Baseline Evaluation Report for the Queensland Strategy for Chronic Disease 2005-2015 (No. 3)

Health Risk Behaviours & Supportive Environments for Healthy Behaviour

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1. BACKGROUND

The *Queensland Strategy for Chronic Disease 2005-2015* was developed in partnership with the Queensland Government, Queensland Health and other key stakeholders in response to increasing pressures on the health care system and the recognition that chronic disease is a major contributor to the burden of disease amongst the Queensland population. The School of Population Health at the University of Queensland has been contracted to undertake the evaluation of the *Strategy.*

The chronic diseases that the *Strategy* focuses on are:

- Cardiovascular disease including coronary heart disease, heart failure, and stroke
- Type 2 diabetes
- Renal disease
- Chronic respiratory diseases (chronic obstructive pulmonary disease (COPD) and asthma).

In addition, there is a focus on depression as a co-morbidity of these chronic diseases.

The *Strategy* also considers four underlying risk factors for these diseases:

- Tobacco smoking
- Poor nutrition
- Alcohol misuse
- Physical inactivity.

The *Strategy* states that "Queensland Health is working with a range of partners across the continuum from prevention through to detection to management, rehabilitation and palliation. Prevention of the lifestyle and behavioural risk factors at the whole-of-population level requires a whole-of-government approach" (p.11). Complementing this state-wide focus, an additional component of the *Strategy* focuses on the development of three Place Based Initiatives (PBIs) in Logan-Beaudesert, North Lakes and surrounds, and Innisfail. These initiatives are producing 'integrated local service delivery models spanning the continuum of care' and focus on using a partnership approach to achieve their objectives.

This report is one of a suite of six baseline evaluation reports relating to the *Strategy* prepared for Queensland Health. The six reports include:

i. Mortality, Prevalence, Incidence, Health Status & Quality of Life (No. 1)

ii. Hospital Separations, Avoidable Admissions, Health Services Utilisation & Quality of Care (No. 2)

iii. **Health Risk Behaviours & Supportive Environments for Healthy Behaviour (No.3)**

iv. Self-management (No. 4)

v. Health Services Quality Improvement & Partnerships (No. 5)

vi. Key Informant Interviews with Clinicians (No. 6)

The first half of this report presents data on tobacco smoking, alcohol misuse, poor nutrition, physical inactivity, and obesity for the general population and for people with one of three in-scope chronic diseases (asthma, diabetes and high blood sugar, and cardiovascular diseases). The second half of the report presents data on environmental supports for healthy behaviour for the general population. These include health care sector supports, social supports, neighbourhood supports and infrastructure, and workplace supports. Data are presented with breakdowns by sex, age, and PBI region, and in some cases by socio-economic status and body mass index (BMI) groupings. These breakdowns are indicative only. Between-group differences and models of association have not yet been statistically tested.

As well as providing baseline data for the evaluation of the *Strategy*, the information presented in this report can inform the ongoing implementation of the *Strategy*. For example, it can guide future refinements of the *Strategy* and the efforts of health care workers in creating programs and environments that discourage unhealthy behaviour and encourage health promoting behaviour among Queenslanders.

The data reported here were collated from several sources, including both existing datasets and new datasets established as part of the evaluation of the *Strategy*. The latter include the *Computer Assisted Telephone Interview Survey of the Queensland General Population* (CATI-Qld) and the *CATI Survey of People Living with Chronic Diseases* (CATI-Chronic), both undertaken as part of the evaluation of the *Strategy* and both providing unique data for Queensland. These two Computer Assisted Telephone Interview (CATI) studies are central to the evaluation and are scheduled to be repeated triennially and biennially, respectively, until 2015. Briefly, the CATI-Qld surveyed a random sample of 2,221 Queenslanders aged 18 years and older and the CATI-Chronic surveyed a random sample of 2,296 Queenslanders aged 18 years and older living with one of three in-scope chronic conditions (i.e. cardiovascular disease, asthma or diabetes mellitus). More detail concerning the methods employed for these studies can be found in Appendix 1.

Observations made in this report should aid decision-makers in setting priorities, allocating resources and developing, planning and organising efforts to positively influence the health related behaviour of the Queensland population. Creating a better health environment for Queenslanders by decreasing unhealthy risk behaviours and supporting the improvement of environments that strengthen and build capacity for health will benefit from the concerted

efforts that document both evidence and evidence of change across the duration of the *Strategy*.

2. HEALTH RISK BEHAVIOURS

The *Strategy* targets a number of lifestyle risk factors which are believed to contribute to chronic disease and other poor health outcomes. These factors include tobacco use, alcohol misuse, poor nutrition, and physical inactivity.

Tobacco smoking, alcohol misuse, poor nutrition and lack of regular physical exercise are associated with an increased risk of disease and mortality. It is well-established that these four lifestyle behaviours increase the likelihood of developing cardiovascular disease, chronic respiratory disease, diabetes mellitus and renal disease. Furthermore, these risk factors also potentially influence quality of life even in the absence of disease (Goldstein, Whitlock, & DePue, 2004).

This section of the report provides baseline data from the CATI-Qld and CATI-Chronic on each of these risk factors, along with data on BMI. Data is also presented from relevant existing data sources such as the *National Drug Strategy Household Survey* (AIHW, 2007) and the *National Health Survey* (ABS, 2006). This section of the report can inform the evaluation of the following *Strategy* objectives:

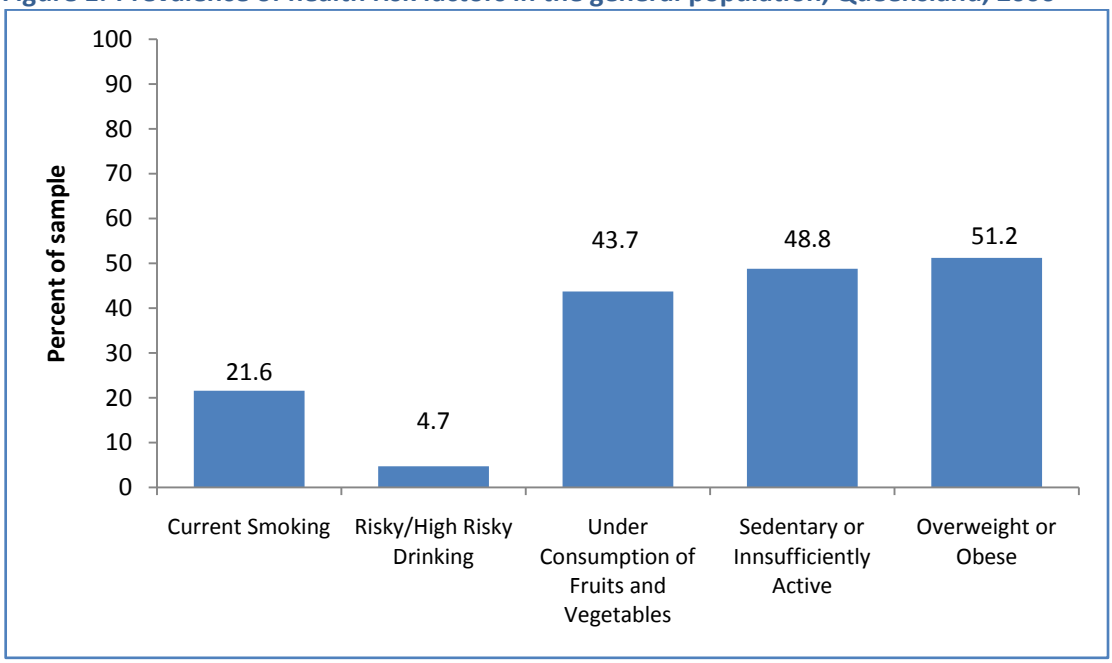
- Reduce smoking prevalence and exposure to passive smoking.
- Reduce the prevalence of high-risk consumption and dependence on alcohol.
- Improve nutritional status of the population.
- Increase physical activity.
- Improve identification and management of lifestyle and behavioural risk factors.

Figure 1 summarises the age-standardised prevalences of key health risk factors for the Queensland general population, as measured in the CATI-Qld 2006. In 2006, around 50% of Queenslanders were not following recommendations on physical exercise, around 50% were overweight or obese, around 40% were not eating enough fruit and vegetables, 20% smoked tobacco, and 5% were drinking at risky or high-risk levels.

These figures provide a crude benchmark against which the outcomes of the *Strategy* can be assessed in the long-term. However, these figures do not take into account the contribution each risk factor makes to the development of chronic disease. When setting priorities for action, this report should be considered in conjunction with other reports that examine burden of disease, such as the *Burden of Disease and Injury in Australia* report (Begg et al., 2007) and the *Health of Queenslanders* series (Queensland Health, 2006). Figure 2 provides an excerpt from the Burden of Disease and Injury in Australia report (Begg et al., 2007) which indicates that smoking makes a relatively high contribution to the burden of disease in Australia, despite being of relatively low prevalence compared to other risk factors. Similarly,

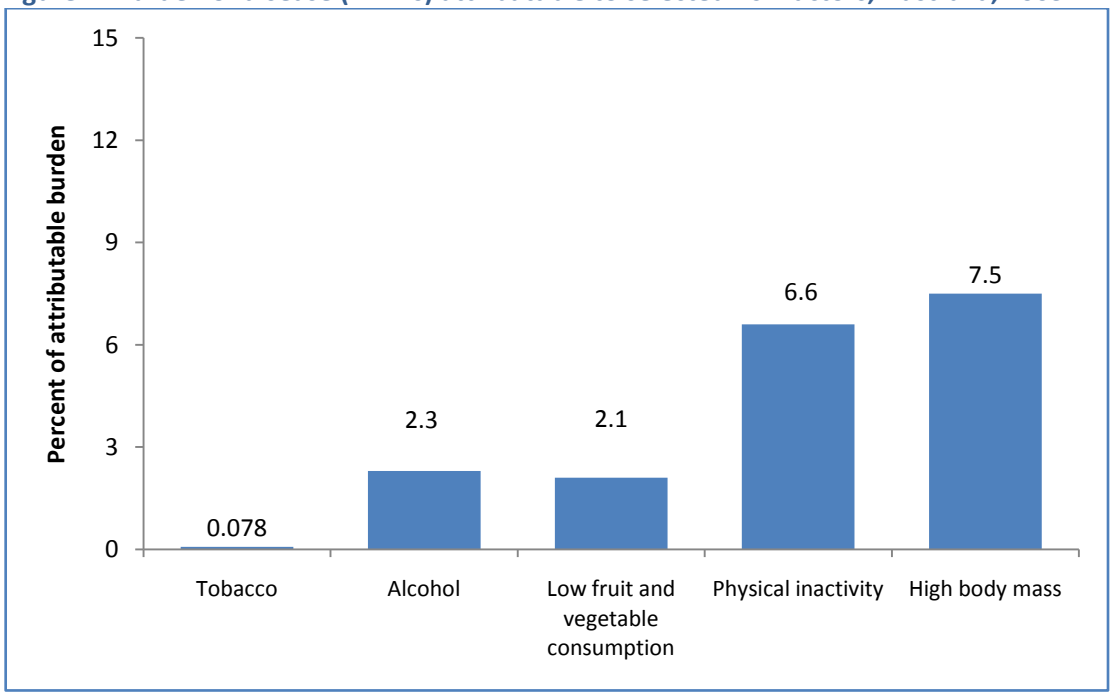
the prevalence of fruit and vegetable under-consumption is common but makes only a small contribution to the burden of disease.

Figure 1. Prevalence of health risk factors in the general population, Queensland, 2006



Source: CATI-Qld (2006)

Figure 2. Burden of disease (DALYs) attributable to selected risk factors, Australia, 2003



Source: (Begg et al., 2007)

2.1 TOBACCO SMOKING

Smoking is one of the major contributors to the burden of disease globally and is the world's leading cause of death (Frieden & Bloomberg, 2007). According to *The Health of Queenslanders 2006* report (Queensland Health, 2006), tobacco smoking was the second largest single determinant of the burden of disease in Queensland in 2003 (8.1 %). Worldwide, 1 in 10 deaths are from smoking related diseases (Frieden & Bloomberg, 2007).

Tobacco smoking causes detrimental effects to health, including an increased risk of lung cancer, heart disease and chronic obstructive pulmonary disease (Glantz, Slade, Bero, Hanauer, & Barnes, 1996; Kessler, 2001). In 1999-2001, there were on average 3,402 deaths per year attributed to tobacco smoking in Queensland (Queensland Health, 2004). Smoking caused 1 in 5 of all male deaths in Queensland and 1 in 10 female deaths.

The current global prevalence of smoking in adults is estimated at about 25%. Following the increasing awareness of the association between tobacco smoking and adverse health outcomes, many anti-smoking and tobacco control strategies have been initiated across the developed world including Australia. Initiatives such as telephone quit help lines; increased access to nicotine supplements, public education and awareness campaigns (including warnings on packaging); restricting access to tobacco by minors; restricting smoking in public spaces such as hospitals, public transport, workplaces and more recently restaurants and clubs; reducing the availability of tobacco; increasing the cost of tobacco through taxation; and banning the advertising and promotion of tobacco are just some examples. In recent years, these collective efforts have begun to demonstrate some success with declines in rates of tobacco smoking (Glantz et al., 1996). Some developed and less-developed countries (e.g. Australia, Brazil, Canada, South Africa, and Sweden) have reduced the prevalence of smoking to 20% or lower due to the implementation of effective policies (Frieden & Bloomberg, 2007). Unfortunately for some developing countries, particularly China and countries in Southeast Asia, Latin America, and Africa, patterns in tobacco consumption are increasing (Shafey, Dolwick, & Guindon, 2003).

CATI SURVEY INDICATORS FOR TOBACCO SMOKING

CATI-Qld and CATI-Chronic respondents were asked how frequently they smoked tobacco products (cigarettes, cigars, pipes or other), with response categories of daily, at least weekly, less often than weekly, not at all, or don't know/refused to answer. The categories of daily, at least weekly, and less often than weekly were collapsed to provide a dichotomous variable of current smoking (yes/no) as the primary indicator for this section of the report. The smoking indicator is based on items used in the 2004 National Drug Strategy Household Survey (NDSHS) (AIHW, 2007).

2.1.1 EXISTING STATE AND NATIONAL DATA

National Health Survey (NHS) data for 2004-05 showed that almost 1 in 4 Australian adults smoke, 90% of whom smoked daily (ABS, 2006). Comparison to previous NHS data indicates the prevalence of smoking has remained almost constant for the 10-year period between 1995 and 2005 (Table 1). Historical data from the NDSHS provides a different assessment of smoking trends in Australia. NDSHS data shows a 24% decline in smoking rates over the same period examined by the NHS (AIHW, 2007). Some of the discrepancy between the two datasets might be explained by differences between the surveys and changes in each survey across time (e.g. ages included, response rates, wording of questions, and data collection methods) (AIHW, 2003b).

Table 1. Prevalence of current smoking, Australia, 1995-2004-05

Data Source	1995	1998	2001	2004-05
National Health Survey†	23.3	-	24.2	23.3
National Drug Strategy Household Survey‡	27.2	24.9	23.1	20.6

Data extracted from National Health Survey (ABS, 2006) and National Drug Strategy Household Survey (AIHW, 2007)
† 18 years and over; current daily smokers and other current smokers
‡ 14 years and over; daily smokers, weekly smokers, and less than weekly smokers

The Queensland prevalence of smoking was above the national average, according to the most recent data from both the National Drug Strategy Household Survey 2004 (AIHW, 2005b) and the National Health Survey 2004-05 (ABS, 2006) (Table 2). The Northern Territory and Tasmania had the highest proportion of current smokers.

