Environment Protection and Heritage Council

Time Activity Study

Stage 1 – Winter Survey
September 2002

A research report to the
Environment Protection and Heritage Council
by the
Centre for Population Studies in Epidemiology,
South Australian Department of Human Services

EPHC

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EXECUTIVE SUMMARY

This report details aspects of the exposure of children, young adults, and elderly people to ambient air pollution in Australian capital cities and some country centres. The data were collected in September 2002 and represent the activities of people both indoors and outdoors at this time of year. The results from this survey are to be compared with a sample taken in summer 2002-03 to illustrate differences in exposure to pollutants in different seasons. When "winter" is used in this report, this refers to September 2002.

In all, over 4,000 respondents to the survey reported on their health condition, home environment, levels of activity, and time spent in various situations both indoors and outdoors. The main findings are listed hereunder.

- Respiratory conditions were common, particularly in elderly people. Symptoms of colds and flus were common at this stage of late winter.

- Alcohol consumption was much higher in people aged 18 to 25 years than in elderly people.

- Smoking was also higher in the 16 to 25 year age group than in elderly people.

- Smoke free homes were very common but less so for the 16 to 25 year age group who demonstrated higher smoking rates.

- Walking was the most popular form of physical activity. Elderly people were less likely to engage in vigorous or other moderate activity. Older children were less active than younger children.

The main findings of time spent outdoors are:

Age groups

- People aged 60 years and over spent the highest proportion of their time outdoors in the morning. The period between 9 am and midday was a period of outdoor activity in all locations.

- The peak time for the 5 to 14 year age group was afternoon, which corresponded with after school activities.

- The 0 to 4 year age group had a bimodal distribution in most centres, with peaks in the morning and late afternoon and generally a less active period outdoors at midday.

Geographic regions

- The most northerly locations (Darwin and Gladstone) showed bimodal distributions for most age groups. Extensive outdoor activity took place both in the mornings and late afternoons. Midday was a time when outdoor activity was low.

- The most southerly location (Hobart) differed from all other locations in that peak outdoor activity times occurred early in the day. Late afternoon was a time when the age groups surveyed were less likely to be outdoors.

- Locations in mid latitudes, where the majority of the population resided, tended to be characterised by the youngest and oldest age groups being outdoors in the morning, and the 5 to 25 year age groups being outdoors in the afternoon.

- Considerable time was spent in motorcars, especially in heavy traffic, compared with other forms of transportation.

The main findings of time spent indoors are:

Chemicals

- There was considerable use of chemicals indoors. These include cleaning products and solvents that are vaporised or produce fumes that can be breathed.

Ventilation

- Greater time was spent in heating homes and less time with windows open in the colder, southerly cities. In Tasmania there was a greater frequency of wood combustion for heating, producing more pollution. However, there was also much greater use of electricity for heating and cooking in Tasmania.

The data in this report are preliminary results that present a picture at a point in time of activities related to ambient air quality in Australian cities. This report is to be

followed by two more reports, detailing the summertime activity of the same respondents included in this report, and a comparison of the two periods.

CHAPTER 1: INTRODUCTION

1.1 Introduction

Air pollution can have a significant impact on public health. Health effects associated with exposure to air pollution can include increases in premature deaths and hospital admissions due to respiratory and cardiovascular disease[1]. Hospital admissions for children with asthma are also strongly associated with current air pollution levels in Australian cities. These impacts may cause a significant burden on the health system. Costs are not only associated with the required health care, but loss in productivity can also pose a significant burden on Australian society.

The National Environment Protection Council (NEPC), an incorporated body of the Environment Protection and Heritage Council, has been established to set national environmental goals and standards for Australia, through National Environment Protection Measures (NEPMs).

The Environment Protection and Heritage Council has agreed that the development of cost-effective air quality standards and management strategies needs to be based on consistent, scientifically sound information. Accordingly, in June 2002, the National Environment Protection Council proposed that a study of population behaviour patterns and exposures to air pollutants in Australia, a "Time Activity Study", be undertaken.

The Time Activity Study is designed to fill current gaps in knowledge and provide baseline data relating to population behaviour patterns and exposures to indoor and outdoor air pollutants amongst children, young adults and the ageing population in Australia. These data will be used to assist in setting air quality standards, for example, by validating the transferability of overseas exposure assessment models to Australia. It is envisioned that these data will be useful for an extended period of time and will be used in a number of ways. Time Activity Study data will be a valuable input in the reviews of the ozone and sulphur dioxide standards commencing in 2003, and in the comprehensive review of the Ambient Air Quality NEPM scheduled to commence in 2005.

In June 2002, a submission to undertake the Time Activity Study was tendered by the Centre for Population Studies in Epidemiology (CPSE), South Australian Department of Human Services. A contract was signed 27 August 2002.

The Time Activity Study will interview 4,000 people on two occasions, once during winter and once during summer to allow consideration of important seasonal differences. Interviews for the first stage of the survey commenced in September 2002. Interviews for the second stage of survey will be conducted in February 2003. This report summarises the main findings of the first stage of the survey.

1.2 Survey objectives

The objectives of the project were to undertake a computer-assisted telephone interviewing (CATI) population survey of state/territory capital cities and two large regional cities to:

- provide statistically sound socio-demographic, time activity data (for example, time spent outdoors and time spent doing heavy exercise during various time intervals over 24 hours) and data on key exposures related to ambient air and indoor air for children aged 0 to 4 years and 5 to 14 years, young adults aged 15 to 25 years, and older people aged 60 years and over.
- provide data on health status related to medical conditions that may be affected by indoor or outdoor air quality (e.g. asthma, emphysema).

CHAPTER 2: METHOD

2.1 Survey design

2.1.1 Sample selection

The Time Activity Study surveyed a number of populations across Australia. An NEPC working group established to oversee the Time Activity Study determined that the survey should be conducted in each of ten Australian cities. The cities selected for inclusion were each of the state/territory capitals: Adelaide, Brisbane, Canberra, Darwin, Hobart, Melbourne, Perth, and Sydney; and the cities of Gladstone in Queensland and Launceston in Tasmania. Inclusion of the latter two cities was based on knowledge that each has an identified ambient air problem. Participation in the survey was restricted to persons in the age groups 0 to 4 years, 5 to 14 years, 15 to 25 years and 60 years and over.

All households in each selected city with a telephone connected and the telephone number listed in the Electronic White Pages (EWP) were eligible for selection in the sample.

Based on best estimates of household composition and response rates, an initial sample size of 15,650 was anticipated to result in approximately 4000 interviews with persons eligible for inclusion in the study (i.e. persons aged 0 to 25 years and persons aged 60 years and over).

The total initial sample of 15,650 households was selected from across the ten selected cities. The initial sample size per city varied. Population age distributions differ between cities meaning that different initial sample sizes were necessary to achieve a similar number of interviews per age group in each city. Further, previous experience with conducting national surveys indicated that response rates differ between states/territories. From the information on age distributions and response rates, the initial sample sizes were calculated for each city and are shown in Table 2.1.

Table 2.1: Initial sample sizes drawn from EWP for each city

City (in alphabetical order)	Initial sample size
Adelaide	1400
Brisbane	1700
Canberra	1400
Darwin	1850
Gladstone	1400
Hobart	1400
Launceston	1400
Melbourne	1850
Perth	1400
Sydney	1850
Total Initial sample	**15650**

Within each household, only one person was interviewed. The target number of interviews with respondents aged 60 years and over was anticipated to be more easily achievable than the targets for the age group 0 to 4 years, 5 to 14 years and 15 to 25 years due to the higher proportion of the population in this age group. Therefore, where the household structure included persons aged 0 to 25 years, the person in this age group who was the last to have a birthday was selected for interview. For selected respondents aged less than 16 years, a parent or equivalent significant adult was interviewed. Where a household structure did not include persons 25 years or less but did include persons aged 60 years or over, the person aged 60 or more years who was last to have a birthday was selected to participate. Households whose occupants were aged 26 to 59 years only were not eligible for the study and were politely informed of this by the interviewer. There was no replacement for non–contactable persons.

2.1.2 Introductory letter

A letter introducing the health survey (Appendix 1) was sent to the household of each selected telephone number. This informed people of the purpose of the survey and indicated that they could expect to be contacted by telephone within the time frame of the survey. Overall, 57.5% of the respondents reported receiving the letter.

2.1.3 Questions

The survey questionnaire was developed in consultation with the National Environment Protection Council working group. Where possible, questions were used that had been previously included in other surveys and indicated their validity/reliability. Some questions were only asked of particular age groups, according to their appropriateness.

The issues covered and the number of questions asked in this survey are listed in Table 2.2.

Table 2.2: Issues covered in survey

Areas covered	Number of questions
Time spent outdoors	5
Level of exertion whilst outdoors	7
Indoor air risks	28
Outdoor air risks	6
Health conditions	6
Symptoms of ill health potentially related to air quality	1
Risk factors for ill health	8
Demographics	14

The full list of questions asked in this survey is contained in Appendix 2.

2.1.4 Pilot testing

Before the conduct of the main survey, the questionnaire was pilot tested (n = 50). The original questionnaire was amended slightly on the basis of the information obtained.

2.2 Data collection

Data collection was undertaken by the agency contracted by the SA Department of Human Services, being Harrison Health Research. The survey commenced on 2 September 2002 and concluded on 1 October 2002. Telephone calls were made between 9:30 am and 9.00 pm in the state of interview, seven days a week. Professional interviewers conducted the interviews and were supervised by Harrison Health Research and CPSE personnel. Disposition codes and data were supplied to CPSE staff daily, or as required, to ensure careful monitoring of survey activities.

On contacting the household, the interviewer initially identified themselves and the purpose of the survey.

2.2.1 CATI

The CATI III (Computer Assisted Telephone Interview) system was used to conduct the interviews. This system allows immediate entry of data from the interviewer's questionnaire screen to the computer database. The main advantages of this system are the precise ordering and timing of call backs and correct sequencing of questions as specific answers are given. The CATI system enforces a range of checks on each response with most questions having a set of pre-determined response categories. When open-ended responses were required these were transcribed exactly by the interviewer.

2.2.2 Call backs

Up to ten call backs were made to the telephone number selected to interview the household member. Different times of the day or evening were scheduled for each call back. If a person could not be interviewed immediately they were rescheduled for interview at a time suitable to them. Replacement interviews for persons who could not be contacted or interviewed were not permitted.

Respondents were asked if they would be prepared to be called again in February 2002 to report on the questions during summer. Of the total of 4,022 respondents, 3,879 (96.4%) indicated that they would be happy to participate again.

2.2.3 Validation

Of each interviewer's work, 10% was selected at random for validation by the supervisor. In addition, Harrison Health Research is a member of Interviewer Quality Control Australia (IQCA), a national quality control assurance initiative of the Market Research Society of Australia. Accredited organisations must strictly adhere to rigorous quality assurance requirements and are subject to regular audits by IQCA auditors.

2.2.4 Participation rate

The estimated participation rate was 64.5%. Initially a sample of 15650 was drawn. Sample loss of 5637 occurred due to fax/modem connections (281), non-connected numbers (2139), non-residential numbers (396), no contact made after 10 calls, no longer at number (17), respondent unavailable (307), and household not contacted in the one month winter interviewing period (68). From the eligible sample of 10013, the participation rate was calculated as shown in Table 2.3. Of the 10013 households where respondents were interviewed, 2980 were ineligible to participate in the survey due to no household member in eligible age groups (2683) or respondent unable to be interviewed in English (297). As it was impossible to determine whether a person in the required age groups was living in households that refused to participate in the survey, the participation rate was calculated on estimates that 70% of contacts resulted in an eligible household and, conversely, 30% of households contacted did not include an eligible person.

Table 2.3: Participation rate

Initial sample	**15650**	
Sample loss		
Fax/modem	281	5.0
Non-connected numbers	2139	37.9
Non-residential numbers	396	7.0
No contact attempted	68	1.2
No contact made after 10 calls	2429	43.1
No longer at number	17	0.3
Respondent unavailable	307	5.4
	5637	100.0
Eligible sample	**10013**	
Ineligible - age & language (contact established but nobody in household in age range or English speaking)	2980	29.8
New eligible sample	**7033**	
Participation rate (contact made)		
Refusals (age not established)	2655	37.8
Unable -ill	320	4.5
Terminated	35	0.5
Interviews	4023	57.2
	7033	100.0
Best estimate participation rate		
Eligible sample	7033	
Ineligible refusals estimate (30%)	797	
Sample	**6237**	**100.0**
Refusals (70% of total refusals)	1859	29.8
Unable -ill	320	5.1
Terminated	35	0.6
Interviews	***4023***	***64.5***

2.2.5 Number of interviews conducted

The total number of interviews conducted in each State/Territory, by age groups, is shown in Table 2.4.

Table 2.4: Number of interviews conducted by State and age group

City or Town (in alphabetical order)	0 to 4 years	5 to 14 years	15 to 25 years	60 years or over	Total
Adelaide	52	111	121	167	451
Brisbane	54	111	120	116	401
Canberra	55	117	135	102	409
Darwin	70	135	133	62	400
Gladstone	64	139	110	88	401
Hobart	49	105	109	138	401
Launceston	50	106	106	140	401
Melbourne	51	104	113	132	400
Perth	47	102	111	113	373
Sydney	52	102	109	123	386
Total	544	1132	1166	1181	4023

2.2.6 Weather conditions

The prevailing weather conditions during the survey were compared with average conditions to suggest whether the behaviours reported were typical of those that would be expected from these cities during September. Adverse weather conditions may influence outdoor and indoor activities due to warmer or cooler weather or increased rain.

Data on meteorological observations in each of the survey cities were received from the Commonwealth Bureau of Meteorology. The mean daily maximum and minimum temperatures and total rainfall for September were compared to overall mean figures for these weather stations. Temperatures that were within 1°C of the overall mean temperatures, and rainfall that was less than 10% different from the mean, were considered to not be different. A summary of the differences of weather conditions in the surveyed cities from the averages for those centres in September is shown in Table 2.5.

These data show that half of the cities surveyed were warmer than average by up to 3°C. This may influence reported outdoor activity by increasing time spent outdoors. The cities in which this occurred were mainly at mid latitude for Australian cities i.e. not the most northerly or southerly cities, although Gladstone was one of the warmer cities.

The most southerly cities, in Tasmania, although experiencing average temperatures were considerably wetter than average. This may have had an influence in decreasing the time spent outdoors in these cities. On the other hand, rainfall was lower than average in most other cities.

Table 2.5: Climatic differences from June/July/August averages for survey cities

Climatic differences	Temperature	Rainfall
Adelaide	average	60% lower than average
Brisbane	average	50% lower than average
Canberra	warmer by 1°C	average
Darwin	average	average
Gladstone	warmer by 1°C	90% lower than average
Hobart	average	100% higher than average
Launceston	average	60% higher than average
Melbourne	warmer by 2°C	50% lower than average
Perth	warmer by 1°C	average
Sydney	warmer by 3°C	60% lower than average

Darwin, the most northerly city in the survey, experienced both temperatures and rainfall that were average for June/July/August.

These data for climate in the surveyed cities during the period of data collection may have biased outdoor activity by slightly increasing it in mainland cities and slightly decreasing it in Tasmania. There is no comparison against which to compare the data in this report so some care is required in interpreting the results as they may not be typical of average conditions.

2.3 Data processing

2.3.1 Analysis

Raw data from the CATI system were imported into SPSS Version 11.0. Data were then analysed using SPSS.

The analysis throughout the report involves separate presentation of population estimates for each of the ten included cities. Where appropriate, analysis is stratified into four age groupings: 0 to 4 years, 5 to 14 years, 15 to 25 years and 60 years and over. For some statistics, averages of the data for the ten states have been calculated. It is important to note that these overall figures do not equate to national estimates, but are merely summaries of the data from the sampled cities.

2.3.2 Weighting

Weighting was used to correct for disproportionality of the sample with respect to the population of interest. Data for each of the ten cities was independently weighted to reflect the population age and sex structure of that particular city's population. The data were weighted by age, sex and probability of selection in the household. Probability of selection in the household was calculated on the number of adults in the household and the number of listings in the White Pages that reach the household.

2.3.3 Data interpretation

The weighting of the data results in rounding effects for the numbers. In all instances the percentages should be the point of reference rather than the actual numbers of respondents. For example cell sizes presented as 1, 2 and 4 could in fact be 1.3, 2.4 and 4.4, which results in a slight variation from the totals presented (7 vs. 8). The percentages presented in this report have been processed on the figures pre-rounding.

Caution should be exercised in the interpretation of some of the results in this report. In some of the tables presented, small cell sizes are apparent and confidence intervals around the estimates will be large.

CHAPTER 3: DEMOGRAPHICS

3.1 Introduction

The samples taken in each of the cities in which the survey was conducted were random samples of the population. Respondents in each household who were not in the desired age range for the questionnaire did not continue with the survey and are not included in this analysis. The remaining sample was weighted by age and gender weighted to the most recent Estimated Residential Population from the Australian Bureau of Statistics. Note that therefore the age groups presented in Section 3.2 reflect the proportions of these age groups in the population rather than in the sample.

Various demographic questions were asked of respondents, and these results are presented here. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

3.2 Age groups

The sample sizes in each age group for the surveyed cities, following weighting, are shown in Table 3.1.

Table 3.1: Weighted age groups by city

Weighted sample size	0-4 years	5-14 years	15-25 years	60+ years
Adelaide	52	111	121	167
Brisbane	54	111	120	116
Canberra	55	117	136	102
Darwin	72	135	131	62
Gladstone	63	139	110	88
Hobart	49	105	109	138
Launceston	50	106	105	140
Melbourne	50	105	113	132
Perth	47	102	111	113
Sydney	52	102	109	123
Overall	544	1133	1165	1181

3.3 Marital status

Marital status was asked only of respondents aged 18 years or over. Table 3.2 shows that more than 80% of respondents aged 18 to 25 years had never been married. There were higher rates of being married/de facto in the smaller regional centres of Darwin, Gladstone, and Launceston than in the larger capital cities.

The majority of those in the survey aged 60 years or over reported being married or in a de facto relationship. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

Table 3.2: Marital status of respondents aged 18 years or over

Marital status	Married/ de facto	Separated/ divorced	Widowed	Never married
18 – 25 years	**%**	**%**	**%**	**%**
Adelaide	6.6	1.1	-	92.3
Brisbane	20.0	-	-	80.0
Canberra	17.0	-	3.4	79.5
Darwin	34.8	-	-	65.2
Gladstone	30.3	-	-	69.7
Hobart	19.7	-	-	80.3
Launceston	30.0	-	-	70.0
Melbourne	11.3	-	-	88.8
Perth	9.7	-	-	90.3
Sydney	5.4	-	-	94.6
Overall	18.3	0.1	0.4	81.2
60 years or over				
Adelaide	68.7	6.0	20.5	4.8
Brisbane	62.9	9.5	25.9	1.7
Canberra	77.2	5.0	14.9	3.0
Darwin	72.1	13.1	13.1	1.6
Gladstone	69.3	10.2	19.3	1.1
Hobart	65.7	10.9	19.0	4.4
Launceston	66.9	7.2	23.0	2.9
Melbourne	65.6	5.3	24.4	4.6
Perth	66.7	10.5	19.3	3.5
Sydney	66.1	9.9	20.7	3.3
Overall	67.7	8.4	20.5	3.3

3.4 Work status

Work status was asked only of respondents aged 18 years or over. Work status was assessed using a range of categories, which have been condensed into the three broad categories in Table 3.3. In the 18 to 25 years age group, employment was less than 50% in Hobart and Melbourne, compared with the overall rate of 62.9%.

The rate of employment in the 60 years or over age group was highest in Darwin, however this age group makes up a smaller proportion of the population in Darwin as shown in Table 3.1. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

Table 3.3: Work status

Work status	Employed	Not in employment	Retired
18-25 years	**%**	**%**	**%**
Adelaide	65.6	34.4	-
Brisbane	60.0	40.0	-
Canberra	71.3	25.3	3.4
Darwin	68.5	31.5	-
Gladstone	69.7	30.3	-
Hobart	47.1	52.9	-
Launceston	62.9	37.1	-
Melbourne	45.0	55.0	-
Perth	69.4	30.6	-
Sydney	69.0	31.0	-
Overall	63.0	36.6	0.4
60+ years			
Adelaide	10.2	5.4	84.3
Brisbane	14.9	10.5	74.6
Canberra	14.7	6.9	78.4
Darwin	27.9	4.9	67.2
Gladstone	18.2	10.2	71.6
Hobart	12.7	11.2	76.1
Launceston	10.7	14.3	75.0
Melbourne	13.7	8.4	77.9
Perth	15.3	5.4	79.3
Sydney	8.1	4.9	87.0
Overall	13.6	8.4	78.0

3.5 Education

Education status is shown in Table 3.4. This question was asked only of respondents aged 16 years or over as it is assumed those under 16 years of age have not yet left school. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

Table 3.4: Education status, by city

Education status	Secondary	Trade/apprenticeship/ certificate/diploma	Degree or higher
16-25 years	**%**	**%**	**%**
Adelaide	68.6	17.1	14.3
Brisbane	75.2	17.4	7.3
Canberra	61.5	24.8	13.7
Darwin	72.8	20.2	7.0
Gladstone	64.6	27.1	8.3
Hobart	82.5	12.4	5.2
Launceston	69.5	14.7	15.8
Melbourne	83.8	7.6	8.6
Perth	78.3	13.0	8.7
Sydney	66.3	21.1	12.6
Overall	72.2	17.7	10.1
60+ years			
Adelaide	54.2	35.5	10.2
Brisbane	58.6	27.6	13.8
Canberra	44.1	35.3	20.6
Darwin	36.5	44.4	19.0
Gladstone	57.0	43.0	-
Hobart	57.7	31.4	10.9
Launceston	67.4	27.7	5.0
Melbourne	55.3	33.3	11.4
Perth	52.2	32.7	15.0
Sydney	55.7	30.3	13.9
Overall	55.1	33.3	11.6

3.6 Household income

All respondents were asked to report household income (Table 3.5). This includes all sources of income for the household.

The large proportion (16.3%) of respondents who did not state, or did no know, their income, is not unusually high. The cities with the highest proportion of low income households were Adelaide and Launceston. These two cities had the highest proportions of people of retiring age, which suggests that the low income households may often comprise aged pensioners. High income households were more common in Canberra, Darwin, and Gladstone. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

Table 3.5: Household income by city

Household income	Up to $20,000 %	$20,001-$40,000 %	$40,001-$60,000 %	Over $60,000 %	Not stated, don't know %
Adelaide	28.6	17.7	7.8	29.0	16.9
Brisbane	20.2	17.5	7.0	35.2	20.2
Canberra	12.7	13.4	9.3	53.8	10.8
Darwin	11.7	18.2	11.7	48.4	10.0
Gladstone	19.0	15.5	8.2	43.1	14.2
Hobart	21.8	26.8	7.8	30.0	13.8
Launceston	28.4	24.6	11.4	24.9	10.7
Melbourne	19.8	16.5	7.3	32.5	24.0
Perth	19.5	16.8	8.6	34.5	20.6
Sydney	19.0	15.6	9.6	33.0	22.9
Overall	20.2	18.3	8.8	36.4	16.3

3.7 Body Mass Index

Body Mass Index (BMI) was calculated from self reported height and weight for all individuals in the sample, including children (Table 3.6 to Table 3.15). The resultant data was used to determine the proportions of the sample that were of under or normal weight (grouped together), overweight, and obese. Data was only collected for respondents aged 2 years and over.

The calculation of BMI was mass in kilograms divided by height in metres squared. Cut-off values for adults were overweight, from 25 and less than 30, and obese 30 or greater[2]. Values for children need to consider their patterns of development. The cut-off values to classify overweight and obese in children are shown in Appendix 3[3]. These values decrease with younger ages, that is, fewer kilograms are required to be classified as overweight or obese.

Age groups for analysis were the same as throughout this report i.e. 0-4 years preschool children, 5-14 years school children, 15-25 years young adults, and 60 years and over adults. Data in the youngest age group were only collected from those aged at least 2 years as the method for determining weight status of infants differs from BMI. Note that the table of BMI cut-off scores shown in Appendix 3 begins at 2 years of age. Sample sizes in the 2 to 4 years age group were very small and as a result gave discordant results that are too variable for meaningful analysis. The results for this age group have therefore have been omitted.

The 5 to 14 year age group generally had a higher proportion of obese individuals than the 15 to 25 year age group, for all cities. In most cases there were at least twice as many obese children aged 5 to 14 as there are people aged 15 to 25 years. These results should be treated with caution, as there is a high degree of variability between cities that is difficult to explain. For example, Melbourne had 3.1% aged 5 to 14 who are obese compared with Sydney having 22.6%.

There was a higher prevalence of overweight and obesity in children than in adolescents and young adults. Older persons aged 60 and over, had a higher prevalence of overweight and obesity than either group of young people. It is difficult to draw conclusions about the apparent differences between cities. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

Table 3.6: Body Mass Index, by age group - Adelaide[a]

Adelaide	5-14 years %	15-25 years %	60+ years %
Underweight/normal	78.1	70.4	40.0
Overweight	10.9	25.0	43.9
Obese	10.9	4.6	16.1
Total	100.0	100.0	100.0

Table 3.7: Body Mass Index, by age group - Brisbane

Brisbane	5-14 years %	15-25 years %	60+ years %
Underweight/normal	73.9	83.3	52.4
Overweight	17.4	12.3	29.5
Obese	8.7	4.4	18.1
Total	100.0	100.0	100.0

Table 3.8: Body Mass Index, by age group - Canberra

Canberra	5-14 years %	15-25 years %	60+ years %
Underweight/normal	80.5	66.7	41.0
Overweight	13.4	27.1	48.0
Obese	6.1	6.2	11.0
Total	100.0	100.0	100.0

Table 3.9: Body Mass Index, by age group - Darwin

Darwin	5-14 years %	15-25 years %	60+ years %
Underweight/normal	72.5	76.7	44.3
Overweight	20.0	20.0	49.2
Obese	7.5	3.3	6.6
Total	100.0	100.0	100.0

[a] Note: for many of these categories the sample sizes are small and therefore Confidence Intervals around the estimates will be wide. The proportions should be treated with caution.

Table 3.10: Body Mass Index, by age group - Gladstone

Gladstone	5-14 years %	15-25 years %	60+ years %
Underweight/normal	59.7	75.8	45.7
Overweight	23.4	20.2	34.6
Obese	16.9	4.0	19.8
Total	100.0	100.0	100.0

Table 3.11: Body Mass Index, by age group - Hobart

Hobart	5-14 years %	15-25 years %	60+ years %
Underweight/normal	70.2	75.5	46.8
Overweight	19.3	19.4	37.9
Obese	10.5	5.1	15.3
Total	100.0	100.0	100.0

Table 3.12: Body Mass Index, by age group - Launceston

Launceston	5-14 years %	15-25 years %	60+ years %
Underweight/normal	63.8	79.2	50.4
Overweight	19.0	15.6	39.7
Obese	17.2	5.2	9.9
Total	100.0	100.0	100.0

Table 3.13: Body Mass Index, by age group - Melbourne

Melbourne	5-14 years %	15-25 years %	60+ years %
Underweight/normal	67.7	78.8	46.3
Overweight	29.2	20.2	38.2
Obese	3.1	1.0	15.4
Total	100.0	100.0	100.0

Table 3.14: Body Mass Index, by age group - Perth

Perth	5-14 years	15-25 years	60+ years
	%	%	%
Underweight/normal	68.9	69.8	56.5
Overweight	10.8	26.0	30.6
Obese	20.3	4.2	13.0
Total	100.0	100.0	100.0

Table 3.15: Body Mass Index, by age group - Sydney

Sydney	5-14 years	15-25 years	60+ years
	%	%	%
Underweight/normal	59.7	72.0	49.5
Overweight	17.7	21.5	37.8
Obese	22.6	6.5	12.6
Total	100.0	100.0	100.0

CHAPTER 4: CURRENT HEALTH CONDITIONS

4.1 Respiratory conditions

The prevalence of current respiratory problems in the sample was investigated estimating the prevalence of asthma, bronchitis, emphysema, chronic lung disease and frequency of wheezing. These respiratory questions were asked of all ages, except those concerning asthma which were not asked of those aged 2 or less. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

4.1.1 Asthma

Asthma was measured in two ways, firstly to determine if the respondent had ever suffered asthma, including asthma as a child that may not have persisted, and secondly whether the respondent still suffered asthma. Rates for asthma are considerably higher in children than in adults. The question as to whether the individual still suffered asthma was asked only of those aged 16 years or older, to detect those persons for whom asthma symptoms had subsided and disappeared. All individuals aged less than 16 years who reported having asthma were considered to still have asthma. This explains why the estimates in Table 4.1 for 'current' asthma for children are the same as for 'ever had' asthma.

Table 4.1: Prevalence of asthma, by age group, by city

	3-4 years	5-14 years	15-25 years	60+ years
Ever had asthma	**%**	**%**	**%**	**%**
Adelaide	46.2	33.3	18.0	15.0
Brisbane	13.0	29.7	26.7	11.3
Canberra	15.4	30.2	30.9	13.7
Darwin	5.7	23.0	19.8	16.1
Gladstone	21.7	27.3	35.5	18.2
Hobart	10.0	27.6	31.5	9.4
Launceston	21.7	23.6	15.2	19.1
Melbourne	17.6	43.3	29.5	19.7
Perth	41.7	25.5	26.1	8.8
Sydney	22.2	30.4	29.6	19.7
Current asthma				
Adelaide	46.2	33.3	9.8	9.0
Brisbane	13.0	29.7	15.0	6.0
Canberra	13.8	29.9	20.0	10.9
Darwin	5.7	23.0	15.9	6.5
Gladstone	21.7	27.3	23.9	12.5
Hobart	10.0	27.9	16.5	8.7
Launceston	21.7	23.6	12.4	10.0
Melbourne	16.7	43.3	21.2	12.2
Perth	41.7	25.5	14.4	7.1
Sydney	22.2	30.4	16.7	15.4

The results of asthma prevalence shown in Table 4.1 generally show higher rates of asthma in children than in adults, as expected. There is a high degree of variability between locations however, and there does not appear to be a recognisable pattern associated with temperature, humidity, or population density. In the 5 to 14 year age group there were similar low rates reported for Darwin and Launceston, whereas Melbourne showed the highest rate.

