



Health lies in wealth

HEALTH INEQUALITIES IN
AUSTRALIANS OF WORKING AGE

REPORT NO. 1/2010

CHA-NATSEM Report on Health Inequalities

PREPARED BY

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PREPARED FOR

Catholic Health Australia

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St Vincent de Paul Society
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AUTHOR NOTE

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GENERAL CAVEAT

NATSEM research findings are generally based on estimated characteristics of the population. Such estimates are usually derived from the application of microsimulation modelling techniques to microdata based on sample surveys.

These estimates may be different from the actual characteristics of the population because of sampling and nonsampling errors in the microdata and because of the assumptions underlying the modelling techniques.

The microdata do not contain any information that enables identification of the individuals or families to which they refer.

ABBREVIATIONS AND ACRONYMS

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
BMI	Body Mass Index
CSDH	Commission on Social Determinants of Health
Disadv.	Disadvantaged
HILDA	Household Income and Labour Dynamics in Australia survey
NATSEM	National Centre for Social and Economic Modelling
NHMRC	National Health and Medical Research Council
IRSD	Index of Relative Socio-economic Disadvantage
LGA	Local Government Area
SEIFA	Socio-Economic Indexes for Areas
SLA	Statistical Local Area
vs.	versus
WHO	World Health Organisation

FOREWORD

A person's health is strongly influenced by that person's wealth. In days past, we thought this was because higher incomes meant better access to health care. We thought this was why the rich lived longer. Today we know more.

A long succession of research indicates a person's health is first influenced by their time in the womb. We know the early years of childhood define a lifetime's health expectations. We know educational attainment, participation in the workforce, and income levels all influence people's health outcomes. Yet in Australia when we talk about health we immediately think of nurses, doctors, and hospitals. We don't immediately think of vibrant childhoods, good schooling, satisfying work lives and fairness in income. Our thinking needs to change.

Despite obvious problems, we have one of the best health care systems in the world. Yet when health reform is considered in Australia, we tend to focus only on immediate problems. Our immediate problems are many – a health workforce shortage, rising costs of care, and an increasing demand on services as our population ages and becomes more obese. We have failed as a nation to properly consider the root causes of most illness and disease. We have failed as a nation to address the social determinants of health.

This Catholic Health Australia (CHA) – NATSEM Report on Health Inequalities “Wealth Determines Health” examines two key questions: do lower socio-economic groups in Australia's working age population experience higher health risks than those of higher socio-economic status, and how well do the most disadvantaged groups of Australia's working age population fare compared with the most advantaged?

This report conclusively finds that the health of working aged Australians is affected by socio-economic status. Household income, level of education, household employment, housing tenure and social connectedness all matter when it comes to health.

Why should we act on this information? There are Catholic service providers across many of these domains and their mission is to advocate for the disadvantaged through service. The change needed to improve the health of those in socioeconomic disadvantage does not need to take place in hospitals nor at the General Practice. The change required needs to take place outside the traditional health system. We know this is where it needs to occur- we have the evidence.¹ New thinking is required by Catholic services, and importantly, by government.

CHA recommends:

1. *Adoption of the World Health Organisation's Social Determinants of Health framework*
To implement a new focus on the social determinants of health, CHA proposes that each Local Hospital Network and Medicare Local currently being established as part of the COAG agreed health reform process be given publicly reportable goals and targets requiring action plans to reduce inequalities in health outcomes and access barriers to health services.

¹ Only 15-20% of health interventions will have an impact on inequalities in mortality rates. National Audit Office, Department of Health “Tackling inequalities in life expectancy in areas with the worst health and deprivation”, Summary, p.4, http://www.nao.org.uk/publications/1011/health_inequalities.aspx, accessed 7/7/2010

Nationally, a new target should be set to reduce the gap in life expectancy between the least disadvantaged and the population average. Reporting of targets should then direct funding to areas of proven need.

2. Targeted preventive programs

Preventive health initiatives need to target the lowest income quintile groups, and creatively develop programs, through community development initiatives that build social capacity. These programs must take into account the level of health literacy and disposable income available to individual population groups. For example it is not useful to develop top-down programs that advocate fresh fruit and vegetable consumption when take away food is more readily available and cheaper.

3. Fund NGOs to provide health promotion

*The preventive health agenda must fund more social support agencies to conduct a direct service role in health promotion with low income families. The cost could be offset by the reduction of advertising campaigns aimed at **entire** communities- which are not targeted. In addition health promoting NGOs (like the Heart Foundation) should target their programs at the lowest income quintile.*

4. School completion results in good health.

State/Territory governments should actively support high school completion as a priority for those at risk of non-completion.

This report is one of several contributions CHA intends to make on the need for action to address the health needs of those living in socioeconomic disadvantage as part of our work to fulfil our Ministry of Catholic healthcare. We are grateful for the support of the St Vincent de Paul Society and Catholic Social Services Australia - our partners in seeking improved outcomes for the health of Australians in need.

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Society and Catholic Social Services Australia

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EXECUTIVE SUMMARY

Objective of the Report

Australia is a prosperous and healthy country from an international standard but there are disparities in wealth as well as health among Australians. It is generally accepted that Australians least likely to enjoy good health are those of low socio-economic status, and especially those Australians who are the most socially and economically disadvantaged within our society. Yet there remains scope for more analysis as well as action to bridge the gaps. This report examines two key questions:

- do lower socio-economic groups in Australia's population of working age experience higher health risks than those of higher socio-economic status, and
- how well do the most disadvantaged groups of Australia's population of working age fare compared with the most advantaged?

These questions are examined within a social determinants of health framework, borrowing largely from the work of the World Health Organisation's Commission on Social Determinants of Health (2008) and the Marmot Strategic Review of Health Inequalities in England post-2010 (2010). The study is also placed within the context of Australia's national social inclusion agenda.

Approach

Most of the data used in this Report was obtained from Wave 8 of the Household, Income and Labour Dynamics in Australia (HILDA) Survey conducted in the second half of 2008. Data on death rates were accessed through a customised request to the ABS. The analysis focuses on adults aged between 25 and 64 years. Two age groups were studied – those aged 25-44 years and those aged 45-64 years.

The health outcomes examined are death rates, self-assessed health status, and presence of a long term health condition. Life style risk factors examined included smoking, alcohol consumption, physical activity and obesity. Socio-economic inequalities in these factors were analysed by using a range of socioeconomic indicators including Index of Relative Socioeconomic Disadvantage, equivalised disposable household income quintile, level of education, household joblessness, housing tenure type and social connectedness. Locational differences in health were explored using area remoteness.

Key Findings

Health inequalities exist for Australians of working age, social gradients in health are common – the lower a person's social and economic position, the worse his or her health - and the health gaps between the most disadvantaged and least disadvantaged socio-economic groups are often very large. Health of Australians of working age is associated with socio-economic status. Household income, level of education, household employment, housing tenure and social connectedness all matter when it comes to health. Socioeconomic differences were found in all the health indicators studied, and were evident for both men and women and for the two age groups studied.

In 2008, nearly 14 per cent of persons of working age lived in Australia's poorest 20 per cent of households, as defined by equivalised disposable household income. One of every four Australians of working age had left high school before or having only completed year 11. One in eight individuals lived in a jobless household i.e. a household where no adult was in paid employment. Over 500,000 individuals aged 25-64 years lived in public rental accommodation, one third of these being women aged 45-64 years. Over 20 per cent of Australians of working age experienced a low level of social connectedness, expressed in terms of gathering infrequently with friends/relatives, having no-one or struggling to find someone to confide in at difficult times, and often feeling lonely. One in ten persons of working age lived in outer regional or remote Australia. It is these individuals who are at greatest risk of having poor health.

Mortality

- Socio-economic gradients exist in small area death rates for both younger and older Australians of working age.
- If the populations of the most disadvantaged areas had the same death rate as those living in the most socio-economically advantaged areas then a half to two-thirds of premature deaths would be prevented.
- Socio-economic differences in age specific death rates give rise to socio-economic differences in life expectancy.

Self-assessed health status

- As many as one in nine 25-44 year olds and over one in five individuals aged 45-64 years report they have poor health.
- Those who are most socio-economically disadvantaged are much less likely to report being in good health compared with those who are least disadvantaged.
- Around half of men and women aged 45-64 years who are in the poorest 20 percent of households by income, or who are members of jobless households, or who live in public rental accommodation report their health as being poor. These men and women of working age are 30 to 40 per cent less likely to have good health compared with those who are least socio-economically disadvantaged.
- Twenty to 30 per cent of the most socio-economically disadvantaged individuals aged 25-44 years report having poor health compared with only 10 per cent of those who are least disadvantaged.
- Three of every ten 25-44 year olds living in public rental accommodation rank their health as being poor, compared with only one in ten living in their own home or private rental housing.
- Early high school leavers and those who are least socially connected are 10 to 20 per cent less likely to report being in good health than those with a tertiary education or who have a high level of social connectedness.

Long term health conditions

- Around 15 per cent of Australians aged 25-44 years and a third of those aged 45-64 years report they have at least one long term health condition that affects their everyday activities.
- Those who are most socio-economically disadvantaged are twice as likely as those who are least disadvantaged to have a long term health condition, and for some disadvantaged

younger males of working age (those in the bottom income quintile or living in jobless households) up to four to five times as likely.

- Around 45 to 65 percent of persons living in public rental accommodation have long term health problems compared to only 15-35 per cent of home-owners.
- Over 60 per cent of men in jobless households report having a long term health condition or disability, and over 40 per cent of women.

Smoking

- Less than 20 per cent of Australian adults now smoke tobacco but the highest rates of smoking occur in the younger most disadvantaged groups, including those living in outer regional and remote areas of Australia.
- A third to nearly three-fifths of younger most disadvantaged males smoke, depending on the socio-economic indicator studied.
- In relative terms, the highest risks of smoking occur for disadvantaged females aged 25-44 years.
- The most discriminating socio-economic factors for smoking are education, housing tenure and income. Fewer than 15 per cent of individuals with a tertiary education smoke.
- Smoking is much more common in younger aged women living in public rental accommodation than any other group, with two-thirds of these women being current smokers.

Obesity

- In 2008, some 20 per cent of adults aged 25-44 years were obese and 30 per cent of those aged 45-64 years.
- Around 25 to 30 per cent of disadvantaged women aged 25-44 years are obese and up to 39 per cent of those living in public rental housing. In comparison, less than 20 per cent of women in the most advantaged socio-economic classes were obese and only 12 per cent of those who owned their home.
- Education and housing tenure are the two socio-economic indicators that are consistently related to rates of obesity.

High risk alcohol consumption

- Around 40 per cent of Australian men of working age meet national criteria for being high risk alcohol drinkers.
- For many of the socio-economic indicators, no difference was seen in the likelihood of being a high risk drinker between those who were most or least disadvantaged.
- However, the likelihood of being a high risk drinker for younger adults who left high school early was 1.5 to 2 times higher than that for those with a tertiary qualification.
- Forty per cent of younger women living in public rental accommodation had high risk alcohol consumption – three times the likelihood of women living in their own home being ‘problem’ drinkers.
- Men and younger women living in outer regional and remote areas are 30 per cent more likely to be high risk drinkers than those living in major cities.

Physical activity

- Around a third of younger men met national guidelines for weekly physical activity, just over a quarter of younger women, around 40 per cent of men aged 45-64 years and around a third of older women.
- Disadvantaged men and women typically reported a lower percentage of individuals undertaking sufficient exercise relative to the most advantaged groups over a number of the socio-economic indicators but many of the relative risk ratios were not significant.
- Social connectedness was the only factor that consistently impacted on the percentage of individuals undertaking sufficient weekly exercise.
- Women aged 45-64 years who were most socio-economically disadvantaged – with the exception of those living in outer regional or remote Australia – were much less likely to undertake sufficient physical activity compared with women who were least disadvantaged.

These findings on health inequalities and inequality gradients are in keeping with international evidence on the social determinants of health. These inequalities need to be understood in relation to a range of social determinants and individual factors that interact in complex ways – does a person have enough money to live healthily, to live in a decent house or apartment, with a good level of knowledge and understanding, and support from family and friends, to eat and drink healthily and take sufficient exercise and not smoke. Household income, level of education, household employment, housing tenure and social connectedness all matter when it comes to health. Does where a person lives also matter? Dividing Australia into three broad regions based on area remoteness reveals some inequalities in terms of smoking, obesity and high risk alcohol consumption for one or more of the four age-sex population groups studied. However, this level of analysis masks community or neighbourhood concentration of socio-economic and health disadvantage. Other studies have mapped the distribution of disadvantage and poverty in Australia at a small area level. Through the actions of a range of social determinants of health, it is most likely that it is these area populations that will experience the poorest health outcomes and greatest health inequalities. Reducing health inequalities is a matter of social inclusion, fairness and social justice.

Key words

Socio-economic disadvantage, health inequalities, social determinants of health, Australians of working age

1 INTRODUCTION

In June 2010, the Australian Institute of Health and Welfare (AIHW) released its latest biennial report card on Australia's health (AIHW, 2010a). AIHW tells the following story about the nation's health:

*We're a healthy nation
But not in every way
And certainly not everyone
But there's much scope to do better
We're spending more and doing more
Some successes and changes are apparent
But important challenges remain (AIHW, 2010b, Table of contents).*

Among those Australians who don't enjoy good health like the rest of the population are those of low socio-economic status, and especially those Australians who are the most socially and economically disadvantaged within our society. A large gap remains between the health of Indigenous Australians and that of other Australians. But, how well are Australia's least well-off groups, in general, faring compared with Australia's most well-off individuals in terms of their health status, mortality rates and lifestyle factors, such as smoking, high alcohol use, obesity and physical inactivity that tend to put an individual's health at risk? And, why in a country such as Australia should your health depend on your wealth?

Social Determinants of Health

We can get a good background to understanding and appreciating why socio-economic inequalities in health might exist in Australia by borrowing from the work and report of the World Health Organisation's Commission on Social Determinants of Health (CSDH). The Commission states:

'... inequities in health, avoidable health inequalities, arise because of the circumstances in which people grow, live, work, and age, and the systems put in place to deal with illness. The conditions in which people live and die are, in turn, shaped by political, social, and economic forces... Social and economic policies have a determining impact on whether a child can grow and develop to its full potential and live a flourishing life, or whether its life will be blighted' (CSDH, 2008, The Commission calls for closing the health gap in a generation).

Thus, social inequalities in health arise because of the inequalities in the conditions of daily life under which we are born, develop as young children, grow into teenage years and adulthood, and live into old age. The material and social circumstances under which we live are in turn shaped by the unequal distribution of money, power and resources at both the national and local levels. We have different access to household goods and services, to health care, schools and

higher education, conditions of work and leisure, housing and community resources, and different opportunities to lead flourishing and fulfilling lives. The Commission on Social Determinants of Health takes a strong position arguing that the 'unequal distribution of health-damaging experiences is not in any sense a 'natural' phenomenon but is the result of a toxic combination of poor social policies and programmes, unfair economic arrangements, and bad politics. *Together, the structural determinants and conditions of daily life constitute the social determinants of health and are responsible for a major part of health inequities between and within countries*[emphasis added]' (CSDH, 2008, p1).

Determinants of health have been described as a 'web of causes' or alternatively as part of broad causal 'pathways' that affect health (AIHW, 2010a). Under a broader perspective of what determines health, a number of different influences come into play – for example a person's individual physical i.e. genetic and biological and psychological makeup, their behaviour and lifestyle, the physical and social environments in which they live, and the health care they receive (Turrell et al, 1999; Baum, 2008; AIHW, 2010a). As seen over the past few years, when it comes to health, both public and political attention in Australia tends to focus on the health sector – the performance of Australia's hospitals and aged care services, lack of nurses and doctors, high and rising costs of care, and who will have to pay. The Australian Government and the Australian people look to the health sector to deal with our health concerns and problems.

Yet, there is a strong evidence base to show that it is the social determinants of health that are mostly responsible for health inequities - the unfair and avoidable differences in health status, burden of disease and mortality seen within countries, including Australia (CSDH, 2008; Lavery, 2009; AIHW, 2010a). As the Marmot Review team comment in the Strategic Review of Health Inequalities in England post-2010 the serious health inequalities that have been observed do not arise by chance, and they cannot be attributed simply to genetic makeup, 'bad', unhealthy behaviour, or difficulties in access to medical care, important as these factors may be (Marmot et al, 2010). Social and economic differences in health status reflect, and are caused by, social and economic inequalities in society. Socio-economic factors have a direct influence on how long a person lives and the burden of disease they will be exposed to, and for many people will exert a greater impact on their personal health than either biomedical or health care factors. Thus, health is not simply a matter of biology or individual choice in how one lives his or her life. Individuals are conditioned, constrained and pressured by the environment in which they live. A collection of societal factors will play out over an individual's lifetime and will be expressed through their health and health behaviours.

It should not be surprising that health inequalities persist – 'persisting inequalities across key domains provide ample explanation: inequalities in early child development and education, employment and working conditions, housing and neighbourhood conditions, standards of living, and, more generally, the freedom to participate equally in the benefits of society' (Marmot et al, 2010, p17). While this was written in regard to England, this equally applies to Australia.

The social determinants of health span the life course. Education, employment and income are the most commonly used measures of socio-economic status (AIHW, 2010), but a number of other factors have been identified as important social determinants of health. These include: early life (poor intrauterine conditions and early childhood experiences), living conditions/housing, working

conditions, social exclusion and discrimination, social support/social safety net, stress and violence, and food security (National Public Health Partnership 2001; Marmot & Wilkinson, 2003; Raphael, 2004; Lavery 2009; Marmot et al, 2010; CSDH, 2008). Lifestyle or behavioural risk factors such as poor diet, drug addiction, tobacco smoking, and lack of exercise or alcohol misuse are also often regarded as social determinants of health. In many ways, these risk factors are proxy measures; reflections of a more basic and underlying socio-economic disadvantage experienced by some segments of the community.

All of these social determinants of health and their impact on health may vary by gender, ethnicity and geography i.e. where a person lives.

Australia's Social Inclusion Agenda

In an earlier report, Catholic Health Australia (2009) argued that if Australia was going to move towards a more socially inclusive society then the social determinants of health needed to be addressed and that health should assume a central place in Australia's Social Inclusion Agenda. There is strong support for this approach from the social determinants of health literature. In the Strategic Review of Health Inequalities in England post-2010, the Marmot Review Team argued, for example, that 'So close is the link between particular social and economic features of society and the distribution of health among the population, that the magnitude of health inequalities is a good marker of progress towards creating a fairer society. Taking action to reduce inequalities in health does not require a separate health agenda, but action across the whole of society' (Marmot et al, 2010, p16). The World Health Organisation (WHO) Commission on Social Determinants of Health similarly called for national governments to develop systems for the routine monitoring of health inequities and the social determinants of health, and develop more effective policies and implement strategies suited to their particular national context to improve health equity (http://www.who.int/social_determinants/en/).