Table 2. Prevalence of current smoking, States and Territories, 2004-05

State/Territory	National Health Survey 2004-05	National Drug Strategy Household Survey 2004
Northern Territory	-	30.9
Tasmania	25.4	24.1
Queensland	24.6	22.7
Victoria	23.3	21.7
Australia	23.3	20.6
South Australia	22.5	19.1
New South Wales	22.4	19.7
Western Australia	21.6	19.1
Australian Capital Territory	17.6	20.6

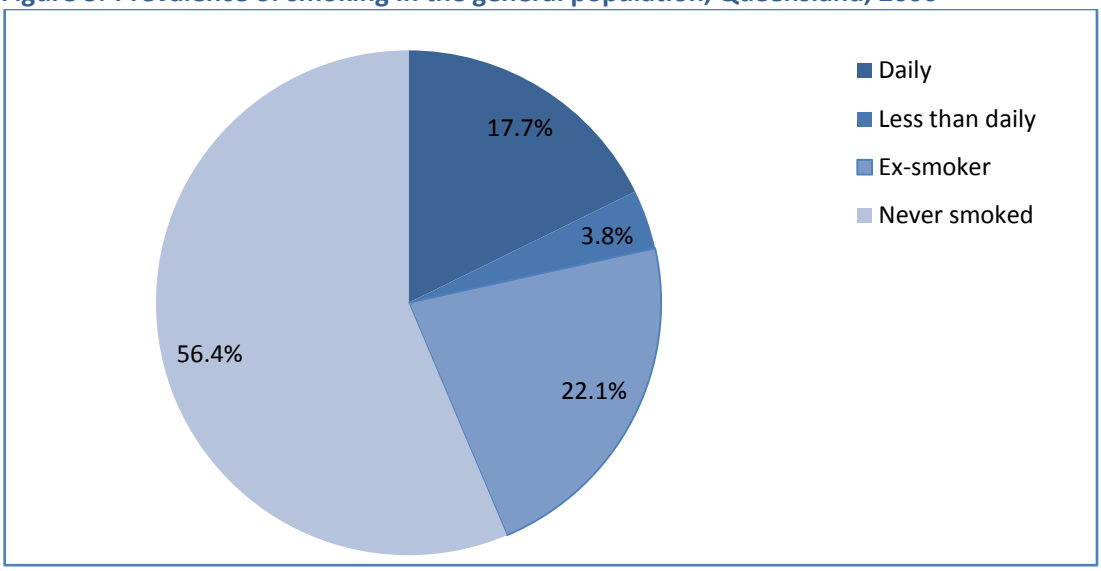
Data extracted from National Health Survey 2004-05 (ABS, 2006) and National Drug Strategy Household Survey 2004 (AIHW, 2005b)

2.1.2 CATI-QLD: SMOKING IN THE GENERAL POPULATION

Approximately 1 in 5 Queenslanders (21.5%) were current smokers according to data from the CATI-Qld 2006 (Figure 3). This included 17.7% of the population who smoked daily and an additional 3.8% of the population who smoked less than daily. A further 22.1% of those surveyed reported being ex-smokers (smoked at least 100 cigarettes in the past but were not currently smoking). The remaining respondents reported never smoking. The baseline

general population smoking rate derived from the CATI-Qld (21.5% all persons) was consistent with recent estimates provided by the National Health Survey (23.3% all persons) (ABS, 2006) and the National Drug Strategy Household Survey (20.6% all persons) (AIHW, 2005a).

Figure 3. Prevalence of smoking in the general population, Queensland, 2006



Source: CATI-Qld (2006)

Table 3 presents the prevalence of current smoking in the general population, with a breakdown by gender, age group, and PBI region. The data is derived from the CATI-Qld 2006.

Smoking was more prevalent among males than females. Almost 1 in 4 males (23.5%) reported being current smokers, compared to around 1 in 5 females (19.8%).

The prevalence of smoking decreased with age. Almost 1 in 3 young people (18-29 years) smoked, versus around 1 in 4 middle-aged people (30-39, 40-49, and 50-59 years), and around 1 in 10 older people (60+ years).

Rates of current smoking in the three PBI regions ranged from 19.9% in Logan-Beaudesert to 25.2% in North Lakes.

Table 3. Prevalence of current smoking, by sex, age group, and PBI region, Queensland, 2006

	%	n	95% CI
Sex			
Males	23.5	233	19.6-27.4
Females	19.8	274	16.6-23.1
Persons	21.6	507	19.0-24.0
Age group			
18-29	29.8	99	22.6-37.0
30-39	22.6	120	17.2-28.0
40-49	25.3	133	19.9-30.6
50-59	23.0	104	17.3-28.7
60+	8.2	51	5.0-11.3
PBI region			
North Lakes	25.2	114	19.3-31.1
Innisfail	21.8	41	13.6-30.1
Logan-Beaudesert	19.9	125	15.2-24.7
Rest of Queensland	20.7	227	17.0-24.5

Source: CATI-Qld (2006)

2.1.3 CATI-CHRONIC: SMOKING AMONG PEOPLE WITH A CHRONIC DISEASE

Around 1 in 5 people with an in-scope chronic disease (asthma, diabetes/HBS, or cardiovascular disease) were current smokers at the time of the CATI-Chronic 2006 (Figure 4). That included 18.4% of people with a chronic disease who were daily smokers and a further 4.0% of people who smoked less than daily. A comparison of CATI-Chronic and CATI-Qld data shows that the prevalence of smoking among people with a chronic disease (22.4%) was similar to the prevalence in the general population (21.5%). However, people with chronic disease were more likely to have been ex-smokers (29.4%) than the general population (22.1%).

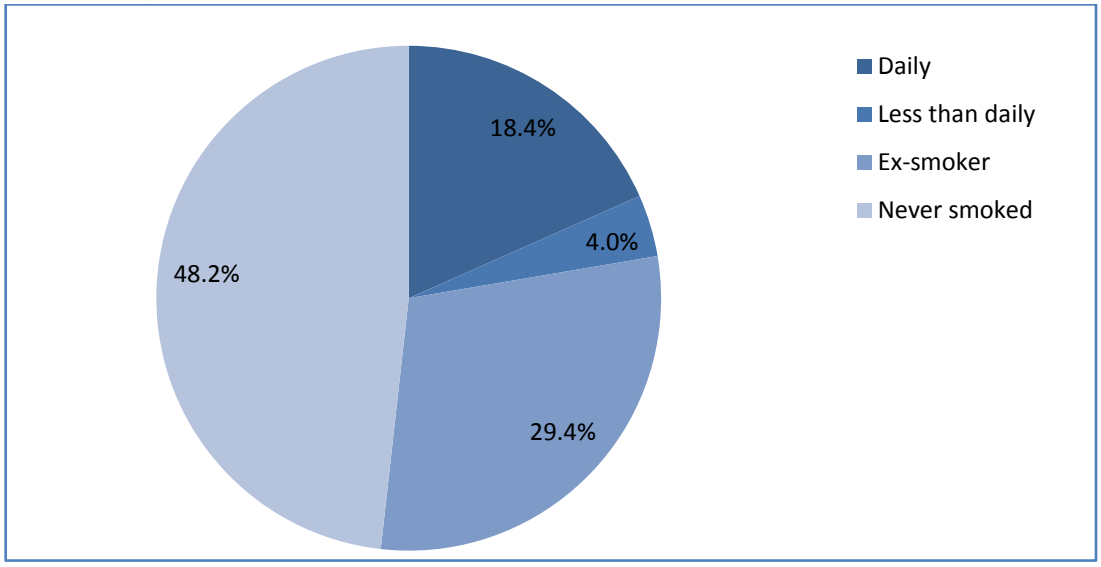
Table 4 presents the prevalence of smoking (daily and less than daily), with a breakdown by gender, type of disease, and PBI region. The data are derived from the CATI-Chronic 2006.

The prevalence of smoking was higher among males with a chronic disease (25.2%) than among females with a chronic disease (19.6%). The gender differences were similar to gender differences observed in the general population (Table 4).

The prevalence of smoking ranged from 19.3% of people with diabetes to 23.1% of people with cardiovascular disease.

The reported prevalences of smoking in Logan-Beaudesert (27.3%) and Innisfail (28.6%) were higher than the prevalences reported in North Lakes (21.5%) or for the rest of Queensland (22.0%).

Figure 4. Prevalence of smoking among people with a chronic disease, Queensland, 2006



Source: CATI-Chronic (2006)

Table 4. Prevalence of current smoking among people with chronic disease, by sex, disease, and PBI region, Queensland, 2006

	%	n	95% CI
Sex			
Males	25.2	176	18.7-31.7
Females	19.6	183	15.1-24.1
Persons	22.3	359	18.5-26.2
Disease			
Asthma	22.6	168	17.5-27.7
Diabetes/HBS	19.3	107	12.2-26.3
Cardiovascular	23.1	84	12.0-34.3
PBI region			
North Lakes	21.5	79	12.6-30.4
Innisfail	28.6	28	12.8-44.4
Logan-Beaudesert	27.3	125	20.4-34.3
Rest of Queensland	22.0	127	17.7-26.3

Source: CATI-Chronic (2006)

2.2 ALCOHOL CONSUMPTION

Excessive consumption of alcohol contributes to physical, familial and social problems (Burge & Schneider, 1999) and is harmful to long-term health (NHMRC, 2001; Sesso, 2001; WHO, 2004). Although some recent research studies have suggested that alcohol in moderate amounts may be beneficial to health (Klatsky, 2001; Mukamal, 2001a, 2001b), it has the potential to cause much harm and is second only to tobacco as a preventable cause of drug-related morbidity and mortality in the Australian population. The net harm associated with alcohol use is estimated at around 2.1% of the total burden of diseases in 2003, according to the *Health of Queenslanders* report (Queensland Health, 2006). People who drink regularly at high levels place themselves at increased risk of chronic ill health and premature death,

while episodic heavy drinking places the drinker and others at risk of injury or death. These patterns of drinking also have substantial social and economic implications, not only for individuals, but also for families, workplaces and society as a whole (NHMRC, 2001).

GUIDELINES

According to the *2001 Australian Alcohol Guidelines*, males should drink no more than 28 standard drinks per week and females no more than 14 standard drinks per week to minimise long-term alcohol-related risks (NHMRC, 2001). This equates to 4 standard drinks per day for males and 2 standard drinks per day for females. The guidelines also recommended that males should consume no more than 6 drinks in any one day, and females no more than 4 drinks in any one day and that both males and females should have one or two alcohol free days per week. The Australian Alcohol Guidelines (NHMRC, 2001) classify alcohol consumption into 'low risk', 'risky', and 'high risk' in the long-term, based on the total number of standard drinks consumed per week (Table 5).

Table 5. Patterns of alcohol consumption and risk levels (long-term)

	Standard drinking per week	
	Males	Females
Low Risk drinking	Up to 28	Up to 14
Risky drinking	29 to 42	15 to 28
High risk drinking	43 or more	29 or more

Adapted from Australian Alcohol Guidelines (NHMRC, 2001)

New alcohol consumption guidelines have been developed and are currently open for public consultation. The new guidelines are expected to be endorsed by the NHMRC in early 2008. The revised guidelines have been simplified and will likely recommend that both males and females consume no more than 2 standard drinks per day. To aid comparison with existing data, this report presents data on alcohol consumption according to the current 2001 Australian Alcohol Guidelines.

CATI SURVEY INDICATORS FOR ALCOHOL CONSUMPTION

The CATI-Qld and CATI-Chronic used the frequency-quantity method to assess alcohol consumption. Respondents were asked how frequently they usually drank alcohol, to which they could respond with a specific number of days, every day, or don't know/refused to answer. Respondents were also asked how many standard drinks they usually had on a day that they drank, to which they could respond with a numeric answer or don't know/refused to answer.

These items were used to derive two main indicators of alcohol consumption. The first indicator is the dichotomous variable of daily drinking (yes/no). The second indicator is risky/high risk drinking (yes/no) which is calculated based on the Australian Alcohol Guidelines (NHMRC, 2001) and combining the two risk categories.

COMPARISON OF RISKY/HIGH RISK DRINKING BETWEEN DATA SOURCES

The prevalence of risky and high risk alcohol consumption has been estimated in the CATI surveys, the NHS, and recent collections of the NDSHS. However, the different data sources are not directly comparable as they use different methodologies. There are differences between the surveys in terms of sample characteristics (e.g. size, composition, and response rate), surveying methods (e.g. telephone interview, face-to-face interview, mail survey), and alcohol consumption assessment methods. In terms of alcohol consumption assessment methods, the CATI surveys use the frequency-quantity method to assess usual alcohol consumption patterns as described above, the NDSHS uses a graduated frequency method to assess the usual frequency of consuming different amounts of alcohol, and the NHS uses a diary method to assess alcohol consumption in the week prior to survey. The frequency-quantity method used in the CATI surveys is a relatively conservative estimate of high risk alcohol consumption (Rehm et al., 1999). Due to these methodological differences, direct comparisons should only be made within each data source across time.

2.2.1 EXISTING STATE AND NATIONAL DATA

The NDSHS provides estimates of alcohol consumption frequency (AIHW, 2005a, 2007). Data from surveys between 1995 and 2004 show that the frequency of alcohol consumption in the Australian general population has remained relatively stable over the last decade (AIHW, 2007) (Table 6). The most recent data showed that 83.6% of Australians aged 14 and over consumed alcohol, but less than 10% drank daily.

Table 6. Prevalence of drinking, by frequency, Australia, 1995-2004

Frequency	1995	1998	2001	2004
Daily	8.8%	8.5 %	8.3%	8.9%
Weekly	35.2%	40.1%	39.5%	41.2%
Less than weekly	34.3%	31.9%	34.6%	33.5%
Ex-drinker	9.5%	10.0%	8.0%	7.1%
Never drank	12.2%	9.4%	9.6%	9.3%

Data extracted from National Drug Strategy Household Survey (AIHW, 2007)

The NHS provides historical data on the prevalence of 'risky' and 'high risk' drinking, as defined by the Australian Alcohol Guidelines (NHMRC, 2001) (Table 7). NHS data from the 2004-05 collection showed that approximately 1 in 7 Australians (13.8%) drank at risky or high risk levels, up from around 1 in 12 (8.2%) a decade prior (ABS, 2006). The increase in the rate of risky and high risk alcohol consumption has been more rapid among females than among males.

Table 7. Prevalence of risky/high risk drinking†, by sex, Australia, 1995-2004-05

Sex	1995	2001	2004-05
Males	10.3	13.1	15.2
Females	6.2	8.5	11.7
Persons	8.2	10.8	13.8

Data extracted from National Health Survey (ABS, 2006)

† Average daily consumption in the seven days prior to interview was greater than 50mL for males and greater than 25mL for females. One standard drink is equivalent to 12.5mL

Together, the NDSHS and NHS data suggest that while the frequency of alcohol consumption has changed little in the Australian population over the last decade, more people are engaged in risky patterns of alcohol consumption (e.g. consuming higher quantities).

The NDSHS survey has also recently commenced measuring and reporting rates of risky and high risk alcohol consumption, according to the Australian Alcohol Guidelines (NHMRC, 2001). The most recent data released for the NHS and NDSHS both allow a comparison of the rates of risky and high risk drinking according to State and Territory (Table 8). While the prevalence estimates differ considerably between the surveys and are not comparable, they provide a similar profile of the pattern within States and Territories. Both surveys place Queensland above the national average in terms of the prevalence of risky and high risk drinking. The Northern Territory and Western Australia are shown to have the highest rates.

Table 8. Prevalence of risky and high risk drinking, States and Territories, 2004/2005

State/Territory	National Health Survey 2004-05	National Drug Strategy Household Survey 2004
Northern Territory	-	17.1
Western Australia	16.4	11.4
South Australia	14.5	10.0
Queensland	14.3	11.2
Australian Capital Territory	14.3	8.9
Australia	13.8	9.9
New South Wales	13.0	9.3
Victoria	12.1	8.7
Tasmania	11.4	9.7

Data extracted from National Health Survey (ABS, 2006) and National Drug Strategy Household Survey (AIHW, 2005b)

2.2.2 CATI-QLD: ALCOHOL CONSUMPTION IN THE GENERAL POPULATION

Data from the CATI-Qld 2006 showed that around 8 in 10 adult Queenslanders consumed alcohol (81.9%) (Figure 5). The majority of people drank weekly or less often (64.6%). Alcohol was consumed daily by 17.3% of the Queensland adult population. Around 5% of adult Queenslanders were found to be drinking at risky or high risk levels according to the Australian Alcohol Guidelines (NHMRC, 2001) (Figure 6).

