



**Australian Longitudinal Study on Women's Health (ALSWH)
Report to the Australian Government Department of Health and Ageing**

Australian Women and Alcohol Consumption 1996-2003

February 2005

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with assistance from

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National Alcohol Strategy

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ISBN 0 642 82595 5

Publications Approval Number: 3582

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Executive Summary

The Australian Longitudinal Study on Women's Health (ALSWH) provides a unique opportunity to monitor changes over time in the health and well-being of a large, nationally representative sample of Australian women, their social circumstances, and their health behaviour, including alcohol consumption. This report presents results for women in three age cohorts (Younger, Mid-age and Older) from 1996 to 2003 and provides important data on alcohol consumption among Australian women.

A clear majority of respondents to the surveys are non-drinkers or drink at low levels of long-term risk, although some of these women reported short-term risk drinking (having five or more drinks on one occasion).

Findings related to long-term risk drinking:

Among Younger women aged 18-23 years (n=14,247):

- 5% were risky or high risk drinkers;
- 52% were low risk drinkers;
- 34% rarely drank; and
- 9% were non-drinkers.

Among Mid-age women aged 45-50 years (n=13,716):

- 5% were risky or high risk drinkers;
- 50% were low risk drinkers;
- 31% rarely drank; and
- 15% were non-drinkers.

Among Older women aged 70-75 years (n=12,432):

- 3% were risky or high risk drinkers;
- 34% were low risk drinkers;
- 29% rarely drank; and
- 34% were non-drinkers.

Findings related to short-term risk drinking (having five or more drinks on one occasion):

Younger women:

- 18% did this often (once a week or more);
- 21% did this sometimes (about once a month);



- 32% did this rarely (less than monthly); and
- 29% never had five or more drinks on one occasion.

Mid-age women:

- 6% did this often (once a week or more);
- 8% did this sometimes (about once a month);
- 19% did this rarely (less than monthly); and
- 67% never had five or more drinks on one occasion.

Older women:

- 2% did this often (once a week or more);
- 2% did this sometimes (about once a month);
- 5% did this rarely (less than monthly); and
- 91% never had five or more drinks on one occasion.

Other findings include:

- Although Older women are more likely to be non-drinkers than Younger or Mid-age women, more than 10% of the Older women report drinking alcohol every day;
- the majority of Mid-age and Older women consumed 1 or 2 drinks on a day when they drink;
- Younger and Mid-age women report similar levels of long-term risk drinking;
- Mid-age women tend to drink alcohol on more days of the week than Younger women but have fewer drinks;
- Younger women were more likely to consume three or more drinks in one day than Mid-age or Older women; and
- at Survey 1, 7% of the Younger women usually consumed 9 or more drinks on a day when they were drinking.

Findings on the longitudinal changes in alcohol consumption between**Surveys include:**

- The majority of women did not change their level of alcohol consumption over 5-7 years between surveys;
- most women who reported consuming alcohol at all surveys were doing so at low levels of long-term risk;
- more than a quarter of the Older women remained non-drinkers over the six-year period from 1996 to 2002; and
- Younger women were more likely than Mid-age or Older women to decrease their alcohol consumption from levels that were risky to their health.



The associations between alcohol consumption at levels of long-term risk and socio-demographic characteristics, health status and health service use of women of different ages were explored. In summary:

Women who consume alcohol at levels that are not harmful to their health (low risk) are more likely than other women to:

- live in urban areas;
- have higher education;
- manage on their income without difficulty;
- be in the healthy weight range;
- have moderate or high levels of physical activity;
- have been born in Australia or another English-speaking country; and
- have better self-rated physical health.

Non-drinkers and women who rarely drink are more likely than other women to:

- have a non-English speaking background;
- be non-smokers;
- have more consultations with general practitioners;
- take a greater number of prescription medications (Mid-age and Older women); and
- be currently pregnant or ever pregnant (Younger women).

Women who consume alcohol at levels that are risky or high risk are more likely than other women their age to:

- have poorer mental health and
- be current smokers;

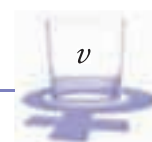
and among Younger women to:

- be current users of multiple illicit drugs;
- have deliberately harmed themselves; and
- have had more male sexual partners.

The associations between alcohol consumption at levels of short-term risk and health and socio-demographic characteristics among Younger women were explored. In summary:

The findings for frequency of short-term risk drinking, by long-term risk drinking, are:

- 93% of risky drinkers participated in short-term risk drinking at least weekly.
- One third of low risk drinkers participated in short-term risk drinking about once a month and 24% did so at least weekly.



Factors associated with short-term risk drinking among Younger women were explored. In summary, short-term risk drinking occurred more often among:

- Australian-born women and those of English-speaking background;
- separated, divorced and widowed young women;
- women who had difficulty managing on available income;
- current smokers;
- women who were not or have never been pregnant;
- women who reported deliberately harming themselves;
- current users of illicit drugs; and
- women who had had more male sexual partners.

Factors associated with change in alcohol consumption over time were explored. In summary:

For women in all three age groups, the most consistent and largest associations over time were between smoking and drinking habits. Women who smoked had consistently higher odds of remaining risky drinkers or changing from low risk to risky drinking.

Changes in marital status were associated with changes in alcohol consumption:

- Younger women who became married or formed de facto relationships between Survey 1 and Survey 2 had decreased odds of continuing to drink at risky levels or of becoming risky drinkers.
- Older women who were widowed by Survey 2 had decreased odds of remaining risky drinkers.
- Although Mid-age women without partners had decreased odds of remaining risky drinkers, those in de facto relationships had increased odds of remaining risky drinkers or changing their drinking habits.

Changes in health were also associated with changes in alcohol consumption in Mid-age women:

- Mid-age women whose mental health had deteriorated by Survey 2 had higher odds of beginning to drink at levels of risk, whereas those whose mental health had improved had higher odds of changing from risky to low risk drinkers, or of remaining risky drinkers.

Other findings for Younger women were:

- Those who were mothers at both Survey 1 and Survey 2 had lower odds of remaining risky drinkers.
- Those who had become new mothers by Survey 2 had lower odds of becoming risky drinkers or remaining risky drinkers.



The long-term effects of alcohol consumption on women's health were investigated. In summary:

The association between alcohol consumption and withdrawing from the study or dying was investigated in each age group with adjustment for area of residence, education, smoking and comorbidity. The main results were:

- Younger women who were non-drinkers were more likely to withdraw from the study than low risk drinkers.
- Mid-age women who were non-drinkers or rarely drank had a significantly higher risk of withdrawing from the study during the survey period than low risk drinkers.
- Older women who were non-drinkers had a significantly higher risk of withdrawing from the study during the survey period than low risk drinkers.
- Older women who were non-drinkers or rarely drank had a significantly higher risk of dying during the survey period than low risk drinkers.