The ongoing development and progressing of a social inclusion agenda in Australia gives rise to an opportunity to address the social determinants of health. A person's health should not depend on their wealth. In Australia, economic inequality persists and for some groups of the population this has widened despite continued prosperity over recent years and a relatively good standard of living compared with other countries (Meagher and Wilson, 2008; Quoc Ngu et al, 2008; Saunders et al, 2008; Tanton et al, 2008; Gaston and Rajaguru, 2009). While Australia has weathered the global financial crisis better than most countries, many Australian families are struggling financially, are emotionally stressed, are finding it difficult to participate fully in work, in social and community activities, and undertaking civic duties or roles.

The Australian Government's vision of a socially inclusive society is one in which all Australians feel valued and have the opportunity to participate fully in the life of our society. Achieving this vision means that all Australians will have the resources, opportunities and capability to: learn by participating in education and training; work by participating in employment, in voluntary work and in family and caring; engage by connecting with people and using their local community's resources; and have a voice so that they can influence decisions that affect them (www.socialinclusion.gov.au). Australian families and individuals may experience social exclusion if they lack certain resources, opportunities or capabilities so that they are unable to

participate in learning, working or engaging activities and are unable to influence the decisions affecting them.

The Social Inclusion Agenda aims to address the need not only to make Australia a more inclusive society but also to overcome the processes leading to, and the consequences of, social exclusion. As such this provides a good vehicle to address inequities in health. The Australian Government has identified, via the Australian Social Inclusion Board, three particular aspirations in terms of what it wants to achieve with respect to social inclusion: reducing disadvantage; increasing social, civic and economic participation; and developing a greater voice, combined with greater responsibility². Each of these can be seen as key social determinants of health.

1.2 OBJECTIVES OF THIS REPORT

There are few reports that monitor the trends in health inequality over time in Australia, that is, whether the gap between 'rich' and 'poor' Australians in their health status is closing. Also, much of the past research has examined health inequalities in terms of differences observed between populations living in different types of areas. For example, mortality rates may be calculated for Local Government Areas (LGAs) and then compared with differences in the socio-economic status of the LGA populations. This 'ecological' approach may mask or smooth out important variations within area populations i.e. individual level effects. For the main part, this study uses person-level data as the unit of analysis rather than areas.

The Report aims to address two key questions:

- *do lower socio-economic groups in Australia's population of working age experience higher health risks than those of higher socio-economic status? and*
- *how well do the most disadvantaged groups of Australia's population of working age fare compared with the most advantaged?*

It is hoped that this will be the first of a series of reports on health disparities. In this first report a key set of health and socio-economic indicators will be identified that can then be used on a regular basis to capture and track changes in health inequality over time. In this way, progress made towards closing the gap in health inequalities can be identified. Identifying the health inequalities currently challenging Australia is the first step.

1.3 STRUCTURE OF THIS REPORT

The following section outlines the set of key health and socio-economic indicators that have been chosen to explore socio-economic inequalities in health. The data sources and variables used are identified and explained. A profile of the study population and a brief overview of the statistical analyses are provided. Inequalities in death rates are then explored in Section 3. Inequalities in a range of health measures are examined in Section 4, followed by an analysis of socio-economic differentials in health risk factors in Section 5. Some concluding remarks are provided in Section 6.

² <http://www.socialinclusion.gov.au/SIAGenda/Principles/Pages/default.aspx> accessed 29 June 2010.

2 MEASURING HEALTH AND SOCIO-ECONOMIC DISADVANTAGE

2.1 DATA SOURCES

The majority of the data analysed in this Report was obtained from Wave 8 of the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The interviews for the Wave 8 were conducted between August 2008 and February 2009, with over 90 per cent of the interviews conducted in September-October 2008 (Watson, 2010). HILDA is a broad household-based social and economic longitudinal survey which started in 2001. As Watson (2010) describes:

The HILDA Survey began with a large national probability sample of Australian households occupying private dwellings. All members of the households providing at least one interview in Wave 1 form the basis of the panel to be pursued in each subsequent wave. The sample has been gradually extended to include any new household members resulting from changes in the composition of the original households. (Watson, 2010, p2).

Data on mortality were accessed through a customised request to the ABS. Data on deaths by socio-economic status is not readily available at the person-level. Age-specific death rates for statistical local area (SLA) populations therefore were obtained. These area population based death rates were then compared with the socio-economic status of the area populations. Deaths for 2005, 2006 and 2007 were combined and annualised death rates were calculated for two age groups: 25-44 years and 45-64 years. The denominator was the estimated resident population for 2006. Even when these years were combined, some SLAs still had small numbers of deaths and rates were not provided. A gender breakdown would result in more data becoming unavailable due to smaller cell sizes, and therefore was not pursued.

2.2 KEY HEALTH AND SOCIO-ECONOMIC INDICATORS

A number of key socio-economic indicators have been selected for the analyses based on the commonality and importance of the social determinants of health reported in the national and international literature, and a number of key health outcomes measures to represent the key dimensions of health, namely mortality, morbidity and lifestyle risk factors. The variables chosen are described briefly in Table 1 and in the discussion below. Further details are provided as technical notes in Appendix 1.

In order to investigate socio-economic inequalities in mortality an area population based measure of socio-economic disadvantage was required. The most commonly used measures are the four ABS Socio-economic Indexes for Areas (SEIFA), each representing a slightly different concept. These indexes, which are created by combining information collected in the five-yearly Census, rank geographic areas across Australia in terms of the socio-economic characteristics of the people, families and dwellings within each area. In this study we are using the *Index of Relative Socio-economic Disadvantage* (IRSD). Unlike the other indexes, this index only includes measures relating to disadvantage, capturing socio-economic disadvantage in terms of relative access to material and social resources and ability to participate in society. It is important to note that a

SEIFA is a summary of people in an area and does not apply to an individual person or dwelling. The IRSD represents the general level of socio-economic disadvantage of all the people in the area in which a person lives, not the person themselves. A *low score* indicates relatively greater disadvantage in general, and a *high score* indicates a relative lack of disadvantage in general.

All of the other variables (apart from mortality) in Table 1 are derived from the person-level data contained in Wave 8 of the HILDA survey. All the variables from the HILDA survey involve self-reported data.

Table 1 Socio-economic and health domains and variables

Domain	Variable description
Socio-economic status	
Household income	Annual disposable (after-tax) household income including government transfers (government benefits) in the past financial year. Income is equivalised to household size and structure, and is reported by quintile.
Relative socio-economic disadvantage	Index of Relative Socio-economic Disadvantage (IRSD) - a composite socio-economic index that reflects the aggregate socioeconomic status of individuals and families living in a geographic unit. The IRSD includes only measures of relative disadvantage. The IRSD is for SLAs and is reported by quintile - the lowest scoring 20% of SLAs being the most disadvantaged are given the quintile number of 1 and the highest 20% of areas being the least disadvantaged are given the quintile number of 5.
Education	Highest educational qualification categorised into three groups: year 11 and below, year 12 or vocational qualification, and tertiary education.
Attachment to the labour market (employment)	Jobless households: a jobless household is a household with all adult members either unemployed or not in the labour force.
Housing	Tenure type of the household – owner, purchaser, private renter, public renter or rent other/free.
Social connectedness	A summary measure constructed on the basis of rating of three questions on frequency of gathering with friends/relatives, perceived availability of someone to confide in at difficult times, and feeling of loneliness. Classified as low connectedness, moderate connectedness or high connectedness.
Mortality	
Death rates	Median age-specific death rates for statistical local area populations. Expressed as deaths per 100,000 population.
Health outcomes	
Self-assessed health status	The five standard levels of self-assessed health status have been collapsed into two: “good health” and “poor health” where “good health” includes excellent, very good and good health; and “poor health” refers to fair and poor health.
Presence of a long term health condition	Has any long-term health condition, impairment or disability that restricts an individual in their everyday activities, and has lasted or is likely to last, for 6 months or more.
Lifestyle risk factors	
Smoking	Classified as current smoker, former smoker or non-smoker.
Alcohol consumption	Classified as non-drinker, former drinker, low risk drinker or high risk drinker.
Physical activity	Based on a person’s participation in moderate or intensive physical activity for at least 30 minutes, coded in to two groups: none/insufficient and sufficient.
Body Mass Index	Body mass index (BMI) is calculated from a person’s height and weight and is classified as underweight, normal range, overweight or obese.

The 2009 National Health and Medical Research Council (NHMRC) guidelines for alcohol consumption have been used to identify 'at risk' alcohol use. The NHMRC has put forward two dimensions of alcohol related risk: life time risk and immediate risk. The first guideline, which is related to the life time risk, suggests that "For healthy men and women, drinking no more than two standard drinks on any day reduces the lifetime risk of harm from alcohol-related disease or injury" (p2). The second guideline advises that "For healthy men and women, drinking no more than four standard drinks on a single occasion reduces the risk of alcohol-related injury arising from that occasion" (p3). We constructed a high risk-low risk dichotomy by combining frequency and amount of alcohol consumed as follows:

Low risk Less frequent (up to 1-2 days/week) and up to 4 drinks, or
More frequent (3-4 days+/week) and up to 2 drinks

High risk Less frequent (up to 1-2 days/week) and more than 4 drinks, or
More frequent (3-4 days+/week) and more than 2 drinks

The National Physical Activity Guidelines for Australians recommends adults to "put together at least 30 minutes of moderate-intensity physical activity on most, preferably all, days" (Department of Health and Ageing, 1999). In following the spirit of this guideline, physical activity was coded as none or insufficient if individuals exercised for at least 30 minutes on 0-3 days per week or sufficient if they exercised for at least 30 minutes on 4 or more days per week.

More information on the other variables can be found in Appendix 1.

2.3 LOCATIONAL DISADVANTAGE

There is general recognition that where a person lives influences his or hers socio-economic well-being and prospects, and that in Australia there are communities living with entrenched and deep disadvantage (Vinson, 2007; Hayes et al, 2008; Vu et al, 2008; Tanton et al, 2009; Miranti et al, 2010). The question is how does the health of residents of these disadvantaged areas compare with the health of people living elsewhere? Unfortunately, a small area analysis cannot be undertaken using the HILDA data because of sample size issues, that is, many areas would have no or too few respondents to be able to carry out such an analysis.

One available possibility to explore locational differences was to use the Australian Standard Geographical Classification (ASGC) of area remoteness. This allows some investigation of the broad geographical nature of health inequalities but it does not identify local neighbourhoods and communities, in either urban or rural Australia, where many disadvantaged and socially excluded individuals and families live. For this study, the ASGC classes of remoteness used in HILDA were collapsed into three areas: major city, inner regional Australia, and outer regional and remote Australia. The HILDA survey does not cover very remote Australia.

2.4 STATISTICAL APPROACH

This Report focuses on adults of working age i.e. those aged between 25 and 64 years of age. Youth under 25 years of age were excluded as many of these individuals could be studying. Simple cross-tabulations between the various socio-economic and health indicators were

generated and the percentages of the different socio-economic groups having a particular health characteristic calculated.

One way to express health inequalities is to compare the health experience of members of the **most** socio-economically disadvantaged group to that of the **least** disadvantaged group using **relative risk** (risk ratio) (RR) estimates. Relative risk is the risk of an event (e.g. developing a particular disease) relative to exposure, and is expressed as the ratio of the probability (risk) of the event occurring in the exposed group to the probability of the event occurring in the unexposed group (Last, 1988). For the current study, the most disadvantaged group within each socio-economic indicator is deemed to be the 'exposed' group and the least socio-economically disadvantaged group to be the 'unexposed' group. The events examined are key outcomes for each of the health indicators e.g. having good self reported health status, having a long-term health condition, being a current smoker, being obese, having high risk alcohol consumption or undertaking sufficient physical activity. As an example, one RR for self-assessed health status is the ratio of the percentage of individuals in the lowest income quintile reporting that they have good health divided by the percentage of those in the top income quintile reporting good health.

In this 'simple' comparison between an exposed group and an unexposed group:

- A RR of 1 means there is no difference in risk between the two groups;
- A RR of < 1 means the event is less likely to occur in the exposed group than in the unexposed group i.e. decreased risk;
- A RR of > 1 means the event is more likely to occur in the exposed group than in the unexposed group i.e. increased risk.

To assess whether the RRs i.e. the health inequalities were likely to have occurred simply by chance, 95 per cent confidence intervals were calculated. If the confidence interval enclosed the value of 1.0 then the difference between the two socio-economic groups was statistically not significant at the five per cent level. However, if the confidence interval did not cover 1.0 then the RR was statistically significant, meaning that there is less than one in 20 (less than 5 per cent) chance that a difference as large as that observed in this study, could have arisen by chance if there was really no true difference in the health or health behaviour of the groups. The statistically significant RRs are highlighted in the relevant results tables.

For this study, the following groups are considered to be the most and least disadvantaged group in each of the socio-economic indicators (Table 2). For the ease of presentation, the term "likelihood" is used to refer to relative risk ratios.

Table 2 Socio-economic classification

	Most Disadvantaged	Least Disadvantaged
Income	bottom quintile	top quintile
Education	≤year 11 schooling	tertiary qualification
Employment	jobless household	other household
Housing	public renter	homeowner
Social connectedness	low	high
Remoteness	regional/remote	major city

With the exception of inequalities in mortality, the analyses are undertaken separately for men and women.

The HILDA Wave 8 data had a total of 8,217 unit records for people aged 25-64 years. For some variables, however, a slightly fewer number of records were available for analyses owing to non-response. Missing values were more prevalent for variables that were collected through self-completed questions such as self-assessed health, alcohol consumption, smoking, height, weight, and physical activity. To deal with this, we compared the socio-demographic profiles of people with missing and non-missing responses. Of the total 8,217 unit records for persons aged 25-64 years of age, 1,039 (12.6%) had data missing for self-assessed health status. These records were excluded from the analyses of self-assessed health. While the non-response to the self-reported health question was slightly higher among younger ages, lower income quintiles, less educated, low social connectedness, home purchasers and private renters, the differences in response rates were not sufficiently large to bias the results for whom responses were known. For long-term health conditions, another key variable, there was no non-response. Numbers of records available for the various variables used in this analysis are presented in Appendix Table A.1.

The HILDA survey population weights were applied to the person-level records to generate the estimates for the Australian population of working age.

2.5 PROFILE OF THE STUDY POPULATION

As the distribution and significance of the socio-economic factors vary across age bands, separate analyses have been recommended for children and young persons, the working age population, and retirees and older Australians, each being the basis of a discrete report. The current study population – Australians of working age – has been broken into two age groups: those aged 25-44 years and those aged 45-64 years. The basic socio-economic profile of this population is given in Table 3.

Table 3 Per cent distribution of men and women aged 25-64 years by selected socioeconomic characteristics

	Men		Women	
	25-44	45-64	25-44	45-64
Equivalentised disposable HH^a income quintile^b				
Bottom	10	15	13	17
Second	20	17	20	18
Third	22	21	22	18
Fourth	23	22	22	22
Top	25	26	22	25
Education				
Year 11 and below	18	25	20	38
Year 12 / vocational	55	52	45	40
Tertiary	27	22	35	22
Whether in jobless HH				
In jobless households	6	15	10	20
In other households	95	85	90	80
Housing tenure				
Owner	16	45	17	47
Purchaser	49	37	51	34
Renter private	28	13	26	12
Renter public	4	4	4	6
Rent other/free	3	1	3	1
Social connectedness^c				
Low connectedness	20	28	19	24
Moderate connectedness	30	33	30	32
High connectedness	30	25	35	30
Remoteness				
Major city	71	64	69	67
Inner regional	19	23	20	22
Outer regional / remote	10	13	11	11
Population (million)	2.97	2.63	2.99	2.70
Number records in HILDA	2,007	1,879	2,230	2,101

Source: HILDA Wave 8 datafile.

Note: ^aHH = household. ^b Equivalentised disposable household income quintile is based on all responding households in the full HILDA sample, and weighted by population weights. ^cPercentage total may not add to 100 owing to missing data.

3 POORER THE SETTING, SHORTER THE LIFE

3.1 LIFE EXPECTANCY GAPS

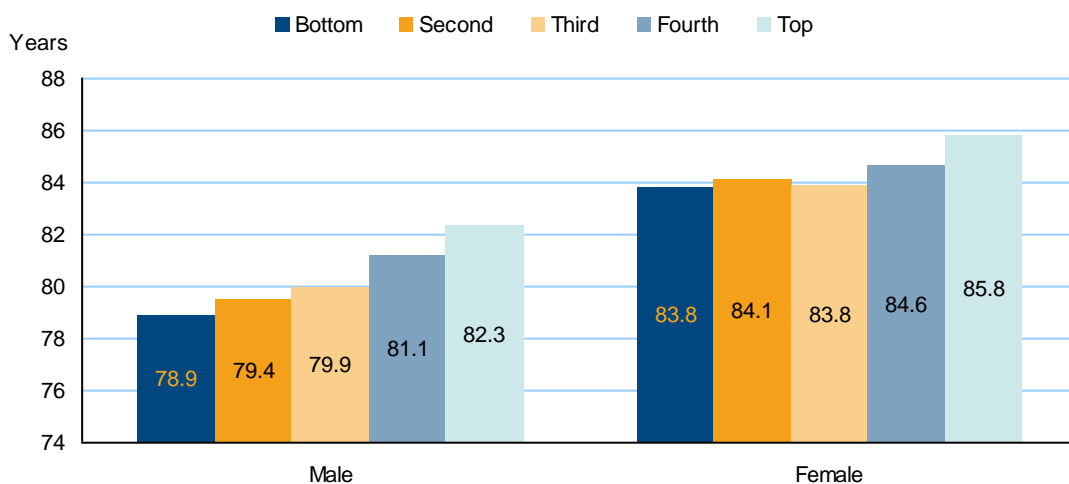
A crucial question is whether those who are most socio-economically disadvantaged are dying earlier than those who are better-off? Does socio-economic disadvantage shorten life?

Unfortunately, there is very little person-level data available in Australia to answer this question directly. However, research by the Victorian Government provides some insight. Estimates of life expectancy were calculated for Local Government Area (LGA) populations within Victoria using

five years (2003-2007) of aggregated mortality and population data from the ABS. Life expectancy at birth for each area (based on the mortality experience of each LGA population) was then compared with the socio-economic status of the area population using quintiles of the ABS Index of Relative Socio-economic Disadvantage (IRSD).

