Health Indicators for Regional Planning in Queensland

September 2006

Queensland Health
Central Area Population Health Services and
Planning and Development Unit

ISBN 1921 021 578

This document will be posted on the Queensland Health intranet site. Queensland Health staff will be able to access this document at: http://qheps.health.qld.gov.au/phpep

Suggested citation:
Queensland Health: Central Area Population Health Services and Planning and Development Unit, Health Indicators for Regional Planning in Queensland, Central Area Population Health Services, Queensland Health, Maroochydore, September 2006

Contact:

For further information, including updated versions and electronic copies, contact:

Debra Blumel
Strategic Research and Development Advisor
Central Area Population Health Services
PO Box 577
Maroochydore Queensland 4558
Australia

Acknowledgements

The Health Indicators for Regional Planning Project was undertaken jointly by Central Area Population Health Services and Population Health Branch over a six month period during 2006. The project was jointly managed by Debra Blumel, State Strategic Research and Development Advisor, and Catherine Harper, Coordinating Epidemiologist. Jenny Barralet, Senior Project Officer, operationalised the project.

Information contained in the Health Indicators for Regional Planning in Queensland (September 2006) report and spreadsheet was provided by a number people across a range of agencies including Jill Harrison (Centrelink); Ken Webb (Dept of Education); Peter Hagan (Department of Employment and Training); Gillian Corkery, Alison Christou, Pamela Farrow and Miranda Mortlock (Dept of Housing); Alison Smith (Department of Primary Industries and Fisheries); Susan Mercer Nightingale, Paul Kennett, Paige Ridgewell and Stephanie Gill (Department of Local Government, Planning, Sport and Recreation), Glen Heyen, David Marshall, Peter Gersekowski and Anneke Schmider (Department of Treasury), Sonia Huff, Jason Krueger, Charlie Moore, Beth Stapleton and Nicky Woodman (Department of Transport); Rick Williams (Department of Communities); Lachlan Hurse, Lynne Turner and Julia Playford (Environmental Protection Agency); Stuart Hoverman (Brisbane City Council); Natalie Baig, Paul Harris, Morton Bell, Connie Allen, Liz Good, Shannon Rutherford, Damien O'Sullivan, Michelle Harrison, Dylan Walker, Toni Cooper, Alistair Hart, Margaret Bright, Philip Baker and John O'Brien (Queensland Health).

Table of Contents

"By far the greatest share of health problems is attributable to broad social conditions. Yet health policies have been dominated by disease-focused solutions that largely ignore the social environment. As a result, health problems persist, inequalities have widened, and health interventions have obtained less than optimal results."

Commission on Social Determinants of Health, World Health Organisation[5]

Part 1: Introduction

Health Indicators for Regional Planning in Queensland is a resource for Queensland Health representatives involved in regional planning. It aims to assist understanding and selection of useful indicators for regional planning processes. It will be particularly useful for Queensland Health representatives involved in coordinated and integrated multi-agency planning processes such as regional planning under the Integrated Planning Act (IPA), Community Renewal, and Regional Managers' Coordination Networks (RMCN). The resource can also be used in other regional planning processes which provide opportunities to protect health, prevent illness and promote health by targeting health determinants.

Why do we need health indicators for regional planning?

Health status or levels of ill health, early death and well-being of a population depend on a variety of factors or 'determinants' that surround individuals, families and communities. Some of these determinants can be influenced through improved planning and evidence-based interventions, thus reducing the burden of disease in Queensland.

Health Indicators for Regional Planning (in Queensland) adopts the five categories of health determinants that are used in the National Health Performance Framework.[7] These are environmental factors, socioeconomic factors, community capacity, health behaviours and person-related factors (Figure 1). There exists a complex two-way relationship between the environmental, socioeconomic and community capacity determinants, and the health behaviours and person-related factors.

Between one third and one half of the burden of disease and injury in Queensland can be attributed to behavioural risk factors that are open to change and therefore may be preventable. Socioeconomic status and location also affect the burden of disease. In disadvantaged areas the burden is about 30 per cent higher than in advantaged areas and the burden in remote areas is around 20 per cent higher than in metropolitan areas.[8] This burden of disease has been attributed to a range of health determinants and so can be targeted for health planning.

At the regional level, interagency and inter-governmental planning processes provide opportunities to influence known health determinants that lie beyond the direct influence of the health portfolio, in particular the socioeconomic, environment and community capacity factors.

The indicators and evidence collated in this resource will assist staff to participate in these processes through knowledge of the determinants of health and accessing data to develop, appraise, decide and evaluate multi-agency interventions.

Figure 1. National Health Performance Framework (Tiers 1 and 2 only)

Health Status and Outcomes			
Health Conditions	**Human Function**	**Life expectancy and Well-being**	**Deaths**
Prevalence of disease, disorder, injury or trauma or other health-related states.	Alterations to body, structure or function (impairment), activities (activity limitation) and participation (restrictions in participation).	Broad measures of physical, mental, and social well-being of individuals and other derived indicators such as Disability Adjusted Life Expectancy (DALE).	Age and/or condition specific mortality rates.

Determinants of Health				
Environmental Factors	**Socioeconomic Factors**	**Community Capacity**	**Health Behaviours**	**Person-related Factors**
Physical, chemical and biological factors such as air, water, food and soil quality resulting from chemical pollution and waste disposal.	Socioeconomic factors such as education, employment, per capita expenditure on health, and average weekly earnings.	Characteristics of communities and families such as population density, age distribution, health literacy, housing, community support services and transport.	Attitudes, beliefs, knowledge and behaviours e.g. patterns of eating, physical activity, excess alcohol consumption and smoking.	Genetic-related susceptibility to disease and other factors such as blood pressure, cholesterol levels and body weight.

Adapted from NHPC (2001) *National Health Performance Framework Report*, Queensland Health, Brisbane.[7]

How to use this resource

This resource brings together regional level health determinants and health outcome indicators, details their attributes, and summarises the evidence that links health determinants and health outcomes. This resource references key data sources and the geographic areas for which the data are available.

This resource has two components:

- A report (this document), which overviews and summarises health determinants and health outcome indicators and measures, and known relationships between them.

- An indicator dictionary (online) complements the report and is a searchable website that details information on available measures. It includes health determinant indicators identified from Queensland Government and other data sources. While there is a vast array of indicators used in regional planning processes, only health determinant indicators relevant to regional planning (i.e. the health determinant represented by the indicator can be influenced through regional planning processes) are included in the dictionary. Further criteria for selection were the validity, availability and accessibility of the data.

This resource will be available on the Population Health Planning and Engagement Portal website on the Queensland Health intranet http://165.86.8.41/phpep/factsheet/default.asp. The portal provides a planning framework linked to relevant information, tools, indicators and resources. The *Health Indicators for Regional Planning in Queensland* documents are located in step three of the planning framework, 'Identify Health Determinants'. The indicators can be used with other steps of the planning framework, for example, during appraisal of intervention options and during impact monitoring.

The data sources and website links outlined in the dictionary were current as of March-July 2006. Further updates and additions may be made subsequent to the release of this resource. In particular, future updates of census data are anticipated following completion of the August 2006 census.

Criteria for indicators and measures

Indicators and measures had to meet established criteria in order to be included in this resource.

An *indicator* was included where it was:

- related to the first two tiers of the National Health Performance Framework, that is Health Status and Outcomes[1] and Determinants of Health
- applicable to regional planning
- potentially amenable to change
- had a highly apparent link with health.[2]

A *measure* was included when the data were:

- valid
- able to be improved through activities across several sectors
- available by regional or sub-population level, rurality, or socioeconomic status levels within Queensland
- collected at least once between 1995 and 2008[3]
- available to Queensland Health.

Information in this report and online indicator dictionary is categorised according to the domain of the National Health Performance Framework (Figure 1), for example, health behaviours. Within each domain are the indicators that are the key factors, for example tobacco smoking. The measures of each indicator are key statistics which the project team identified as reflecting the indicator. An indicator may have an indirect meaning as well as a direct one; for example, overall death rate is a direct measure of mortality however it is often used as a major indicator (indirect measure) of population health.

For the report component of the resource, only key measures and data sources are included. In some cases there are multiple sources of data for the same measure, for example, with the health behaviour measure of smoking prevalence. The online indicator dictionary lists alternative data sources where available. Further details are included in the indicator dictionary, such as the representativeness, timeliness, accessibility and validity of the data.

[1] Limited to key national health priority areas.
[2] The evidence-base for social capital and potentially other areas is still under development.
[3] These dates were selected to ensure the most recent and useful data was selected.

Data for geographic regions

Data may be available at standard geographic units and/or non-standard units. In this report generally the geographic unit is listed at the smallest known available level. The indicator dictionary lists regions for which data is readily available. For some regions data can be constructed (for example Statistical Local Area – or SLA – data may be aggregated to statistical division) with adequate knowledge of geographic entities. Some regions may possibly be deconstructed (for example statistical division to SLA). If lower level regional data is required, the relevant agency should be contacted as data may be available at a lower geographic unit subject to confidentiality or interdepartmental agreement.

Most data is available at the standard geographic units of the Australian Standard Geographic Classification (ASGC). This a hierarchical classification scheme developed by the Australian Bureau of Statistics (ABS). Within this system the smaller level geographic units can be aggregated upwards to larger units. The small level unit currently is the Census Collection District (CD), which is defined for the conduct of the Census of Population and Housing. CDs aggregate up to a SLA. Mesh blocks will be introduced in the 2006 census release and will provide a new and ongoing small unit for reporting. An SLA is the smallest geographical area for which health and health related statistics are usually available. The SLA usually equates to a Local Government Area (LGA) in many rural areas or a suburb or group of suburbs within an LGA in urban areas.

Data may also be available by the standard geographic units developed by Queensland Health - Health Service District and Area Health Service. Maps of these key geographic regions and their interrelationship are included in Appendix 2.

Data may also be available by categories of remoteness within Queensland. The Accessibility/ Remoteness Index of Australia (ARIA) is the most recent standard measure of remoteness developed.[9] This resource also uses other standard and non-standard indexes for some of the proposed measures. Other standard indexes include the Rural, Remote and Metropolitan Area (RRMA) and Rural and Remote Area (RARA) classification systems. In addition, indexes may be specifically developed by some organisations as is the case with some education data. These regions do not always correlate with the standard ARIA measure.

For various measures, data may also be available by area-based categories of socioeconomic status within Queensland. In Australia there is wide adoption of the suite of indexes in the Socioeconomic Index for Areas (SEIFA), developed by the ABS.[10] These indexes enable ranking of the level of social and economic well-being of areas. SEIFA is a measure of socioeconomic status using census data including income, educational attainment, public sector housing, unemployment, and jobs in geographic regions.[11] This enables links to be examined between health outcomes and socioeconomic conditions.[12] For example, the health outcomes of Australians in geographic regions with higher levels of socioeconomic disadvantage can be examined.

Of note, some data are only available at state level or at state and population group level, for example, in physical activity or overweight and obesity prevalence are only available at state and population group level – in this case by ARIA and SEIFA.

Selecting indicators for regional planning

The selection of indicators and measures of relevance to planning in a specific region must include consideration of:

- The purposes and goals of the planning process, and the scope of the health determinants and health outcomes that may be influenced by the activity.
- The broad health needs of the population by review of the data on the relevant indicators listed in this resource.
- Regional and local contextual factors that influence health. This includes local data collections (for example, project specific data), population specific data (for example, adolescents going to boarding school) and local conditions of significance (for example, dengue fever in north Queensland), which may not be listed in this resource.
- Uneven levels of most health indicators within a regional area, for example socioeconomic status or levels of overweight and obesity. The technique of averaging over a regional area can conceal the extent of inequality within the area. It is important to consider both the average level of an indicator and the variation within an area in order to assess inequality. In this way, the regional and local need for a specific program can be assessed.

Epidemiologists from Population Health Services in each Area Health Service may be contacted to provide assistance in interpreting regional data.

"Even in the most affluent countries, people who are less well off have substantially shorter life expectancies and more illnesses than the rich."

Wilkinson R & Marmot M (2003) World Health Organisation[2]

Part 2: Health determinants

Socioeconomic factors

Socioeconomic status

Health is linked to socioeconomic position, with people who are socioeconomically disadvantaged having higher mortality and morbidity rates for most major causes of death in Australia.[13, 14] In addition, people living with disadvantage are less likely to access healthcare to prevent disease or to detect it at an early stage.[15] The most frequently used measure of socioeconomic disadvantage in Australia is the Index of Relative Socioeconomic Advantage/Disadvantage, which is drawn from the suite of indexes within the ABS Socioeconomic Indexes for Areas.

Income

Income is an important modifiable determinant of health and is strongly related to health and well-being.[11] The link between poverty and health is clear: people who are financially poorer have higher rates of illness and premature death.[11] Economic inequality may also be important for the health of the population, with health and well-being affected by the distribution of income in society just as much as by absolute standard of living.[16]

Financial stress refers to households at risk of deprivation due to a shortage of money[17] and is a subjective measure used by the ABS to identify households at risk of falling below acceptable living standards.[18] However, this indicator is not yet validated and so requires careful interpretation.

High levels of financial stress may not necessarily indicate deprivation or disadvantage. For example, some households with high incomes report high levels of financial stress. These households may find it difficult to meet financial obligations, however they usually have options to leave that obligation.[19] These households are unlikely to be living in a situation of unacceptably low living standards that may warrant government or other intervention.[19]

Employment

Unemployment and job insecurity is shown to be detrimental to physical and mental health.[11, 20] Employment provides income, and unemployment reduces people's ability to purchase goods and services, such as adequate nutrition and housing.[13] In industrialised countries employment also provides other support functions through status, social support, structure to life, and a means of participating in society.[11, 21] Long term unemployment may increase mortality, the risk of self-harm including suicide, and have a negative effect on the health of children.[11]

Education

There are strong links between health and education levels. People with poorer health generally have lower education levels and people with lower levels of education are more likely to become unemployed.[22]

Literacy, in particular, influences health and health determinants in a variety of ways, including the choice of activities of daily living, coping skills, safety risks in the workplace/home, and vulnerability to changes in social and medical circumstances.[13] These factors can lead to errors in following medical instructions, poor or late accessing of health services, and lifestyles which can result in chronic illness and subsequently in preventable morbidity and mortality.[23]

Low levels of literacy are associated with poor health outcomes including low health knowledge, increased incidence of chronic illness, poorer intermediate disease markers, and lower use of preventive health services.[24] Overall, people with low literacy are 1.5 to three times more likely to experience poor health outcomes.[25]

Indicators and measures	Data sources and availability	Resources and contacts
Socioeconomic status		
Socioeconomic status of areas	*Data sources:* Infobank, Datahub, ABS[4] (national regional profiles) *Geographic Unit:*[5] SLA *Year*: 2001 (census data)	SEIFA data files and background papers: http://qheps.health.qld.gov.au/hic/infobank/ib8.htm#subtopic2 *http://datahub.govnet.qld.gov.au/data_acc/seifa.htm* *Cost*[6]: Nil
Socioeconomic mortality, morbidity and health behaviour differentials	*Data sources:* Planning and Development Unit, Health Information Centre, Queensland Health *Geographic Unit:* SEIFA by Health Service District (HSD), area health service, state *Year*: 2003-04, 2001-03, 1996, 1991-93	The Health of Queenslanders 2006. Report of the Chief Health Officer Queensland. *[in press]* Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* Socioeconomic-based mortality differentials in Qld, 1991-1993 and 2001-2003: *http://qheps.health.qld.gov.au/hic/pdf/Info73.pdf* *Contact:* Health Information Centre, Queensland Health, Email: hlthstat@health.qld.gov.au *Cost:* Nil

[4] Australian Bureau of Statistics.
[5] Smallest level of available geographic aggregation.
[6] All indicated costs relate to Queensland Health employees.

Indicators and measures	Data sources and availability	Resources and contacts
Income		
Average individual taxable income	*Data source:* ABS *Geographic unit:* SLA *Years:* 1999, 2000, 2001, 2002	National regional profiles (statistical summaries of key economic and social information): *http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/LGA3Main%20Features12003?OpenDocument&tabname=Summary&prodno=LGA3&issue=2003&* Regional statistics Queensland 2004: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1362.32004?OpenDocument* *Cost:* Nil
Median weekly individual income	*Data source:* ABS *Geographic unit:* SLA *Year*: 2001	Census of Population and Housing: Selected Social and Housing Characteristics for Statistical Local Areas, Queensland 2001: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2015.32001?OpenDocument* *Cost:* Nil
Weekly family income	*Data source:* ABS *Geographic unit:* Remoteness Area *Year*: 2001	Regional statistics Queensland 2004: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1362.32004?OpenDocument* *Cost:* Nil
Number of wage and salary earners, total income, average and median income	*Data source*: ABS *Geographic unit:* SLA *Years:* 2000-2001 (yearly from 1995)	Regional wage and salary earner statistics: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/5673.0.55.001Main%20Features42000-01?opendocument&tabname=Summary&prodno=5673.0.55.001&issue=2000-01&num=&view=* Regional statistics Queensland 2004: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1362.32004?OpenDocument* *Cost:* Nil
Number of income support customers by type of pension or allowance	*Data source:* ABS *Geographic unit:* SLA *Years:* 2002, 2003	National regional profiles data files: *http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/LGA3Main%20Features12003?OpenDocument&tabname=Summary&prodno=LGA3&issue=2003&* Regional statistics Queensland 2004: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1362.32004?OpenDocument* *Cost:* Nil
Employment		
Number employed and unemployed, type of employment, unemployment rate, occupation and industry of employment	*Data source:* ABS *Geographic unit:* SLA *Year:* 2001	Selected education and labour force characteristics for SLAs Queensland 2001: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2017.32001?OpenDocument* *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Education		
Children's literacy and numeracy: Reading, writing and numeracy, Years 3, 5, 7	*Data sources:* Ministerial Council on Education, Employment, training and Youth Affairs (MCEETYA), Queensland Studies Authority *Geographic unit:* MCEETYA Geographic Location Classification (metropolitan, provincial, remote); state *Years:* 2000-2004 (annual)	National and state reports on schooling in Australia: *http://www.mceetya.edu.au/mceetya/anr/index.html* *http://www.qsa.qld.edu.au/testing/357tests/minister.html* *Contact:* MCEETYA, PO Box 202, Carlton South, Victoria 3053 E-mail: enquiries@mceetya.edu.au *Cost:* Nil
Year 12 school outcomes	*Data source:* Queensland Studies Authority *Geographic unit:* Individual school Year: 2005	Year 12 School Outcomes 2005: *http://www.qsa.qld.edu.au/yrs11_12/statistics/2005/year12outcomes.html* *Contact:* To obtain more information about specific school outcomes, contact the school directly. *Cost:* Nil
Enrolments, Year 12 completion rates, student/teaching staff ratios and other key statistics	*Data source:* MCEETYA *Geographic unit:* MCEETYA Geographic Location Classification (Metropolitan, provincial, remote); SEIFA *Year:* 2000-2005 (annual)	Key statistics on Australian schooling reports: *http://www.mceetya.edu.au/mceetya/anr/index.html* *Cost:* Nil
Level of education (non-school qualifications)	*Data source:* ABS (census data) *Geographic Unit:* SLA *Year:* 2001	Selected Education and Labour force characteristics for SLA Queensland 2001: http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2017.32001?OpenDocument *Cost:* Nil

"[Cities should be]…a collection of communities where every member has a right to belong. It should be a place where every man feels safe on his streets and in the house of his friends. It should be a place where each individual's dignity and self-respect is strengthened by the respect and affection of his neighbours. It should be a place where each of us can find the satisfaction and warmth which comes from being a member of the community of man. This is what man sought at the dawn of civilization. It is what we seek today."