The association between alcohol consumption and health-related quality of life was investigated in each age group with adjustment for area of residence, education, smoking, BMI and comorbidity. The main results were:

Alcohol consumption among the Younger women over the seven-year period was significantly associated with three health outcomes.

- Compared with low risk drinkers, non-drinkers had poorer physical functioning and lower physical health summary scores.
- Compared with low risk drinkers, women who remained risky drinkers had poorer mental health.

Alcohol consumption was associated with many aspects of health for the Mid-age women over the five-year period.

- Being a non-drinker or rarely drinking was associated with a reduction in all dimensions of physical health.
- Being a risky drinker, compared with a low risk drinker, was associated with poorer mental health and general health.

A strong relationship was found between alcohol consumption and health-related quality of life among the Older women.

- Compared with being a low risk drinker, Older women who were non-drinkers also had significantly poorer health on the physical health summary measure and the eight dimensions of physical and mental health.
- The findings for Older women who rarely drink were similar but not as strong with lower scores on the physical health summary measure and five of the eight dimensions.

Further information on alcohol consumption and women's health will be available as more data are collected in the longitudinal study. Survey 4 of the Mid-age group was conducted in 2004, Survey 4 of the Older women will begin in March 2005 and Survey 4 of the Younger cohort will take place in 2006.



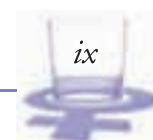
Acknowledgements

The research on which this report is based was conducted as part of the Australian Longitudinal Study on Women's Health (The Universities of Newcastle and Queensland) and is funded by the Australian Government Department of Health and Ageing. We appreciate the assistance of Professor Julie Byles and Dr Hiroyuki Furuya in the development of the longitudinal analyses used in this report. We thank all participants for their valuable contribution to this project.



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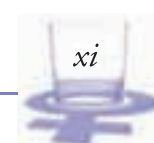


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Section 1 Background

1.1 Overview of previous research on women and alcohol

Alcohol consumption and health

The harmful effects on health of heavy alcohol consumption have been well documented. 'Drinking alcohol at risky and high risk levels for long-term harm was estimated to have caused 3,290 deaths in Australia in 1997, accounting for about 4 percent of all male deaths and 2 percent of all female deaths, and about 50,000 hospitalisations [Chikritzhs *et al.* 2001].' (National Health & Medical Research Council, 2001: 32). Heavy drinking, sporadically and long term, increases the risk of chronic disease, including heart attack and liver cirrhosis, along with an increased risk of injury to the drinker or others through, for example, road traffic accidents (Dobson, Brown, Ball, Powers, & McFadden, 1999: 525; Mathers *et al.*, 2001: 110; National Health & Medical Research Council, 2001). In addition, 'the risk of a number of types of cancer rises with increasing level of consumption of alcoholic beverages. However, the risks vary considerably depending on types of cancer'. (Chapman, 2003: 37).

The risk of alcohol-related mortality and morbidity, in general, increases with high levels of alcohol consumption, including periods of heavy drinking. Consequently, investigation into drinking patterns and predictors of risky drinking is necessary.

The possible benefits of low to moderate alcohol consumption, as opposed to the negative health, social and economic implications of heavy alcohol consumption, are not as well understood. 'There is growing evidence that regular intake of alcohol protects against cardiovascular disease, but that alcohol consumption at all levels above abstinence increases the risk of various other diseases and injuries [Roche 1997]'. (Mathers, Vos, Stevenson, & Begg, 2001: 107). Mathers *et al.* found that approximately half of the disease burden and injury caused by alcohol consumption (4.9% of total) was countered by beneficial effects of alcohol consumption (which averted 2.8% of the total disease burden) (2001: 107).

A NSW study of 11,511 cases of acute myocardial infarction or coronary death and 6077 controls 'shows that moderate regular consumption of alcohol over



five or six days a week is associated with a reduction in risk of a major coronary event' (McElduff & Dobson, 1997: 1162). Along with having advantages for coronary heart disease, drinking alcohol regularly at low or moderate levels has also been found to reduce the risk of stroke, hypertension, gallstones and diabetes mellitus, as well as increasing life-expectancy (Mathers *et al.*, 2001: 109; Rehm *et al.*, 2003).

Alcohol and women's health

Research into the health risks and benefits of alcohol consumption is of particular consequence to women. Women are more susceptible to the effects of alcohol consumption than men because of their physiological differences. In general, women have a smaller body mass, a higher proportion of body fat and smaller livers than men. So women's bodies have less chance to dilute, absorb and disperse the alcohol they consume (National Health & Medical Research Council, 2001: 45).

This can be exacerbated by 'the culture of thinness and dieting that particularly affects young women, [and]... places them at increased risk of the effects of alcohol. Dieting leads to a disproportionate loss of body fluid, so that a given quantity of alcohol in a person who is dieting leads to a higher concentration of alcohol within the body' (National Health & Medical Research Council, 2001: 45). Body mass is also an issue for older women who drink, as the volume of water in the body decreases with age. Moreover the increased number of medications that older people often take can lead to a 'reduced neurological tolerance for alcohol' (National Health & Medical Research Council, 2001: 49). Therefore, the risks associated with drinking alcohol, such as liver cirrhosis, alcohol dependence, risky driving behaviour and cancer, occur at lower levels of consumption for women than they do for men (Australian Government Department of Health and Ageing, June 2003).

Breast cancer, the commonest form of cancer among Australian women, is particularly affected by alcohol, and is a major public health issue. The Cancer Council NSW suggest that, 'women who are at high risk of breast cancer and low risk of heart disease may benefit from stopping even light or moderate alcohol consumption' (Chapman, 2003: 37).

Further health risks exist for women in the form of the association that alcohol has with both weight-gain (see Ball, Brown, & Crawford, 2002) and depression. 'A relationship has also been found between alcohol use and adverse mental health problems commonly experienced by women, such as depression, eating disorders and lower self-esteem [Copeland *et al.*, 1993]' (Fleming, 1996: 1326; see also Bell & Lee, 2003: 349; Brown, Ball & Powers, 1998).

Alcohol consumption has social implications for women as well. For women in particular, researchers have suggested that there is a correlation between marital problems and higher alcohol consumption (National Health & Medical Research Council, 2001: 42). In addition, Miller and Downs (1993) found that 'women with alcohol problems experienced significantly higher levels of



violence by partners' (1993: 141), than women without alcohol dependence (see also Australian Institute of Health and Welfare, 2002). The relationship between alcohol and violence is clearly of particular concern.