The rates for current asthma in adults showed a marked decrease from those who had ever had asthma in the same age groups, indicating the degree to which asthma abates during maturity.

4.1.2 Wheezing

Questions regarding wheezing were asked only of those aged 3 years and above. Wheezing was measured as the frequency of wheezing over the last month. The results were ranked from the most frequent, being wheezing on a daily or nearly daily basis over the last month, to those who rarely or never wheeze.

Frequent wheezing had a relationship with age, with persons aged 60 years or over being most likely to experience wheezing on a daily or nearly daily basis. Overall rates of wheezing in older people were highly variable (Table 4.2 to Table 4.11).

Overall there did not appear to be a relationship with latitude, as the two most northerly cities, Darwin and Gladstone, are substantially different from each other in the rates of wheezing, and as such are not clearly distinguished from the cities in southerly latitudes.

Table 4.2: Prevalence of wheezing, by age group - Adelaide

Adelaide	3-4 years %	5-14 years %	15-25 years %	60+ years %
Daily or most days	-	2.7	2.5	9.0
Once or twice a week	11.5	2.7	4.9	5.4
Once or twice a month	3.8	6.3	9.8	5.4
Rarely or never	84.6	88.3	82.8	79.5
Don't know/not sure	-	-	-	0.6
Total	100.0	100.0	100.0	100.0

Table 4.3: Prevalence of wheezing, by age group - Brisbane

Brisbane	3-4 years %	5-14 years %	15-25 years %	60+ years %
Daily or most days	-	1.8	4.1	6.8
Once or twice a week	18.2	5.5	5.8	2.6
Once or twice a month	18.2	7.3	9.9	6.8
Rarely or never	63.6	85.5	78.5	82.9
Don't know/not sure	-	-	1.7	0.9
Total	100.0	100.0	100.0	100.0

Table 4.4: Prevalence of wheezing, by age group - Canberra

Canberra	3-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Daily or most days	-	1.7	5.9	9.9
Once or twice a week	11.1	3.4	8.1	3.0
Once or twice a month	14.8	8.6	11.1	2.0
Rarely or never	74.1	85.3	74.8	85.1
Don't know/not sure	-	0.9	-	-
Total	100.0	100.0	100.0	100.0

Table 4.5: Prevalence of wheezing, by age group - Darwin

Darwin	3-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Daily or most days	-	0.7	1.5	6.5
Once or twice a week	2.9	3.7	8.3	1.6
Once or twice a month	-	4.4	6.8	4.8
Rarely or never	94.3	90.4	81.8	87.1
Don't know/not sure	2.9	0.7	1.5	-
Total	100.0	100.0	100.0	100.0

Table 4.6: Prevalence of wheezing, by age group - Gladstone

Gladstone	3-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Daily or most days	4.3	5.1	3.7	21.8
Once or twice a week	4.3	1.4	1.8	2.3
Once or twice a month	17.4	9.4	14.7	4.6
Rarely or never	73.9	82.6	79.8	69.0
Don't know/not sure	-	1.4	-	2.3
Total	100.0	100.0	100.0	100.0

Table 4.7: Prevalence of wheezing, by age group - Hobart

Hobart	3-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Daily or most days	5.3	3.8	2.8	10.9
Once or twice a week	-	7.6	6.4	3.6
Once or twice a month	5.3	1.0	9.2	1.4
Rarely or never	89.5	86.7	81.7	84.1
Don't know/not sure	-	1.0	-	-
Total	100.0	100.0	100.0	100.0

Table 4.8: Prevalence of wheezing, by age group - Launceston

Launceston	3-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Daily or most days	4.3	2.8	3.8	10.6
Once or twice a week	-	4.7	8.6	2.1
Once or twice a month	-	8.4	7.6	3.5
Rarely or never	95.7	84.1	80.0	82.3
Don't know/not sure	-	-	-	1.4
Total	100.0	100.0	100.0	100.0

Table 4.9: Prevalence of wheezing, by age group - Melbourne

Melbourne	3-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Daily or most days	5.6	2.9	4.5	11.4
Once or twice a week	-	3.9	7.1	3.0
Once or twice a month	11.1	7.8	11.6	6.8
Rarely or never	77.8	85.4	76.8	77.3
Don't know/not sure	5.6	-	-	1.5
Total	100.0	100.0	100.0	100.0

Table 4.10: Prevalence of wheezing, by age group - Perth

Perth	3-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Daily or most days	-	1.0	0.9	9.7
Once or twice a week	-	3.9	11.7	4.4
Once or twice a month	8.7	10.8	11.7	8.0
Rarely or never	87.0	84.3	74.8	75.2
Don't know/not sure	4.3	-	0.9	2.7
Total	100.0	100.0	100.0	100.0

Table 4.11: Prevalence of wheezing, by age group - Sydney

Sydney	3-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Daily or most days	3.8	5.9	1.8	6.5
Once or twice a week	7.7	2.0	3.7	6.5
Once or twice a month	11.5	9.8	4.6	6.5
Rarely or never	76.9	82.4	89.0	80.5
Don't know/not sure	-	-	0.9	-
Total	100.0	100.0	100.0	100.0

4.1.3 Bronchitis, emphysema, chronic lung disease

Questions regarding other respiratory conditions (bronchitis, emphysema and chronic lung disease) were asked only of those aged 3 years and above. The rates of other respiratory conditions appear higher in older people than young people (Table 4.12 to Table 4.21). In particular, emphysema and chronic lung disease were rare in persons aged under 25 years.

There were no clear regional differences in the prevalence of these respiratory conditions, with rates in southerly centres being little different from northerly centres.

Table 4.12: Prevalence of other respiratory problems, by age group – Adelaide*

Adelaide	3-4 years	5-14 years	15-25 years	60+ years
Ever had	%	%	%	%
Bronchitis	7.4	4.5	-	5.4
Emphysema	-	-	-	3.6
Chronic lung disease	-	-	-	3.0
None of the above	92.6	95.5	100.0	88.0
Current respiratory problem	7.4	4.5	-	7.2

*Multiple response

Table 4.13: Prevalence of other respiratory problems, by age group – Brisbane*

Brisbane	3-4 years	5-14 years	15-25 years	60+ years
Ever had	%	%	%	%
Bronchitis	-	0.9	-	5.2
Emphysema	-	-	-	3.4
Chronic lung disease	-	-	0.8	2.6
None of the above	100.0	99.1	99.2	90.5
Current respiratory problem	-	0.9	0.8	4.3

*Multiple response

Table 4.14: Prevalence of other respiratory problems, by age group – Canberra*

Canberra	3-4 years	5-14 years	15-25 years	60+ years
Ever had	%	%	%	%
Bronchitis	-	2.6	3.7	3.9
Emphysema	-	-	-	2.0
Chronic lung disease	-	0.9	2.2	2.0
None of the above	100.0	96.6	94.1	93.1
Current respiratory problem	-	3.4	5.2	5.0

*Multiple response

Table 4.15: Prevalence of other respiratory problems, by age group – Darwin*

Darwin	3-4 years	5-14 years	15-25 years	60+ years
Ever had	%	%	%	%
Bronchitis	5.7	0.7	.8	3.2
Emphysema	-	-	-	-
Chronic lung disease	-	0.7	-	3.2
None of the above	94.3	98.5	99.2	93.5
Current respiratory problem	5.7	1.5	-	4.8

*Multiple response

Table 4.16: Prevalence of other respiratory problems, by age group – Gladstone*

Gladstone	3-4 years	5-14 years	15-25 years	60+ years
Ever had	%	%	%	%
Bronchitis	4.3	3.6	4.5	3.4
Emphysema	-	-	-	5.7
Chronic lung disease	-	-	-	1.1
None of the above	95.7	96.4	95.5	92.0
Current respiratory problem	4.3	3.6	0.9	8.0

*Multiple response

Table 4.17: Prevalence of other respiratory problems, by age group – Hobart*

Hobart	3-4 years	5-14 years	15-25 years	60+ years
Ever had	%	%	%	%
Bronchitis	-	-	4.6	2.9
Emphysema	-	-	-	6.5
Chronic lung disease	-	-	-	0.7
None of the above	100.0	100.0	95.4	90.6
Current respiratory problem	-	-	3.7	7.2

*Multiple response

Table 4.18: Prevalence of other respiratory problems, by age group – Launceston*

Launceston	3-4 years	5-14 years	15-25 years	60+ years
Ever had	%	%	%	%
Bronchitis	-	1.9	1.9	6.4
Emphysema	-	-	-	4.3
Chronic lung disease	-	-	-	5.7
None of the above	100.0	98.1	98.1	85.7
Current respiratory problem	-	1.9	1.0	9.2

*Multiple response

Table 4.19: Prevalence of other respiratory problems, by age group – Melbourne*

Melbourne	3-4 years	5-14 years	15-25 years	60+ years
Ever had	%	%	%	%
Bronchitis	-	-	4.4	7.6
Emphysema	-	-	0.9	3.8
Chronic lung disease	-	-	-	3.1
None of the above	100.0	100.0	94.7	88.5
Current respiratory problem	-	-	2.7	9.2

*Multiple response

Table 4.20: Prevalence of other respiratory problems, by age group – Perth*

Perth	3-4 years	5-14 years	15-25 years	60+ years
Ever had	%	%	%	%
Bronchitis	-	1.0	0.9	4.4
Emphysema	-	1.0	-	2.7
Chronic lung disease	-	-	-	0.9
None of the above	100.0	97.1	99.1	92.9
Current respiratory problem	-	2.9	-	4.4

*Multiple response

Table 4.21: Prevalence of other respiratory problems, by age group – Sydney*

Sydney	3-4 years	5-14 years	15-25 years	60+ years
Ever had	%	%	%	%
Bronchitis	-	1.0	2.8	6.5
Emphysema	-	-	-	4.9
Chronic lung disease	-	-	-	1.6
None of the above	100.0	99.0	97.2	90.2
Current respiratory problem	-	1.0	-	7.3

*Multiple response

4.2 Other health conditions

A range of health conditions other than respiratory conditions were surveyed. Of these, the first were heart conditions that had ever been diagnosed by a doctor. The remaining health conditions were a range of symptoms that may be associated with respiratory conditions. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

4.2.1 Heart conditions

Heart conditions were surveyed by asking if the respondent had ever been diagnosed by a doctor with having a heart attack, angina, heart disease, or stroke. These questions were asked only of respondents aged 16 to 25 years or 60 years or over. The results are shown in the following tables (Table 4.22 to Table 4.31). There were more reported heart conditions in the 60 years and over group in Launceston (27.7% reporting at least one heart condition, 72.3% reporting none) than in the other centres. The city with the lowest rate of heart conditions was Darwin (17.7% reporting at least one heart condition, 82.3% reporting none).

Table 4.22: Prevalence of heart conditions, by age group – Adelaide*

Adelaide	16-25 years	60+ years
Ever had	%	%
Heart attack	-	10.8
Angina	-	10.2
Heart disease	-	8.4
Stroke	-	6.6
None of the above	100.0	73.7

*Multiple response

Table 4.23: Prevalence of heart conditions, by age group – Brisbane*

Brisbane	16-25 years	60+ years
Ever had	%	%
Heart attack	-	8.6
Angina	-	12.1
Heart disease	-	7.8
Stroke	-	5.2
None of the above	100.0	78.3

*Multiple response

Table 4.24: Prevalence of heart conditions, by age group – Canberra*

Canberra	16-25 years	60+ years
Ever had	%	%
Heart attack	-	8.8
Angina	-	6.9
Heart disease	-	7.8
Stroke	0.9	5.9
None of the above	99.1	79.4

*Multiple response

Table 4.25: Prevalence of heart conditions, by age group – Darwin*

Darwin	16-25 years	60+ years
Ever had	%	%
Heart attack	-	6.5
Angina	-	9.5
Heart disease	-	8.1
Stroke	-	4.8
None of the above	100.0	82.3

*Multiple response

Table 4.26: Prevalence of heart conditions, by age group – Gladstone*

Gladstone	16-25 years	60+ years
Ever had	%	%
Heart attack	-	13.8
Angina	-	8.0
Heart disease	-	8.0
Stroke	-	6.8
None of the above	100.0	77.0

*Multiple response

Table 4.27: Prevalence of heart conditions, by age group – Hobart*

Hobart	16-25 years	60+ years
Ever had	%	%
Heart attack	-	8.0
Angina	-	11.6
Heart disease	-	5.1
Stroke	-	3.6
None of the above	100.0	78.8

*Multiple response

Table 4.28: Prevalence of heart conditions, by age group – Launceston*

Launceston	16-25 years	60+ years
Ever had	%	%
Heart attack	-	14.3
Angina	-	13.6
Heart disease	-	7.1
Stroke	-	4.3
None of the above	100.0	72.3

*Multiple response

Table 4.29: Prevalence of heart conditions, by age group – Melbourne*

Melbourne	16-25 years	60+ years
Ever had	%	%
Heart attack	-	9.9
Angina	-	9.9
Heart disease	-	6.1
Stroke	-	1.5
None of the above	100.0	79.4

*Multiple response

Table 4.30: Prevalence of heart conditions, by age group – Perth*

Perth	16-25 years	60+ years
Ever had	%	%
Heart attack	-	7.1
Angina	-	7.1
Heart disease	-	7.0
Stroke	-	3.5
None of the above	100.0	81.4

*Multiple response

Table 4.31: Prevalence of heart conditions, by age group – Sydney*

Sydney	16-25 years	60+ years
Ever had	%	%
Heart attack	-	8.1
Angina	-	7.4
Heart disease	1.1	10.6
Stroke	-	4.9
None of the above	98.9	77.9

*Multiple response

4.2.2 Symptoms of ill health

Other health conditions investigated were reported symptoms that may be related to respiratory conditions. These included evidence of colds and flu, hay fever, and difficulty breathing. In addition, questions were asked concerning headache, and digestive system symptoms. Finally, reports of disturbed sleep were recorded. These data are presented in Table 4.32 to Table 4.41. Each city is shown in a separate table, stratified by age groups.

Symptoms of stuffy or runny noses or coughs were highest of all symptoms experienced in the past two weeks. This was evident across the country, with no exceptional differences between northern and southern latitudes. In general, these symptoms were less frequent in older age groups than in the 0 to 4 years age group. This sample taken in winter illustrates the high prevalence of cold and flu symptoms at that time of year.

Hay fever symptoms were most common in adults, with marginal differences across the country. In most centres the prevalence of adults suffering hay fever symptoms was 20% or greater, although the south eastern centres of Canberra, Melbourne, Launceston and Hobart were slightly lower. Itching or burning eyes and skin rashes were frequently reported but there was no pattern across geographic regions. Reports of difficulty with breathing were variable across centres but could not be associated with latitude.

Headache was most prevalent in 15 to 25 year old respondents. All centres reported levels of approximately 50% of this age group suffering headache in the past two weeks. Other age groups had lower prevalence of headache.

Symptoms of digestive system upset surveyed were diarrhoea, nausea, and vomiting. These reported rates were generally low (less than 10%) in all centres, however these rates were somewhat higher in the 0 to 4 years age group.

Disturbed sleep in the past two weeks was reported by over 30% in some age groups. The age groups with the highest rates of disturbed sleep were generally the youngest (0 to 4 years) and oldest (60 years and over).

Table 4.32: Symptoms of ill health, by age group – Adelaide*

Adelaide	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Stuffy or runny nose	69.2	53.2	57.9	48.5
Sore or scratchy throat	13.5	40.5	43.8	23.4
Cough	59.6	40.0	41.3	38.9
Hay fever attacks	7.7	17.3	24.6	21.6
Headache	5.9	34.2	55.4	23.4
Diarrhoea	7.7	3.6	5.7	9.0
Nausea	1.9	12.6	8.3	6.6
Vomiting	5.8	2.7	4.1	1.2
Itching or burning eyes	7.7	8.2	15.6	26.3
Skin rashes, irritation or itching	23.1	13.5	16.4	21.6
Difficulty breathing	3.8	7.2	4.9	15.0
Disturbed sleep	30.8	17.1	24.0	29.9
None of the above	13.5	21.8	7.4	21.4

*Multiple response

Table 4.33: Symptoms of ill health, by age group – Brisbane*

Brisbane	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Stuffy or runny nose	64.8	50.9	47.9	47.0
Sore or scratchy throat	22.2	35.1	39.7	18.1
Cough	53.7	41.8	35.5	37.9
Hay fever attacks	-	10.8	18.3	17.2
Headache	13.0	33.3	47.1	19.1
Diarrhoea	16.7	5.4	5.0	11.2
Nausea	7.4	10.9	10.0	6.0
Vomiting	17.0	4.5	3.3	2.6
Itching or burning eyes	15.1	7.3	19.0	19.1
Skin rashes, irritation or itching	16.7	17.3	18.3	13.8
Difficulty breathing	7.5	9.1	8.3	8.6
Disturbed sleep	37.7	27.0	22.3	32.8
None of the above	9.3	24.3	14.9	22.6

*Multiple response

Table 4.34: Symptoms of ill health, by age group – Canberra*

Canberra	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Stuffy or runny nose	54.5	51.7	62.5	42.6
Sore or scratchy throat	20.0	35.0	41.2	20.6
Cough	52.7	33.6	40.7	37.3
Hay fever attacks	3.6	15.4	12.5	16.7
Headache	9.1	25.6	51.1	30.4
Diarrhoea	27.3	5.1	8.1	6.9
Nausea	9.1	6.0	10.4	7.8
Vomiting	20.0	2.6	5.9	3.0
Itching or burning eyes	3.6	9.5	12.5	20.8
Skin rashes, irritation or itching	28.6	19.8	14.1	18.6
Difficulty breathing	12.5	8.6	16.9	11.8
Disturbed sleep	43.6	11.1	22.1	36.3
None of the above	17.9	21.6	10.4	21.6

*Multiple response

Table 4.35: Symptoms of ill health, by age group – Darwin*

Darwin	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Stuffy or runny nose	50.0	43.7	42.0	30.6
Sore or scratchy throat	16.7	26.7	29.0	17.7
Cough	50.0	37.0	33.6	25.8
Hay fever attacks	5.6	5.2	20.6	14.3
Headache	6.9	28.1	47.0	33.9
Diarrhoea	13.9	8.9	11.4	11.3
Nausea	5.6	11.9	9.8	11.3
Vomiting	5.6	5.9	6.9	6.5
Itching or burning eyes	12.5	9.6	19.7	17.7
Skin rashes, irritation or itching	22.2	13.2	21.4	12.9
Difficulty breathing	9.7	5.9	12.9	6.5
Disturbed sleep	30.6	16.2	27.5	34.9
None of the above	25.0	34.1	20.5	27.0

*Multiple response

Table 4.36: Symptoms of ill health, by age group – Gladstone*

Gladstone	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Stuffy or runny nose	53.1	46.4	49.5	41.4
Sore or scratchy throat	17.5	38.8	30.3	24.1
Cough	46.9	51.1	42.7	39.8
Hay fever attacks	1.6	15.7	22.7	21.6
Headache	11.1	37.4	44.0	37.5
Diarrhoea	17.2	9.4	5.5	9.1
Nausea	10.9	11.5	7.3	8.0
Vomiting	7.8	7.2	4.6	3.4
Itching or burning eyes	7.9	18.6	21.8	25.3
Skin rashes, irritation or itching	23.4	9.3	15.6	14.8
Difficulty breathing	14.3	12.2	10.0	19.3
Disturbed sleep	39.7	26.6	27.5	43.2
None of the above	28.6	23.7	19.1	23.9

*Multiple response

Table 4.37: Symptoms of ill health, by age group – Hobart*

Hobart	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Stuffy or runny nose	44.9	46.7	52.8	35.8
Sore or scratchy throat	12.2	27.6	40.7	19.7
Cough	44.9	39.0	38.5	33.3
Hay fever attacks	-	12.4	16.5	16.7
Headache	6.1	25.7	50.9	25.4
Diarrhoea	2.0	1.9	6.4	6.6
Nausea	8.2	9.6	10.1	8.7
Vomiting	8.2	2.9	4.6	2.2
Itching or burning eyes	14.3	12.4	11.9	22.5
Skin rashes, irritation or itching	40.8	18.1	12.8	17.5
Difficulty breathing	6.1	9.5	15.6	13.8
Disturbed sleep	25.0	21.0	25.7	30.7
None of the above	20.8	38.1	20.2	26.1

*Multiple response

Table 4.38: Symptoms of ill health, by age group – Launceston*

Launceston	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Stuffy or runny nose	56.9	49.1	53.8	37.6
Sore or scratchy throat	29.4	27.4	29.5	17.9
Cough	48.0	40.6	39.0	34.3
Hay fever attacks	12.0	9.4	17.1	14.3
Headache	9.8	30.2	46.7	15.0
Diarrhoea	10.0	4.7	4.8	5.0
Nausea	14.0	13.2	9.5	6.4
Vomiting	10.0	6.6	5.7	1.4
Itching or burning eyes	2.0	17.0	15.2	23.6
Skin rashes, irritation or itching	19.6	17.9	19.0	15.7
Difficulty breathing	10.0	8.5	7.6	11.4
Disturbed sleep	45.1	19.8	32.1	33.6
None of the above	11.8	28.3	19.0	25.0

*Multiple response

Table 4.39: Symptoms of ill health, by age group – Melbourne*

Melbourne	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Stuffy or runny nose	60.0	55.2	61.1	41.7
Sore or scratchy throat	20.0	33.3	34.8	23.5
Cough	50.0	43.8	46.9	37.1
Hay fever attacks	2.0	20.8	15.0	19.7
Headache	2.0	30.5	41.6	22.1
Diarrhoea	18	5.7	6.3	5.3
Nausea	6.0	11.4	9.7	4.5
Vomiting	20.0	3.8	6.2	1.5
Itching or burning eyes	16.0	20.8	20.4	18.2
Skin rashes, irritation or itching	24.0	23.6	19.5	18.2
Difficulty breathing	2.0	8.6	13.4	12.9
Disturbed sleep	38.0	24.5	20.4	25.2
None of the above	22.0	17.1	15.9	27.3

*Multiple response

Table 4.40: Symptoms of ill health, by age group – Perth*

Perth	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Stuffy or runny nose	63.8	51.0	57.7	41.6
Sore or scratchy throat	25.5	39.2	40.5	15.9
Cough	55.3	46.1	44.1	32.7
Hay fever attacks	6.4	15.7	20.7	26.5
Headache	6.4	36.3	50.0	21.2
Diarrhoea	10.6	4.9	9.9	5.3
Nausea	2.1	15.7	18.0	7.0
Vomiting	6.4	2.9	5.4	0.9
Itching or burning eyes	12.8	16.5	21.6	23.0
Skin rashes, irritation or itching	10.4	17.5	16.2	18.6
Difficulty breathing	8.3	16.7	13.5	15.9
Disturbed sleep	41.7	21.4	27.9	32.7
None of the above	27.7	25.2	14.3	31.0

*Multiple response

Table 4.41: Symptoms of ill health, by age group – Sydney*

Sydney	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Stuffy or runny nose	64.7	44.1	64.8	41.8
Sore or scratchy throat	30.8	32.4	30.3	15.6
Cough	57.7	37.3	35.8	39.3
Hay fever attacks	7.7	13.7	20.4	19.5
Headache	5.8	28.2	48.6	19.7
Diarrhoea	13.5	7.8	6.4	9.0
Nausea	3.9	3.9	11.9	7.3
Vomiting	9.8	3.9	7.3	3.3
Itching or burning eyes	9.6	10.8	17.6	21.1
Skin rashes, irritation or itching	15.4	12.7	15.6	19.7
Difficulty breathing	7.7	9.8	8.3	9.8
Disturbed sleep	25.0	14.7	17.4	31.1
None of the above	23.1	27.5	11.9	25.2

*Multiple response

CHAPTER 5: HEALTH RELATED BEHAVIOURS

5.1 Introduction

Health related behaviours were investigated by asking respondents questions concerning alcohol consumption, tobacco consumption, and physical activity. These were all collected to enable comparisons between cities, and age groups where appropriate.

5.2 Alcohol consumption risk

Alcohol consumption data were collected from respondents aged 18 to 25 years and 60 years or over. Two questions were used and these related to the number of days per week that the respondent usually drank alcohol, and the number of standard drinks the respondent would drink on a day when they drank alcohol. From these data, the long term risk to health from alcohol consumption was calculated. Long term risk is associated with the number of drinks per week, averaged over a long period. No data were collected on short term risk which is the most number of drinks consumed in a single session.

Alcohol risk varies with gender as there are separate recommendations for safe drinking levels in males and females. Alcohol risk was separately calculated for men and women in this sample, but due to the small sample sizes concerned with expressing alcohol risk by age and gender the results are only presented by age group. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

Respondents were categorised into non-drinkers, no risk drinkers, low risk drinkers, intermediate risk drinkers, high risk drinkers and very high risk drinkers. These questions, and the classification formulae that put them into risk categories, were taken from the 1989 National Heart Foundation Risk Factor Prevalence study[4]. The risk factor levels have been defined in Table 5.1:

Table 5.1: Alcohol risk levels

		Risk	
Category	**Description**	**Men**	**Women**
A	Non-drinkers	None	None
B	Average daily intake of less than 3 drinks	None	Low
C	Average daily intake of 4 drinks or 9-12 drinks in any day	Low	Intermediate
D	Average daily intake of 5-8 drinks or occasional excess	Intermediate	High

E	Average daily intake of 9-12 drinks or frequent or great occasional excessive intake	High	Very high
F	Average daily intake of over 12 drinks	Very high	Very high

The calculation of alcohol risk status for women means that at the same level of consumption as men, women are one risk category higher eg average daily intake of four drinks for men is low risk but for women is intermediate risk. Thus, calculation precludes any women who drink from being classified as 'no risk'.

The categories of risk have been defined in Table 5.2.

Table 5.2: Categories of Risk Levels

	Number of drinks					
Frequency of drinking	**1-2**	**3-4**	**5-8**	**9-12**	**13-20**	**>20**
Less than once a week	B	B	B	C	D	E
1 or 2 days	B	B	B	C	D	E
3 or 4 days	B	B	C	D	E	F
5 or 6 days	B	C	D	E	F	F
Every day	B	C	D	E	F	F

Table 5.3 to Table 5.12 show alcohol risk for the 18 to 25 years and 60 year and over age groups for the ten cities surveyed. Medium to high alcohol risk was higher in the 18 to 25 year age group than among older people. The younger age group showed medium to high alcohol risk ranging from 38% to 63% of the age group. There was no association of higher alcohol consumption with hotter climate, as the two cities with highest alcohol risk were Hobart and Gladstone.

Table 5.3: Alcohol consumption risk, by age group - Adelaide

Adelaide	**18-25 years**	**60+ years**
	%	**%**
Non-drinkers	7.6	32.3
Low alcohol risk	38.0	61.7
Medium alcohol risk	29.3	4.8
High alcohol risk	25.0	1.2
Total	100.0	100.0

Table 5.4: Alcohol consumption risk, by age group - Brisbane

Brisbane	18-25 years	60+ years
	%	%
Non-drinkers	8.0	33.6
Low alcohol risk	47.1	62.1
Medium alcohol risk	28.7	2.6
High alcohol risk	16.1	1.7
Total	100.0	100.0

Table 5.5: Alcohol consumption risk, by age group - Canberra

Canberra	18-25 years	60+ years
	%	%
Non-drinkers	20.7	32.4
Low alcohol risk	39.1	63.7
Medium alcohol risk	17.2	3.9
High alcohol risk	23.0	-
Total	100.0	100.0

Table 5.6: Alcohol consumption risk, by age group - Darwin

Darwin	18-25 years	60+ years
	%	%
Non-drinkers	10.1	32.8
Low alcohol risk	40.4	54.1
Medium alcohol risk	18.0	9.8
High alcohol risk	31.5	3.3
Total	100.0	100.0

Table 5.7: Alcohol consumption risk, by age group - Gladstone

Gladstone	18-25 years	60+ years
	%	%
Non-drinkers	4.6	39.1
Low alcohol risk	27.7	52.9
Medium alcohol risk	21.5	6.9
High alcohol risk	41.5	1.1
Refused	4.6	-
Total	100.0	100.0

Table 5.8: Alcohol consumption risk, by age group - Hobart

Hobart	18-25 years %	60+ years %
Non-drinkers	15.5	26.8
Low alcohol risk	22.5	64.5
Medium alcohol risk	25.4	5.8
High alcohol risk	36.6	2.9
Total	100.0	100.0

Table 5.9: Alcohol consumption risk, by age group - Launceston

Launceston	18-25 years %	60+ years %
Non-drinkers	7.1	34.3
Low alcohol risk	44.3	60.0
Medium alcohol risk	21.4	4.3
High alcohol risk	27.1	0.7
Refused	-	0.7
Total	100.0	100.0

Table 5.10: Alcohol consumption risk, by age group - Melbourne

Melbourne	18-25 years %	60+ years %
Non-drinkers	12.5	39.7
Low alcohol risk	40.0	59.5
Medium alcohol risk	13.8	-
High alcohol risk	33.8	0.8
Total	100.0	100.0

Table 5.11: Alcohol consumption risk, by age group - Perth

Perth	18-25 years	60+ years
	%	%
Non-drinkers	16.4	30.1
Low alcohol risk	31.5	65.5
Medium alcohol risk	30.1	4.4
High alcohol risk	21.9	-
Total	100.0	100.0

Table 5.12: Alcohol consumption risk, by age group - Sydney

Sydney	18-25 years	60+ years
	%	%
Non-drinkers	16.0	32.0
Low alcohol risk	45.3	59.8
Medium alcohol risk	18.7	5.7
High alcohol risk	20.0	2.5
Total	100.0	100.0

5.3 Smoking

Several aspects of smoking as a behavioural risk factor were addressed in this survey. As the sample included children, the survey included questions about smoke in environments where children would be exposed to it. This is in addition to the standard questions about individuals smoking behaviour, which do not address where the smoking takes place.

The first issue addressed was smoking in the home. This covers not only the smoking behaviour of occupants but also that of visitors to the home. The amount of tobacco smoked in the home was then quantified, by different types of tobacco. Finally, the self reported smoking status of adults was assessed. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

5.3.1 Smoking in the home

Respondents were asked to choose from a range of statements that best described the smoking situation in their home. The options were either that their home was smoke free, although smoking may be permitted outside, that there was occasional smoking in the home, or that there was frequent smoking in the home. These data were then stratified by age of respondent and city of residence. The results are presented in Table 5.13 to Table 5.22.