Figure 5. Frequency of alcohol consumption in the general population, Queensland, 2006

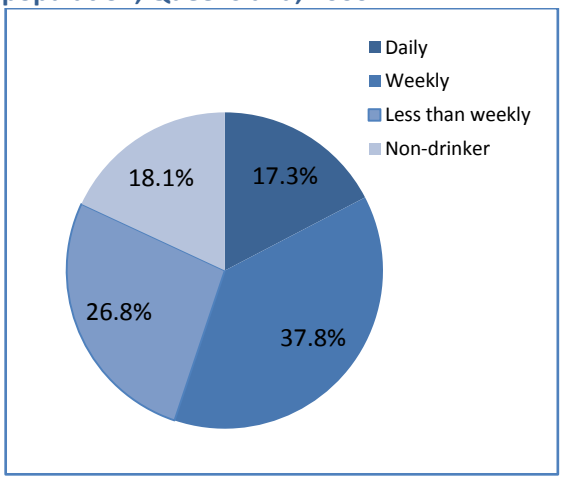
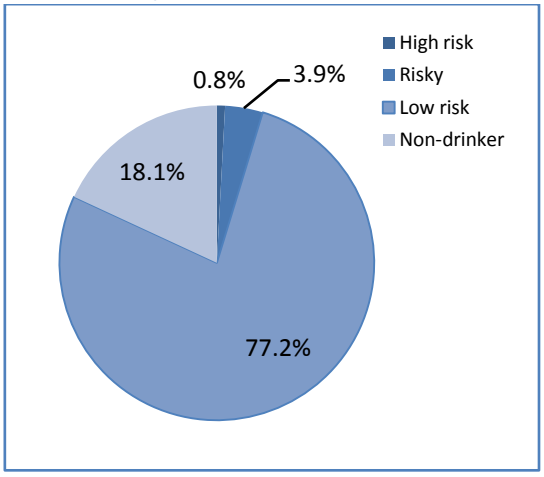


Figure 6. Risky/high risk drinking† in the general population, Queensland, 2006



Source: CATI-Qld (2006)
† According to Australian Alcohol Guidelines (NHMRC, 2001)

Table 9 presents the prevalence of daily drinking and risky/high risk drinking in the Queensland general population, with a breakdown by gender, age group, and PBI region. The data is derived from the CATI-Qld 2006.

Males were more likely to consume alcohol every day (23.4%) compared to females (12.1%). However, males and females were equally likely to be engaged in risky or high risk drinking patterns (4.6% and 4.4% respectively).

The prevalence of daily drinking increased with age, from 5.8% of young people (18-29 years) to 28.2% of older people (60+ years). While there was variation in the rates of risky and high risk drinking, the small number of observations may be responsible for this variation and further statistical testing is required to determine if differences exist.

There were variations in the rates of daily and risky/high risk drinking across the PBI regions but additional statistical testing is required to establish if these are reliable differences.

Table 9. Prevalence of daily and risky/high risk† alcohol consumption, by sex, age group, and PBI region, Queensland, 2006

	Daily Drinking		Risky/High Risk Drinking†	
	%	n, 95% CI	%	n, 95% CI
Gender				
Males	23.4	213, 19.4-27.4	4.6	51, 2.8-6.5
Females	12.1	145, 9.7-14.6	4.4	57, 2.9-5.9
Persons	17.3	358, 15.0-19.7	4.7	108, 3.4-6.0
Age group				
18-29	5.8	18, 2.2-9.43	5.5	19, 1.8-9.3
30-39	10.2	40, 6.1-14.3	3.5	19, 1.3-5.8
40-49	21.2	85, 16.1-26.4	7.2	33, 4.1-10.2
50-59	22.5	100, 17.1-28.1	5.3	24, 2.4-8.2
60+	28.2	115, 22.2-34.3	2.4	13, 0.6-4.3
PBI region				
North Lakes	16.7	82, 11.6-21.7	4.8	27, 1.9-7.8
Innisfail	13.8	33, 7.8-19.7	4.6	10, 0.8-8.5
Logan-Beaudesert	15.6	69, 11.1-20.1	3.7	20, 1.5-5.8
Rest of Queensland	19.1	174, 15.5-22.8	5.5	51, 3.4-7.8

Source: CATI-Qld (2006)
† More than 28 standard drinks per week for males and more than 14 standard drinks per week for females

2.2.3 CATI-CHRONIC: ALCOHOL CONSUMPTION AMONG PEOPLE WITH A CHRONIC DISEASE

Around 7 in 10 Queenslanders with chronic disease (asthma, diabetes/HBS, or cardiovascular disease) consumed alcohol at the time of the CATI-Chronic 2006 (72.1%) (Figure 7), which included 11.3% of people who drank daily, 33.9% who drank weekly, and 26.9% who drank less often than weekly. Around 4% of people with a chronic disease drank at risky/high risk levels (Figure 8).

A comparison of CATI-Chronic and CATI-Qld data shows that the overall proportion of people who drank was slightly higher among the general population sample (81.9%) than the chronic disease sample (72.1%). The proportion of daily drinkers was also higher in the general population (17.3%) compared to those with a chronic disease (11.3%). The proportion of risky/high risk drinkers was similar between the two samples (4.7% and 3.9% respectively).

Figure 7. Frequency of alcohol consumption among people with a chronic disease, Queensland, 2006

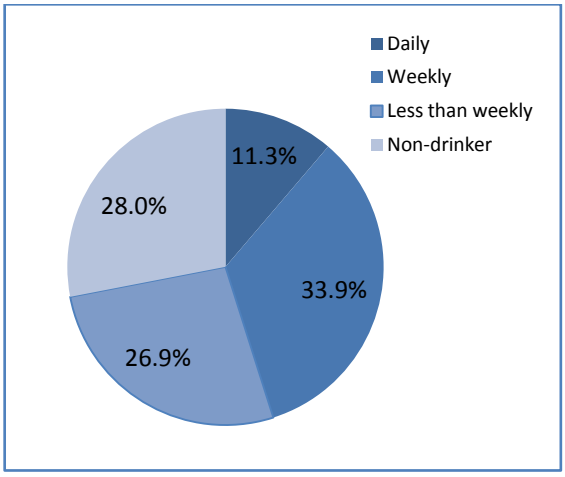
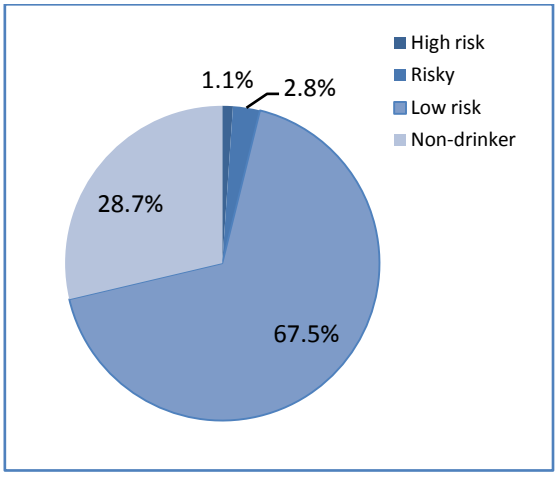


Figure 8. Risky/high risk drinking† among people with a chronic disease, Queensland, 2006



Source: CATI-Chronic (2006)
† According to Australian Alcohol Guidelines (NHMRC, 2001)

Table 10 presents the prevalence of daily drinking and risky/high risk drinking among people with a chronic disease, with a breakdown by gender, type of disease, and PBI region. The data is derived from the CATI-Chronic 2006.

Males were more likely to consume alcohol every day (14.9%) than were females (8.5%). The proportion of males drinking at risky or high risk levels (6.5%) was also higher than the proportion of females (2.6%).

The prevalence of daily drinking was consistent across the chronic diseases, at around 10%. The prevalence of risky/high risk drinking ranged from 2.6% of people with a cardiovascular condition to 4.4% of people with diabetes/HBS, however, these figures are based on small numbers and may not be reliable.

Daily drinking was highest among people with a chronic disease who lived in Innisfail (17.1%) and lowest in people with a chronic disease who lived in North Lakes (6.5%). There are variations in the rates of risky/high risk drinking. Again, these figures are based on small numbers and may not be reliable.

Table 10. Prevalence of daily and risky/high risk† alcohol consumption among people with chronic disease, by sex, disease, and PBI region, Queensland, 2006

	Daily Drinking		Risky/High Risk Drinking†	
	%	n, 95% CI	%	n, 95% CI
Gender				
Males	14.9	222, 10.9-18.9	6.5	41, 2.0-10.9
Females	8.5	107, 5.6-11.3	2.6	31, 0.9-4.3
Persons	11.3	329, 8.9-13.6	3.9	72, 2.3-5.5
Disease				
Asthma	10.0	87, 6.9-13.2	3.6	35, 1.8-5.3
Diabetes/HBS	10.4	93, 5.8-14.9	4.4	24, 0.5-8.4
Cardiovascular	10.0	149, 5.3-14.7	2.6	13, -0.4-5.6
PBI region				
North Lakes	6.5	66, 3.5-9.5	2.7	14, 0.8-4.5
Innisfail	17.1	49, 9.8-24.4	6.5	11, 1.8-11.1
Logan-Beaudesert	9.6	68, 5.7-13.6	7.3	18, 1.9-12.7
Rest of Queensland	11.5	146, 8.9-14.0	3.5	29, 1.8-5.3

Source: CATI-Qld (2006)

† More than 28 standard drinks per week for males and more than 14 standard drinks per week for females

2.3 NUTRITION

Having a healthy diet is critically important for overall health (Mann, 2002). Diet is a key factor affecting an individual's weight and predisposition for adverse health outcomes (Darnton-Hill, Nishida, & James, 2004) including type 2 diabetes (Steyn et al., 2004), hypertension and cardiovascular disease (Srinath Reddy & Katan, 2004), and some cancers (Key et al., 2004). It has been estimated that insufficient fruit and vegetable consumption was responsible for 1.2% of the burden of disease and injury in Queensland in 2003: 1.6% for males and 0.8% for females (Queensland Health, 2006).

Ideally, a healthy diet should be low in fat (especially saturated fat), salt, and sugar and contain adequate quantities of fruit and vegetables and cereal foods such as wholegrain bread, pasta, noodles and rice that are known to confer protection against chronic diseases (Contento et al., 1995; de Lorgeril et al., 1999; Mann, 2002; NHMRC, 2003; Roe, Hunt, Bradshaw, & Rayner, 1997).

Addressing poor nutrition is a significant component of the *Strategy.* In the last decade, State, Territory and the Federal Governments have also been addressing this problem with a number of campaigns where healthy eating is promoted: *Go for 2 Fruit and 5 Veg*; *Healthy Active Ambassador Program*; National Children's Nutrition and Physical Activity; Healthy Weight website; *Active After-School* Communities program and the Active School Curriculum.

GUIDELINES

According to the *Dietary Guidelines for Australian Adults*, an adult should consume at least 2 serves of fruit and 5 serves of vegetables per day (NHMRC, 2003). Choosing foods that are low in fat, particularly saturated fat is recommended for a healthy life style. For example, consumption of low fat milk rather than full cream milk is encouraged, especially for people who are overweight, obese or morbidly obese.

CATI SURVEY INDICATORS FOR NUTRITION

Fruit, vegetable, and milk consumption was measured in both CATI surveys. Respondents were asked how many serves of fruit and vegetables (including fresh, dried, frozen and tinned) they usually eat each day. A serve of fruit was described as 1 medium piece, or 2 small pieces, or 1 cup of diced pieces of fruit; a serve of vegetables was described as half a cup of vegetables or 1 cup of salad vegetables. Fruit and vegetable juices were not included. Some care should be taken when interpreting the data concerning fruit and vegetable consumption due to difficulties the respondents might have had when estimating the quantities consumed. Respondents were also asked what type of milk they usually used. The type of milk usually consumed can be used as a proxy to estimate the fat content in a person's diet (ABS, 2006; NHMRC, 2003; Roe et al., 1997).

The items in the surveys were used to yield three indicators of less than optimal nutrition according to the *Dietary Guidelines for Australian Adults* (NHMRC, 2003). These indicators were "under-consumption of fruit" (yes/no) indicating less than 2 serves per day**, "**under-consumption of vegetables" (yes/no) indicating less than 5 serves per day. Difficulties have arisen in the analysis of milk consumption in the initial CATI surveys. This indicator will be reported in future reports.

2.3.1 EXISTING STATE AND NATIONAL DATA

Data from the *Queensland Health Omnibus* survey 2003 showed that around 50% of Queenslanders ate less than the recommended 2 serves of fruit per day, and around 90% ate less than the recommended 5 serves of vegetables per day (Queensland Health, 2006).

The NHS 2004-05 (ABS, 2006) showed that most Australians did not meet recommendations on the consumption of fruit and vegetables outlined in the *Dietary Guidelines for Australian Adults* (NHMRC, 2003). One in 2 adult Australians did not eat the recommended 2 serves of fruit per day (46.0%), and almost 9 in 10 did not eat the recommended 5 serves of vegetables per day (85.6%) (Table 11). There was little differentiation in under-consumption of fruit and vegetables across the States and Territories.

Table 11. Consumption of fruit and vegetables, States and Territories, 2004/2005

State/Territory	% consuming < 2 serves of fruit/day	% consuming < 5 serves of vegetables/day
South Australia	50.0	87.9
Queensland	47.3	84.7
Australian Capital Territory	46.5	89.7
Tasmania	46.3	79.4
Australia	46.0	85.6
New South Wales	46.0	88.1
Western Australia	44.6	80.3
Victoria	44.0	84.7

Data extracted from National Health Survey (ABS, 2006)

There are no reliable national data sources providing data on nutritional trends in the Australian population.

2.3.2 CATI-QLD: NUTRITION IN THE GENERAL POPULATION

According to the CATI-Qld 2006, the majority of Queenslanders consumed 1 or fewer serves of fruit a day (include those who reported none) (51.3%) and 2-4 serves of vegetables per day (65.3%) (Figure 9 and Figure 10). A small proportion of the population reported no daily fruit consumption (5.8%) and a smaller proportion reported no daily vegetable consumption (1.1%). These data indicate that 51.3% of the general population under-consumed fruit (less than 2 serves per day) and 88.8% under-consumed vegetables (less than 5 serves per day). Nearly half (43.7%) of the Queensland population reported both insufficient fruit and vegetable consumption. These figures are consistent with recent data from the National Health Survey (ABS, 2006) and the Queensland Health Omnibus survey 2003 (Queensland Health, 2006).

Figure 9. Daily fruit consumption in the general population, Queensland, 2006

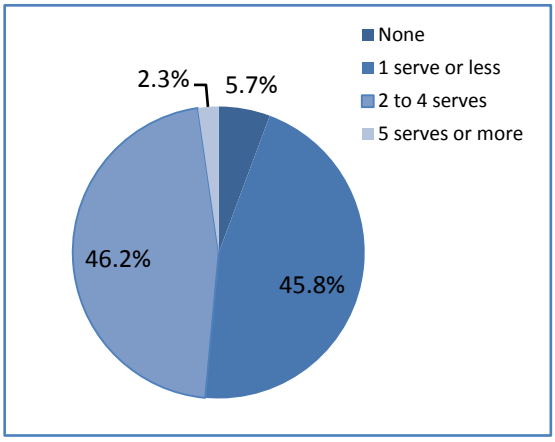
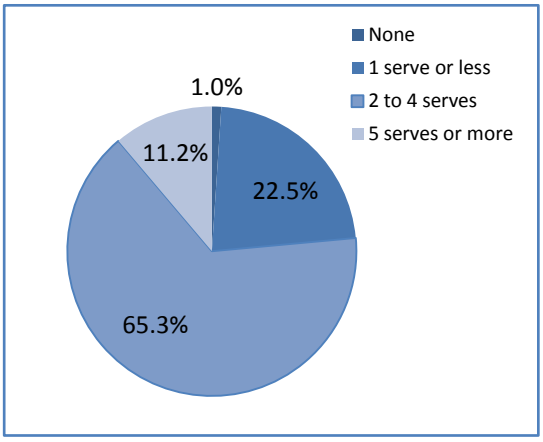


Figure 10. Daily vegetable consumption in the general population, Queensland, 2006



Source: CATI-Qld (2006)

Table 12 presents the prevalence of under-consumption of fruit and vegetables in the Queensland general population, with a breakdown by gender, age group, and PBI region. Males were more likely than females to under-consume fruit (58.5% vs. 46.1%) but not vegetables (91.5% vs. 86.1%).

There was a slight trend toward decreased under-consumption of fruit with age, ranging from 56.7% among young people (18-29 years) to 43.5% among older people (60+ years). There were no apparent age-related differences in vegetable under-consumption.