As Figure 1 shows there was a noticeable inequality gradient in life expectancy across the IRSD quintiles for both men and women. Males born and raised in the most disadvantaged areas of Victoria could expect to live nearly 3.5 years less than those born and living in the least disadvantaged areas of Victoria. For females, there is a gap of two years in life expectancy (Figure 1). Similar gap was observed in a national level study by the Australian Institute of Health and Welfare (AIHW). Based on mortality patterns in 2003, this study estimated that persons from the lowest socioeconomic quintile were expected to live 79.6 years while the persons from the highest socioeconomic quintile would live 82.7 years (Begg et al, 2007), a gap of 3.1 years between the most and least disadvantaged groups. The AIHW study also estimated health-adjusted life expectancy by deducting the time spent in various states of disability. It was found that persons born in the most disadvantaged areas (quintiles) would expect to live 71.2 years of healthy life and those in the least disadvantaged areas would live 75.5 years of healthy life, or a gap of 4.3 years. On average, the proportion of life expectancy lost to disability was greater for people in the most disadvantaged areas than those in the least disadvantaged areas (10.6% vs. 8.7%) (Begg et al, 2007).

Figure 1 Life expectancy at birth by quintiles of Index of Relative Socioeconomic Disadvantage, Victoria, 2003-2007



Source: Victoria Department of Health (2010).

While these studies illustrate that total as well as healthy life expectancy is lower among people born in more disadvantaged background in Australia, they, being ecological analysis, might not have revealed the true extent of the disparity. That is, the socioeconomic as well as mortality data were averages for people living in a spatial unit and the aggregation might have smoothed out

individual differences to some extent.³ Pointing out this limitation in an earlier version of the Victorian study, Vos et al (2001, p128) explained: “As this is an ecological analysis, taking the average socioeconomic status of the population living in a small area and correlating it with the average mortality experience in the area, it is likely that this has diluted the true association between socioeconomic status and life expectancy”. In England, using mortality data from 1999-2003, it was found that people living in the poorest neighbourhoods, on average, died seven years earlier than people living in the richest (Marmot et al, 2010). For one of the most disadvantaged groups in Australia, the gap in life expectancy at birth, at the national level for 2005-2007, was 11.5 years for Indigenous males (67.2 years) compared with non-Indigenous males (78.7 years), and 9.7 years for Indigenous females (72.9 years) compared with non-Indigenous females (82.6 years) (ABS, 2009; ABS, 2010).⁴

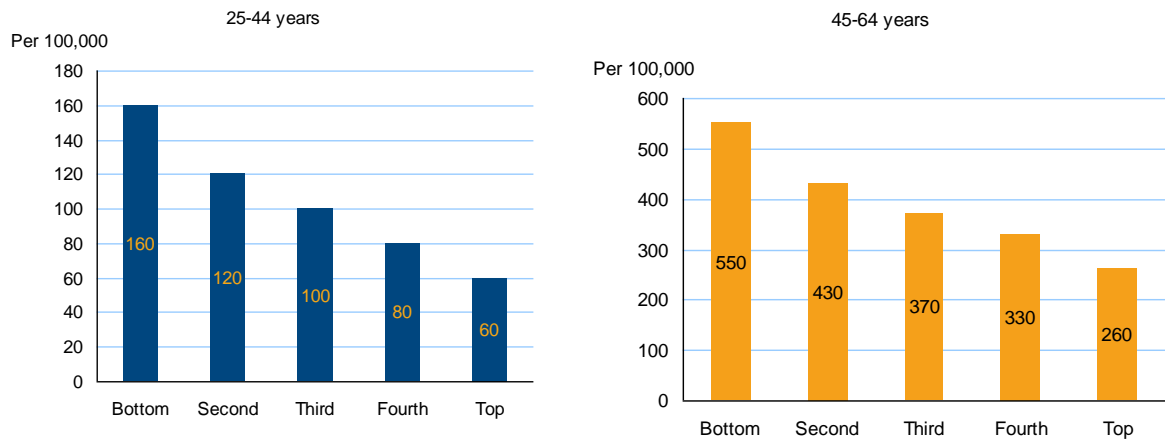
3.2 MORTALITY GAPS

Differences in life expectancy arise because of differences in age specific death rates. In Figure 2, death rates per 100,000 persons for Statistical Local Area (SLA) populations across Australia are compared by the IRSD quintile. Figure 2 illustrates how the mortality of people living in the more disadvantaged and less disadvantaged areas differs.

While death rates are relatively low, the median SLA death rate for the younger population (i.e. those aged 25-45 years) living in areas of very low socio-economic status (the bottom IRSD quintile areas) is 2.7 times higher than that for 25-44 year olds living in the most advantaged 20 per cent of areas. While death rates rise for the older age group (45-64 years), the median SLA death rate for this age group living in the most disadvantaged 20 per cent of areas is still double that for populations aged 45-64 years living in the top IRSD quintile areas. If the populations of the most disadvantaged areas had the same death rate as those living in the most socio-economically advantaged areas then the number of deaths would be one-third to a half of current numbers. In other words, around a half to two-thirds of current premature deaths of Australians of working age would be prevented. Similar to the life expectancy gradient discussed above, Figure 2 shows that there is a clear socio-economic gradient in small area death rates for both younger and older Australians of working age. Being ecological analysis based on areal-level aggregated statistics, the socioeconomic gaps in death rates may have been underestimated.

³ Despite knowing this limitation, Australian studies of socioeconomic differences in mortality have been relying on ecological analyses owing to the lack of mortality data linked to socioeconomic data at the individual level.

⁴ Due to significant changes in methodology, estimates of life expectancy at birth for Indigenous Australians for 2005-2007 are not comparable to previously published estimates by the ABS. In the period 1996-2001, life expectancy at birth for Indigenous Australians was estimated to be 59.4 years for males and 64.8 years for females, compared with 76.6 years for all males and 82.0 years for all females for the period 1998-2000: a difference of approximately 17 years for both males and females (ABS, 2007).

Figure 2 Median number of deaths per 100,000 population by IRSD quintile, 2005-2007

Notes: Deaths from the years 2005 to 2007, and estimated resident population for 2006. Analysis included 948 Statistical Local Areas for which data were available.

Source: Special request data, ABS, 2010.

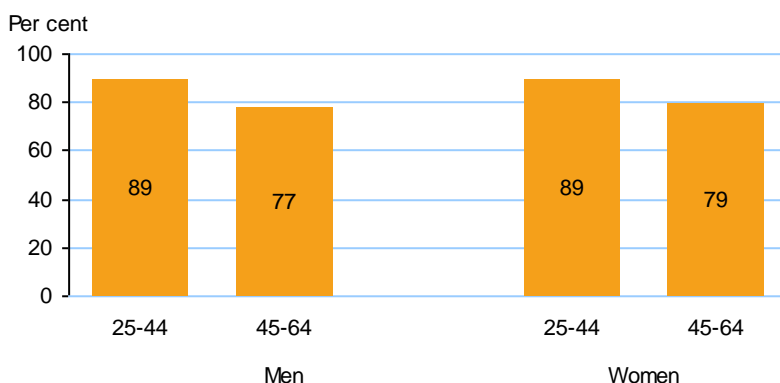
4 LOWER THE RANK, POORER THE HEALTH

4.1 SELF-ASSESSED HEALTH STATUS

A large majority of Australian men and women of working age report that they are in good health (Figure 3). However, as many as one in nine 25-44 year olds and over one in five persons aged 45-64 years believe their health to be poor or at best fair. Gender differences are none or negligible but differences by age are notable with more of the younger adults (25-44 years) than younger adults (25-44 years) having a good health.

As Table 4 shows the proportion of individuals who report their health as being good differs greatly by socio-economic status. With the exception of remoteness, those who are most socio-economically disadvantaged are statistically much less likely to report being in good health compared with those who are least disadvantaged (Table 5). As Tables 4 and 5 show, inequalities in self-assessed health status are significant for both men and women, and both age groups.

Figure 3 Per cent of persons reporting good health, by sex and age



Note: N=7178 HILDA records. Non-response cases are excluded from the calculation.

Source: HILDA Wave 8 datafile.

Table 4 Per cent of persons reporting good health, by sex, age and socio-economic disadvantage

	Men				Women			
	25-44 years		45-64 years		25-44 years		45-64 years	
	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.
Income	77	93	51	87	78	92	53	86
Education	82	93	66	85	86	93	72	88
Employment	63	91	50	82	70	91	57	84
Housing	70	92	46	78	72	91	45	83
Social connectedness	82	94	71	82	81	94	65	86
Remoteness	90	90	73	78	89	90	77	78

Five lowest percentages of groups reporting good health

Source: HILDA Wave 8 datafile.

Table 5 Likelihood of reporting good health, by sex and age

	Men		Women	
	25-44 years	45-64 years	25-44 years	45-64 years
Income quintile (bottom vs. top)	0.8	0.6	0.8	0.6
Education (≤year 11 vs. tertiary)	0.9	0.8	0.9	0.8
Employment (jobless vs. other HH)	0.7	0.6	0.8	0.7
Housing (public renter vs. homeowner)	0.8	0.6	0.8	0.5
Social connectedness (low vs. high)	0.9	0.9	0.9	0.8
Remoteness (regional/remote vs. major city)	1.0	0.9	1.0	1.0

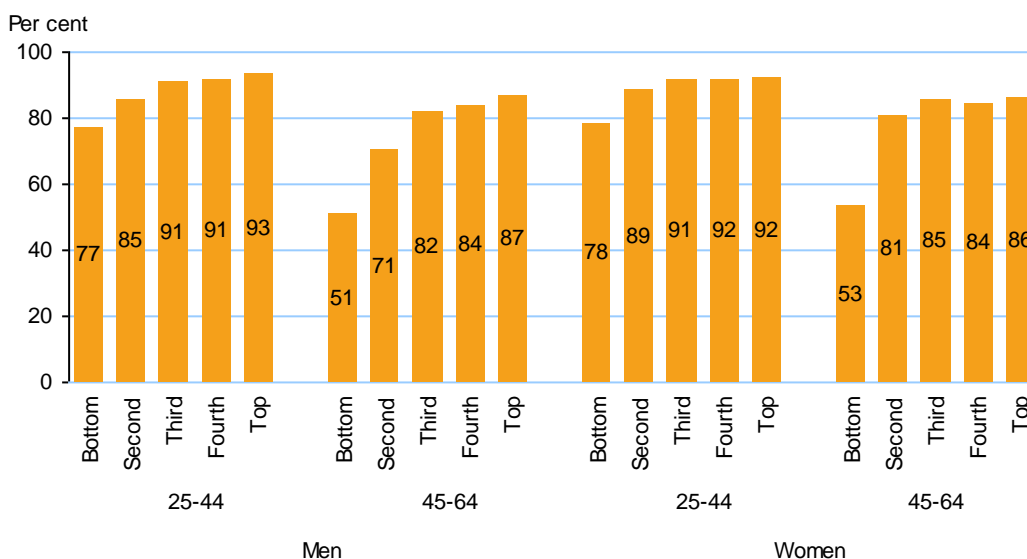
The probability of good health being reported by members of the most disadvantaged group is statistically lower ($p < 0.05$) than that for members of the least disadvantaged group

Source: HILDA Wave 8 datafile.

The Likelihood of being in poor health is most marked for men and women aged 45-64 years who are in the poorest 20 percent of households by income, or who are members of jobless households, or who live in public rental accommodation. For every one of these individuals who reports their health as being good, there is another who reports their health as poor (Table 4). These mid-to-older men and women are 30 to 40 per cent less likely to have good health than those who are least socio-economically disadvantaged.

Even though relatively more Australians in the 25-44 year age group report being in good health, those who are socio-economically disadvantaged do have a higher risk of poor health than those who are not disadvantaged. These individuals are 20 to 40 percent less likely to report being in good health than those in the top socio-economic groups (Table 5). While proportion of people with good health is drops with age across all income quintiles, the fall is striking for people in the bottom quintile: from 77 per cent to 51 per cent among men, and from 78 per cent to 53 per cent among women (Figure 4).

Tables 4 and 5 show that household income, participation in employment and housing tenure are strongly associated with people's health status. Figure 4 shows that not only is there a difference in the proportion of people reporting being in good health between those who are 'worst' and 'best' off but also a socio-economic gradient exists across the five household income quintiles. As household income increases so does the chance of having good health, or alternatively as household income decreases, the risk of having poor health increases.

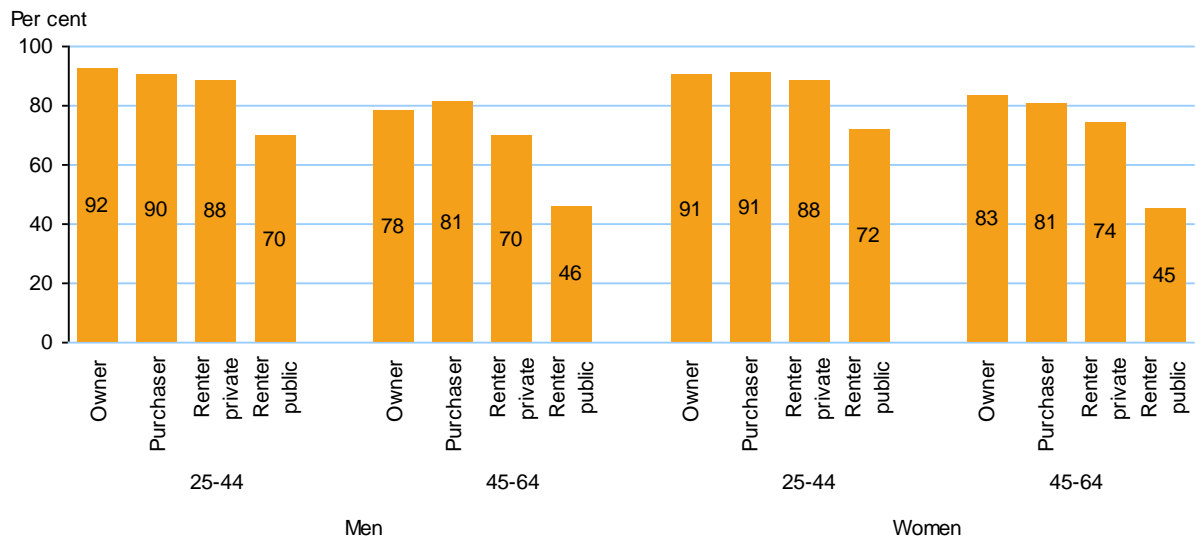
Figure 4 Per cent of persons reporting good health, by sex, age and income quintile

Source: HILDA Wave 8 datafile.

A major contributor to financial hardship is joblessness. Around 10 per cent of men and 15 per cent of women of working age live in households where no adult is in paid employment. For some individuals, this may be by choice – those who choose to retire early, be a stay-at-home parent, or are studying for example. But, many Australians of working age are unemployed or unable to participate in the labour force, often because of poor health or disability. This study indicates that men living in a jobless household are 30 to 40 per cent more likely to have poor self-assessed health than men from other households, and women are 20-30 per cent more likely to have poor health than those living in households where at least one adult is working (Table 5). Four of every ten younger men living in a jobless household are likely to report that they have poor health and as many as half of mid-older men (Table 4).

A key dimension of social exclusion is the lack of access to affordable and high quality housing. As Figure 5 shows there is a difference in the proportion of people reporting good health between those who own or are purchasing their own home and those who rent. This is most noticeable for the older of the two age groups, with three of every ten individuals living in private rental accommodation ranking their health as being poor, and one of every two living in public rental housing.

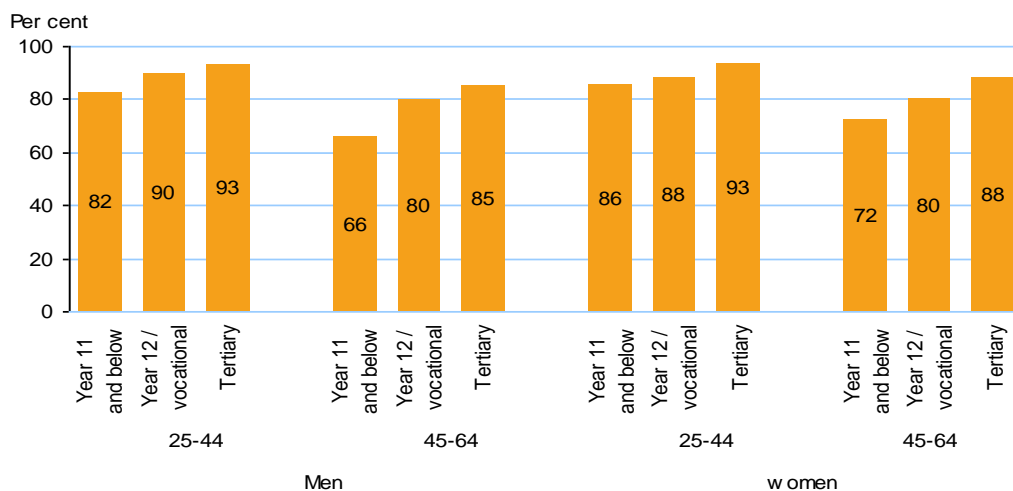
For the younger group, many young adults will be in private rental accommodation before they enter into home ownership with little difference in their health status between those who are already home-owners or purchasers. However, far fewer younger men and women living in public housing enjoy good health compared to those living in other forms of housing. Three of every ten 25-44 year olds living in public rental accommodation rank their health as being poor, compared with only one in ten living in their own home or private rental housing.

Figure 5 Per cent of persons reporting good health, by sex, age and housing tenure type

Source: HILDA Wave 8 datafile.