In general, 80% or more of homes surveyed were smoke free. There was little difference between age groups. The most northerly cities, Darwin and Gladstone, had the lowest rates of smoke free homes.

Table 5.13: Smoking in the home, by age group of respondent - Adelaide

Adelaide	0-4 years %	5-14 years %	15-25 years %	60+ years %
Home is smoke free	86.3	92.7	76.2	95.2
People occasionally smoke in the house	13.7	4.5	17.2	3.0
People frequently smoke in the house	-	2.7	6.6	1.8
Total	100.0	100.0	100.0	100.0

Table 5.14: Smoking in the home, by age group of respondent - Brisbane

Brisbane	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Home is smoke free	94.4	79.3	80.8	87.8
People occasionally smoke in the house	-	12.6	5.8	3.5
People frequently smoke in the house	5.6	8.1	13.3	8.7
Total	100.0	100.0	100.0	100.0

Table 5.15: Smoking in the home, by age group of respondent - Canberra

Canberra	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Home is smoke free	89.1	95.7	85.2	92.1
People occasionally smoke in the house	7.3	2.6	5.9	2.0
People frequently smoke in the house	3.6	1.7	8.9	5.9
Total	100.0	100.0	100.0	100.0

Table 5.16: Smoking in the home, by age group of respondent - Darwin

Darwin	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Home is smoke free	88.9	85.3	68.9	77.4
People occasionally smoke in the house	2.8	8.8	12.1	16.1
People frequently smoke in the house	8.3	5.9	18.9	6.5
Total	100.0	100.0	100.0	100.0

Table 5.17: Smoking in the home, by age group of respondent - Gladstone

Gladstone	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Home is smoke free	84.4	81.3	70.9	79.5
People occasionally smoke in the house	14.1	7.2	15.5	12.5
People frequently smoke in the house	1.6	11.5	13.6	8.0
Total	100.0	100.0	100.0	100.0

Table 5.18: Smoking in the home, by age group of respondent - Hobart

Hobart	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Home is smoke free	89.8	83.7	78.7	87.0
People occasionally smoke in the house	2.0	10.6	10.2	8.0
People frequently smoke in the house	8.2	5.8	11.1	5.1
Total	100.0	100.0	100.0	100.0

Table 5.19: Smoking in the home, by age group of respondent - Launceston

Launceston	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Home is smoke free	84.3	86.7	85.7	85.8
People occasionally smoke in the house	9.8	9.5	4.8	5.7
People frequently smoke in the house	5.9	3.8	9.5	7.1
Don't know/refused	-	-	-	1.4
Total	100.0	100.0	100.0	100.0

Table 5.20: Smoking in the home, by age group of respondent - Melbourne

Melbourne	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Home is smoke free	96.1	79.2	89.4	86.4
People occasionally smoke in the house	2.0	15.1	6.2	6.1
People frequently smoke in the house	2.0	5.7	4.4	7.6
Total	100.0	100.0	100.0	100.0

Table 5.21: Smoking in the home, by age group of respondent - Perth

Perth	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Home is smoke free	78.7	91.2	80.9	90.3
People occasionally smoke in the house	12.8	4.9	8.2	5.3
People frequently smoke in the house	8.5	3.9	10.9	4.4
Total	100.0	100.0	100.0	100.0

Table 5.22: Smoking in the home, by age group of respondent - Sydney

Sydney	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Home is smoke free	100.0	87.4	83.5	90.2
People occasionally smoke in the house	-	8.7	8.3	3.3
People frequently smoke in the house	-	3.9	8.3	6.5
Total	100.0	100.0	100.0	100.0

5.3.2 Number of cigarettes smoked

Respondents who indicated that there was smoking in the home were asked the number of cigarettes smoked in the home yesterday. These data are shown in Table 5.23.

It should be noted that the median is used as the measure of average number of cigarettes smoked as the sample sizes were small and hence numbers highly variable. The results should be treated with caution.

Table 5.23: Number of cigarettes smoked in house yesterday, by age group and city

Number of cigarettes smoked in house yesterday (median)	0-4 years	5-14 years	15-25 years	60+ years
Adelaide	5	10	6	5
Brisbane	-	5	15	8
Canberra	4	7	4	15
Darwin	13	10	6	-
Gladstone	2	13	5	5
Hobart	40	4	9	5
Launceston	10	10	5	17
Melbourne	13	3	7	8
Perth	10	3	8	7
Sydney	-	4	3	10

Table 5.24 reports the number of cigars or pipes smoked in the house yesterday. These data were collected only from respondents aged 16 years or over.

In the sample, there were no reports of cigar or pipe smoking from seven cities. There were only five reports of cigar or pipe smoking from the remaining cities.

Table 5.24: Number of cigars or pipes smoked in house yesterday, by age group and city

Number of cigars or pipes smoked in house yesterday (mean)	16-25 years	60+ years
Adelaide	1	<1
Brisbane	-	-
Canberra	-	-
Darwin	-	-
Gladstone	-	<1
Hobart	-	<1
Launceston	<4	-
Melbourne	<1	-
Perth	-	-
Sydney	-	-

5.3.3 Smoking status

Self reported smoking status was asked of respondents aged 16 years or over. Respondents who indicated that they were daily or occasional smokers were classified as current smokers. Those responding that they do not smoke now but used to, or who tried a few times but never smoked regularly, were classified as ex-smokers. Respondents indicating that they had never smoked were classified as non-smokers. The results for each city are presented in Table 5.25 to Table 5.34 by age group.

Substantial differences exist between smoking rates of the younger age group compared with the older, which confirms other data that describe smoking rates as declining with age[5]. Reported smoking rates in the 16 to 25 year age group ranged from 21% to 29%. These rates are within the expected range given sampling variation and do not indicate substantial differences between cities.

Table 5.25: Smoking status, by age group - Adelaide

Adelaide	16-25 years %	60+ years %
Non-smoker	56.2	39.8
Ex-smoker	21.9	55.4
Current smoker	21.9	4.8
Total	100.0	100.0

Table 5.26: Smoking status, by age group - Brisbane

Brisbane	16-25 years %	60+ years %
Non-smoker	57.8	36.2
Ex-smoker	20.2	51.7
Current smoker	22.0	12.1
Total	100.0	100.0

Table 5.27: Smoking status, by age group - Canberra

Canberra	16-25 years	60+ years
	%	%
Non-smoker	49.1	42.2
Ex-smoker	21.6	47.1
Current smoker	29.3	10.8
Total	100.0	100.0

Table 5.28: Smoking status, by age group - Darwin

Darwin	16-25 years	60+ years
	%	%
Non-smoker	47.8	32.3
Ex-smoker	25.2	58.1
Current smoker	27.0	9.7
Total	100.0	100.0

Table 5.29: Smoking status, by age group - Gladstone

Gladstone	16-25 years	60+ years
	%	%
Non-smoker	53.7	35.6
Ex-smoker	22.1	47.1
Current smoker	24.2	17.2
Total	100.0	100.0

Table 5.30: Smoking status, by age group - Hobart

Hobart	16-25 years	60+ years
	%	%
Non-smoker	43.8	41.3
Ex-smoker	35.4	50.0
Current smoker	20.8	8.7
Total	100.0	100.0

Table 5.31: Smoking status, by age group - Launceston

Launceston	16-25 years	60+ years
	%	%
Non-smoker	40.4	40.0
Ex-smoker	31.9	47.9
Current smoker	27.7	12.1
Total	100.0	100.0

Table 5.32: Smoking status, by age group - Melbourne

Melbourne	16-25 years	60+ years
	%	%
Non-smoker	41.9	31.3
Ex-smoker	30.5	56.5
Current smoker	27.6	12.2
Total	100.0	100.0

Table 5.33: Smoking status, by age group - Perth

Perth	16-25 years	60+ years
	%	%
Non-smoker	49.5	38.1
Ex-smoker	26.4	54.0
Current smoker	24.2	8.0
Total	100.0	100.0

Table 5.34: Smoking status, by age group - Sydney

Sydney	16-25 years	60+ years
	%	%
Non-smoker	46.8	45.5
Ex-smoker	31.9	44.7
Current smoker	21.3	9.8
Total	100.0	100.0

5.4 Physical activity

Physical activity measurement was included in the survey as an important component of activity out of doors. This activity was measured in several categories corresponding with various rates of exertion.

Adult physical activity was measured separately from child physical activity. The questions for measuring adult physical activity have been extensively researched in recent years in Australia by the Australian Institute of Health and Welfare, and represent the latest thinking on capturing the essential components of leisure time physical activity. These questions have also been used in National and State population surveys. A subset of these is included in the section on adult physical activity.

The questions on adult physical activity have not been used for measuring child physical activity and as such do not reflect the manner of physical activity in this age group. To measure child physical activity, separate questions were asked of these respondents. The results are therefore presented separately in the following two sections. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

5.4.1 Adult physical activity

Adult physical activity was measured in three categories, representing various levels of exertion. These categories correspond with those used in National and State surveys to determine levels of physical activity in the population sufficient to provide a health benefit. For the purposes of brevity in the current survey, a subset of questions was asked. These relate to the number of times per week the nominated activities were performed. The week referred to is the week previous to the date the questionnaire was administered to the respondent.

The physical activity questions were asked of ages 16 to 25 years inclusive, and 60 to 64 years inclusive. Child physical activity is addressed in the next section, and those aged 65 years or over were not questioned.

The categories of physical activity surveyed were walking, vigorous activity, and moderate activity other than walking. The rationale for measuring walking separately

relates to the predominance of this activity, and the different roles it plays in various age groups.

Walking was measured as an activity that was performed continuously for at least ten minutes. The purpose of the walking may have been for recreation or exercise, or for transport in getting to or from places. This definition was explained to respondents at the time of asking the question.

Vigorous physical activity was defined as any activity that resulted in breathing harder or puffing and panting. Examples given were tennis, jogging, cycling, and keep fit exercises. There was specific exclusion of household chores or gardening due to the lack of research into the benefits from these activities. This is in concordance with the use of this question in National and State surveys.

Moderate physical activity other than walking similarly excluded household chores and gardening. Examples of the activities accepted under this category were given as lawn bowls, golf, and gentle swimming.

Data for walking are presented in Table 5.35 to Table 5.36. The prevalence of walking was high for both the 16 to 25 year and 60 to 64 year age groups. There was no consistent pattern of one age group being more likely to walk than the other across the cities surveyed.

Table 5.35: Prevalence of walking in the last week, by age group and city

Proportion who did any walking in the last week	16-25 years %	60-64 years %
Adelaide	86.8	90.0
Brisbane	84.3	83.3
Canberra	86.3	83.9
Darwin	87.8	68.0
Gladstone	76.0	75.0
Hobart	95.9	79.5
Launceston	92.6	72.4
Melbourne	90.5	96.6
Perth	88.0	92.3
Sydney	87.4	90.9

Of those respondents who indicated in Table 5.35 that they walked, the mean number of times they did this activity in the previous week is shown in Table 5.36. There was variation between cities but no clear pattern of walking being more common in some cities than in others.

Table 5.36: Number of times walked in the last week, by age group and city

Mean number of times walked in the last week	16-25 years %	60-64 years %
Adelaide	6.3	4.7
Brisbane	6.1	5.6
Canberra	6.6	5.1
Darwin	6.9	7.2
Gladstone	4.8	6.1
Hobart	8.1	6.6
Launceston	7.7	5.1
Melbourne	6.5	5.2
Perth	6.2	6.4
Sydney	4.9	5.2

The prevalence of vigorous activity is shown in Table 5.37. Vigorous physical activity was very much higher in younger people than in older people, as expected from the results of other surveys around Australia. There was variation between cities that can perhaps be best explained by sampling variability due to the size of the samples used. The general trend for higher rates of vigorous physical activity in younger people is however supported.

Table 5.37: Prevalence of vigorous activity in the last week, by age group and city

Proportion who did any vigorous activity in the last week	16-25 years	60-64 years
	%	%
Adelaide	80.0	30.8
Brisbane	76.1	35.5
Canberra	71.8	29.0
Darwin	73.9	40.0
Gladstone	66.7	37.5
Hobart	69.8	18.4
Launceston	69.1	27.6
Melbourne	49.5	26.7
Perth	68.5	35.9
Sydney	72.6	27.3

Of those in Table 5.37 who indicated that they did vigorous activity, the mean number of times that this activity was performed in the previous week is shown in Table 5.38. These data show that those older people who did do vigorous activity in the previous week did so at a comparable number of times per week to that of the younger people in the sample.

Table 5.38: Number of times did vigorous activity in the last week, by age group and city

Mean number of times did vigorous activity in the last week	16-25 years	60-64 years
Adelaide	3.4	4.5
Brisbane	2.9	3.6
Canberra	3.6	4.6
Darwin	4.4	3.0
Gladstone	3.6	2.9
Hobart	3.2	3.4
Launceston	4.0	4.1
Melbourne	3.4	1.6
Perth	3.7	4.0
Sydney	3.4	2.7

The prevalence of moderate physical activity other than walking is shown in Table 5.39. The rates of moderate activity for younger people show a high degree of similarity between cities, while those of older people show some variation but no relation with latitude eg. Gladstone and Hobart have similar rates.

Table 5.39: Prevalence of moderate activity other than walking in the last week, by age group and city

Proportion who did any moderate activity in the last week	16-25 years	60-64 years
	%	%
Adelaide	41.0	35.9
Brisbane	34.9	16.7
Canberra	43.6	35.5
Darwin	46.1	36.0
Gladstone	39.6	25.0
Hobart	38.1	23.7
Launceston	38.3	16.7
Melbourne	48.6	17.2
Perth	37.0	33.3
Sydney	41.5	50.0

Of those who reported in Table 5.39 that they did moderate activity, the mean number of times this moderate activity was performed in the previous week is shown in Table 5.40. Again there is some variability in the numbers, but overall there is no clear pattern of difference between geographic regions. The data do not distinguish between younger and older respondents in the frequency of moderate activity.

Table 5.40: Number of times did moderate activity in the last week, by age group and city

Mean number of times did moderate activity other than walking in the last week	16-25 years	60-64 years
Adelaide	3.3	1.6
Brisbane	2.2	3.7
Canberra	2.7	2.3
Darwin	3.0	2.6
Gladstone	3.1	4.7
Hobart	4.3	2.6
Launceston	3.2	5.3
Melbourne	2.6	1.6
Perth	2.2	4.8
Sydney	2.3	2.7

5.4.2 Child physical activity

Levels of physical activity in children were measured by reports from the adult in the household responding on the child's behalf. There were two questions asked, the first being a subjective assessment of the level of activity of the child, and the second being the number of hours per week the child spends doing organised sport outside.

The results of the question on levels of physical activity are shown for each surveyed city in Table 5.41 to Table 5.50. The response categories were read to the adult who responded on behalf of the child. These categories were very active, active, not very active, and not at all active. The results were stratified by three age groups. No questions were asked of children aged less than two years old.

Levels of physical activity in children were fairly consistent across cities. Children of all ages were reported to be predominantly active or very active. Small variations exist that are perhaps the result of sampling variability.

Younger children were more active than older children. Overall, approximately 10% of children aged 10 to 15 years were reported to be not very active. In most instances this was in comparison with a much smaller proportion of younger children being not very active.

Table 5.41: Level of physical activity in children, by age group - Adelaide

Adelaide	2-4 years	5-9 years	10-15 years
	%	%	%
Very active	67.6	57.1	54.9
Active	29.4	41.1	28.2
Not very active	-	1.8	15.5
Not at all active	-	-	1.4
Don't know	2.9	-	-
Total	100.0	100.0	100.0

Table 5.42: Level of physical activity in children, by age group - Brisbane

Brisbane	2-4 years	5-9 years	10-15 years
	%	%	%
Very active	51.4	63.6	50.7
Active	48.6	36.4	38.8
Not very active	-	-	10.4
Not at all active	-	-	-
Total	100.0	100.0	100.0

Table 5.43: Level of physical activity in children, by age group - Canberra

Canberra	2-4 years	5-9 years	10-15 years
	%	%	%
Very active	61.5	56.9	41.6
Active	38.5	37.9	44.2
Not very active	-	5.2	11.7
Not at all active	-	-	2.6
Total	100.0	100.0	100.0

Table 5.44: Level of physical activity in children, by age group - Darwin

Darwin	2-4 years	5-9 years	10-15 years
	%	%	%
Very active	66.7	62.3	44.7
Active	31.1	33.3	47.1
Not very active	2.2	4.3	8.2
Not at all active	-	-	-
Total	100.0	100.0	100.0

Table 5.45: Level of physical activity in children, by age group - Gladstone

Gladstone	2-4 years	5-9 years	10-15 years
	%	%	%
Very active	70.7	62.9	53.7
Active	26.8	37.1	36.6
Not very active	2.4	-	9.8
Not at all active	-	-	-
Total	100.0	100.0	100.0

Table 5.46: Level of physical activity in children, by age group - Hobart

Hobart	2-4 years %	5-9 years %	10-15 years %
Very active	62.1	54.9	40.9
Active	37.9	45.1	43.9
Not very active	-	-	13.6
Not at all active	-	-	1.5
Total	100.0	100.0	100.0

Table 5.47: Level of physical activity in children, by age group - Launceston

Launceston	2-4 years %	5-9 years %	10-15 years %
Very active	58.3	59.3	55.6
Active	41.7	29.6	36.5
Not very active	-	9.3	6.3
Not at all active	-	1.9	1.6
Total	100.0	100.0	100.0

Table 5.48: Level of physical activity in children, by age group - Melbourne

Melbourne	2-4 years %	5-9 years %	10-15 years %
Very active	74.2	59.6	61.0
Active	22.6	36.5	32.2
Not very active	-	3.8	6.8
Not at all active	3.2	-	-
Total	100.0	100.0	100.0

Table 5.49: Level of physical activity in children, by age group - Perth

Perth	2-4 years %	5-9 years %	10-15 years %
Very active	71.8	66.0	47.9
Active	28.2	34.0	45.1
Not very active	-	-	7.0
Not at all active	-	-	-
Total	100.0	100.0	100.0

Table 5.50: Level of physical activity in children, by age group - Sydney

Sydney	2-4 years	5-9 years	10-15 years
	%	%	%
Very active	55.6	48.1	45.3
Active	38.9	50.0	35.9
Not very active	5.6	1.9	12.5
Not at all active	-	-	6.3
Total	100.0	100.0	100.0

The following section shows the results of the question asking about time spent doing organised sport outside. Table 5.51 shows the proportion of children, by age group, who were reported to participate in organised sport outside. In all instances, the proportion of children being involved in organised sport outside increased with the age of the children. Rates in very young children, aged 2 to 4 years, were around 25% or less. The oldest group of children, aged 10 to 15 years, participated at the rate of 67% or more. There was a reasonable consistency of the rate of participation across cities.

Table 5.51: Proportion of children active at organised sport outdoors, by age group and city

Proportion of children active at organised sport outdoors	2-4 years	5-9 years	10-15 years
	%	%	%
Adelaide	14.7	45.5	70.8
Brisbane	11.4	53.6	71.6
Canberra	20.5	59.6	72.7
Darwin	23.9	55.1	70.2
Gladstone	5.0	55.1	71.6
Hobart	20.7	62.0	85.1
Launceston	2.8	57.4	70.5
Melbourne	20.7	58.5	78.0
Perth	12.8	68.0	77.5
Sydney	25.7	66.0	67.2

The mean time spent being active at organised sport outdoors by those children who were reported as being active is shown in Table 5.52. The times for the youngest age group are highly variable due to the small numbers this age group who were active. For the older age groups there was consistency across cities in the time spent being

active in organised sport outside. In general, about five hours per week were spent by participating children aged 10 to 15 years in organised sport outside.

Table 5.52: Time spent by children being active at organised sport outdoors, by age group and city

Mean time spent doing organised sport outdoors (hours)	2-4 years	5-9 years	10-15 years
Adelaide	4.3	2.8	4.7
Brisbane	1.7	3.1	5.6
Canberra	3.3	4.0	4.5
Darwin	1.5	4.0	5.2
Gladstone	1.0	4.1	5.4
Hobart	16.9	4.2	5.2
Launceston	-	5.4	5.1
Melbourne	12.5	2.9	5.1
Perth	1.2	2.9	5.9
Sydney	2.8	3.8	4.5

CHAPTER 6: ENVIRONMENTAL EXPOSURES OUTDOORS

6.1 Time spent outdoors during the day

The time spent outdoors by the age groups represented by this study is shown in the following graphs. Each age group is represented by a line that traces the length of time spent outdoors in three hour periods across the entire day. The questions regarding environmental exposure outdoors were asked of all respondents. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

There are notable differences between age groups, and geographic regions, in the time spent outdoors. The most apparent patterns are explained below.

Age groups

- People aged 60 years and over spent the highest proportion of their time outdoors in the morning. The period between 9 am and midday was a period of outdoor activity in all locations.

- The peak time for the 5 to 14 year age group was afternoon, which corresponds with after school activities.

- The 0 to 4 year age group had a bimodal distribution in most centres, with peaks in the morning and late afternoon and generally a less active period outdoors at midday.

Geographic regions

- The most northerly location samples (Darwin and Gladstone) showed bimodal distributions for most age groups. Extensive outdoor activity took place both in the mornings and late afternoons. Midday was a time when outdoor activity diminished.

- The most southerly location (Hobart) differed from all other locations in that peak outdoor activity times occurred early in the day. Late afternoon was a time when these age groups were less likely to be outdoors.

- Locations in mid latitudes, where the majority of the population resided, tended to be characterised by the youngest and oldest age groups being outdoors in the morning, and the 5 to 25 years ages being outdoors in the afternoon.

The patterns of activity reported for the alternative day, being the day before yesterday, are substantially similar to the patterns described above.

Patterns of time spent outdoors breathing heavily represent a fraction of the time reported outdoors, and as such are substantially lower. The times at which these activities occur reflect the patterns of total activity outdoors. In all locations, the 5 to 14 years age group spent the most time across the day outdoors breathing heavily.

6.1.1 Time spent outdoors - Adelaide

Outdoor activity in Adelaide was characterised by older people being active in the morning and 5 to 14 year olds being active in the late afternoon (Figure 6.1 to Figure 6.4).

Figure 6.1: Time spent outdoors yesterday, by time of day - Adelaide

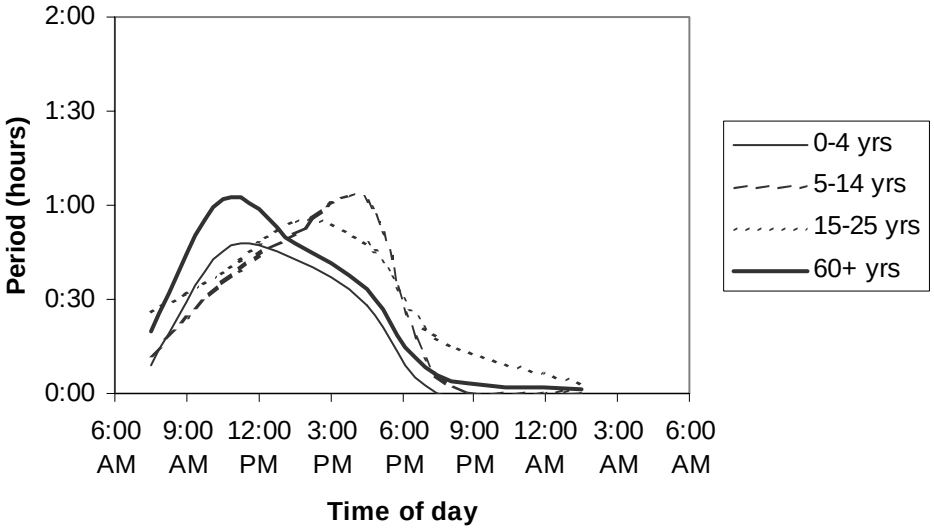


Figure 6.2: Time spent outdoors yesterday breathing heavily, by time of day - Adelaide

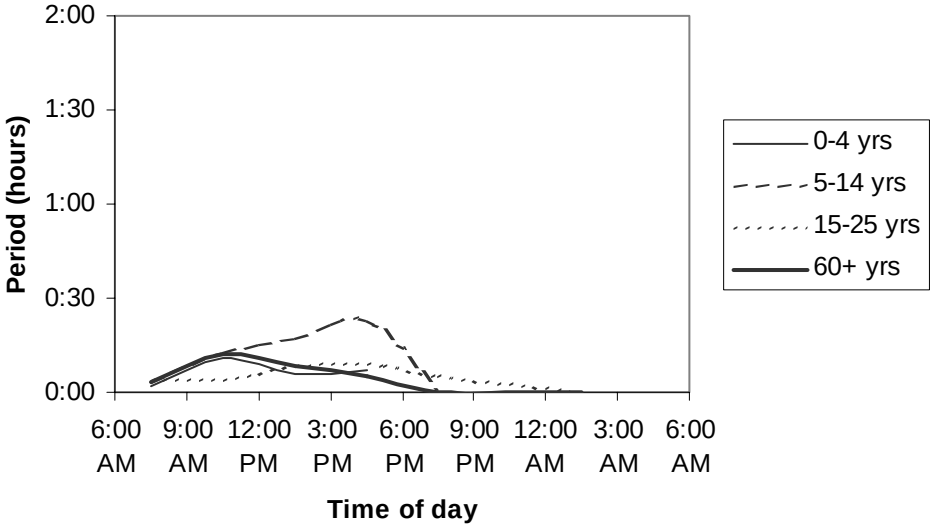


Figure 6.3: Time spent outdoors the day before yesterday, by time of day - Adelaide

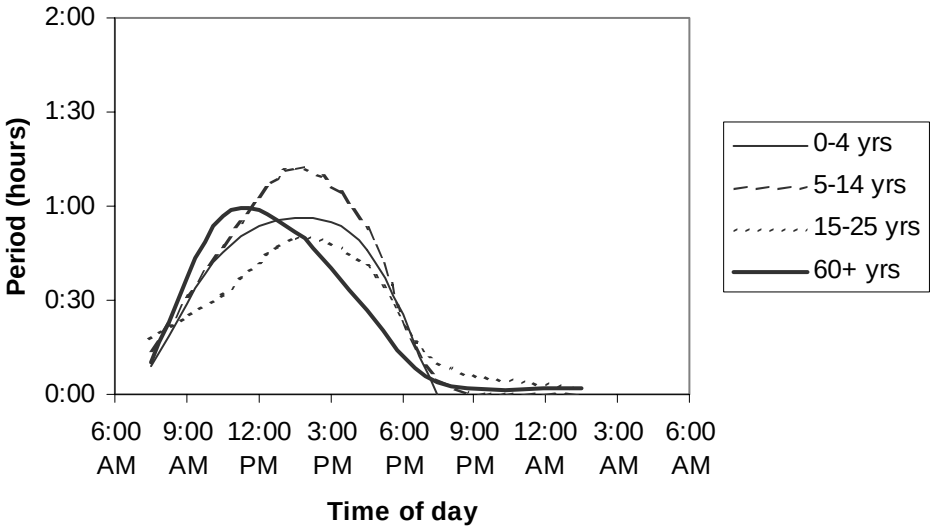
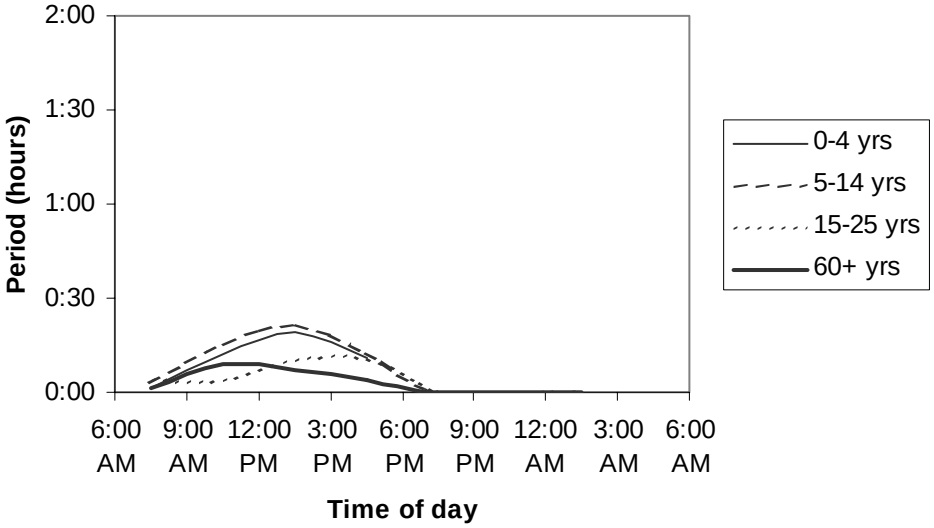


Figure 6.4: Time spent outdoors the day before yesterday breathing heavily, by time of day - Adelaide



6.1.2 Time spent outdoors - Brisbane

Outdoor activity in Brisbane was characterised by older people being active in the morning and 5 to 14 year olds being active in the late afternoon (Figure 6.5 to Figure 6.8). The 0 to 4 year age group showed a bimodal distribution of morning and late afternoon time spent outdoors.