Fruit under-consumption ranged from 43.9% of people in Innisfail to 53.9% of people in North Lakes. The three PBI regions reported similar rates of vegetable under-consumption and all three were similar to the rest of Queensland.

Table 12. Under-consumption of fruit and vegetables†, by sex, age group, and PBI region, Queensland, 2006

	Under consumption of fruit (<2 serves/day)		Under consumption of vegetables (<5 serves/day)	
	%	n, 95% CI	%	n, 95% CI
Gender				
Males	58.5	539, 53.8-63.2	91.5	841, 88.7-94.2
Females	46.1	586, 42.0-50.3	86.1	1109, 83.2-88.9
Persons	51.5	1125, 48.4-54.6	88.8	1950, 86.9-90.8
Age group				
18-29	56.7	183, 48.6-64.9	92.4	277, 87.9-96.9
30-39	54.2	239, 47.4-61.0	89.2	378, 85.0-93.5
40-49	56.5	262, 50.3-62.7	86.1	419, 81.5-90.7
50-59	45.7	214, 39.0-52.4	86.5	395, 81.8-91.1
60+	43.5	227, 37.3-49.8	89.0	481, 85.2-92.7
PBI region				
North Lakes	53.9	258, 47.2-60.6	88.4	429, 84.0-92.9
Innisfail	43.9	93, 34.2-53.6	89.1	178, 83.5-94.8
Logan-Beaudesert	47.9	250, 41.6-54.2	92.3	452, 89.2-95.4
Rest of Queensland	52.1	524, 47.3-56.9	86.4	891, 83.0-89.8

Source: CATI-Qld (2006)
†According to Dietary Guidelines for Australian Adults (NHMRC, 2003)

2.3.3 CATI-CHRONIC: NUTRITION AMONG PEOPLE WITH A CHRONIC DISEASE

The CATI-Chronic data showed the majority of people with chronic disease consumed 2-4 serves of fruit and 2-4 serves of vegetables per day (Figure 11 and Figure 12). Only 1.8% of people with chronic disease reported no daily fruit consumption and only 0.6% reported no daily vegetable consumption. The CATI-Chronic sample was just as likely to under-consume fruit and vegetables (48.3% and 89.3% respectively) as the CATI-Qld sample (51.5% and 88.6%, respectively).

Figure 11. Daily fruit consumption among people with chronic disease, Queensland, 2006

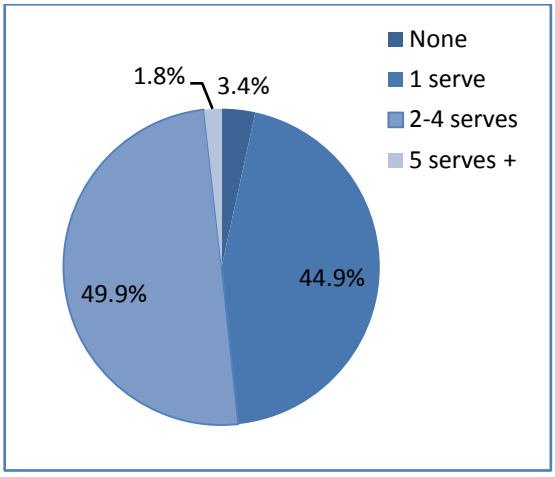
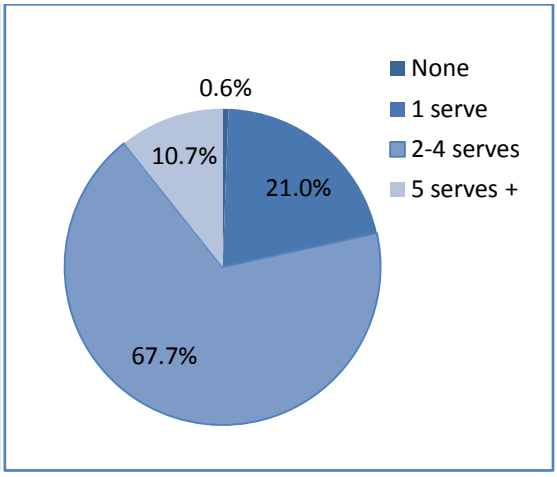


Figure 12. Daily vegetable consumption among people with chronic disease, Queensland, 2006



Source: CATI-Chronic (2006)

Table 13 presents the prevalence of under-consumption of fruit and vegetables among people with chronic disease, with a breakdown by gender, disease, and PBI region. The data is derived from the CATI-Chronic 2006.

Males were more likely than females to under-consume fruit (53.3% vs. 44.0%) but reported a similar rate of vegetable under-consumption (92.7% vs. 87.0%).

The rates of under-consumption of fruit ranged from 35.3% of people with diabetes/HBS to 53.2% of people with asthma. All disease groups showed similar rates of vegetable under-consumption.

Under-consumption of fruit did not differ between the three PBIs but PBIs all reported higher rates of fruit under-consumption than the rest of Queensland. Vegetable under-consumption was similar across the PBI regions and the rest of Queensland.

Table 13. Under-consumption of fruit and vegetables† among people with chronic disease, by sex, disease, and PBI region, Queensland, 2006

	Under consumption of fruit (<2 serves/day)		Under consumption of vegetables (<5 serves/day)	
	%	n, 95% CI	%	n, 95% CI
Gender				
Males	53.3	491, 46.2-60.4	92.7	882, 89.7-95.8
Females	44.0	462, 38.3-49.6	87.0	955, 83.5-90.6
Persons	48.3	953, 43.9-52.7	89.3	1838, 86.8-91.8
Disease				
Asthma	53.2	390, 47.6-58.9	88.4	653, 84.7-92.2
Diabetes/HBS	35.3	285, 26.3-44.4	87.9	585, 92.9-92.8
Cardiovascular	43.2	278, 29.9-56.4	92.1	600, 86.0-98.2
PBI region				
North Lakes	60.2	241, 51.3-69.1	85.5	452, 76.5-94.5
Innisfail	58.3	91, 45.8-70.8	82.5	168, 73.0-92.1
Logan-Beaudesert	58.5	263, 51.0-66.0	89.5	457, 85.7-93.3
Rest of Queensland	47.2	358, 42.3-52.0	89.3	761, 86.5-92.1

Source: CATI-Chronic (2006)
†According to Dietary Guidelines for Australian Adults (NHMRC, 2003)

2.4 PHYSICAL ACTIVITY

There is an association between physical activity and risk for 6 of the 7 Australian National Health Priority Areas - cardiovascular disease; diabetes; cancer; mental health; arthritis and musculoskeletal health; and injury (Armstrong, Bauman, & Davies, 2000). People who lead sedentary lifestyles are considered to be at increased risk of poor health because of their inactivity (AIHW, 2003a). Physical inactivity is also a significant contributor to weight gain (King, Rejeski, & Buchner, 1998; Ross, Freeman, & Janssen, 2000). A simplified model of weight regulation shows that weight gain may result when there is inadequate physical activity (energy expenditure) to balance food consumption (energy intake) (AIHW, 2003a; Armstrong et al., 2000; Bauman, Bellew, Vita, Brown, & Owen, 2002).

Regular physical activities may help to prevent and manage chronic disease and may improve mental health and well-being as well as social interactions (Bauman et al., 2002; Key et al., 2004; Oguma & Shindo-Tagawa, 2004). As it recognises the importance of physical activity in maintaining good health, the *Strategy* emphasises the need for Queenslanders to participate in more active lifestyles.

GUIDELINES

National Physical Activity Guidelines for Australians encourages adults to be physically active for a minimum of 30 minutes at least 5 days a week with a total of at least 150 minutes of activity per week (AIHW, 2003a; DHAC, 1999). The activity should be carried out for at least 10 minutes at one time without stopping and it should be of at least moderate intensity.

CATI SURVEY INDICATORS FOR PHYSICAL ACTIVITY

The main indicator of physical activity for this report is "sedentary/insufficiently active lifestyle" (yes/no) as defined in the Active Australia Survey and using the calculations described below.

The two CATI surveys measured physical activity using a series of questions and formulas developed for the *Active Australia Survey* (AIHW, 2003a). These questions asked the number of sessions (of greater than 10 minutes) and the total duration of different physical activities undertaken in an average week. The types of physical activities measured included walking, garden and yard work, moderate physical activities (excluding household chores and gardening), and vigorous physical activity (excluding household chores and gardening).

The number of sessions and total duration of physical activity were used to classify each respondent's physical activity level into one of three categories: sedentary, insufficiently active, and sufficiently active (Table 14). Consistent with the standard formula, gardening and heavy housework was excluded (due to concerns over the validity of self-report) and vigorous activity was weighted by two when calculating total duration of physical activity (to reflect its higher intensity and greater health benefits).

Table 14. Classification of physical activity levels based on total duration and sessions

Classification	Definition
Sedentary	No physical activity
Insufficiently active	1 to 149 minutes per week or 150 or more minutes per week but less than 5 sessions per week
Sufficiently active	150 minutes per week and 5 or more sessions per week

Adapted from Active Australia Survey (AIHW, 2003a)

This classification differs from that used in the NHS (ABS, 2006) but shares similar terms (e.g. sedentary). Some data from the NHS is presented in this report along with an explanation of the classification method used.

2.4.1 EXISTING STATE AND NATIONAL DATA

Table 15 presents data on exercise levels among adult Australians from the NHS between 1995 and 2004-05 (ABS, 2006). According to the NHS, the pattern of exercise levels in the population has remained relatively unchanged over the last decade. The most recent data shows that just over one third of Australian adults live sedentary lifestyles (i.e. less than 100 minutes of exercise per week).

Table 15. NHS estimates of exercise levels†, Australia, 1995-2004-05

Exercise level	1995	2001	2004-05
Sedentary	35.3	31.6	34.1
Low	34.5	37.8	36.3
Moderate	23.6	24.2	23.3
High	6.6	6.3	6.3

Data extracted from the National Health Survey (ABS, 2006)

† Classification: Sedentary (Less than 100 minutes exercise per week); Low (100 to less than 1600 minutes); Moderate (1600-3200 minutes or more than 3200 minutes but less than 2 hours vigorous exercise); High (More than 3200 minutes and 2 hours or more vigorous exercise)

The NHS (ABS, 2006) shows that Queensland has one of the highest rates of sedentary lifestyles in the country, although the States and Territories have generally comparable rates (Table 16).

Table 16. Prevalence of sedentary lifestyle, States and Territories, 2004/2005

State/Territory	% Sedentary lifestyle
Queensland	36.4
New South Wales	35.6
South Australia	34.6
Tasmania	34.1
Australia	34.0
Victoria	31.8
Western Australia	30.8
Australian Capital Territory	23.6
Northern Territory	-

Data extracted from National Health Survey (ABS, 2006)

The Active Australia Survey (AIHW, 2003a) examines activity levels using different indicators to the NHS (but the same as the CATI surveys). The Active Australia Survey's main classification scheme for physical activity level includes a more conservative definition of sedentary lifestyle (no activity) than the NHS definition (less than 100 minutes exercise per week), leading to smaller estimates of the rate of sedentary lifestyles. The most recent data from the Active Australia Survey indicated that 14.6% of Australians led sedentary lifestyles and an additional 40.2% were insufficiently active to maintain good health (Table 17).

Table 17. Proportion of people achieving sufficient time and sessions of physical activity†, Australia, 1999

Activity level	% of respondents
Sedentary	14.6
Insufficiently active	40.2
Sufficiently active	45.2

Data extracted from Active Australia Survey (AIHW, 2003a)

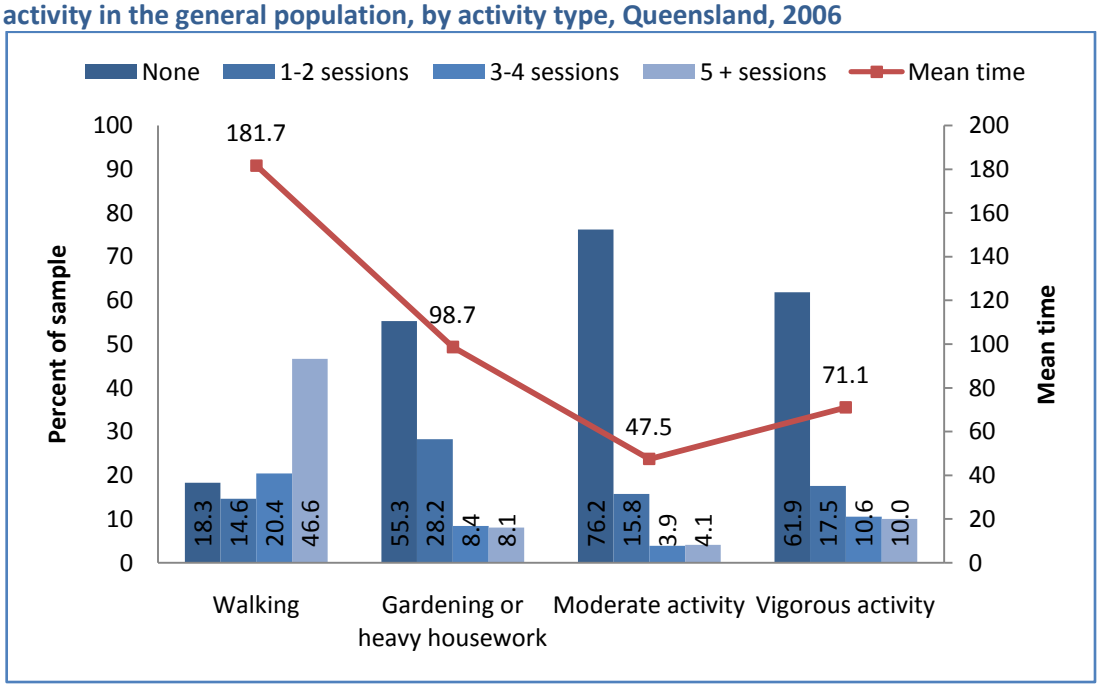
† Sedentary (0 minutes per week); insufficiently active (1 to 149 minutes per week or 150 minutes per week but less than 5 sessions per week); sufficiently active (150 or more minutes per week and 5 or more sessions per week)

The Queensland Health Omnibus Survey 2003 estimated the proportion of Queenslanders leading sedentary lifestyles to be 16.1% using the same classification scheme as the Active Australia survey (Queensland Health, 2006). Time series data did not show a clear trend in the rate of sedentary lifestyles in Queensland.

2.4.2 CATI-QLD: PHYSICAL ACTIVITY IN THE GENERAL POPULATION

The CATI-Qld 2006 survey showed that walking was the most common form of physical activity undertaken by adult Queenslanders (Figure 13). Over 80% of Queenslanders walked at least once in the week prior to the survey. The average time spent walking across the sample was 181.7 minutes (around 3 hours) over the week. Gardening, moderate activity, and vigorous activity were much less likely to be done (44.7%, 23.8%, and 38.1% of people did 1 or more sessions per week respectively) and the average time across the sample spent doing these activities was also much lower than the average time spent walking (98.7 minutes, 47.5 minutes, and 71.1 minutes respectively).

