health Survey (ABS 2002g) showed that an estimated 83,000 persons aged 18 years and over were current smokers in Tasmania. This figure represents 24.4% of the total Tasmanian population aged 18 years and over.

As shown in Figure 4.1, the proportion of current smokers in Tasmania was the third highest in the country, just after Queensland and South Australia. However, more Tasmanians (26.5%) had given up smoking than their interstate counterparts. On national comparison, the proportion of people who had never smoked in Tasmania was lower than in New South Wales, Victoria and the Australian Capital Territory.

A major challenge for Tasmania is to reduce the number of young people who take up smoking, before the age of 18, as its addictive nature means there is a very high risk that the behaviour will continue into later life.
Risk Factors

Smoking Status in Males Aged 18 Years and Over, Tasmania

In the 2001 NHS, 41,000 Tasmanian males aged 18 years and over reported as current smokers. The number of current smokers was estimated to be 52,100 in males aged 15 years and over in the Tasmanian State Supplementary Survey conducted by the ABS in the October 1995 (ABS 1996c).

The proportion of current smokers in Tasmanian males aged 18 years and over decreased significantly from 43.0% in 1977 to 25.0% in 2001 (Figure 4.2). The number of males who had given up smoking increased from 1997 to 1995. However, the proportion of Tasmanian males who had never smoked increased after 1995.

In 1992 the Department of Health and Human Services set a target to reduce smoking levels by 10% by the year 1995, and by 20% or more by the year 2000. If the results of the 1989/90 National Health Survey are used as the baseline to measure the progress toward the target, then the 2000 target was not met with a decrease of 15%.

Tasmania Together has set goals of reducing the percentage of current smokers in the community to 24% by 2005, 16% by 2010, 12% by 2015 and 10% by 2020.

\begin{table}
\centering
\begin{tabular}{|c|c|c|c|}
\hline
Year & Current smoker & Ex-smoker & Never smoked \\
\hline
1977 & 43.0 & 26.5 & 30.5 \\
1989/90 & 31.4 & 27.6 & 40.9 \\
1995 & 26.9 & 37.5 & 35.6 \\
2001 & 25.0 & 30.8 & 44.2 \\
\hline
\end{tabular}
\caption{Smoking status in males aged 18 years and over \( \downarrow \) \( \# \) \( \$ \) Never smoked}
\end{table}
Smoking Status in Females Aged 18 Years and Over, Tasmania

The 2001 NHS showed that 40,100 Tasmanian females aged 18 years and over were current smokers, while the number of current smokers was estimated to be 45,200 in those aged 15 years and over in the 1995 Tasmanian State Supplementary Survey (ABS 1996c).

The proportion of current smokers has continued decreasing in Tasmanian females over the last 25 years (Figure 4.3). The proportion of ex-smokers in Tasmanian females decreased from 26.4% in 1995 to 22.5% in 2001. Smoking rates in young women, 18-34 years however, continues to be a concern (see figure 4.4).
Proportion of Current Smokers by Age Group and Sex, Tasmania

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Male 1989/90</th>
<th>Male 2001</th>
<th>Female 1989/90</th>
<th>Female 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-34</td>
<td>39.8</td>
<td>29.5</td>
<td>32.6</td>
<td>39.7</td>
</tr>
<tr>
<td>35-54</td>
<td>29.8</td>
<td>30.7</td>
<td>28.5</td>
<td>20.5</td>
</tr>
<tr>
<td>55+</td>
<td>21.6</td>
<td>11.6</td>
<td>16.5</td>
<td>10.5</td>
</tr>
</tbody>
</table>

Source: ABS Cat. No. 4380.6; 2001 NHS companion tables (Tas.).

The proportion of current smokers among Tasmanian males varied with age group. The highest proportion occurred in the 35-54 age group, and the lowest in the 55 years and over age group (Figure 4.4).

Young females aged 18-34 years in Tasmania had the highest proportion of current smokers in the 1989/90 NHS and the 2001 NHS.

As shown in Figure 4.4, the proportion of current smokers for all age groups was higher for males than females in the 2001 NHS, but the proportion of females aged 18-34 years (39.7%) was higher than that in males (29.5%).

The high rates of smoking amongst younger women of child-bearing age is a major concern, not only for their health and well-being, but also the impact on fertility rates, and on babies and small children exposed to tobacco smoke.
Proportion of daily smoking in persons aged 18 years and over by region, Tasmania

Figure 4.5 illustrates regional variation in the proportion of daily smoking from the 1998 Tasmanian Healthy Communities Survey.

The highest proportion of daily smoking occurred in the North West region and the lowest was in the South region. The differences were not statistically significant.
Daily Smoking Rate by Local Government Area, Tasmania

Map 4.1

Source: 1998 Tasmanian Healthy Communities Survey Database.

Map 4.1 presents daily smoking by Tasmanian Local Government Area (LGA), which was produced from the 1998 Tasmanian Community Health Survey.

Cigarette smoking was more common in Break O’Day (27.5%), Brighton (25.9%), George Town (31.9%), Glenorchy (24.0%), Tasman (42.6%) and West Coast (37.6%) LGAs when compared to the statewide average of 19.9%. This difference was statistically significant (P<0.05) for those LGAs.
The Cancer Council of Tasmania has conducted the triennial survey on the use of tobacco and alcohol in Tasmania’s secondary students since 1984, in collaboration with the Anti-Cancer Council of Victoria. For each survey, more than 2,000 students in years 7 to 12 were randomly selected from Tasmania’s schools to answer self-administered questionnaires.

A current smoker is defined as smoking at least one cigarette in the week preceding the survey (Cancer Council of Tasmania 1996a). As shown in Table 4.1, 14% of males and 6% of females at the age of 12 years were current smokers in 1984. This figure increased to 19% for males and 11% for females in 1996. An increase in the proportion of current smokers was also found in males aged 13 and 14 years and in females aged 14 years between 1984 and 1996.

The proportion of current smokers in both males and females increased with age. However, students aged 17 years experienced a relatively low proportion of current smokers, compared to those aged 15 or 16 years.

The 1996 survey showed that the mean number of cigarettes smoked per week in current smokers aged 12-15 years was 24 for males and 18 for females. For smokers aged 16-17 years, the average number of cigarette smoked per week was 26 for males and 31 for females.
Smoking Status in Homes, Tasmania

Figure 4.6 shows proportions of passive smokers in Tasmanian homes. Based on ABS 1995 Tasmanian State Supplementary Survey 7.1% of all Tasmanians aged 15 years and over were passive smokers. This percentage corresponded to an estimated total of 25,200 persons who had exposure to tobacco smoking in homes (ABS 1996c).
**Proportion of Passive Smokers by Workplace, Tasmania**

![Figure 4.7 Proportion (%) of passive smokers by workplace Tasmania, 1995](chart)

Source: ABS Catalogue No. 4396.6.

Figure 4.7 illustrates the wide variation in the proportion of passive smokers in different workplaces in Tasmania in 1995. The highest proportion of passive smokers occurred in the accommodation, cafes and restaurants industry, while the lowest proportion was seen in the health and community services.
Rates of Passive Smoking by Local Government Area, Tasmania

Map 4.2

Map 4.2 displays the rate of passive smoking in homes by Local Government Area (LGA). The highest rates were found in Brighton (28.9%), Central Highlands (45.8%), George Town (31.9%), Glenorchy (24.7%), %, King Island (37.2%), Sorell (29.2, the Southern Midlands (33.8%), Tasman (50.1%) and West Coast (41.4%).
Alcohol consumption is associated with road injury, violence and interpersonal injury, chronic liver disease, liver cancer and other diseases. In Australia, it has been estimated that alcohol consumption is responsible for 3,694 deaths each year (Unwin and Codde 1998).

The 2001 National Health Survey used measures of low risk, risky and high risk to quantify alcohol consumption in the community. These categories are based on the average daily consumption of alcohol during the week preceding interview (ABS 2002g).

For males, 50 millilitres or less per day is defined as the low risk level of alcohol consumption, 51-75 millilitres, risky level and greater than 75 millilitres, high risk level. For females, the low risk indicates alcohol consumption of 25 millilitres or less per day, risky level, 26-50 millilitres and the high risk level, greater than 50 millilitres.

The 2001 National Health Survey found that the proportion of alcohol consumption at the low risk level was 51.3% in Tasmanians aged 18 years and over. This was the fourth highest in the country, after the Australian Capital Territory (56.4%), Western Australia (53.4%) and Victoria (51.9%) (Figure 4.8). Alcohol consumption of the risky and high risk levels was less common in Tasmania, compared with the rest of Australia.
As shown in Figure 4.9, a slight increase in the proportion of alcohol consumption at the risky and high risk levels was found in Tasmania between the two surveys of 1989/90 and 2001. The proportion of alcohol consumption of the low risk level in the 1989/90 National Health Survey (54.4%) was slightly higher than that in the 2001 National Health Survey (51.3%).
Alcohol Consumption (Medium/High Level) in People Aged 18 Years and Over by Statistical Division

People in the North region (8.9%) had the highest proportion of alcohol consumption at medium and high levels in Tasmania (Figure 4.10). The figure in the North region was higher than in Tasmania as a whole (7.1%) and the national average (8.3%).
Rates of Harmful Alcohol Consumption by Local Government Area, Tasmania

Map 4.3

Source: 1998 Tasmanian Healthy Communities Survey Database.