Figure 6.5: Time spent outdoors yesterday, by time of day - Brisbane

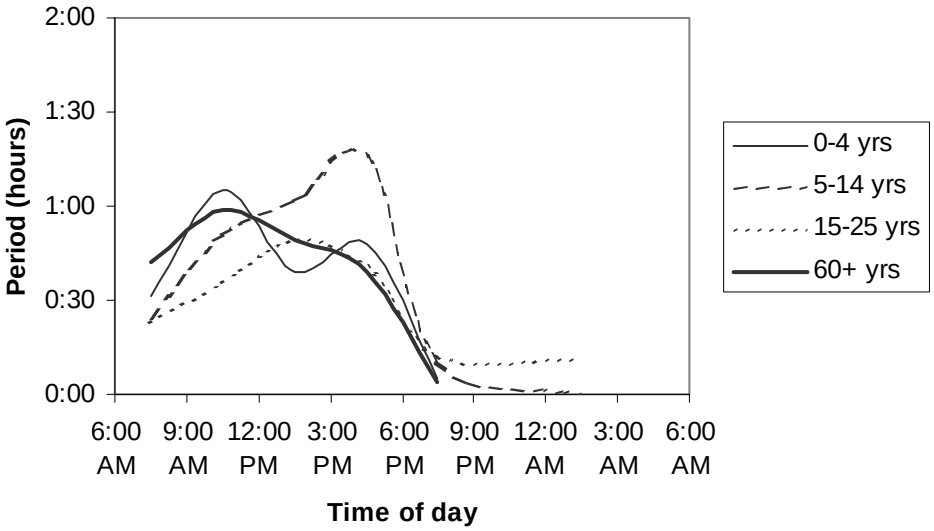


Figure 6.6: Time spent outdoors yesterday breathing heavily, by time of day - Brisbane

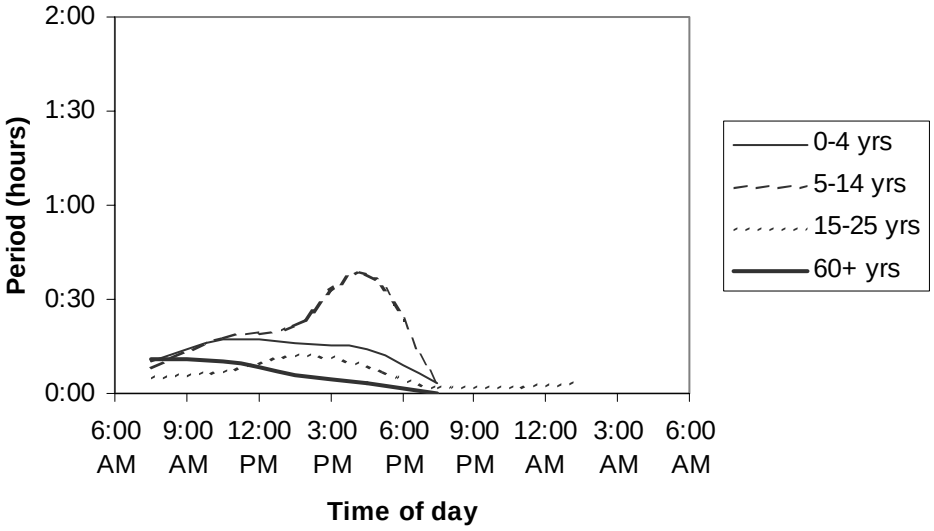


Figure 6.7: Time spent outdoors the day before yesterday, by time of day - Brisbane

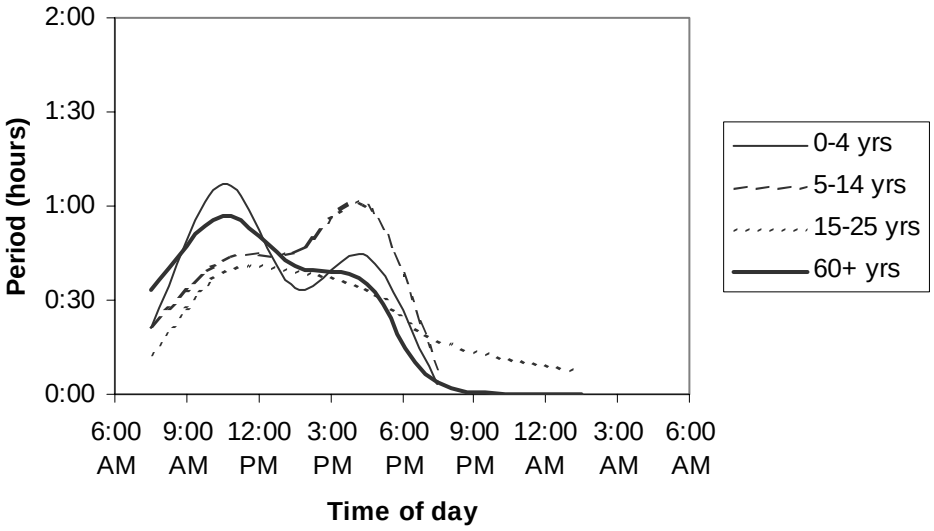
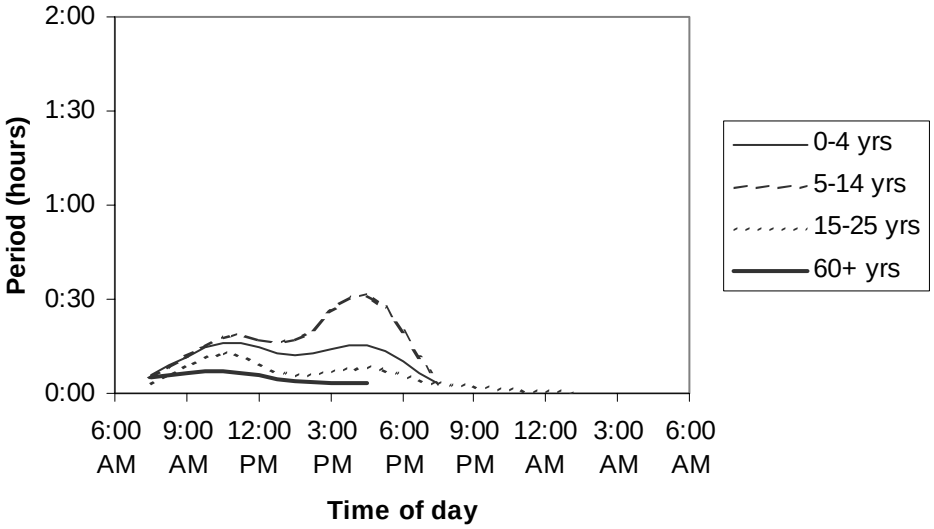


Figure 6.8: Time spent outdoors the day before yesterday breathing heavily, by time of day - Brisbane



6.1.3 Time spent outdoors - Canberra

Outdoor activity in Canberra was characterised by older people being active in the morning (Figure 6.9 to Figure 6.12).

Figure 6.9: Time spent outdoors yesterday, by time of day - Canberra

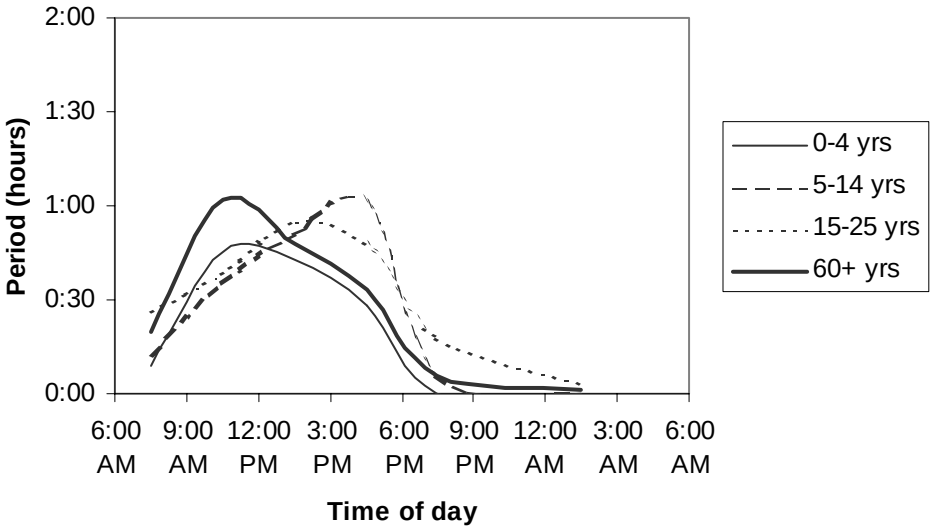


Figure 6.10: Time spent outdoors yesterday breathing heavily, by time of day - Canberra

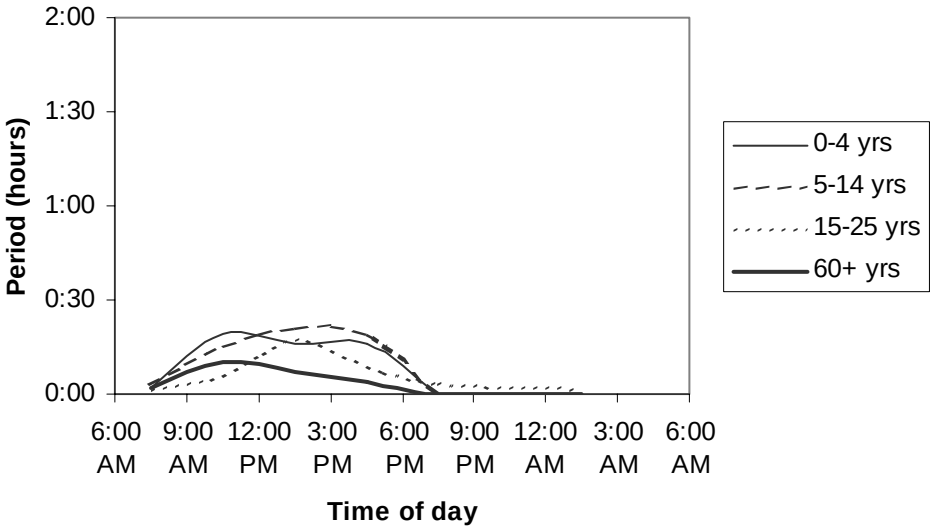


Figure 6.11: Time spent outdoors the day before yesterday, by time of day - Canberra

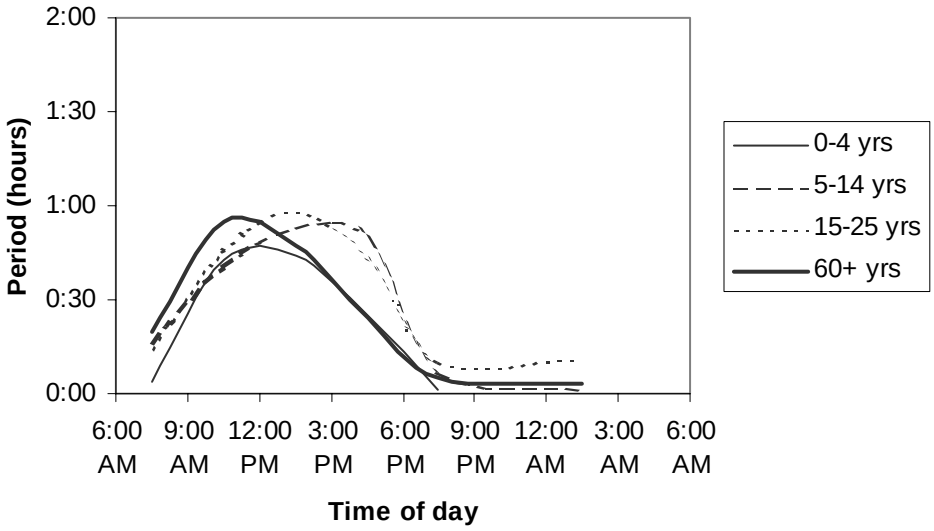
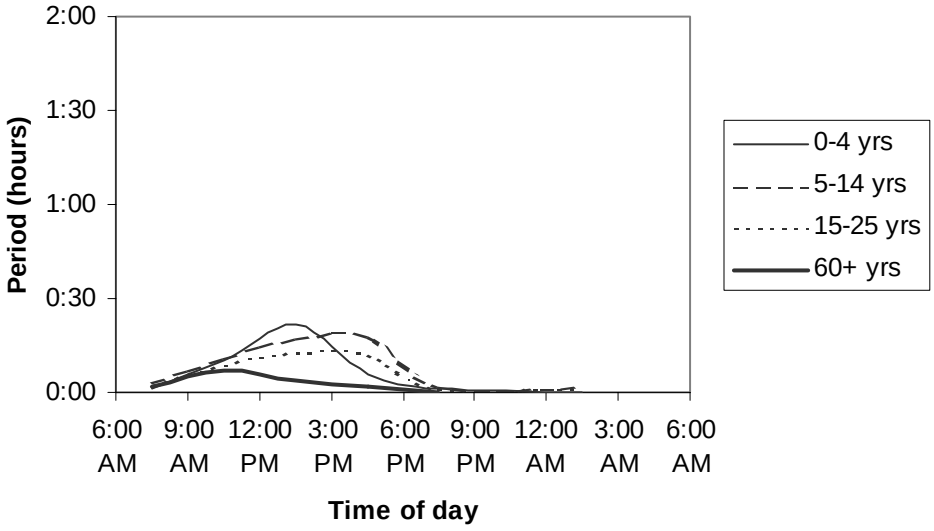


Figure 6.12: Time spent outdoors the day before yesterday breathing heavily, by time of day - Canberra



6.1.4 Time spent outdoors - Darwin

Outdoor activity in Darwin was characterised by bimodal distribution where there was substantial outdoor activity both in the morning and late afternoon (Figure 6.13 to Figure 6.16).

Figure 6.13: Time spent outdoors yesterday, by time of day - Darwin

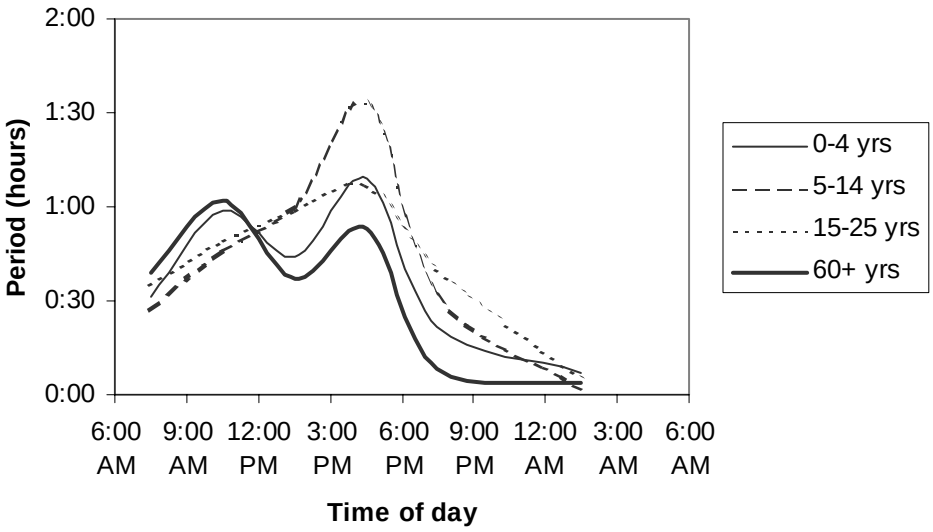


Figure 6.14: Time spent outdoors yesterday breathing heavily, by time of day - Darwin

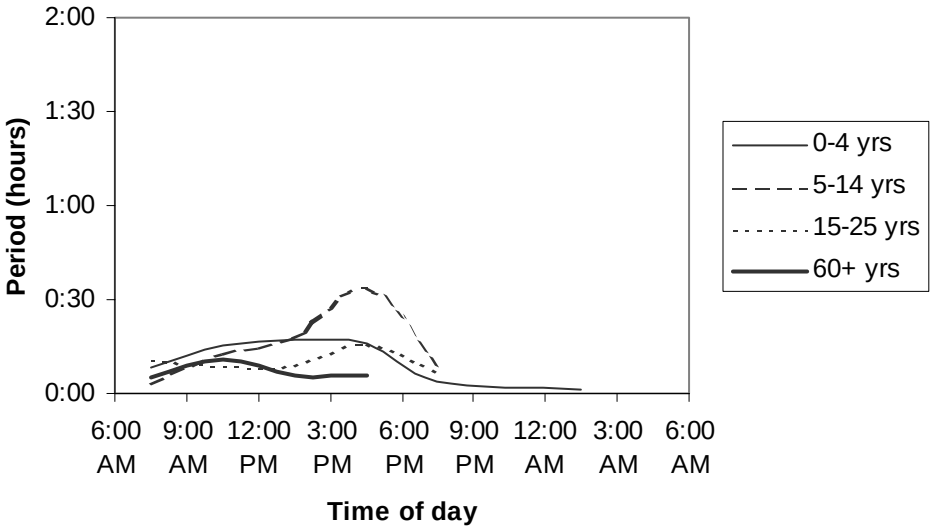


Figure 6.15: Time spent outdoors the day before yesterday, by time of day - Darwin

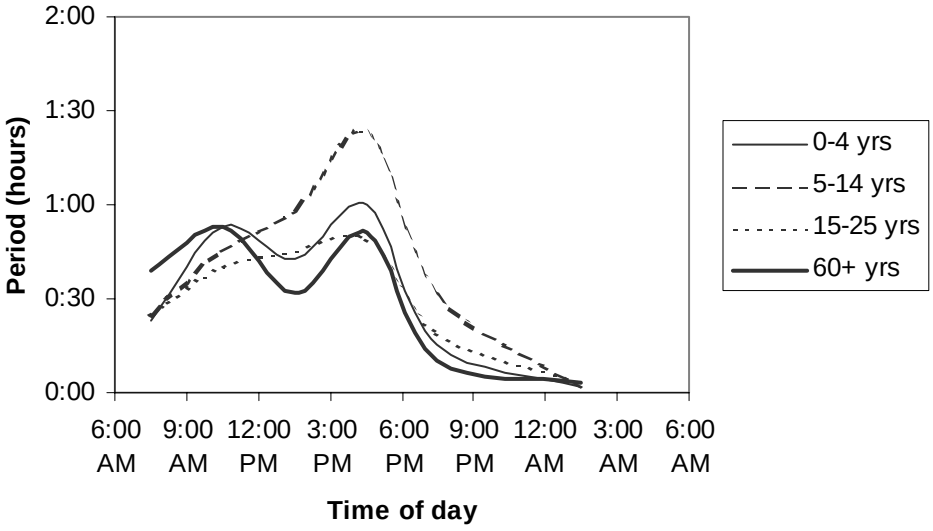
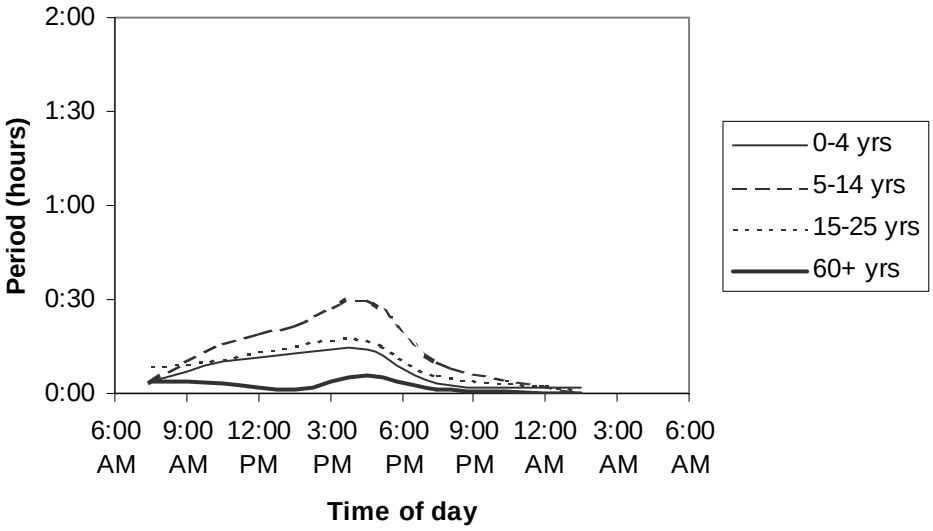


Figure 6.16: Time spent outdoors the day before yesterday breathing heavily, by time of day - Darwin



6.1.5 Time spent outdoors - Gladstone

Outdoor activity in Gladstone was characterised by bimodal distributions with substantial time spent outdoors in the morning and late afternoon (Figure 6.17 to Figure 6.20).

Figure 6.17: Time spent outdoors yesterday, by time of day - Gladstone

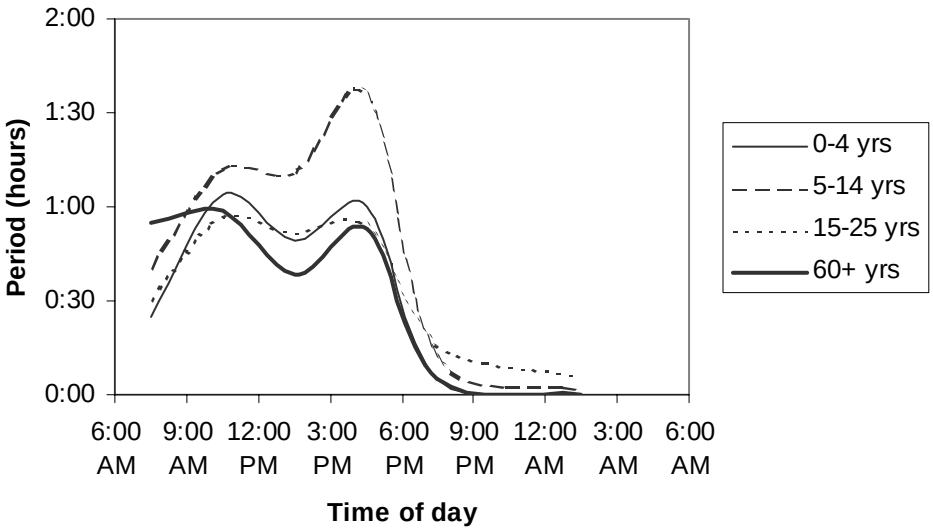


Figure 6.18: Time spent outdoors yesterday breathing heavily, by time of day - Gladstone

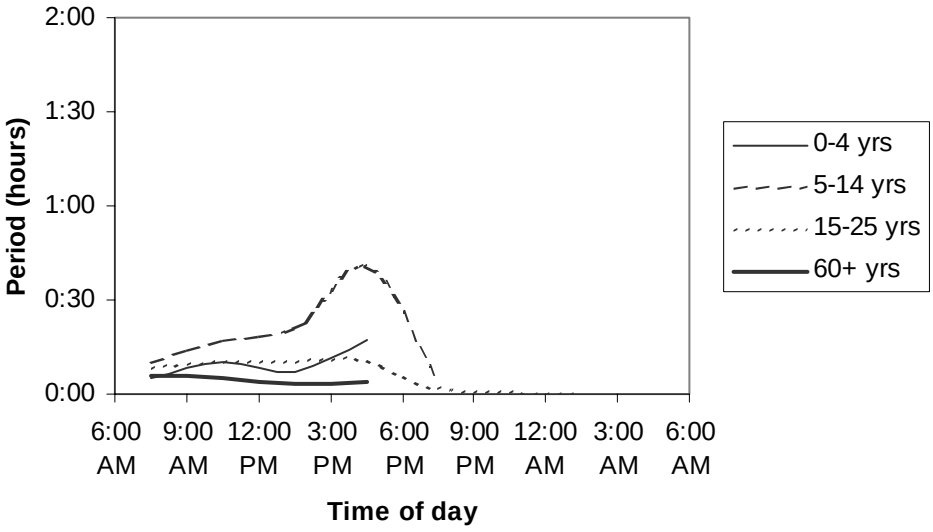


Figure 6.19: Time spent outdoors the day before yesterday, by time of day - Gladstone

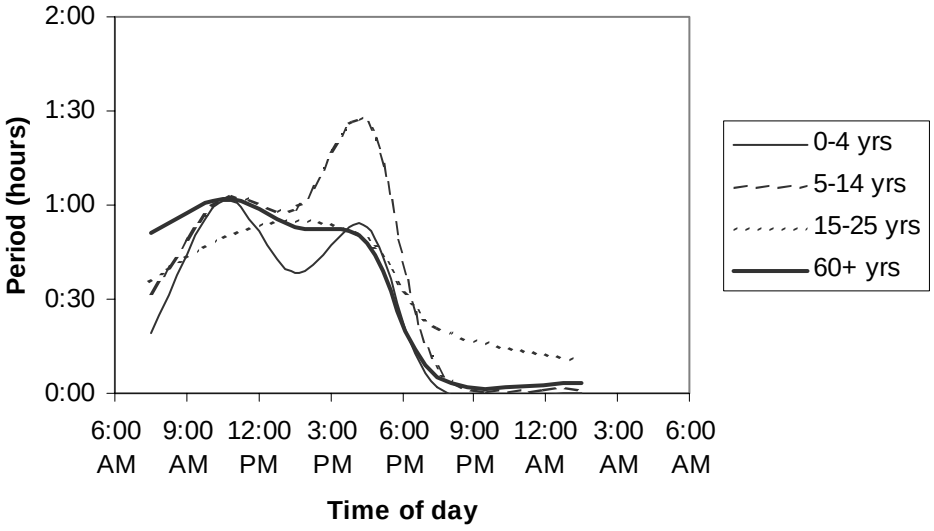
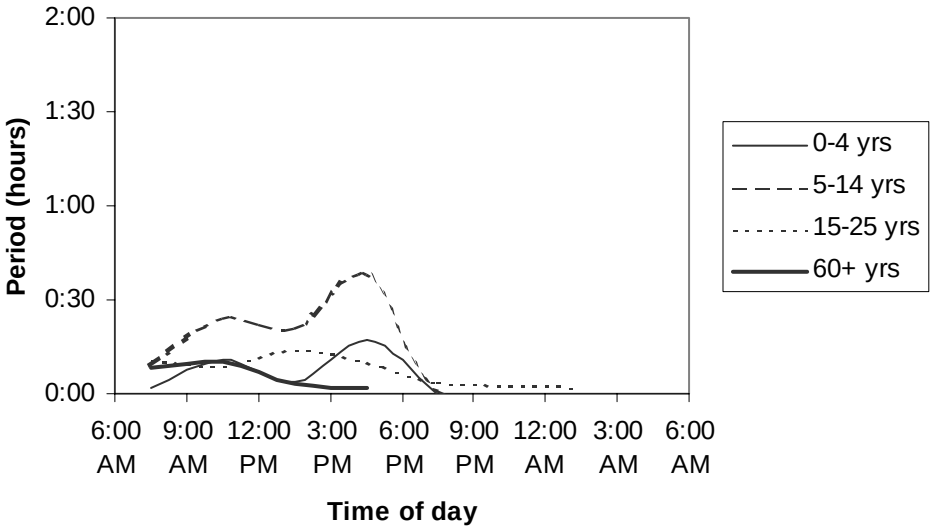


Figure 6.20: Time spent outdoors the day before yesterday breathing heavily, by time of day - Gladstone



6.1.6 Time spent outdoors - Hobart

Outdoor activity in Hobart was characterised by outdoor activity early in the day and little activity from late afternoon onward (Figure 6.21 to Figure 6.24).

Figure 6.21: Time spent outdoors yesterday, by time of day - Hobart

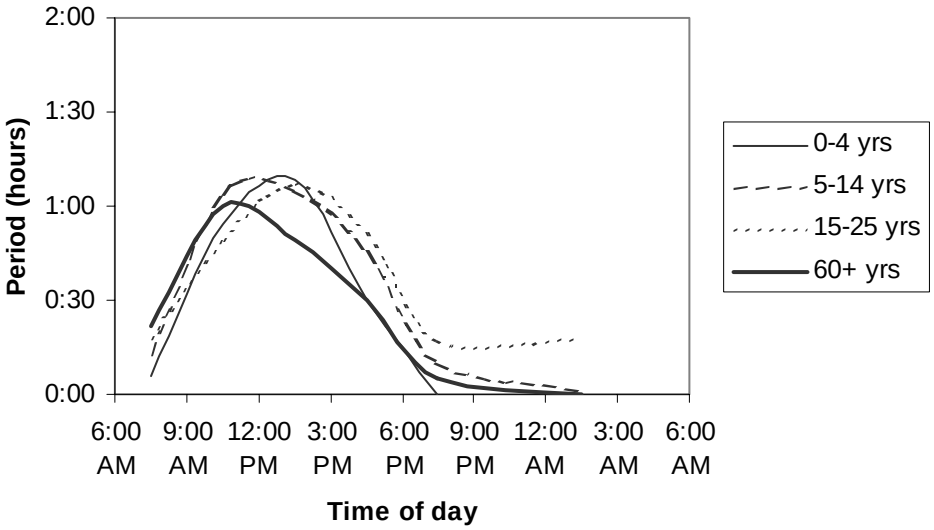


Figure 6.22: Time spent outdoors yesterday breathing heavily, by time of day - Hobart

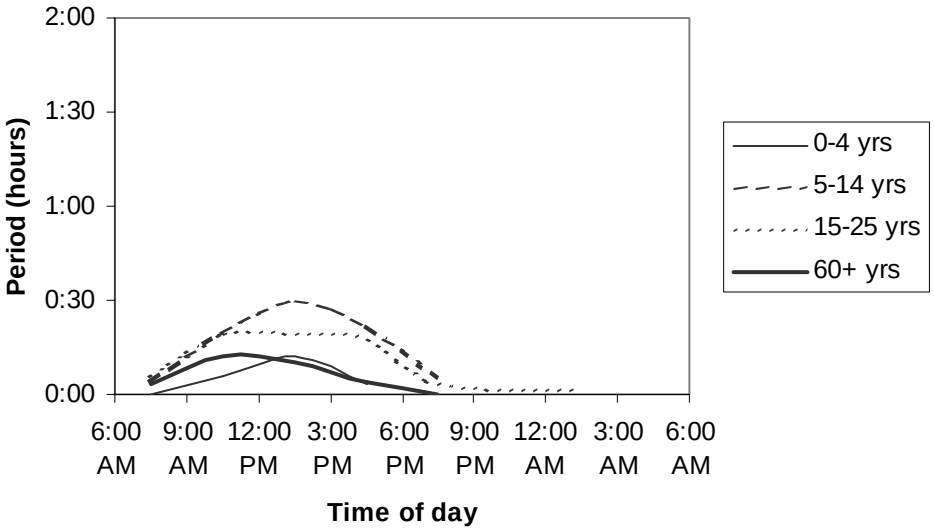


Figure 6.23: Time spent outdoors the day before yesterday, by time of day - Hobart

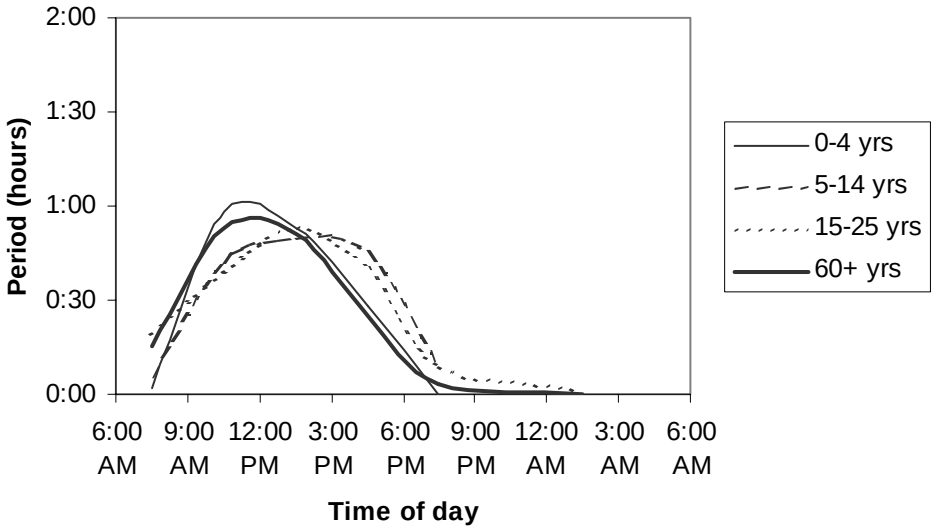
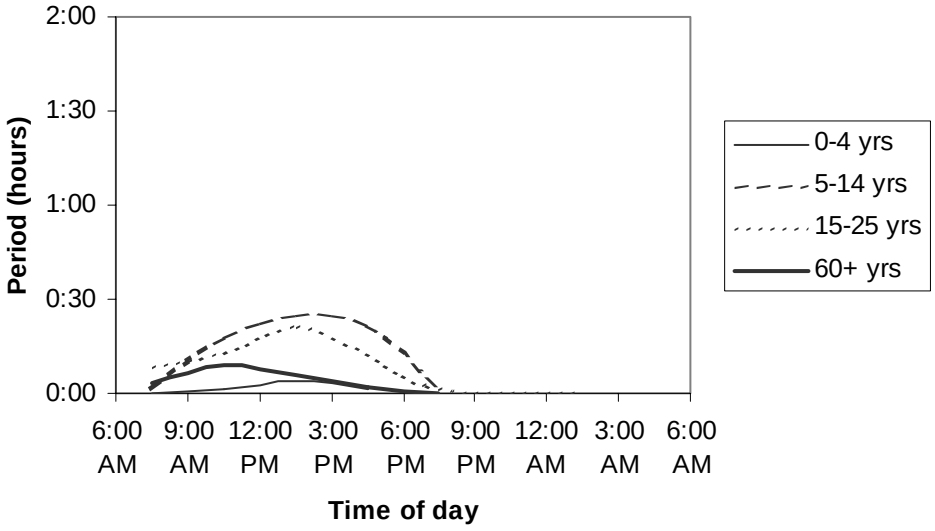


Figure 6.24: Time spent outdoors the day before yesterday breathing heavily, by time of day - Hobart



6.1.7 Time spent outdoors - Launceston

Outdoor activity in Launceston was characterised by older people being active in the morning (Figure 6.25 to Figure 6.28).