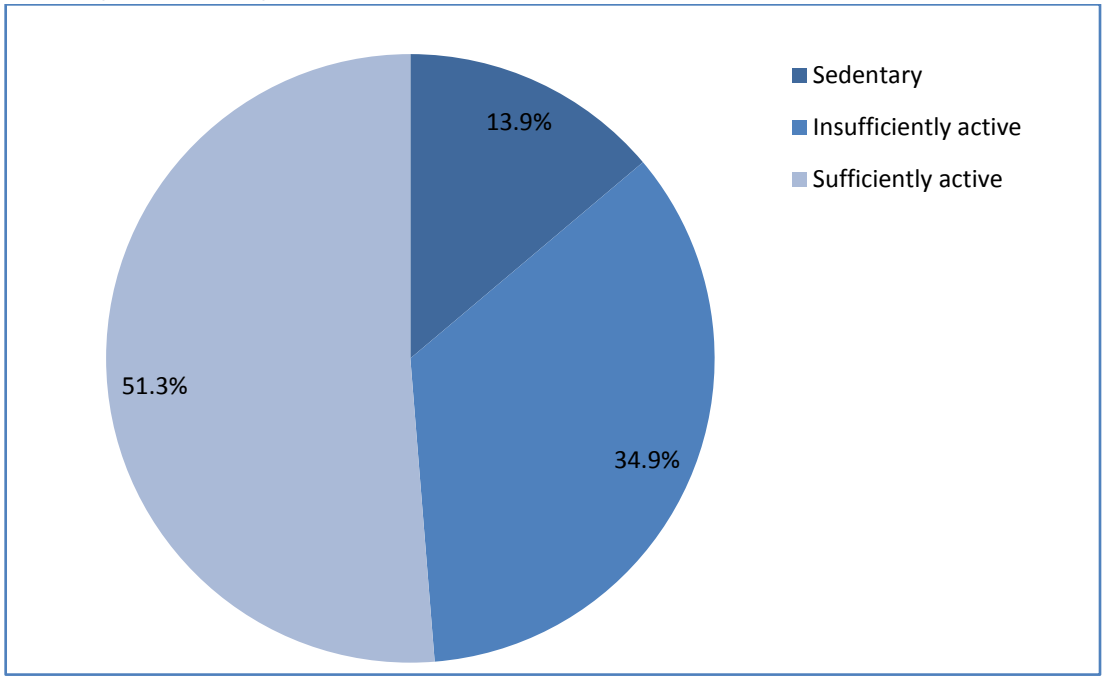
Figure 13. Number of sessions of physical activity per week and mean time spent doing activity in the general population, by activity type, Queensland, 2006



Source: CATI-Qld (2006)

Factoring in the time and sessions spent doing physical activity, the CATI-Qld 2006 showed that almost 50% of Queenslanders were not participating in enough physical activity to maintain good health (Figure 14). This included 13.9% of the Queensland population who were classified as 'sedentary' (no activity) and a further 34.9% classified as 'insufficiently active' (do some activity but less than 150 minutes or less than 5 sessions of activity per week). These figures are comparable to those provided by the Active Australia Survey (AIHW, 2003a) and the Queensland Health Omnibus Survey 2003 (Queensland Health, 2006).

Figure 14. Levels of physical activity† in the general population based on time and sessions, Queensland, 2006



Source: CATI-Qld (2006)
† Sedentary (0 minutes per week); insufficiently active (1 to 149 minutes per week or 150 minutes per week but less than 5 sessions per week); sufficiently active (150 or more minutes per week and 5 or more sessions per week)

Table 18 presents the prevalence of sedentary/insufficiently active lifestyles in the Queensland general population, with a breakdown by gender, age group, and PBI region.

Females were more likely than males to be classified as sedentary/insufficiently active (52.4% vs. 44.5%).

The prevalence of sedentary/insufficiently active lifestyles generally decreased with age. The prevalence among the youngest age group was 36.1%, increasing to between 43.3 and 51.5% in the middle age groups (30-39, 40-49, and 50-59 years), and increasing again to 61.0% in the older age group (60+ years).

The three PBI regions reported similar rates of sedentary/insufficiently active lifestyles and all three were close to the rate for the rest of Queensland.

Table 18. Sedentary or insufficiently active lifestyles based on time and sessions in the last week†, by sex, age group, and PBI region, Queensland, 2006

	%	n	95% CI
Sex			
Males	44.5	430	39.8-49.3
Females	52.4	707	48.3-56.6
Persons	48.8	1137	45.6-51.8
Age group			
18-29	36.1	113	28.4-43.9
30-39	48.8	209	42.0-55.6
40-49	51.5	247	45.2-57.8
50-59	43.3	230	38.7-52.0
60+	61.0	338	55.0-67.1
PBI region			
North Lakes	47.7	253	41.0-54.4
Innisfail	48.6	99	38.7-58.6
Logan-Beaudesert	46.4	245	40.2-52.7
Rest of Queensland	51.0	540	46.2-55.8

Source: CATI-Qld (2006)

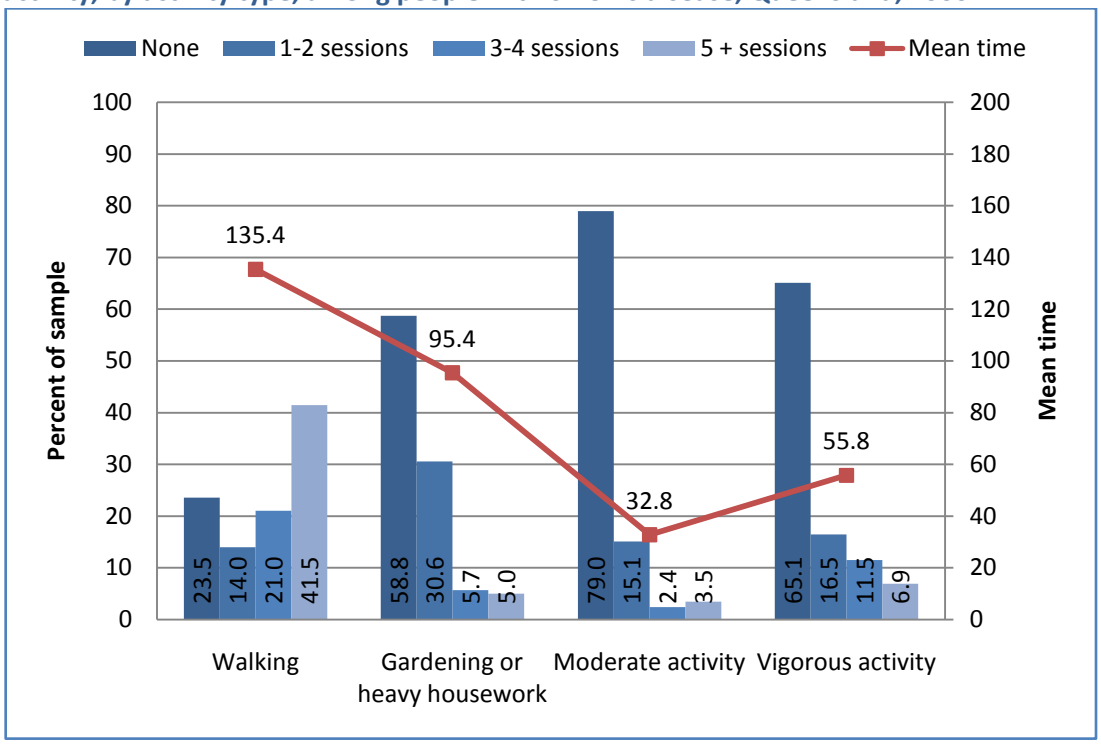
† Less than 150 minutes per week or 150 minutes per week but less than 5 sessions per week

2.4.3 CATI-CHRONIC: PHYSICAL ACTIVITY AMONG PEOPLE WITH A CHRONIC DISEASE

Figure 15 presents the amount of time and sessions spent doing different physical activities by people with a chronic disease, as measured in the CATI-Chronic 2006. This can be contrasted to figures provided for the general population in Figure 13. About 60% of people with a chronic disease were engaged in sedentary or insufficiently active lifestyles (Table 16), compared to around 50% of the general population (Figure 14). People with chronic disease reported a broadly similar pattern to the general population in terms of the number of sessions devoted to different types of physical activity. Even so, it is evident that the number of sessions and the average time participating in each activity was lower for people with chronic diseases, particularly with respect to walking and vigorous physical activities.

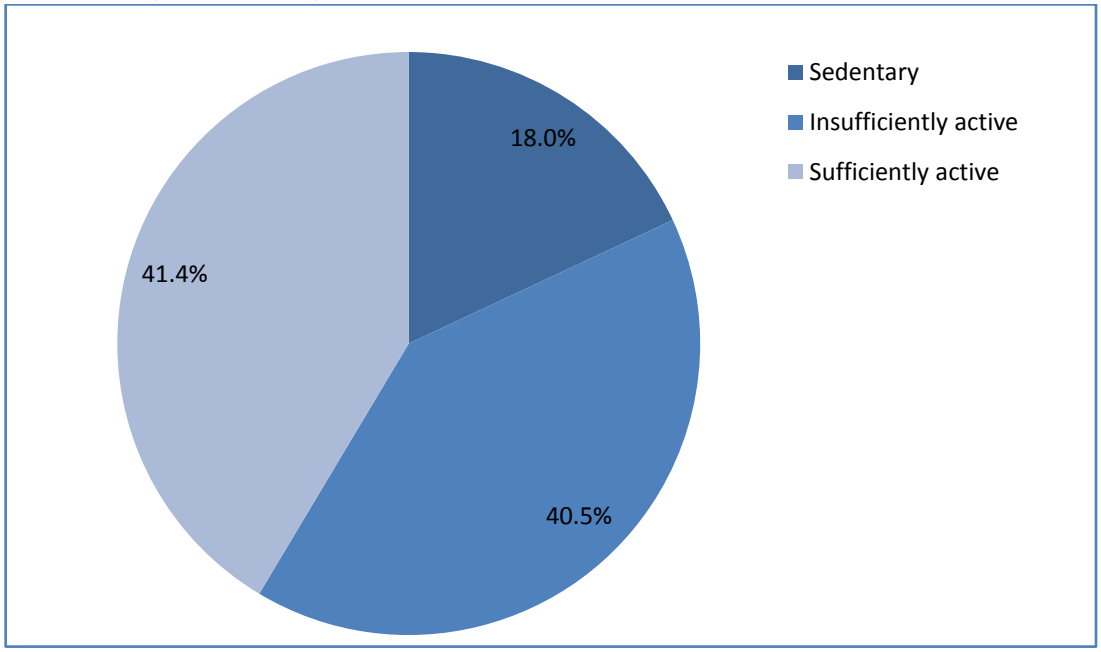
It should be recognised that people with some chronic conditions may be unable to participate in optimal physical activity due to disability or may be advised not to participate in some types of physical activity (e.g. vigorous activity) due to the presence of high risk conditions (e.g. recent, unstable, or complicated cardiac conditions) (RACGP, 2004).

Figure 15. Number of sessions of physical activity per week and mean time spent doing activity, by activity type, among people with chronic disease, Queensland, 2006



Source: CATI-Chronic (2006)

Figure 16. Levels of physical activity† among people with chronic disease based on time and sessions, Queensland, 2006



Source: CATI-Chronic (2006)

† Sedentary (0 minutes per week); insufficiently active (1 to 149 minutes per week or 150 minutes per week but less than 5 sessions per week); sufficiently active (150 or more minutes per week and 5 or more sessions per week)

Table 19 presents the prevalence of sedentary or insufficiently active lifestyles among people with chronic disease, with a breakdown by gender, disease, and PBI region.

Males and females had similar rates of sedentary and insufficiently active lifestyles.

The rate of sedentary or insufficiently active lifestyles among people with cardiovascular disease was somewhat lower (47.1%) than the rate among people with asthma (61.5%), and diabetes/HBS (57.5%).

The PBI regions had similar proportions of people with chronic disease who led sedentary or insufficiently active lives (65.0% o 68.2%) but all regions had slightly higher rates than the rest of Queensland.

Table 19. Sedentary or insufficiently active lifestyles based on time and sessions in the last week†, people with a chronic disease, by sex, disease, and PBI region, Queensland, 2006

	%	n	95% CI
Sex			
Males	58.7	520	51.5-66.0
Females	59.0	623	53.0-65.0
Persons	58.6	1143	54.0-63.2
Disease			
Asthma	61.5	426	55.9-67.1
Diabetes/HBS	57.5	395	46.9-68.1
Cardiovascular	47.1	322	33.0-61.3
PBI region			
North Lakes	67.7	280	59.5-75.9
Innisfail	65.0	119	48.9-81.1
Logan-Beaudesert	68.2	315	61.3-75.1
Rest of Queensland	57.6	429	52.5-62.7

Source: CATI-Qld (2006)

† Less than 150 minutes per week or 150 minutes per week but less than 5 sessions per week

2.5 BODY MASS INDEX

Being overweight increases the risk for adverse health outcomes including high blood pressure, heart disease, type 2 diabetes, stroke, breathing problems, arthritis, gallbladder disease, sleep apnoea (breathing problems while sleeping), osteoarthritis, and some cancers (Anderson & Rossner, 1997; Armstrong et al., 2000; Field et al., 2001).

GUIDELINES

BMI is a key indicator of obesity at the population level (WHO, 2000). It is calculated as a ratio of height to weight (kg/m²). Table 20 shows BMI values and their corresponding classifications according to the national and international standard (ABS, 2006; WHO, 2000). Health risks increase as BMI increases (ABS, 2006; AIHW, 2003a). Adults who have a BMI of 25 or more are classified as overweight and are considered at risk for premature death and disability.

Table 20. BMI† and corresponding classifications according to the international standard

BMI	Classification
Below 18.50	Underweight
18.50 -24.99	Normal
25.00 - 29.99	Overweight
30.00 and above	Obese
40.00 and above	Morbidly obese (class III obesity)

Adapted from WHO (2000)
†Body Mass Index (BMI) = weight/height² = (kg/m²)

CATI SURVEY INDICATORS FOR BODY MASS

Respondents of the two CATI surveys were asked their height (without shoes) and their weight (without clothes and shoes). All height measurements were converted to centimetres and all weight measurements were converted to kilograms. BMI was calculated using the following formulae: BMI = weight/height² = (kg/m²). Consistent with national and international standards, this report uses "BMI of 25.00 or more" (yes/no) as an indicator of being overweight or obese.

2.5.1 EXISTING STATE AND NATIONAL DATA

Data from the Queensland Health Omnibus survey 2003 showed that half the Queensland population (50.1%) was overweight or obese (Queensland Health, 2006). Moreover, an 11% increase in the proportion of Queenslanders who are overweight or obese was detected between 1998 and 2003. Table 21 shows the distribution of BMI classification in the Australian adult population, as measured in the NHS data over the 10 years to 2004-05 (ABS, 2006). The NHS data shows a progressive increase in the proportion of the Australian population classified as overweight and obese over the period. The most recent NHS data indicated that more than half of the population was overweight, with a further 8% of respondents declining to provide height or weight information.

Table 21. Body Mass Index Classification, by sex, Australia, 1995-2004/05

BMI category	1995	2001	2004-05
Underweight	3.0	2.7	2.4
Normal	47.2	43.5	40.5
Overweight	29.5	31.1	32.6
Obese	11.1	15.0	16.4
Not Stated	9.3	7.8	8.0

Data extracted from National Health Survey (ABS, 2006)

According to the NHS 2004-05 data (ABS, 2006), there are no differences in the proportion of the population who are classified as overweight or obese between States and Territories (Table 22).

Table 22. Prevalence of overweight and obese Body Mass Index classifications†, States and Territories, 2004/2005

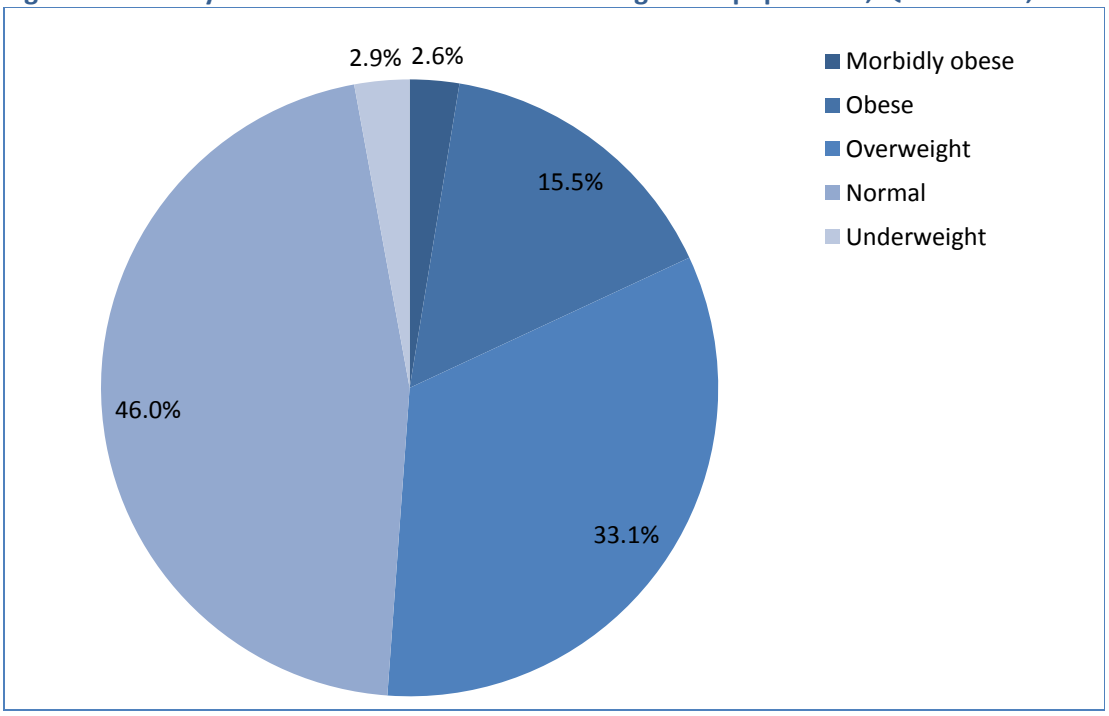
State/Territory	% Overweight or Obese
Queensland	49.7
South Australia	49.7
New South Wales	49.5
Australia	49.3
Tasmania	48.9
Victoria	48.9
Australian Capital Territory	48.7
Western Australia	48.4
Northern Territory	-

Data extracted from National Health Survey (ABS, 2006)
† Nationally, an additional 8.0% of respondents declined to give height and weight data

2.5.2 CATI-Qld: Body Mass in the General Population

Figure 17 shows the distribution of BMI classifications in the general population of Queensland, according to the CATI-Qld 2006. The survey showed that about half of the Queensland population was overweight (33.3%), obese (15.7%), or morbidly obese (2.7%). These figures are very similar to those observed in the Queensland Health Omnibus Survey 2003 (31.0%, 17.5%, and 1.6% respectively) (Queensland Health, 2006).