Lyndon B. Johnson (Thirty-sixth President of the United States of America)

Community capacity factors

Demographics

There are many demographic characteristics that play a role in the health of a population. Major determinants include age and sex distribution. Other demographic factors also play a role, for example, unmarried and divorced people,[26] and men have higher death rates (adjusted for age) than married people and women. Similarly social trends such as the ageing population, the increase in age of people starting families, and the increase in one-parent families are already influencing the economic environment and the health status of the population.[11]

Specific populations, particularly Aboriginal and Torres Strait Islander peoples, have poorer health status in comparison with the rest of the Australian population.[27] In Queensland, Aboriginal and Torres Strait Islander peoples:

- experience earlier onset of most chronic diseases, are more likely to be hospitalised, have a higher prevalence of disability, and lower life expectancy[13, 27]
- have infant mortality rates more than twice that of other infants[27]
- have babies that are twice as likely to be of low birth weight while perinatal mortality is about twice that of other infants.[27]

Likely reasons for these health outcomes include the conditions of social and economic disadvantage experienced by many Aboriginal and Torres Strait Islander peoples, which places them at greater risk of exposure to behavioural and environmental risk factors.[27]

Being a member of a population whose culture and language is different from the dominant ones also can influence health outcomes.[13] This may be due to limited service knowledge, poor language skills, employment discrimination,[28] an associated low socioeconomic living environment, and absence of social networks[29] within minority migrant communities and refugees, as well as genetic determinants. For example, racial minorities in Britain experience more interpersonal violence, institutional discrimination, or socioeconomic disadvantage – these all have independent detrimental effects on health, regardless of the health indicator used.[30]

Some risks for adult health are predetermined at birth.[13] Deficient maternal nutrition can impact on growth and development of the foetus, and lead to organ impairment and chronic disease later in life.[13] Likewise, low birth weight babies, adjusted for gestational age, have an increased risk of early death and, if they survive, they have an increased risk of disability and chronic disease during childhood and adult life.[31] Low birth weight babies are more frequent among mothers in deprived socioeconomic conditions.[32] Babies born to Australian women under the age of 20 years who were single, separated or divorced, Aboriginal, or who smoke during pregnancy are at increased risk of being premature or of low birthweight.[33]

Children born to teenage mothers are at increased risk of physical neglect and abuse, and poor school performance.[34] They are more likely to have developmental delay, lower academic achievement, and behavioural problems.[13] They are at greater risk of substance abuse, and of becoming teenage parents themselves.[35-37]

For teenage mothers there are ongoing implications, such as long term unemployment, poorly paying job options, lack of school qualifications[38] and poor psychosocial outcomes[34].

Risk factors for teenage pregnancy include family situations with regular conflict between members, violence and sexual abuse in childhood, unstable housing arrangements,[39] poor school performance, low socioeconomic background, [34-36] family history of teenage pregnancies, low maternal education,[34] father's absence,[40] and low self-esteem[41]. Important strategies to address the issue of teenage pregnancy focus around improving family support, school connectedness and retention,[42] employment opportunities, sex education,[43] and self-esteem[13].

Crime and safety

Violence impacts on the victims, their families, friends and communities and may lead to reduced quality of life, illness, disability and death (including suicide)[44]. Exposure to violence in the home is associated with being a later victim or perpetrator of violence[44]. Child abuse in particular has broad health consequences including physical (for example, injuries, disability, sexually transmitted diseases), psychological and behavioural (for example, depression and anxiety, developmental delays, suicide), and other long-term health consequences (for example, coronary heart disease)[44].

Fear of violence and crime may have broader community-level consequences such as inhibiting social interaction and increasing mistrust[20] which also have health consequences through increasing social isolation. Interventions to improve safety in previously unsafe housing estates have led to improved health outcomes such as better mental health and self-esteem[20].

Housing

Access to adequate housing is a basic need and may influence both physical and mental health[45]. The most frequently used indicators of housing circumstances in Australia are housing tenure, housing affordability and homelessness.

Housing tenure or home ownership is linked to mortality rates, specifically cardiovascular disease[46]. People in rented accommodation have higher death rates than owner-occupiers, even after socioeconomic variables are considered[46]. Housing insecurity results in people having to relocate which can have a negative impact on children's educational success[13]. Those living in poor quality housing with overcrowding and damp conditions are more likely to suffer both physical and mental health problems[47].

Housing affordability indicates the capacity of households to meet housing costs and other living expenses[45]. In Australia, lower income households have problems finding affordable, secure and appropriate housing – and increasingly, so are moderate income households[45]. Inadequate housing and housing stress (caused by the need to spend more than 30 per cent of a low income on housing) can lead to family conflict and breakdown[48]. "People are experiencing financial housing stress if they cannot afford 'adequate' housing, where 'adequate' housing is that which has sufficient rooms so that the household is not living in overcrowded conditions, is in reasonable repair, provides the basic amenities considered essential by the community, has adequate security of tenure, and is in a suitable location"[49].

Homelessness is an indicator of housing deprivation and evidence of social exclusion[45]. Homelessness in childhood can contribute to ill health, behavioural problems and poor educational outcomes. Homeless young people have a much higher prevalence of physical and psychological problems (including sexual health, nutrition, oral health, and substance abuse) than the general population[50].

Transport

Transport affects the health of the population both directly and indirectly[51]. Lack of transport increases social isolation and decreases community cohesion[52]. Restricted access to transport through factors such as low income, disability and increasing age may reduce access to employment, education and the opportunity to participate in community activities[13]. Active commuting, such as walking or cycling to work or school, has benefits for cardiovascular, musculoskeletal and mental health[13]. Cycling, walking and the use of public transport also promote health through reducing fatal accidents, increasing social contact and reducing air pollution[2].

Gambling

For some Queenslanders gambling leads to adverse consequences for themselves, family, friends and the community[53]. 'Problem gambling' describes any gambling activity that results in negative consequences. Problem gambling can have a wide range of direct and indirect impacts on the health of individuals including but not limited to, the loss of income and housing, deterioration in nutrition, depression, stress, anxiety, lethargy, insomnia and suicidal thoughts[54]. Wider consequences of problem gambling can impact on families and communities leading to emotional distress, marital discord, divorce, physical and psychological abuse, financial problems and crime[55]. While problem gambling is an issue which cuts across the sociodemographic spectrum, some population sectors and regions may be more vulnerable to experiencing such problems[53].

Social capital

The link between social isolation and poor health is well-established[55]. People who actively participate in their community and have strong and supportive family, cultural and community relationships have better health than people who are socially isolated[11]. Social capital is defined as 'social relations of mutual benefit characterised by norms of trust and reciprocity'. It describes features of social life such as how involved we are in our community, how much we trust each other, how much we trust our governments and institutions, how connected we are to our communities and families, and how much we help each other.

The social capital survey conducted by Queensland Health in 2002, included seven dimensions of social capital: community cohesion; community identity; generalised trust; tolerance of diversity; civic trust; community involvement; and informal social networks[56]. Social capital (represented by the core domains of community cohesion, community identity and generalised trust) was significantly associated with better quality of life, self reported health and satisfaction with health.

People with higher social capital generally reported a greater number of healthy behaviours: sufficient physical activity, not smoking, healthy weight, and consumption of sufficient fruit and vegetables[13, 56]. In addition, social capital was the leading factor in the pathways to subjective health and well-being and mediated the effects of predictors of health such as age, sex and socioeconomic status[56].

Volunteerism

There are links between volunteerism among older adults and high levels of well-being[57, 58]. Volunteerism refers to being actively involved in unpaid activities that benefit the community. "Unpaid volunteer and community work builds networks in the community, and complements the assistance provided within families and households, enabling society to function more efficiently and with less reliance on government involvement"[59]. The extent of community volunteer work is considered an indicator of community strength and a direct outcome of social capital, demonstrating a balance between concern for self and concern for the community[57, 60].

Indicators and measures	Data sources and availability	Resources and contacts
Demographics		
Population counts, estimated resident population and population projections	*Data source:* Infobank, Health Information Centre, Queensland Health *Geographic unit:* SLA, ARIA *Year:* 1979-2004 (annual and variable)	Data:*http://qheps.health.qld.gov.au/hic/infobank/ib3.htm#subtopic6* *Contact:* Health Information Centre, Queensland Health, Email: hlthstat@health.qld.gov.au *Cost:* Nil
Births: number, gestatational age, age of mother, indigenous status	*Data source:* Infobank, Health Information Centre, Queensland Health *Geographic unit:* HSD *Year:* 1987-2004 (annual)	Data:*http://qheps.health.qld.gov.au/hic/infobank/ib3.htm#subtopic2* Annual perinatal statistics reports: *http://qheps.health.qld.gov.au/hic/products.htm* *Contact:* Health Information Centre, Queensland Health, Email: hlthstat@health.qld.gov.au *Cost:* Nil
Aboriginality: indigenous population and projections	*Data source:* Infobank, Health Information Centre, Queensland Health *Geographic unit:* SLA, ARIA, Indigenous areas, Aboriginal and Torres Strait Islander Commission regions *Year:* 1976-2001 (annual) and population projections to 2009	Data:*http://qheps.health.qld.gov.au/hic/infobank/ib3.htm* *Contact:* Health Information Centre, Queensland Health, Email: hlthstat@health.qld.gov.au *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Ethnicity: Language spoken at home and country of birth	*Data source:* Infobank, Health Information Centre, Queensland Health (based on ABS data) *Geographic unit:* SLA, RRMA *Year:* 2001, 1996, 1991	Data:*http://qheps.health.qld.gov.au/hic/infobank/ib3.htm#subtopic4* *Contact:* Health Information Centre, Queensland Health, Email: hlthstat@health.qld.gov.au *Cost:* Nil
Crime and Safety		
Offences (reported and self-reported), courts (appearances, charges, outcomes), and corrections (imprisonment and detention)	*Data source:* Office and Economic and Statistical Research (OESR) *Geographic unit:* Variable *Year:* Variable and ongoing	Crime and Justice Statistics: *http://www.oesr.qld.gov.au/queensland_by_theme/society/crime_justice/index.shtml* Queensland Crime Victimisation Survey 2000: *http://www.oesr.qld.gov.au/publications/single_publications/society/crime_survey_2000.shtml* Data search: *http://www.oesr.qld.gov.au/online_services/data_search/index.shtml* 'Request a statistic' service: *http://www.oesr.qld.gov.au/online_services/data_search/request_a_statistic.shtml* *Contact:* OESR website, Email: oesr@treasury.qld.gov.au *Cost:* Nil
Feelings of safety, victim of violence or break-in	*Data source:* ABS *Geographic unit:* Major city/ inner regional/other areas, SEIFA *Year:* 2002	General Social Survey 2002 data: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4159.3.55.0012002?OpenDocument* *Cost:* Nil
Reported offences and type of crime	*Data source:* ABS *Geographic unit::* police regions *Year:* 2002-2003 (financial year), annual from 1999	Regional Statistics Queensland 2004: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1362.32004?OpenDocument* *Cost:* Nil
Armed robbery, unarmed robbery, break and enter, and motor vehicle theft	*Data source:* Australian Institute of Criminology *Geographic unit::* SLA *Year:* 1994-1998	Atlas of Crime in Australia 2000: *http://www.aic.gov.au/publications/atlas/flyer.pdf* Other crime related publications: *http://www.aic.gov.au/* *Contact:* Australian Institute of Criminology, GPO Box 2944, Canberra 2601 Email: aicpress@aic.gov.au Website: http://www.aic.gov.au *Cost:* $10 (for Atlas of Crime report)

Indicators and measures	Data sources and availability	Resources and contacts
Housing		
Homeless rates	*Data sources:* Salvation Army, Institute for Social Research Swinburne University, ABS *Geographic unit::* Statistical District and variable *Year:* 2001	Counting Homelessness in Queensland, 2001 and other reports: *http://www.salvationarmy.org.au/homeless/reports.asp OR http://www.countingthehomeless.com.au* Swinburne University and RMIT University C/- Institute for Social Research Swinburne University, Hawthorn 3122 Tel: (03) 92148825 *Cost:* Nil
Homelessness	*Data sources:* Department of Housing, ABS *Geographic unit:* SLA *Year:* 2001	*Contact:* Senior data analyst, Organisational Performance and Strategy, Queensland Department of Housing. Tel: (07) 32251093
Household composition, dwelling and tenure type, modifications, reasons for moving and choosing dwellings	*Data source:* ABS *Geographic unit:* Brisbane Major Statistical Region (MSR)/Balance of Queensland MSR. Customised data may be available on request. *Year:* 2004	Housing motivations and intentions Queensland 2004: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8710.3.55.0012004?OpenDocument* *Contact:* ABS, National Information and Referral Service Tel: 1300 135 070 *Cost:* A fee may be incurred for provision of unpublished data.
Dwelling type, fully owned/being purchased/rented, median rent and loan repayments, household type and size and family type	*Data source:* ABS *Geographic Unit:* SLA *Year:* 2001	Census of Population and Housing: Selected Social and Housing Characteristics for Statistical Local Areas, Queensland report 2001: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2015.32001?OpenDocument* *Cost:* Nil
Adequacy of housing: Years in current residence, reasons for moving house, distance moved and preference to live in local area	*Data source:* University of Melbourne *Geographic unit:* SLA *Year:* 2001 and ongoing	Household, Income and Labour Dynamics in Australia (HILDA) Survey: *http://melbourneinstitute.com/hilda/* *Contact:* Planning and Development Unit, Queensland Health. Email: healthsurveillance_pophealth@health.qld.gov.au. *Cost:* Nil
Housing affordability (low income proportional and residual budget standards)	*Data sources:* Department of Health and Ageing, Centrelink *Geographic Unit:* SLA *Year:* 2001-2003	*Contact:* Senior data analyst, Organisational Performance and Strategy, Queensland Department of Housing. Tel: 3225 1093. *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Housing affordability and housing stress	*Data source:* Australian Housing and Urban Research Institute (AHURI) *Geographic unit:* LGA, SSD, statistical regions, Brisbane and rest of Queensland *Year:* 2001	AHURI website: http://www.ahuri.edu.au/ Housing affordability reports: *http://www.ahuri.edu.au/publications/projects/p60279/* Housing affordability in Australia: *http://www.ahuri.edu.au/downloads/NRV3/NRV3_C_Housing_affordability_in_Australia_Background_Report.pdf* *Contact:* AHURI, Level 1 114 Flinders Street, Melbourne 3000. Email: information@ahuri.edu.au *Cost:* Nil
State housing tenancy and stock research dataset	*Data sources:* Department of Housing, Department of Health and Ageing, AIHW *Geographic unit:* ARIA, state *Year:* 2000 to 2005	*Contact:* Senior data analyst, Organisational Performance and Strategy, Queensland Department of Housing. Tel: 32251093.
Overcrowding (census population and Canadian occupancy standard)	*Data sources*: Department of Health and Ageing, ABS *Geographic unit:* SLA *Year:* 2001	*Contact:* Senior data analyst, Organisational Performance and Strategy, Queensland Department of Housing. Tel: (07) 3225 1093.
Transport		
Journey to work trends: Origin and destination, method of travel and work at home	*Data sources:* OESR, ABS *Geographic unit:* LGA (south east Queensland) *Years:* 2001, 1996 (census data)	Journey to work data: *http://www.oesr.qld.gov.au/queensland_by_theme/industry/transport_communications/transport/bulletins/journey_to_work_c01_htm.shtml* *Cost:* Nil
Private vehicle, public transport and bicycle usage; transport difficulties (through impairment or disability)	*Data sources:* Planning and Development Unit, Queensland Health; Queensland Transport *Geographic unit:* South east Queensland (Brisbane, Gold Coast and Sunshine Coast regions) *Years:* 2003-04; 1992	South East Queensland Travel Survey. Preliminary results for Brisbane only currently available. *http://www.transport.qld.gov.au/qt/tpSite.nsf/index/SEQTS* *Contact:* Planning and Development Unit, Queensland Health. Email: healthsurveillance_pophealth@health.qld.gov.au. *Cost:* Nil
Private transport, public transport and bicycle usage; motor vehicle ownership	*Data source:* ABS Geographic unit: Statistical regions *Year:* 2004	Regional statistics Queensland 2004: *http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/681544F7583BF592CA256F2D007ABC4D/$File/13623_2004.pdf* *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Bicycle usage Queensland	D*ata source:* ABS Geographic unit: Statistical region and aggregated statistical regions *Year:* 2003	Bicycle usage Queensland report: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/9215.3Oct%202003?OpenDocument* Data also available in the Regional Statistics Queensland report (see below) *Contact*: ABS, National Information and Referral Service, Tel: 1300 135 070 *Cost:* Nil. Additional data are available from the ABS subject to confidentiality and data quality restrictions and a cost may be incurred.
Motor Vehicle: Registrations, attrition, vehicle types	*Data source:* ABS Geographic unit: Postcode Years: Annually 1997 to 2005	Motor vehicle census Australia 2005 report and data: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/9309.0Mar%202005?OpenDocument* Supertable software may be required to access the data. *Contact:* ABS, National Information and Referral Service Ph: 1300 135 070 *Cost:* Nil
Difficulty with transport and access to motor vehicle/s	*Data source:* ABS *Geographic unit:* Remoteness areas, SEIFA *Years:* 2002	General Social Survey: *http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4159.3.55.0012002?OpenDocument* *Cost:* Nil
Gambling		
Gambling activity, gambling group demographics, problem gambling and help-seeking behaviour for gambling related problems	*Data Source:* Queensland Office of Gaming Regulation *Geographic unit:* Statistical Division. May be available at lower geographic regions on application. *Years*: 2001; 2003-04	Queensland Household Gambling Survey 2003-04: *http://www.responsiblegambling.qld.gov.au/knowledge/research/surveys/index.shtml* *Contact:* Director, Research and Community Engagement Division, Queensland Office of Gaming Regulation, Queensland Treasury *Cost:* Nil
Gambling statistics	*Data Source:* OESR *Geographic unit:* State *Years:* 2003-04; 1978-79	Australian Gambling statistics report: *http://www.oesr.qld.gov.au/publications/regular_publications/society/australian_gambling_statistics.shtml* *Cost:* $175 for CD
Social capital		
Reciprocity and cohesion, community identity and generalised trust	*Data Sources:* Planning & Development Unit and Health Information Centre, Queensland Health *Geographic unit:* State only *Years:* 2002	Social Capital Omnibus Survey: Is social capital associated with health?: *http://qheps.health.qld.gov.au/PHS/Documents/sphun/20496.pdf* *Contact:* Planning and Development Unit, Queensland Health. Email: healthsurveillance_pophealth@health.qld.gov.au. *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Volunteerism		
Participation in and type of voluntary work	*Data Source:* ABS *Geographic unit:* Remoteness area; SEIFA *Years:* 2002	General social survey: *http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4159.3.55.0012002?OpenDocument* *Cost:* Nil
Voluntary work involvement rate and type of organisation	*Data Source:* ABS *Geographic unit:* metropolitan/ex-metropolitan based on statistical division. Special tabulations may be available on request. *Years:* 2000, 1995	Voluntary work 2000 survey and data: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4441.0Explanatory%20Notes12000?OpenDocument* *http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4441.0.55.0012000?OpenDocument* *Cost:* Nil
Participation in voluntary work	*Data Source:* ABS *Geographic unit:* Remoteness area, SEIFA *Year:* 2002	Aboriginal and Torres Strait Islander Social Survey, 2002: *http://abs.gov.au/AUSSTATS/abs@.nsf/PrimaryMainFeatures/4714.3.55.001?OpenDocument* *Cost:* Nil