Figure 6.25: Time spent outdoors yesterday, by time of day - Launceston

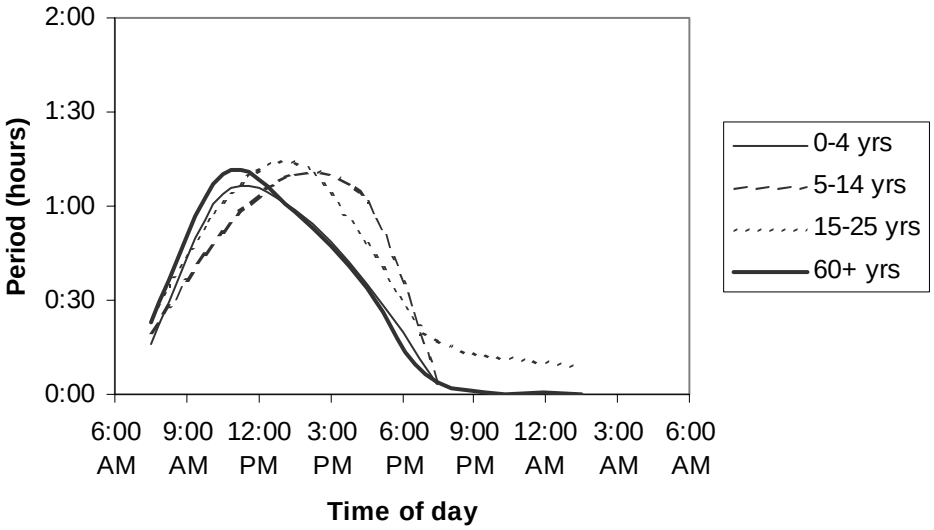


Figure 6.26: Time spent outdoors yesterday breathing heavily, by time of day - Launceston

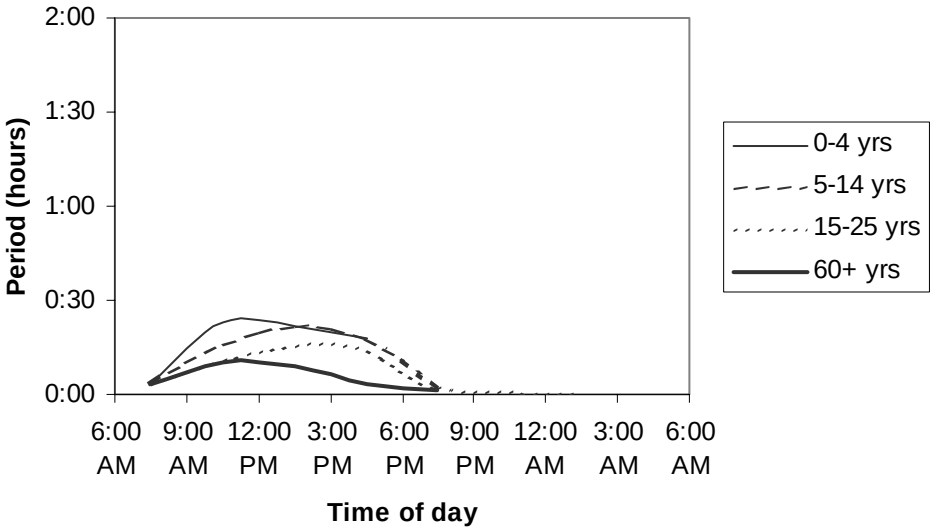


Figure 6.27: Time spent outdoors the day before yesterday, by time of day - Launceston

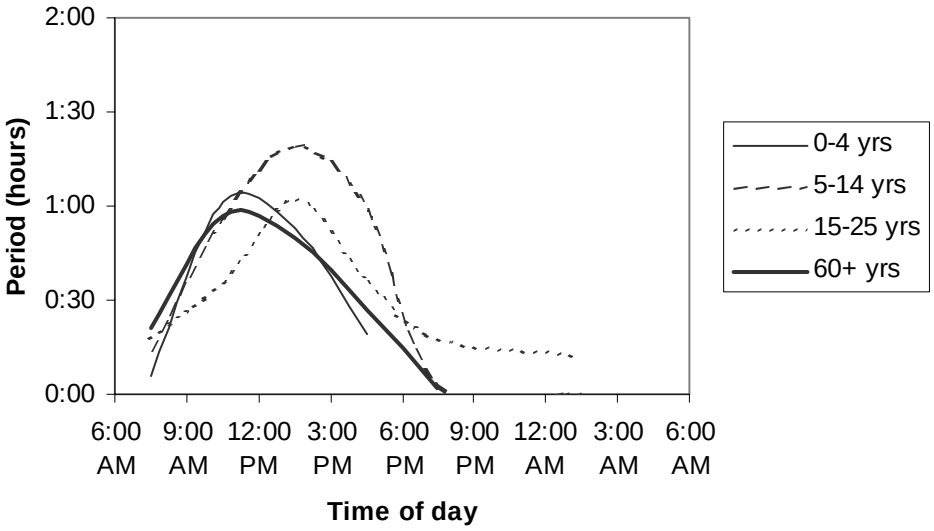
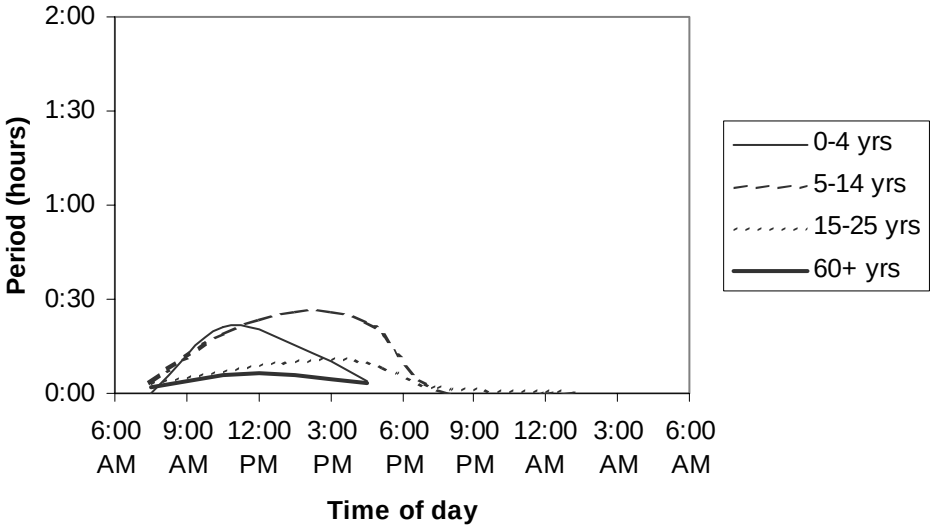


Figure 6.28: Time spent outdoors the day before yesterday breathing heavily, by time of day - Launceston



6.1.8 Time spent outdoors - Melbourne

Outdoor activity in Melbourne was characterised by older people being active in the morning and the 5 to 14 year age group being active in the late afternoon (Figure 6.29 to Figure 6.32).

Figure 6.29: Time spent outdoors yesterday, by time of day - Melbourne

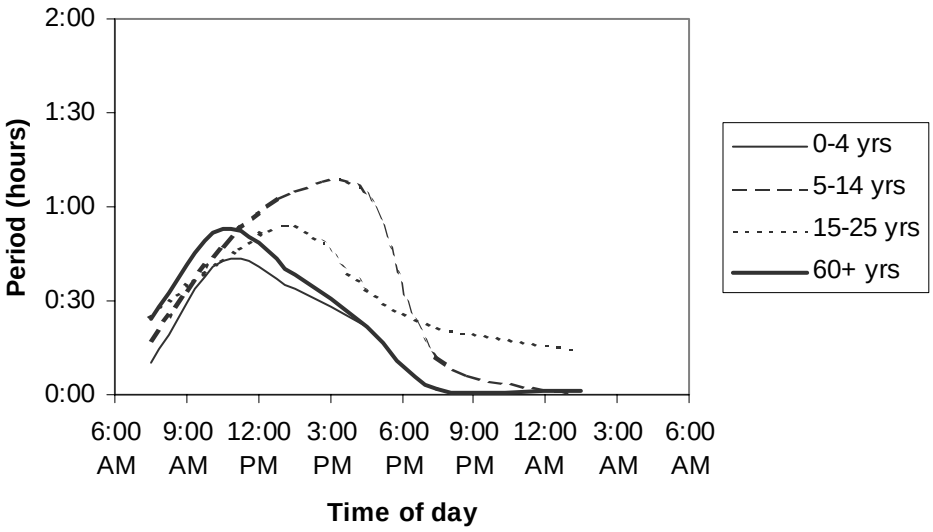


Figure 6.30: Time spent outdoors yesterday breathing heavily, by time of day - Melbourne

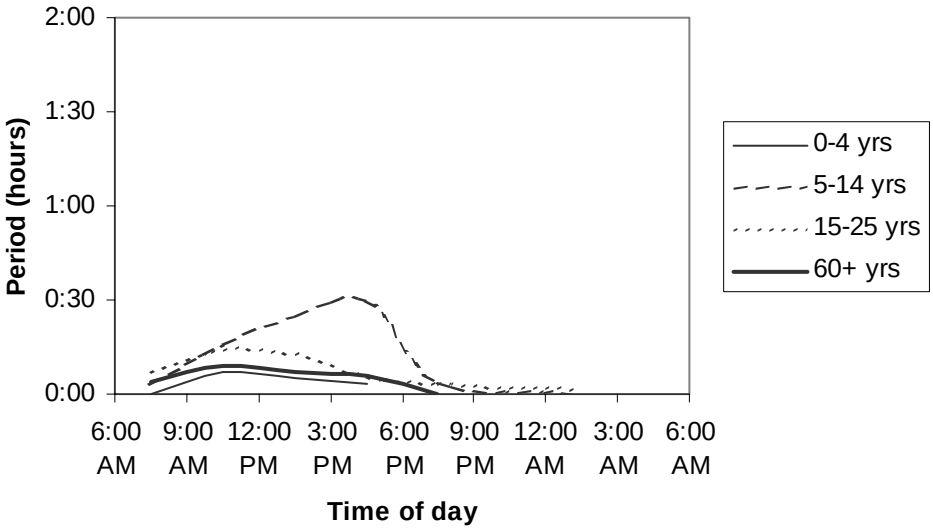


Figure 6.31: Time spent outdoors the day before yesterday, by time of day - Melbourne

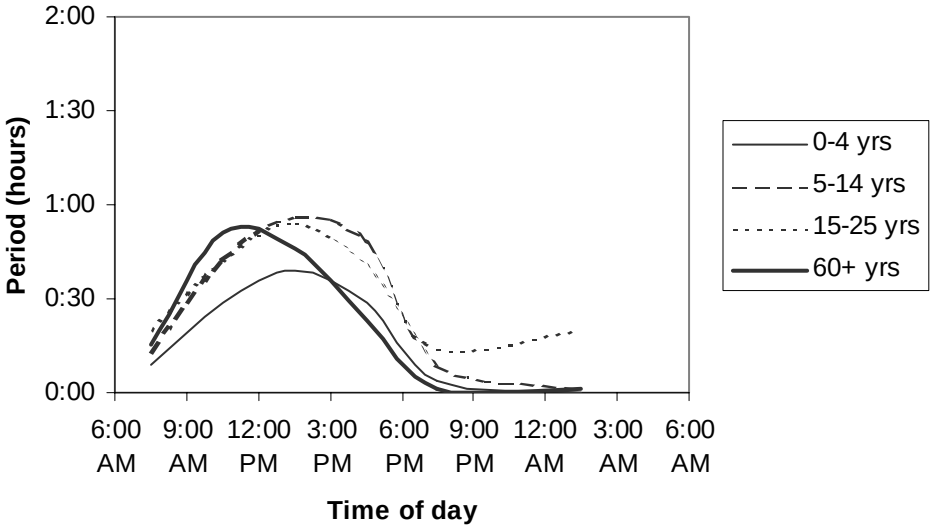
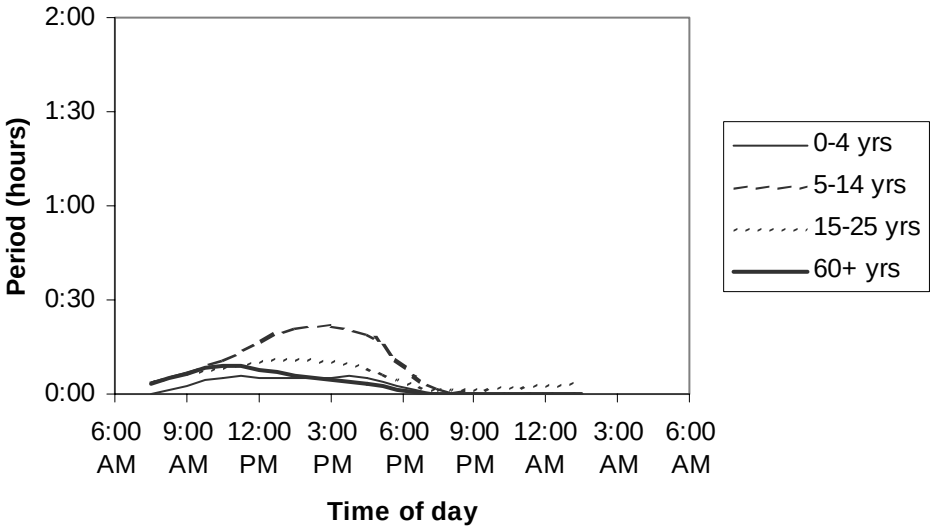


Figure 6.32: Time spent outdoors the day before yesterday breathing heavily, by time of day - Melbourne



6.1.9 Time spent outdoors - Perth

Outdoor activity in Perth was characterised by older people being active in the morning (Figure 6.33 to Figure 6.36).

Figure 6.33: Time spent outdoors yesterday, by time of day - Perth

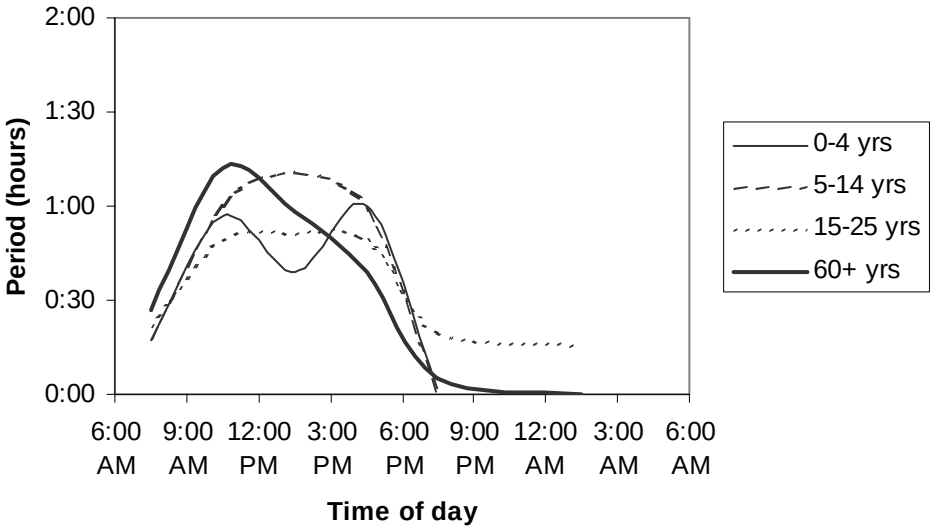


Figure 6.34: Time spent outdoors yesterday breathing heavily, by time of day - Perth

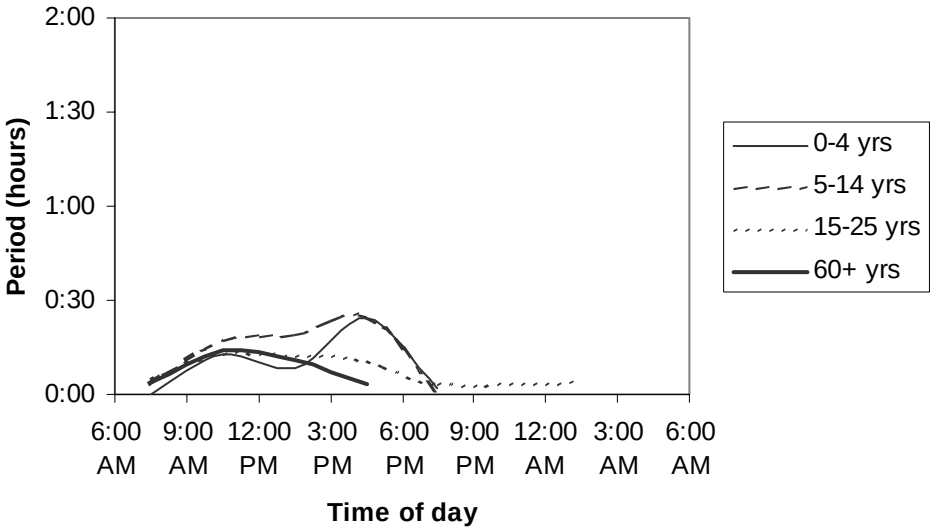


Figure 6.35: Time spent outdoors the day before yesterday, by time of day - Perth

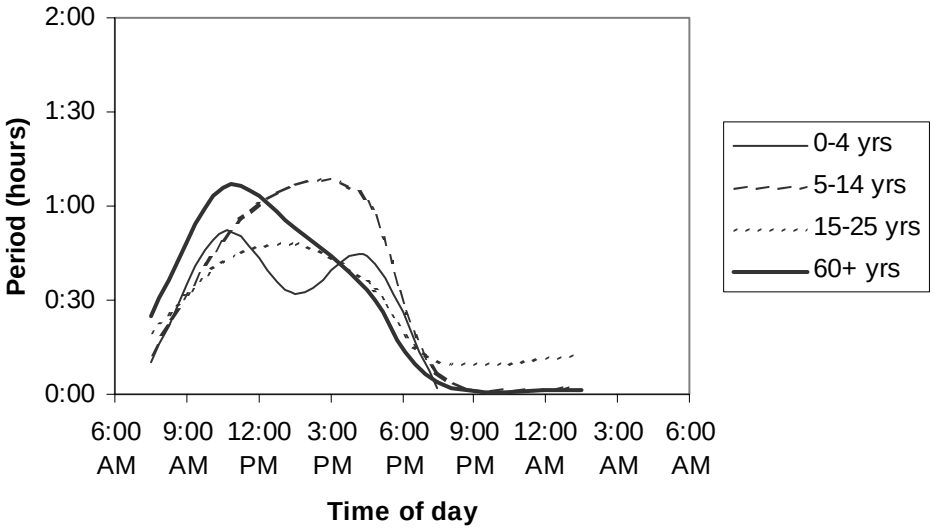
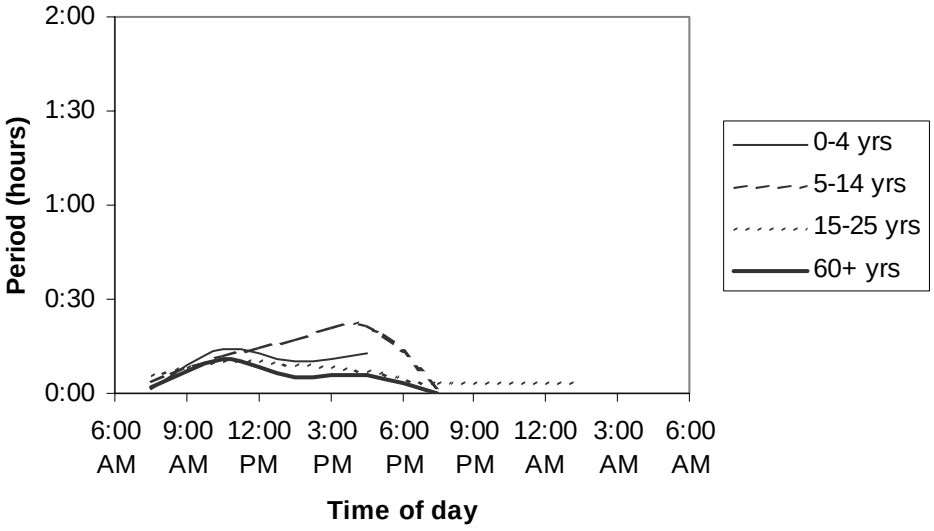


Figure 6.36: Time spent outdoors the day before yesterday breathing heavily, by time of day - Perth



6.1.10 Time spent outdoors - Sydney

Outdoor activity in Sydney was characterised by older people being active in the morning and the 5 to 14 year age group being active in the late afternoon (Figure 6.37 to Figure 6.40).

Figure 6.37: Time spent outdoors yesterday, by time of day - Sydney

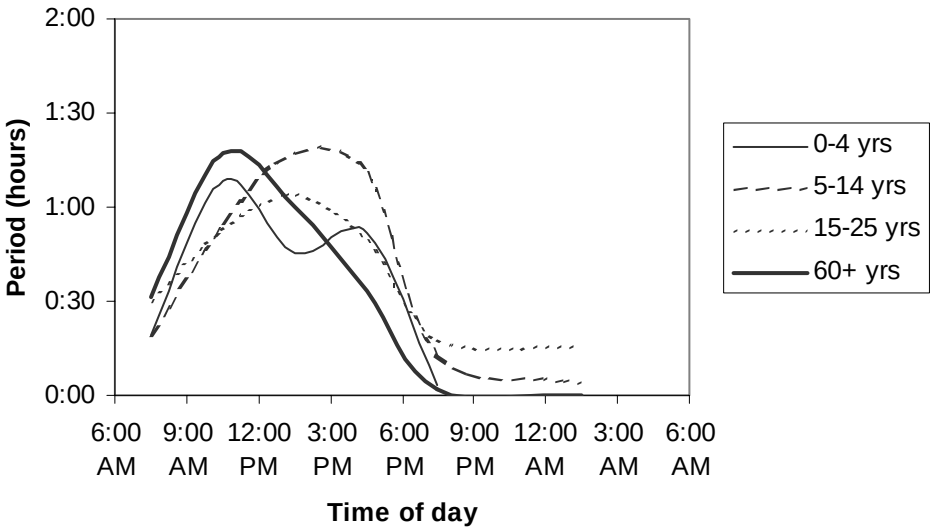


Figure 6.38: Time spent outdoors yesterday breathing heavily, by time of day - Sydney

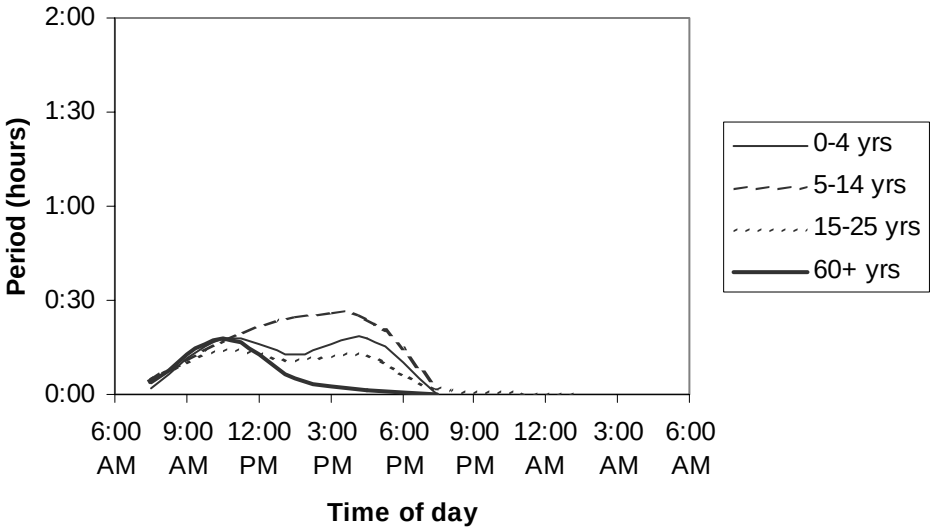


Figure 6.39: Time spent outdoors the day before yesterday, by time of day - Sydney

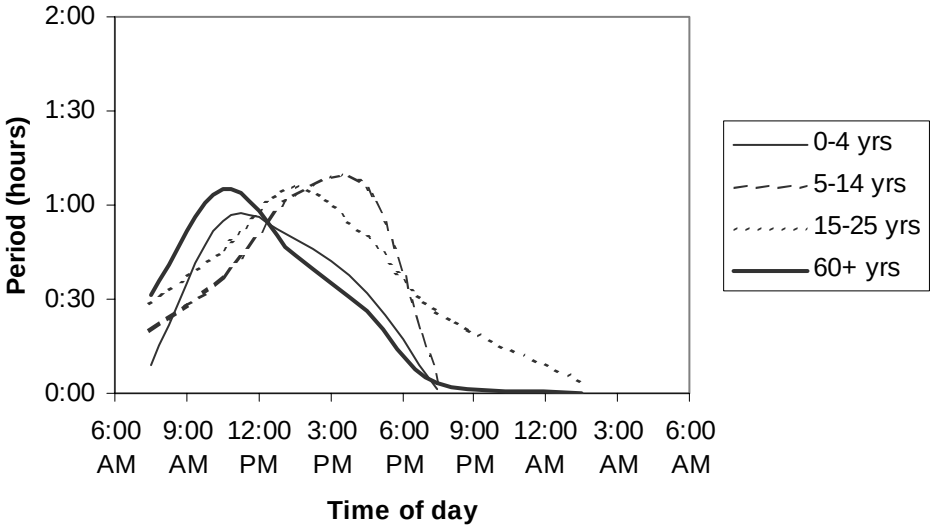
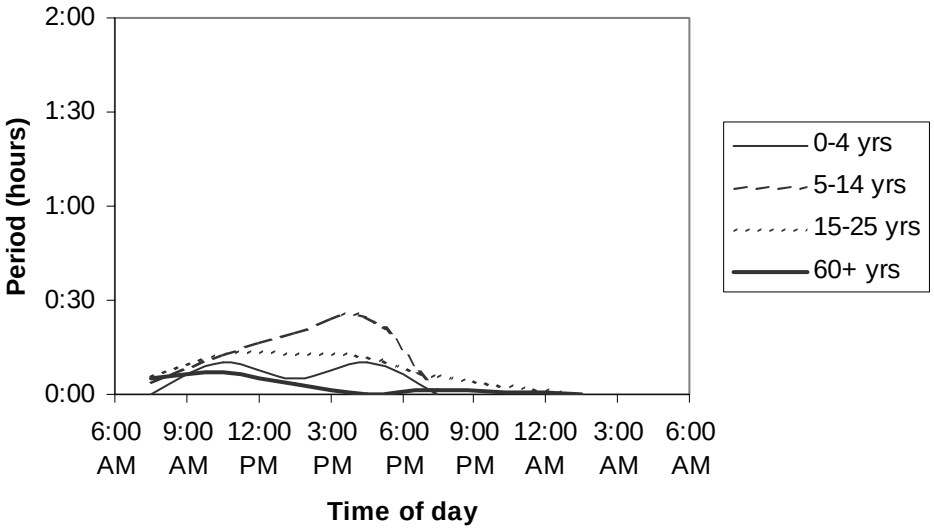


Figure 6.40: Time spent outdoors the day before yesterday breathing heavily, by time of day - Sydney



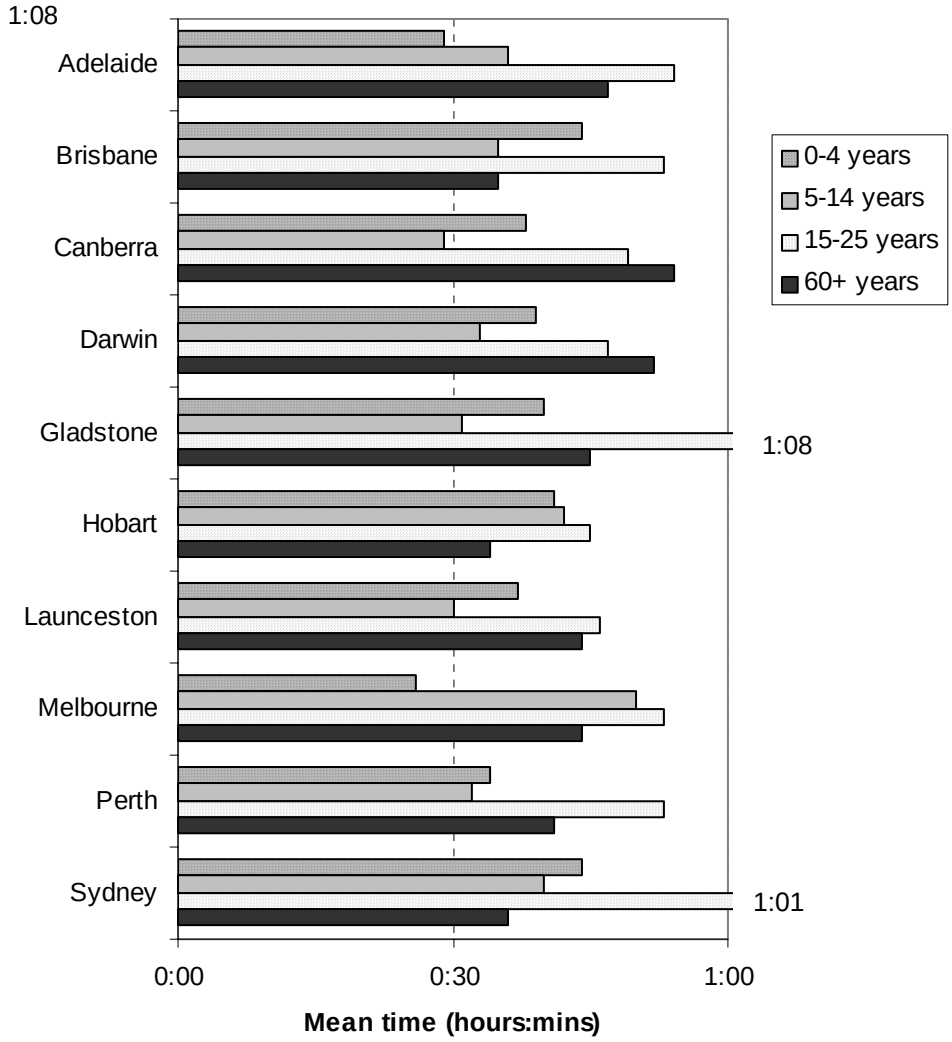
6.2 Time spent in transport

Respondents were asked about the time they spent yesterday in a range of vehicles. These varied from private modes of transport, such as a car or pushbike, to public transport options. The data presented are the mean times across all the individuals in the sample. This was done even though some modes of transport were reported as being used by only one or two respondents, as reporting times for users alone would distort the results and indicate greater transport use than actual. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

6.2.1 Time spent in a car

The first question asked about time spent yesterday in a car. The results shown in Figure 6.41 indicate that car use was fairly consistent across the nation at between a half an hour and one hour for most age groups and cities. In general, car use was higher for the 15 to 25 year age group, who are perhaps the more mobile age group sampled here.