Figure 17. Body Mass Index classifications† in the general population, Queensland, 2006



Source: CATI-Qld (2006)
†Based on national and international standard classification (WHO, 2000) (ABS, 2006)

Table 23 presents the proportion of the Queensland general population with a BMI classified as overweight or obese, with a breakdown by gender, age group, and PBI region.

Males had a slightly higher prevalence of obesity (19.1%) than females (16.7%). The discrepancy was more obvious when combining the obese and overweight classifications (60.8% vs. 42.1%).

The proportions of people classified as overweight and/or obese increased with age, up to the 50-59 years age group.

The rate of obesity in the three PBIs ranged from 14.4% in Logan-Beaudesert to 19.1% in Innisfail. The rates of obesity in the PBIs were slightly less than that observed in the rest of Queensland (21.1%). Combining the obese and overweight classifications, differences between the PBIs were less obvious but the PBIs differed more notably from the rest of Queensland.

Table 23. Body Mass Index classification, by sex, age group, and PBI region, Queensland, 2006

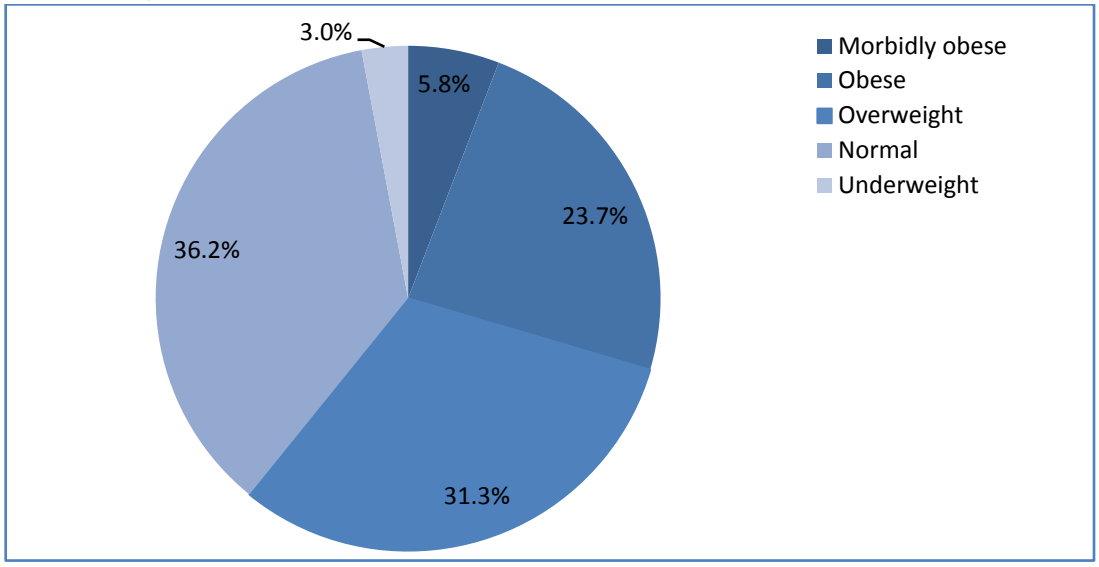
	Obese (BMI = 30.00 or above)		Overweight or Obese (BMI = 25.0 or above)	
	%	n, 95% CI	%	n, 95% CI
Gender				
Males	19.1	208, 15.4-22.7	60.8	581, 56.1-65.6
Females	16.7	258, 13.8-19.7	42.1	601, 38.0-46.2
Persons	18.1	466, 15.7-20.4	51.2	1182, 48.0-54.3
Age group				
18-29	12.7	46, 7.3-18.1	37.4	105, 29.2-45.6
30-39	17.6	83, 12.5-22.7	51.3	222, 44.5-58.2
40-49	19.5	94, 14.4-24.5	57.0	270, 50.7-63.2
50-59	24.0	114, 18.1-29.9	58.3	273, 51.5-65.1
60+	18.4	129, 13.5-23.3	54.4	312, 48.0-60.8
PBI region				
North Lakes	16.9	102, 11.8-13.0	49.3	250, 42.5-56.1
Innisfail	19.1	37, 10.5-27.8	47.0	99, 36.8-57.2
Logan-Beaudesert	14.4	92, 10.4-18.3	43.2	244, 37.1-49.4
Rest of Queensland	21.1	235, 17.3-24.9	58.1	589, 53.3-63.0

Source: CATI-Qld (2006)
†Based on national and international standard classification (WHO, 2000) (ABS, 2006)

2.5.3 CATI-CHRONIC: BODY MASS AMONG PEOPLE WITH A CHRONIC DISEASE

Figure 18 shows the distribution of BMI classifications among people with a chronic disease, according to the CATI-Chronic 2006. About two-thirds of people with a chronic disease were classified as overweight (31.3%), obese (23.7%), or morbidly obese (5.8%). The proportion of people with a chronic disease in an overweight category (60.8%) was higher than the proportion in the general population (51.2%). This difference was most notable in the obese (23.7% vs. 15.5%) and morbidly obese classifications (5.8% vs. 2.6%).

Figure 18. Body Mass Index classifications† among people with a chronic disease, Queensland, 2006



Source: CATI-Chronic (2006)
†Based on national and international standard classification (WHO, 2000) (ABS, 2006)

Table 24 presents the proportion of people with chronic disease with a BMI classified as overweight or obese, with a breakdown by gender, disease, and PBI region.

There were similar proportions of males and females with chronic disease who were classified as obese (27.3% vs. 30.7%) and overweight or obese (64.9% vs. 58.1%).

The rate of obesity in people with diabetes/HBS was considerably higher (43.2%) than the rate in people with asthma (25.0%) or cardiovascular disease (19.4%). This difference was also observed when combining the overweight and obese classifications.

The rate of obesity ranged from 33.1% in North Lakes to 45.9% in Innisfail. Combining the overweight and obese classifications, rates ranged from 57.2% in North Lakes to 78.3% in Innisfail.

Table 24. Body Mass Index classification among people with chronic disease, by sex, disease, and PBI region, Queensland, 2006

	Obese (BMI = 30.00 or above)		Overweight or Obese (BMI = 25.0 or above)	
	%	n, 95% CI	%	n, 95% CI
Gender				
Males	27.3	300, 20.6-34.0	64.9	700, 58.0-71.9
Females	30.7	366, 25.6-35.8	58.1	662, 52.2-64.0
Persons	29.6	666, 25.6-33.6	60.8	1363, 56.5-65.2
Disease				
Asthma	25.0	195, 19.6-30.4	55.2	414, 49.3-61.1
Diabetes/HBS	43.2	311, 31.4-52.0	74.4	525, 66.1-82.6
Cardiovascular	19.4	160, 10.2-28.6	58.0	424, 43.9-72.1
PBI region				
North Lakes	33.1	180, 23.4-42.9	57.2	336, 45.9-68.6
Innisfail	45.9	75, 31.3-60.4	78.3	140, 69.4-87.3
Logan-Beaudesert	34.9	183, 27.2-42.6	70.2	361, 63.2-77.1

Source: CATI-Chronic (2006)
†Based on national and international standard classification (WHO, 2000) (ABS, 2006)

2.6 SUMMARY OF FINDINGS FOR HEALTH RISK BEHAVIOURS

This section of the report synthesises data from existing State and National datasets and new datasets established as part of the evaluation of the *Strategy*. The latter include the CATI-Qld and the CATI-Chronic, both undertaken as part of the evaluation of the *Strategy* and both providing baseline data against which outcomes of the *Strategy* can be assessed.

The findings in this section of the report indicate that there is considerable scope for improving the health status of all Queenslanders through effecting reductions in key health risk factors. The main findings include:

- In 2006, approximately 50% of Queenslanders were not following recommendations on physical exercise, 50% were overweight or obese, 40% were not following recommendations on nutrition, 20% smoked tobacco, and 5% were drinking at risky or high risk levels.
- Queensland is above the national average in terms of the prevalence of almost all the risk factors examined.
- Existing State and National data show that alcohol misuse and obesity have been increasing in the last decade.
- Men generally showed a higher rate of risk factors than women, with the exception of physical activity levels.
- The prevalence of some risk factors (smoking and poor nutrition) decreased with age while the others (high alcohol consumption, physical inactivity, and obesity) increased with age.

- PBI-regions showed variation in the risk profiles but were broadly similar to each other and similar to the rest of Queensland.
- People with chronic disease showed similarly poor risk-factor profiles to the general population, placing them at substantial risk of complications, co-morbidity, and premature mortality. The extremely high rate of obesity (43.2%) in people with diabetes/HBS compared to other chronic diseases (25.0% in asthma; 19.4% in cardiovascular) and the general population (18.1%) stands out in this regard.

3. SUPPORTIVE ENVIRONMENTS FOR HEALTHY BEHAVIOUR

Supportive environments are an important factor in health maintenance. In a health context, the term 'supportive environments' refers to both the physical and the social aspects of our surroundings. It encompasses where people live, their local community, their home, their recreational space and where they work. For example, the presence of social and environmental supports (e.g. good street lighting; presence of sidewalks and parks; having trustworthy and active neighbours) has been associated with higher levels of participation in physical activity (Addy et al., 2004).

The CATI-Qld collected data on supportive environments for healthy behaviour. Most of the questions were items from the "Chronic Illness Resources Survey" (Glasgow, Strycker, Toobert, & Eakin, 2000). The domains and items covered in the CATI-Qld are summarised in Table 25. Proportions and means are presented depending on the most appropriate method for the structure of the data in each domain. Breakdowns by gender, PBI region, socio-economic grouping, and BMI classification are provided where they are relevant.

Table 25. Environmental supports for healthy behaviour: domains and items assessed

Domain	Type of items
Support from health care sector	Health care provider telling respondent to eat fewer high fat foods, eat more fruit and vegetables, and/or do more physical activity.
Social support	Sharing or exchanging healthy food with family or friends, family or friends buying or preparing healthy foods for respondent, exercising with family or friend, or exercising with neighbours.
Local neighbourhood environment	Perception of neighbourhood features such as convenience for walking, traffic problems, accessibility of walking and cycling paths, and distance to public transport and parks/beaches.
Community infrastructure	Reported use of community infrastructure that supports healthy lifestyles such as restaurants with healthy options, parks, exposure to health promotion advertising, weight loss meetings, volunteer work, and well-being and fitness facilities
Supportive workplaces	Perceived features of the workplace that support healthy behaviours such as flexible work schedules, rules and policies that support health such as time off for exercise, and control over decision making and priorities.

This section of the report provides information useful to inform the evaluation of the primary prevention objectives of the *Strategy,* including activities designed to encourage behaviour change that promote health and well-being as well as the creation of healthy environments.

3.1 SUPPORT FROM THE HEALTH CARE SECTOR

Respondents were asked whether a health-care professional (including doctors, nurses, and nutritionists) had told them to improve their health behaviours by eating fewer high fat or high cholesterol foods, eating more fruit and vegetables, and/or doing more physical activity

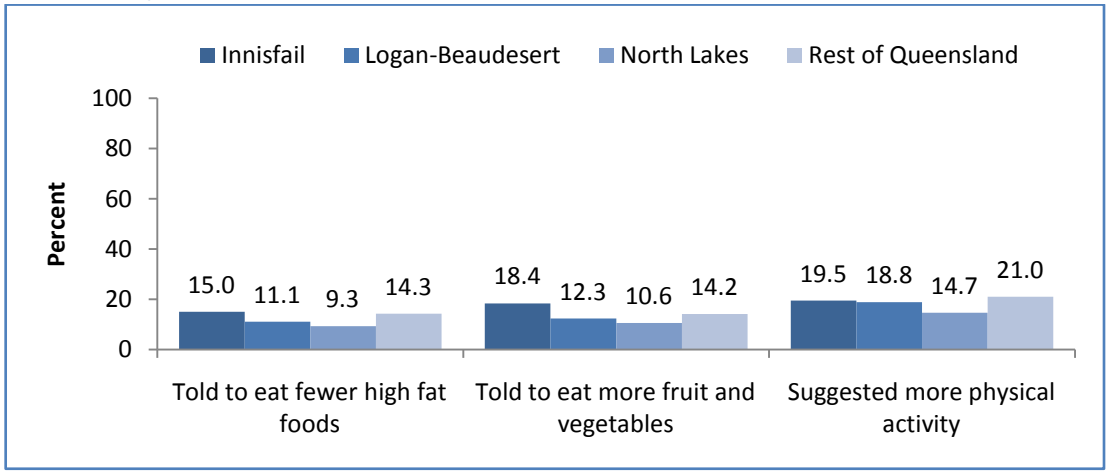
in the last 12 months. To these questions, respondents could answer yes, no, or don't know/refused to answer.

Only a small proportion of respondents could recall having a health care professional recommend changes in their health behaviours in the 12 months prior to interview (12.4% were told to eat less high fat/cholesterol food, 13.6% were told to eat more fruit and vegetables, and 18.8% were told to be more physically active) (Figure 19). There were no differences between males and females in the support received from health care professionals. Respondents in Innisfail were most likely while respondents in North Lakes were least likely to recall having a health professional suggest a change in their health behaviours (Figure 20).

Figure 19. Health care providers' support for healthier lifestyles, by sex, Queensland, 2006

Source: CATI-Qld (2006)

Figure 20. Health care providers' support for healthier lifestyles, by PBI region, Queensland, 2006



Source: CATI-Qld (2006)

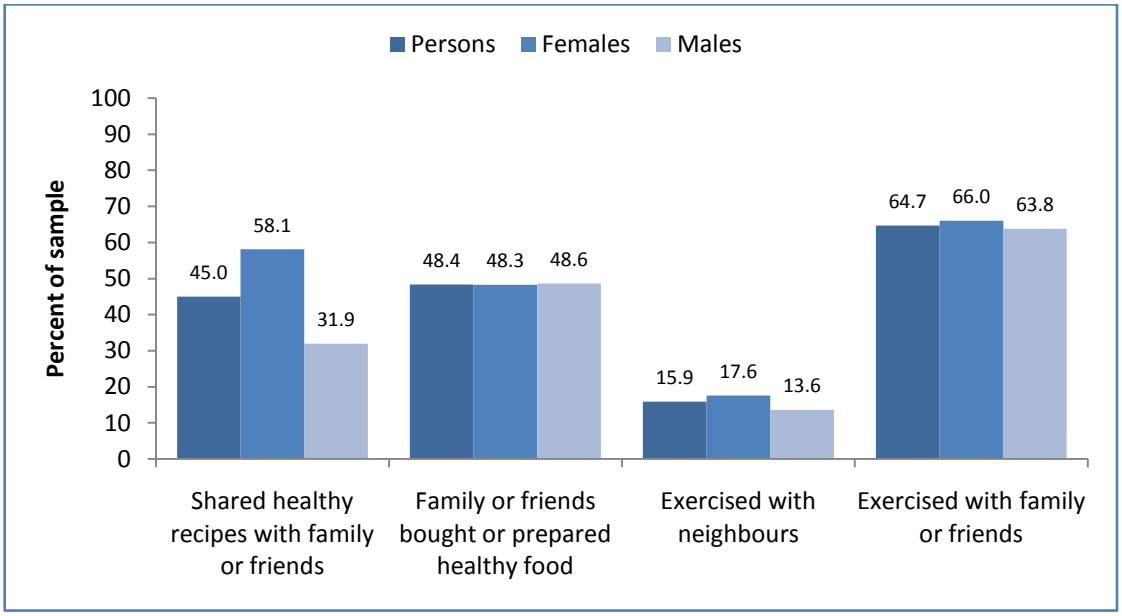
3.2 SOCIAL SUPPORT FOR A HEALTHY LIFESTYLE

Social support has a beneficial effect on health and has been identified as an important factor in immune, endocrine, and cardiovascular functioning; recovery from illness and injury; and health maintenance (DiMatteo, 2004). The mechanisms through which social support improves health outcomes is not precisely known but might include a combination of factors such as buffering stress, influencing affective states and/or changing behaviours, and direct effects on biological systems.