Alcohol consumption by women also affects the safety of the foetus during pregnancy. 'The evidence indicates that episodes of drinking above the guideline levels considerably increase the risk to the unborn child, including the risk of miscarriage, low birth weight, cognitive defects and congenital abnormalities. Heavy bouts of drinking maximise that risk' (National Health & Medical Research Council, 2001: 16). The fact that these risks exist from the moment of conception onwards, when a woman may not know she is pregnant, increases the threat to the foetus. Once born, children are still at risk from their mother's consumption of alcohol, as alcohol in the bloodstream also passes into breast milk (National Health & Medical Research Council, 2001).

Mathers *et al.* (2001) found that the number of women drinking at risky levels had escalated in recent years, thus further compounding the health risks associated with alcohol consumption. 'Women are particularly vulnerable to the adverse health consequences of alcohol, with alcohol-dependent women experiencing higher mortality than alcohol dependent men [Hill, 1983]' (Fleming, 1996: 1326). Consequently, research on women and alcohol is of vital importance.

The need for longitudinal data on women and alcohol consumption in Australia

Analysis of data from the Australian Longitudinal Study on Women's Health (ALSWH) can contribute to information on women and alcohol in Australia. The longitudinal design of the ALSWH project permits the analysis of alcohol consumption over time for three different age groups of women. Other recent studies of women and alcohol tend only to provide either cross-sectional data or longitudinal data at two time-points (Dent, Grayson, Waite, Cullen, *et al.*, 2000; Droomers, Schrijvers, & Mackenbach, 2004). Consequently, little is known about changes in women's alcohol consumption over time.

In addition, the majority of existing research on the use of alcohol by women is either based on populations outside Australia (Casswell, Pledger, & Pratap, 2002; Gronboek *et al.*, 2004; Thun, Peto, Lopez, & Monaco, 1997), or on specific geographic, ethnic, or age groups in the Australian population (Broe, Creasey, Jorm, Bennett, *et al.*, 1998; Dent *et al.*, 2000). For example, Crook *et al.* (1998) investigated heavy drinking in eight regions of Queensland.

Therefore, the ALSWH sample is important both in terms of size (40,000 participants) and composition, being a national representation of women living in Australia. When participants were originally invited to take part in the project, women living in rural and remote areas were over-sampled, and this allows geographic comparisons in alcohol consumption across Australia (Brown, Young, & Byles, 1997). The structure of the sample is also noteworthy in that the three age cohorts provide the opportunity of assessing



and comparing alcohol consumption both across and at specific stages of the life span. Other Australian research on women and alcohol, has focused on one age group only, such as the Sydney Older Persons Study which investigated the effect of alcohol consumption on cognitive impairment in a sample of over-75 year olds (Broe *et al.*, 1998).

It is necessary to explore alcohol consumption in different age groups, as it has been suggested that women's alcohol consumption patterns change over the life span, in relation both to age and to transitions of social roles and environments, such as marriage, motherhood, and living arrangements. 'Because many elements of a woman's life, such as her upbringing or career, occur at different points in her life, some may be risk factors for developing problem drinking only at certain periods during the life cycle' (Gomberg, 1994). For example, in a Netherlands study of 1327 men and women aged 16-69 years, Hajema and Knibbe (1998) found that while both gaining a spouse and having a child decreased alcohol consumption, losing a spouse increased consumption. Furthermore, analysis of the ALSWH data has shown that risky drinking was 'most common amongst women who lived in shared accommodation, and least common amongst those living with a partner and child(ren)' (Brown, Ball, & Powers, 1998: 22).

Interestingly, 'the harmful affects of alcohol are distributed relatively evenly across all age groups, whereas almost all the benefits from alcohol are found in ages over 45 and particularly in older people. This suggests that different public health advice may be appropriate for younger and older people. Moderate alcohol use is beneficial at middle and older ages, while excessive alcohol use is harmful at all ages' (Mathers *et al.*, 2001: 109-110; see also Gomberg (1994), and Jonas *et al.* (2000)).

In a recent report funded by the Australian Government Department of Health and Ageing, gaps and priorities and potential opportunities for further research of alcohol consumption in Australia are discussed. (Australian Institute of Health and Welfare, 2004) Some of the main points are:

- repetition of surveys is important and useful and should be considered a priority;
- information should be available to a wide range of people such as policy makers, health professionals and the public;
- data linkage could improve or greatly increase the benefits and usefulness of the data;
- specific population groups or priority populations that require special consideration include the elderly and people from rural and remote areas;
- few national collections include sufficient numbers of people from the priority groups and few regularly collect data; and
- there are limited national data on the relationship between alcohol use and mental health.

In response to these gaps and priorities, this report presents findings from a large nationally representative sample of women in three age groups, with



repeated surveys over eight years of follow-up, with measures of demographic, health and psychosocial variables, including mental health. The surveys use well validated questions on alcohol consumption. Risk of alcohol-related harm in the short term and long term are considered, as well as the health and social benefits of alcohol consumption. The study also has record linkage to Medicare and National Death Index data.

1.2 Aims of this report

This report has been prepared on the basis of discussions between the research team and staff of the Alcohol Substance Misuse & Injury Prevention Section of the Department of Health and Ageing. Initial discussions, held in February 2004, addressed policy needs and their match with existing data. On this basis, specific topics were selected for this report.

Using data from the Australian Longitudinal Study on Women's Health for the period 1996-2003, the following research questions will be investigated:

- Who drinks how much, and do women's drinking patterns change over time?
- What are the characteristics of women with different drinking patterns?
- What predicts becoming a more or less risky drinker over time?
- What long-term effects does alcohol consumption have on women's health?

1.3 The Australian Longitudinal Study on Women's Health

The Australian Longitudinal Study on Women's Health (ALSWH)—widely known as Women's Health Australia—is a longitudinal population-based survey, funded by the Australian Department of Health and Ageing. The project began in 1996 and examines the health of over 40,000 Australian women.

The ALSWH involves three large, nationally representative, cohorts of Australian women representing three generations:

- The Younger women, aged 18-23 when first recruited in 1996 (n=14,247), are now in their late 20s, the peak years for relationship formation, childbearing, and establishing adult health habits (e.g. physical activity, diet) and paid and unpaid work patterns.
- The Mid-age women, initially aged 45-50 (n=13,716), are now experiencing menopause, as well as changes in household structure, family care-giving, and impending retirement, which are common at this life stage. Some are showing early signs of age-related physical decline, while some are adopting new health behaviour in preparation for a healthy old age.