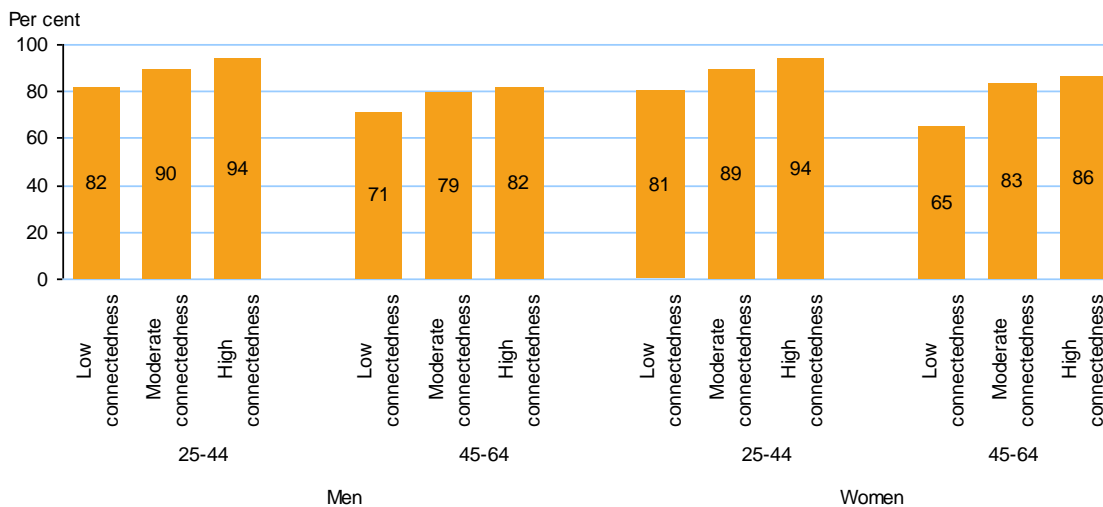
Both people's levels of education and social connectedness are associated with their risk of being in poor or good health although the relationship is less extreme than that of the other socio-economic indicators. Early high school leavers and those who are least socially connected are 10 to 20 per cent less likely to report being in good health than those with a tertiary education or who have a high level of social connectedness (Table 5). As with income and housing tenure, there is a clear social gradient in health status by education and social connectedness (Figures 6 and 7). These gradients occur for both men and women and for the two age groups.

Figure 6 Per cent of persons reporting good health, by sex, age and education



Source: HILDA Wave 8 datafile.

Figure 7 Per cent of persons reporting good health, by sex, age and social connectedness



Source: HILDA Wave 8 datafile.

While these analyses do not address issues of causality, having higher educational qualifications and being socially connected – such as gathering with friends and/or relatives, having someone to confide in at difficult times, and not feeling lonely - are clearly important for maintaining a good health.

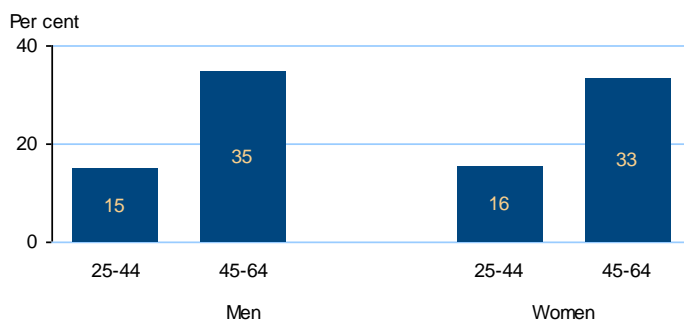
The proportion of people reporting poor or good health does not appear to vary between city dwellers and those living in regional or remote Australia (see Appendix 2).

4.2 LONG TERM HEALTH CONDITIONS

Having seen that major socio-economic inequalities in health exist when individuals' perceptions of their own health are investigated, what differentials exist when long term health conditions are considered. As described in Table 1, the measure used is whether a person identifies that they have any long term health condition, impairment or disability that restricts them in their everyday activities, and that has lasted or is likely to last, for 6 months or more. This is very sweeping in terms of health problems, ranging from, for example, a person having hearing problems, loss of sight or visual impairment, long term effects of a head injury or stroke, chronic or recurring pain, limited use of their arms or legs, a mental health condition, arthritis, asthma, heart disease, dementia and so on. The key factor is that whatever health problem or problems an individual has, this impacts on their daily life and is long-lasting.

Around 15 per cent of Australians aged 25-44 years and a third of those aged 45-64 years report they have at least one long term health condition that affects their everyday activities (Figure 8). However, when socio-economic status is taken into account, those who are most disadvantaged are twice as likely as those who are least disadvantaged to have a long term health condition, and for some disadvantaged younger men up to four to five times as likely (Tables 6 and 7). Like self-assessed health status, the differences in the proportion of the most versus least disadvantaged groups having a long term health condition are statistically significant across all of the socio-economic indicators (other than area remoteness).

Figure 8 Per cent of persons reporting a long-term health condition, by sex and age



Source: HILDA Wave 8 datafile.

Table 6 Per cent of persons reporting a long-term health condition, by sex, age and socio-economic disadvantage

	Men				Women			
	25-44 years		45-64 years		25-44 years		45-64 years	
	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.
Income	38	9	62	26	30	13	59	23
Education	23	9	46	25	22	11	41	20
Employment	61	12	69	29	41	13	58	27
Housing	49	17	67	34	45	20	66	30
Social connectedness	24	12	43	26	24	12	47	26
Remoteness	15	15	35	35	13	16	30	34

Five highest percentages of groups reporting a long-term health condition
Source: HILDA Wave 8 datafile.

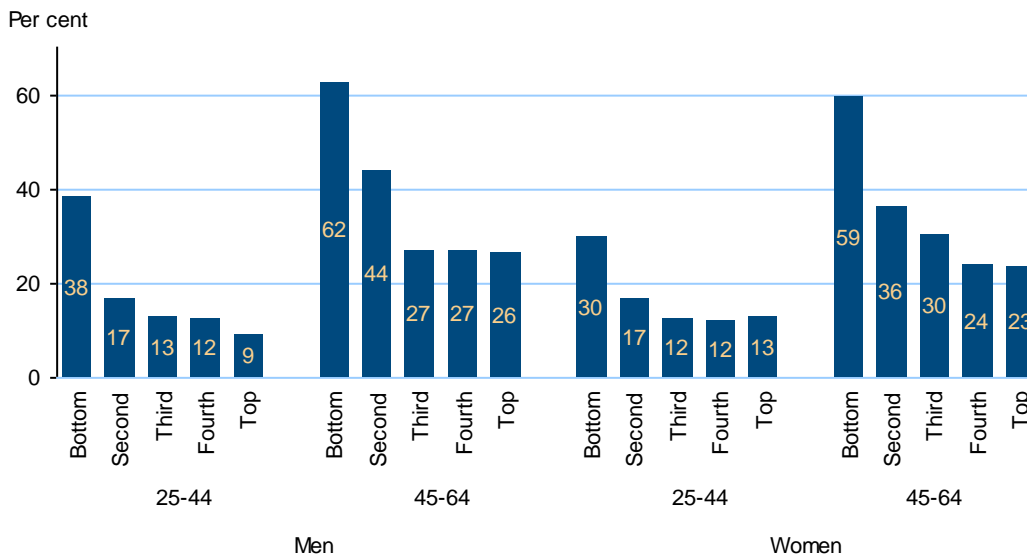
Table 7 Likelihood of reporting a long-term health condition, by sex and age

	Men		Women	
	25-44 years	45-64 years	25-44 years	45-64 years
Income quintile (bottom vs. top)	4.2	2.4	2.3	2.6
Education (\leq year 11 vs. tertiary)	2.6	1.8	2.0	2.1
Employment (jobless vs. other HH)	5.1	2.4	3.2	2.1
Housing (public renter vs. homeowner)	2.9	2.0	2.3	2.2
Social connectedness (low vs. high)	2.0	1.7	2.0	1.8
Remoteness (regional/remote vs. major city)	1.0	1.0	0.8	0.9

The probability of having a long-term health condition being reported by members of the most disadvantaged group is statistically higher ($p < 0.05$) than that for members of the least disadvantaged group.

Source: HILDA Wave 8 datafile.

Figure 9 Per cent of persons reporting a long-term health condition, by sex, age and income quintile



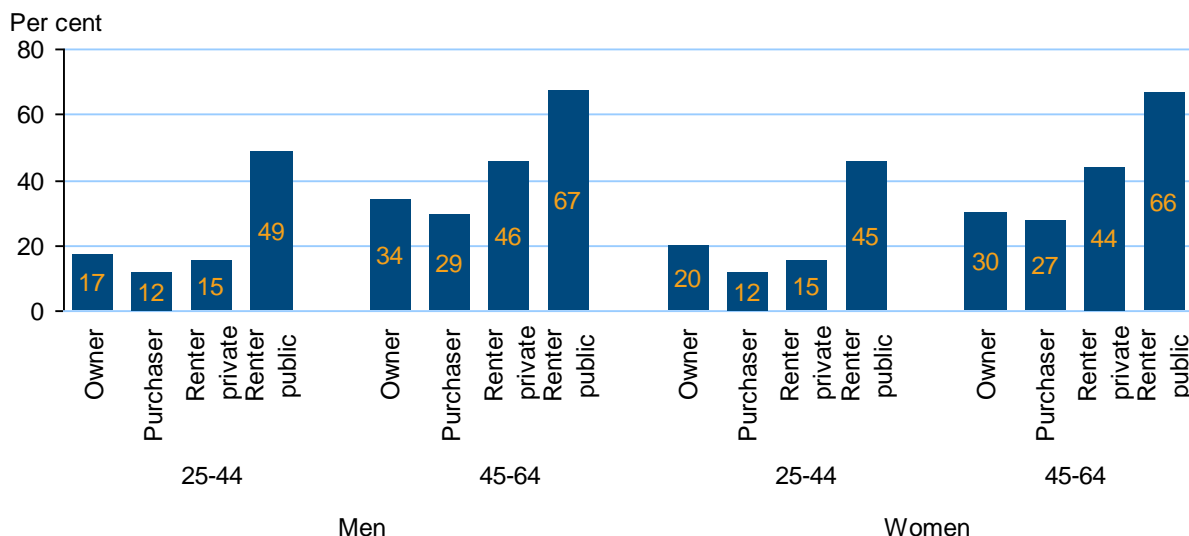
Source: HILDA Wave 8 datafile.

As Figure 9 shows, individuals in the bottom two income quintiles are most at risk of having a long term health condition. Nearly two of every five younger aged males in the poorest household income quintile report having a long term health problem – this is four times the risk of a man of the same age but whose household income is in the top 20 percent of families (Table 7).

Differences in the proportion of persons reporting a long-term health condition by household joblessness is striking, and again especially for younger men as well as younger women. Whether these individuals are out of work because of poor health or disability or whether persisting unemployment and lack of attachment to the labour force is giving rise to long term health problems, such as depression, is not known. What is known from the reported data is that Australian adults of working age living in jobless households are at a significantly higher risk of having long term health problems that impact on their daily lives than those living in households where at least one adult is in paid work. Over 60 per cent of men in jobless households report having a long term health condition or disability, and over 40 per cent of women (Table 6).

Individuals who rely on the public rental sector for their housing needs are often regarded as among Australia's most socio-economically disadvantaged as they do not have the resources to access private rental accommodation or home-ownership. Nearly half of younger adults living in public rental accommodation have a long term health condition and two-thirds of those aged 45-64 years (Table 6, Figure 10). Public renters are over two times as likely to have a long term health condition as home-owners (Table 7).

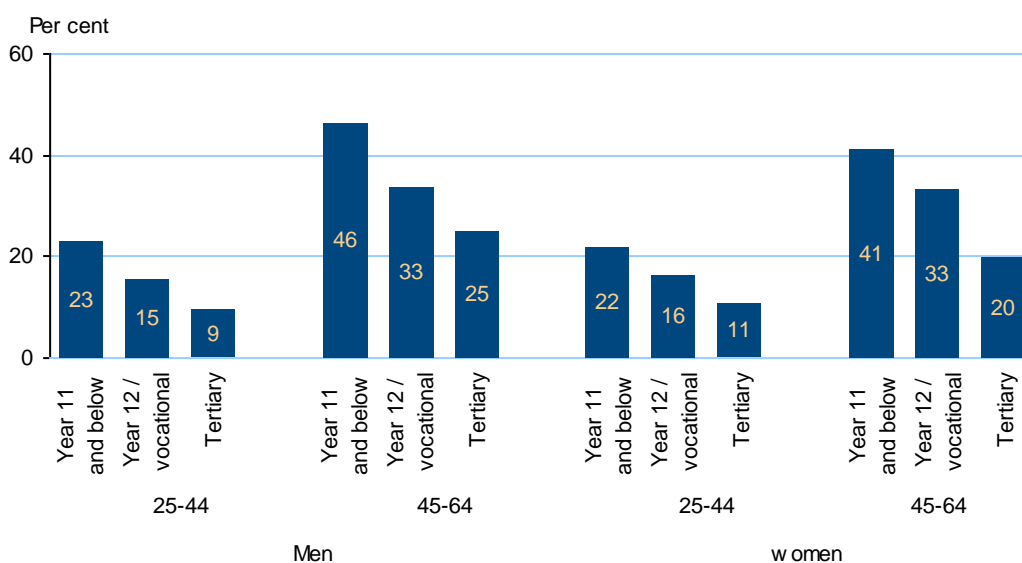
Figure 10 Per cent of persons reporting a long-term health condition, by sex, age and housing tenure type



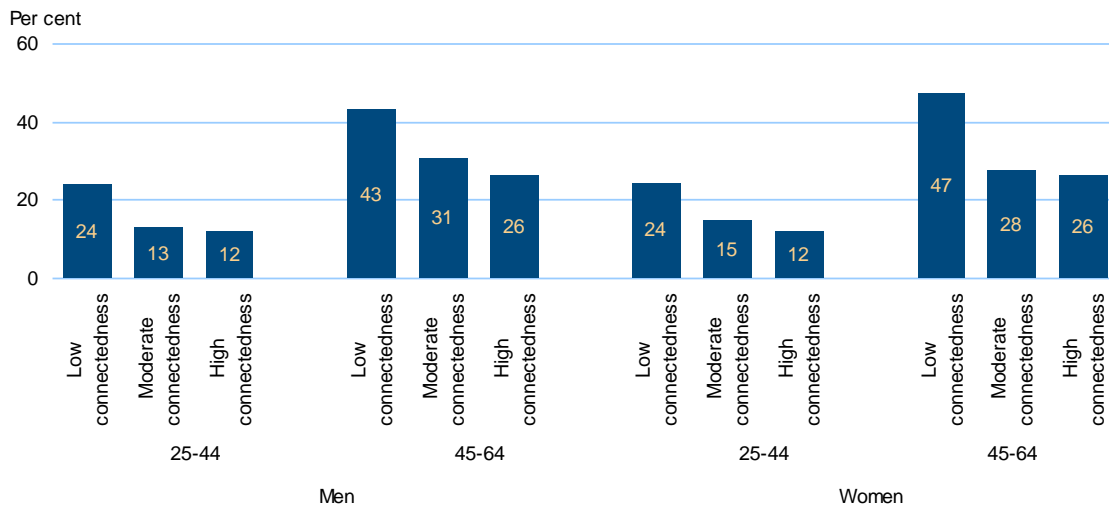
Source: HILDA Wave 8 datafile.

Figure 11 shows that education does matter when it comes to health. An educational gradient in the prevalence of long term health conditions is evident for both men and women and for both age groups. The percentage of early school leavers who have a long term health problem is typically twice that for those with higher education.

Figure 11 Per cent of persons reporting a long-term health condition, by sex, age and education



Source: HILDA Wave 8 datafile.

Figure 12 Per cent of persons reporting a long-term health condition, by sex, age and social connectedness

Source: HILDA Wave 8 datafile.

When it comes to health, social connectedness also matters. The patterns of health inequalities shown in Figure 12 are very similar to the educational based differences shown in Figure 11. Individuals who have low social connectedness are twice as likely to have long term health problems as those who are highly socially connected.

Again, locational differences in the self-reported prevalence of long term health conditions do not show at the aggregate level of remoteness that was available for analysis (see Appendix 2 for further information on differences by remoteness).

5 LIFE STYLE RISK FACTORS: WHO ARE MORE EXPOSED?

5.1 SMOKING AND SOCIO-ECONOMIC STATUS

Overall, less than 20 per cent of Australian adults now smoke tobacco. As smoking is the single most preventable cause of ill-health and death in Australia (AIHW, 2010), it is of major concern that significant socio-economic differentials exist in the proportion of people who are current smokers (Tables 8 and 9). Of further concern is that the highest rates of smoking occur in the younger most disadvantaged groups, including those living in outer regional and remote areas of Australia. In general, rates of smoking are higher in men than women. So while younger disadvantaged males have the highest percentage of individuals who smoke – from a third to nearly three-fifths of individuals depending on the socio-economic indicator – the Likelihood of smoking is greatest for younger disadvantaged females (Table 9). The proportion who smoke is approximately 10 and 20 per cent among women aged 25-44 years and who are not disadvantaged, but the proportion of women who are most disadvantaged and smoke is 1.5 to four times higher.

Table 8 Per cent of persons reporting being a current smoker, by sex, age and socio-economic disadvantage

	Men				Women			
	25-44 years		45-64 years		25-44 years		45-64 years	
	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.
Income quintile	43	17	25	14	39	11	20	12
Education	49	13	32	12	40	10	18	8
Employment	58	26	22	20	46	21	17	15
Housing	45	22	52	15	66	17	23	10
Social connectedness	34	25	22	20	29	20	20	11
Remoteness	39	26	25	18	34	19	20	14

Five highest percentages of groups reporting being a current smoker

Source: HILDA Wave 8 datafile.

Table 9 Likelihood of reporting being a current smoker, by sex and age

	Men		Women	
	25-44 years	45-64 years	25-44 years	45-64 years
Income quintile (bottom vs. top)	2.5	1.8	3.5	1.7
Education (\leq year 11 vs. tertiary)	3.8	2.7	4.0	2.3
Employment (jobless vs. other HH)	2.2	1.1	2.2	1.1
Housing (public renter vs. homeowner)	2.1	3.5	3.9	2.3
Social connectedness (low vs. high)	1.4	1.1	1.5	1.8
Remoteness (regional/remote vs. major city)	1.5	1.4	1.8	1.4

The probability of members of the most disadvantaged group reporting they are current smokers is statistically higher ($p < 0.05$) than that for members of the least disadvantaged group.

Source: HILDA Wave 8 datafile.