According to recommendations made by the National Health and Medical Research Council, harmful alcohol consumption is regarded as more than six standard drinks per day, on average, for males, and more than four standard drinks per day, on average, for females (NHMRC, 1991).

As shown in Map 4.3, the high rates of harmful alcohol consumption were recorded in several Local Government Areas in Tasmania. However, the only statistically significant level was recorded in the West Coast at 41.3%. The State average was 24.9%.
Proportion of Current Drinkers in Secondary Students by Age and Sex, Tasmania

Table 4.2  Proportion (%) of current drinkers in secondary students by age and sex, Tasmania, 1984-96

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>1984</th>
<th>1987</th>
<th>1990</th>
<th>1993</th>
<th>1996</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>34</td>
<td>24</td>
<td>17</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td>13</td>
<td>34</td>
<td>24</td>
<td>24</td>
<td>31</td>
<td>29</td>
</tr>
<tr>
<td>14</td>
<td>39</td>
<td>41</td>
<td>32</td>
<td>37</td>
<td>40</td>
</tr>
<tr>
<td>15</td>
<td>49</td>
<td>54</td>
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<td>49</td>
<td>45</td>
</tr>
<tr>
<td>16</td>
<td>56</td>
<td>52</td>
<td>53</td>
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<td>Females</td>
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<tr>
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<td>53</td>
<td>53</td>
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</tbody>
</table>

Source: Cancer Council of Tasmania, Anti-Cancer Council of Victoria.

In the survey of Tasmania’s secondary students by the Cancer Council of Tasmania (Cancer Council, 1996b), current drinkers were defined as those who had drank alcohol on at least one of the seven days prior to the survey. Table 4.2 shows the proportion of current drinkers at 12 years of age was 28% for males and 19% for females. The survey shows drinking in young people is more common in males than females in all age groups.

While there was much variation from one year to the next, the proportion of male drinkers aged 12 years decreased from 34% in 1984 to 28% in 1996. A reduction in the proportion of current drinkers was also found in males aged 13, 15, 16 and 17 years and in females aged 13, 14, 16 and 17 years from 1984 to 1996 (Table 4.2).
## Substance Use

### Proportion (%) of substance use in secondary students Tasmania, 1996

**Table 4.3**

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>Sex</th>
<th>12 yrs</th>
<th>13 yrs</th>
<th>14 yrs</th>
<th>15 yrs</th>
<th>16 yrs</th>
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<td>Analgesics Used in last month</td>
<td>Male</td>
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<td>65</td>
<td>64</td>
<td>62</td>
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<td>Opiates Used in last month</td>
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<td>Hallucinogens Used in last month</td>
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<tr>
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<td>1</td>
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</tbody>
</table>

Source: Cancer Council of Tasmania
The Survey

The 1996 substance use survey conducted by the Cancer Council of Tasmania was conducted through 35 secondary schools in Tasmania, with a total of 2448 students participating. Students were selected randomly from the school roll and answered a written questionnaire under supervision.

Analgesics

Analgesics (pain killers such as Aspro, Panadol) were the most common medication used by students. The highest proportion of analgesic use in the last month prior to the survey was seen in males aged 13 years (65%) and in females aged 16 years (86%) (Table 4.3).

The proportion of male students who used analgesics in the week before the survey increased from 30% of 12-year olds to the peak of 36% of 14-year olds. In female students, this proportion increased to 51% by the age of 16 years and then decreased. The use of analgesics was more common in females than in males and this difference can be seen in all age groups.

Sedatives

Only about 20% of Tasmanian secondary students had ever used sedatives (sleeping tablets, tranquilisers) in their lifetime. There was a difference found in the use of sedatives between age groups. The proportion of students who used sedatives in the last month before the survey decreased with age in males and increased in females aged 12-16 years (Table 4.3).

The proportion of sedative use in the week before the survey was the most common in males aged 12 years (6%) and in females aged 16 years (5%). In students aged 12 years, the use of sedatives was more common in males than in females. However, there was no marked difference found between males and females after the age of 13 years.

Cannabis

The survey found that cannabis was the most commonly used illicit substance in Tasmanian schools. An estimated 51% of males and 52% of females by the age of 17 years had used cannabis (Cancer Council of Tasmania, 1996c) (Table 4.3). The proportion of students who used cannabis in the month before the survey was the highest in males aged 16 years (33%) and in females aged 15 and 16 years (23%).

The proportion of cannabis use in the week before the survey increased with age in males aged 12-16 years and then decreased at the age of 17 years (Table 4.3). In females, this proportion increased from 1.0% at the age of 12 years to 15% at the age of 15 years and then decreased from the age of 16 years. In the 12, 14, 15, 16 and 17 year olds, the use of cannabis in the week before the survey was more common in males than in females, while in the 13 year olds, the reverse was seen.

Inhalants

The younger students were more likely to deliberately sniff inhalants (glue, paint, thinners), compared with the older students.
An estimated 34% of males and females reported that they had sniffed inhalants in their lifetime (Cancer Council of Tasmania, 1996c). The proportion of inhalant use decreased markedly with age in both sexes. By the age of 17 years, only 10% of students reported inhalant use in both males and females (Cancer Council of Tasmania, 1996c).

The proportion of inhalant use in the month and week before the survey decreased significantly with age in both males and females (Table 4.3). Among 12 and 16 year olds, more males than females deliberately sniffed inhalants.

**Steroids; amphetamines; ecstasy; cocaine; opiates; hallucinogens**

The use of steroids, amphetamines (speed), ecstasy, cocaine, opiates (e.g., heroin, morphine, methadone) and hallucinogens (e.g., LSD) was not common in the Tasmanian secondary students in the 1996 survey. Only few students reported that they had used these substances in the month and week before the survey. The details for the proportion of each substance used by age and sex have been given in Table 4.3.
Regular exercise, for at least 30 minutes a day, is found to be associated with a decreased risk of developing cardiovascular disease, hypertension, colon cancer, breast cancer, and type 2 diabetes mellitus (DHHS 1996; WHO 2002). People who undertake regular exercise also benefit from improving their mental health (with reduced symptoms of anxiety, stress or depression) and quality of life.

In general, physical activity achieves these benefits through improving glucose metabolism, reducing body fat and achieving some beneficial effects on hormone metabolism, lowering blood pressure, and improving musculoskeletal health.

Figure 4.11 shows that an estimated 68% of Tasmanians aged 18 years and over reported undertaking exercise in the two weeks prior to survey. This figure was slightly higher than that in Queensland (67.8%) and New South Wales (65.5%). The proportion of people who took part in only low-level exercise in Tasmania was 39.6%.

The proportion of Tasmanians who undertook moderate/highlevel exercise in the two weeks before the survey was the second lowest (28.4%) in the country, just after South Australia.

*Tasmania Together* has targets such as increasing the number of people undertaking moderate/high level intensity exercise to 35% by 2005 and 45% by 2010.
Exercise Level in People Aged 15 Years and Over, Tasmania

Figure 4.12 shows that 68.6% of Tasmanians aged 15 years and over reported undertaking exercise in the two weeks before the survey in 2001, which is a small increase compared with the 1995 survey figure of 64.9%.

The proportion of people who had low and high levels of exercise was slightly higher in 2001 than in 1995, while the proportion of moderate level of exercise decreased.
### Proportion of People Not Exercising by Statistical Division, Tasmania

#### Fig 4.13 Proportion of people who did not exercise by statistical division
Tasmania and Australia, 1995

<table>
<thead>
<tr>
<th>Statistical Division</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater Hobart</td>
<td>30.5</td>
</tr>
<tr>
<td>Southern</td>
<td>39.8</td>
</tr>
<tr>
<td>Northern</td>
<td>34.9</td>
</tr>
<tr>
<td>Mersey-Lyell Tasmania</td>
<td>35.5</td>
</tr>
<tr>
<td>Tasmania</td>
<td>34.1</td>
</tr>
<tr>
<td>Australia</td>
<td>33.0</td>
</tr>
</tbody>
</table>

Source: ABS Cat. No. 4368.0; Percentages are age-standardised.

Figure 4.13 shows that the Greater Hobart Statistical Division has the lowest rate of people who do not exercise, compared with in the Southern region, the Northern region, the Northern-West region and Australia as a whole.
Physical activity has been recognised as an important component of promoting health and preventing disease. In 1999, the National Physical Activity Guidelines for Australians recommended “putting together at least 30 minutes of moderate-intensity physical activity on most, preferably all, days of the week” (DHAC 1999).

Map 4.4 illustrates the daily participation rates (%) in moderate-intensity physical activity for at least 30 minutes by Local Government Area. This data was obtained from the 1998 Tasmanian Healthy Communities Survey.

Break O’Day (31.3%), King Island (36.4%) and Latrobe (32.3%) LGAs had significantly higher participation rates of physical activity (P<0.05) compared to the Tasmanian average of 23.4%.
Nutrition plays a significant role in the development of a range of chronic diseases that may be preventable. These include coronary heart disease, stroke, hypertension, atherosclerosis, type 2 diabetes, some forms of cancer, dental caries, osteoporosis, gall bladder disease, non-cancerous disorders of the large bowel and nutritional anaemias (Lester 1994).