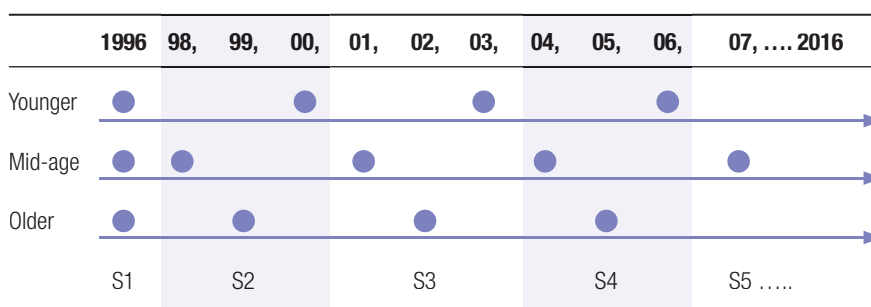


- The Older women, aged 70-75 when first recruited (n=12,432), are in their 80s and facing the physical, emotional and social challenges of old age.

Features of the study design include:

- Women were randomly selected from the Medicare database and invited to participate in the longitudinal study.
- Women in rural and remote areas of Australia were intentionally over-sampled to ensure adequate numbers for statistical analysis.
- Since Survey 1 in 1996, the three age cohorts have been surveyed sequentially, one cohort per year, on a rolling basis since 1998 (see Figure 1.1).

Figure 1.1 Timeline for main ALSWH Surveys



The study was designed to explore factors that influence health among women who are broadly representative of the entire Australian population. The study assesses:

- physical and emotional health (including well-being, major diagnoses, symptoms);
- use of health services (GP, specialist and other visits, access, satisfaction);
- health behaviour and risk factors (diet, exercise, smoking, alcohol, other drugs);
- time use (including paid and unpaid work, family roles, and leisure);
- socio-demographic factors (location, education, employment, family composition); and
- life stages and key events (such as childbirth, divorce, widowhood).

The project provides a valuable opportunity to examine associations over time between aspects of women's lives and their physical and emotional health. It provides an evidence base to the Australian Department of Health and Ageing—as well as other Australian and State/Territory Departments—for the development and evaluation of policy and practice in many areas of service delivery that affect women. An overview of the study and investigators, copies of the questionnaires, and abstracts of all publications and presentations can be located on the Study's website <http://www.newcastle.edu.au/centre/wha>.

The project has been able to retain a very high proportion of the original participants. Among the Younger women, 68% responded to Survey 2 in 2000 and 64% to Survey 3 in 2003, retention rates which compare well with other surveys of this highly mobile age group. Retention rates have been much higher



among the Mid-age women: 90% and 83% of Mid-age women respectively responded to Survey 2 in 1998 and Survey 3 in 2001. Of the Older women, 88% responded to Survey 2 in 1999 and 79% to Survey 3 in 2002.

Alcohol consumption data are available for the Younger cohort at Survey 1 (1996), Survey 2 (2000) and Survey 3 (2003), for the Mid-age cohort Survey 1 (1996) and Survey 2 (1998) and for the Older cohort Survey 1 (1996), Survey 2 (1999) and Survey 3 (2002). The Mid-age Survey 3 was conducted in 2001, but data on alcohol were only collected using a non-comparable method (the Victoria Cancer Council's Food Frequency Questionnaire), which measures alcohol consumption with a different set of questions.

The notation used in this report for the nine surveys analysed in this report, the years the surveys were conducted and the ages of the women are shown in Table 1.1.

Table 1.1 Notation for the surveys used in this report

Year	Younger	Mid-age	Older
1996	Y1 18-23 yrs	M1 45-50 yrs	O1 70-75 yrs
1997			
1998		M2 47-52 yrs	
1999			O2 73-78 yrs
2000	Y2 22-27 yrs		
2001		M3* 50-55 yrs	
2002			O3 76-81 yrs
2003	Y3 25-30 yrs		

* Australian alcohol guidelines consumption categories not available



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Section 2 The measurement of alcohol consumption

2.1 Introduction

The Australian alcohol guidelines developed by the National Health & Medical Research Council (NH&MRC) classify alcohol use in terms of level of risk: *low risk*, *risky* and *high risk* levels of drinking (National Health & Medical Research Council, 2001). *Low risk* describes a level of drinking at which there is only a minimal risk of harm and there may be health benefits. *Risky* levels are those at which the risk of harm is significantly increased beyond any possible benefits. *High risk* drinking levels are those where there is substantial risk of serious harm. Risk is also assessed in terms of *long-term* and *short-term* risk. *Long-term* risk is defined by the total amount of alcohol typically consumed per week. *Short-term* risk is associated with levels of drinking on a single day. The number of standard drinks for levels of drinking for adult women of average size is shown in Table 2.1.

Table 2.1 Definition of levels of risk for alcohol consumption among women (standard drinks)

	Low risk	Risky	High risk
Short-term risk	Up to 4 on any one day, no more than 3 days per week	5 to 6 on any one day	7 or more on any one day
Long-term risk	Up to 2 per day OR Up to 14 per week	3 to 4 per day OR 15 to 28 per week	5 or more per day OR 29 or more per week

2.2 How has alcohol use been measured by ALSWH?

Each survey for each cohort has included questions on the frequency and quantity of alcohol consumed by the respondents. A full description of the questions asked at each survey is shown in Appendix. The ALSWH has defined four categories of *long-term* risk, based on the Australian alcohol guidelines, and a fifth category of *non-drinkers* was added (Table 2.2).



The Australian alcohol guidelines' definitions for *risky* and *high risk* drinking are adopted in full. For women defined as *low risk* by the Australian alcohol guidelines, the ALSWH has defined two subgroups: those who *rarely drink* (those who report they drink only rarely, i.e. less than once per month) and the remainder of this group who are classified as *low risk*. From Section 4 onwards of this report, the categories of risky and high risk have been combined because of small numbers.

Table 2.2 Categories of long-term risk for alcohol consumption in the Australian alcohol guidelines and ALSWH

Australian alcohol guidelines	ALSWH
	Non-drinker
Low risk	{ Rarely drink Low risk
Risky	Risky
High risk	High risk

Short-term risk is assessed by a question asking how often the respondent has five or more drinks on one occasion (see Appendix).

The ALSWH questions did not ask the women to assess their alcohol consumption in terms of standard drinks nor to report the type of alcohol product consumed. Hence, the raw number of drinks cannot be adjusted in order to convert it to number of standard drinks. At Survey 3 for the Mid-age group in 2001, as part of a food frequency questionnaire, women were asked questions about the number of days on which they drank beer, wine and/or spirits; the number of standard drinks they consumed on a day when they drank alcohol and the maximum number of glasses of beer, wine and/or spirits they consumed in a day. Wine was found to be the most common alcoholic beverage for women. As wine is consumed from glasses which usually range from 1 to 1.8 standard drinks, the prevalence of risky/high-risk drinking may be under-estimated. However the main aim of this report is to look at trends over time and a consistent, well-defined method of measuring alcohol consumption has been used.