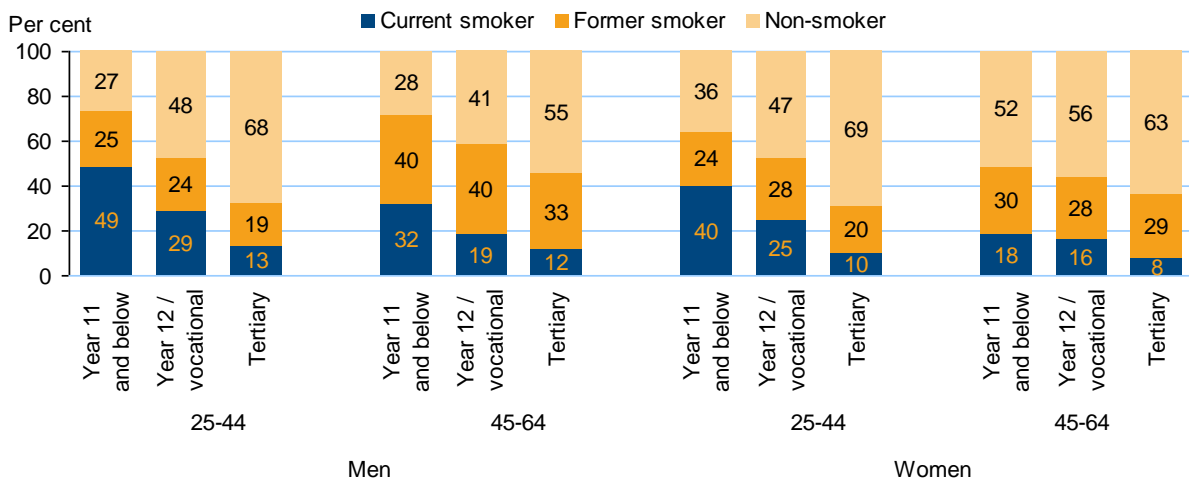
The most discriminating socio-economic factors for smoking are education, housing tenure and income. As Figure 13 shows there is a striking educational gradient in the proportion of individuals of working age who are current smokers or conversely who have never smoked (rates of being an ex-smoker are not that different). Fewer than 15 per cent of individuals with a tertiary education smoke; nearly 70 per cent of 25-44 year olds with a tertiary education have never smoked, and over 55 per cent of those aged 45-64 years. These figures are in marked contrast to those for both early high school leavers and individuals who have completed year 12 or obtained vocational qualifications.

The distribution of smoking status by housing tenure is shown in Figure 14. Those in rental accommodation, and especially public rental housing, are more likely to be smokers than those owning or buying their own home. Smoking is much more common in younger aged women living in public rental accommodation than any other group, with two-thirds of these women being current smokers. The proportion of current smokers is substantially higher among women (66%) than men (45%) aged 25-44 living in public rental accommodation. This is an exception to

that fact that smoking is generally higher among men than women of comparable categories examined in this study.

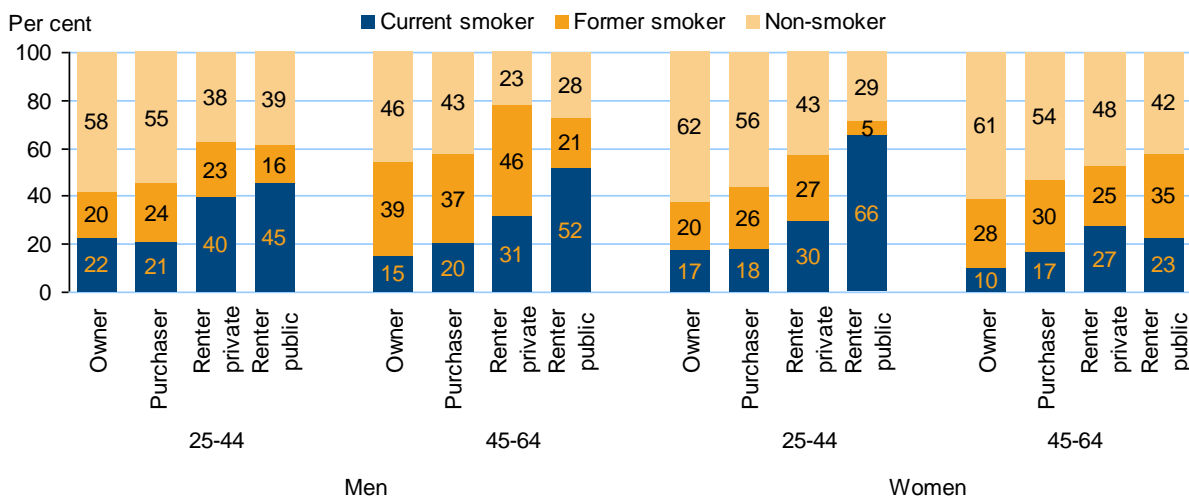
An income gradient in smoking behaviour is clearly evident for younger adults but less so for those aged 45-64 years (Figure 15). For the older age group there appears to be more of a split between the bottom two income quintiles and the top three.

Figure 13 Tobacco smoking status (per cent of individuals) by age, sex and education



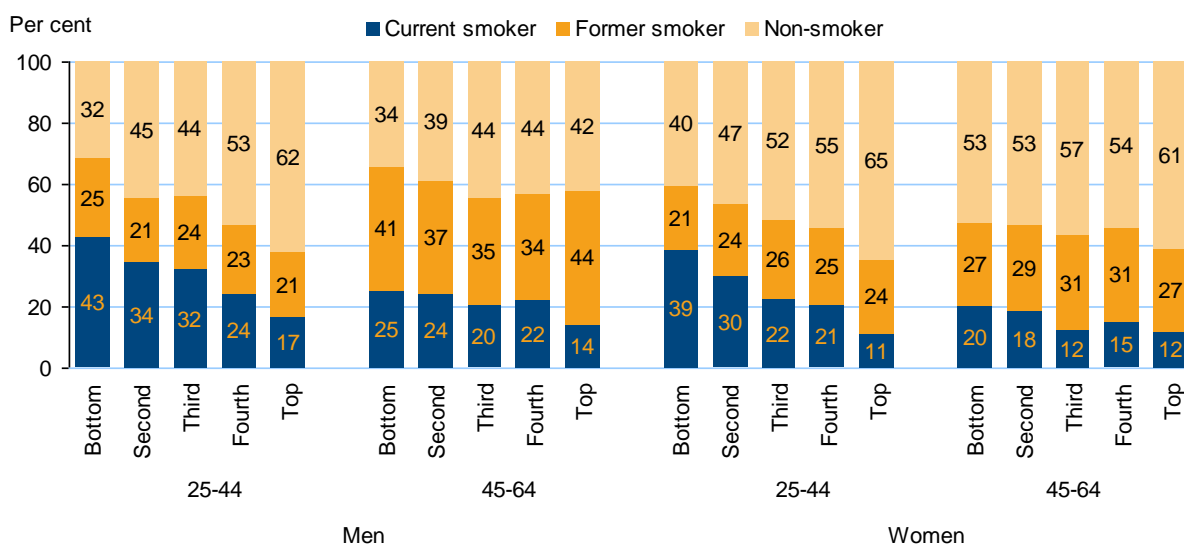
Source: HILDA Wave 8 datafile.

Figure 14 Tobacco smoking status (per cent of individuals) by age, sex and housing tenure



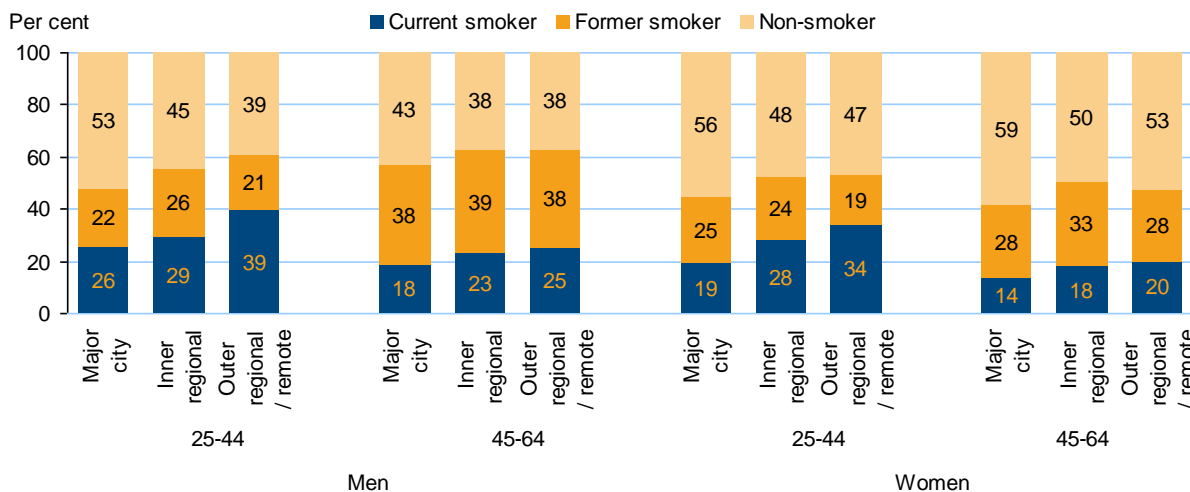
Source: HILDA Wave 8 datafile.

Figure 15 Tobacco smoking status (per cent of individuals) by age, sex and income quintile



Source: HILDA Wave 8 datafile.

Figure 16 Tobacco smoking status (per cent of individuals) by age, sex and remoteness



Source: HILDA Wave 8 datafile.

Appendix 2 provides graphs of the distribution of smoking status by jobless household, and by level of social connectedness. As stated above, both men and women living in outer regional and remote Australia are more likely to smoke than those living in major cities but also than those living in inner regional areas (Figure 16). As Figure 16 indicates, there is a locational gradient in smoking behaviour – the more remote, the higher the proportion of current smokers.

5.2 OBESITY

Australia's adult population is now one of the fattest in the world with the rate of obesity in Australian adults rising rapidly. In 2008, some 20 per cent of adults aged 25-44 years were obese (as defined by having a BMI \geq 30) and 30 per cent of those aged 45-64 years according to the HILDA survey data. While the percentages presented in Table 10 suggest obesity is more common among those who are socio-economically disadvantaged, many of the relative risk ratios are not statistically significant (Table 11). Nevertheless, the results show there are still some very important socio-economic inequalities.

Perhaps the most noticeable are those for women aged 25-44 years. Around 25 to 30 per cent of disadvantaged women aged 25-44 years are obese and up to 39 per cent of those living in public rental housing. In comparison, less than 20 per cent of women in the least disadvantaged socio-economic categories were obese and only 12 per cent of those owned their home.

For men aged 45-64 years, education, employment and housing tenure were important factors in obesity prevalence and for older women, education, housing tenure and social connectedness were important.

Table 10 Per cent of persons reporting being obese, by sex, age and socio-economic disadvantage

	Men				Women			
	25-44 years		45-64 years		25-44 years		45-64 years	
	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.
Income	25	20	32	27	27	17	35	29
Education	30	15	36	21	30	12	38	22
Employment	15	22	39	28	26	20	31	29
Housing	38	22	43	27	39	12	43	28
Social connectedness	24	19	32	27	25	18	35	26
Remoteness	21	22	31	29	24	18	31	30

Six highest percentages of groups reporting being obese

Source: HILDA Wave 8 datafile.

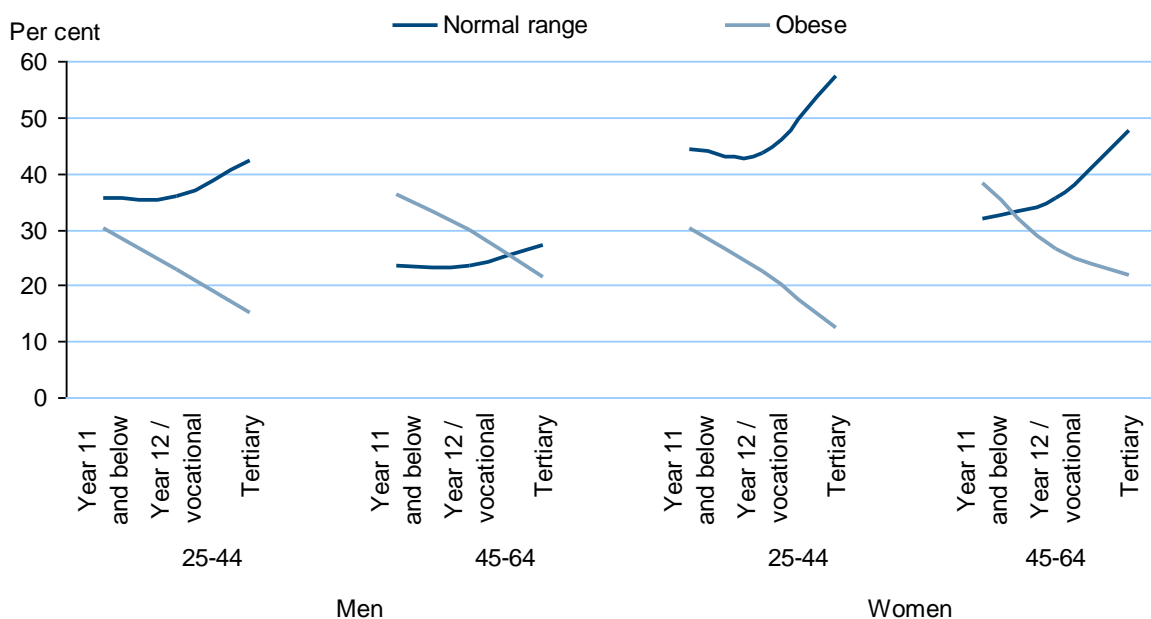
Table 11 Likelihood of reporting being obese, by sex and age

	Men		Women	
	25-44 years	45-64 years	25-44 years	45-64 years
Income quintile (bottom vs. top)	1.3	1.2	1.6	1.2
Education (≤year 11 vs. tertiary)	2.0	1.7	2.5	1.7
Employment (jobless vs. other HH)	0.7	1.4	1.3	1.1
Housing (public renter vs. homeowner)	1.7	1.6	3.3	1.5
Social connectedness (low vs. high)	1.3	1.2	1.4	1.3
Remoteness (regional/remote vs. major city)	1.0	1.1	1.3	1.0

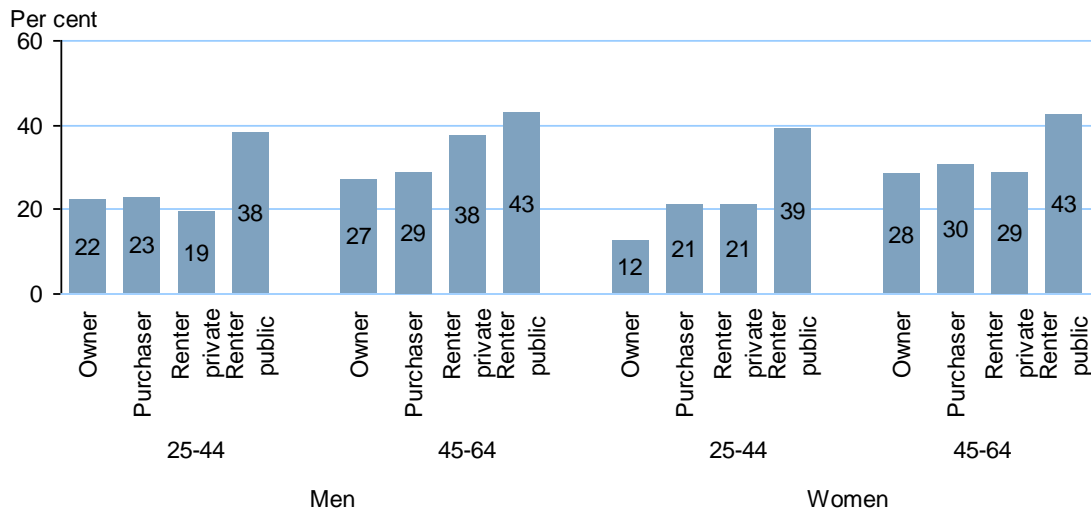
The probability of members of the most disadvantaged group reporting they are obese is statistically higher ($p < 0.05$) than that for members of the least disadvantaged group.
 Source: HILDA Wave 8 datafile.

Education and housing tenure are the socio-economic indicators that are consistently related to rates of obesity. Figure 17 shows the percentage of persons reporting having a normal BMI or a BMI indicating obesity by age, gender and level of education. There are very clear educational gradients in obesity prevalence for men and women and for the two age groups. Among men as well as women, the proportion of people reporting obesity declines as level of education rises. Proportions of people with their weight in normal range tend to be higher among those with higher level of education. But the relationship is weak among men. Only for women aged 25-44 years who have a tertiary education are there more individuals having normal weight than overweight or obese.

Figure 17 Per cent of persons reporting normal or obese BMI by age, sex and education



Source: HILDA Wave 8 datafile.

Figure 18 Per cent of persons reporting an obese BMI by age, sex and housing tenure

Source: HILDA Wave 8 datafile.

Figure 19 shows the distribution of obesity by housing tenure. While there is a distinct difference in rates of obesity between home-owners and those in private rental housing, there is only a clear housing gradient for men aged 45-64 years, and to a lesser degree for younger females.

Further distributional results for the other socio-economic indicators can be found in Appendix 2.

5.3 ALCOHOL CONSUMPTION

High risk alcohol consumption is a major social and health issue, especially among men. Using the most recent NHMRC definition of high risk alcohol consumption which takes into account both the frequency and volume of alcohol consumption, we estimated from HILDA data that some 40 per cent of Australian men of working age would be classified as high risk drinkers. However, these drinkers are not necessarily from lower socio-economic groups. In fact, for many of the socio-economic indicators there are no real differences in the likelihood of being a high risk drinker between those who are most or least disadvantaged (Table 12 and 13). In terms of household income, it is the younger men from the top income quintile who are most at risk of high risk alcohol consumption- those in the bottom income quintile being 30 per cent less likely to be high risk drinkers compared with men in the top income quintile.

Education does, however, appear to moderate risky alcohol consumption in both younger men and women (Table 13 and Figure 19). It is interesting that the prevalence of non-drinkers is similar across the educational groups with the highest rate of non-drinking being among older women (Figure 19).

However, of concern are younger women living in public rental accommodation who are nearly three times as likely to be high risk drinkers compared to women living in their own home.

Table 12 Per cent of persons reporting high risk alcohol consumption, by sex, age and socio-economic disadvantage

	Men				Women			
	25-44 years		45-64 years		25-44 years		45-64 years	
	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.
Income	34	46	28	41	21	19	12	13
Education	52	31	37	33	28	14	12	11
Employment	31	42	35	36	18	19	12	11
Housing	34	36	44	38	40	14	14	10
Social connectedness	39	43	35	41	17	18	11	12
Remoteness	49	38	43	33	22	17	12	11

Six highest percentages of groups reporting high risk alcohol consumption.

Source: HILDA Wave 8 datafile.