In Australia, the National Health and Medical Research Council develops guidelines for healthy eating. The current guidelines recommend increasing intakes of plant foods (fruit, vegetables, bread, cereals and legumes), reducing consumption of saturated fat, reducing consumption of salt and promoting breastfeeding.

Health problems linked to poor nutrition such as heart disease, diabetes and some cancers represent a significant cost to the burden of disease in Australia. The cost of diet-related disease to the Australian economy was estimated over a decade ago to be in the order of $2.25 billion annually.

In 1998 the Commonwealth Department of Health and Aged Care funded a series of projects under a three-year contract with the Australian Nutrition Monitoring Unit to improve the quality of nutrition data collected in Australia. These projects include:

- a study to determine the comparability between the 1995 National Nutrition Survey and the 1983 nutrition survey of adults and the 1985 nutrition survey of children and adolescents
- a study to determine the reliability of short questions for monitoring food habits
- development of standard methodology for collection of anthropometric data in children
- development of recommendations for a national system for monitoring breastfeeding in Australia.
Vegetable and fruit intake
Vegetables and fruit have been shown to be protective against illnesses including coronary heart disease, hypertension, stroke, Type 2 diabetes and some cancers. The NHMRC recommends adult Australians consume a minimum of 2 serves of fruit and 5 serves of vegetables each day.

Economic analysis, based on 1993/94 values, suggest inadequate consumption of vegetables and fruit in Australia results in health care costs associated with certain cancers (colorectal, lung, breast and prostate), in the order of $90 million per annum. By increasing vegetable consumption by one serve per day, up to $33 million could be saved from annual health care costs associated with these cancers alone (Marks et al. 2002).

In recognition of this significant health issue, *Tasmania Together*, under its health goal (goal 5), includes increasing consumption of vegetables and fruit as Indicator 1.4 (Community Leaders Group, 2001).

Whilst the Tasmanian data from the National Nutrition Survey are not reliable for children, the Australian data suggest less than 50% of children aged 2 to 18 years have an adequate fruit intake and one-third have adequate vegetable intake (Magarey et al. 2000).

**Percentage of Persons Aged 19 Years and Over Usually Consuming 2 or More Serves of Fruit Daily by State/Territory**

![Chart showing the percentage of persons aged 19 years and over who reported usually consuming 2 or more serves of fruit daily.


Approximately half of Australian adults (but only 42% of Tasmanians) eat 2 or more serves per day (ABS 1995, in Figure 4.15). The 1996 Eat Well Tasmania Survey confirms this finding with 40% of Tasmanian adults consuming the recommended 2 or more serves of fruit per day.
The National Health and Medical Research Council recommends a minimum intake of 5 serves of vegetables per day (NMHRC 1994).

While the intake of vegetables in Tasmania is comparable to other states in Australia, consumption falls well below national recommendations. Less than 20% of Tasmanians consume 4 or more serves a day (Figure 4.16) [Note: the National Nutrition Survey (NNS) vegetable question combines the responses for 4 and 5 serves.].
Saturated Fat
High intakes of saturated fat lead to a rise in plasma LDL-cholesterol, which is a major risk factor of coronary heart disease. The NHMRC (2002) recommends that saturated fat intake should contribute to no more than 10% of total energy intake.

The 1995 National Nutrition Survey found saturated fat contributes 14% of the total energy intake of Tasmanian adults. This is significantly higher than the national average of 12.5% (ABS 1998). Consumption of full cream milk and fat on meat are considered indicators of saturated fat intake.

Percentage of Persons Aged 19 Years and Over Usually Consuming Milk by State/Territory

The NHMRC recommends saturated fat should contribute to no more than 10% of total energy intake. Tasmanian adults consume more saturated fat than recommended and more than the national average with saturated fat contributing 14% of total energy intake in Tasmania compared to 12.5% nationally.

Full cream milk contributes to saturated fat consumption in the Australian diet. Tasmanian adults are more likely to consume full cream milk than other Australians (with the exception of Northern Territorians) (Figure 4.17).

The Eat Well Tasmanian 1996 Survey confirms this finding with a reported 57% of adult Tasmanians consuming full cream milk rather than fat modified milk.
Eating fat on meat also contributes to the saturated fat intake in the Australian diet. According to the 1995 National Nutrition Survey, apart from Northern Territorians, Tasmanian adults were the least likely among Australians to report trimming fat off meat (Figure 4.18).
High salt (sodium) intake is associated with the widespread prevalence of age-related hypertension (National Heart Foundation 2001). It has been estimated that a reduction in dietary salt by an average of 3g (50 mmol sodium) per day in a whole Western population would reduce age-specific stroke mortality by about 22% and ischemic heart disease mortality by about 16% (Law et al 1991).

There is currently no representative data of salt consumption in Australia. However, the National Heart Foundation has estimated that sodium intake in Australia ranges from 130-200mmol/day (8-12g salt/day), with the recommend level being 40-100mmol/day (2.5-6g) (NHF, 2001). In a study conducted in Hobart it was found that only 36% of women and 6% of men in Tasmania achieved sodium intake levels below the maximum recommended daily intake (Beard et al. 1997).

The majority of salt in the Australian diet comes in the form of processed food, some salt is naturally occurring in foods, and some as added salt either during or after cooking.

The 1995 National Nutrition Survey asked respondents to indicate how often they add salt to food after it is cooked. A total of 25% of Tasmanians reported adding salt to their food after it is cooked, which is similar to the national average (Figure 4.19).

**Figure 4.19 Percentage of persons aged 19 years and over who reported usually adding salt to food after it is cooked**
Nutrition workforce: full time equivalent dietitians per 100 000 population

Tasmania has half the number of dietitians per head of population working in the public, private and non-government sectors than the national average, and significantly less than other states and territories (Figure 4.20).

Whilst there are many areas of the health workforce who incorporate nutrition into their role (eg family and child health nurses, dental therapists, GPs), dietitians are the only health workers with specific tertiary training in nutrition.
**Folate and Neural Tube Defects (NTDs)**

Folate is a B group vitamin found in fresh vegetables and fruit, orange juice, legumes, nuts, liver and yeast. There is evidence that 50-75% of neural tube defects can be prevented through ensuring women have adequate folate intake during the month prior and three months into a pregnancy.

A voluntary folate fortification program was introduced in Australia in 1995 to allow folate to be added to certain foods including: breads, breakfast cereals, yeast extracts, fruit and vegetable juices.

The 1997 Eat Well Tasmania Survey identified over half of adult Tasmanians had heard of folate, however, knowledge of its link to neural tube defects was low with only 11% reporting awareness of the link between folate and neural tube defects (eat Well Tasmania, 1998).

**Iodine Status of the Tasmanian Population**

Iodine deficiency is considered the world’s greatest single cause of preventable brain damage and mental retardation. Even mild deficiency is now recognised to negatively influence physical and intellectual development, especially during fetal life (Dunn 2001).

Tasmania has a history of iodine deficiency probably due to deficient soils following glaciation during the ice age. Over the decades, different measures have been used to supplement the population, such as potassium iodate tablets for school children (1950-1966), iodine added to bread improvers (1966–1976), and in the seventies, iodophors used as sanitising agents in the dairy industry were thought to have provided enough iodine residue in the milk supply to protect the population against deficiency (Gibson 1995).

A urinary iodine survey of Tasmanian school children in 1998/99 suggested a re-emergence of mild iodine deficiency. These results were confirmed by a further survey in 2000/2001 (Hynes 2001).

World Health Organisation criteria for iodine sufficiency is for the median iodine level to be >100 ug/L and <20% below 50 ug/L.

**Table 4.4 Results of urinary iodine surveys on school aged children in Tasmania**

<table>
<thead>
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<th>N (ages)</th>
<th>Median</th>
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</thead>
<tbody>
<tr>
<td>1988</td>
<td>241 (4-14yrs)</td>
<td>75 ug/L</td>
<td>13</td>
</tr>
<tr>
<td>2000</td>
<td>215 (5-15yrs)</td>
<td>77 ug/L</td>
<td>21</td>
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</tbody>
</table>

The Tasmanian Iodine Supplementation Program was launched in October 2001 which involves an agreement with major bread manufacturers to use iodised salt.

The Tasmanian Department of Health and Human Services has commissioned a five year Iodine Monitoring Program including a series of urinary iodine surveys of school children and pregnant women, and, monitoring of potential negative effects of iodine.
excess. The results from the first urinary iodine survey of school children will be available in mid 2003. A National Iodine Nutrition Survey is planned for 2003. This will provide the sound evidence base for appropriate health policy on food iodine supplementation for Australia.

Figure 4.21  Iodine Status of the Tasmanian Population 1949 to present.

Note: This graph provides an overview of the estimated iodine status of the Tasmanian population from 1949. Not all surveys performed over this time were representative of the Tasmanian population or were carried out in a consistent manner and therefore may not reflect the true iodine status of the population. (Reardon 2002)
Breastfeeding

Percentage of Children Ever Breastfed by State/Territory

Breast-feeding is the optimal method of feeding during early infancy with well documented nutritional, immunological, psychological and economic benefits.