"Risk factors, including lifestyle behaviours, physiological states and societal conditions are responsible for a sizable proportion of the total burden of disease in Australia—and for much of the inequality in the burden falling on different population groups."

Mathers C, Vos T & Stevenson C (1999) Australian Institute of Health and Welfare.[6]

Health behaviour factors

Overweight and obesity

Overweight and obesity was the leading determinant of the total burden of disease in Queensland in 2003, causing 8.5 per cent of the burden[8]. Overweight and obesity now contribute to substantial increases in chronic disease morbidity as well as escalating personal and health system costs[61]. If the current trends continue, overweight and obesity may overtake smoking as the leading cause of chronic disease[62]. Overweight and obesity are substantial risk factors for many diseases including type 2 diabetes, hypertension, coronary heart disease, stroke, and psychosocial disorders[63]. There is also an association between depression and overweight and obesity although the connection is not completely understood[64].

Obese children are at greater risk of social and emotional development problems as well as increased risk of developing asthma and type 1 diabetes[65]. For obese children there is an increased risk of physical and psychological illness which increases with age[65]. A 20-year long follow-up has shown that childhood obesity is associated with higher mortality and is linked to low self-esteem and behavioural problems[65]. Even later in life health risks continue for obese children; as adults they are at greater risk of developing cardiovascular disease, diabetes and some forms of cancer[65].

The current epidemic of obesity is linked with environmental, technological, social and economic changes in society[13]. Urban design, ready availability of inexpensive and heavily marketed energy-dense foods and drinks, globalisation, reliance on cars and consumer changes, all contribute to reduced physical activity and to increased consumption of energy-dense foods[66]. Addressing overweight and obesity requires changes in physical activity and eating behaviour such as regular exercise, a reduction in sedentary behaviour, a diet high in fibre and reduced intake of energy dense foods[62].

Tobacco smoking

Smoking is the largest cause of preventable deaths in Australia[67] and it is known to increase the risk of a range of conditions including lung cancer, cardiovascular disease, chronic obstructive pulmonary disease, and several other conditions[13]. More than 90 per cent of cases of lung cancer are caused by smoking[68] and the incidence of lung cancer reflects smoking patterns of more than 20 years ago[13]. Quitting smoking leads to a marked and rapid fall in the risk of heart, stroke and vascular disease[69]. For former smokers, within two to five years of quitting, the risk of a coronary event or stroke is similar to that of people who have never smoked[70, 71].

Alcohol consumption

Risky alcohol consumption is linked to more than 60 diseases[72]. Regular drinking at high levels and episodes of heavy drinking increase the risk of chronic illness, premature death and injury[73]. Regular drinking at high levels predisposes the drinker to long-term health problems including cardiovascular disease, stroke, cancer, cirrhosis of the liver, cognitive problems, dementia and alcohol dependence[73]. Traumatic injuries due to alcohol consumption include road injuries, suicide, fall injuries, fire injuries, drowning, assault and child abuse[73]. Hazardous and harmful alcohol consumption is a significant contributor to deaths and hospital separations in Queensland[74].

Physical activity

Physical inactivity was the fourth leading single cause of burden of disease in Australia in 2003[75]. Lack of regular physical activity is directly linked with several chronic diseases including heart disease, type 2 diabetes, hypertension, colon cancer, depression, obesity and osteoporosis[76]. Physical activity is essential for physical and mental health and general well-being[13]. Physical activity protects against several cancers and diabetes and may reduce the risk of falls in the elderly[77]. It improves metabolism of glucose, reduces body fat and lowers blood pressure[78]. Participation in moderate physical activity can reduce the risk of type 2 diabetes by up to 35 per cent[13].

Nutrition

Dietary patterns can either increase or decrease risk of disease[31]. Poor diet is one of the main determinants of common diseases that lead to premature mortality and disability[20]. Unhealthy eating may be twice as bad for health as smoking – poor diet is estimated to contribute 17 per cent of the burden of disease in Queensland, twice than of smoking (eight per cent)[8]. Good nutrition can reduce risk of stroke, osteoporosis, tooth decay and high blood pressure[31].

Low fruit and vegetable consumption is related to some cancers and cardiovascular disease and high salt intake is linked to obesity and high blood pressure[20]. People who regularly eat diets high in fruit and vegetables substantially lower their risk of coronary heart disease, stroke, several major cancers and possibly hypertension, type 2 diabetes, cataract and macular degeneration of the eye[79, 80]. Fruit and vegetables enhance health because of their high fibre and nutrient content, and because a higher intake of fruit and vegetables means an individual is less likely also to be consuming high levels of unhealthy substances like saturated fat[13].

High intake of saturated fats is linked to high blood cholesterol and a greater risk of coronary heart disease, type 2 diabetes, cancer, overweight and obesity[20, 31]. Insufficient folate intake increases the risk of neural tube defects in pregnancy while breastfeeding is protective for infant health[31].

Illicit drug use

Illicit drugs are substances 'whose production, sale or possession is prohibited,' including marijuana, heroin, ecstasy, cocaine; use of glue, solvent and petrol as inhalants; and the non-medical use of prescribed drugs[81]. Illicit drug use can lead to drug-related harm for the individual, their family and the community[82]. Harm to communities can result from drug-related crime, violence and antisocial behaviour[82].

Illicit drug use has a substantial impact on the health and well-being of an individual, including disability and loss of life.[83] Illicit drug users have higher rates of premature death (from drug overdose, HIV/AIDS, suicide and trauma), very high levels of psychological distress, and are twice as likely to have been diagnosed with, or treated for, a mental health disorder.[83,84] Drug dependence causes disability such as cognitive impairment.[83] Injecting drug users have

associated health conditions such as high prevalence of hepatitis B and C which are associated with substantial morbidity and mortality from chronic infection.[83] The proportion of injecting drug users with hepatitis B and C infection appears to increase with the duration of injecting drug use.[84]

Indicators and measures	Data sources and availability	Resources and contacts
Overweight and obesity		
Prevalence of overweight and obesity by Body Mass Index (BMI)	*Data source:* Health Information Centre, Queensland Health *Geographic unit:* SEIFA, ARIA, State *Year:* 2003, 2001 Next data release on adult and child BMI anticipated in 2007	The Health of Queenslanders 2006. Report of the Chief Health Officer,Queensland. [in press] Health Determinants Queensland 2004 report: *http://qheps.health.qld.gov.au/phs/hdq/index.html* Contact: PEU_reports@health.qld.gov.au *Cost:* Nil
Tobacco smoking		
Tobacco smoking related mortality rates and hospital separations	*Data sources:* Health Information Centre, Queensland Health, ABS *Geographic unit:* SEIFA, ARIA, State *Year:* Variable 1999-2004	Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* Contribution of cigarette smoking to mortality and hospitalisation in Queensland: *http://www.health.qld.gov.au/hic/smoke.pdf* *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil
Number and proportion of tobacco smokers, frequency, mean number of cigarettes, support for tobacco smoking measures and psychological distress	*Data sources:* Qld Health; AIHW *Geographic unit:* State *Year:* 2004, 2001, 1998	The Health of Queenslanders 2006. Report of the Chief Health Officer Queensland. [in press] National Drug Strategy Household Survey: Selected results for Queensland : *http://www.health.qld.gov.au/atods/documents/29784.pdf* *Contact:* PEU_reports@health.qld.gov.au *http://www.health.qld.gov.au/atods/publications.asp* *Cost:* Nil
Smoking frequency, current daily smoker	*Data source:* ABS *Geographic unit:* Remoteness area *Year:* 2002	National Aboriginal and Torres Strait Islander Social Survey: *http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4714.3.55.0012002?OpenDocument* Cost: Nil
Alcohol consumption		
Hazardous and harmful alcohol consumption mortality rates and hospital separations	*Data sources:* Health Information Centre, Queensland Health, ABS *Geographic unit:* SEIFA, ARIA, State *Year:* Variable 1999-2004	Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Alcohol use disorder and dependence hospital separations	*Data source*: Infobank, Health Information Centre, Queensland Health *Geographic unit:* Hospital *Year:* 1995/96-2004/05 (annual)	Data on Infobank: *http://qheps.health.qld.gov.au/hic/infobank/ib1.htm#subtopic1* *Contact:* Health Information Centre, Queensland Health, Email: hlthstat@health.qld.gov.au *Cost:* Nil
Alcohol consumption including frequency, age of initiation, opportunity to use alcohol, support for alcohol measures, activities undertaken while under the influence of alcohol and victims of alcohol-related incidents, psychological distress	*Data sources:* Queensland Health; AIHW *Geographic unit:* State *Year:* Variable 1991-2004	2004 National Drug Strategy Household Survey: Selected results for Qld: *http://www.health.qld.gov.au/atods/documents/29784.pdf* Alcohol, Tobacco and other Drug Services (ATODS) website: *http://www.health.qld.gov.au/atods/publications.asp* *Cost:* Nil
Alcohol consumption level	*Data source:* ABS *Geographic unit:* Remote/ non-remote; State *Year:* 2002	National Aboriginal and Torres Strait Islander Social Survey, Qld 2002 data: *http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4714.3.55.0012002?OpenDocument* *Cost:* Nil
Physical activity		
Deaths and hospital separations attributed to lack of physical activity	*Data sources:* Health Information Centre, Queensland Health, ABS *Geographic unit:* SEIFA, ARIA, State *Year:* 1999-2001	Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil
Physical activity trends: BMI, sessions of physical activity, time in physical activity, sufficient time and sessions for health benefit and knowledge of physical activity	*Data source:* Health Information Centre, Queensland Health *Geographic unit*: State *Year:* 1997-2001	The Health of Queenslanders 2006. Report of the Chief Health Officer Queensland. [in press] Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* Physical Activity Patterns of Queensland Adults: *http://qheps.health.qld.gov.au/PHS/Documents/shpu/21523.pdf* Physical activity patterns of Australian adults: *http://www.aihw.gov.au/publications/health/papaa/index.html* *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Nutrition		
Nutrient intake, fruit and vegetable consumption, milk consumption and breastfeeding	*Data sources:* Health Information Centre, Queensland Health *Geographic unit:* variable SEIFA, ARIA, State *Years:* 2005, 2001, 1995 Next data release expected in 2007	The Health of Queenslanders 2006. Report of the Chief Health Officer, Queensland. [in press] Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* Trends in reported fruit and vegetable consumption among Queensland adults' report. Combines data from five surveys: *http://qheps.health.qld.gov.au/hic/pdf/info74.pdf* An overview of indicators of nutritional status in Queensland adults' report: *http://www.health.qld.gov.au/hic/default.asp* *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil
Infant nutrition, breastfeeding	*Data source:* Health Information Centre, Queensland Health *Geographic unit:* SEIFA, ARIA, RARA, CSR, State *Year:* 2003	2003 Infant Nutrition Survey: *http://qheps.health.qld.gov.au/hic/pdf/top%20of%20line%20infant%20obus03.pdf* *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil
Illicit drug use		
Illicit drug use mortality rates and hospital separations	*Data sources:* Health Information Centre, Queensland Health, ABS *Geographic unit:* SEIFA, ARIA, State *Year:* Variable 1999-2004	Health Determinants Queensland 2004 report: *http://qheps.health.qld.gov.au/phs/hdq/index.html* *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil
Poisoning/toxic effects of drugs and other substances hospital separations	*Data source:* Infobank Health Information Centre, Queensland Health *Geographic unit:* Hospital *Year:* 1995/96-2004/05 (annual)	Data on Infobank: *http://qheps.health.qld.gov.au/hic/infobank/ib1.htm#subtopic1* *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Illicit drug use; drug type; age of initiation; opportunity; support for making legal, penalties and heroin measures; activities undertaken while under the influence of drugs; and victim of drug-related incident/s	*Data sources:* Queensland Health; AIHW *Geographic unit:* State *Year:* Variable 1993-2004	The Health of Queenslanders 2006. Report of the Chief Health Officer Queensland [in press] 2004 National Drug Strategy Household Survey: Selected results for Qld: *http://www.health.qld.gov.au/atods/documents/29784.pdf* Alcohol, Tobacco and other Drug Services (ATODS) website: *http://www.health.qld.gov.au/atods/publications.asp* *Cost:* Nil
Trends in drug offences: Drug offender and offence type	*Data source:* OESR *Geographic unit:* statistical division *Year:* Variable 1992-1998	Illicit drug offences bulletin: *http:www.oesr.qld.gov.au/Queensland_by_theme/society/crime_justice/offences/bulletins/bull_crime06.shtml* *Cost:* Nil

"When the earth is sick and polluted, human health is impossible. To heal ourselves we must heal the planet and to heal the planet we must heal ourselves."

Indigenous Peoples' Earth Charter (1992)[3]

Environmental factors

Air quality

Respiratory health is the primary health outcome related to air quality[13]. Air quality is affected by pollutants from industry (for example, power stations, oil refineries); transport (for example, motor vehicles, trucks, aircraft) domestic sources (for example, lawn mowers, wood burning), agriculture (for example, cane burning, chemical spraying) and other sources, such as controlled burning, bushfires, and vegetation[13].

To investigate links between air pollution and health outcomes it is common to use a number of health factors such as lung function, respiratory symptoms, as well as levels of respiratory disease, hospital admissions and mortality[13].

A number of air pollutants are known to be cancer causing[13] and there is increasing evidence of negative impacts on cardiovascular health[13]. There is not yet a quantitative measure of the burden of disease (through respiratory, cardiovascular and cancer levels) in Queensland due to air pollution[13].

Water quality

Water is used for a variety of purposes, for example, drinking, irrigation and recreation[13]. Human health is put at risk through exposure to polluted water (potable or otherwise)[13]. Water contamination has the potential to present a significant risk to human health, and the greatest risk comes from contamination of drinking water[85]. Biological contamination of water supplies can have harmful health effects ranging from diarrhoea to death[13]. Chemical pollutants (dioxins, heavy metals, arsenic, pesticides, etc) may also pose a serious health hazard in the longer term[13].

In Australia, the proportion of human disease that can be attributed to poor water quality is unknown and the importance of some micro-organisms and chemicals to health is unclear[13].

Water fluoridation

Queensland has the lowest proportion of population living in areas with fluoridated water in Australia[86]. Every capital city in Australia, except Brisbane, has water fluoridation[86]. Both children and adults benefit from water fluoridation[13] through prevention of decay in both ‘baby’ and permanent teeth[13].

Dental decay decreases with fluoridation of water supplies and increases with withdrawal of water fluoridation[87]. Fluoridation is estimated to reduce coronal and root caries by 20-40 per cent over a lifetime[88, 89]. These benefits are additional to those obtained from other sources of fluoride such as toothpaste[13].