2.3 Reference

National Health & Medical Research Council 2001. *Australian Alcohol Guidelines: Health Risks and Benefits*, Canberra, NH&MRC.



Section 3 Who drinks how much, and do women's drinking patterns change over time?

3.1 Cross-sectional data

Tables 3.1 and 3.2 provide cross-sectional data on the frequency and quantity of alcohol consumed by Younger, Mid-age and Older women at Survey 1, Survey 2 and Survey 3. It should be noted that the surveys are sent out at the same time of year (around March/ April) each time.

Table 3.1 Frequency of alcohol consumption

How often do you usually drink alcohol?	Younger			Mid-age**		Older		
	Y1 n=14,247 %	Y2 n=9689 %	Y3 n=9049 %	M1 n=13,716 %	M2 n=11,648 %	O1 n=12,432 %	O2 n=9514 %	O3 n=8646 %
Never	9.3	8.8	7.7	14.7	12.7	33.8	34.5	37.5
Rarely*	33.5	27.5	25.7	30.5	27.8	28.9	27.1	24.1
< once a week	28.0	26.8	24.7	14.4	14.4	7.4	5.9	6.1
1 or 2 days a week	24.1	25.2	24.9	15.3	16.3	8.1	7.8	7.4
3 or 4 days a week	4.1	8.6	11.7	10.6	12.1	6.1	6.4	6.1
5 or 6 days a week	0.7	2.2	4.1	7.2	8.5	4.4	5.3	5.3
Every day	0.2	0.9	1.3	7.3	8.2	11.3	13.1	13.5
Total	100	100	100	100	100	100	100	100

* Response options changed for Survey 2 and Survey 3 for the Younger cohort. Instead of *rarely*, the option was *less than once a month*.

** Survey 3 data not comparable

Percentages of responses with missing alcohol data were <1% for the Younger and Mid-age cohorts and 3% to 4% in the Older cohort.

Older women are more likely to be non-drinkers than Younger or Mid-age women, although more than 10% report drinking alcohol every day. Mid-age and Younger women report similar frequency of rarely drinking, but the Mid-age women tend to drink alcohol on more days of the week than Younger women. However there is a trend for Younger women to drink alcohol on an increasing number of days of the week over the seven year period 1996-2003.

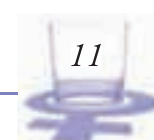


Table 3.2 Quantity of alcohol consumed

On a day when you drink alcohol, how many drinks do you usually have?	Younger			Mid-age*		Older		
	Y1 n=14,247 %	Y2 n=9689 %	Y3 n=9049 %	M1 n=13,716 %	M2 n=11,648 %	O1 n=12,432 %	O2 n=9514 %	O3 n=8646 %
Non-drinker	9.4	8.8	7.7	15.0	13.1	35.2	41.9	43.3
1 or 2	31.1	43.0	51.8	65.6	69.0	58.1	52.6	52.7
3 or 4	29.5	29.4	27.8	16.4	15.2	6.1	5.2	3.8
5 to 8	22.8	15.3	10.9	2.5	2.4	0.5	0.3	0.3
9 or more	7.3	3.6	1.8	0.5	0.3	0.1	0	0
Total	100	100	100	100	100	100	100	100

* Survey 3 data not comparable

Percentages of responses with missing alcohol data were 1% to 2% for the Younger, 2% to 4% for the Mid-age and 4% to 8% in the Older cohort.

The majority of Mid-age and Older women consumed one or two drinks on a day when they were drinking. Younger women were more likely to consume three or more drinks than Mid-age or Older women. At Survey 1, 7.3% of the Younger women usually consumed nine or more drinks on a day when drinking, but this had dropped to 1.8% when they were resurveyed seven years later at Survey 3. The percentage of Younger women drinking five to eight drinks in one day also decreased substantially from 22.8% in 1996 to 10.9% by 2003.

Table 3.3 provides cross-sectional data on the frequency of short-term risk alcohol consumption by Younger women at Surveys 1, 2 and 3, Mid-age women at Surveys 1 and 2, and Older women at Survey 1. The rates for Mid-age women did not change over the two-year period between surveys but there was a decrease in short-term risk drinking among Younger women.

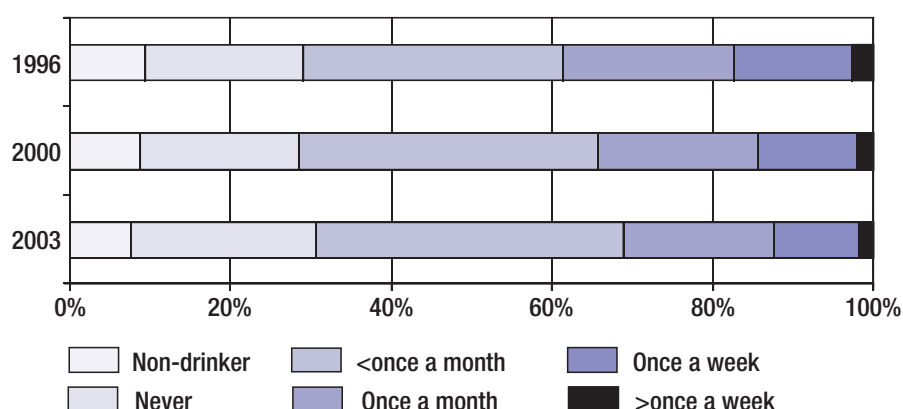
Table 3.3 Frequency of short-term risk drinking (5 or more standard drinks on one occasion)

How often do you have five or more drinks of alcohol on one occasion?	Younger			Mid-age		Older*
	Y1 n=14,247 %	Y2 n=9689 %	Y3 n=9049 %	M1 n=13,716 %	M2 n=11,648 %	O1 n=12,432 %
Non-drinker	9.4	8.8	7.6	14.8	12.8	34.1
Never	19.8	19.8	23.1	52.4	54.6	56.5
< once a month	32.2	37.2	38.3	18.7	17.7	5.3
Once a month	21.3	19.9	18.7	7.8	8.7	2.4
Once a week	14.9	12.5	10.5	4.7	4.8	1.1
> once a week	2.5	1.9	1.8	1.6	1.5	0.6
Total	100	100	100	100	100	100

* question about short-term risk drinking only included in Survey 1 for Older cohort

Percentages of responses with missing alcohol data were 1% to 2% for the Younger and the Mid-age and 5% for the Older cohort.



Figure 3.1 Percentage of Younger women in each short-term risk category

Cross-sectional data are shown in Table 3.4 for the modified categories of alcohol consumption from the Australian alcohol guidelines (long-term risk; see Table 2.2) for the three cohorts. The majority of Younger women were drinking at low long-term risk; Mid-age women were most likely to drink at low long-term risk or drink rarely; most Older women were equally likely to be non-drinkers, to drink rarely or at low long-term risk.