Figure 6.41: Time spent in a car in previous day, by age group



6.2.2 Median year of manufacture of car

Following the report of the time spent in a car yesterday was a question regarding the year of manufacture of the car. The results are presented in Table 6.1.

No one city stands out as having newer, or older, cars than other cities. There is a difference between age groups in the age of the cars used. The two youngest age groups, combined the 0 to 14 years, are driven in the newest cars. This may indicate that families with young children are more likely to have newer cars.

The 15 to 25 years age group drive, or are driven in, the oldest cars. This is only by a few years, but may indicate independent young people using a cheaper car for transport.

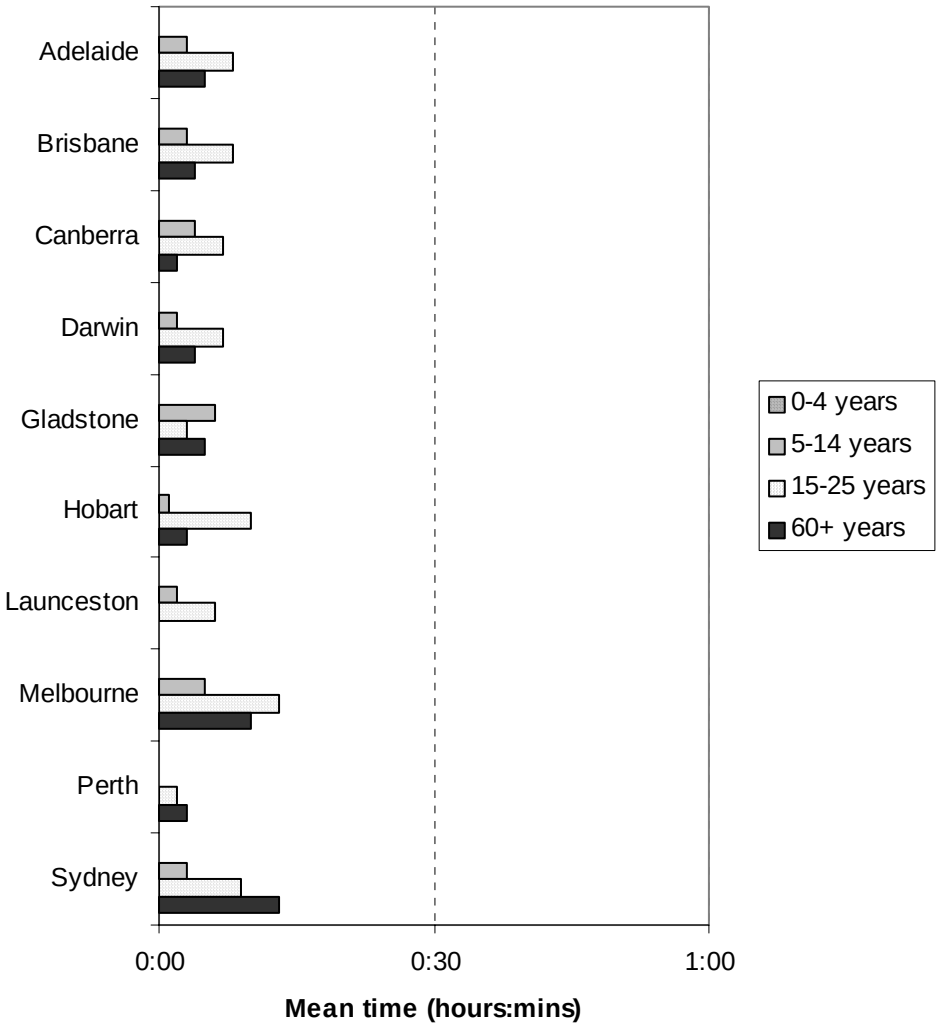
Table 6.1: Median year of manufacture of car, by age group

Median year of manufacture	0-4 years	5-14 years	15-25 years	60+ years
Adelaide	1994	1995	1991	1993
Brisbane	1994	1994	1994	1994
Canberra	1994	1996	1993	1994
Darwin	1995	1997	1994	1993
Gladstone	1996	1996	1995	1993
Hobart	1994	1995	1989	1994
Launceston	1994	1993	1989	1992
Melbourne	1995	1996	1991	1992
Perth	1995	1994	1994	1994
Sydney	1997	1997	1993	1995

6.2.3 Time spent in a bus

The first of the public transport modes in the questionnaire was time spent in a bus on the previous day. Figure 6.42 shows the time spent by age groups and cities. Bus transport appears to be predominantly used by the 15 to 25 years age group. This age group spent the most time on a bus in seven of the ten cities. The longest average time spent on a bus was in the two largest cities, Sydney and Melbourne.

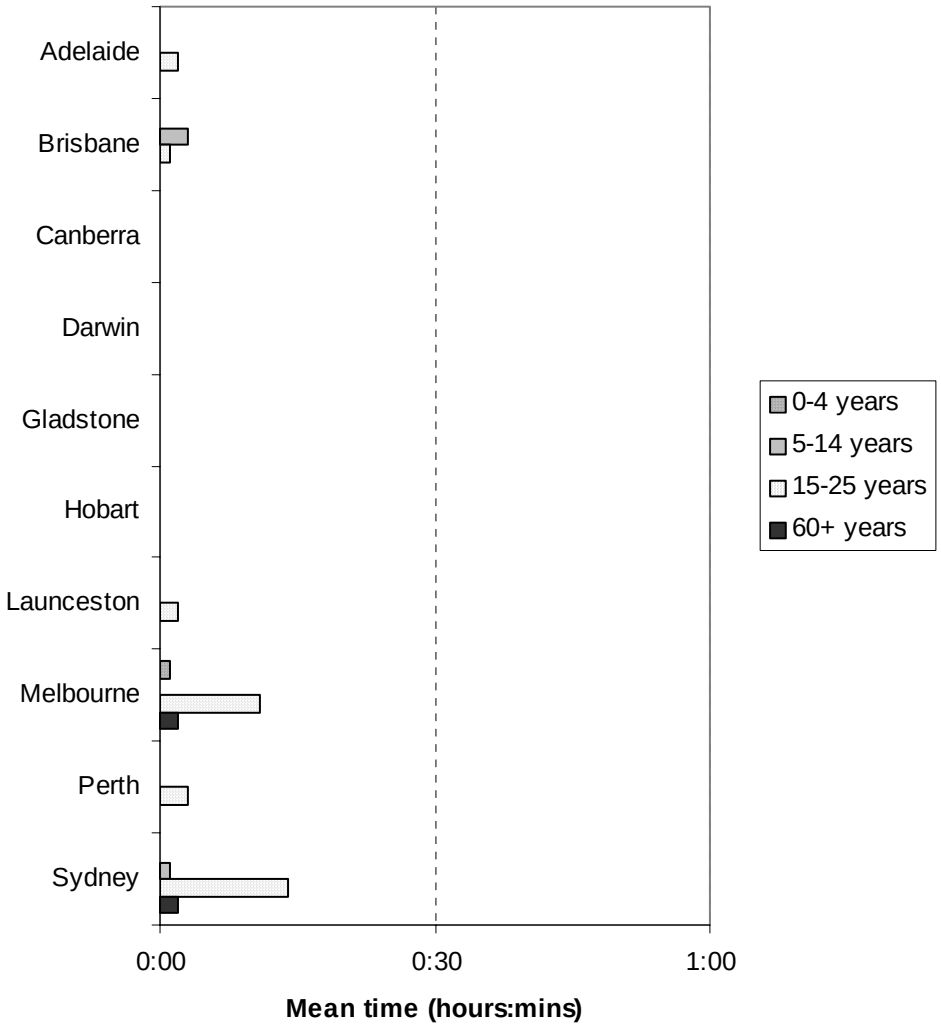
Figure 6.42: Time spent in a bus in previous day, by age group



6.2.4 Time spent in a train

Train transport was used mainly by the 15 to 25 year old age group, as was shown by bus transport. Figure 6.43 shows that similar to bus transport, average train travel times were greatest in Sydney and Melbourne.

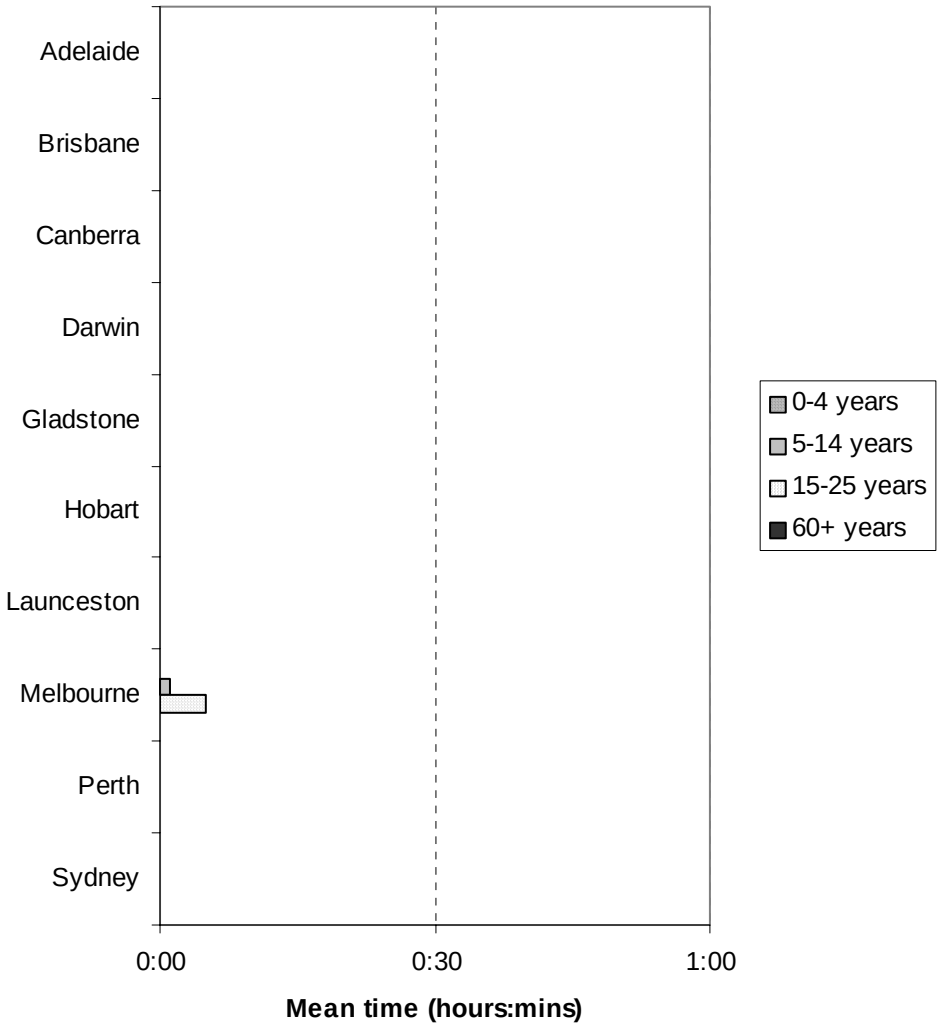
Figure 6.43: Time spent in a train in previous day, by age group



6.2.5 Time spent in a tram

Trams were indicated as being a source of public transport in the Melbourne sample only (Figure 6.44). Again, the 15 to 25 years age group were the greatest users of trams.

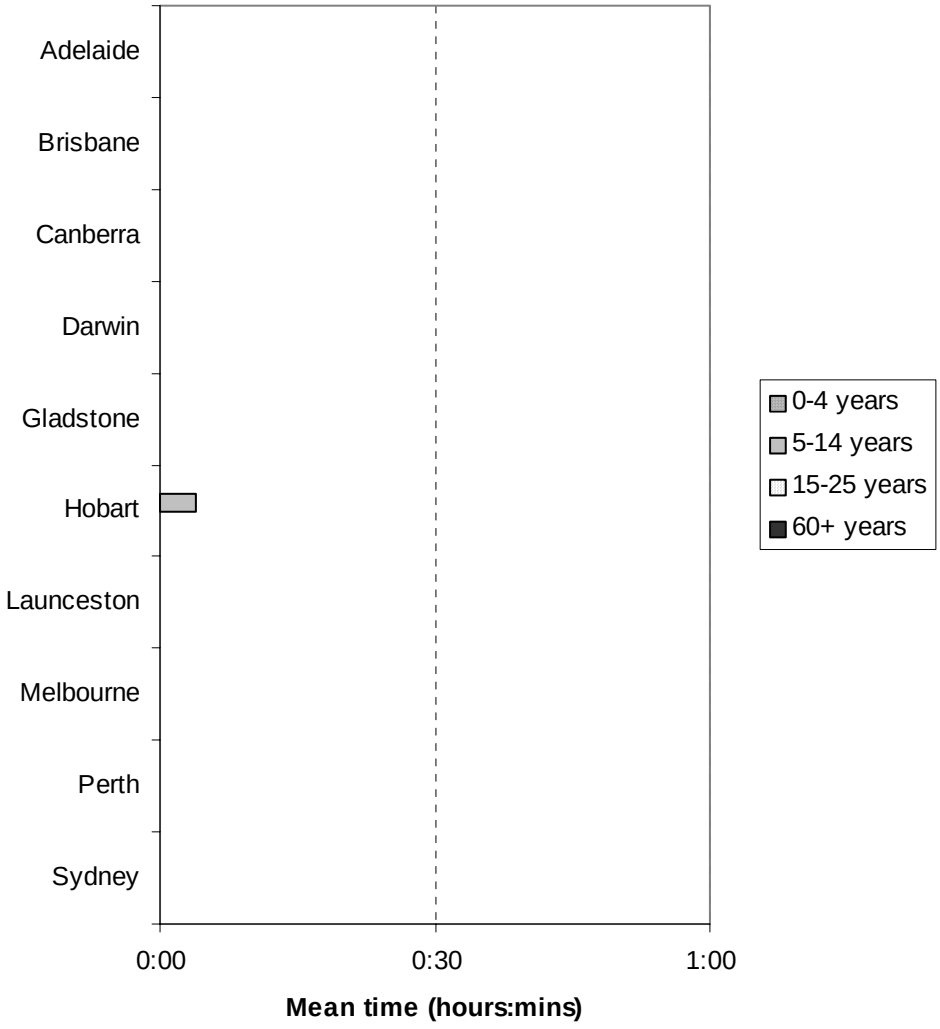
Figure 6.44: Time spent in a tram in previous day, by age group



6.2.6 Time spent on a ferry

The only ferry use that was sufficient to produce a mean time greater than zero was recorded in Hobart (Figure 6.45), and occurred in the 5 to 14 years age group. There was only one reported use of a ferry in Sydney in the sample, indicating that although ferries are prominent in that city they are in use by only a minority of the population.

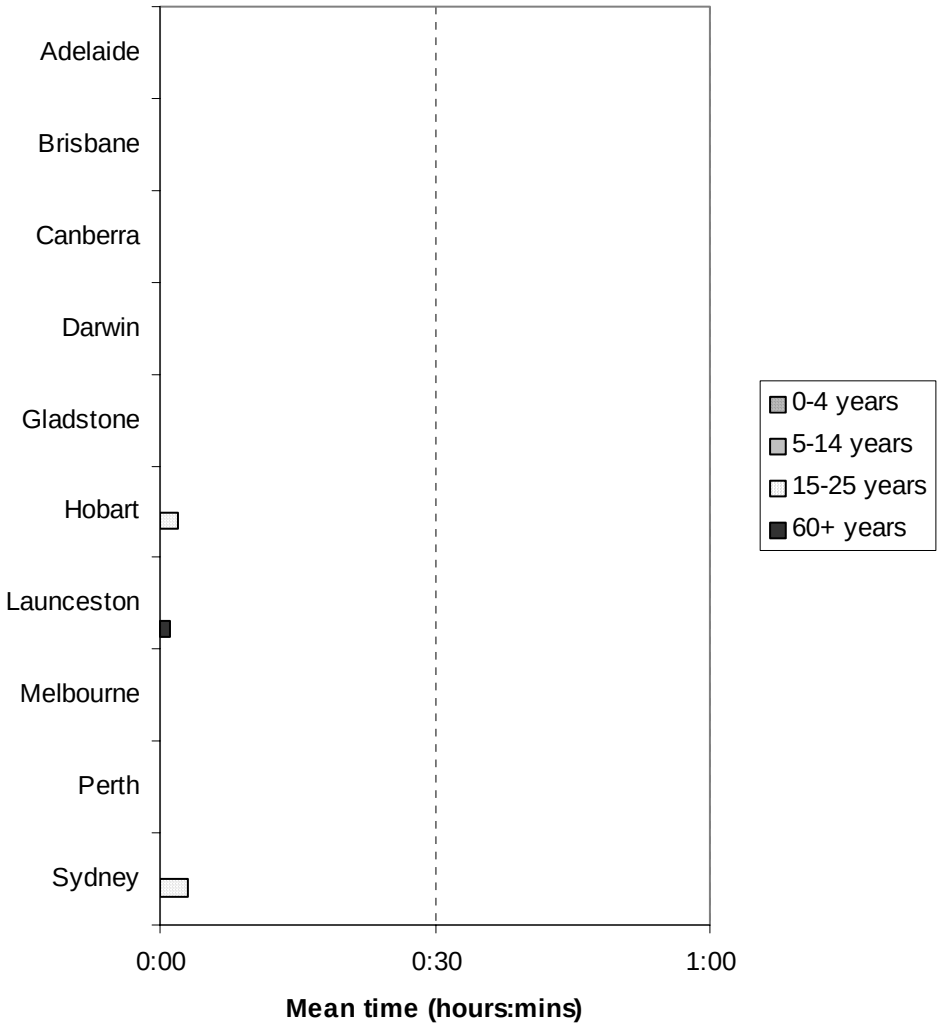
Figure 6.45: Time spent on a ferry in previous day, by age group



6.2.7 Time spent in a truck

Time spent in a truck was rarely recorded (Figure 6.46). The most time spent in a truck, on average, occurred in Hobart and Sydney in the 15 to 25 years age group.

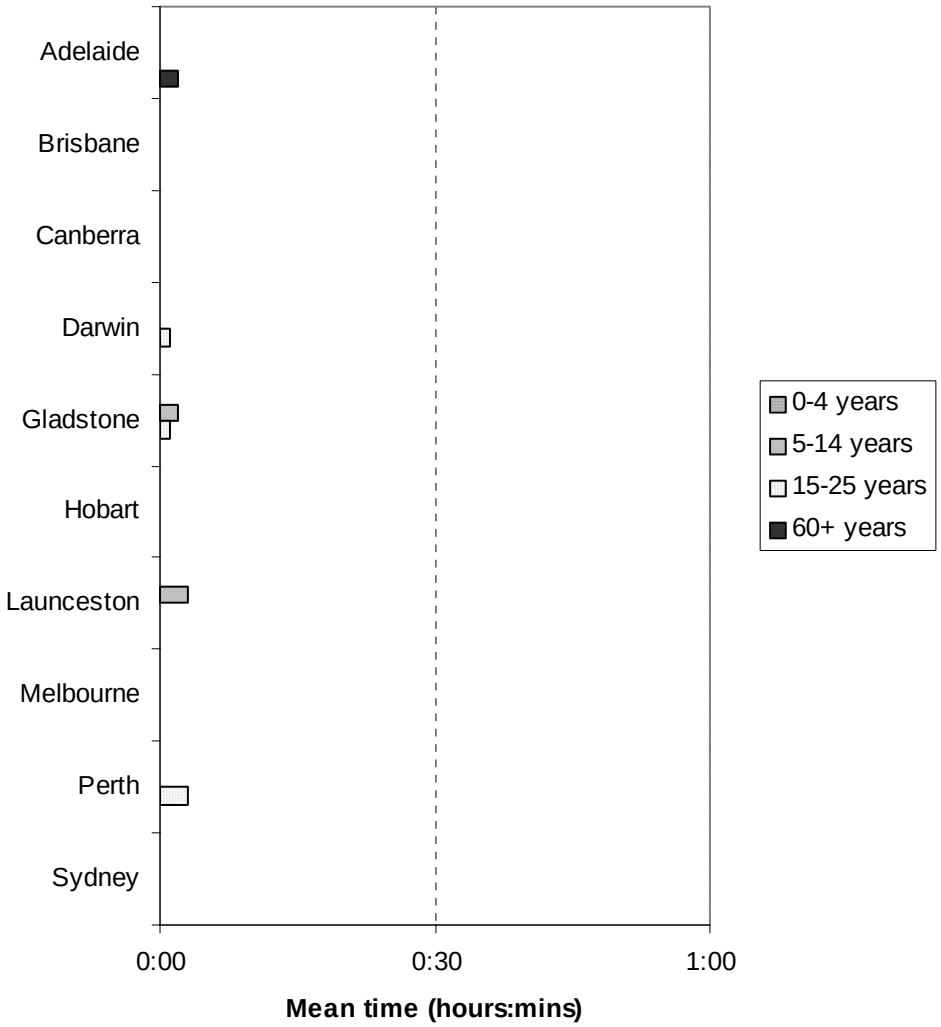
Figure 6.46: Time spent in a truck in previous day, by age group



6.2.8 Time spent on a motorbike/scooter

Mean time spent on a motorbike or scooter was low when averaged across all respondents in the sample (Figure 6.47).

Figure 6.47: Time spent on a motorbike/scooter in previous day, by age group

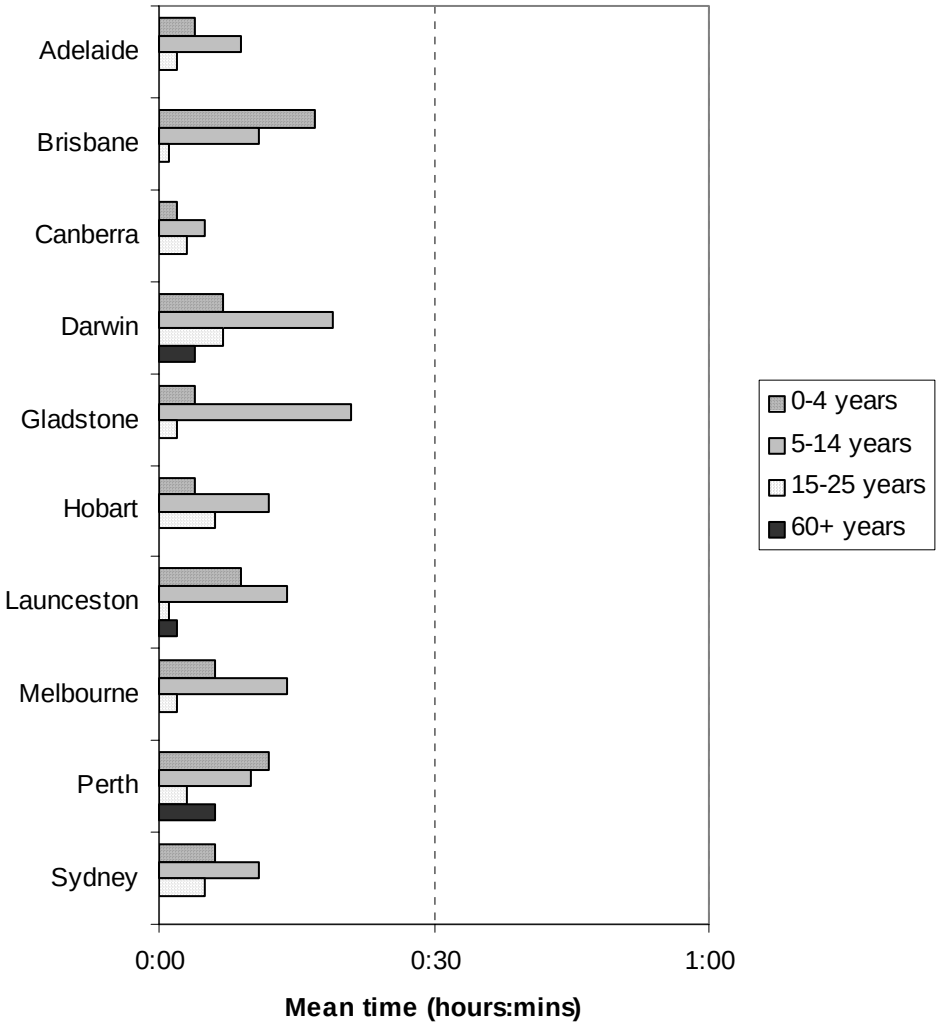


6.2.9 Time spent on a pushbike

Pushbike use was reported at substantial levels by the 5 to 14 years age group, for whom this is a popular mode of transport (Figure 6.48). The cities with the highest reported use in this age group were the northern cities of Darwin and Gladstone. The lowest use in this age group was in Canberra. These results may reflect climatic differences that could tend to encourage bike use when the weather is warm or discourage it when the weather is cold and wet.

Average time spent on a pushbike was low in the 15 to 25 year age group, who already reported relatively high car use. There were some relatively long times for the 0 to 4 year age group, in particular in Brisbane and Perth where this age group recorded the highest mean times for pushbike use.

Figure 6.48: Time spent on a pushbike in previous day, by age group

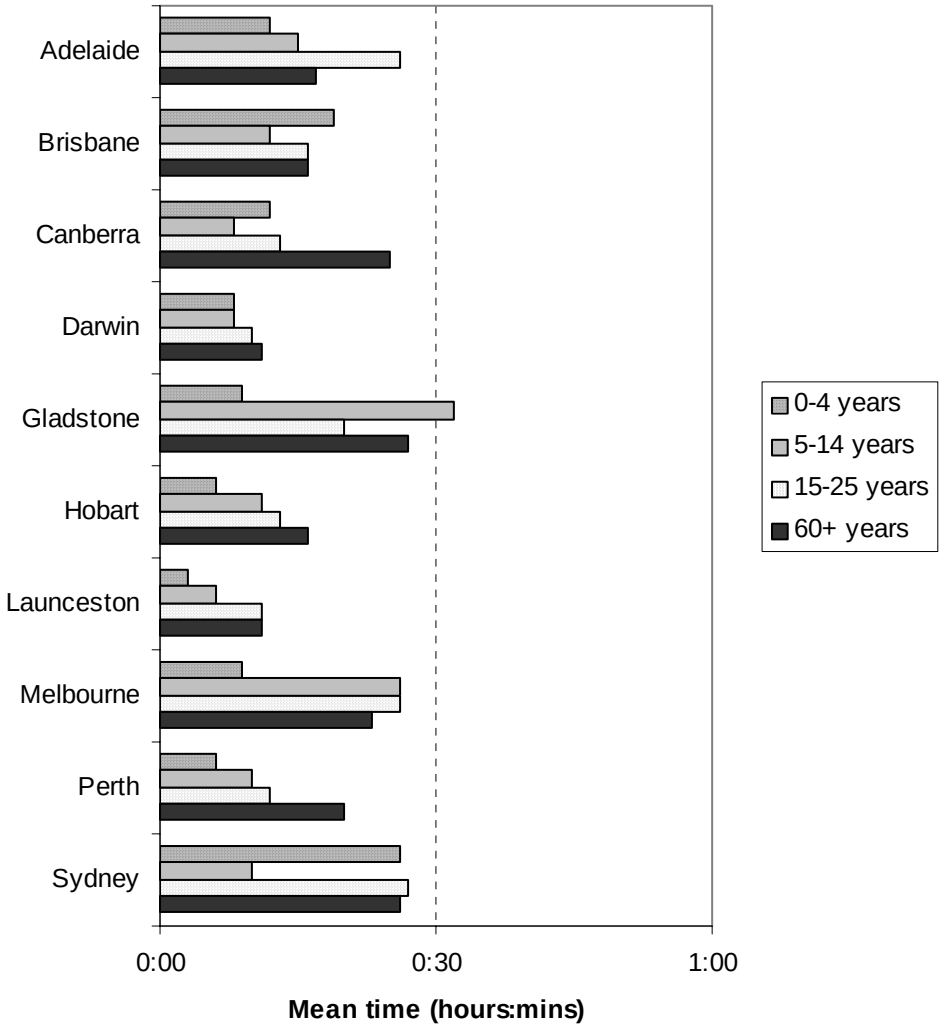


6.2.10 Time spent in medium/heavy traffic

Time spent in medium to heavy traffic is shown in Figure 6.49. There were notable differences between cities, with Melbourne and Sydney having substantial amounts of traffic, however Gladstone also showed very high mean times. The least amount of time spent in medium to heavy traffic was in Darwin and Launceston.