Goals to increase breastfeeding have been incorporated into many international, national and state policies and plans. The Commonwealth Government’s National Breastfeeding Strategy set a target of 80% of infants being at least partially breastfed at six months of age by the year 2000.

While Tasmanian breastfeeding initiation rates are slightly lower than other Australian States and Territories, they are still relatively high with over 78% of infants being breastfed at some stage (Figure 4.22).
The National Health and Medical Research Council in the 2002 draft of the infant feeding guideline recommends exclusive breastfeeding to the age of about six months with continued breastfeeding to 12 months and thereafter as long as mutually desired.

Breastfeeding duration rates Australia-wide fall well below the national target (Figure 4.23). Fewer than half (43.9%) of Tasmanian infants are still breastfed, even if only partially, at 6 months of age.
Overweight and obesity are significant risk factors for a range of conditions including type 2 diabetes, hypertension, cardiovascular disease, strokes, some forms of cancer as well as psychosocial disorders, musculoskeletal disorders and gall bladder disease. Evidence is emerging to show weight cycling (ie weight gain and loss) can increase the risk of health problems particularly in relation to cardiovascular mortality. Research indicates traditional weight loss strategies are often ineffective.

Obesity and overweight have traditionally been assessed using body mass index (BMI) (BMI is calculated by dividing a person’s weight in kg by their height in metres\(^2\)). However, body fat distribution (measured by waist/hip) may be a more important indicator at predicting mortality and morbidity than overall weight.

The proportion of people who are overweight or obese according to BMI criteria is increasing alarmingly both nationally and in Tasmania where 45% of Tasmanians aged 18 years and over are considered to be overweight (Figure 4.24).
Proportion of Adults 18 Years and Over Classified as Overweight by State/Territory and by Gender – measured data

Figure 4.25 shows the proportion of overweight and obese persons estimated according to measured height and weight from the 1995 National Nutrition Survey. Two thirds of males and just over half of females aged 18 years and over, in Tasmania, are considered to be overweight or obese.

These results are similar to the more recent findings of the 1999 Australian Diabetes, Obesity and Lifestyle Study conducted by Dunstan, Zimmet, et al., showing 68.2% of males and 56.3% of females aged 25 years and over in Tasmania to be classified as overweight (BMI $\geq 25$) (AusDiab 2000).

This and the preceding graph (Figure 4.24) serve as a good example of the unreliability of self-reported data. Figure 4.24 uses data from the National Health Survey where respondents reported their height and weight, whereas Figure 4.25 uses data from the National Nutrition Survey in which interviewers actually measured people’s height and weight. These more accurate measurements show quite different BMI results, implying inaccurate data in the self-reported surveys.
Nearly 60% of Tasmanian males and 40% of Tasmanian females are considered to have had abdominal obesity (waist to hip ratio greater than 0.9 for males and 0.8 for females) according to data collected in the 1995 National Health Survey (Figure 4.26).

Of great concern is the alarming increase in overweight and obesity in children. For children and adolescents aged 7-15, 15.0% of boys and 15.8% of girls are considered overweight, and a further 4.5% boys and 5.3% of girls obese with the incidence of overweight in children aged 7-15 years having nearly doubled and incidence of obesity almost tripled from 1985 to 1995 (Margarey, Daniels and Boulton 2001).
Cancer Screening

Cervical Cancer Screening

Pap smears can detect cervical abnormalities before they progress to cervical cancer. Early detection and relatively simple treatments prevent over 90% of cervical cancers in women who are regularly screened.

The National Health and Medical Research Council recommends that women in the target group who have neither symptoms nor abnormal results should be screened every two years.

In screening for cervical cancer, the target population is defined as the number of women between the ages of 20 and 69 who have an intact cervix. This is estimated as the resident female population within this age group as reported by the Australian Bureau of Statistics, adjusted for the percentages of women in those age groups who reported having had a hysterectomy in the National Health Survey.

Table 4.5 indicates that in Tasmania, the target population is estimated to be 123,849 with about 72% of these (88,724) being screened in the 27-month period from 01/09/2000 to 30/11/2002. Participation is lowest in the older age groups. Only about 57% of targeted women between the ages of 60 and 69 were screened in this period.

Although about 72% of women in the target population were screened in the 27 months to 30/11/2002, many of these women are not screening at the recommended interval. Only about half of the women who had a Pap smear in Tasmania during this period had been screened within the previous 27 months.

Table 4.5 Cervical cancer screening and re-screening rates for Tasmanian Women

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Target Population No.</th>
<th>Screened</th>
<th>Re-screened within 27 months</th>
<th>Re-screened after 27 months</th>
<th>New Clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>29,276</td>
<td>19,866</td>
<td>8,229</td>
<td>6,496</td>
<td>5,131</td>
</tr>
<tr>
<td>30-39</td>
<td>32,281</td>
<td>24,061</td>
<td>11,844</td>
<td>9,355</td>
<td>2,862</td>
</tr>
<tr>
<td>40-49</td>
<td>29,065</td>
<td>22,244</td>
<td>11,572</td>
<td>8,663</td>
<td>2,009</td>
</tr>
<tr>
<td>50-59</td>
<td>19,514</td>
<td>14,775</td>
<td>8,478</td>
<td>5,092</td>
<td>1,205</td>
</tr>
<tr>
<td>60-69</td>
<td>13,713</td>
<td>7,788</td>
<td>4,645</td>
<td>2,431</td>
<td>712</td>
</tr>
<tr>
<td>Total 20-69</td>
<td>123,849</td>
<td>88,724</td>
<td>44,768</td>
<td>32,037</td>
<td>11,919</td>
</tr>
</tbody>
</table>

Source: Tasmanian Cervical Cytology Register

Table 4.5 shows that in the 12 months from 1/12/2001 to 30/11/2002 over 94% of women screened had a normal result.

The majority of those with an abnormal result (over 81% of abnormal smears) showed only a minor abnormality while less than 1% of all women screened showed a serious abnormality (CIN2 or worse) or their result was inconclusive.
Breast Cancer Screening
BreastScreen Tasmania forms part of the Breastscreen Australia Program which works toward reducing mortality and morbidity from breast cancer.

The program aims to:
- Maximise the proportion of women aged 50-59 who are screened every two years, and to ensure equitable access for women in this age group
- Maximise the number of cancers and small cancers detected, while minimising the number of unnecessary recalls and investigations
- Ensure that services are acceptable and appropriate to the needs of the eligible population.

BreastScreen Tasmania operates out of two fixed clinics in Launceston and Hobart as well as a mobile screening unit which visits 19 locations around the state.

Asymptomatic women over the age of 40 are eligible for the program, however the target group is women aged 50-69 years. The participation rate measures the percentage of women in the eligible population who are screened during the period. Individual services must show progress to achieving a 70% participation rate.

The BreastScreen Tasmania 24 month participation rate for women in the 50-69 age group.

<table>
<thead>
<tr>
<th>24 month period</th>
<th>Number of women screened</th>
<th>Participation %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994 -1995</td>
<td>19 994</td>
<td>47.3</td>
</tr>
<tr>
<td>1995 -1996</td>
<td>21 935</td>
<td>51.1</td>
</tr>
<tr>
<td>1996 -1997</td>
<td>23 222</td>
<td>53.0</td>
</tr>
<tr>
<td>1997 -1998</td>
<td>26 172</td>
<td>58.2</td>
</tr>
<tr>
<td>1998 -1999</td>
<td>27 264</td>
<td>59.3</td>
</tr>
<tr>
<td>1999 -2000</td>
<td>28 253</td>
<td>60.0</td>
</tr>
<tr>
<td>2000 - 2001</td>
<td>29 276</td>
<td>60.3</td>
</tr>
</tbody>
</table>

The rescreening rate measures the percentage of women who return for screening every two years. The National Accreditation Standard for round 1 screening is 75%. For Tasmania the figures are 71.2% in the first re-screening, 77.4% in the second re-screening and 85.2% in third and subsequent re-screenings.

The cancer detection rate measures the number of cancers detected (see table 4.7).

<table>
<thead>
<tr>
<th>Period (financial year)</th>
<th>First Screening</th>
<th>Subsequent Screenings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cancers detected</td>
<td>Rate per 100 000 women screened</td>
</tr>
<tr>
<td>1998/1999</td>
<td>32</td>
<td>645</td>
</tr>
<tr>
<td>1999/2000</td>
<td>17</td>
<td>561</td>
</tr>
<tr>
<td>2000/2001</td>
<td>14</td>
<td>489</td>
</tr>
<tr>
<td>2001/2002</td>
<td>15</td>
<td>530</td>
</tr>
</tbody>
</table>
Sun Protection

Type of Skin Protection Measure by Sex, Tasmania

The 1995 National Health Survey showed that 82.7% of males and 78.4% of females in Tasmania had used skin protection measures against the sun’s ultra violet rays in the month before the survey (1995 National Health Survey Database).

There was no difference in the proportion of skin protection measures used by males between Tasmania and Australia as a whole (82.0%) (ABS 1997b). However, females in Tasmania were less likely to take skin protection measures than those (83.0%) in Australia as a whole (ABS 1997b).