Table 3.4 Alcohol consumption based on Australian alcohol guidelines

Alcohol consumption	Younger			Mid-age		Older		
	Y1 n=14,247 %	Y2 n=9689 %	Y3 n=9049 %	M1 n=13,716 %	M2 n=11,648 %	O1 n=12,432 %	O2 n=9514 %	O3 n=8646 %
Non-drinker	9.3	8.8	7.7	14.7	12.8	33.8	34.0	37.3
Rarely drinks	33.6	27.6	25.8	30.6	27.9	28.9	26.7	23.9
Low risk drinker	52.0	59.9	62.9	49.5	53.6	33.9	35.3	35.8
Risky drinker	4.5	3.4	3.2	4.3	4.9	3.1	3.7	2.8
High risk drinker	0.6	0.3	0.5	0.9	0.8	0.3	0.3	0.2
Total	100	100	100	100	100	100	100	100

Note: the discrepancy between missing numbers in Tables 3.1, 3.2 and 3.3 is mainly due to women who rarely drink.

Percentages of responses with missing alcohol data were 1% for the Younger and the Mid-age and 2% to 4% for the Older cohort.

The data for Survey 1 are also shown graphically in Figure 3.2, in which the risky and high risk categories have been combined because of small numbers.

At Survey 3 in 2001, as part of a food frequency questionnaire, Mid-age women were asked about their alcohol consumption over the last year (Tables 3.5 and 3.6). The questions related to the number of days on which they drank beer, wine and/or spirits; the number of standard drinks they consumed on a day when they drank alcohol and the maximum number of glasses of beer, wine and/or spirits they consumed in a day.

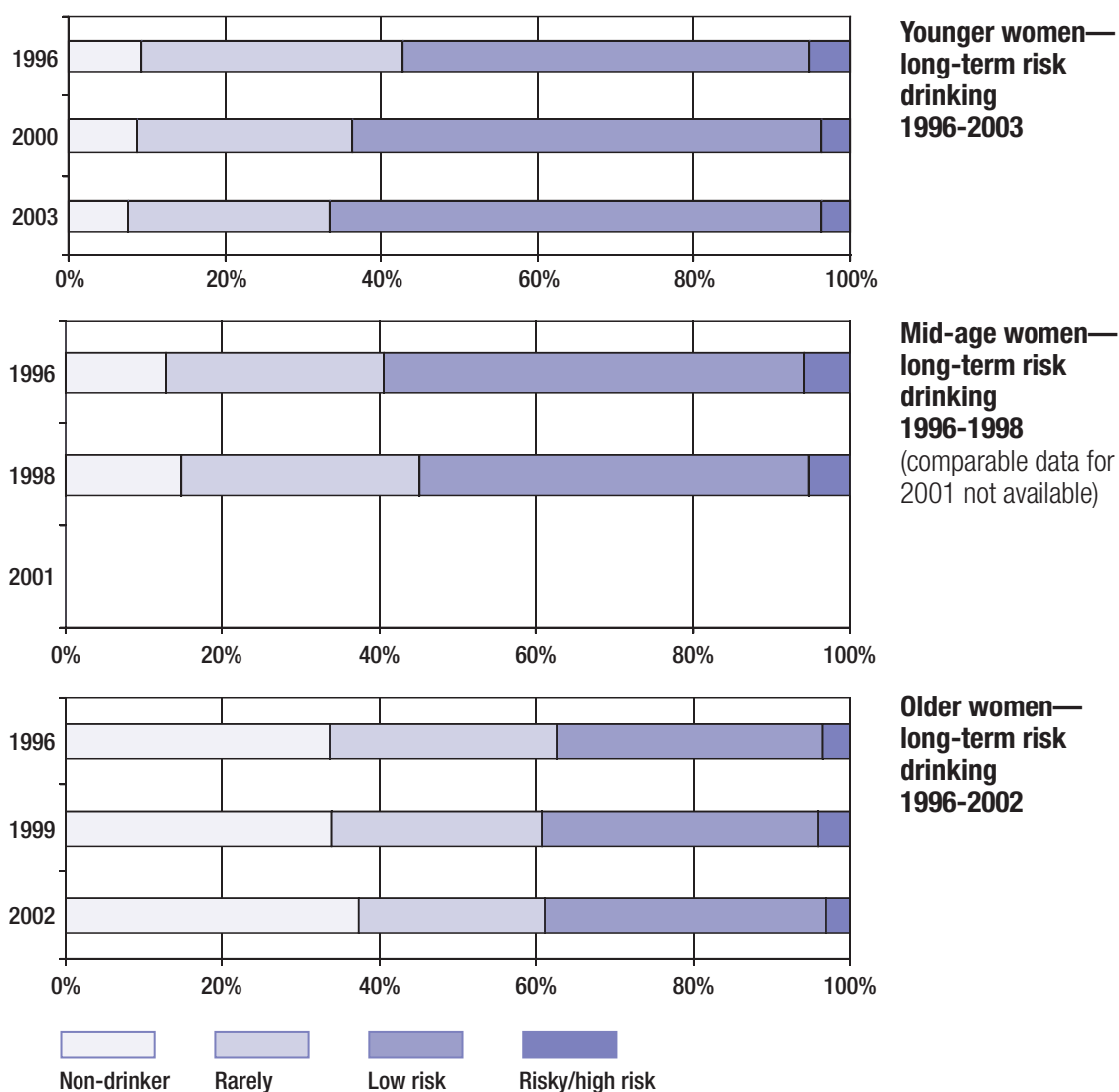
The Mid-age women were more likely to drink white wine, red wine and spirits/liqueurs than beer or fortified wines (Table 3.5).

Table 3.5 Frequency of consumption of beer, wine and/or spirits by 11,192 Mid-age women at Survey 3

	Beer (low alcohol) %	Beer (full strength) %	Red wine %	White wine %	Fortified wines, port, sherry %	Spirits, liqueurs %
Never	67.7	78.6	43.7	27.3	63.9	48.0
Rarely*	18.6	13.9	18.7	21.7	25.9	27.7
< once a week	6.9	3.7	12.4	17.1	6.1	10.9
1 or 2 days a week	4.1	2.2	12.2	15.6	2.5	7.9
3 or 4 days a week	1.5	0.8	8.0	10.1	0.9	3.1
5 or 6 days a week	0.6	0.4	2.7	4.6	0.4	1.3
Every day	0.6	0.5	2.3	3.6	0.3	1.1
Total	100	100	100	100	100	100

* less than once a month

Percentages of responses with missing alcohol data were between 3% and 9%.