The pattern of time spent in traffic by age groups is less clear. The 0 to 4 years age group in Sydney spent the most time in traffic for that age group, followed by Brisbane. The 5 to 14 year age group in Gladstone and Melbourne spent the most time in traffic, whereas other cities were less than half of those times. Similar highly variable results were seen for the other age groups.

Figure 6.49: Time spent in medium/heavy traffic, by age group



6.2.11 Exposure at service station yesterday

Respondents were asked if they had visited a service station during the previous day. The results in Table 6.2 show that the 15 to 25 years age group was the age group most likely to have visited a service station. This concurs with their higher use of cars as shown in Figure 6.41. More frequent visits can perhaps best be explained by greater distances travelled, but this does not appear to be associated with large cities. Smaller centres such as Launceston also demonstrate frequent service station use, which may reflect considerable rural travel as well as urban.

Table 6.2: Visit to service station yesterday, by age group

Service station	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Adelaide	9.6	9.9	30.6	10.2
Brisbane	11.1	10.8	28.3	10.4
Canberra	9.1	8.6	21.3	15.8
Darwin	14.1	8.1	30.3	12.9
Gladstone	14.3	9.4	41.3	13.6
Hobart	6.3	17.1	21.1	11.6
Launceston	10.0	9.4	21.9	10.0
Melbourne	7.8	12.3	28.3	12.2
Perth	2.1	6.9	29.5	14.0
Sydney	15.7	11.7	35.8	8.2

6.2.12 Exposure at enclosed car park yesterday

Enclosed car park use in the previous day is shown in Table 6.3. There were high rates in centres where this use would perhaps not be expected, such as Darwin.

Table 6.3: Visit to enclosed car park yesterday, by age group

Enclosed car park	0-4 years	5-14 years	15-25 years	60+ years
	%	%	%	%
Adelaide	1.9	5.4	16.5	6.0
Brisbane	7.4	9.9	21.5	17.4
Canberra	14.5	6.9	22.8	10.9
Darwin	19.4	9.6	24.4	14.5
Gladstone	9.5	2.1	10.9	9.1
Hobart	6.1	7.6	17.4	12.3
Launceston	7.8	1.9	10.5	5.0
Melbourne	14.0	7.7	16.1	12.9
Perth	8.5	6.9	12.6	8.8
Sydney	5.8	10.8	18.5	9.8

6.2.13 Present when petrol engine garden tools used

The use of petrol engine garden tools in the previous week while the respondent was present is shown in Table 6.4. As these data represent one week, there is a weekend included in every response. The opportunity for petrol engine garden tools to be used is therefore high. These results show that substantial proportions of age groups who are too young to use the tools themselves were present when the tools were being used. There is no ready explanation, however, for why rates for the youngest group in Launceston should be so much higher than, for example, in Perth. All respondents in each age group were included in the questioning.

Table 6.4: Present when petrol engine garden tools used, by age group

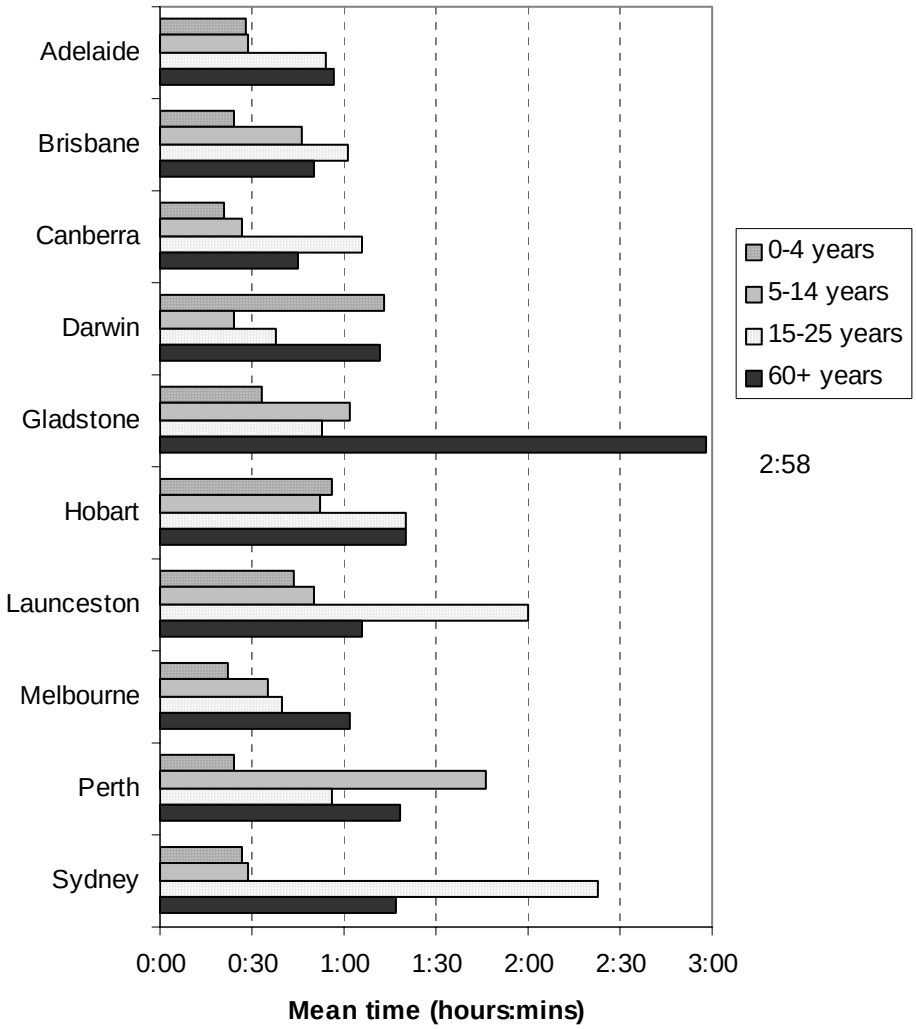
Petrol engine garden tools	0-4 years %	5-14 years %	15-25 years %	60+ years %
Adelaide	32.7	30.6	24.8	19.8
Brisbane	22.2	32.4	25.0	33.9
Canberra	20.0	11.1	19.1	33.3
Darwin	19.4	17.0	23.7	22.6
Gladstone	23.8	29.5	29.1	33.3
Hobart	22.4	15.2	30.6	37.0
Launceston	40.0	26.4	37.1	36.4
Melbourne	16.0	28.8	23.9	31.3
Perth	8.5	10.7	25.0	23.9
Sydney	15.4	20.6	22.9	26.8

6.2.14 Time present when petrol engine garden tools used

Of those respondents who indicated in Table 6.4 above that they were present when petrol engine garden tools were in use, the mean times that the tools were in use are shown in Figure 6.50. The mean times for the youngest age group are generally the least time spent exposed to the emissions from the tools.

The greatest time spent exposed to the emissions were generally by the age groups who could be expected to be operating the tools i.e. adults. Petrol engine garden tools were most often in use by people aged 60 years or over in Gladstone. This rate was more than double the rates for the same age group in other cities. High rates were also evident for 15 to 25 year old respondents in Sydney and Launceston, and there was an unexpectedly high rate for 5 to 14 year olds in Perth.

Figure 6.50: Time present when petrol engine garden tools used, by age group



CHAPTER 7: ENVIRONMENTAL EXPOSURES INDOORS

7.1 Introduction

Exposure to a range of substances that affect indoor air quality are investigated in this section. These substances fall into general categories that are defined as indoor air fresheners, heating and cooking sources, volatile chemicals, and sundry items such as leaving windows open. These questions regarding environmental exposure indoors were asked of all respondents, and the results are expressed as proportions of respondents who were exposed yesterday, and in some categories the length of time of exposure as well. For the sample sizes used for each different age group, in each city, please refer to Table 3.1.

7.1.1 Use of indoor air fresheners

The use of room fresheners or sprays in the previous day is shown in Table 7.1. Rates varied from 21.6% in Sydney to 30.5% in Gladstone. The overall rate fell midway between these rates and most cities were close to the overall rate.

Table 7.1: Use of room fresheners or sprays, by city

Use of room fresheners or sprays	Households %
Adelaide	27.3
Brisbane	30.3
Canberra	25.4
Darwin	24.9
Gladstone	30.5
Hobart	27.5
Launceston	27.6
Melbourne	24.3
Perth	27.0
Sydney	21.6
Overall	26.7

The overall rate of use of bathroom or toilet bowl deodorisers was just less than 40% (Table 7.2). Most cities were very close to this figure. The range of rates was from 34% in Melbourne to 47.3% in Sydney.

Table 7.2: Use of bathroom or toilet bowl deodorisers, by city

Use of bathroom or toilet bowl deodorisers	Households %
Adelaide	41.9
Brisbane	39.3
Canberra	35.2
Darwin	38.7
Gladstone	41.3
Hobart	37.8
Launceston	40.5
Melbourne	34.0
Perth	41.2
Sydney	47.3
Overall	39.7

Humidifiers were in most frequent use in Tasmania, as shown by the figures for Hobart and Launceston in Table 7.3. This represents the cities with the coldest climates in the sample. The other centre to report a higher rate of use of humidifiers than the overall rate was the third coldest climate city, Canberra.

Table 7.3: Use of humidifiers, by city

Use of humidifiers	Households %
Adelaide	0.4
Brisbane	1.0
Canberra	1.7
Darwin	1.2
Gladstone	1.3
Hobart	2.8
Launceston	2.0
Melbourne	1.3
Perth	0.8
Sydney	0.8
Overall	1.3

Just less than half of the sample reported no use of the indoor air fresheners. These results are shown in Table 7.4. There was substantially less use of indoor air fresheners in Melbourne, with 56.3% using none.

Table 7.4: None of these indoor air fresheners used, by city

None of these indoor air fresheners used yesterday	Households %
Adelaide	44.8
Brisbane	42.5
Canberra	48.9
Darwin	49.1
Gladstone	43.5
Hobart	47.5
Launceston	43.5
Melbourne	56.3
Perth	46.3
Sydney	46.0
Overall	46.8

7.1.2 Use of indoor heating methods

A range of indoor heating methods were reported on. Some of these, such as wood combustion, could produce emissions that would affect air quality in the home, whereas others like electricity would not pollute through combustion. The range of heating methods and the proportions of houses using them during winter are shown in Table 7.5 to Table 7.9, followed by the length of time these methods were used in the previous day shown in Figure 7.1 to Figure 7.10.

Firstly, wood combustion heaters were most frequently used by households in Tasmania (Table 7.5). Hobart and Launceston reported rates between 27% and 39% of households using this heating method. These were substantially higher than the overall rate of 9.7%. Very little use was made of wood combustion heaters in the most northerly cities of Darwin, Gladstone, and Brisbane. The rate was also very low in Sydney.

Table 7.5: Use of wood combustion heaters, by city

Use of wood combustion heaters	Households %
Adelaide	5.3
Brisbane	1.0
Canberra	4.2
Darwin	0.2
Gladstone	0.5
Hobart	27.8
Launceston	38.8
Melbourne	6.0
Perth	12.8
Sydney	0.5
Overall	9.7

Open fires were used less than wood combustion heaters, however the pattern of use being highest in Tasmania and lowest in northerly latitudes remained the same, as shown in Table 7.6.

Table 7.6: Use of open fires, by city

Use of open fires	Households %
Adelaide	0.4
Brisbane	0.3
Canberra	1.0
Darwin	0.2
Gladstone	-
Hobart	5.0
Launceston	2.7
Melbourne	0.5
Perth	1.3
Sydney	0.3
Overall	1.2

Use of gas heaters was most frequent in southerly cities other than Tasmania, where wood heating predominated. Table 7.7 shows Melbourne and Canberra to have the highest rates of use of gas as the home heating source. Again, there was little heating used in the northerly cities of Darwin, Gladstone, and Brisbane. The overall rate of use of gas, at 20.1%, was higher than the rate for any other single heating source.

Table 7.7: Use of gas heaters, by city

Use of gas heaters	Households %
Adelaide	30.4
Brisbane	1.3
Canberra	45.0
Darwin	0.2
Gladstone	1.3
Hobart	4.8
Launceston	7.7
Melbourne	59.3
Perth	39.8
Sydney	10.9
Overall	20.1

The methods of fluing gas heaters, for those households making use of them, are shown in Table 7.8. There is a predominance of the use of ducting with gas heating in Melbourne and Canberra. This is in comparison with the simpler fluing mainly used in Tasmania. Note: the numbers for the warmer cities of Darwin, Gladstone, and Brisbane represent only very small sample sizes and should be treated with caution.

Table 7.8: Fluing of gas heaters, by city

Fluing of gas heaters	Flue %	Chimney %	Ducted %	None %
Adelaide	57.7	9.5	16.8	8.0
Brisbane	-	-	75.0	25.0
Canberra	25.7	6.6	63.4	2.7
Darwin	-	100.0	-	-
Gladstone	-	50.0	-	-
Hobart	44.4	11.1	38.9	5.6
Launceston	40.6	12.5	21.9	25.0
Melbourne	25.2	7.1	61.3	4.2
Perth	23.6	7.4	20.3	40.5
Sydney	14.3	4.8	33.3	35.7

The results reported for the use of air conditioners, shown in Table 7.9 make no distinction between heating and cooling. The conclusion to be deduced from Darwin having the highest use of air conditioners is that it is for cooling purposes. There were relatively high rates of use in Tasmania, when compared with the overall rate of 14.7%, which may reflect the price of electricity in that state. There was also a relatively high rate of air conditioner use in Adelaide, which may result from installations for dual use for heating and cooling in that state.

Table 7.9: Use of air conditioners, by city

Use of air conditioners	Households %
Adelaide	18.6
Brisbane	4.8
Canberra	13.4
Darwin	36.9
Gladstone	7.8
Hobart	22.0
Launceston	16.9
Melbourne	8.0
Perth	9.1
Sydney	8.1
Overall	14.7

7.1.3 Time spent using heaters by type

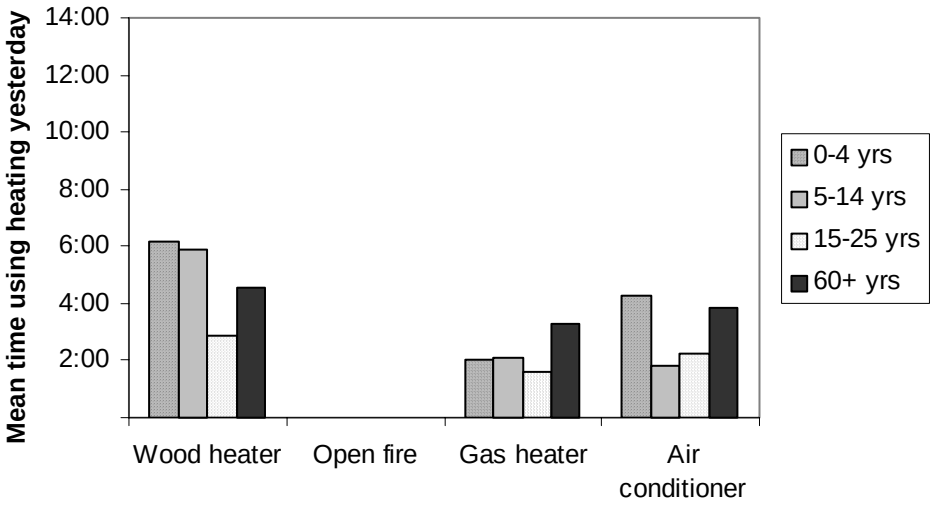
The time spent in the previous day using the various heating methods is shown for each city in Figure 7.1 to Figure 7.10. All graphs are scaled to the same number of hours to enable visual comparisons between cities. The results have been stratified by age groups however it should be noted that this is the age group of the respondents only and is not indicative of the ages present in the household. The summed results for age groups can be used to indicate the relative use of the types of heating.

The results show predictable patterns regarding the extent of use of heating, and the types of heating or cooling preferred for winter. The Tasmanian cities have the most extensive use of heating in winter. The mean number of hours that heating is in use in Hobart and Launceston exceeds that of every other city surveyed. The next most extensive use of heating was in cities at southerly latitudes on the mainland of Australia. Adelaide, Canberra, Melbourne, and Perth all had similar hours of heating use. Sydney displays the effects of a slightly milder climate than these centres by having less frequent use of heating. The warmer northerly centres of Brisbane, Darwin, and Gladstone had the least use of heating or cooling appliances.

The northern cities of Brisbane, Darwin, and Gladstone were also likely to use air conditioners for more time than any other form of home heating or cooling. In these centres there was little if any recorded use of wood or gas burning for home heating. Wood combustion heaters were used for relatively longer periods in Hobart than other centres, followed by slightly less use in Launceston, Adelaide, and Melbourne. Open fires were recorded for the longest periods of time in Hobart, Melbourne, and Perth. Gas heaters were used for the longest periods in Hobart and Melbourne.

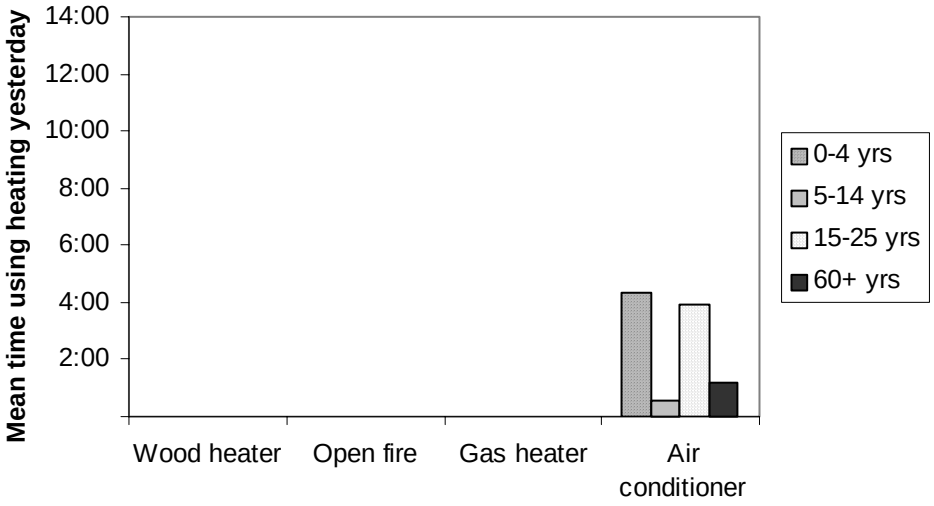
Figure 7.1 shows that for Adelaide in this winter sample there was use of heating for a mean of between 2 and 6 hours in the previous day.

Figure 7.1: Mean time spent using heaters, by type - Adelaide



In Brisbane, there was use of air conditioners for between 2 and 4 hours in the previous day but not wood or gas heating, as shown in Figure 7.2.

Figure 7.2: Mean time spent using heaters, by type - Brisbane



The mean length of time that heating was used in Canberra was approximately 4 hours in the previous day, as shown in Figure 7.3.

Figure 7.3: Mean time spent using heaters, by type - Canberra

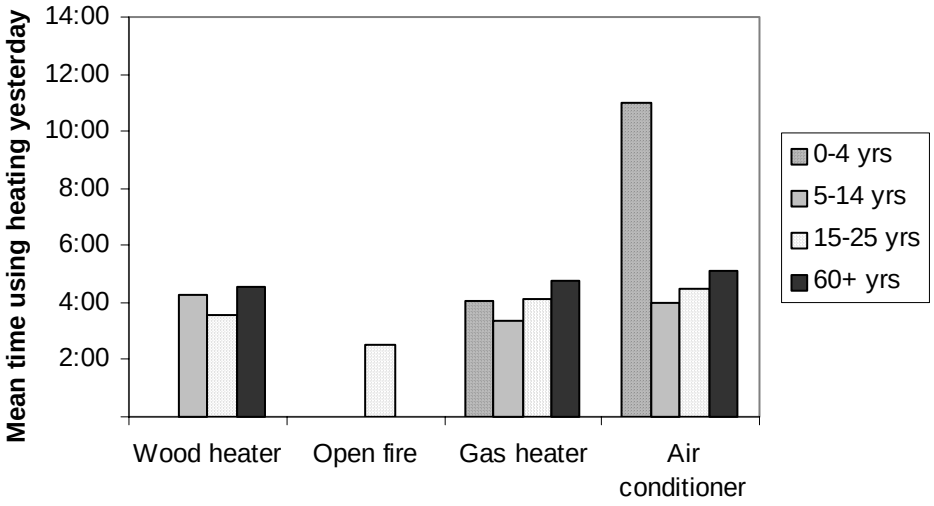
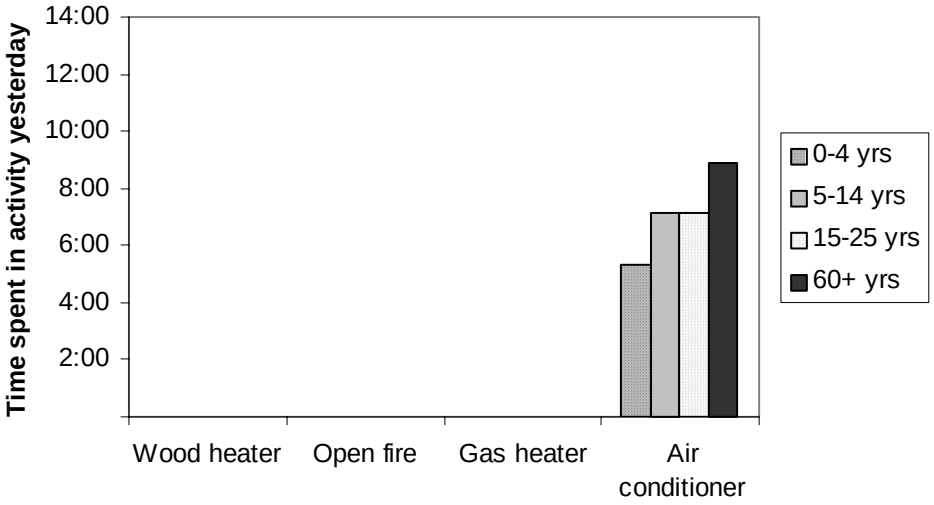


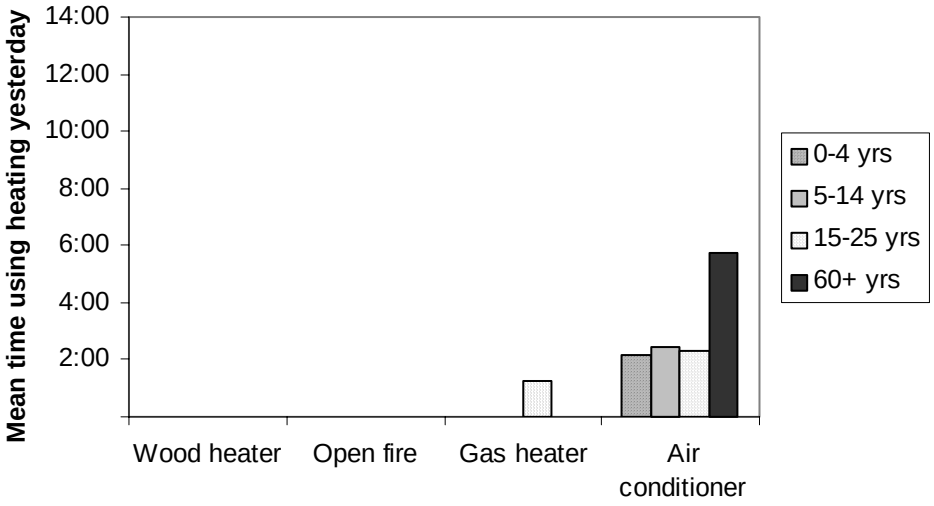
Figure 7.4 shows that the only form of heating and cooling for which time spent in use was recorded was air conditioners. These were in use for around 6 hours in the previous day.

Figure 7.4: Mean time spent using heaters, by type - Darwin



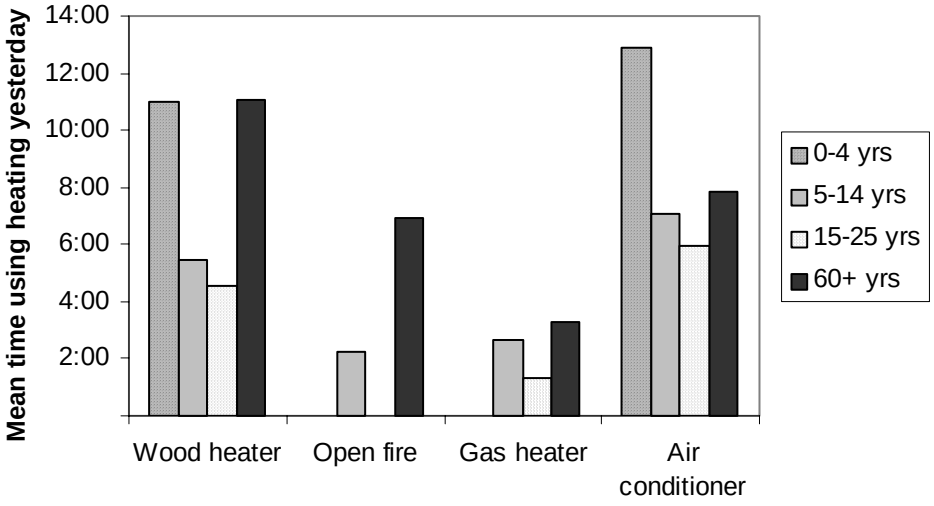
Use of air conditioners in Gladstone mirrored the pattern of Darwin, as shown in Figure 7.5, but the period of time using these means was less. This may reflect the milder temperatures in Gladstone compared with Darwin.

Figure 7.5: Mean time spent using heaters, by type - Gladstone



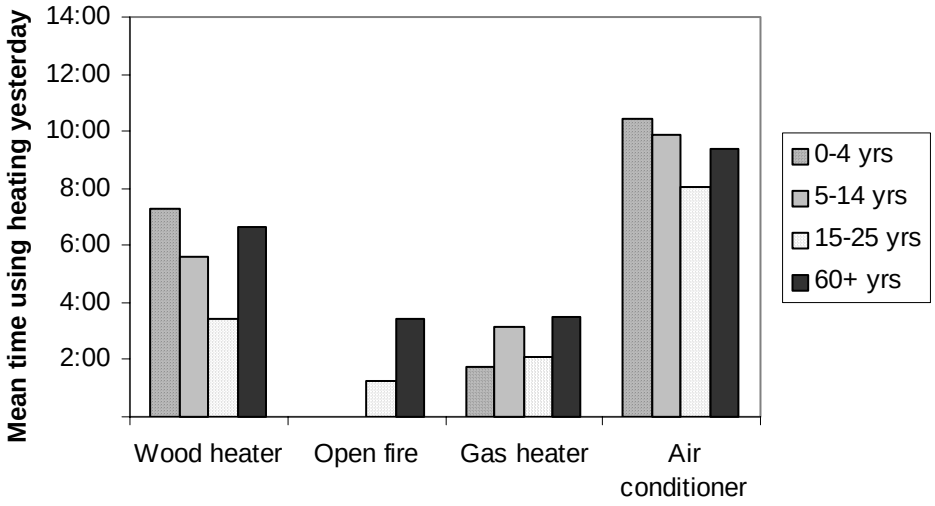
Hobart's cooler temperatures in winter compared with mainland Australia are reflected in the hours of use of heating in that city. Figure 7.6 shows that air conditioners and wood heaters were in use for longer in the previous day than in any of the other cities surveyed.

Figure 7.6: Mean time spent using heaters, by type - Hobart



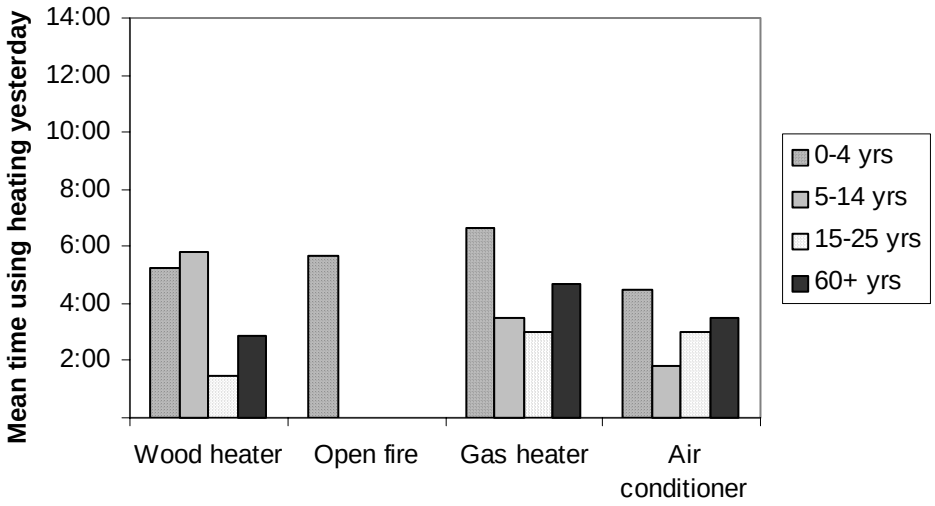
The pattern of heater use in Launceston, as shown in Figure 7.7, was for wood heaters to be in use for approximately 6 hours of the day, and air conditioners for 8 to 10 hours of the previous day.