Supportive environments

The role of the environment in supporting health is an emerging field of study. *"The way we design our cities and organise our lives impacts on our health behaviours in many subtle, varied and complex ways. People are more likely to make healthy behaviour choices when these choices are easily available to them; and thus environments that support or discourage health behaviours critically influence health"* [62].

The environment in Australia and many other developed nations is described as obesogenic, that is, the environment encourages over consumption of food and being sedentary rather than physically active[62]. Changing this environment may lead to sustainable outcomes[62]. Three important themes for the creation of supportive environments through regional planning are facilitating physical activity through urban design, nutrition through access to healthy food, and sun protection.

Increasing **physical activity** in communities is linked with the physical environment as well as behavioural and social determinants[13]. Participation in physical activity is affected by proximity and density of places for physical activity within neighbourhoods[90-96], access to facilities such as cycleways, footpaths, health clubs and swimming pools[90-92], as well as environmental characteristics such as safety lighting, hilly terrain, enjoyable scenery, and the number of other visibly active people[62, 95, 96]. In addition, people living in 'traditional' neighbourhoods (with higher residential density, mixture of land uses and grid-like street patterns with short block lengths) walk and cycle more than people living in sprawling neighbourhoods[93]. Policies that target physical activity through community and street-scale urban design and land use policies and practices are effective in increasing physical activity[97].

Good **diet** is affected by the availability and accessibility of healthy food. Many social factors affect good diet and access to food, including: transport for delivery of goods and access to nutritious food outlets; literacy levels to interpret labels and nutrition panels; housing and associated whitegoods for appropriate storage and preparation of foods; income, especially where the price and availability of healthy food is high; and discrimination issues around cultural appropriateness of foods[13]. In rural and remote regions residents may pay more for healthy and perishable foods and these foods may be in short supply or of poorer quality[31].

Exposure to **sunlight** has both positive and negative health implications. Sunlight exposure stimulates production of Vitamin D in the body, improves mental well-being, and may be linked to a reduction in the risk of developing multiple sclerosis[98]. However, exposure to ultraviolet light in sunlight (or solariums) can lead to sunburn, deterioration of skin, eye damage, and skin cancer[98]. Queensland has the highest rate of skin cancer in the world and reports over 200 deaths from melanoma annually[99]. The most important risk factor for skin cancer is exposure to ultraviolet radiation from the sun[99] particularly in childhood[98]. Other risk factors include family history of melanoma, congenital moles and tendency to develop freckles[99]. Skin cancers are considered largely preventable through simple measures to avoid or reduce sun exposure such as use of quality shade, protective clothing such as hats and sunglasses, and sunscreen[98, 99].

Shade structures are being used increasingly in public areas to provide shade, however these need to be demonstrated to provide sufficient protection from the sun's ultraviolet radiation[100].

Indicators and measures	Data sources and availability	Resources and contacts
Air Quality		
Air Quality Index (hourly data)	*Data source:* Environmental Protection Agency (EPA) *Geographic unit:* Selected monitoring sites across Queensland *Year:* 2000-2006 available online. Daily measurements taken since 1978.	Hourly air quality data: *http://www.epa.qld.gov.au/projects/air/* Annual summary reports, monthly bulletins and other publications: *http://www.epa.qld.gov.au/environmental_management/air/air_quality_monitoring/air_quality_reports/* Contact: Environmental Protection Agency, Tel: 38969239 Cost: Nil
National Pollutant Inventory (NPI): location, substance, source, facility	*Data sources:* Environmental Protection Agency; Commonwealth Department of the Environment and Heritage *Geographic unit*: Individual facility *Year:* 2004-2005	NPI website: *http://www.npi.gov.au/overview/reports/qld-location-report.html* and *http://www.npi.gov.au/database/download-data.html or http://www.npi.gov.au/overview/index.html* Additional data may be available from the EPA on request subject to confidentiality. *Contact:* Industry Reporting Manager, EPA. Tel: 32251020, *Cost:* Nil
Outdoor air quality: Carbon monoxide, ozone, lead, nitrogen dioxide, sulphur dioxide, particles concentrations and trends in pollutants	*Data source:* Environmental Protection Agency *Geographic unit:* South east Queensland *Year:* 1995-2004	Data available from the State of the environment Qld 2003 report: *http://www.epa.qld.gov.au/soe-online/SOWEB030.jsp?ThemeId=Atmosphere* Report available online and hard copies available from the EPA bookshop. *Contact:* EPA website *Cost:* Nil
Greenhouse gas emissions	*Data sources:* EPA; Commonwealth Department of the Environment and Heritage *Geographic unit:* State *Years:* 1990-2003	State of the Environment: *http://www.epa.qld.gov.au/soe-online/SOWEB030.jsp?ThemeId=Atmosphere* National Greenhouse Gas Inventory: *http://www.greenhouse.gov.au/inventory/stateinv/index.html* *Contact:* EPA, Tel: 32475899 *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Water quality		
Pollution levels: NPI: location, substance, source and facility		See entry under air quality. This inventory includes emissions for air, water and land.
Water quality	*Data source*: EPA *Geographic unit:* Selected locations across Queensland *Years:* 2003 to present	Map of testing site locations: *http://www.epa.qld.gov.au/environmental_management/water/water_quality_monitoring/current_water_quality_in_queensland/* Coastal metadata: *http://www.coastal.crc.org.au/coastalmeta/index.asp* Healthy Waterways website: *http://www.healthywaterways.org* Ecosystem Health Monitoring Program: *http://www.ehmp.org/* *Contact:* Environmental Protection Agency, Tel: 38969251 *Cost:* Nil
Waterways locations	*Data Source:* Brisbane City Council *Geographic unit:* Brisbane only *Year:* 2005	Waterway use activities on Brisbane's waterways: type and extent report currently only available in hard copy. *Contact:* Principal Waterways Health Officer, Human Health, Brisbane City Council, 69 Ann Street Brisbane, Tel: 34034156 *Cost:* Nil
Estuarine and marine water quality	*Data source:* EPA *Geographic unit:* South east Queensland *Year:* 2004-2005	State of the Environment Report: *http://www.epa.qld.gov.au/soe-online/SOWEB300.jsp?IndicatorId=196* *Cost:* Nil
Wastewater treatment and disposal	*Data source:* EPA *Geographic unit:* South east Queensland *Year:* 2004-2005	State of the Environment Report: *http://www.epa.qld.gov.au/soe-online/SOWEB300.jsp?IndicatorId=135* Note: There is currently no information available on recycled water/grey water. For future reference, contact the Environmental Health Unit, Queensland Health *Cost:* Nil
Salinity and nitrate levels in groundwater and surface water	Data source: EPA *Geographic unit:* Ground water management units *Year:* 2003	State of the Environment: *http://www.epa.qld.gov.au/soe-online/SOWEB030.jsp?ThemeId=Inland%20waters* *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Water Fluoridation Proportion of population with fluoridated water	*Data source*: Queensland Health *Geographic unit:* State, towns *Year:* 2006, 2005	The Health of Queenslanders 2006. Report of the Chief Health Officer Queensland. [in press] Water fluoridation: Helps protect teeth throughout life report: *http://www.health.qld.gov.au/oralhealth/documents/30266.pdf* *Contact:* Oral Health Unit, Queensland Health *Cost:* Nil
Supportive environments Sun safety and sun protection	*Data source:* Health Promotion Unit, Queensland Health *Geographic unit*: Variable SEIFA, ARIA, State *Year:* 2005, 2000	The Health of Queenslanders 2006. Report of the Chief Health Officer, Queensland. [in press] Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* 2005 Sunsafe Survey: http://www.health.qld.gov.au/sunsafety/documents/30316.pdf *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil
Cost of healthy food	*Data source:* Health Promotion Unit, Queensland Health *Geographic unit:* ARIA and State *Year:* 2006 survey currently in planning; 2004; 2001; 2000, 1998; 1997(North Queensland only)	Healthy Food Access Basket Survey: *http://qheps.health.qld.gov.au/phs/Everything/OA_PA_Quality/sup/nutrition.htm* Other reports: *http://www.health.qld.gov.au/health_professionals/food_nutrition.asp* *Cost:* Nil
Other Meteorological data	*Data source:* Environmental Protection Agency *Geographic unit:* Selected regions in south east Queensland, Gladstone, West Mackay, Townsville and Mt Isa *Years:* 2000-2006	Hourly meteorological data: *http://www.epa.qld.gov.au/projects/air/* Contact: EPA, Tel: 38699503. *Cost:* Nil

"The real tragedy is that more hasn't been done to avoid this epidemic [chronic disease], as overweight and obesity, and their related chronic diseases, are largely preventable. Approximately 80% of heart disease, stroke, and type 2 diabetes, and 40% of cancer could be avoided through healthy diet, regular physical activity and avoidance of tobacco use."

Dr Robert Beaglehole, World Health Organisation[4]

Part 3: Health outcomes

Principal health outcomes

Health status, or levels of ill health and early death, depends on a variety of factors that surround individuals, families and communities[13]. Health of an individual is determined by their socioeconomic and physical environment, early childhood experiences, personal health behaviours, and biology[13].

Two thirds of premature deaths of Queenslanders are considered preventable mostly by changes in lifestyle behaviours[8]. Socioeconomic status has a strong influence on deaths considered avoidable with higher rates of such deaths in areas of higher socioeconomic disadvantage[8]. Similarly, with increasing remoteness from the major cities in Queensland there is also greater rate of avoidable deaths[8].

The **burden of disease** and injury is the sum of the impact to the community of premature mortality, non-fatal outcomes and disability[13]. Burden of disease studies are an approach used to measure the gap between the current health of the population and the ideal, where everyone lives into old age free of disease and disability. The burden of disease is a specific measure to capture the full impact of ill health in a population. Using burden of disease techniques enables the burden of fatal and non-fatal health outcomes to be combined in a single measure. This leads to a more complete understanding of the risks to health than is achieved using mortality and hospital separation statistics alone as it puts health priorities in a population perspective[13]. This data can be used to rethink service orientation, project infrastructure needs, and guide investment decisions[13].

Infant mortality is recognised internationally as one of the most important measures of the health of a nation and its children[13]. It is also an important indicator of the health of pregnant women[13]. A low infant mortality rate is a major contributor to increased life expectancy[101]. The rate of infant deaths in Australia has declined dramatically from 1980 to 2000[13]. However, compared to other Organisation for Economic Cooperation and development (OECD) countries the infant mortality rate in Australia is only moderately low and indicates potential for improvement[8]. Dramatic gains have been achieved through improvements in public sanitation and health education, the development of vaccines, and the effective use of antibiotics[13]. In Queensland the Aboriginal and Torres Strait Islander infant mortality rate is more than twice that of other infants[27].

Specific health outcomes

Cardiovascular disease

Coronary Heart Disease (CHD) is the largest cause of burden of disease in Queensland and Australia[13]. There are substantial opportunities to reduce CHD mortality and morbidity rates through lifestyle changes to tobacco smoking, nutrition and physical activity[13]. Lifetstyle changes can both prevent CHD occurring and reduce the incidence of further events or death in people with existing disease[13]. Even just making better use of existing knowledge could avoid about 40 per cent of the current deaths and more than 30 per cent of hospitalisations[13].

Key risk factors for CHD are overweight and obesity, smoking, high blood cholesterol, inadequate vegetable and fruit consumption, physical inactivity and hypertension[13]. Any increases in factors such as excess weight (as assessed by BMI)[102], reduced fruit and vegetable intake[103], blood cholesterol[102], and diastolic blood pressure lead to increases in the risk of coronary heart disease[102]. In addition, there are strong links between depression, social isolation, work-related stressors (job control, demands and strain) and lack of quality social support[104]. The increased risk contributed by these psychosocial factors is similar to the more conventional CHD risk factors, such as smoking, poor blood lipid levels and high blood pressure[13].

Diabetes

Risk factors due to modifiable lifestyle behaviours make a large contribution to death and disability associated with diabetes[13]. These risk factors include overweight and obesity, current high blood pressure, poor diet, physical inactivity, tobacco smoking and alcohol intake[105]. Excess weight (as assessed by BMI) increases the risk of diabetes[102]. Several specific ethnic groups are particularly susceptible to high rates of diabetes[106]. People with diabetes are more likely to use health services more often and for longer periods of time[31].

Cancer

While specific causes of many cancers remain largely unclear there are a large number risk factors that are due to lifestyle behaviours and so can be modified[13]. The leading preventable determinants of cancer are tobacco smoking and diet, with around 30 per cent of all cancers considered preventable by healthy eating[107, 108]. Other leading factors associated with cancer are harmful alcohol consumption, lack of physical activity[109], pre-existing pathological conditions, and exposure to carcinogens or environmental hazards such as UV radiation, some chemicals, and infectious agents[107]. Queensland has the highest rates of melanoma incidence and mortality of any Australian state, and Australia has one of the highest rates in the world[110].

Injury

Important causes of injury in Australia are road transport accidents, falls in older adults and drowning in children.

Road trauma is considered one of Queensland's most significant public health problems[111]. In Queensland, males represented more than 70 per cent of fatalities in the 2001-2005 period: notably 27 per cent of these fatalities were 17-24 years old[112]. Major contributing factors to road fatalities in the 2001-2005 period included driving under the influence of alcohol and/or drugs, inattention, inexperience, illegal manoeuvres, speed and/or fatigue[112]. The majority of fatalities occurred along roads with favourable on-road conditions, clear atmospheric conditions, during daylight, along a straight road, level road, and/or sealed dry road[112].

Risk of injury is strongly associated with age, for example, the risk of hospitalisation for falls increases with age, but for other conditions such as drowning and poisoning, young children are most at risk[13].

For older Queenslanders the most common cause of serious injury is through falls[113]. Deaths and hospitalisations for falls have increased in the last decade[13]. One in every three people over the age of 65 years may experience a fall within the next 12 months[13]. By 2026, it is estimated that the number of hip fractures will double and, by 2051, increase fourfold[13]. Most falls are preventable and predictable[13]. There are a number of risk factors for falling, include unsafe footwear, insufficient physical activity, home medication management[114] and unsafe public environment[13]. The risk of falls increases as the number of factors accumulate[13].

For children, injury is the leading cause of mortality in Australia[115]. One third of all deaths in children in Queensland in the 1996-1998 period were caused by injury and poisoning[13]. The risk of injury in children is linked with gender, age, geographical location, and socioeconomic status of the family[115]. Outcomes from injury, such as disability or disfigurement, can have a lasting detrimental effect on the child's development and also on the child's family[13].

The greatest number of drowning incidents in children less than five years old occur in domestic swimming pools[13]. Uniform minimum domestic pool fencing legislation was introduced in Queensland in 1992.[13] In the first two years after the introduction of the requirements, the average number of drownings declined and has since fluctuated[116].

Mental health

Mental health is the capacity for an individual to interact with others and the environment, in ways that promote subjective well-being, optimal development and the ability to make choices, handle stress and develop relationships with others[8]. There is evidence that mental health is supported through having strong social support, being free from discrimination and violence, and having a satisfying job[117]. Unemployed people and people who are socially isolated have higher prevalence of mental health disorders than do people who are employed and socially connected[117].

Experiences in childhood and negotiation of life changes have profound effects on mental health for a person's entire life[13]. However, the effects of negative experiences can be minimised within a strong and supportive community environment[13]. There are also strong links between depression, social isolation, work-related stressors (job control, demands and stress), and causes and prognosis of coronary heart disease[104]. The increased risk contributed by these psychosocial factors is of similar order to the more conventional coronary heart disease risk factors, such as smoking, poor blood lipid levels and high blood pressure[13].

For mental health there are a number of risk factors that increase the likelihood that a disorder will develop or that will exacerbate an existing problem[13]. Protective factors reduce the likelihood that a disorder will develop[118].

Risk factors may include factors associated with the:

- individual (low birth weight, physical and intellectual disability, chronic illness, low self-esteem)
- family or social factors (having a teenage mother, absence of father in childhood, family disharmony and violence, neglect in childhood)
- school context (bullying, inadequate behaviour management)
- life events (child abuse, family break-ups, poverty)

- community factors (socioeconomic disadvantage, isolation, neighbourhood violence and crime)[118].

Protective factors include connectedness to family and school[119], responsibility for children[120], the presence of a significant other[120], personal resilience and problem solving[121], good physical and mental health[122] and economic security in older age[122].

Suicide is the final outcome of a complex, cumulative and interacting set of risk factors[123]. There is compelling evidence that having a mental disorder places a person, whatever their age, at considerably higher risk of suicide[123]. A significant proportion of people who die by suicide are suffering from mental illness at the time[13]. Depression is the largest single risk factor for suicide and suicidal behaviour[13]. The relationship between depression and suicide becomes increasingly strong with age, although depression becomes less common among older people[123].

Arthritis and musculoskeletal conditions

Musculoskeletal conditions include joint problems, disorders of the bones, muscles and their attachments[31]. These conditions can lead to pain, stiffness, disability and deformity which disrupt daily life and lead to loss of productivity[31]. Although there are more than 100 conditions, the key national priority areas are osteoarthritis, rheumatoid arthritis, and osteoporosis[31]. In 2001, one in three Queenslanders reported a musculoskeletal condition that was considered to be longstanding (of six months or greater duration)[13].

Regular physical activity is necessary for maintaining normal muscle strength, joint structure and joint function[124]. Physical activity is good for bone development and the maintenance of bone density[125, 126]. Participating in physical activity throughout life can maintain and reduce the decline in musculoskeletal health associated with ageing[127]. The behavioural and environmental factors known to influence osteoporosis incidence and severity are physical inactivity, low calcium intake, low body weight, tobacco smoking, alcohol abuse, repetitive joint usage, and joint trauma and falls[128].

Respiratory conditions

The two major respiratory diseases contributing to poor health in Australia are asthma and chronic obstructive pulmonary disease (COPD)[31].

Asthma is a chronic respiratory disease that leads to difficulty breathing due to narrowing of the airways in the lungs and obstructed air flow[31]. The prevalence of asthma in Australia is high by international standards and is similar to levels in Queensland[13, 129]. Asthma is the biggest cause of burden of disease and injury in Australian children and is one of the most frequent reasons for hospitalisation of Australian children[13].