Figure 3.2 Percentage of women in each long-term risk category, by year and age group

Most Mid-age women at Survey 3 reported usually drinking one or two glasses of alcohol, although more than 20% reported having consumed five or more glasses in 24 hours at least once in the last year (Table 3.6).

Table 3.6 Quantity of alcohol consumed usually and maximum number of glasses by 11,192 Mid-age women at Survey 3

Usual quantity	%
Non-drinker	16.0
1 or 2 glasses per day	60.3
3 or 4 glasses per day	19.2
5 to 8 glasses per day	4.0
9 or more glasses per day	0.5
Total	100
Maximum quantity	%
Non-drinker	16.0
1 or 2 glasses per day	32.6
3 or 4 glasses per day	29.1
5 to 8 glasses per day	19.2
9 or more glasses per day	3.1
Total	100

Percentages of responses with missing alcohol data were 6.5% for usual quantity and 6.1% for maximum quantity.

3.2 Data for women who participated in all surveys

The following tables show the alcohol consumption at Survey 1 and 2 (and 3 for Younger and Older women) for those women who completed the surveys at each phase of the study. Women who died, withdrew from the study, failed to return follow-up surveys or were not contactable are excluded from the data in Tables 3.7 – 3.10.

There was little change in the cross-sectional pattern of alcohol consumption for Mid-age women. Younger women were drinking more frequently at Survey 2 and Survey 3 than at Survey 1 whereas there was a greater percentage of Older women not drinking alcohol at Survey 3 (Table 3.7).

Table 3.7 Frequency of alcohol consumption among participants to all surveys

Usually drink alcohol	Younger (n=7790)			Mid-age (n=11,648)		Older (n=7966)		
	Y1 %	Y2 %	Y3 %	M1 %	M2 %	O1 %	O2 %	O3 %
Never	8.5	8.8	7.7	14.1	12.7	30.8	32.7	37.1
Rarely*	33.4	27.5	25.9	29.9	27.8	28.8	27.3	24.0
< once a week	28.8	26.8	24.9	14.7	14.4	7.9	6.1	6.1
1 or 2 days a week	24.1	25.2	24.6	15.6	16.3	8.4	7.9	7.3
3 or 4 days a week	4.2	8.6	11.4	10.8	12.1	6.6	6.6	6.3
5 or 6 days a week	0.8	2.2	4.1	7.5	8.5	4.9	5.7	5.4
Every day	0.3	0.9	1.3	7.6	8.2	12.6	13.8	13.9
Total	100	100	100	100	100	100	100	100

* response options were changed for Surveys 2 and 3 for the Younger cohort. Instead of *rarely*, the option was *less than once a month*. Percentages of responses with missing alcohol data were <1% for the Younger and Mid-age cohorts and 2% to 4% for the Older cohort.



Younger women were likely to drink fewer drinks per day at Surveys 2 and 3 than at Survey 1. The quantity of alcohol consumed per day remained about the same for Mid-age women between Survey 1 and Survey 2 and the Older women were less likely to be drinking alcohol at Survey 3 than Survey 1 or Survey 2 (Table 3.8).

Table 3.8 Quantity of alcohol consumed among participants in all surveys

Drinks per day	Younger (n=7790)			Mid-age (n=11,648)			Older (n=7966)	
	Y1 %	Y2 %	Y3 %	M1 %	M2 %	O1 %	O2 %	O3 %
Non-drinker	8.6	8.7	7.8	14.3	13.1	31.9	40.0	42.9
1 or 2	32.6	43.0	52.7	66.9	69.0	61.2	54.2	53.1
3 or 4	30.1	29.4	27.5	16.2	15.2	6.3	5.5	3.7
5 to 8	21.8	15.3	10.4	2.3	2.4	0.5	0.3	0.3
9 or more	6.9	3.6	1.6	0.4	0.3	0.1	0.0	0.0
Total	100	100	100	100	100	100	100	100

Percentages of responses with missing alcohol data were 1% to 2% for the Younger, 2% to 4% for the Mid-age and 4% to 7% for the Older cohorts.

Short-term risk drinking among the Younger women declined from Survey 1 to Survey 3. There was little change in short-term risk drinking among the Mid-age women between Survey 1 and Survey 2 (Table 3.9).

Table 3.9 Frequency of short-term risk drinking (5 or more standard drinks on one occasion) among participants in all surveys

Short-term risk drinking	Younger (n=7790)			Mid-age (n=11,648)		Older (n=7966)
	Y1 %	Y2 %	Y3 %	M1 %	M2 %	O1 %
Non-drinker	8.5	8.7	7.7	14.2	12.8	31.1
Never	20.4	19.8	23.8	53.4	54.6	59.4
< once a month	33.2	37.2	38.5	18.9	17.7	5.5
Once a month	21.2	19.9	18.4	7.6	8.7	2.4
Once a week	14.3	12.5	9.8	4.5	4.8	1.0
> once a week	2.4	1.9	1.8	1.4	1.5	0.6
Total	100	100	100	100	100	100

Percentages of responses with missing alcohol data were 1% to 2% for the Younger, 1% for the Mid-age and 4% for the Older cohorts.

Younger women who participated in all surveys reported decreased alcohol consumption over the seven year period between their first and third surveys. There was little change in long-term risk drinking among Mid-age women. Older women by Survey 3 were more likely to be non-drinkers and less likely to drink rarely than in previous years (Table 3.10).

Although the data in Tables 3.7 to 3.10 show trends in the consumption of alcohol over time in each age group for the same group of women (longitudinal data), these tables do not show the movement between categories (transitions) for the women. These transitions are shown in the next section.



Table 3.10 Alcohol consumption based on Australian alcohol guidelines among participants in all surveys

Alcohol consumption	Younger (n=7790)			Mid-age (n=11,648)		Older (n=7966)		
	Y1 %	Y2 %	Y3 %	M1 %	M2 %	O1 %	O2 %	O3 %
Non-drinker	8.2	8.3	7.7	14.1	12.8	30.8	32.3	36.9
Rarely drinks	33.1	27.5	25.9	29.9	27.9	28.8	26.9	23.8
Low risk drinker	53.8	60.9	62.9	50.9	53.6	36.8	36.7	36.3
Risky drinker	4.2	3.1	3.0	4.3	4.9	3.3	3.9	2.8
High risk drinker	0.6	0.2	0.5	0.8	0.8	0.3	0.3	0.2
Total	100	100	100	100	100	100	100	100

Percentages of responses with missing alcohol data were 1% or less for the Younger and Mid-age cohorts and 2% to 3% for the Older cohort.