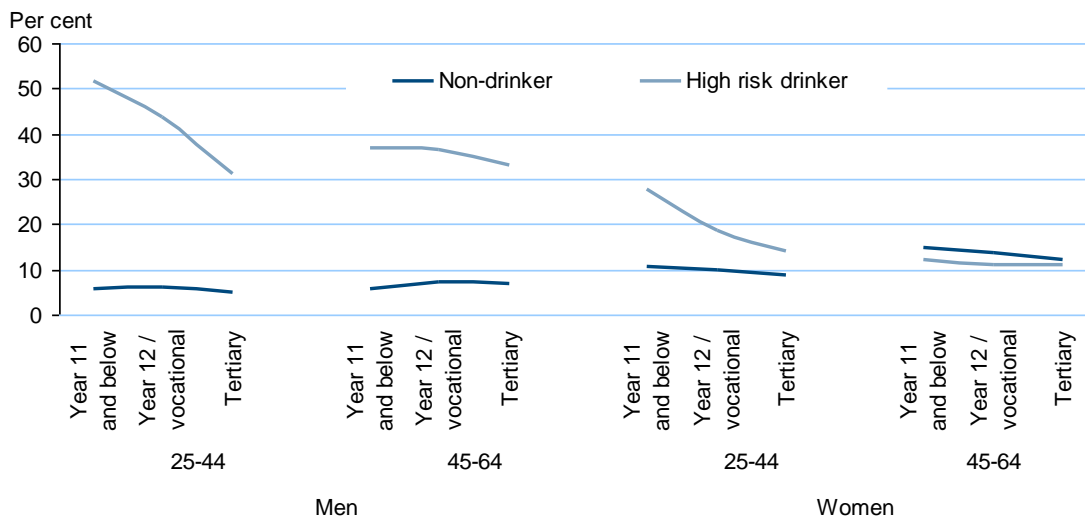
Table 13 Likelihood of reporting high risk alcohol consumption, by sex and age

	Men		Women	
	25-44 years	45-64 years	25-44 years	45-64 years
Income quintile (bottom vs. top)	0.7	0.7	1.1	0.9
Education (\leq year 11 vs. tertiary)	1.7	1.1	2.0	1.1
Employment (jobless vs. other HH)	0.7	1.0	0.9	1.1
Housing (public renter vs. homeowner)	0.9	1.2	2.9	1.4
Social connectedness (low vs. high)	0.9	0.9	0.9	0.9
Remoteness (regional/remote vs. major city)	1.3	1.3	1.3	1.1

The probability of members of the most disadvantaged group reporting high risk alcohol consumption is statistically higher ($p < 0.05$) than that for members of the least disadvantaged group.

The probability of members of the most disadvantaged group reporting high risk alcohol consumption is statistically lower ($p < 0.05$) than that for members of the least disadvantaged group.

Source: HILDA Wave 8 datafile.

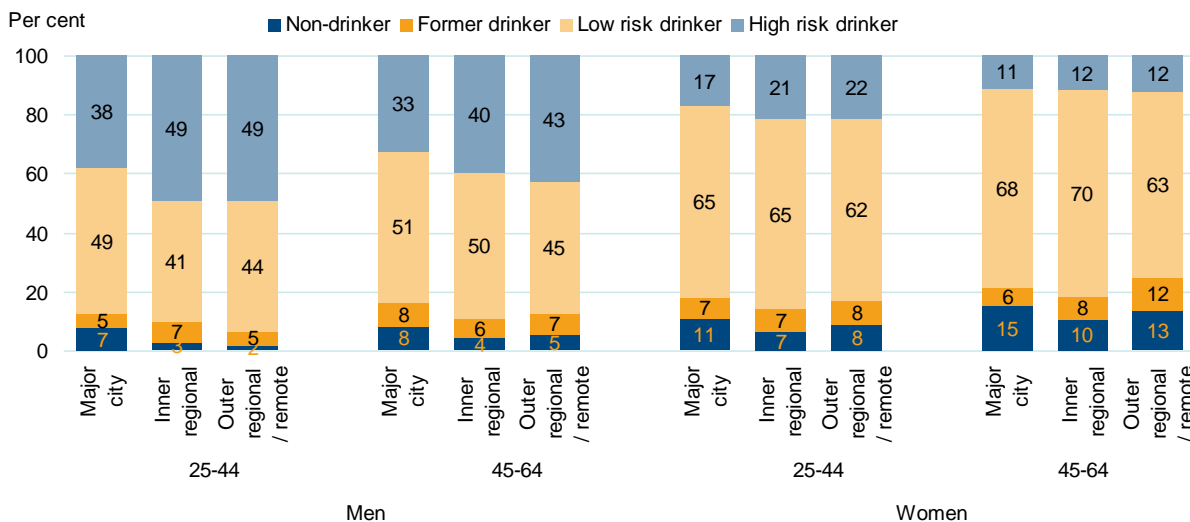
Figure 19 Per cent of persons reporting no or high risk alcohol consumption by age, sex and education

Source: HILDA Wave 8 datafile.

It is commonly thought that men living in regional and remote Australia are 'heavy' drinkers. This study indicates that men and younger women living in outer regional and remote areas are 30 per cent more likely to be high risk drinkers than those living in major cities (Table 13). However, patterns of alcohol consumption are not that different to those living in inner regional areas where 40 to 49 per cent of men and 12 to 21 per cent of women are high risk drinkers (Figure 20).

Other distributional results can be found in Appendix 2.

Figure 20 Per cent of persons by alcohol consumption status by age, sex and remoteness



Source: HILDA Wave 8 datafile.

5.4 PHYSICAL ACTIVITY

Physical activity is the final health indicator to be reported upon in this study. The results relate to the proportion of individuals undertaking sufficient weekly exercise which is regarded as moderate or intensive physical activity for at least 30 minutes four or more days a week. Around a third of younger men undertake this level of activity, just over a quarter of younger women, around 40 per cent of older men and around a third of older women (Figure 21). How do these rates vary across the socio-economic indicators?

Table 14 compares the percentages of the most and least disadvantaged of men and women who reported undertaking sufficient physical exercise. Women aged 45-64 years who are most socio-economically disadvantaged – especially those who are in the bottom household income quintile, live in public rental housing or who are least socially connected - are much less likely to undertake sufficient physical activity compared with women who are least disadvantaged. The exception is women aged 45-64 years living in outer regional or remote Australia who are 30 per cent more likely to undertake sufficient exercise than women of the same age living in major cities of Australia (Table 15).

The relative risk ratios for education and employment related categories are statistically insignificant (Table 15). This means there is no real difference in the percentage of individuals undertaking sufficient weekly exercise between disadvantaged and advantaged groups considered here.

Table 14 Per cent of persons reporting sufficient physical activity, by sex, age and socio-economic disadvantage

	Men				Women			
	25-44 years		45-64 years		25-44 years		45-64 years	
	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.	Most Disadv.	Least Disadv.
Income	26	33	37	41	22	34	26	35
Education	30	29	40	38	27	27	30	33
Employment	24	34	34	39	29	27	26	31
Housing	22	32	24	37	22	31	19	36
Social connectedness	28	37	32	42	21	29	25	35
Remoteness	31	32	42	37	26	27	35	27

Five lowest percentages of groups reporting sufficient physical activity.

Source: HILDA Wave 8 datafile.

Table 15 Likelihood of reporting sufficient physical activity, by sex and age

	Men		Women	
	25-44 years	45-64 years	25-44 years	45-64 years
Income quintile (bottom vs. top)	0.8	0.9	0.6	0.7
Education (≤year 11 vs. tertiary)	1.0	1.1	1.0	0.9
Employment (jobless vs. other HH)	0.7	0.9	1.1	0.8
Housing (public renter vs. homeowner)	0.7	0.7	0.7	0.5
Social connectedness (low vs. high)	0.8	0.8	0.7	0.7
Remoteness (regional/remote vs. major city)	1.0	1.1	1.0	1.3

The probability of members of the most disadvantaged group reporting sufficient physical activity is statistically higher ($p < 0.05$) than that for members of the least disadvantaged group.

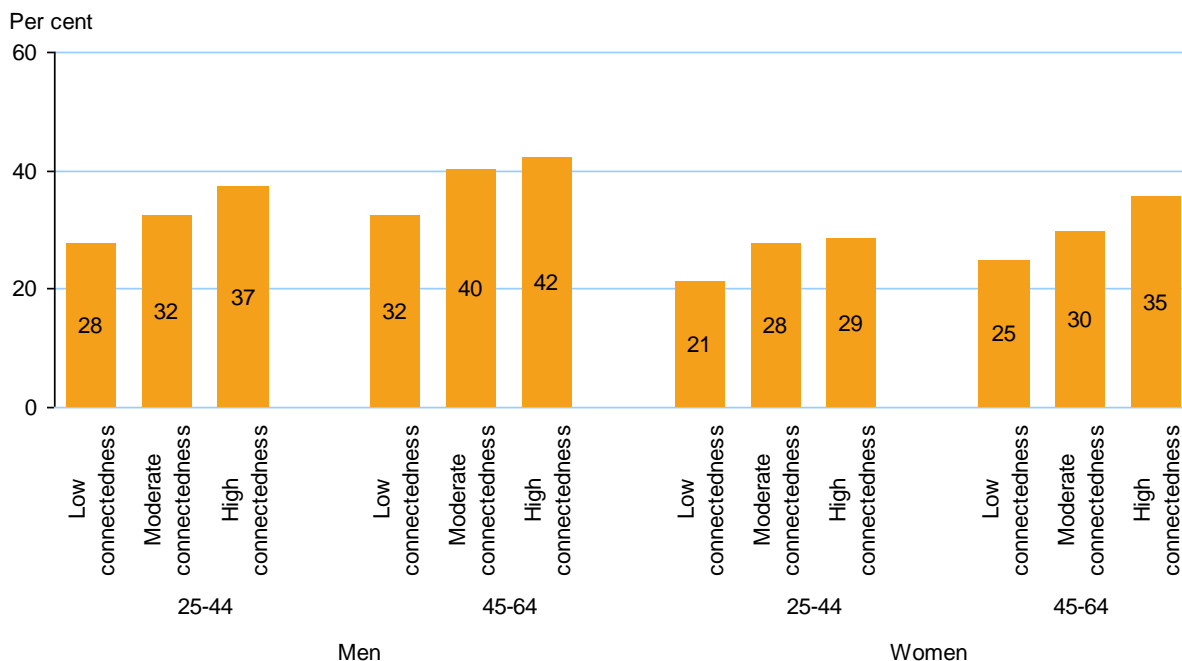
The probability of members of the most disadvantaged group reporting sufficient physical activity is statistically lower ($p < 0.05$) than that for members of the least disadvantaged group.

Source: HILDA Wave 8 datafile.

There are two outstanding features revealed in Tables 13 and 14. First, the level of social connectedness a person has is very important to whether or not they undertake sufficient physical activity. As Figure 21 shows there is a clear gradient across the three social connectedness categories for both men and women and for the two age groups. This may not be surprising given that many Australians participate in group physical activities or activities that may have a social element, such as team sports or going to the gym or pool.

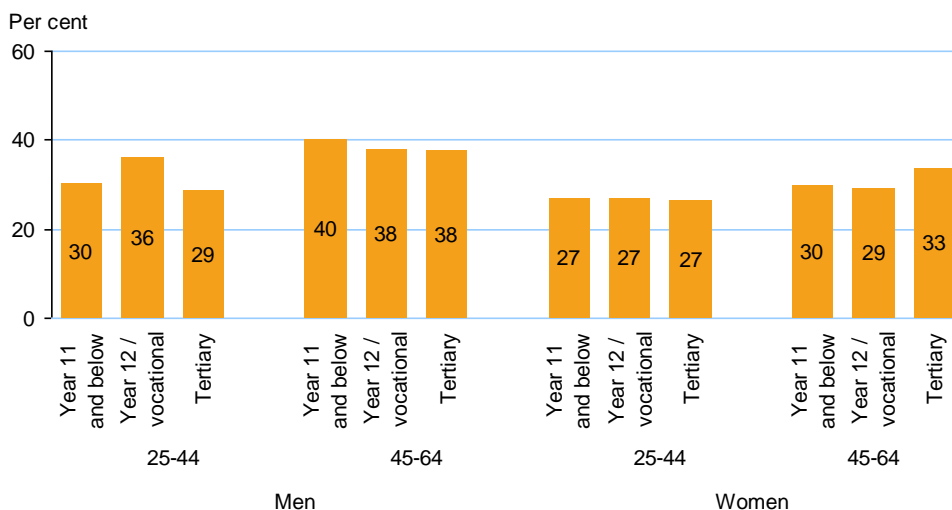
Second, unlike social connectedness, there is no educational inequality in the proportion of Australians of working age undertaking sufficient physical activity (see Figure 22 as well). The type of activity may very well differ but overall a similar proportion of individuals meet the national guidelines for sufficient weekly exercise.

Figure 21 Per cent of persons reporting sufficient physical activity by age, sex and social connectedness



Source: HILDA Wave 8 datafile.

Figure 22 Per cent of persons reporting sufficient physical activity by age, sex and education

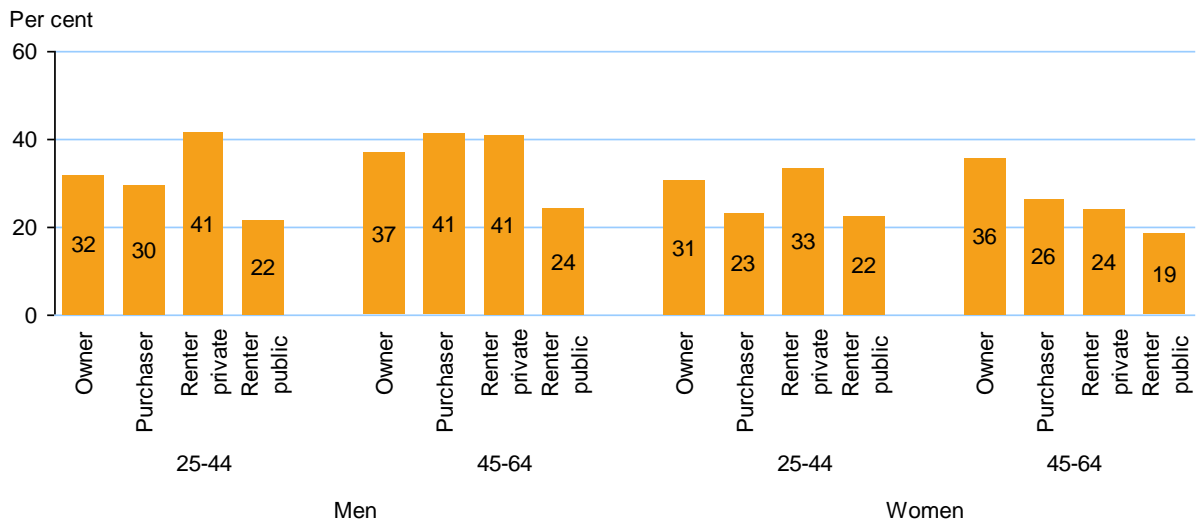


Source: HILDA Wave 8 datafile.

In terms of the other indicators, the results are much more mixed (further graphs are provided in Appendix 2). Of these, the relationship between housing tenure and levels of physical activity gives rise to some concern. The only significant relative risk was for older women but the

percentage of those who are most socio-economically disadvantaged and who undertake sufficient weekly physical activity was consistently lower than that for the advantaged groups, for both men and women and for the two age groups studied. Figure 23 provides further evidence to indicate that individuals living in public rental accommodation are less physically active than those living in other forms of housing.

Figure 23 Per cent of persons reporting sufficient physical activity by age, sex and housing tenure



Source: HILDA Wave 8 datafile.

6 SUMMARY AND CONCLUSIONS

This report confirms that health inequalities exist for Australians of working age. These relate to socio-economic disadvantage: social gradients in health are common – the lower a person’s social and economic position, the worse his or her health - and the health gaps between the most disadvantaged and least disadvantaged groups are often very large. Socioeconomic differences were found in all the health indicators studied, and were evident for both men and women and for both age groups. Health of Australians of working age was found to be associated with socio-economic disadvantage, irrespective of how socio-economic status or health was measured.

In 2008, nearly 14 per cent of persons of working age lived in Australia’s poorest 20 per cent of households, as defined by equivalised disposable household income. One of every four Australians of working age had left high school before or having only completed year 11. One in eight individuals lived in a jobless household i.e. a household where no adult was in paid employment. Over 500,000 individuals aged 25-64 years lived in public rental accommodation, one third of these being women aged 45-64 years. Over 20 per cent of Australians of working age experienced a low level of social connectedness, expressed in terms of gathering infrequently with friends/relatives, having no one or struggling to find someone to confide in at difficult times, and often feeling lonely. It is these individuals who are at greatest risk of having poor health.

Household income, level of education, household employment, housing tenure and social connectedness all matter when it comes to health. Does where a person lives also matter? One in ten persons of working age lived in outer regional or remote Australia. Dividing Australia into three broad regions based on area remoteness reveals some inequalities in terms of smoking, obesity and high risk alcohol consumption for one or more of the four age-sex population groups studied. However, this level of analysis masks community or neighbourhood concentration of socio-economic and health disadvantage. Other studies such as *Dropping off the Edge* (Vinson, 2007) or *Advance Australia Fair* (Vu et al, 2008) map the distribution of disadvantage and poverty in Australia at a small area level. Through the actions of a range of social determinants of health, it is most likely that it is these area populations that will experience the poorest health outcomes and greatest health inequalities.

Mortality Socio-economic gradients exist in small area death rates for Australians of working age. If the populations of the most disadvantaged areas enjoyed the same death rate as those living in the most socio-economically advantaged areas then a half to two-thirds of current deaths would be prevented. Socio-economic differences in age specific death rates give rise to socio-economic differences in life expectancy.

Self-assessed health status As many as one in nine 25-44 year olds and over one in five individuals aged 45-64 years report they have poor health. With the exception of remoteness, those who are most socio-economically disadvantaged are much less likely to report being in good health compared with those who are least disadvantaged. Fifty per cent of men and women aged 45-64 years who are in the poorest 20 percent of households by income, or who are members of jobless households, or who live in public rental accommodation report their health as being poor. These men and women of working age are 30 to 40 per cent less likely to have good health compared with those who are least socio-economically disadvantaged. Twenty to 30 per cent of the most socio-economically disadvantaged individuals aged 25-44 years report having poor health compared with only 10 per cent of those who are least disadvantaged. Three of every ten 25-44 year olds living in public rental accommodation rank their health as being poor, compared with only one in ten living in their own home or private rental housing. Early high school leavers and those who are least socially connected are 10 to 20 per cent less likely to report being in good health than those with a tertiary education or who have a high level of social connectedness.

Long term health conditions Around 15 per cent of Australians aged 25-44 years and a third of those aged 45-64 years report they have at least one long term health condition that affects their everyday activities. Those who are most socio-economically disadvantaged are twice as likely as those who are least disadvantaged to have a long term health condition, and for some disadvantaged younger men (those in the bottom income quintile or living in jobless households) up to four to five times as likely.