Asthma is a disease of unknown cause, although a number of developmental and environmental factors continue to be investigated[115]. A familial link has been observed and the disease is closely related to allergy triggers, such as pollen, tobacco smoke, physical activity and other respiratory conditions[115]. Stressful life events also appear to predict asthma attacks[130].

Exposure to environmental tobacco smoke in childhood is a recognised risk factor for the development of asthma symptoms, and also for the worsening of pre-existing asthma[13]. Smokers with asthma have additional morbidity[13]. Environmental and other related factors, such as diet and lifestyle, may affect the risk of acquiring asthma; change the course of the disease; or trigger attacks of airway narrowing and symptoms[13]. Studies indicate that breastfeeding for the first four to six months of life is a protective factor for asthma in children[131, 132].

COPD in a progressive chronic lung disease that leads to substantial morbidity and mortality and is a major cause of disability, hospitalisation and premature death in Australia[31, 133]. Tobacco smoking, including passive smoking, is the most important risk factor for COPD[133, 31]. Other risk factors include exposure to air pollutants (indoor and outdoor), occupational dusts, fumes and chemicals[31, 133]. Anxiety, depression and other associated conditions are common[133]. Quitting smoking can improve lung function, and slow disease progression and disability[133]

Communicable disease

More than 70 communicable diseases are notifiable in Queensland under the Public Health Act 2005. Key notifiable diseases are regarded as vaccine preventable, gastrointestinal, vector-borne, sexually transmissible and blood borne. Although notified cases may represent only a percentage of the total cases in the community, they provide an estimate of the burden of disease[13]. For regional planning, three key areas of interest are vector-borne disease, gastrointestinal illness, and vaccine preventable disease.

Vector-borne diseases are usually seasonal, with cases varying over time due to different weather and tidal patterns[13]. The number of notifications may be reduced by mosquito control programs run by Local Government and through people's behaviour such as using repellent, and by avoiding mosquito-areas and high biting times[13]. Notification rates for geographic areas need to be interpreted with caution as people may be bitten by mosquitoes outside their normal place of residence, for example, in areas where they work or engage in recreational activity[13].

Gastrointestinal illness is frequently notified in Queensland. *Campylobacter* and *Salmonella* are the most frequently notified conditions[8]. *Cryptosporidiosis* is an important cause of water-borne outbreaks[134]. Outbreaks of *Cryptosporidiosis* in Queensland have been associated with swimming in public swimming pools and drinking unpasteurised milk[135]. Other outbreaks internationally have been associated with contaminated food and recreational water (swimming pools, ponds and lakes)[134]. Although Cryptosporidium infections usually result in a self-limited diarrhoeal illness, more persistent and serious illness can occur in people who have low immunity[134]. Ozfoodnet Queensland has maintained an outbreak register of all enteric outbreaks (food-borne and non-food-borne) in Queensland since 2001.

Vaccine preventable disease includes conditions such as hepatitis A, hepatitis B, diphtheria, pertussis, *Haemophilus influenzae* type b, poliomyelitis, measles, mumps, rubella, varicella-zoster (chickenpox/shingles), pneumococcal disease, meningococcal C and influenza. These diseases have resulted historically in high rates of morbidity and mortality. However, with the introduction of national immunisation programs there are significant reductions in the number of notified cases of many of these conditions. The importance of these programs is discussed in the following section.

Immunisation

Immunisation of children is considered one of the highest ranking preventive services[136]. Vaccination protects individuals and the community through increasing the level of immunity and minimising spread of infection[137].

The impact of immunisation on health is well demonstrated[138, 139]. Vaccination in Australia has greatly reduced the incidence, morbidity and mortality of a number of diseases including tetanus, diphtheria, poliomyelitis, pertussis, measles, mumps, rubella and Haemophilus influenzae type b[140]. Maintaining high immunisation rates is necessary to ensure continuing low morbidity rates due to vaccine preventable diseases[141]. While much of the effort in immunisation over the last decade has resulted in demonstrated successes, a significant number of children in all cohorts remain incompletely vaccinated[13]. In particular, for children at six years of age immunisation coverage remains lower than optimum[13].

Factors associated with the incomplete vaccination status of children include failure to commence primary vaccination, high mobility, socioeconomic disadvantage, being from a single parent family, parental unemployment, coming from a culturally or linguistically diverse background, or being of Aboriginal or Torres Strait Islander descent[13].

Indicators and measures	Data sources and availability	Resources and contacts
Principal health outcomes		
Burden of disease and injury	*Data sources:* Queensland Health; AIHW *Geographic unit:* SEIFA, State *Year:* 1996-1998, 2003	The Health of Queenslanders 2006. Report of the Chief Health Officer, Queensland. [in press] Queensland data for 1996-1998: *http://www.health.qld.gov.au/publications/infocirc/burden.pdf* Burden of Disease and Injury in Australia: *http://www.aihw.gov.au/bod/index.cfm* *Contact:* PEU_reports@health.qld.gov.au *Cost*: Nil

Indicators and measures	Data sources and availability	Resources and contacts
Deaths		
Mortality (all causes and specific causes)	*Data source*: Infobank, Health Information Centre Queensland Health *Geographic unit:* Health Service District *Years:* 1982-2003	The Health of Queenslanders 2006. Report of the Chief Health Officer, Queensland. [in press] Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* Health Indicators for Queensland 2001: *http://qheps.health.qld.gov.au/PHS/HealthIndicators/home.htm* Infobank website: *http://qheps.health.qld.gov.au/hic/infobank/ib6.htm#subtopic1* Historic data (1921-2004): *http://qheps.health.qld.gov.au/hic/infobank/ib6.htm#subtopic3* *Contact:* Health Information Centre, Queensland Health, Email: hlthstat@health.qld.gov.au *Cost*: Nil
Deaths Australia and Queensland: includes population, births, fertility rate, deaths, indirect standardised death rate, infant deaths and mortality rates and indigenous deaths	*Data source*: ABS *Geographic unit:* SLA *Years:* Variable 1998-2004	Deaths Australia: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3302.02004?OpenDocument* Demography Queensland data: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3311.3.55.0012004%20Final?OpenDocument* Regional Statistics Queensland 2004: *http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/681544F7583BF592CA256F2D007ABC4D/$File/13623_2004.pdf* *Cost:* Nil
Hospital separations (all causes and specific causes)	*Data source:* Infobank, Health Information Centre, Queensland Health *Geographic unit:* Public/private facilities, individual facility (hospitals) and State *Years:* 1993-2005 (Variable and annual)	Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* Health Indicators for Queensland 2001: *http://qheps.health.qld.gov.au/PHS/HealthIndicators/home.htm* Data on Infobank: *http://qheps.health.qld.gov.au/hic/infobank/ib1.htm#subtopic11* *Contact:* Health Information Centre, Queensland Health, Email: hlthstat@health.qld.gov.au *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Specific health outcomes		
Cardiovascular disease Heart, stroke and vascular disease prevalence	*Data source:* ABS *Geographic unit:* SEIFA, major city/inner regional/outer regional and other area, State *Year:* 2004-05	National Health Survey: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4362.02004-05?OpenDocument* *Cost:* Nil
Diabetes Diabetes mellitus prevalence	*Data source:* Health Information Centre, Queensland Health *Geographic unit:* HSD, SEIFA, ARIA, State *Years:* Variable 1999-2004	The Health of Queenslanders 2006. Report of the Chief Health Officer, Queensland. [in press] Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* 'Impact of diabetes on the health of Queenslanders' report: *http://qheps.health.qld.gov.au/hic/pdf/diabetes.pdf* *Contact:* PEU_reports@health.qld.gov.au *Cost*: Nil
Cancer Cancer incidence and survival	*Data sources:* Health Information Centre, Queensland Health, Queensland Cancer Registry *Geographic unit:* SLA, HSD, selected indigenous communities, urban/rural/remote, State *Years:* 1982-2003 (incidence, prevalence and mortality), prevalence and survival (2002), incidence and mortality by site (1982-2003)	Health Determinants Queensland 2004: *http://qheps.health.qld.gov.au/phs/hdq/index.html* Health Indicators for Queensland 2001: *http://qheps.health.qld.gov.au/PHS/HealthIndicators/home.htm* Reports via the Health information centre: *http://www.health.qld.gov.au/hic/* OR *http://qheps.health.qld.gov.au/hic/home.htm* Regional information: Health Information Centre Information Circulars: *http://qheps.health.qld.gov.au/hic/products.htm#reports* Including cancer among people living in rural and remote Indigenous communities in Queensland 1997-2002 Further information on the Queensland Cancer Registry: *http://www.aihw.gov.au/cancer/aacr/qld.cfm* *Contact:* Health Information Centre, Queensland Health, Email: hlthstat@health.qld.gov.au *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Injury		
Hospital presentations for injury	*Data source:* Queensland Injury Surveillance Unit *Geographic unit:* Data collected from 15 hospitals in Queensland in three regions: metropolitan (South Brisbane); regional (Mackay and Moranbah Health Districts) and remote (Mt Isa) *Years:* 1988-2006	A range of injury related bulletins available at: *http://www.qisu.org.au/modcore/HomePage/frontend/index.asp* *Contact:* Queensland Injury Surveillance Unit, Level 2, Mater Children's Hospital, Raymond Terrace, South Brisbane 4101, Tel: 3840 8569, Email: mail@qisu.org.au *Cost:* Nil
Mental health		
Psychological distress prevalence	*Data source:* Health Information Centre, Queensland Health *Geographic unit:* ARIA, SEIFA, State *Year:* 2004-2005	The Health of Queenslanders 2006. Report of the Chief Health Officer Queensland. [in press] *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil
Self-reported mental health and well-being	*Data source:* Health Information Centre, Queensland Health *Geographic unit:* Aggregated area health service (North Queensland; combined central/ Southern Queensland); State Year: 2004	Mental Health Promotion Survey reports: *http://qheps.health.qld.gov.au/hic/home.htm* *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil
Prevalence of mental disorders, comorbidities and use of services	*Data source:* ABS *Geographic unit:* Capital city/rest of state, State *Year:* 1997	Survey of Mental Health and Well-Being: Profile of adults Queensland: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4326.3.40.0011997?OpenDocument* A confidentialised unit record file may be available: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4329.01997?OpenDocument* *Cost:* Nil
Self-reported mental health and behavioural problems	*Data source:* ABS *Geographic unit:* SEIFA, remoteness area, State *Year:* 2004-05	National Health Survey data: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4362.02004-05?OpenDocument* *Cost:* Nil
Arthritis and musculoskeletal conditions		
Arthritis: self-reported	*Data source:* ABS *Geographic unit:* SEIFA, major city/inner regional/outer regional and other area, State *Year:* 2004-05	National Health Survey data: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4362.02004-05?OpenDocument* *Cost:* Nil

Indicators and measures	Data sources and availability	Resources and contacts
Respiratory conditions		
Asthma: self-reported	*Data source:* ABS *Geographic unit;* SEIFA, remoteness area, State *Year:* 2004-2005	National Health Survey data: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4362.02004-05?OpenDocument* *Cost:* Nil
Communicable disease		
Communicable disease notifications from the Queensland Notifiable Conditions System	*Data source:* Communicable Diseases Unit, Queensland Health *Geographic unit:* SLA, Variable dependent upon condition *Year:* Variable dependent upon year disease became notifiable. 1991-2006 (to date and some earlier data may be available)	Communicable Diseases reports: *http://qheps.health.qld.gov.au/PHS/Everything/OA_PA_Quality/sup/notif.htm* The list of notifiable conditions in Queensland can be viewed through the Control of Communicable Diseases Manual: *http://qheps.health.qld.gov.au/phs/CDPM/index.htm* *Contact*: Communicable Diseases Unit, Queensland Health, GPO Box 48, Brisbane 4001 *Cost:* Nil
Outbreak Register and Reports	*Data source:* Ozfoodnet Queensland, Queensland Health *Geographic unit:* Variable *Years:* 2001 to present	Ozfoodnet Queensland annual reports will soon be available on the Ozfoodnet website (website under development). Some reports are currently available on the population health website: *http://qheps.health.qld.gov.au/phs/Everything/OA_PA_Quality/sup/foodborne.htm* Ozfoodnet national website: *http://www.ozfoodnet.org.au/internet/ozfoodnet/publishing.nsf/Content/Home-1* *Contact:* Communicable Diseases Unit, Queensland Health, GPO Box 48, Brisbane 4001, *Cost:* Nil
Immunisation		
Immunisation Rates	*Data source:* Communicable Diseases Unit, Queensland Health *Geographic unit:* SLA *Year:* 1996 to present (variable and quarterly)	Vaccination coverage in Australia is monitored through the Australian Childhood Immunisation Register (ACIR). ACIR data for Queensland can be obtained through the Communicable Diseases Unit. ACIR website: *http://www.medicareaustralia.gov.au/providers/health_statistics/statistical_reporting/acir.htm* Immunise Australia website: *http://www.immunise.health.gov.au/* *Contact:* Communicable Diseases Unit, Queensland Health, GPO Box 48, Brisbane 4001, *Cost:* Nil

"Health is a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity."

World Health Organisation (1948)[1]

Well-being

"…*societal objectives relate not only to improving the health of the population but, more importantly, to maximizing health-related quality of life and well-being.*"[142]

With increasing life expectancy there has been an increase in people surviving to older ages with an associated increase in disability (through becoming more limited in activity) and handicap (through being less able to participate in activities)[142]. Therefore population health must increasingly relate to improving quality of life[142].

Well-being is an individual's experience in terms of joy, contentment and life satisfaction[142]. People who have the same health status may report different levels of well-being - a difference which may be due to the interaction of health with individual or environmental factors[142]. Better health and well-being are usually associated with a safe environment, adequate income, meaningful social roles, secure housing, higher levels of education and social support[143-145]. It is the interaction of these social, cultural, economic and environmental factors that ultimately determines the health of individuals, families and communities[146].

The most appropriate indicators for the measurement of well-being are yet to be determined. However, three key areas have been identified and used by Queensland Health to measure well-being: quality of life, satisfaction with health and self-reported health.

Quality of life

Health-related quality of life is a person's valuation of their own health, that is, the gap between their expectations of health and experiences[142, 147]. These perceptions vary between and within individuals over time[147]. Using an objective measure of quality of life, in 2003 Australia was rated as the highest in the world[148]. This rating was based on factors including relative income, environmental quality, health status and access to services[13].

Satisfaction with health and self-reported health

Satisfaction with health is defined as the extent of an individual's experience compared with their expectations[149]. There is good evidence for the link between reported satisfaction with health and well-being. People's perception of their own health has been shown to be a powerful, independent predictor of their survival in several population groups[150-152], regardless of demographic factors, a range of illnesses, disability, personality and social supports[13].

Disability

There are an estimated 3.9 million people in Australia (20 per cent of the population) whose lives are affected by impairment, activity limitation or participation restriction[153]. This includes around six per cent of the population which requires assistance with self-care mobility and communication[153]. The independence of these people is affected by physical, sensory/speech, intellectual and psychiatric disabilities and acquired brain injury[153]. Experiences of disability are influenced by health status, environmental and personal factors[153]. The likelihood of disability increases with age and people with disabilities with early onset are living longer[153]. Due to population growth and ageing, the number of people with disabilities is rising[153].