3.3 Longitudinal data for women who participated in all surveys

The following tables show changes over time in alcohol consumption from Survey 1 to Survey 2 for participants of all ages, and changes between Surveys 1, 2 and 3 for Younger and Older participants. Mid-age and Older women were the least likely to change their alcohol consumption over time (Table 3.11). The Younger women were more likely to change, with 17% decreasing their consumption and only 3% increasing their consumption to risky or high risk levels.

Table 3.11 Changes over time in alcohol consumption from Survey 1 to Survey 2

Changes in alcohol consumption	Younger (n=9689) %	Mid-age (n=11,648) %	Older (n=9514) %
No change			
Remained non-drinker	4.5	10.3	27.7
Remained rarely drinks	14.9	20.1	17.1
Remained low risk drinker	40.6	44.3	27.7
Remained risky or high risk drinker	1.0	3.7	2.5
Sub-total no change	61.0	78.4	75.0
Decreased consumption			
Rarely drinks to non-drinker	3.1	1.9	4.5
Low risk to non-drinker/ rarely drinks	10.2	4.6	6.6
Risky or high risk to non-drinker/ rarely	1.0	0.1	0.2
Risky or high risk to low risk drinker	3.1	1.3	0.9
Sub-total decreased consumption	17.4	7.9	12.2
Increased consumption			
Non-drinker to rarely/ low risk drinker	3.9	3.7	4.6
Rarely drinks to low risk drinker	15.0	8.0	6.8
Non-drinker/ rarely/ low risk drinker to risky or high risk drinker	2.7	2.0	1.5
Sub-total increased consumption	21.6	13.7	12.9
Total	100	100	100

Percentages of responses with missing alcohol data were 2% for the Younger and Mid-age cohorts and 6% for the Older cohort.

The women who reported never drinking at all surveys will be categorised as 'perpetual non-drinkers'. The most common transitions are between low risk drinker, rarely drinks and non-drinker. In Tables 3.12 to 3.14, these data are summarised so that **low risk** refers to women who reported drinking alcohol at least rarely at one survey (not perpetual non-drinkers) but did not drink at levels that were 'risky' or 'high risk' at any survey (risky).

As seen in Table 3.12, the majority of women did not change their alcohol consumption category between Survey 1 and Survey 2. Most women consuming alcohol remained in the 'low risk' combined category at both times and more than a quarter of the Older women remained non-drinkers. Younger women were more likely than Mid-age or Older women to change from drinking at risky levels to low risk, perhaps in connection with other life events such as becoming pregnant. These factors will be explored in Section 6.

Table 3.12 Summary of changes over time in alcohol consumption from Survey 1 to Survey 2

	Younger (n=9689) %	Mid-age (n=11,648) %	Older (n=9514) %
Perpetual non-drinker	4.5	10.3	27.7
Remain low risk	87.8	82.6	67.2
Risky/high risk to low risk	4.1	1.4	1.0
Low risk to risky/high risk	2.7	2.0	1.5
Remain risky/high risk	1.0	3.7	2.5
Total	100	100	100

Percentages of responses with missing alcohol data were 2% for the Younger and Mid-age cohorts and 6% for the Older cohort.

Very few of the Younger women (0.2%) had been drinking at risky levels at all three surveys and only 1.8% had been drinking at risky levels at two of the three surveys (Table 3.13).

Table 3.13 Summary of changes in alcohol consumption among Younger women from Survey 1 (1996) to Survey 3 (2003), (n=7790)

Alcohol consumption over time	%
Perpetual non-drinker	3.3
Remain low risk	87.4
Low risk at two surveys, risky/high risk at one	7.3
Low risk at one survey, risky/high risk at two	1.8
Remain risky/high risk	0.2
Total	100

Alcohol transition data were missing for 2% of Younger women.

Most Older women remained non-drinkers or continued to drink rarely or at low risk (Table 3.14).



Table 3.14 Summary of changes in alcohol consumption among Older women from Survey 1 (1996) to Survey 3 (2002), (n=8397)

Alcohol consumption over time	%
Perpetual non-drinker	25.2
Remain not risky	69.0
Not risky at two surveys, risky/high risk at one	2.3
Not risky at one survey, risky/high risk at two	1.8
Remain risky/high risk	1.7
Total	100

Alcohol transition data were missing for 12% of Older women.

The associations between socio-demographic characteristics, health status and health service use and alcohol consumption among women in each cohort will be examined in the next section of this report.

3.4 Summary

A clear majority of respondents to the surveys are non-drinkers or drink at low levels of long-term risk, although some of these women reported short-term risk drinking (having five or more drinks on one occasion).

In summary, the findings related to long-term risk drinking at Survey 1 for all respondents are:

Among Younger women aged 18-23 years (n=14,247):

- 5% were risky or high risk drinkers;
- 52% were low risk drinkers;
- 34% rarely drank; and
- 9% were non-drinkers.

Among Mid-age women aged 45-50 years (n=13,716):

- 5% were risky or high risk drinkers;
- 50% were low risk drinkers;
- 31% rarely drank; and
- 15% were non-drinkers.

Among Older women aged 70-75 years (n=12,432):

- 3% were risky or high risk drinkers;
- 34% were low risk drinkers;
- 29% rarely drank; and
- 34% were non-drinkers.

In summary, the findings related to short-term-risk drinking (having five or more drinks on one occasion) at Survey 1 are:

Younger women:

- 18% did this often (once a week or more)
- 21% did this sometimes (about once a month)
- 32% did this rarely (less than monthly) and
- 29% never had five or more drinks on one occasion.

Mid-age women:

- 6% did this often (once a week or more)
- 8% did this sometimes (about once a month)
- 19% did this rarely (less than monthly) and
- 67% never had five or more drinks on one occasion.

Older women:

- 2% did this often (once a week or more)
- 2% did this sometimes (about once a month)
- 5% did this rarely (less than monthly) and
- 91% never had five or more drinks on one occasion.

Other findings include:

- Although Older women are more likely to be non-drinkers than Younger or Mid-age women, more than 10% of the Older women report drinking alcohol every day.
- The majority of Mid-age and Older women consumed one or two drinks on a day when they drink.
- Younger and Mid-age women report similar levels of long-term risk drinking.
- Mid-age women tend to drink alcohol on more days of the week than Younger women but have fewer drinks.
- Younger women were more likely to consume three or more drinks in one day than Mid-age or Older women.
- At Survey 1, 7% of the Younger women usually consumed nine or more drinks on a day when they were drinking.

In summary, the findings on the longitudinal changes in alcohol consumption between Surveys include:

- The majority of women did not change their level of alcohol consumption over 5-7 years between surveys.
- Most women who reported consuming alcohol at all surveys were doing so at low levels of long-term risk.
- More than a quarter of the Older women remained non-drinkers over the six-year period from 1996 to 2002.
- Younger women were more likely than Mid-age or Older women to decrease their alcohol consumption from levels that were risky to their health.