The most common skin protection measure used in Tasmania was a hat (82.7% for males and 59.4% for females), followed by sunglasses (55.9% for males and 65.9% for females) and sunscreen (38.5% for males and 57.8% for females) (Figure 4.27).

Males in Tasmania were more likely to use a hat and clothing for protecting themselves from the sun than females. However, more females in Tasmania used sunscreen, umbrella, sunglasses and avoided sun, compared with males.
Immunisation

**Proportion of Children Immunised at Two Years of Age by Disease and State/Territory**

Table 4.8  Proportion (%) of children immunised at two years of age by disease and State/Territory, September 2002

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>DTP*</th>
<th>Polio</th>
<th>Hib</th>
<th>MMR**</th>
<th>Fully immunised</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>90.1</td>
<td>94.1</td>
<td>94.0</td>
<td>93.1</td>
<td>87.7</td>
</tr>
<tr>
<td>Vic.</td>
<td>91.6</td>
<td>95.5</td>
<td>94.7</td>
<td>94.2</td>
<td>89.5</td>
</tr>
<tr>
<td>Qld.</td>
<td>91.9</td>
<td>94.7</td>
<td>94.5</td>
<td>94.2</td>
<td>89.9</td>
</tr>
<tr>
<td>SA</td>
<td>91.4</td>
<td>95.5</td>
<td>95.0</td>
<td>94.8</td>
<td>90.0</td>
</tr>
<tr>
<td>WA</td>
<td>89.5</td>
<td>94.1</td>
<td>93.2</td>
<td>93.3</td>
<td>87.1</td>
</tr>
<tr>
<td>Tas.</td>
<td>93.7</td>
<td>96.1</td>
<td>95.5</td>
<td>95.2</td>
<td>92.8</td>
</tr>
<tr>
<td>NT</td>
<td>88.2</td>
<td>96.1</td>
<td>94.8</td>
<td>95.6</td>
<td>87.4</td>
</tr>
<tr>
<td>ACT</td>
<td>89.4</td>
<td>93.1</td>
<td>92.8</td>
<td>91.6</td>
<td>87.2</td>
</tr>
<tr>
<td>Aust.</td>
<td>90.9</td>
<td>94.7</td>
<td>94.3</td>
<td>93.8</td>
<td>88.8</td>
</tr>
</tbody>
</table>

Source: Australian Childhood Immunisation Register.

*Diphtheria-Pertussis-Tetanus; **Measles, mumps, rubella.

Immunisation gives direct protection for the individual and a boost for group (“herd”) immunity in the community. Effective immunisation has successfully resulted in the substantial reduction of morbidity and mortality caused by the communicable diseases and global eradication of smallpox in 1977 (Peter 1992).

Table 4.8 shows the coverage rate of fully immunised children at age two years by State/Territory in 2002.

Tasmanian children had high rates of coverage against diphtheria, pertussis, tetanus, polio, haemophilus influenza type b, measles, mumps and rubella, compared with other States and Territories and higher coverage than the national average.
Perceptions of High Health Risk – Environment

Perceptions of various environmental health risks - Tasmania

Tasmanians perceive themselves and their families to be at greater risk from poor indoor air quality than any other environmental health risk (Starr et al. 2000).

The main issue of concern to Tasmanians is tobacco smoke in enclosed work places, public places and homes that adversely affect indoor air quality.
Oral Health

‘Being orally healthy means that people can eat, speak and socialise without discomfort or embarrassment, and without active disease in their mouth which affects their overall well-being’ (UK Dept of Health cited in AHMAC, 2001 p 2).

Diseases and disorders affecting teeth and gums have many preclinical and clinical effects. These include infections, abscess formation, tissue destruction and even death. More deaths occur each year from oral cancer than cervical cancer (AIHW & AACR 1999).

Dental caries is the most prevalent, and periodontal diseases the fifth most prevalent, health problem in Australia (AHMAC, 2001). Approximately 1% of all disability adjusted life years (DALYs) lost are as a result of oral disease, with estimates that more than 20 000 DALYs will be lost due to dental caries, periodontal disease and edentulism that occurred in 1996 alone (Mathers et al 1999).

Data on oral health are collected for children aged 5 to 12 years through the Child Dental Health Survey and published by the AIHW’s Dental Statistics and Research Unit (DSRU).

The published 1998 age-standardised data on caries experience in permanent teeth in children between 5 and 12 years are illustrated in figure 4.29. The percentage of children with no decayed, missing or filled teeth in permanent teeth was lower in Tasmania than all other states and territories except for Victoria.
Appendices

Appendix 1  Data
Appendix 2  Methods
Appendix 3  ASIR for selected cancers by region and sex
Appendix 4  Glossary
Appendix 5  References
Appendix 1. Data

1.1 Population
The estimated resident population data of Tasmania, from 1978 to 2001, was obtained from the Australian Bureau of Statistics (ABS). These population estimates comprise the basic information on sex and five-year age groupings.

Tasmanian population data from 1993 to 2001 has an additional field of statistical division that may be used to classify Tasmania into three regions, such as South, North and North West.

The South region includes Greater Hobart and Southern statistical divisions, the North region is equivalent to the Northern statistical division and the North West region is equivalent to Mersey-Lyell statistical division.

The statistical local area is the smallest spatial unit used by the ABS for reporting demographic statistics in non-census years. Estimated Tasmanian populations by statistical local area from 1993 onwards were obtained from the ABS. The code of the statistical local area was used to define metropolitan, regional and rural populations in this Report.

The ABS provided estimated resident population data in Australia from 1978 to 2001, which can be broken down by State/Territory, sex and five-year age group.

Estimated resident populations of Tasmania and Australia are used as denominators for calculating age-specific morbidity and mortality rates in this Report.

1.2 Notifiable Infectious Diseases
In Tasmania, medical practitioners and persons in charge of hospitals and laboratories are required by law to report certain specified infectious diseases and poisoning to the Director of Public Health. This surveillance system allows for the detection of infectious diseases, and for the Public and Environmental Health Service to monitor their trends and to evaluate the effectiveness of intervention programs.

For determining the trends of notifiable infectious diseases that occurred in Tasmania, the data from 1917 to 1989 were obtained from the National Centre for Disease Control, Department of Health and Aged Care, Canberra. The notifications of infectious diseases in Tasmania from 1990-2001 were extracted from the surveillance database managed by the Public and Environmental Health Service.

The notification rates of infectious diseases for Australia as a whole came from Communicable Diseases Intelligence which is a publication produced by the National Centre for Disease Control.

Infectious disease surveillance relies on reporting by medical practitioners, hospitals and pathology laboratories. The reliability of the routine reporting system includes the
accurate diagnosis and completeness of notification forms of infectious diseases. Sometimes people with infections which are notifiable do not seek medical attention for their condition, and so are not captured in the data collections.

1.3 Cancer incidence
Cancer is a notifiable disease in Tasmania, as it is elsewhere in Australia. New cases of cancer diagnosed in Tasmania are reported to the Tasmanian Cancer Registry, which is located at the Menzies Centre, University of Tasmania.

The cancer incidence data from 1978 to 1999 were obtained from the Tasmanian Cancer Registry. Incident cancers are classified using the International Classification of Diseases, 9th Revision.

1.4 Hospital admissions
The Tasmanian Statewide Morbidity Database is a collection of the inpatient information for those who were admitted to the public and private hospitals as a result of acute or chronic medical condition. The hospital data consist of details of demographic information of the patient, diagnoses, procedures and separations (discharge, transfer, death or absconding).

In Tasmania, the diagnoses of hospital admissions were coded according to the International Classification of Diseases, 9th Revision, Clinical modification (ICD-9-CM) before June 1999. Since July 1999, the International Classification of Diseases, 10th Revision, Australian modification (ICD-10-AM) has been introduced. The hospital database has been coordinated and managed by the Hospital and Ambulance Division, Department of Health and Human Services, Tasmania.

This Report used available computerized hospital data from 1991-2000 to estimate morbidity for selected diseases in Tasmanian residents. This estimate was made according to principal diagnosis of the hospital admission, that is, the medical condition chiefly responsible for patient’s episode of care in hospital. However, the hospital morbidity for injury and poisoning caused by external causes was estimated using any additional diagnosis in the external cause field, where the principal diagnosis code was in the range ICD-CM-9 800-999 (Chapter 17 ‘Injury and Poisoning’) and ICD-10-AM S00-T98. The selection criteria for injury cases caused by external causes are consistent with national injury publications.

The data analysis of hospital morbidity was based on the patient’s place of usual residence. Persons who came from interstate or overseas were excluded from hospital morbidity statistics.

The reliability of the Statewide Morbidity Database managed by the Hospital and Ambulance Division mainly depends on the discharge summary supplied by the doctor in charge of the patient. This information is the key for accurately coding and determining the principal diagnosis.
### 1.5 Mortality

In all States and Territories of Australia, a medical practitioner or a coroner is required to certify the causes and date for all deaths. The causes of death were coded by the ABS on the basis of the International Classification of Diseases 9th Revision or 10th Revision.

The mortality unit record file for Tasmania and Australia as a whole was provided by the ABS, which contains sex, date of birth, date of death, place of usual residence, country of birth, cause of death, etc.