Around 45 to 65 percent of persons living in public rental accommodation have long term health problems compared to only 15-35 per cent of home-owners. Over 60 per cent of men in jobless households report having a long term health condition or disability, and over 40 per cent of women.

Smoking Less than 20 per cent of Australian adults now smoke tobacco but the highest rates of smoking occur in the younger most disadvantaged groups, including those living in outer regional and remote areas of Australia. A third to nearly three-fifths of younger most disadvantaged men smoke, depending on the socio-economic indicator studied. In relative terms, the highest risks of smoking occur for younger disadvantaged women. The most discriminating socio-economic factors for smoking are education, housing tenure and income. Fewer than 15 per cent of individuals with a tertiary education smoke. Smoking is much more common in younger aged women living in public rental accommodation than any other group, with two-thirds of these women being current smokers.

Obesity In 2008, some 20 per cent of adults aged 25-44 years were obese and 30 per cent of those aged 45-64 years. Around 25 to 30 per cent of disadvantaged women aged 25-44 years are obese and up to 39 per cent of those living in public rental housing. In comparison, less than 20 per cent of women in the least disadvantaged socio-economic classes were obese and only 12 per cent of those who owned their home. Education and housing tenure are the two socio-economic indicators that are consistently related to rates of obesity.

High risk alcohol consumption Around 40 per cent of Australian men of working age meet national criteria for being high risk alcohol drinkers. For many of the socio-economic indicators, no difference was seen in the likelihood of being a high risk drinker between those who were most or least disadvantaged. However, the risk of being a high risk drinker for younger adults who left high school early was 1.5 to 2 times that for those with a tertiary qualification. Forty per cent of younger females living in public rental accommodation had high risk alcohol consumption – three times the likelihood of women living in their own home being ‘problem’ drinkers. Men and younger women living in outer regional and remote areas are 30 per cent more likely to be high risk drinkers than those living in major cities.

Physical activity Around a third of younger men met national guidelines for weekly physical activity, just over a quarter of younger women, around 40 per cent of older men and around a third of older women. Disadvantaged men and women typically reported a lower percentage of individuals undertaking sufficient exercise relative to the least disadvantaged groups over a number of the socio-economic indicators but many of the relative risk ratios were not significant. Social connectedness was the only factor that consistently impacted on the percentage of individuals undertaking sufficient weekly exercise. Women aged 45-64 years who were most socio-economically disadvantaged – with the exception of those living in outer regional or remote Australia – were much less likely to undertake sufficient physical activity compared with women who were least disadvantaged.

The findings in this study on health inequalities and inequality gradients are in keeping with international evidence on the social determinants of health. Such inequalities need to be understood in relation to a range of factors that interact in complex ways – does a person have enough money to live healthily, to live in a decent house or apartment, with a good level of knowledge and understanding, and support from family and friends, to eat and drink healthily and take sufficient exercise and not smoke.

Reducing health inequalities is a matter of social inclusion, fairness and social justice (Marmot et al, 2010). Paraphrasing from the English Strategic Review of Health Inequalities in England post-2010

Inequalities are a matter of life and death, of health and sickness, of well-being and misery. The fact that in Australia today people in different social circumstances experience avoidable differences in health, well-being and length of life is, quite simply, unfair. Creating a fairer society is fundamental to improving the health of the whole population.

This Report investigated health inequalities in Australians of working age. Similar analyses need to be undertaken for Australia's children and for older Australians, and regular reports produced to determine if gaps in health of certain socio-economic groups in the population are closing.

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APPENDIX 1 - TECHNICAL NOTES

(a) Self-Assessed Health Status

Self-assessed health is a key health variable analysed in this study. This variable represents the standard self-assessed health status collected through the self-completed questionnaire. The question asked was: “In general, would you say that your health is: excellent, very good, good, fair or poor?” Respondents reported their health to be in any of the five levels. For the ease of analysis and interpretation, we have grouped these five levels into two: “good health” and “poor health”. “Good health” includes excellent, very good and good health; and “poor health” refers to fair and poor health. Non-response cases were excluded from the analysis.

Use of self-assessed health status has some merits and some demerits that need to be taken into account while interpreting the results presented in this report. This is an easily available indicator of health status from socioeconomic surveys and this provides an opportunity to relate this indicator to various socio-economic measures. The self-assessed health indicator has been widely used in the empirical research of health status because it has been found to reflect the true health status of individuals reasonably well. A number of previous Australian studies of relationships between health and socio-economic issues have satisfactorily used this indicator (Cai and Kalb, 2006; Cai, 2009; Nepal, 2009). Yet the data for this indicator come from individual’s perception rather than clinical assessment of their health. Therefore this measure cannot be expected to be identical to an objective measure of health status.

(b) Long-term health condition

In the HILDA survey, data on long-term health conditions was collected through individual interview. The question was: Looking at SHOWCARD K1, do you have any long-term health condition, impairment or disability (such as these) that restricts you in your everyday activities, and has lasted or is likely to last, for 6 months or more?

(c) Smoking

The data on smoking was collected through the HILDA self-completed questionnaire. The question asked was: Do you smoke cigarettes or any other tobacco products? The responses were categorised into current smokers, former smokers and non-smokers.

(d) Physical activity

The data on physical activity was collected through the self-completed questionnaire. The question asked was: In general, how often do you participate in moderate or intensive physical activity for at least 30 minutes?

Australia’s National Guideline on physical activity says: “put together at least 30 minutes of moderate-intensity physical activity on most, preferably all, days”. For the purpose of this study, we recoded it into two categories: none/less frequent and more frequent. None/less frequent physical activity included “Not at all, Less than once a week, 1 to 2 times a week, 3 times a week”. More frequent included “More than 3 times a week (but not every day), Every day”. The

former category was regarded to represent insufficient and the later to represent sufficient physical activity in this study.

(e) BMI

Body mass index is a number calculated from a person's height and weight. In the HILDA survey, the index was derived from self-reported height and weight. The categories were as follows: underweight (less than 18.5 BMI), normal range (18.5 to less than 25.0), overweight (25.0 to less than 30.0), obese (30.0 and greater).

(f) Alcohol consumption

We constructed a summary measure based on the frequency and volume of alcohol consumption. The data in HILDA was collected through the self-completed questionnaire. The questions asked were: Do you drink alcohol? On a day that you have an alcoholic drink, how many standard drinks do you usually have? The first question provided data on frequency of drinking and the second question on volume of alcohol consumption. Combining those data, current drinkers were classified into low risk and high risk groups.

Low risk: Less frequent (up to 1-2 days/week) and up to 4 drinks, or
More frequent (3-4 days+/week) and up to 2 drinks

High risk: Less frequent (up to 1-2 days/week) and more than 4 drinks, or
More frequent (3-4 days+/week) and more than 2 drinks

(g) Income quintile

The income quintile used is the equivalised disposable household income quintile. HILDA data file provided disposable income in the previous financial year that was calculated by applying a tax module to the reported incomes:

In order to produce the disposable income variable, an income tax model is applied to each sample member that calculates the financial-year tax typically payable for a permanent resident taxpayer in the circumstances akin to those of the respondent. The information collected in the HILDA Survey does not permit accounting for every individual variation in tax available under the Australian taxation system, but most major sources of variation are accounted for. When aggregated, income tax estimates from HILDA compare favourably with national aggregates produced by the Australian Taxation Office (ATO). (Watson, 2010, p46).

Before calculating the equivalised disposable household income quintiles, negative income was set to zero. Using the full sample of responding households, equivalent scale was calculated as $1 + (\text{number of remaining adults} \times 50\%) + (\text{number of children under 15 years} \times 30\%)$. Total disposable household income was divided by the equivalence scale to derive equivalised household income. Income is equivalised to take account of the fact that two-person households do not need twice the amount of resources of a single-person household, for example.

(h) Social connectedness

The indicator called social connectedness reflects the degree to which an individual is connected to the family, friends and society. The indicator was derived on the basis of responses to the following three questions or statements posed in a self-completed questionnaire:

- i) How often get together socially with friends/ relatives not living with you
- ii) I don't have anyone that I can confide in
- iii) I often feel very lonely

Responses were sought in an ordinal scale of 1 and 7 (better to worse). The first three scales were considered as reflect a high score and the remaining a low score for the purpose of this study. Having a high score in all three dimensions was classified as high connectedness, a high score in any two dimensions as moderate connectedness and just one or no high score as reflecting low connectedness.

Table A.1 Sample size and population by analysis variables, persons aged 25-64 years

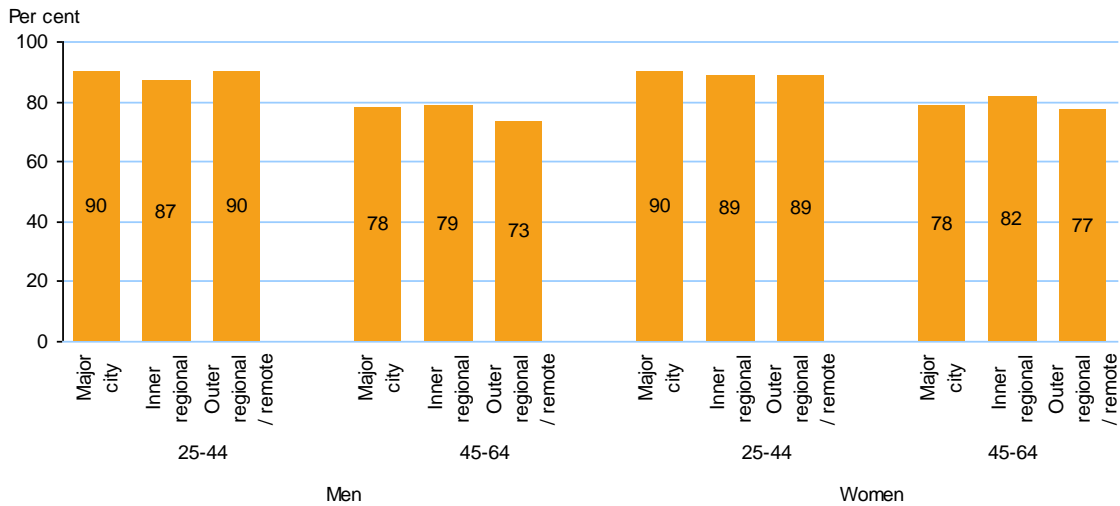
Variables	N	Population (thousands)
Self-assessed health status	7,178	9,520
Long-term health condition	8,217	11,293
Chronic condition	1,824	2,720
smoking	7,138	9,464
alcohol	7,098	9,407
physical	7,154	9,478
BMI	6,918	9,167
Housing	7,086	9,844
Connectedness	7,164	9,496
Other SES	8,217	11,293

Source: HILDA Wave 8 datefile

APPENDIX 2 – ADDITIONAL RESULTS

(a) Self reported health status

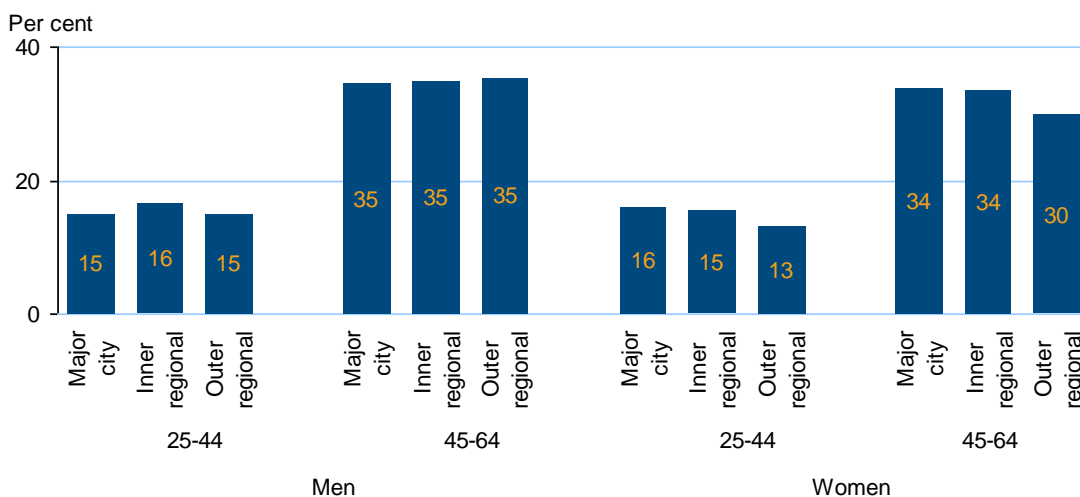
Figure 24 Per cent of persons reporting good health, by sex, age and remoteness



Source: HILDA Wave 8 datafile.

(b) Long term health conditions

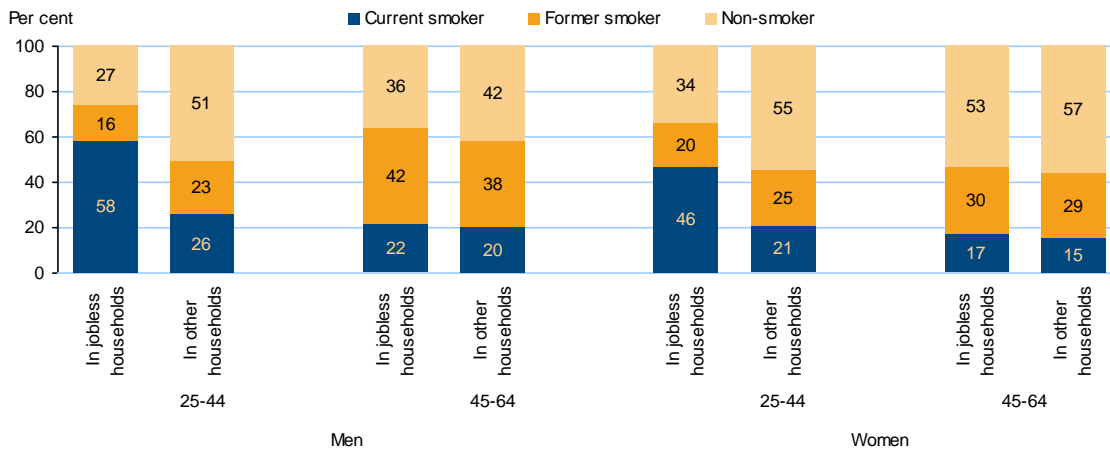
Figure 25 Per cent of persons reporting long term health conditions, by sex, age and remoteness



Source: HILDA Wave 8 datafile.

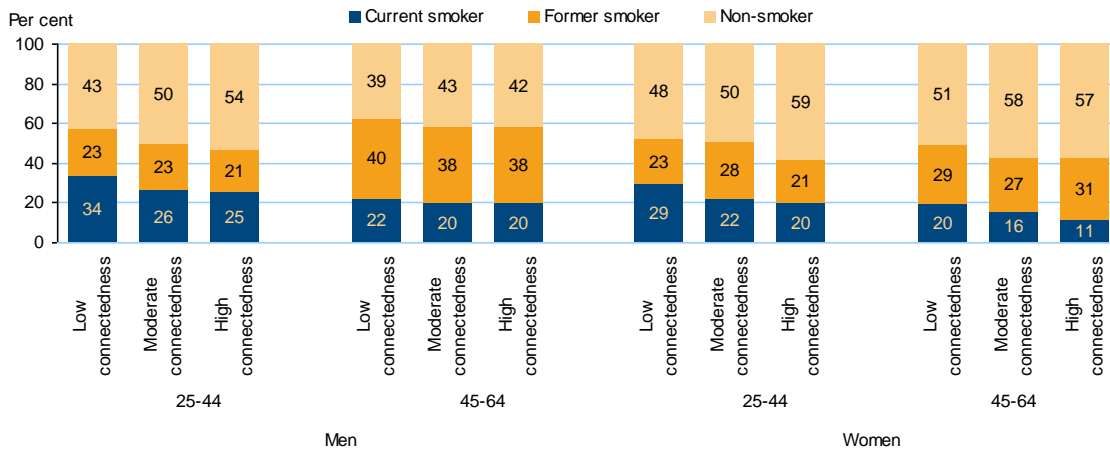
(c) Smoking status

Figure 26 Tobacco smoking status (per cent of individuals) by age, sex and household joblessness



Source: HILDA Wave 8 datafile.

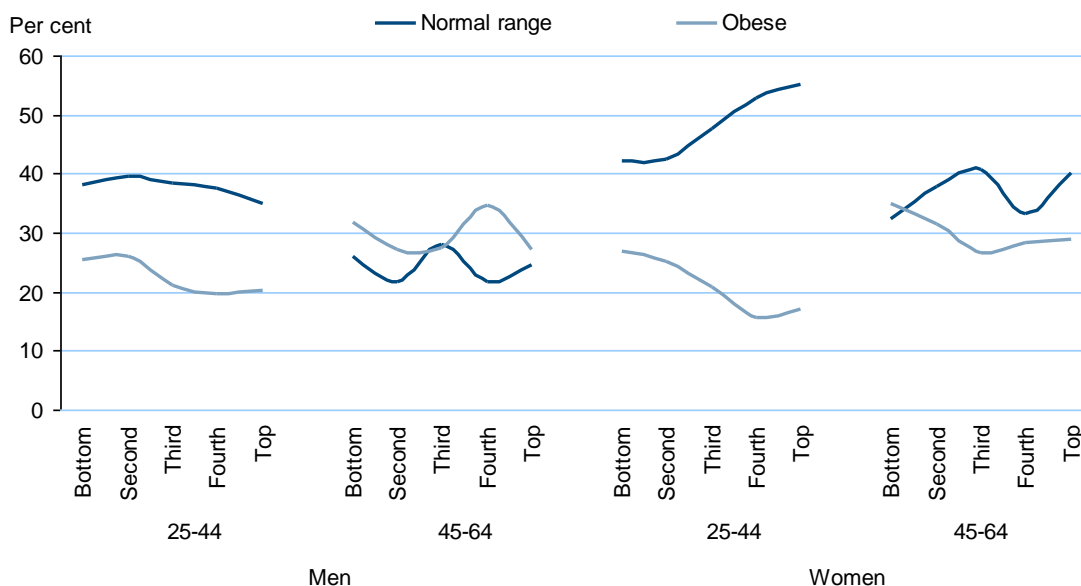
Figure 27 Tobacco smoking status (per cent of individuals) by age, sex and social connectedness



Source: HILDA Wave 8 datafile.