Respondents were asked about the support they received from family, friends, and neighbours in the 6 months prior to interview with regard to maintaining a healthy diet and physical activity. Specifically, respondents were asked the extent to which they have shared or exchanged recipes with family or friends, had family or friends buy or prepare meals for them, exercised with neighbours, and exercised with family or friends. To each question, respondents could answer "not at all", "a little bit", "a moderate amount", "quite a bit", or "a great deal". The categories of a little bit, a moderate amount, quite a bit, and a great deal have been collapsed to provide dichotomous (yes/no) indicators.

The most common social support for healthy life styles was in the form of exercise with family or friends (64.7%), followed by having healthy foods bought or prepared by family (48.4%), and sharing and exchanging healthy recipes (45.0%) (Figure 21). Exercising with neighbours was not a common form of social support, with only 15.9% of respondents doing this in the 6 months prior to interview. Females were much more likely than males to share and exchange recipes with friends and family (58.1% vs. 31.9%). They were also slightly more likely than males to exercise with neighbours (17.6% vs. 13.6%).

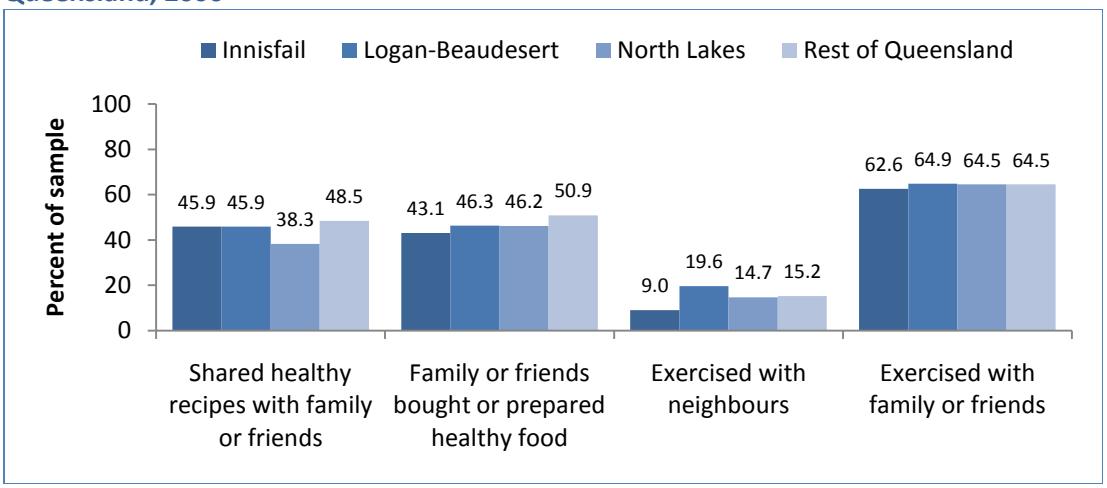
Figure 21. Social supports for a healthy lifestyle in the last 6 months, by sex, Queensland, 2006



Source: CATI-Qld (2006)

A comparison of regions showed that respondents in North Lakes were less likely than respondents in other regions to share recipes with family or friends (Figure 22). The proportion of respondents who exercised with neighbours in the 6 months prior to interview ranged from 9.0% in Innisfail to 19.6% in Logan Beaudesert.

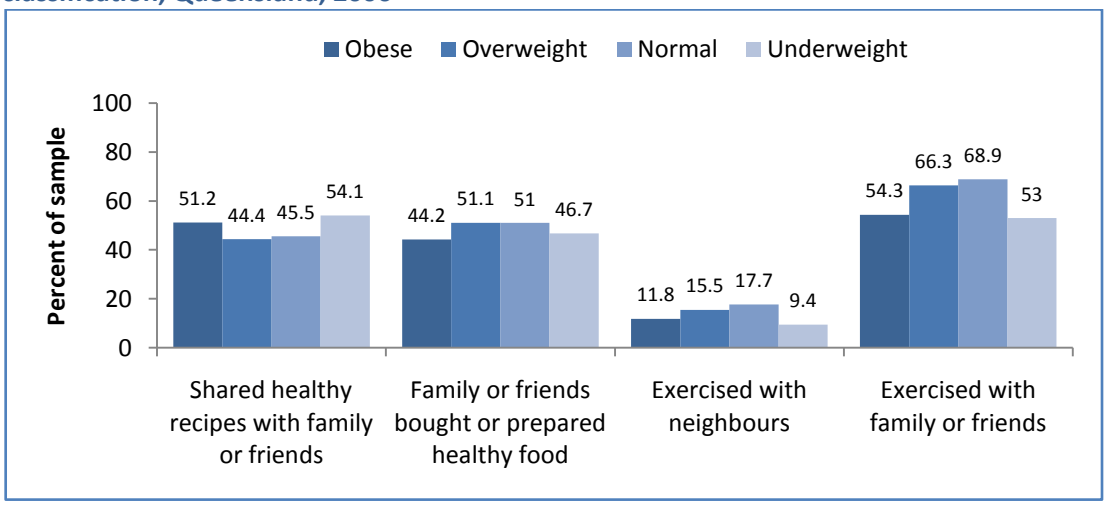
Figure 22. Social supports for a healthy lifestyle in the last 6 months, by PBI region, Queensland, 2006



Source: CATI-Qld (2006)

When examining differences in social support according to BMI classification, it was evident that people on the extremes of the BMI classification (obese and underweight) shared similar profiles and people in the middle of the BMI classification (normal and overweight) shared similar profiles (Figure 23). Compared to people in the normal and overweight classifications, people who were obese and underweight were more likely to share recipes with family or friends, were less likely to have meals bought or prepared for them, were less likely to exercise with neighbours, and were less likely to exercise with family or friends.

Figure 23. Social supports for a healthy lifestyle in the last 6 months, by Body Mass Index classification, Queensland, 2006



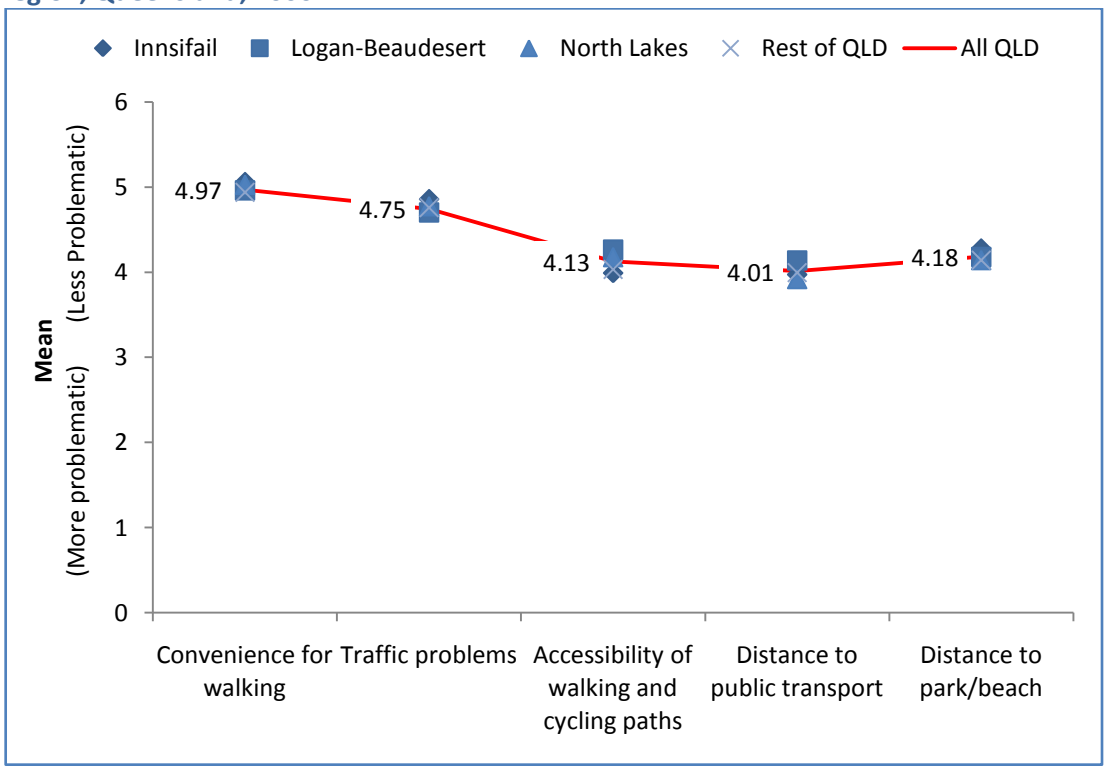
Source: CATI-Qld (2006)

3.3 LOCAL NEIGHBOURHOOD ENVIRONMENT

Respondents were asked about the features of their local neighbourhood that may make it more or less conducive to physical activity. These features included convenience for walking, traffic problems, accessibility to paths, distance to public transport, and distance to parks and beaches. Respondents could rate each feature of their neighbourhood from 1 to 6, where higher ratings indicated fewer problems (i.e. more accessibility, less distance to public transport, etc.). The mean rating was used as an indicator for this section of the report. Mean rates are provided according to PBI region and socio-economic status, and are compared to the Queensland average.

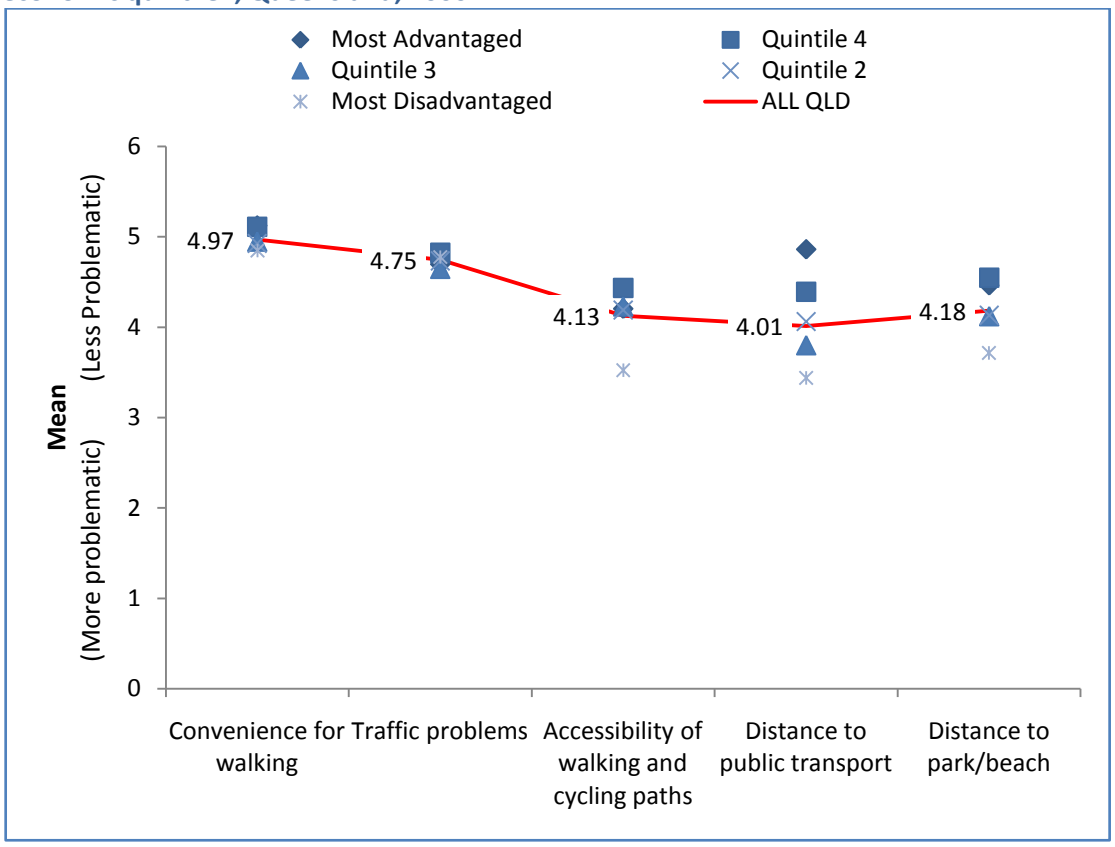
On average, respondents rated their neighbourhoods highly in terms of having features conducive to exercise (Figure 24). The best ratings were given to convenience for walking ($\bar{x}$ =4.97) and extent of traffic problems ($\bar{x}$=4.75). Lower ratings were given to the accessibly of walking and cycling paths ($\bar{x}$=4.13), the distance to public transport ($\bar{x}$=4.01), and distance to parks and beaches ($\bar{x}$=4.18). The mean ratings given to each neighbourhood feature did not differ between the PBI regions. There were differences in the ratings of some neighbourhood features according to socio-economic status of the respondents (Figure 25). Respondents in the more advantaged socio-economic quintiles rated accessibility of walking and cycling paths, distance to public transport, and distance to parks and beaches higher than respondents in more disadvantaged socio-economic quintiles.

Figure 24. Perceived neighbourhood and environmental barriers to exercise, by PBI region, Queensland, 2006



Source: CATI-Qld (2006)

Figure 25. Perceived neighbourhood and environmental barriers to exercise, by socio-economic quintile†, Queensland, 2006



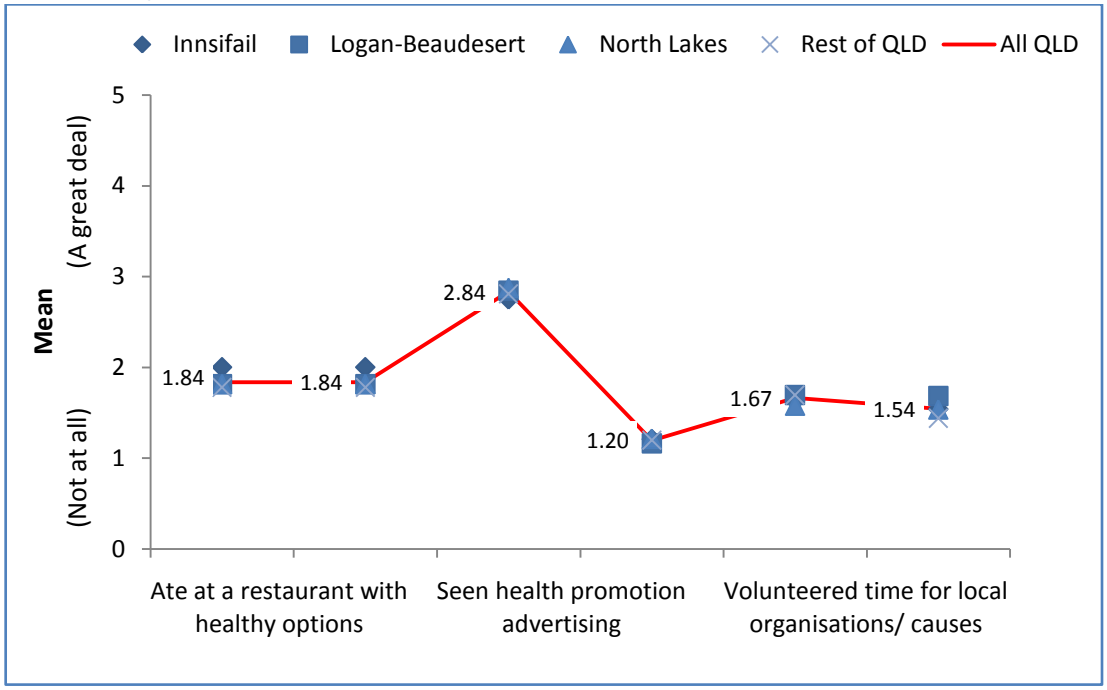
Source: CATI-Qld (2006)
- † Based on the SEIFA index of relative advantage/disadvantage

3.4 COMMUNITY INFRASTRUCTURE TO SUPPORT HEALTHY LIFESTYLES

Respondents were asked about their use of community infrastructure that supported healthy lifestyles. These infrastructure included restaurants with healthy options, parks, health promotion advertising (e.g. quit smoking campaigns), meetings that support lifestyle change (e.g. weight watchers), volunteer work, and wellness classes and fitness centres. Respondents could rate their use of each piece of infrastructure from 1 (“not at all”) to 5 (“a great deal”). The mean rating was used as an indicator for this section of the report. Mean rates are provided according to PBI region and compared to the Queensland average.