Indicators and measures	Data sources and availability	Resources and contacts
Quality of life		
Quality of life	*Data source:* Health Information Centre, Queensland Health *Geographic unit:* Variable SEIFA, ARIA, State *Years:* 2005, 2000	The Health of Queenslanders 2006. Report of the Chief Health Officer, Queensland. [in press] Health Determinants Queensland 2004 report: *http://qheps.health.qld.gov.au/phs/hdq/index.html* *Contact:* PEU_reports@health.qld.gov.au *Cost:* Nil
Self-reported health and satisfaction with health		
Self-reported health and satisfaction with health	*Data source:* Health Information Centre, Queensland Health *Geographic unit:* SEIFA, ARIA, State *Years:* Variable 2001-2005	The Health of Queenslanders 2006. Report of the Chief Health Officer, Queensland. [in press] Health Determinants Queensland 2004 report: *http://qheps.health.qld.gov.au/phs/hdq/index.html* *Contact:* PEU_reports@health.qld.gov.au *Cost*: Nil
Self-reported health status	*Data source:* ABS *Geographic unit:* Torres Strait Area, Balance of Queensland, State, Australia excluding Torres Strait area and National *Year:* 2002	National Aboriginal and Torres Strait Islander Social Survey report and data: *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4714.02002?OpenDocument* *http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4714.3.55.0012002?OpenDocument* *Cost:* Nil
Disability		
Activity limitation and restriction or disability status	*Data source:* ABS *Geographic unit:* SEIFA, ARIA, State. Data may be available for aggregated SLAs on request. *Years:* 2003, 1998	Disability, Ageing and Carers, Australia: Summary of Findings and state tables for Queensland data: *http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4430.02003?OpenDocument* Further information on the survey: *http://abs.gov.au/AUSSTATS/abs@.nsf/DSSbyCollectionid/4926CFF764B65A25CA256BD000288447* *Cost*: Nil
Disability status and type	*Data source:* ABS *Geographic unit:* Remote/non-remote, State *Year:* 2002	National Aboriginal and Torres Strait Islander Social Survey 2002 data: *http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4714.3.55.0012002?OpenDocument* *Cost*: Nil

Appendix 1: Key data sources

Queensland Health Sources:

Infobank, QHEPS: http://qheps.health.qld.gov.au/hic/infobank/home.htm

Health Information Centre: http://qheps.health.qld.gov.au/hic/home.htm

Other Government Sources:

Australian Bureau of Statistics: http://www.abs.gov.au

Guide to finding census data on the ABS website:
http://www.abs.gov.au/Websitedbs/d3310114.nsf/51c9a3d36edfd0dfca256acb00118404/60155d1bc4a07296ca256d740019f1d0!OpenDocument

Australian Institute of Health and Welfare: http://www.aihw.gov.au

Datahub (Office of Economic and Statistical Research): http://datahub.govnet.qld.gov.au/

Register of Strategic Information: http://register.govnet.qld.gov.au/rosi/rosi$srch.startup

Queensland Regional Statistical Information System (QRSIS):
http://datahub.govnet.qld.gov.au/data_acc/qrsis/entry.htm

Other Sources and Useful Documents:

Australian Standard Geographical Classification (ASGC) report 2001:
http://www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/AA73DF0A91A3F71BCA256AD500017147/$File/12160_jul2001.pdf

Regional Statistics Queensland 2004:
http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1362.32004?OpenDocument

South East Queensland State of Region Sustainability Indicators:
http://www.oum.qld.gov.au/?id=27

Recent Developments in the Collection of Aboriginal and Torres Strait Islander Health and Welfare Statistics report:
http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4704.0.55.0012005?OpenDocument

Appendix 2. Maps of key geographic regions in Queensland

Figure 1. Map of Queensland by Statistical Division (2004 Australian Standard Geographic Classification)

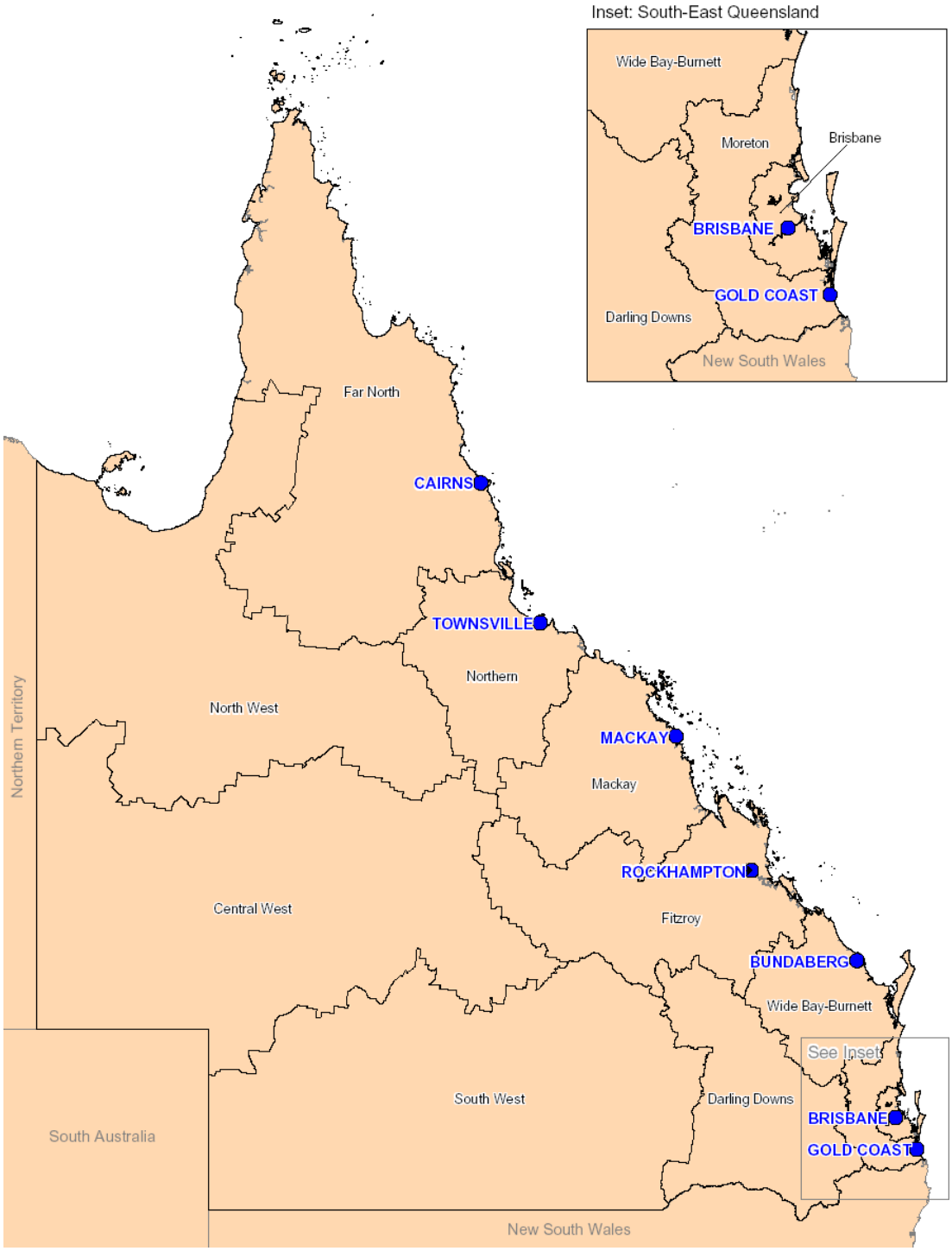


Figure 2. Map of Queensland by Statistical Sub-Division within Statistical Division

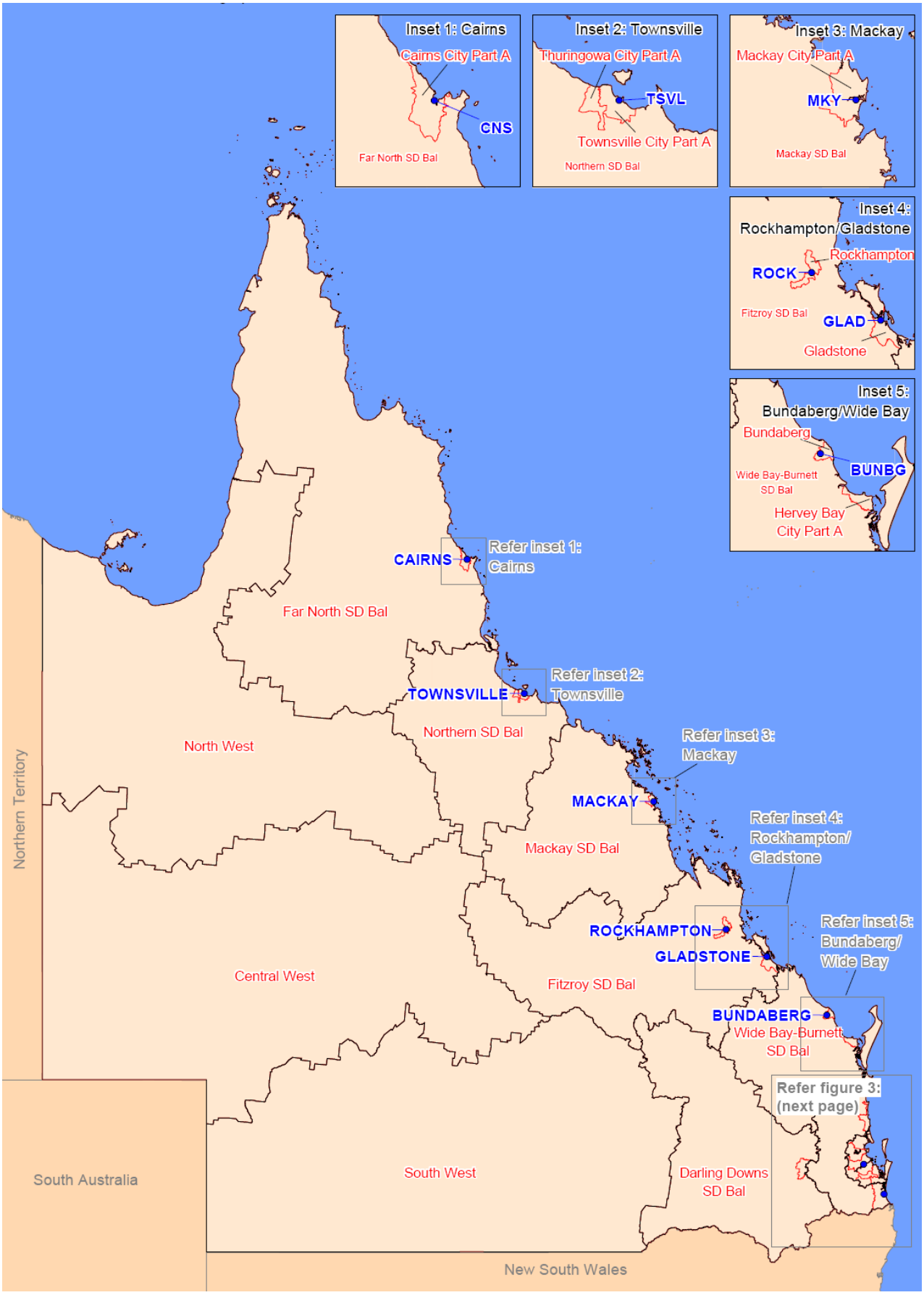


Figure 3. Map of South East Queensland by Statistical Sub-Division within Statistical Division

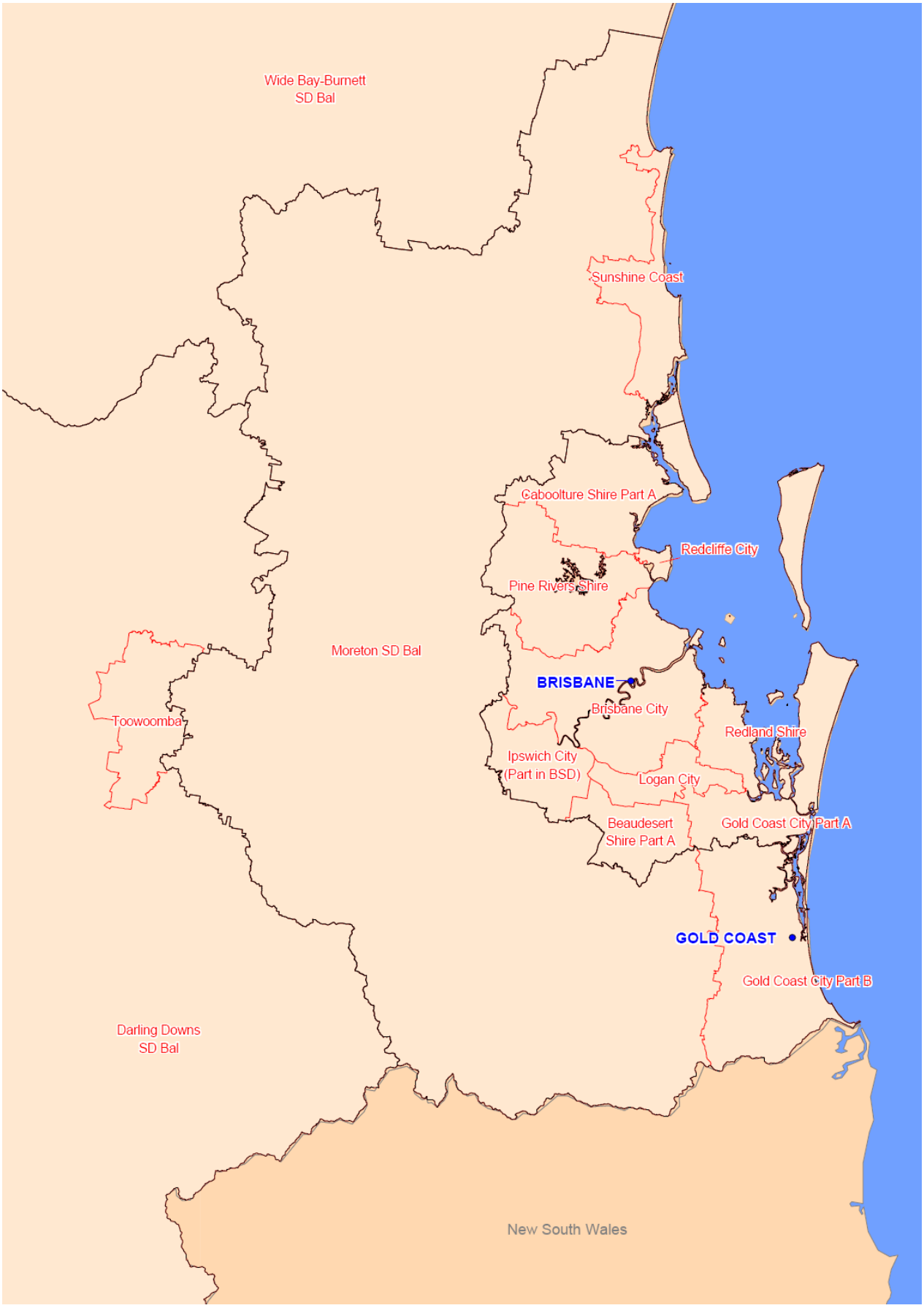


Figure 4. Map of Queensland by Local Government Area within Statistical Division

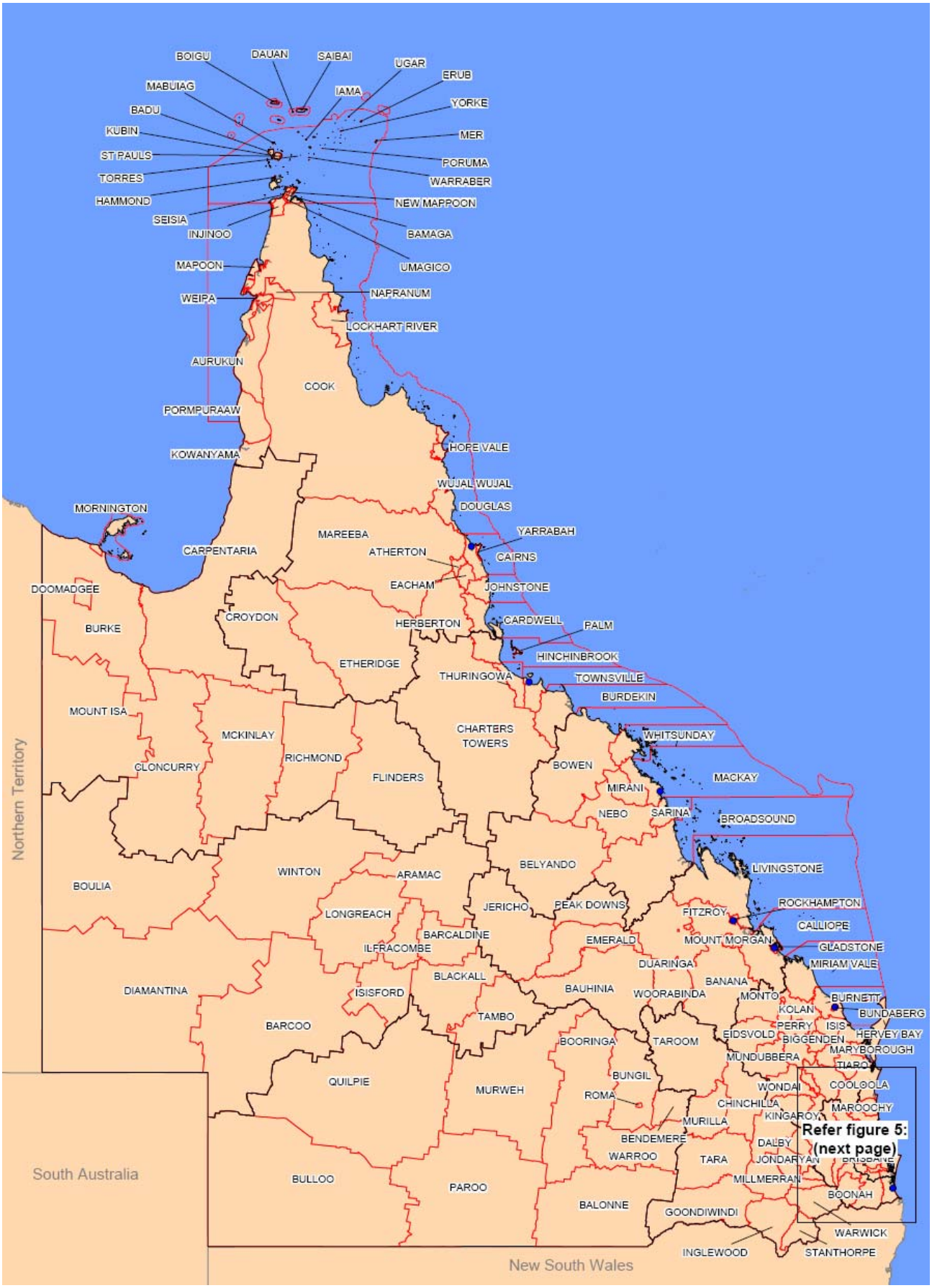
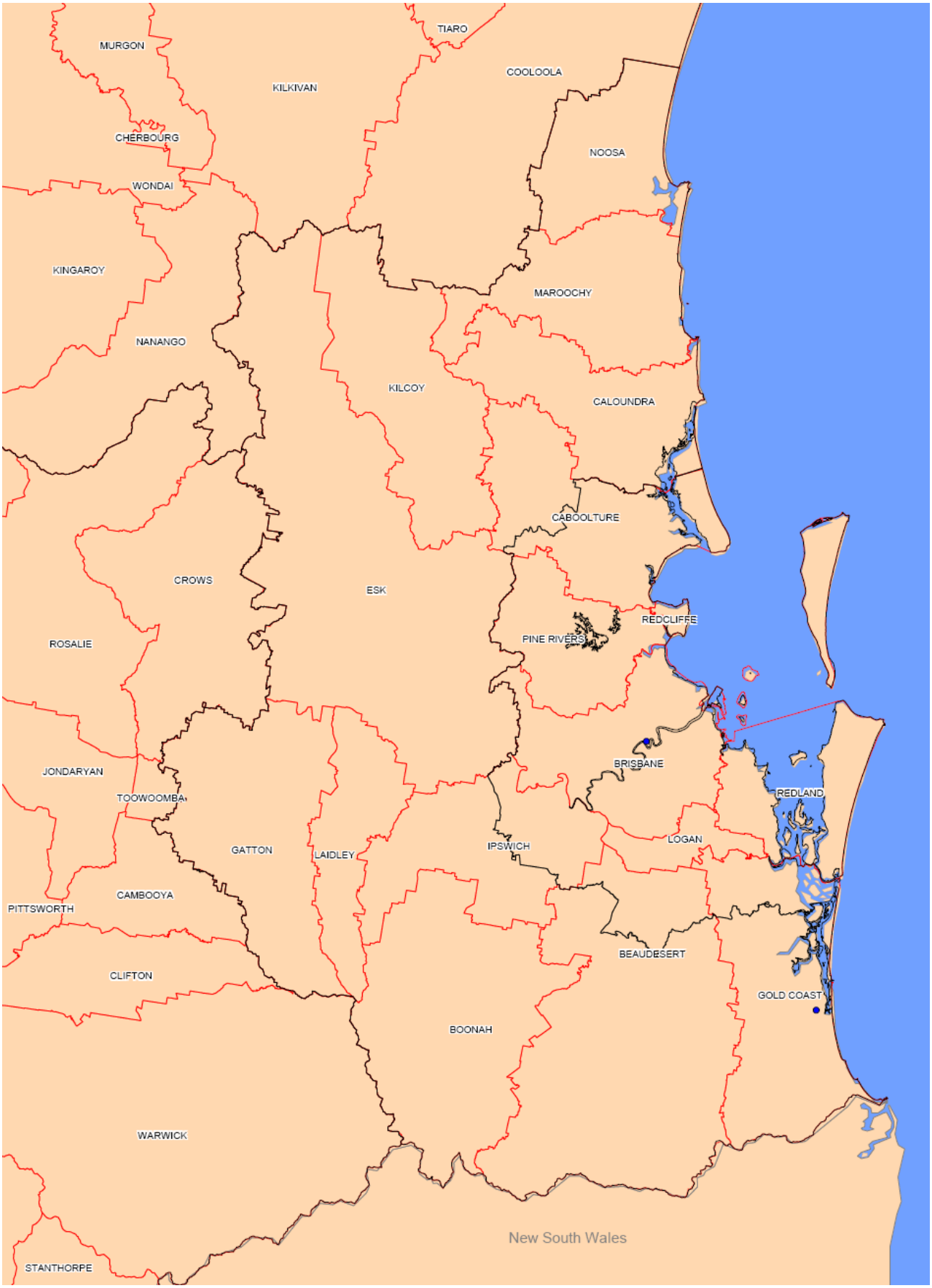