For estimating the mortality rates for Tasmanians in this Report, persons whose place of usual residence was interstate or overseas were excluded.

The reliability of the mortality data is affected by the primary diagnosis of the underlying cause of death if there are multiple causes contributing to the death.

### 1.6 National health survey

The ABS conducts a five-yearly national health survey that aims at providing benchmarks of illness, injury and health risk factors experienced by Australians.

Self-reported morbidity and proportions of risk factors presented in this Report are mainly derived from the publications of the 1989/90, 1995 and 2001 National Health Surveys. Some figures used in this Report were obtained from unpublished tabulations and unit record data of the 1995 & 2001 National Health Surveys which were provided by the ABS.

As the sample size of the National Health Surveys for Tasmania were small (2,657 respondents in 1995, 1,730 in 2001), use of the data is limited especially for subgroups by region and rurality.

The National Health Survey is based on the data collection of self-reported questionnaire. The results may reflect the respondents’ knowledge about health, understanding of the diagnosis made by health professionals and their literacy. Therefore, care should be taken in interpreting the results in different populations.

### 1.7 Survey of Disability, Ageing and Carers

The ABS has conducted regular surveys for data collection of people with a disability since 1981. The last two surveys carried out in 1993 and 1998 provided additional information on older people and people who provide assistance to others because of their disabilities (ABS 1999b).

Data on people with disabilities is mainly derived from the results of the 1998 Survey of Disability, Ageing and Carers. It is important to note that the information gathered from the survey was based on self-reported questionnaires. The reliability of the results from the survey may be related to the respondents’ knowledge about a disability and particularly to persons with intellectual disability.
1.8 Tobacco and alcohol use in Tasmanian secondary students
The regular surveys of tobacco and alcohol-use, in Tasmanian secondary students, has been done in conjunction with the Tasmanian Cancer Council and the Anti-Cancer Council of Victoria since 1984.

The information on tobacco and alcohol-use in Tasmanian secondary students presented in this Report was supplied by the Tasmanian Cancer Council, the Anti-Cancer Council of Victoria and the Menzies School of Population and Health Research, Tasmania.

1.9 Healthy Communities Survey, Tasmania, 1998
In 1998, the Department of Health and Human Services, Tasmania, conducted a statewide survey that was designed to estimate the proportion of behavioral risk factors and health and wellbeing in adults aged 18 years and over. The details of the survey methodology from sampling and data collection were given in the publication titled “First Results of the Healthy Communities Survey 1998” (DHHS 1999).

The unit record survey data was obtained from the Strategic and Corporate Support Division of the Department of Health and Human Services, which was used to estimate the proportion of risk factors by local government area in Tasmania.

The Healthy Community Survey, Tasmania, 1998 was based on the data collection of self-reported questionnaire. Therefore, care should be taken in interpreting the results in different populations as the results may reflect the respondents’ knowledge about health and also their literacy.
Appendix 2. Methods

2.1 Age-specific rate
The age-specific rate is calculated by dividing the number of cases by the number of estimated population in a specific age group. The rate is expressed as “per 100,000 population”.

2.2 Notification rate
The notification rate for infectious diseases is calculated by dividing the number of notified cases by the estimated population at a specified year. The rate is expressed as “per 100,000 population”.

2.3 Age-standardised rates
Age-standardised rates are estimated by the direct standardisation method (Boyle and Parkin 1991). This method applies the age-specific rates from the study population to the standard population in order to calculate the number of events or deaths that would be expected in the standard population. The expected events or deaths are then summed and divided by the size of the standard population.

For this Report, the ‘World Population’ was used as a standard population. Age-standardised rate is expressed as “per 100,000 population”.

An important aim of this Report was to determine whether there was a statistical difference in the age-standardised mortality rates between Tasmania and Australia as a whole. Statistical significance was determined by calculating the standardised rate ratio of two directly age-standardised mortality rates and the confidence intervals of the ratio (Boyle and Parkin 1991). If the estimated confidence intervals for the ratio do not include one (unity), then the rate for Tasmania is statistically significant (at the 5% level or at the 1% level) from the rate for Australia as a whole.

2.4 Standardised mortality ratio (SMR)
The indirect method of age standardisation has been used for comparing the mortality by local government area (LGA) to the mortality in Tasmania as a whole. This method is relatively reliable for the small number of deaths involved when the mortality data are aggregated into a small area (Armitage 1971).

The Standardised Mortality Ratio (SMR) was calculated by the indirect method of age standardisation (Boyle and Parkin 1991). SMR is the ratio of the number of observed deaths in a study population (LGA) to the number of expected deaths that are calculated according to the age-specific rates in the reference population (Tasmania as a whole). SMR is usually expressed as a percentage (multiples by 100).
Exact Poisson confidence intervals were calculated for each estimated SMR as described in Breslow and Day (1987). Confidence intervals for the SMR were set at 99% in this Report. The statistical significance of a SMR was determined based on confidence intervals. If the SMR for a local government area is above 100 and its lower confidence interval is also above 100, the SMR is considered to be significantly high at the 1% level, compared to the reference population (Tasmania as a whole).

2.5 Standardised incidence ratio (SIR)
The calculation of the Standardised Incidence Ratio is the same as the SMR.

2.6 Modeling of trends
The Poisson regression model was used to model age-standardised cancer incidence rates and age-standardised mortality rates for Tasmania and Australia as a whole from 1979-80 to 1999-2000 on the assumption that the number of expected events have a Poisson distribution. In the Poisson regression model, the data were modelled with a log link function and the natural log of population treated as an “offset”.

The methods in modelling data, calculating annual rate of change and testing of trends for statistical significance are described in detail in the publication titled “Mortality Surveillance, Australia, 1981-1992” (Bennett et al. 1994).

2.7 Relative standard error
The relative standard error (RSE) was calculated for the estimates obtained from the Healthy Communities Survey, Tasmania, 1998. The relative standard error (RSE) is a measure of the reliability or precision of a survey statistic on a percentage scale (ABS 1999b). The RSE is defined as the standard error of a survey estimate, divided by the survey estimate, then multiplied by 100.

The 95% or 99% confidence intervals were estimated using the standard errors of survey estimates. If the confidence intervals for two proportions do not overlap, the proportions are considered to be significantly different at the 95% level or 99% level in this Report.

2.8 Classification of metropolitan, regional and rural areas
Geographical classification of data is utilised in a number of decision-making processes. In the health field it is used to inform policy making and planning related to issues such as: need, access, equity, cost, resource allocation, service provision, population health status and evaluation of health programs and services. In Australia two classification systems are currently widely utilised. These are the Australian Standard Geographical Classification (ASGC, ABS 1996d) and the Rural Remote and Metropolitan Areas Classification (RRMAC 1994).

For this Report an alternative classification system has been used for urban and rural areas within Tasmania. This system is an amalgamation of both the ASGC and RRMAC. The need for such a system occurred when it became apparent that existing classification systems were too broadly structured to accurately portray the patterns of
settlement within Tasmania. This alternate system builds on the ASGC but is structured to take into account Tasmania’s unusual population distribution.

Both the ASGC and the RRMAC were designed as standardised general-purpose tools to enable compatibility and comparability of data across Australia. The ASGC is the classification system used by the ABS to enable survey and census data to be categorised by area. The RRMAC classification was designed by the Department of Primary Industries and Energy in collaboration with the Department of Community Services and Health to enable rural and urban areas to be categorised in a standardised manner at a national level. The RRMAC is a widely used statistical classification. The major criteria used to categorise an area as either urban or rural, in this classification, is population size (Table 2.1). The generalised nature of this taxonomy can lead to distortions when trying to apply it to states whose population size and distribution do not fit with the broad categories used. Such is the case in Tasmania.

### Major categories in the Rural Remote and Metropolitan Areas Classification (RRMAC)

**Table 2.1**

<table>
<thead>
<tr>
<th>Category</th>
<th>Sub-category</th>
<th>Population Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan</td>
<td>Capital City</td>
<td>State and territory capital city Statistical Divisions</td>
</tr>
<tr>
<td></td>
<td>Other metropolitan</td>
<td>Urban centres &gt;100,000</td>
</tr>
<tr>
<td></td>
<td>Large rural</td>
<td>Regional centres &gt;25,000 and &lt;100,000</td>
</tr>
<tr>
<td>Non-metropolitan zones</td>
<td>Small rural centres</td>
<td>Towns &gt;10,000 and &lt;25,000</td>
</tr>
<tr>
<td></td>
<td>Other rural areas</td>
<td>Remaining Statistical Local Areas</td>
</tr>
</tbody>
</table>

When the RRMAC is applied to the Tasmanian setting the Hobart statistical division is, (correctly), categorised as a capital city metropolitan area. However, all other areas of the State fall within the rural classification. This presents a false picture of the population distribution within the State with implications for statistical analysis, policy, planning, resource allocation and service delivery. Therefore, the alternative classification system provides a more accurate reflection of the geographical characteristics of the state.