On average, respondents did not report making frequent use of health-related community infrastructure, with mean ratings generally toward the “not at all” end of the scale (Figure 26). Respondents were more likely to have seen health promotion advertising than to have made use of other health-related community infrastructure. There were no clear differences between PBI regions in the extent to which respondents used each type of infrastructure.

Figure 26. Use of community infrastructure for supporting healthy lifestyles, Queensland, 2006



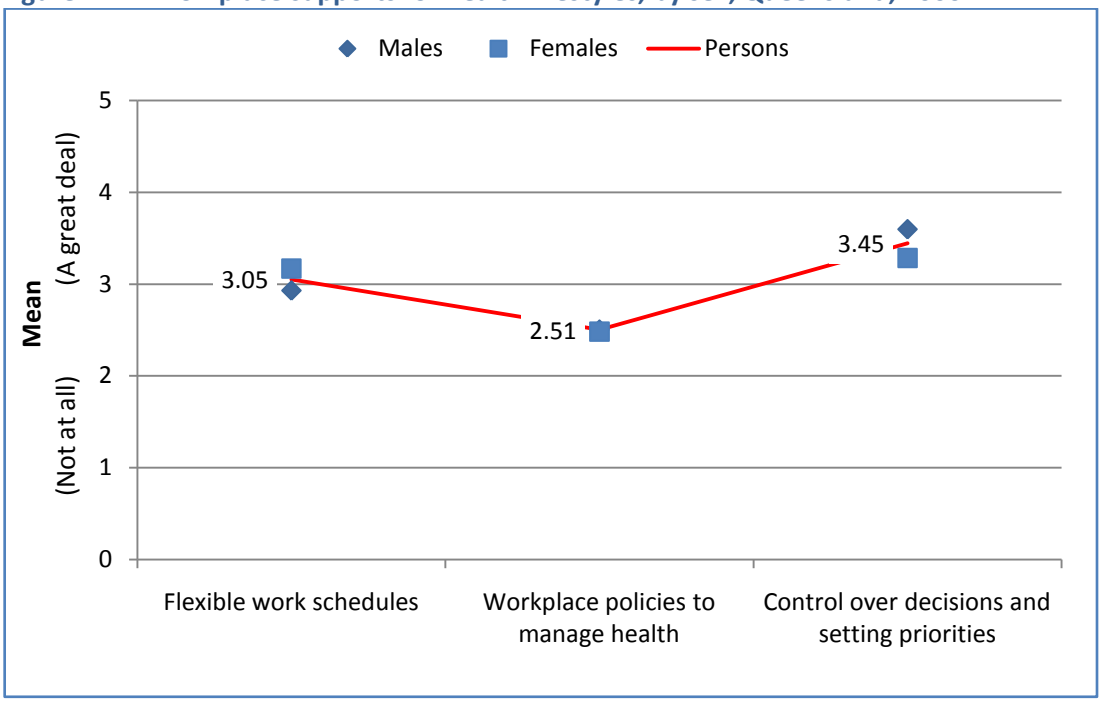
Source: CATI-Qld (2006)

3.5 SUPPORTIVE WORKPLACES

Respondents who worked part-time or full-time were asked about the features of their workplaces that may support healthy lifestyles. These features included flexibility in work schedules, rules and policies that help in the management of health (e.g. time off for exercise), and control over decision-making and priority setting. Respondents could rate their work features from 1 ("not at all") to 5 ("a great deal"). The mean rating was used as an indicator for this section of the report. Mean rates are provided according to sex and PBI region and compared to the Queensland average.

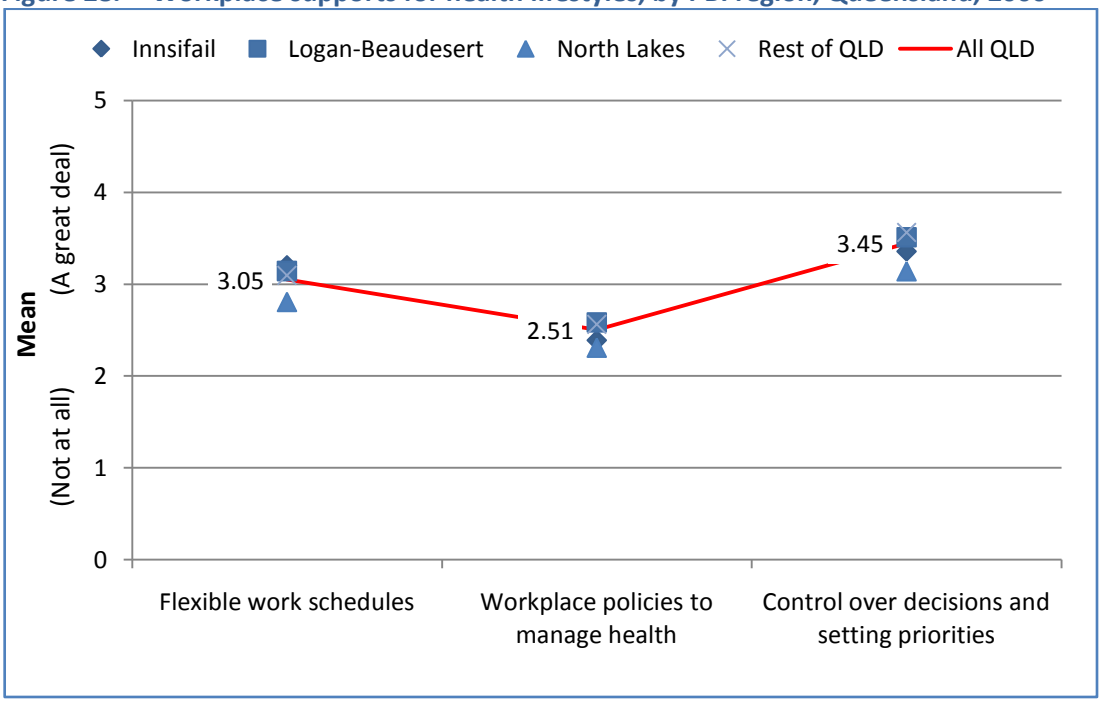
Respondents gave mixed ratings of their workplaces in terms of the features available to support healthy lifestyles (Figure 27). While respondents reported a degree of control and flexibility in their workplaces, they were less likely to recall having specific workplace policies aimed at managing health. There were only small differences in the ratings of workplace features according to respondent gender. Females were a little more likely to perceive their workplaces as flexible while males were a little more likely to report control over decisions and setting priorities. There was also a trend toward poorer workplace ratings in North Lakes than other PBI regions (Figure 28), but these differences are yet to be tested statistically.

Figure 27. Workplace supports for health lifestyles, by sex, Queensland, 2006



Source: CATI-Qld (2006)

Figure 28. Workplace supports for health lifestyles, by PBI region, Queensland, 2006



Source: CATI-Qld (2006)

3.6 SUMMARY OF FINDINGS FOR SUPPORTIVE ENVIRONMENTS

This section of the report summarises data on supportive environments, collected as part of the CATI-Qld.

The findings in this section highlight opportunities for improving health through promoting supportive environments. It provides a snapshot of public perceptions about the availability and use of supports from the health care sector, social networks, neighbourhood and community, and the workplace. The main findings include:

- 12.4% of Queenslanders recalled being asked by a health professional to eat fewer high fat foods in the previous 12 months, 13.6% recalled being asked to eat more fruit and vegetables, and 18.8% recalled being asked to do more physical activity.
- Respondents in North Lakes were less likely to recall a health professional asking them to modify their health-related behaviour than respondents in other PBI regions.
- The majority of respondents reported receiving some form of social support for a healthy lifestyle, with the most common being exercising with family or friends. People who were obese were more likely than people within the normal BMI range to share healthy recipes with family or friends but were less likely to have healthy foods prepared for them by family or friends or exercise with family, friends, or neighbours.
- Respondents generally rated their neighbourhoods highly in terms of features that are conducive to exercise (e.g. convenience for walking and distance to parks and beaches), suggesting that the high rate of sedentary and insufficiently active lifestyles observed in the first section of this report (almost 50% of the general population) is not being driven by perceptions of poor social and environmental supports.
- Respondents in more disadvantaged socio-economic quintiles rated accessibility of walking and cycling paths, distance to public transport, and distance to parks and beaches higher than respondents in lower socio-economic quintiles.
- Respondents did not report making frequent use of health-related community infrastructure such as parks and fitness centres but were aware of health promotion advertising (e.g. quit smoking campaigns).
- Workplaces were reported to have features supportive of health, particularly with regard to providing flexibility and control over decision-making.

APPENDIX 1: CATI SURVEYS - BRIEF METHODOLOGY AND DATA ANALYSES

The two CATI surveys (CATI-Qld and CATI-Chronic) are central to the evaluation and are scheduled to be repeated triennially and biennially, respectively, until 2015.

CATI-QLD METHODOLOGY

STUDY DESIGN AND SAMPLE

The CATI-Qld survey was conducted by the Office of Economic and Statistical Research (OESR) using their CATI facility. Random Digit Dialling for general household surveys was used so that silent numbers were included. This sampling method excludes individuals living in non-private dwellings. The private dwelling households were first screened for one or more residents aged 18 years or over. One person randomly selected from all of the people aged 18 years or over in the household was then interviewed.

The three PBI areas were oversampled with 501 participants from Logan-Beaudesert, 495 from North Lakes, 201 from Innisfail and 1,024 from the rest of Queensland. The final sample included 2,221 Queenslanders. The response rate for the survey was 41.5% and the average interview length was 17.5 minutes.

PURPOSE OF THE STUDY

The principal purposes of the survey included the measurement of disease prevalence, behavioural risk factors and supportive environments and the uptake of preventive interventions. Renal disease and COPD were not measured in the CATI-Qld due to the low prevalence of diagnosed illness.

WEIGHTS

To derive estimates for the entire population in the scope of the survey, weights were applied to sample responses. The weighting procedure reduces sampling variability and compensates for any under enumeration or non-response in the survey. Benchmark categories for weighting were classified by geographical area (Logan-Beaudesert, North Lakes, Innisfail and the rest of Queensland), age and sex. These benchmark categories were based on the ABS Estimated Resident Population figures for Queensland (adjusted for dwellings), as at 30th September 2005.

CATI-CHRONIC METHODOLOGY

STUDY DESIGN AND SAMPLE

The CATI-Chronic was carried out by the Queensland Health CATI laboratory and surveyed a sample of the Queensland wide population, as well as an additional sample of people from

within each of the PBI regions. Participants were aged 18 years and older and reported having one of three in-scope chronic conditions (i) asthma (ii) diabetes/high blood sugar (HBS) or (iii) a cardiovascular condition including stroke. As noted above for the CATI-Qld, renal disease and COPD were not included in the CATI-Chronic due to the low incidence of diagnosed illness.

A simple random sample of households was selected by choosing numbers from the last six editions of the electronic white pages. Once contact with an adult 18 years or more had been made, screening questions were asked to establish the number of eligible people in the household. If more than one individual qualified for selection, an adult was asked their age position in the household relative to the other eligible adults. An individual was then randomly selected from the household according to their age position. Surveying continued until approximately equal numbers of participants in each of the three disease categories of asthma, diabetes/HBS and cardiovascular condition, had been surveyed (N=813, 35.4%; N=753, 32.8%; and N=730, 31.8% respectively).

The CATI-Chronic surveyed a sample of 1,029 people Queensland wide and an additional 1,267 people from within the PBI regions. The final sample included 2,296 Queenslanders. The response rate for the Queensland wide sample was 82.3% of the contacted in-scope people and the response rate for the PBI areas was 83.9%. The overall response rate for contacted in-scope eligible people for the survey was 83.1%.

PURPOSE OF THE STUDY

Principal aims of the study include monitoring quality of life, patient perceptions concerning their care, behavioural risk factors and their uptake of management interventions including self-management.

WEIGHTS

Weights were also applied to the CATI-chronic survey data. The aim of weighting for this survey is to remove any effects that are introduced by interviewing a sample rather than the whole population. To do this, weights are allocated to each respondent. The CATI-Chronic survey was aimed at collecting information from a particular population sample with no known distribution, so the usual method for weighting to a known population could not be employed. The weights are based on adjusting for the different stages of selection that occurred for respondents.

The contribution to the weight for each stage was calculated as the inverse of the probability of being selected at that stage. For example, when adjusting for the chance of selection within the household, if the respondent was the only eligible person in their household then they had a probability of 1 of being selected so they were assigned an initial weight of 1. If there were 2 eligible people in the household then the respondent had a probability of 1/2 of being selected and they were assigned an initial weight of 2.

The stages of selection that were adjusted for were; (i) chance of selection of the phone number from the frame of phone numbers, (ii) chance of selection of the person from the eligible people within the household, and (iii) chance of selection of the chronic condition out of all of that persons' in-scope chronic conditions. For this survey a weight was calculated for the questions relating to a specific chronic disease and a separate weight was calculated for the rest of the questions in the survey. The weight for the chronic disease questions included all of these adjustments; while that of the non-chronic disease questions did not include an adjustment for the chance of selection of the condition, as that was not relevant to these questions (for example, the quality of life questions, which were asked of everyone in the sample).

AGE-STANDARDISATION AND STATISTICAL ANALYSES

All percentages were age-standardised using the estimated resident population of Australians aged 18 years and over from the ABS Australian 2001 census. The survey data capabilities of SAS version 9.1 (SAS Institute Inc, Cary, NC, USA) and Stata version 10.0 (Statacorp, College Station, TX, USA) were used to analyse these data.

Age-standardised estimates were calculated taking into account the survey sampling weights as detailed below. An age-standardised estimate of mean outcome X for sub-group j, taking into account survey sampling weights:

$$= \sum_{i=1}^{k} w_i \bar{r}_{ij},$$

where w_i is the weight for the ith age-group in the standard population, $\sum w = 1$,

$\bar{X}_{ij}$ is the age-specific mean for X for the ith age-group, adjusted for survey sampling weights, within subgroup j

$$= \sum_{i=1}^{k} w_i \frac{\sum_{m \in G_j} v_{mij} x_{mij}}{\sum_{s \in G_j} v_{sij}},$$

where v_{mij} is the survey sampling weight for the mth observation in the ith age-group in subgroup j (G_j),

x_{mij} is the mth observed value for X in the ith age-group in G_j

$$= \sum_{m \in G_j} \sum_{i=1}^{k} \left(\frac{w_i v_{mij}}{v_{.ij}} \right) x_{mij}, \text{ where } v_{.ij} = \sum_{s \in G_j} v_{sij}$$

$$= \sum_{m \in G_j} \sum_{i=1}^{k} u_{mij} x_{mij},$$

where $u_{mij} = \left(\frac{w_i v_{mij}}{v_{.ij}} \right)$

Thus, the age-standardised estimate of the mean of X for subgroup j, taking into account the survey sampling weights, is calculated as a weighted mean of X, within subgroup j, with weights given by $\mathbf{u_{mij}}$ in the last line of the above computations.

The steps are:

- Calculate the sum of the survey sampling weights in each age group in the subgroup(s) of interest;
- Multiply the sum of the survey sampling weights from 1. by the individual survey sampling weight for the observation and the weight for the age-standardised population, to obtain a composite age-standardised and survey sampling weight;
- Calculate the weighted mean of the variable of interest, using the composite weights.

Estimates of proportions may be calculated by defining indicator variables for the outcome categories of interest.

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