Figure 5. Map of South East Queensland by Local Government Area within Statistical Division



References

1. Last M. *A Dictionary of Epidemiology*. 4th ed. Oxford: Oxford University Press; 2001.
2. Wilkinson R, Marmot M. *Social Determinants of Health: The Solid Facts. 2nd ed. .* World Health Organisation; 2003. http://www.who.dk/document/e81384.pdf
3. World Conference of Indigenous Peoples on Territory Environment and Development. Kari-Oca Declaration and the Indigenous Peoples· Earth Charter; 1992.
4. World Health Organisation. Quotes from the report team. http://www.who.int/chp/chronic_disease_report/media/quotes/en/index.html. Accessed 11/08/2006.
5. World Health Organisation. World Health Organisation: Regional Office for the Eastern Mediterranean: Press release no.5. http://62.193.78.3/pressreleases/2005/no5.htm. Accessed 11/08/2006.
6. Mathers C, Vos T, Stevenson C. *The Burden of Disease and Injury in Australia.* Canberra: Australian Institute of Health and Welfare; 1999. http://www.aihw.gov.au/publications/index.cfm/title/5180\
7. National Health Performance Committee. *National Health Performance Framework report.* Brisbane: Queensland Health; 2001. http://www.health.qld.gov.au/nathlthrpt/framework.asp
8. Queensland Health. *Health Status and Burden of Disease of Queenslanders. Report of the Chief Health Officer.* Brisbane: Division of the Chief Health Officer Queensland Health; [in press]; 2006.
9. Department of Health and Ageing. *Measuring Remoteness: Accessibility/Remoteness Index of Australia (ARIA).* Canberra: Department of Health and Ageing; 2001. http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/health-pubs-hfsocc-ocpanew14a.htm
10. Australian Bureau of Statistics. *Census of Population and Housing: Socio-Economic Indexes for Area's (SEIFA) Australia.* Canberra: Australian Bureau of Statistics; 2001. http://www.abs.gov.au/Ausstats/abs@.nsf/7d12b0f6763c78caca257061001cc588/84d68d8d34deecbaca2571800020da7f!OpenDocument
11. Queensland Health. *Social Determinants of Health: The Role of Public Health Services.* Brisbane: Queensland Health; 2001. http://qheps.health.qld.gov.au/phs/Everything/OtherTopics/SocialDet.htm
12. Australian Bureau of Statistics. 2001 Census of Population and Housing - SEIFA Case Studies. http://www.abs.gov.au/Websitedbs/D3110124.NSF/f5c7b8fb229cf017ca256973001fecec/683345231d47dd59ca256de2007cd4ca!OpenDocument. Accessed 27 June 2006.
13. Queensland Health. *Health Determinants Queensland 2004.* Brisbane: Public Health Services, Queensland Health; 2004. http://www.health.qld.gov.au/hdq/
14. Draper G, Turrell G, Oldenburg B. *Health Inequalities in Australia: Mortality.* Health Inequalities Monitoring Series No. 1. Canberra: Queensland University of Technology and the Australian Institute of Health and Welfare; 2004. Cat. No. PHE 55 http://www.aihw.gov.au/publications/index.cfm/title/10041
15. Sleigh T, Turrell G. *Measuring socioeconomic position in population health monitoring and health research: Current issues and future directions.* Dutton, T., Turrell, G. and Oldenburg, B., Measuring Socioeconomic Position in Population Health Monitoring and Health Research, Health Inequalities Monitoring Series No. 3, Queensland University of Technology, Brisbane, 2005. ?? Brisbane: School of Public Health Queensland University of Technology.
16. Kawachi I, Wilkinson R, Kennedy B. *The Society and Population Health Reader: Income Inequality and Hhealth*. New York: The New Press; 1999.
17. Australian Bureau of Statistics. *Australian Social Trends 2004.* Canberra: Australian Bureau of Statistics; 2004. Cat no. 4102.0. http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4102.02004?OpenDocument
18. Australian Bureau of Statistics. *Measures of Australia's Progress 2006.* Canberra: Australian Bureau of Statistics; 2006. Cat no. 1370.0. http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1370.02006?OpenDocument
19. Australian Bureau of Statistics. Household Income, Living Standards and Financial Stress. http://www.abs.gov.au/Ausstats/abs@.nsf/Previousproducts/1301.0Feature%20Article72002?opendocument&tabname=Summary&prodno=1301.0&issue=2002&num=&view=. Accessed 27 Jun 2006.
20. Marmot M, Wilkinson G. *Social Determinants of Health*. 2nd ed. Oxford: Oxford University Press; 2006.
21. Australian Bureau of Statistics. *Census of Population and Housing.* Canberra: Australian Bureau of Statistics; 2001. Cat. no. 2015.0.
22. Broom D. The distribution of illness: is Australia more equal? *Social Science and Medicine.* 1984;18(11):909-917.
23. National Advisory Committee on Health and Disability. *The Social, Cultural and Economic Determinants of Health in New Zealand: Action to Improve Health.* Wellington: National Advisory Committee on Health and Disability; 1998. http://www.nhc.govt.nz/publications/he-social.htm
24. Berkman N, DeWalt D, Pignone M, et al. *Literacy and health outcomes.* Evidence report/technology assessment no. 87. Rockville, MD: Agency for Healthcare Research and Quality; 2004. http://www.ahrq.gov/downloads/pub/evidence/pdf/literacy/literacy.pdf
25. DeWalt D, Berkman N, Sheridan S, Lohr K, Pignone M. Literacy and health outcomes: A systematic review of the literature. *Journal of General Internal Medicine.* 2004;19:1228-1239. http://www.blackwell-synergy.com/doi/abs/10.1111/j.1525-1497.2004.40153.x
26. Wyke S, Ford G. Competing explanations for associations between marital status and health. *Social Science and Medicine.* 1992;36:907-917.

27. Australian Institute of Health and Welfare. *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples 2005.* Canberra: Australian Institute of Health and Welfare; 2005. Cat no. IHW14. http://www.aihw.gov.au/publications/index.cfm/title/10172

28. Darity WJ. Employment discrimination, segregation, and health. *American Journal of Public Health.* 2003;93(2):226-231. http://www.ajph.org/cgi/content/abstract/93/2/226

29. Kawachi I, Colditz GA, Ascherio A, et al. A prospective study of social networks in relation to total mortality and cardiovascular disease in men in the USA. *Journal of Epidemiology and Community Health.* 1996;50(3):245-251. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?CMD=search&DB=pubmed

30. Karlsen S, Nazroo JY. Relation between racial discrimination, social class, and health among ethnic minority groups. *American Journal of Public Health* 2002;92(4):624-631. http://www.ajph.org/cgi/content/abstract/92/4/624

31. Australian Institute of Health and Welfare. *Australia's Health 2004.* Canberra: Australian Institute of Health and Welfare; 2004. Cat no. AUS 44.

32. United Nations Children's Fund and World Health Organization. *Low Birthweight: Country, Regional and Global Estimates.* New York: UNICEF; 2004. http://www.who.int/reproductive-health/publications/low_birthweight/

33. Mohsin M, Wong F, Bauman A, Bai J. Maternal and neonatal factors influencing premature birth and low birthweight in Australia. *Journal of Biosocial Science.* 2003;35(2):161-174.

34. Elfenbein DS, Felice ME. Adolescent pregnancy. *Pediatric Clinics of North America.* 2003;50(4):781-800. http://home.mdconsult.com/das/article/body/58654060-2/jorg=clinics&source=MI&sp=14003082&sid=483448000/N/368942/s0031395503000695.pdf?summaryresults=true&SEQNO=1

35. Card JJ. Teen pregnancy prevention: Do any programs work? *Annual Review of Public Health.* 1999;20:257-285. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10352859&query_hl=15&itool=pubmed_docsum

36. Coory M. Trends in birth rates for teenagers in Queensland, 1988 to 1997: An analysis by economic disadvantage and geographic remoteness. *Australian and New Zealand Journal of Public Health.* 2000;24(3):316-319. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10937411&query_hl=19&itool=pubmed_docsum

37. Skinner SR, Hickey M. Current priorities for adolescent sexual and reproductive health in Australia. *Medical Journal of Australia.* August 2003;179(3):158-161. http://www.mja.com.au/public/issues/179_03_040803/ski10035_fm.html

38. Tomal A. Determinants of teenage birth rates as an unpooled sample: age matters for socioeconomic predictors. *The American Journal of Economics and Sociology.* 1999;58. http://www.findarticles.com/p/articles/mi_m0254/is_1_58/ai_54019295/print

39. Saewyc EM. Influential life contexts and environments for out-of-home pregnant adolescents. *Journal of Holistic Nursing.* December 2003;21(4):343-367. http://jhn.sagepub.com/cgi/reprint/21/4/343

40. Ellis BJ, Bates JE, Dodge KA, et al. Does father absence place daughters at special risk for early sexual activity and teenage pregnancy? *Child Development.* 2003;74(3):801-821. http://www.blackwell-synergy.com/doi/abs/10.1111/1467-8624.00569

41. Davies SL, DiClemente RJ, Wingood GM, Harrington KF, Crosby RA, Sionean C. Pregnancy desire among disadvantaged African American adolescent females. *American Journal of Health Behaviour.* 2003;27(1):55-62. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12500952&itool=iconabstr&query_hl=1&itool=pubmed_docsum

42. Queensland Health. *A Strategic Policy Framework for Children's and Young People's Health 2002-2007.* Brisbane: Queensland Health; 2002. http://www.health.qld.gov.au/publications/childhealth/16008dmp.htm

43. Queensland Health. *Scoping Paper Teenage Pregnancy Queensland.* Brisbane: Queensland Health Child and Youth Health Unit; 2003.

44. Krug EG, Dahlberg LL, Mercy JA, Zwi AB, Lozane R. *World Report on Violence and Health.* Geneva: World Health Organization; 2002. http://www.who.int/violence_injury_prevention/violence/world_report/en/

45. Australian Institute of Health and Welfare. *Australia's Welfare 2005.* Canberra: Australian Institute of Health and Welfare; 2005. Cat no. AUS 65. http://www.aihw.gov.au/publications/index.cfm/title/10186

46. Woodward M, Shewry MC, Smith S, Tunstall-Pedoe H. Social status and coronary heart disease: Results from the Scottish heart health study. *Preventive Medicine.* 1992;21(1):136-148.

47. Best R. The Housing Dimension. In: Benzeval M, Judge K, Whitehead M, eds. *Tackling Inequalities in Health: An Agenda for Action*. London: Kings Fund; 1995.

48. Nevile A. *State of the Family 2002.* Melbourne: Anglicare, Australia; 2002. http://www.anglicare.asn.au/reports/stateoffamily/stateoffamily.shtml

49. Karmel R. *Measuring Financial Housing Stress.* Canberra: Australian Institute of Health and Welfare; 1995. Cat. No. AIHW 343. http://www.aihw.gov.au/publications/index.cfm/title/154

50. Queensland Health. *Health Education Guidelines for Disadvantaged Young People.* Brisbane: Youth Health Policy Unit, Queensland Health; 1993.

51. World Health Organisation. Transport and Health. 27 June 2006; http://www.who.dk/transport/hia/20021009_2.

52. Queensland Health. *Social Determinants of Health: Transport fact sheet.* Brisbane: Queensland Health; 2003. http://qheps.health.qld.gov.au/PHS/Documents/sphun/20406.pdf

53. Amies M. *Gambling: Is it a Health Hazard?* Canberra: Department of Health and Aged Care; 1999. http://www.dhac.gov.au/internet/wcms/publishing.nsf/Content/health-pubs-hfsocc-ocpanew2a.htm
54. Darbyshire P, Oster C, Carrig H. Children of parent(s) who have a gambling problem: A review of the literature and commentary on research approaches. *Health and Social Care in the Community.* 2000;9(4):185-193.
55. Berkman LF, Kawachi I. *Social Epidemiology*. Oxford: Oxford University Press; 2000.
56. Queensland Health. *Is Social Capital Associated with Health? Findings from the 2002 Queensland Health Survey.* Brisbane: Queensland Health 2002. http://qheps.health.qld.gov.au/PHS/Documents/sphun/20496dmp.htm
57. Australian Bureau of Statistics. *Measuring Social Capital: Current Collections and Future Directions.* Canberra: Australian Bureau of Statistics; 2000. http://www.abs.gov.au/websitedbs/D3110122.NSF/0/6CD8B1F3F270566ACA25699F0015A02A?Open
58. Morrow-Howell N, Hinterlong J, Rozario P, Tang F. Effects of volunteering on the well-being of older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences.* 2003;58(3):S137-S145
59. Australian Bureau of Statistics. *Australian Social Trends 2001.* Canberra: Australian Bureau of Statistics; 2001. http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4102.02001?OpenDocument
60. Australian Bureau of Statistics. *Social Capital and Social Wellbeing.* Canberra: Australian Bureau of Statistics; 2002. http://www.abs.gov.au/websitedbs/D3110122.NSF/4a255eef008309e44a255eef00061e57/150bcb152250ddcfca256c220080ba47!OpenDocument
61. Catford JC, Caterson ID. Snowballing obesity: Australians will get run over if they just sit there *Medical Journal of Australia* 2003;179(11-12):577-579. http://www.mja.com.au/public/issues/179_11_011203/cat10664_fm.html
62. Gebel K, King L, Bauman A, et al. *Creating healthy environments: A review of links between the physical environment, physical activity and obesity.* Sydney: NSW Health Department and NSW Centre for Overweight and Obesity; 2005. http://www.coo.health.usyd.edu.au/publications/reports.shtml
63. World Health Organisation. *Obesity: Preventing and managing the global epidemic. Report of a WHO Consultation.* Geneva: World Health Organisation; 2000.
64. Goodman E, Whitaker RC. A prospective study of the role of depression in the development and persistence of adolescent obesity. *Pediatrics.* 2002;110(3):497-504. http://pediatrics.aappublications.org/cgi/content/full/110/3/497
65. Reilly JJ, Methven E, McDowell ZC, et al. Health consequences of obesity. *Archives of Disease in Childhood.* 2003;88(9):748-752. http://adc.bmjjournals.com/cgi/content/full/88/9/748
66. Hill JO, Peters JC. Environmental contributions to the obesity epidemic. *Science* 1998;5368:1371-1374. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9603719&query_hl=11&itool=pubmed_docsum
67. Davilia DG, Williams DE. The etiology of lung cancer. *Mayo Clinic Proceedings.* 1993;68:170-182.
68. Ridolfo B, Stevenson C. *The quantification of drug-caused mortality and morbidity in Australia, 1998.* Canberra: Australian Institute of Health and Welfare; 2001. http://www.aihw.gov.au/publications/phe/qdcmma98/
69. US Department of Health and Human Services. *The Health Benefits of Smoking Cessation: A Report of the Surgeon General.* Rockville, MD: Centres for Diseases Control; 1990. http://www.surgeongeneral.gov/library/reports.htm
70. Kawachi I, Colditz GA, Stampfer MJ, et al. Smoking cessation and decreased risk of stroke in women. *Journal of American Medical Association.* 1993;269(2):232-236.
71. Negri E, La Vecchia C, D'Avanzo B, Nobili A, La Malfa RG. Acute myocardial infarctions: Association with time since stopping smoking in Italy. *Journal of Epidemiology and Community Health.* 1994;48(2):129-133.
72. World Health Organisation. *Global Status Report on Alcohol 2004.* Geneva: World Health Organisation; 2004. http://whqlibdoc.who.int/publications/2004/9241562722_(425KB).pdf
73. National Health and Medical Research Council. *Australian Alcohol Guidelines: Health Risks and Benefits.* Canberra: National Health and Medical Research Council; 2001. http://www.nhmrc.gov.au/publications/_files/ds9.pdf
74. Queensland Health. *The Contribution of Hazardous and Harmful Alcohol Consumption to Mortality and Hospital Morbidity in Queensland.* Brisbane: Health Information Centre, Queensland Health; 2000. http://www.health.qld.gov.au/publications/infocirc/info50.PDF
75. Begg S, Vos T, Goss J, et al. *The Burden of Disease and Injury in Australia, 2003 [in press].* Brisbane: University of Queensland and the Australian Institute of Health and Welfare; 2006.
76. United States Department of Health and Human Services. *The Surgeon General's Report on Physical Activity and Health.* Washington, DC: US Government Printing Office; 1996. http://www.surgeongeneral.gov/library/reports.htm
77. Armstrong T, Bauman A, Davies J. *Physical Activity Patterns of Australian Adults: Results of the 1999 National Physical Activity Survey.* Canberra: Australian Institute of Health and Welfare; 2000. http://www.aihw.gov.au/publications/index.cfm/title/5944
78. World Health Organisation. *The World Health Report 2002: Reducing Risks, Promoting Healthy Life.* France: World Health Organisation; 2002.
79. National Health and Medical Research Centre. *Dietary Guidelines for Australians.* Canberra: National Health and Medical Research Centre; 2002. http://www.nhmrc.gov.au/publications/synopses/dietsyn.htm
80. Baghurst P, Beaumont-Smith N, Baghurst K, Cox D. *The Relationship Between the Consumption of Fruits and Vegetables and Health Status. Report to Department of Health and Aged Care and the Strategic*