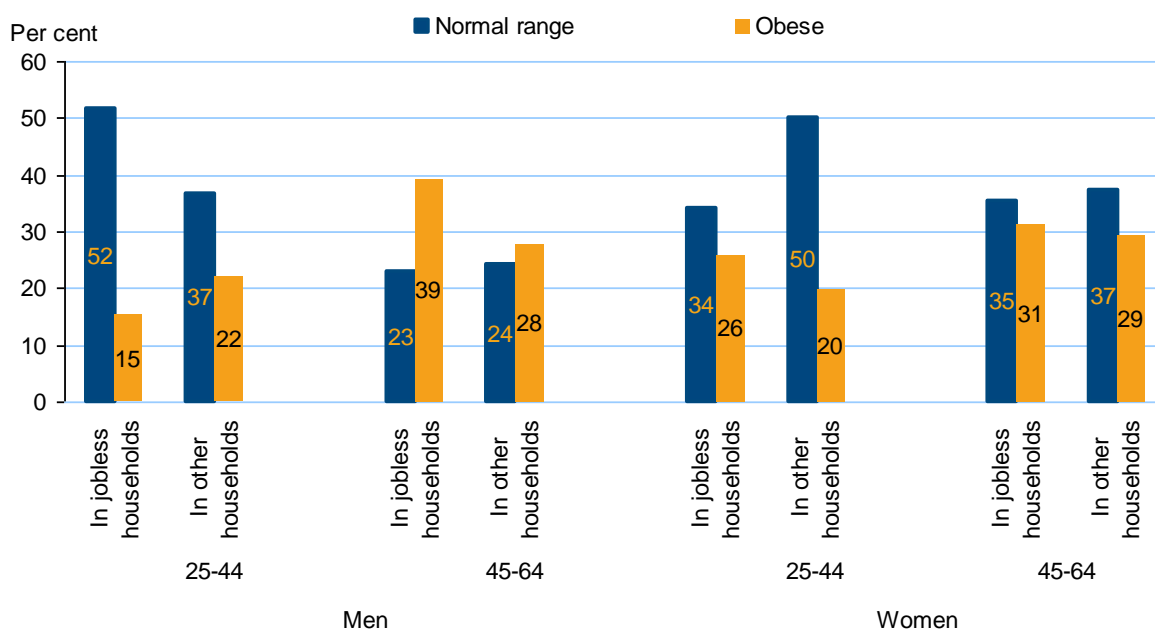
(d) Obesity

Figure 28 Per cent of persons reporting normal or obese BMI by age, sex and income quintile



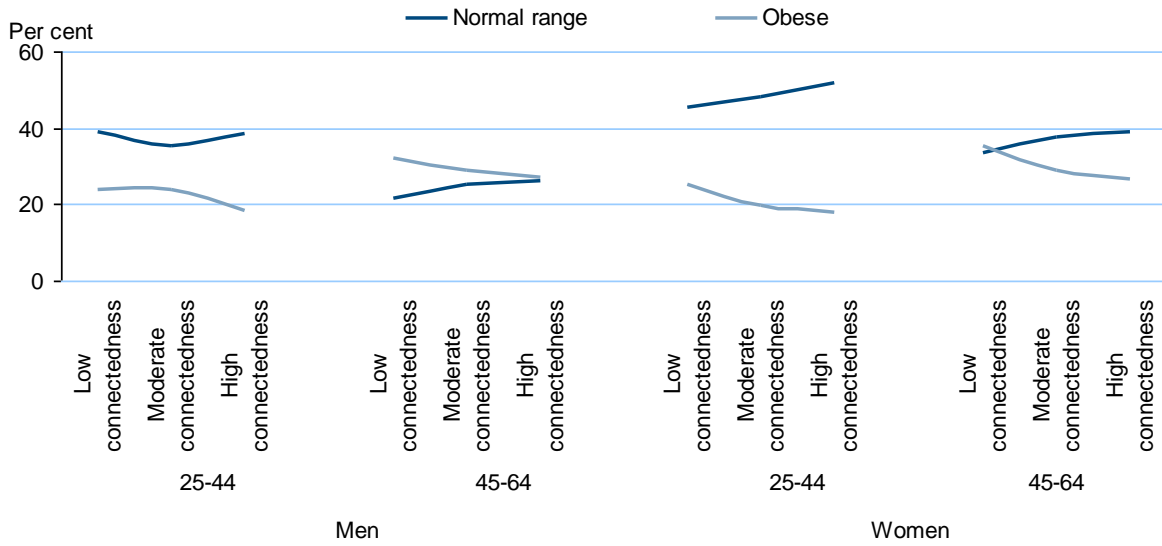
Source: HILDA Wave 8 datafile.

Figure 29 Per cent of persons reporting normal or obese BMI by age, sex and household joblessness



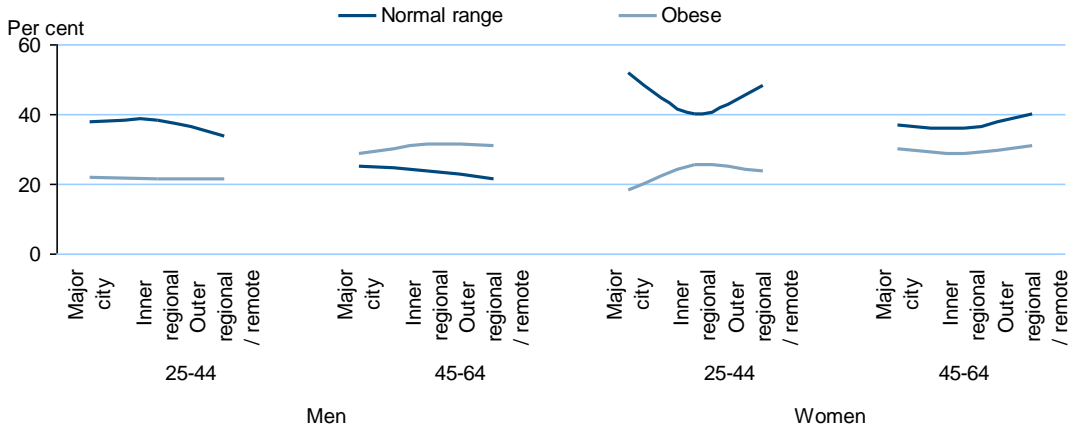
Source: HILDA Wave 8 datafile.

Figure 30 Per cent of persons reporting normal or obese BMI by age, sex and social connectedness



Source: HILDA Wave 8 datafile.

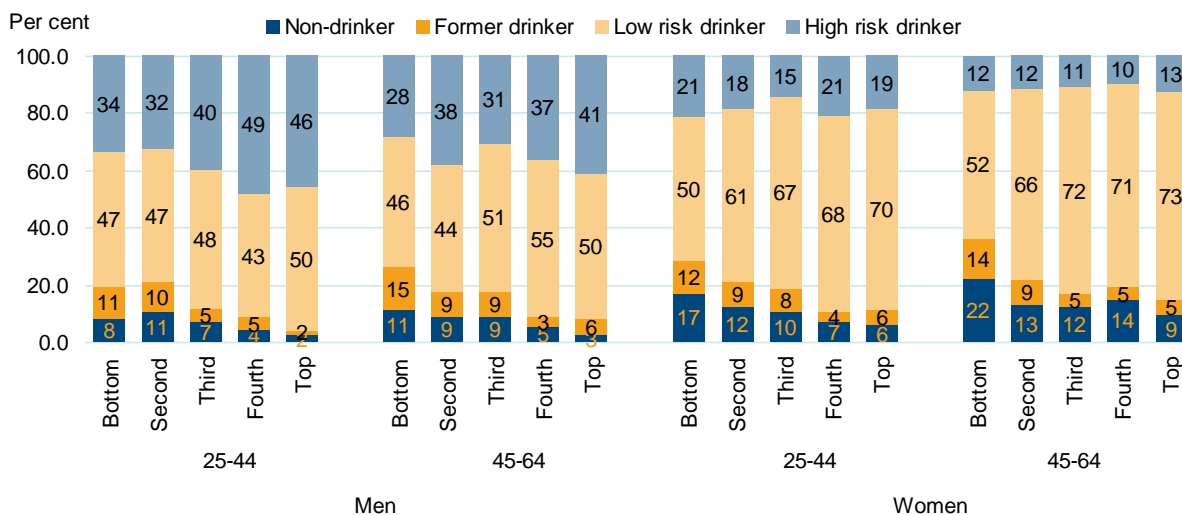
Figure 31 Per cent of persons reporting normal or obese BMI by age, sex and remoteness



Source: HILDA Wave 8 datafile.

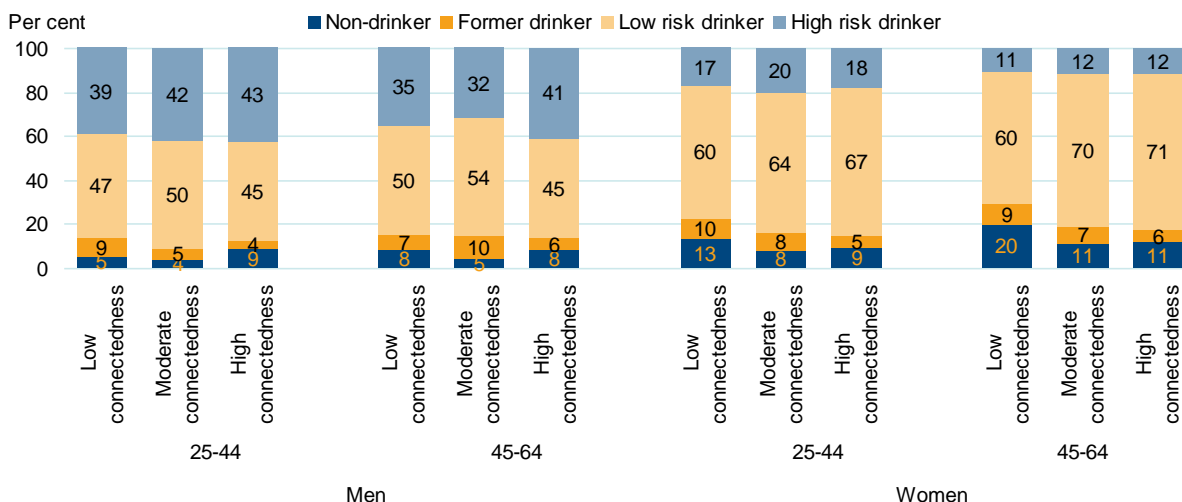
(e) Alcohol consumption

Figure 32 Per cent of persons by alcohol consumption status by age, sex and income quintile



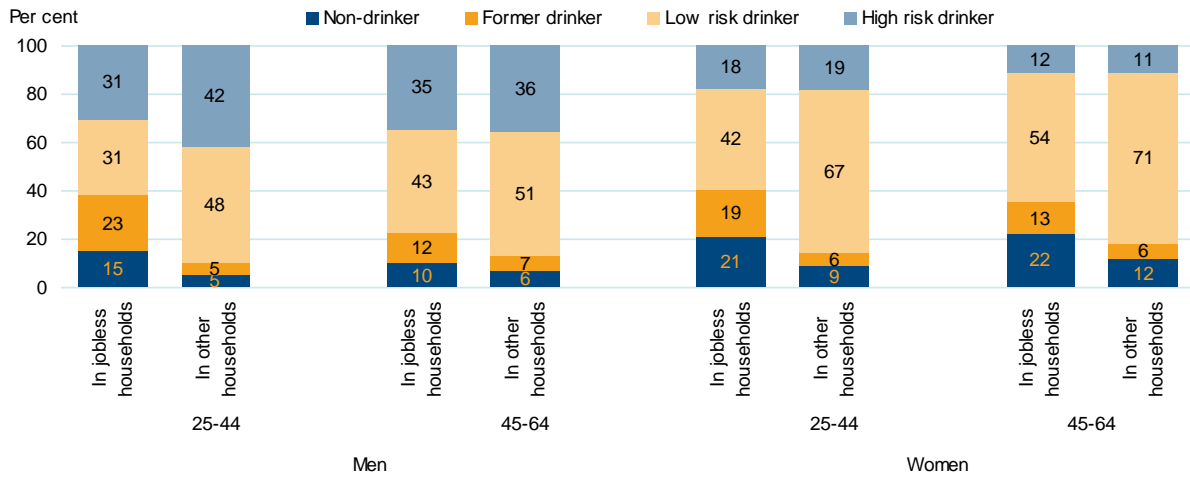
Source: HILDA Wave 8 datafile.

Figure 33 Per cent of persons by alcohol consumption status by age, sex and social connectedness



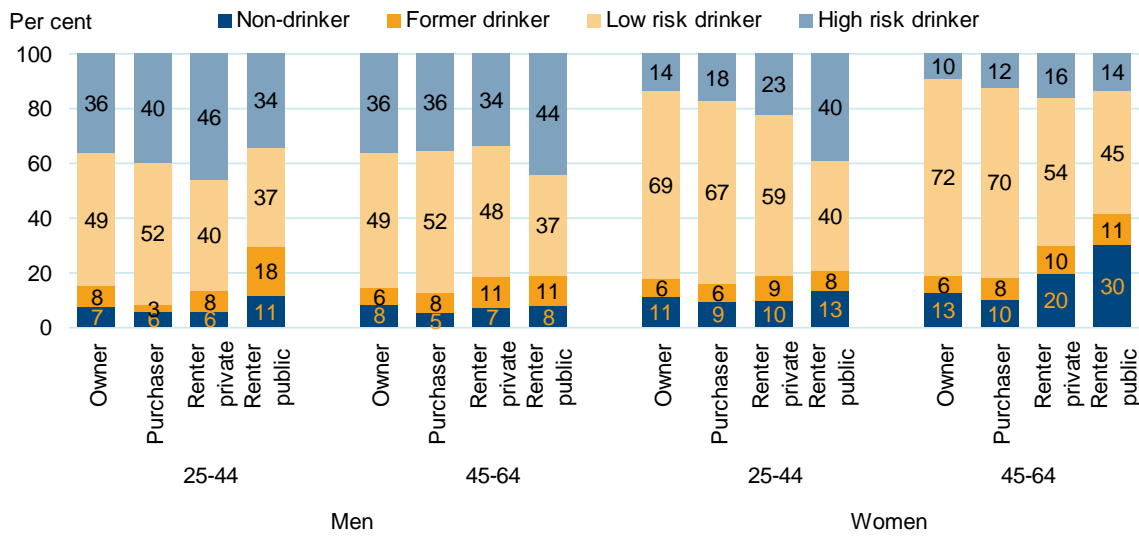
Source: HILDA Wave 8 datafile.

Figure 34 Per cent of persons by alcohol consumption status by age, sex and household joblessness



Source: HILDA Wave 8 datafile.

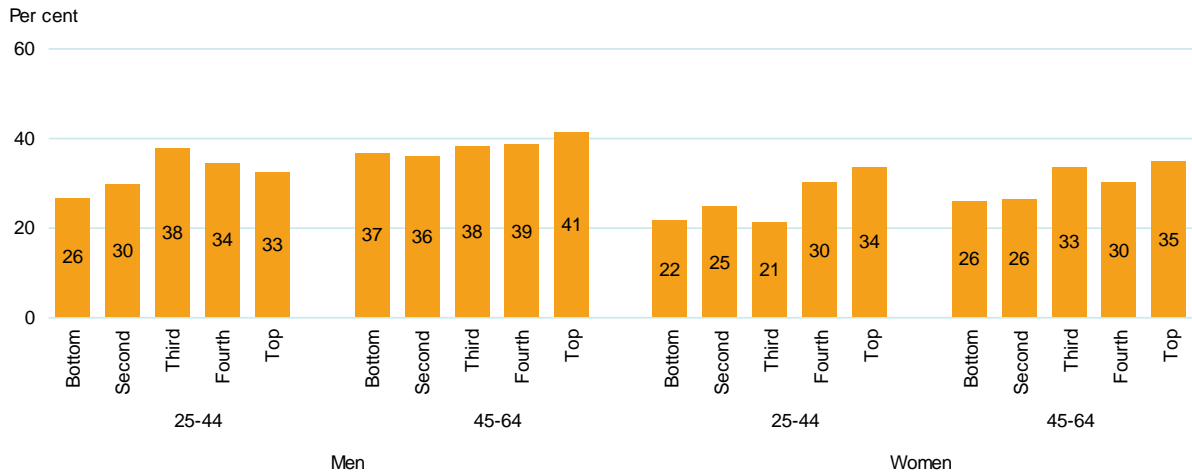
Figure 35 Per cent of persons by alcohol consumption status by age, sex and housing tenure



Source: HILDA Wave 8 datafile.

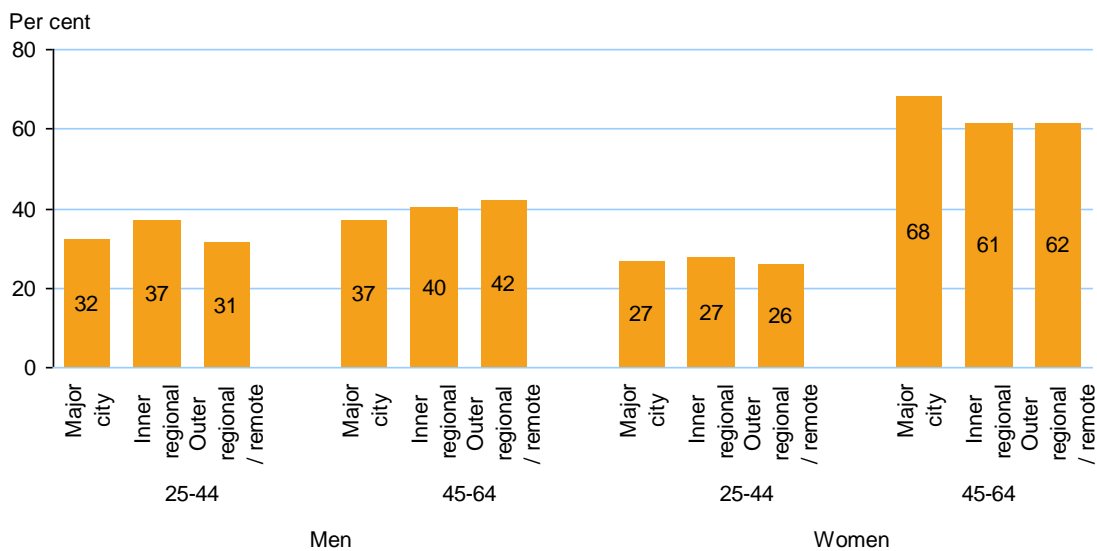
(f) Physical activity

Figure 36 Per cent of persons reporting sufficient physical activity by age, sex and income quintile



Source: HILDA Wave 8 datafile.

Figure 37 Per cent of persons reporting sufficient physical activity by age, sex and remoteness



Source: HILDA Wave 8 datafile.