### 2.8.1 Structure of the Alternative Classification System:

**Classification Criteria**

In addition to population numbers the alternative classification takes into account population density, geographical confluence and access to goods and services as additional criteria for categorising areas. The use of such classification enables a greater degree of differentiation between areas, which would more closely reflect the rural/urban mix in Tasmania.
Three major categories are used for this Report; Metropolitan, Regional and Rural. Areas were allocated to these categories on the basis of the criteria described above. Each area was rated high, medium or low, or in the case of geographical confluence, either confluent or not. Geographical confluence refers to the degree of spatial proximity that areas of approximately equal size and characteristics have to each other. If an area were rated high on all criteria and exhibited geographical confluence, it was classified as Metropolitan. If it rated high against two criteria and medium against another and was geographically confluent, it was classified as regional. An area that failed to score at least two high ratings was classified as rural. Table 2.2 shows the rating categories.

**Compatibility and comparability of data**

Major concerns in the design of any classification system are the issues of compatibility and comparability of data. For this reason the ASGC was used to provide the core components of the alternative classification system. Comparison with existing datasets in Tasmania and interstate were facilitated by the use of the spatial units employed by this alternate classification

**Rating categories for the proposed Tasmanian Geographical Classification**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population size (SSD)</td>
<td></td>
</tr>
<tr>
<td>&gt; 90,000</td>
<td>High</td>
</tr>
<tr>
<td>70,000 -90,000</td>
<td>Medium</td>
</tr>
<tr>
<td>&lt; 70,000</td>
<td>Low</td>
</tr>
<tr>
<td>Population Density (SD)</td>
<td></td>
</tr>
<tr>
<td>&gt; 120 persons/km</td>
<td>High</td>
</tr>
<tr>
<td>60-120,000 persons/km</td>
<td>Medium</td>
</tr>
<tr>
<td>&lt; 60 persons/km</td>
<td>Low</td>
</tr>
<tr>
<td>Access - Travel time to major referral hospital</td>
<td></td>
</tr>
<tr>
<td>&lt; 45 mins drive</td>
<td>High</td>
</tr>
<tr>
<td>45-90 mins drive</td>
<td>Medium</td>
</tr>
<tr>
<td>&gt; 90 mins drive</td>
<td>Low</td>
</tr>
<tr>
<td>Geographical Confluence</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
Details of the Alternative Classification System

The ASGC has a six level hierarchical structure in which components at each level can be aggregated to equate to the next level in the matrix.

In census years, the Census Collector’s District (CD) is the base unit of this structure. When one or more whole CD’s are aggregated they form Statistical Local Areas (SLA). In non-census years, a SLA is the smallest spatial unit in the classification system. Statistical Local Areas (SLA) are used as the base unit of the alternative classification system. “Statistical local areas” are based on the boundaries of incorporated bodies of local government where these exist” (ABS 1996d). The advantages of using SLA as the core component of the alternative classification system are firstly, that it facilitates direct comparison of non-census statistical data, both within Tasmania and interstate. Secondly, compatibility with Census data is optimised because the base spatial unit of census data collection, the Census Collection District (CD) can be directly aggregated to form a SLA.

Statistical Local Areas can also be aggregated to form Statistical Sub Divisions (SSD). Statistical Sub Divisions are intermediate geographic areas of contiguous SLA, which share similar socioeconomic characteristics. The next level in the hierarchy is Statistical Divisions (SD) or Statistical Districts (S Dist). Geographical confluence and socio-economic homogeneity are again the major factors, which determine the limitations of SD or S Dist. They consist of one or more SSD and represent a broader geographic and socioeconomic region. The largest spatial units in the hierarchy are the States or Territories. Each level of the hierarchy has been designed to ensure complete coverage of Australia without gaps or overlaps.

Statistical Local Areas and Statistical Sub Divisions are the main components of the alternative system used in this Report. Under this classification two areas were classified as Metropolitan. These are the Greater Hobart and Greater Launceston Statistical subdivisions. These SSDs equate to the conurbations encompassed within these two cities. The Greater Hobart SSD consists of eight SLAs, which represent the major confluent urban areas within the SSD. These SSDs score highly on all four rating criteria used. The Burnie-Devonport SSD is classified as Regional. It comprises five SLAs, namely: Burnie (Part A), Central Coast (part A), Devonport, Latrobe (part A) and Waratah/Wynyard (part A). Although these areas form a confluent geographical district, and score high ratings for both population density and access time, the smaller overall population of this SSD places it in the Regional rather than Metropolitan classification. The remaining areas in the state are all relatively sparsely populated and would be classified as rural (Table 2.3).

2.8.2 Potential Applications of the Alternative Classification System

This classification system has potentially wide application within the Public Health and Health Services fields in Tasmania. Monitoring and analysis of the geographic distribution of particular health or disease states is one important use for this classification. It could also be utilised in; health needs analysis, health program evaluation, including cost benefit and cost effectiveness evaluations, and health services planning, including evaluation of cost efficiencies.
### Geographical classification system used in this Report for Tasmania

#### Table 2.3

<table>
<thead>
<tr>
<th>METROPOLITAN Statistical local area (SLA)</th>
<th>REGIONAL Statistical Local Area (SLA)</th>
<th>RURAL Statistical local area (SLA)</th>
<th>Statistical Division (SD)</th>
<th>Statistical Subdivision (SSD)</th>
<th>Statistical Local Area Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brighton</td>
<td>Central Highlands</td>
<td>Greater Hobart</td>
<td>Greater Hobart</td>
<td></td>
<td>0410, 1410, 4411, 2610, 2811, 2812, 3611, 4811</td>
</tr>
<tr>
<td>Clarence</td>
<td>Derwent Valley - Pt B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Derwent Valley - Pt A</td>
<td>Glamorgan/Spring Bay</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glenorchy</td>
<td>Huon Valley</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hobart – Inner</td>
<td>Kingborough - Pt B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hobart – Remainder</td>
<td>Sorell - Pt B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kingborough-Pt A</td>
<td>Southern</td>
<td></td>
<td>Southern</td>
<td></td>
<td>1010, 2410, 3010, 3612, 4812, 5010, 5210</td>
</tr>
<tr>
<td>Sorell-Pt A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorell-Pt A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorell - Pt B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern Midlands</td>
<td>Greater Launceston</td>
<td></td>
<td>Greater Launceston</td>
<td></td>
<td>2211, 4011, 4012, 4211, 4611, 5811</td>
</tr>
<tr>
<td>Tasman</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>George Town - Pt A</td>
<td>George Town - Pt B</td>
<td>Central North</td>
<td>Central North</td>
<td></td>
<td>2212, 4013, 4212, 4612, 5812</td>
</tr>
<tr>
<td>Launceston – Inner</td>
<td>Launceston-Pt C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Launceston-Pt B</td>
<td>Meander Valley - Pt B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meander Valley - Pt A</td>
<td>Northern Midlands - Pt B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Midland-Pt A</td>
<td>West Tamar-Pt B</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>West Tamar-Pt A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Tamar-Pt B</td>
<td>Break O’Day</td>
<td>North-East</td>
<td>North-East</td>
<td></td>
<td>0210, 1810, 2010</td>
</tr>
<tr>
<td>Dorset</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flinders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burnie-Pt A</td>
<td>Burnie Devonport</td>
<td>Mersey Lyell</td>
<td>Burnie Devonport</td>
<td></td>
<td>0611, 0811, 1610, 3811, 5411</td>
</tr>
<tr>
<td>Central Coast-Pt A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Devonport</td>
<td>Burnie-Pt B</td>
<td></td>
<td>North-Western Rural</td>
<td></td>
<td>0612, 0812, 1210, 3210, 3410, 3812, 5412</td>
</tr>
<tr>
<td>Latrobe-Pt A</td>
<td>Central Coast-Pt B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latrobe-Pt A</td>
<td>Circular Head</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waratah/Wynyard-Pt A</td>
<td>Kentish</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waratah/Wynyard-Pt B</td>
<td>King Island</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Coast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5610</td>
</tr>
<tr>
<td>Lyell</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix 3. Age-standardised incidence rates (ASIR) of selected cancers

Age-standardised incidence rates (ASIR) of selected cancers by sex and region, Tasmania, 1993-99