Intergovernmental Nutrition Alliance. Adelaide: CSIRO Health Sciences & Nutrition; 1999. http://www.dhs.vic.gov.au/nphp/publications/signal/fvstat.pdf

81. Australian Institute of Health and Welfare. *2001 National Drug Strategy Household Survey: Detailed Findings.* Canberra: Australian Institute of Health and Welfare; 2002. http://www.aihw.gov.au/publications/index.cfm/title/8227

82. Ministerial Council on Drug Strategy. *The National Drug Strategy: Australia's Integrated Framework 2004–2009.* Canberra: Australian Government Department of Health and Ageing; 2004. http://www.nationaldrugstrategy.gov.au/pdf/framework0409.pdf

83. Ezzati M, Lopez A, Rodgers A, Murray J. *Comparative Quantification of Health Risks Global and Regional Burden of Disease Attributable to Selected Major risk Factors Volume 1.* Geneva: World Health Organisation; 2004. http://www.who.int/publications/cra/en/

84. Australian Institute of Health and Welfare. *Statistics on Drug Use in Australia 2004.* Canberra: Australian Institute of Health and Welfare; 2005. http://www.aihw.gov.au/publications/index.cfm/title/10143

85. Commonwealth Department of Health and Aged Care. *Productivity Commission's Inquiry into Australian Gambling Industries.* Canberra: Australian Government Productivity Commission; 1999. http://www.pc.gov.au/inquiry/gambling/subs/sub163.pdf

86. Queensland Health. *Fluoridation of Water Supplies and Your Health: Information Bulletin.* Brisbane: Queensland Health; 2005. http://www.health.qld.gov.au/phs/documents/ohu/30268.pdf

87. McDonagh M, Whiting P, Bradley M, et al. *A Systematic Review of Public Water Fluoridation.* York: NHS Centre for Reviews and Dissemination; 2000. http://www.nofluoride.com/reports/York%20Review.pdf

88. US Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000. http://www.surgeongeneral.gov/library/reports.htm

89. Burt B, Eklund S. Community-based strategies for preventing dental caries. In: Pine CM, ed. *Community Oral Health*. Oxford: J. Wright; 1997.

90. Burton NW, Turrell G, Oldenburg B. Participation in recreational physical activity: Why do socio-economic groups differ? *Health Education and Behaviour.* 2003;30(2):225-244.

91. Giles-Corti B. *The Relative Influence of, and Interactions Between, Environmental and Individual Determinants of Recreational Physical Activity in Sedentary Workers and Home Makers: A Summary.* Western Australia: Health Promotion Evaluation Unit, Department of Public Health and Graduate School of Management, University of Western Australia; 1998.

92. Humpel N, Owen N, Leslie E. Environmental factors associated with adults' participation in physical activity: A review. *American Journal of Preventive Medicine.* 2002;22(3):188-199. http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VHT-459W2H8-9&_coverDate=04%2F30%2F2002&_alid=411429009&_rdoc=1&_fmt=&_orig=search&_qd=1&_cdi=6075&_sort=d&view=c&_acct=C000047541&_version=1&_urlVersion=0&_userid=894471&md5=f91bc61688be6aec2a7b574e36ebfdce

93. Saelens BE, Sallis JF, Frank LD. Environmental correlates of walking and cycling: Findings from the transport, urban design, and planning literatures. *Annals of Behavioural Medicine.* 2003;25(2):80-91.

94. Sallis JF, Owen N. *Physical Activity and Behavioral Medicine*. California: Sage Publications; 1999.

95. Trost SG, Owen N, Bauman AE, Sallis JF, Brown W. Correlates of adults' participation in physical activity: review and update. *Medicine and Science in Sports and Exercise.* 2002;34(12):1996-2001. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?CMD=search&DB=pubmed

96. Task Force on Community Preventative Services. Recommendations to increase physical activity in communities. *American Journal of Preventive Medicine.* 2002;22(4 Suppl):67-72. http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VHT-45NNFDB-8&_coverDate=05%2F31%2F2002&_alid=411430867&_rdoc=1&_fmt=&_orig=search&_qd=1&_cdi=6075&_sort=d&view=c&_acct=C000047541&_version=1&_urlVersion=0&_userid=894471&md5=2df4a4adbb70636a1d49c08355e0c4ae

97. Heath GW, Brownson RC, Kruger J, Miles R, Powell KE, Ramsey LT. The effectiveness of urban design and land use and transport policies and practices to increase physical activity: A systematic review. *Journal of Physical Activity and Health.* 2006;3(Suppl 1):S55-S76.

98. Australian Institute of Health and Welfare. Excessive Sun Exposure. http://www.aihw.gov.au/riskfactors/sun.cfm. Accessed 1 June, 2006.

99. Queensland Health. *Queensland Skin Cancer Prevention Strategic Plan 2001-2005.* Brisbane: Queensland Health; 2001. http://www.health.qld.gov.au/sunsafety/resources/print.asp

100. Turnbull DJ, Parisi AV. Effective shade structures. *Medical Journal of Australia.* 2006;184(1):13-15. http://www.mja.com.au/public/issues/184_01_020106/tur10224_fm.html

101. Australian Bureau of Statistics. *Australian Social Trends 2002.* Canberra: Australian Bureau of Statistics; 2002. Cat. no. 4102.0. http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4102.02002?OpenDocument

102. Law MR, Wald NJ. Risk factor thresholds: Their existence under scrutiny. *British Medical Journal.* 2002;324(7353):1570-1576. http://bmj.bmjjournals.com/cgi/content/full/324/7353/1570

103. Joshipura K, Hu FB, Manson JE, et al. The effect of fruit and vegetable intake on risk for coronary heart disease. *Annals of Internal Medicine.* 2001;134(12):1106-1114. http://www.annals.org/cgi/reprint/134/12/1106

104. Bunker SJ, Colquhoun DM, Esler MD, et al. "Stress" and coronary heart disease: Psychosocial risk factors. *Medical Journal of Australia.* 2003;178(6):272-276. http://www.mja.com.au/public/issues/178_06_170303/bun10421_fm.html

105. Cardona M, Coyne T, McClintock C, Muller S. *The Impact of Diabetes on the Health of Queenslanders: Health Information Circular 62.* Brisbane: Health Information Centre, Queensland Health; November; 2002. http://qheps.health.qld.gov.au/hic/Cover_pages/16768dmp.htm
106. McCarty D, Zimmett P, Dalton P, Segal L, Welborn T. *The Rise and Rise of Diabetes in Australia, 1996.* New South Wales: Diabetes Australia NSW; 1996.
107. Stadtlander CT, Waterbor JW. Molecular epidemiology, pathogenesis and prevention of gastric cancer. *Carcinogenesis.* 1999;20(12):2195-2208. http://carcin.oxfordjournals.org/cgi/content/full/20/12/2195
108. Glade MJ. *Food, Nutrition and the Prevention of Cancer: A Global Perspective.* Washington, DC: World Cancer Research Fund, American Institute for Cancer Research; 1997.
109. Thune I, Furberg AS. Physical activity and cancer risk: dose-response and cancer, all sites and site-specific. *Medicine and Science in Sports and Exercise.* 2001;33(6 Suppl):S530-S550.
110. Queensland Health. *The State of Health of the Queensland Population.* Brisbane: Queensland Health; 2001.
111. Queensland Transport. *2003 Road Traffic Crashes in Queensland: A Report on the Road Toll.* Brisbane: Queensland Transport; 2005. http://www.roadsafety.qld.gov.au/qt/LTASinfo.nsf/ReferenceLookup/RTC_2003_new.pdf/$file/RTC_2003_new.pdf
112. Queensland Department of Transport. Road Crash Data Analysis and Statistics: Data Analysis, Land Use and Safety, Webcrash Database; 2006.
113. Pointer S, Harrison J, Bradley C. *National injury prevention plan priorities for 2004 and beyond: Discussion paper.* Injury Research and Statistics Series Number 18. Adelaide: Australian Institute of Health and Welfare; 2003. Cat. no. INJCAT 55. http://www.aihw.gov.au/publications/index.cfm/title/9247
114. Queensland Health. *Injury Prevention and Control Health Outcomes Plan: Background paper.* Brisbane: Queensland Health; 2000. http://www.health.qld.gov.au/hop/injury/plans.asp
115. Australian Institute of Health and Welfare. *Australia's Children: Their Health and Wellbeing 2002.* Canberra: Australian Institute of Health and Welfare; 2002. http://www.aihw.gov.au/publications/index.cfm/title/7516
116. Pike A, Muller S, Baade P, Ward J. *Injury morbidity and mortality in Queensland 2000. Information circular 51.* Brisbane: Health Information Centre, Queensland Health; 2000. http://www.health.qld.gov.au/publications/injury2000b.PDF
117. VicHealth. Mental Health and Wellbeing. *VicHealth Letter.* 2003;21. http://www.vichealth.vic.gov.au/assets/contentFiles/VicHealthLetter21_03.pdf
118. Commonwealth Department of Health and Aged Care. *Promotion, Prevention and Early Intervention for Mental Health: A Monograph 2000.* Canberra: Mental Health and Special Programs Branch, Commonwealth Department of Health and Aged Care; 2000. http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/mental-pubs/$FILE/monograph.pdf
119. Resnick MD, Bearman P, Blum RW, et al. Protecting adolescents from harm: Findings from the national longitudinal study on adolescent health. *Journal of the American Medical Association.* 1997;278(10):823-832. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?CMD=search&DB=PubMed
120. Smith JC, Mercy JA, Conn JM. Marital status and the risk of suicide. *American Journal of Public Health.* 1988;78(1):78-80.
121. Frederico M, Davis C, Barber J. Growing up in Australia: The role of parents in promoting positive adolescent development. *Asia Pacific Families: APFAM Journal.* 1999;1(1):61-64.
122. De Leo D, Hickey PA, Neulinger K, Cantor CH. *Ageing and Suicide.* Canberra: Commonwealth Department of Health and Aged Care; 2001. http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/mental-pubs/$FILE/ageing.pdf
123. Commonwealth Department of Health and Aged Care. *A Framework for Prevention of Suicide and Self-harm in Australia 2000.* Canberra: Commonwealth Department of Health and Aged Care; 2000. http://www.health.gov.au/internet/wcms/publishing.nsf/content/publicat-suicide.htm
124. Queensland Health. *Health priorities: The role of Physical Activity: Public Health Physical Activity Background Paper.* Brisbane: Queensland Health; 2003.
125. American College of Sports Medicine. American College of Sports Medicine position stand. Osteoporosis and exercise. *Medicine and Science in Sports and Exercise.* 1995;27(4):i-vii. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7791573&query_hl=49&itool=pubmed_DocSum
126. Drinkwater BL. CH McCloy research lecture: Does physical activity play a role in preventing osteoporosis? *Research Quarterly for Exercise and Sport.* 1994;65(3):197-206. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7973068&query_hl=52&itool=pubmed_docsum
127. Brill PA, Macera CA, Davis DR, Blair SN, Gordon N. Muscular strength and physical function. *Medicine and Science in Sports and Exercise.* 2000;32(2):412-416.
128. Australian Institute of Health and Welfare. *Chronic diseases and associated risk factors in Australia, 2001.* Canberra: Australian Institute of Health and Welfare; 2002. Cat. No. PHE 33. http://www.aihw.gov.au/publications/phe/cdarfa01/index.html
129. Australian Centre for Asthma Monitoring. *Asthma in Australia 2003.* AIHW Asthma Series 1 Canberra Australian Institute of Health and Welfare; 2003. Cat. no. ACM 1. http://www.aihw.gov.au/publications/index.cfm/title/9331
130. Sandberg S, Paton JY, Ahola S, et al. The role of acute and chronic stress in asthma attacks in children. *Lancet* 2000;356(9234):982-987. http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T1B-4194K8X-D&_coverDate=09%2F16%2F2000&_alid=411470836&_rdoc=1&_fmt=&_orig=search&_qd=1&_cdi=4886&_s

ort=d&view=c&_acct=C000047541&_version=1&_urlVersion=0&_userid=894471&md5=e0b2af6128eb69cb2fc405d79c93967d

131. Oddy WH, Holt P, Sly PD, et al. Association between breast feeding and asthma in 6 year old children: findings of a prospective birth cohort study. *British Medical Journal.* 1999;319(7213):815-819. http://bmj.bmjjournals.com/cgi/content/full/319/7213/815

132. Friedman N, Zeiger R. The role of breast-feeding in the development of allergies and asthma. *Journal of Allergy and Clinical Immunology.* 2005;15(6):1238-1248.

133. Australian Lung Foundation and the Thoracic Society of Australia and New Zealand. *The COPD-X Plan: Australian and New Zealand Guidelines for the management of Chronic Obstructive Pulmonary Disease* Brisbane: Australian Lung Foundation; 2006. http://www.copdx.org.au/guidelines/documents/COPDX_March31_2006.pdf

134. Huang DB, Chappell C, Okhuysen PC. Cryptosporidiosis in children. *Seminars in Pediatric Infectious Diseases.* 2004;15(4):253-259. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15494949&itool=iconabstr&query_hl=62&itool=pubmed_docsum

135. Queensland Health. *Notifiable Diseases Report 1997-2001.* Brisbane: Communicable Diseases Unit, Queensland Health; 2001. http://qheps.health.qld.gov.au/PHS/Documents/cdu/15896.pdf

136. Maciosek MV, Coffield AB, Edwards NM, Flottemesch TJ, Goodman MJ, Solberg LI. Priorities among effective clinical preventive services: Results of a systematic review and analysis. *American Journal of Preventive Medicine.* 2006:[pre-print]. http://www.prevent.org/content/view/50/101/

137. National Health and Medical Research Council. *The Australian Immunisation Handbook*. 8th ed. Canberra: National Health and Medical Research Council; 2003. http://www.immunise.health.gov.au/handbook.htm

138. Plotkin SA, Orenstein WA. *Vaccines*. 4th ed. Philadelphia: Saunders; 2004.

139. World Health Organisation. *GIVS Global Immunization Vision and Strategy 2006-2015.* Geneva: World Health Organisation; 2005. http://www.who.int/vaccines-documents/DocsPDF05/GIVS_Final_EN.pdf

140. Gidding HF, Burgess MA, Kempe A. A short history of vaccination in Australia. *Medical Journal of Australia.* 2001;174(1):37-40.

141. Queensland Health. *Immunisation Outcome Area Plan: 2004-2007.* Brisbane: Queensland Health; 2004. http://qheps.health.qld.gov.au/phs/Everything/OA_PA_Quality/Immunisation.htm

142. Eckersley R, ed. *Measuring progress: is life getting better?* Collingwood, Vic: CSIRO Publishing; 1998.

143. Queensland Health. Discrimination: A Factsheet. In: Health Q, ed. *Social Determinants of Health*. Brisbane: Queensland Health; 2003.

144. Queensland Health. Education: A Factsheet *Social Determinants of Health* Brisbane: Queensland Health; 2003.

145. Queensland Health. Indigenous People: A Factsheet. *Social Determinants of Health* Brisbane: Queensland Health; 2003.

146. Federal Provincial and Territorial Advisory Committee on Population Health. *Toward a Healthy Future: Second report on the health of Canadians.* Charlottetown: P.E.I.; 1999. http://www.phac-aspc.gc.ca/ph-sp/phdd/report/subin.html

147. Carr AJ, Gibson B, Robinson PG. Measuring quality of life: Is quality of life determined by expectations or experience? *British Medical Journal.* 2001;322(7296):1240-1243.

148. IMD International. *World Competitiveness yearbook.* Lausanne, Switzerland: World Competitiveness Center; 2003.

149. Asadi-Lari M, Tamburini M, Gray D. Patients' needs, satisfaction, and health related quality of life: Towards a comprehensive model. *Health and Quality of Life Outcomes.* 2004;2(32). http://www.hqlo.com/content/2/1/32

150. Idler I, Benyamini,Y. Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behaviour.* 1997;38(1):21-37. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?CMD=search&DB=pubmed

151. McCallum J, Shadbolt B, Wang D. Self-rated health and survival: A 7-year follow-up study of Australian elderly. *American Journal of Public Health.* 1994;84(7):1100-1105.

152. Australian Institute of Health and Welfare. *Australia's Health 2000.* Canberra: Australian Institute of Health and Welfare; 2000. http://www.aihw.gov.au/publications/index.cfm/title/5742

153. Australian Institute of Health and Welfare. *Disability and Disability Services in Australia.* Canberra: Australian Institute of Health and Welfare; 2006. Cat. No. DIS43. http://www.aihw.gov.au/publications/index.cfm/title/10250