<table>
<thead>
<tr>
<th>Site of cancer</th>
<th>Sex</th>
<th>South</th>
<th>North</th>
<th>North-West</th>
<th>Tasmania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lip</td>
<td>Male</td>
<td>9.1 (7.3-11.0)</td>
<td>8.4 (6.1-10.7)</td>
<td>14.9 (11.5-18.3)</td>
<td>10.3 (8.9-11.6)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.5 (1.6-3.5)</td>
<td>2.6 (1.4-3.8)</td>
<td>3.0 (1.5-4.5)</td>
<td>2.7 (2.0-3.3)</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>Male</td>
<td>7.5 (5.8-9.1)</td>
<td>6.1 (4.1-8.1)</td>
<td>7.1 (4.8-9.4)</td>
<td>7.0 (5.9-8.1)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.9 (2.0-3.9)</td>
<td>4.1 (2.6-5.6)</td>
<td>1.3 (0.5-2.1)</td>
<td>2.9 (2.2-3.6)</td>
</tr>
<tr>
<td>Stomach</td>
<td>Male</td>
<td>9.5 (7.6-11.3)</td>
<td>10.7 (8.2-13.2)</td>
<td>9.9 (7.2-12.6)</td>
<td>9.9 (8.6-11.2)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>4.9 (3.6-6.1)</td>
<td>4.3 (2.8-5.8)</td>
<td>3.3 (1.7-4.8)</td>
<td>4.3 (3.5-5.1)</td>
</tr>
<tr>
<td>Colon</td>
<td>Male</td>
<td>28.9 (25.6-32.2)</td>
<td>28.5 (24.2-32.7)</td>
<td>30.7 (25.9-35.5)</td>
<td>29.2 (26.9-31.5)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>24.2 (21.3-27.0)</td>
<td>22.8 (19.2-26.3)</td>
<td>29.0 (24.5-33.4)</td>
<td>24.9 (22.9-26.9)</td>
</tr>
<tr>
<td>Rectum</td>
<td>Male</td>
<td>19.2 (16.5-21.8)</td>
<td>17.4 (14.2-20.7)</td>
<td>17.6 (14.0-21.2)</td>
<td>18.3 (16.5-20.1)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>10.2 (8.3-12.1)</td>
<td>11.6 (9.0-14.3)</td>
<td>12.1 (9.2-15.0)</td>
<td>11.0 (9.7-12.4)</td>
</tr>
<tr>
<td>Lung</td>
<td>Male</td>
<td>48.0 (43.8-52.2)</td>
<td>44.1 (39.0-49.2)</td>
<td>44.8 (39.0-50.6)</td>
<td>46.1 (43.3-49.0)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>21.6 (18.8-24.3)</td>
<td>18.3 (14.9-21.7)</td>
<td>13.4 (10.3-16.5)</td>
<td>18.7 (16.9-20.5)</td>
</tr>
<tr>
<td>Melanoma of skin</td>
<td>Male</td>
<td>36.2 (32.4-40.0)</td>
<td>24.6 (20.6-28.7)</td>
<td>27.7 (22.9-32.5)</td>
<td>30.9 (28.4-33.3)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>34.4 (30.7-38.1)</td>
<td>25.8 (21.6-29.9)</td>
<td>27.7 (22.9-32.5)</td>
<td>30.4 (28.0-32.8)</td>
</tr>
<tr>
<td>Breast</td>
<td>Male</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>82.4 (76.8-88.1)</td>
<td>79.2 (72.0-86.3)</td>
<td>73.5 (65.9-81.1)</td>
<td>79.4 (75.6-83.3)</td>
</tr>
<tr>
<td>Cervix</td>
<td>Male</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>8.6 (6.8-10.4)</td>
<td>7.7 (5.4-10.0)</td>
<td>10.5 (7.5-13.6)</td>
<td>8.8 (7.5-10.1)</td>
</tr>
<tr>
<td>Prostate</td>
<td>Male</td>
<td>93.3 (87.6-99.0)</td>
<td>98.7 (91.3-106.1)</td>
<td>82.9 (75.2-90.6)</td>
<td>92.6 (88.7-96.5)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Brain</td>
<td>Male</td>
<td>8.2 (6.3-10.1)</td>
<td>4.2 (2.5-6.0)</td>
<td>5.6 (3.5-7.8)</td>
<td>6.5 (5.3-7.6)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>5.3 (3.7-7.0)</td>
<td>4.5 (2.6-6.5)</td>
<td>6.2 (3.6-8.7)</td>
<td>5.3 (4.2-6.4)</td>
</tr>
<tr>
<td>Thyroid</td>
<td>Male</td>
<td>2.3 (1.3-3.3)</td>
<td>2.1 (0.8-3.3)</td>
<td>1.9 (0.7-3.2)</td>
<td>2.2 (1.5-2.8)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>8.3 (6.5-10.2)</td>
<td>4.8 (3.0-6.7)</td>
<td>4.7 (2.8-6.7)</td>
<td>6.5 (5.4-7.7)</td>
</tr>
<tr>
<td>Lymphomas</td>
<td>Male</td>
<td>16.4 (13.8-19.0)</td>
<td>15.5 (12.3-18.7)</td>
<td>14.2 (10.8-17.5)</td>
<td>15.6 (13.9-17.3)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>12.8 (10.6-15.0)</td>
<td>9.9 (7.3-12.5)</td>
<td>13.4 (10.3-16.6)</td>
<td>12.1 (10.6-13.6)</td>
</tr>
<tr>
<td>Leukaemias</td>
<td>Male</td>
<td>9.5 (7.6-11.5)</td>
<td>7.7 (5.3-10.2)</td>
<td>8.1 (3.9-8.3)</td>
<td>8.2 (6.9-9.5)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>7.6 (5.9-9.3)</td>
<td>6.1 (3.8-8.4)</td>
<td>6.4 (3.7-9.0)</td>
<td>6.9 (5.7-8.1)</td>
</tr>
</tbody>
</table>
Notes:
1. Rates are per 100,000 population.
2. Figures in parentheses are the 95% confidence intervals of the ASIRs.
3. Because of the large number of comparisons, any two ASIRs are considered significantly different if their 95% confidence intervals do not overlap.
### Appendix 4. Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Diagnosis</td>
<td>A condition or complaint either coexisting with the principal diagnosis or arising during the episode of care or attendance at a health care facility (AIHW 1998).</td>
</tr>
<tr>
<td>Age/Sex-Specific Incidence Rate</td>
<td>(Number of new cases in a specific age and sex group in a year) x (100,000/mid-year population of the same age and sex group).</td>
</tr>
<tr>
<td>Age-Standardisation</td>
<td>A procedure for adjusting rates, e.g. death rates, designed to minimize the effects of differences in age composition when comparing rates for different populations (Last 1988).</td>
</tr>
<tr>
<td>Average Length of Stay</td>
<td>For a group of patients by dividing the total number of bed days accumulated by patients separating during the study period by the number of separations occurring during that period (AIHW 1996).</td>
</tr>
<tr>
<td>Disability</td>
<td>Restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being (Lwanga et al. 1999).</td>
</tr>
<tr>
<td>Handicap</td>
<td>A disadvantage for a given individual, resulting from impairment or a disability, that limits or prevents the fulfillment of a role that is normal for that individual (Lwanga et al. 1999).</td>
</tr>
<tr>
<td>Hospital Admission</td>
<td>An admission is the process by which an admitted patient commences an episode of care (AIHW 1998). In this report, the number of separation has been taken as the number of admission.</td>
</tr>
<tr>
<td>Illicit Drugs</td>
<td>The following drugs when used for non-medical purposes: speed, cocaine, sleeping pills/tranquillisers, marijuana, analgesics, heroin, petrol sniffing, other inhalants, hallucinogens, designer drugs, and injecting of any illegal drugs (ABS 1999c).</td>
</tr>
<tr>
<td>Impairment</td>
<td>Any loss or abnormality of psychological or anatomical structure or function (Lwanga et al. 1999).</td>
</tr>
<tr>
<td>Incidence</td>
<td>Occurrence of new cases of a specified disease in a specified community during a specified period of time (Lwanga et al. 1999).</td>
</tr>
<tr>
<td>Infant Mortality Rate</td>
<td>(Number of deaths under one year of age in a year x 1000)/total number of live births in the same year (Lwanga et al. 1999).</td>
</tr>
<tr>
<td>Life Expectancy</td>
<td>Refers to the average number of additional years a person of a given age and sex might expect to live if the age-specific death rates of the given period continued throughout his or her lifetime (ABS 2001).</td>
</tr>
<tr>
<td>Long-Term Conditions</td>
<td>Refers to medical conditions (illness, injury or disability) which have lasted at least six months, or which the respondent expects to last for six months (ABS 1997b).</td>
</tr>
</tbody>
</table>
Natural Increase
The excess of births over deaths (ABS 2002c).

Morbidity
Any departure, subjective or objective, from a state of physiological or mental well-being, whether due to disease, injury or impairment (WHO 1959).

P Value
The probability of obtaining a given result by chance alone (Morton et al. 1996).

Principal Diagnosis
The diagnosis established after study to be chiefly responsible for the patient’s episode of care in hospital (or attendance at the health care facility (AIHW 1998).

Recent Condition
Medical conditions (illness, injury or disability) experienced in the two weeks prior to interview. May include long-term conditions experienced in the period (ABS 1997b).

Self-Assessed Health Status
Refers to a respondent’s perception of his or her general health status. In the National Health Survey and the National Aboriginal and Torres Strait Islander Survey, respondents were asked to rate their health as excellent, very good, good, fair or poor (ABS 1997b).

Separation
The formal process by which a hospital records the completion of treatment and/or care for an admitted patient. This occurs when an admitted patient leaves hospital to return home, transfers to another institution, or dies (AIHW 1997).

Standardised Mortality (Incidence) Ratio
The ratio of the number of events observed in the study group or population to the number that would be expected if the study population had the same specific rates as the standard population, multiplied by 100 (Last 1988).

Statistical Significance
Implies that the observed result was unlikely to have occurred by chance alone (Morton et al. 1996).

Unemployed
Persons aged 15 and over who were not employed during the reference week (ABS 2002e).
Appendix 5. References


Appendices


Australian Bureau of Statistics (ABS) 1999c. The health and welfare of Australia’s Aboriginal and Torres Strait Island peoples. ABS Cat. No. 4704.0. Canberra: ABS.


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Appendices


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