Figure 7.7: Mean time spent using heaters, by type - Launceston



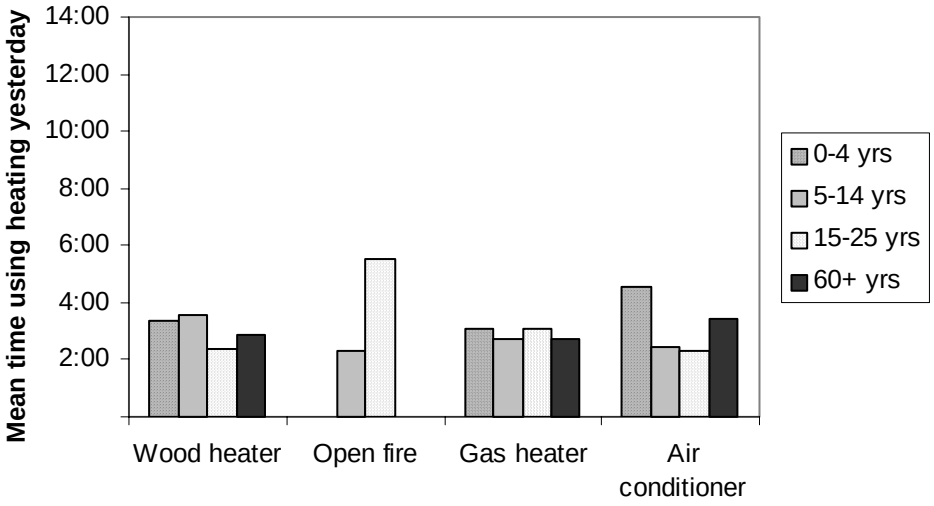
Melbourne's use of heaters was for a mean of generally between 2 and 6 hours on the previous day, as shown in Figure 7.8.

Figure 7.8: Mean time spent using heaters, by type - Melbourne



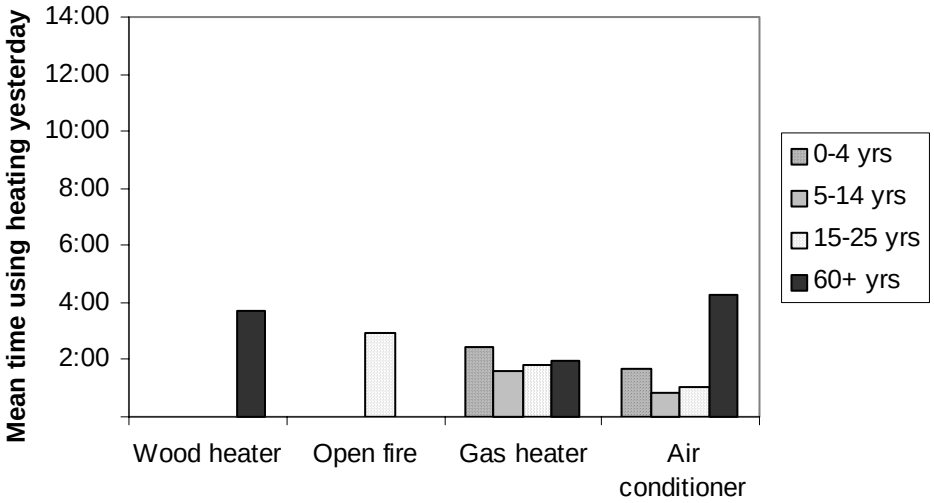
Perth's use of heaters was reported to be slightly less than for other Australian cities at a similar latitude. Reported use of heating was for a mean of between 2 and 4 hours on the previous day, as shown in Figure 7.9.

Figure 7.9: Mean time spent using heaters, by type - Perth



Heater use in Sydney was for a mean of approximately 2 hours on the previous day. This rate was the lowest of the cities in the southern states included in this survey (Figure 7.10).

Figure 7.10: Mean time spent using heaters, by type - Sydney



7.1.4 Use of cooking methods

The survey questionnaire included questions on the use of kitchen cooking appliances, specifically the use of gas and electric ovens and cook tops. The following sections show the proportions of households surveyed that use each of these cooking appliances, and then the mean time each was in use on the day previous to the survey. The analyses are stratified by cities, and age groups where appropriate.

Table 7.10 shows the proportion of household reporting ownership of an electric cook top. Electric cook top ownership was highest in Tasmania, with Launceston and Hobart having ownership rates exceeding 85%. Rates were lowest in Adelaide, Melbourne, and Perth where fewer than 40% of households reported having electric cook tops. The overall rate was 61.3%.

Table 7.10: Use of electric cook tops, by city

Use of electric cook tops	Households %
Adelaide	36.6
Brisbane	70.5
Canberra	63.3
Darwin	72.6
Gladstone	75.5
Hobart	90.0
Launceston	86.6
Melbourne	26.0
Perth	31.0
Sydney	61.8
Overall	61.3

In contrast with electric cook tops above, gas cook tops showed the reverse pattern. Gas was most common in Adelaide, Melbourne, and Perth, as shown in Table 7.11. The overall rate of gas cook top ownership was 35.2%.

Table 7.11: Use of gas cook tops, by city

Use of gas cook tops	Households %
Adelaide	58.3
Brisbane	24.0
Canberra	35.0
Darwin	23.7
Gladstone	19.5
Hobart	8.3
Launceston	10.0
Melbourne	71.8
Perth	66.3
Sydney	34.5
Overall	35.2

Electric oven ownership was high, at an overall rate of 75.6% of households. Table 7.12 shows that again Hobart and Launceston have the highest ownership of electric kitchen appliances. The lowest rates were in Adelaide and Melbourne.

Table 7.12: Use of electric ovens, by city

Use of electric ovens	Households %
Adelaide	53.0
Brisbane	80.5
Canberra	79.7
Darwin	83.3
Gladstone	83.0
Hobart	94.3
Launceston	90.0
Melbourne	56.5
Perth	65.2
Sydney	72.2
Overall	75.6

Gas ovens were in highest use in Adelaide and Melbourne, with both exceeding 40% of households. Fewer than 10% of Tasmanian households had gas ovens. The overall rate, as shown in Table 7.13, was 22.6%.

Table 7.13: Use of gas ovens, by city

Use of gas ovens	Households %
Adelaide	45.2
Brisbane	17.5
Canberra	18.8
Darwin	13.7
Gladstone	15.0
Hobart	4.5
Launceston	7.5
Melbourne	43.0
Perth	31.8
Sydney	26.5
Overall	22.6

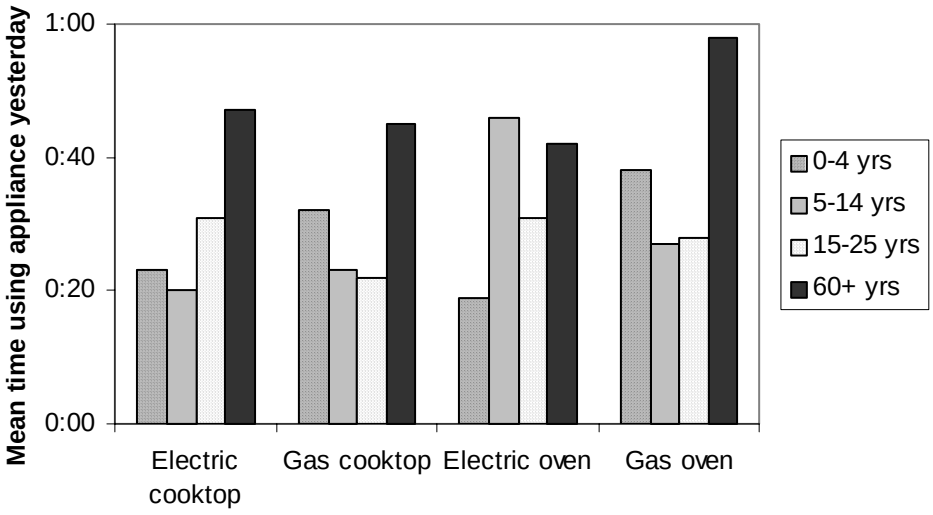
7.1.5 Time spent using cooking methods by type

The contrasts in the types of ovens and cook tops between Australian cities displayed in Section 7.1.4 does not follow through to the reported amount of time these appliances were used in the day prior to the survey. In general, the mean length of time spent using a cooking appliance varied between 20 and 40 minutes irrespective of the city. The results are explained along with the city graphs shown at Figure 7.11 to Figure 7.20.

In most cities there appeared to be greater time on average spent using cooking appliances in households where the respondent was aged 60 years and over than in other households.

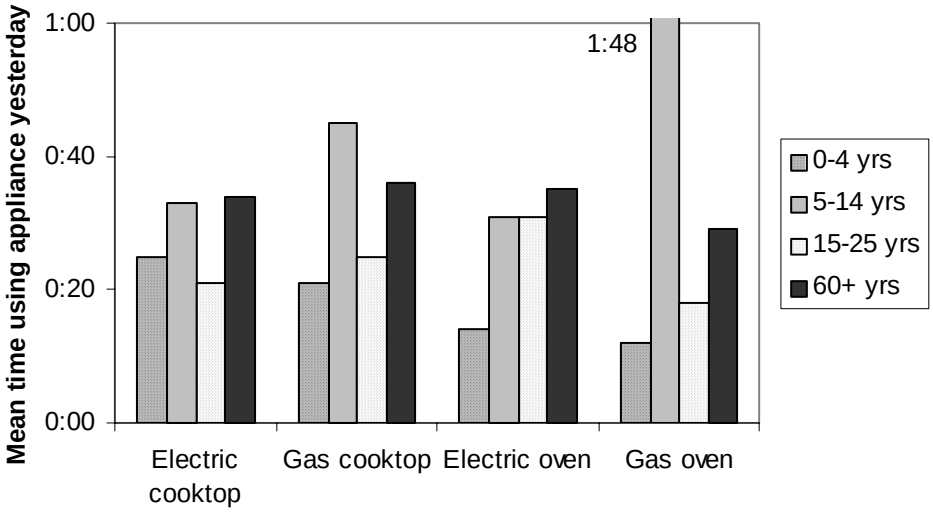
Mean time spent using cooking appliances in Adelaide did not appear to differ much between types of appliance. Gas appliances, although more common in Adelaide than electric appliances, were not used for greater time, as shown in Figure 7.11.

Figure 7.11: Time spent using cooking methods, by type - Adelaide



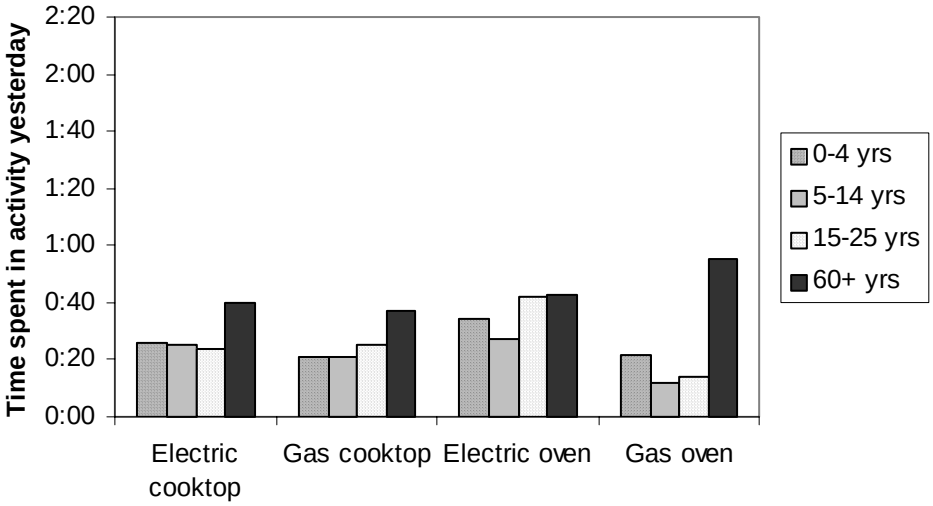
The use of cooking appliances in Brisbane shows a pattern consistent with other cities (Figure 7.12), with the exception of a peak in the use of gas ovens in households where the respondent was aged 5 to 14 years. As only 17.5% of households in Brisbane own a gas oven (Table 7.13), and this proportion is further stratified by four age groups, this anomaly can best be explained as the result of a small sample size and should be treated with caution.

Figure 7.12: Time spent using cooking methods, by type - Brisbane



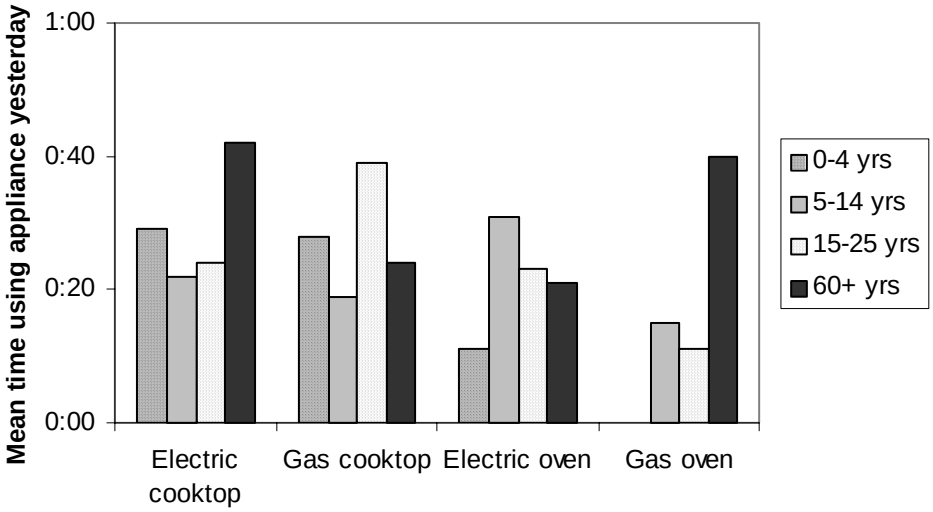
The use of cooking appliances in Canberra, shown in Figure 7.13, shows that the mean time each type was in use varied in general between 20 and 40 minutes in the previous day.

Figure 7.13: Time spent using cooking methods, by type - Canberra



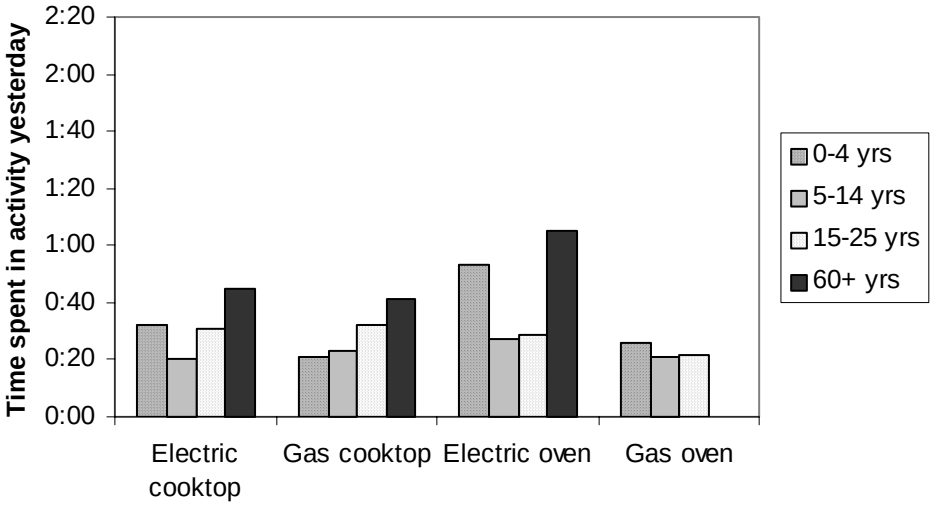
In Darwin the mean times spent using any of the cooking appliance types ranged up to a maximum of around 40 minutes (Figure 7.14).

Figure 7.14: Time spent using cooking methods, by type - Darwin



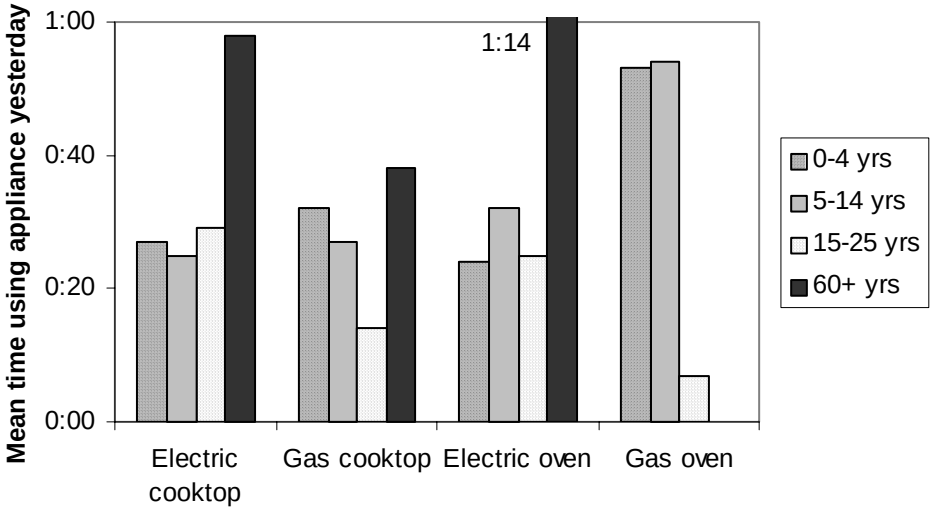
Mean times using a cooking appliance in Gladstone ranged from 20 minutes up to an hour (Figure 7.15).

Figure 7.15: Time spent using cooking methods, by type - Gladstone



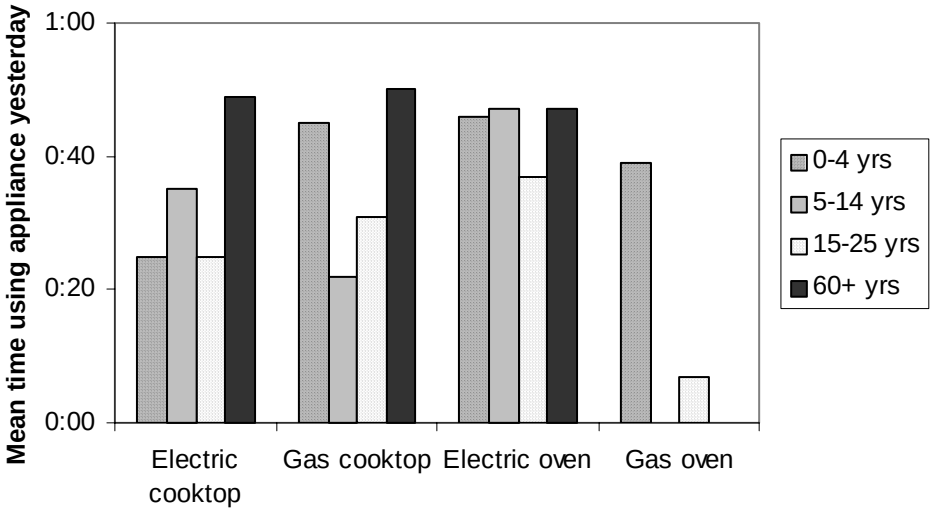
The older age group in the survey from Hobart, aged 60 years or over, were predominantly greater users of cooking appliances than other households. Figure 7.16 shows that the mean times for electric appliances for this age group ranged up to approximately an hour and a quarter.

Figure 7.16: Time spent using cooking methods, by type - Hobart



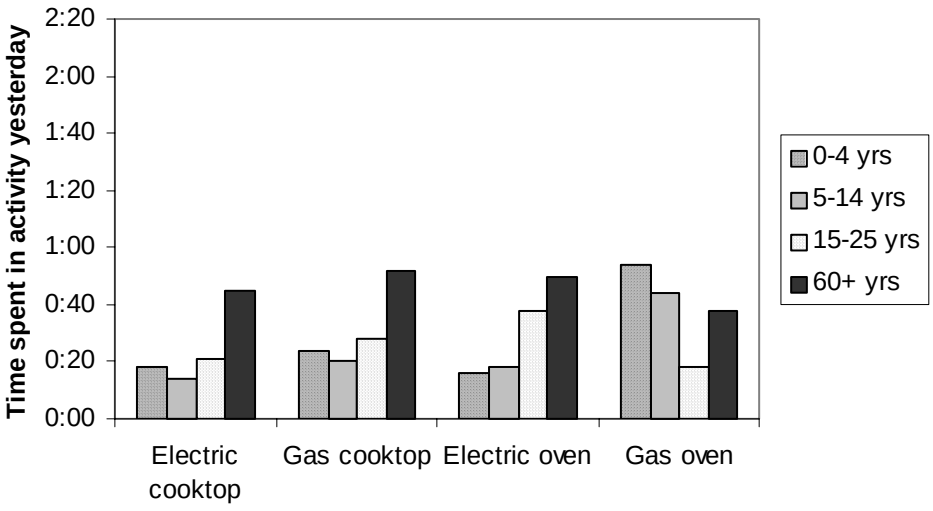
A similar pattern in the use of electric appliances by the 60 years and over age group in Hobart above was revealed by the results for Launceston shown in Figure 7.17.

Figure 7.17: Time spent using cooking methods, by type - Launceston



In Melbourne, households where the respondent was aged 60 years or over were high users of cooking appliances (Figure 7.18).

Figure 7.18: Time spent using cooking methods, by type - Melbourne



Figures for use of cooking appliances in Perth show a similar pattern to other cities (Figure 7.19).

Figure 7.19: Time spent using cooking methods, by type - Perth

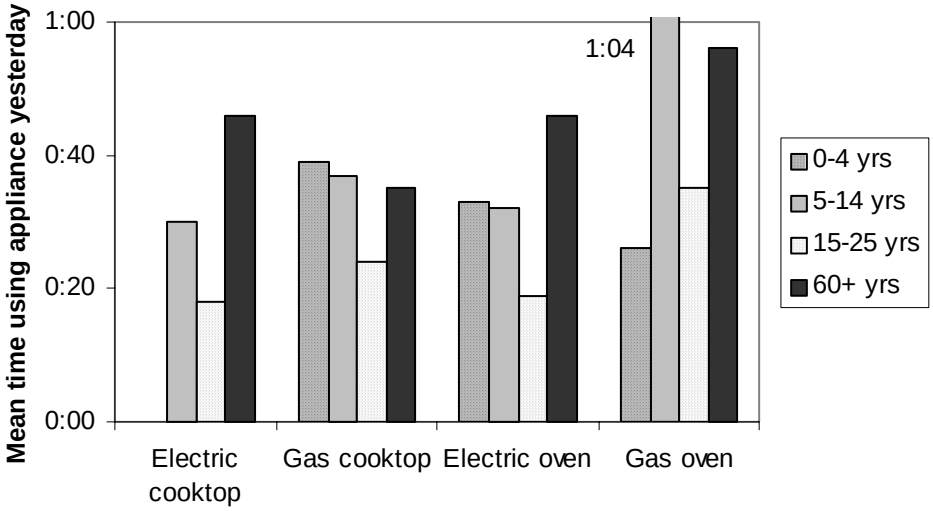
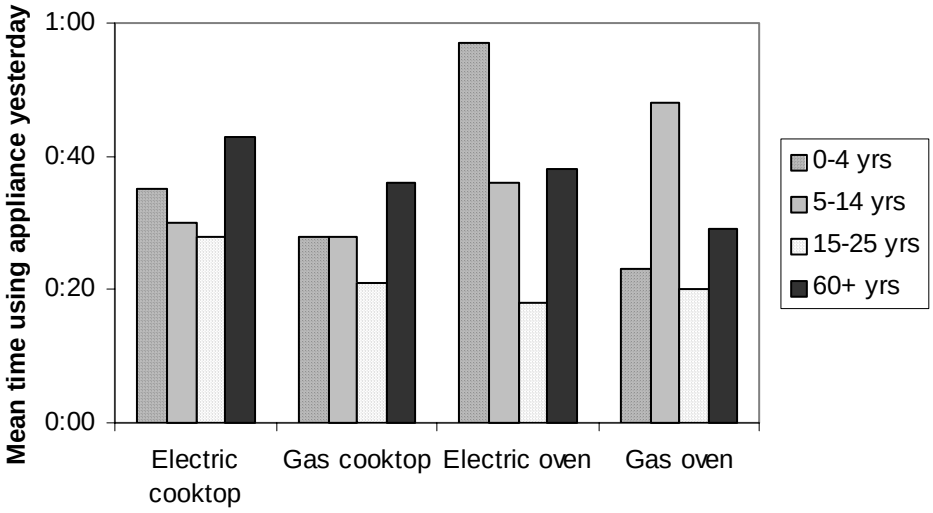


Figure 7.20 shows the mean times using electric and gas cooking appliances for Sydney. Mean times generally ranged between 20 and 40 minutes in the previous day.

Figure 7.20: Time spent using cooking methods, by type - Sydney



7.1.6 Use of volatile chemicals

This section presents the results from questions in the survey about the use of household products that may possibly release solvent or other fumes. These household products include volatile chemicals that passively enter the atmosphere, or that are expressed in the air by being sprayed. These chemicals are broadly grouped into glues, nail polish or removers, household cleaning sprays, household cleaning liquids other than dishwashing liquid, and paints.

The proportions of households using these chemicals in the day prior to the survey, or week prior in the case of paints, are shown in Table 7.14 to Table 7.18. These proportions are presented separately for each city surveyed. Following these tables are graphs presenting the mean amount of time spent using these chemicals, for each city.

The use of glue is shown in Table 7.14. The overall rate of use of glue in the previous day was 9.0% of households. Rates in surveyed cities were generally close to this figure.

Table 7.14: Use of glue, by city

Use of glue yesterday	Households %
Adelaide	8.9
Brisbane	8.8
Canberra	12.0
Darwin	8.5
Gladstone	12.0
Hobart	5.0
Launceston	7.2
Melbourne	7.5
Perth	10.7
Sydney	9.6
Overall	9.0

Nail polish or remover use was reported in 4.1% of households overall, as shown in Table 7.15. Rates for cities did not differ substantially from this.

Table 7.15: Use of nail polish or removers, by city

Use of nail polish or removers yesterday	Households %
Adelaide	4.9
Brisbane	4.0
Canberra	3.4
Darwin	3.7
Gladstone	4.0
Hobart	4.5
Launceston	4.2
Melbourne	3.5
Perth	5.1
Sydney	3.9
Overall	4.1

The use of household cleaning sprays in the previous day was fairly consistent between cities, as shown in Table 7.16. The overall rate was 9.3% of households reporting use of household cleaning sprays.

Table 7.16: Use of household cleaning sprays, by city

Use of household cleaning sprays yesterday	Households %
Adelaide	9.3
Brisbane	9.5
Canberra	11.2
Darwin	10.7
Gladstone	9.8
Hobart	7.8
Launceston	7.7
Melbourne	7.8
Perth	10.2
Sydney	8.8
Overall	9.3

Overall reported use of household cleaning liquids, other than dishwashing liquid, was 7.4% of households. Table 7.17 shows the rate of use for these chemicals ranged between 4.2% and 10.0% of households.

Table 7.17: Use of household cleaning liquids, by city

Use of household cleaning liquids yesterday	Households %
Adelaide	10.0
Brisbane	7.5
Canberra	7.3
Darwin	10.0
Gladstone	7.3
Hobart	7.0
Launceston	4.2
Melbourne	5.0
Perth	8.8
Sydney	7.0
Overall	7.4

The survey questions asking about the use of paints, stains, and varnishes differed from the previous categories of chemicals by asking about use at any time in the week prior to the survey. The other chemicals were asked of only if used in the previous day. Table 7.18 shows that 17.8% of households used these paints sometime in the previous week. There was variation between cities in the rate of use of paints, however the range of values was from 13.5% and 20.9% that indicates little substantial difference.

Table 7.18: Use of paints, stains and varnishes in last week, by city

Use of paints, stains and varnishes in last week	Households %
Adelaide	14.9
Brisbane	15.5
Canberra	20.8
Darwin	18.2
Gladstone	19.8
Hobart	16.8
Launceston	18.4
Melbourne	13.5
Perth	20.9
Sydney	19.5
Overall	17.8

7.1.7 Time spent using volatile chemicals, by type

The overall proportions of the sample that indicated the use of the following volatile chemicals were less than 10%. The usage times of these chemicals therefore come from very small numbers and would be expected to be quite variable as a result. The following graphs (Figure 7.21 to Figure 7.30) should therefore be treated with caution. It is difficult to draw firm conclusions from these graphs, however the patterns that are apparent will be briefly described.

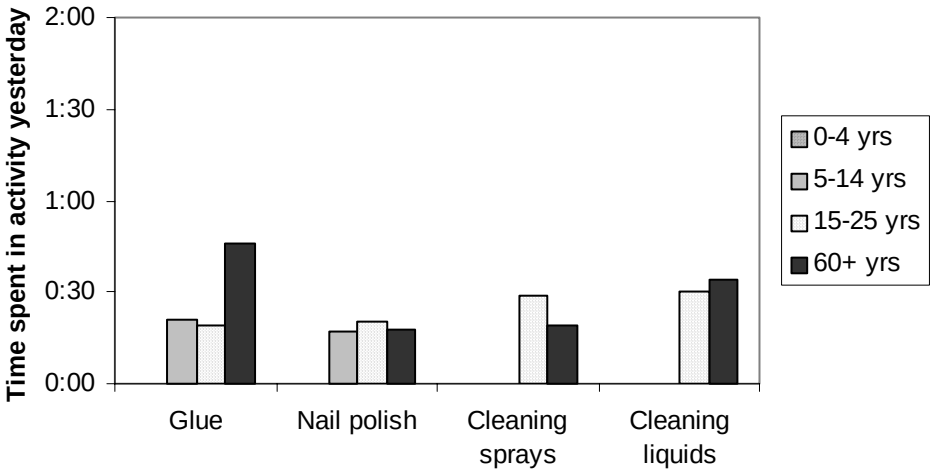
In general, mean times for use of volatile chemicals are less than 30 minutes in the previous day. In particular, nail polish or remover use appears to be in brief episodes of less than 30 minutes, whereas cleaning sprays and liquids are used for slightly longer periods. Glue use shows greater variation, which may indicate the wider range of activities that may be encompassed by use of this chemical.

Note should made of the extreme values for Gladstone that are incongruous with the other cities. Other sections of the survey have shown similarly discrepant findings for Gladstone. The reasons for such differences are not immediately obvious. The sample size for Gladstone was similar to that for the other cities, so the explanation of sampling variance does not hold. More investigation may need to take place to establish why Gladstone shows to have an individual character.

The time spent in the use of paints is presented at the end of this section.

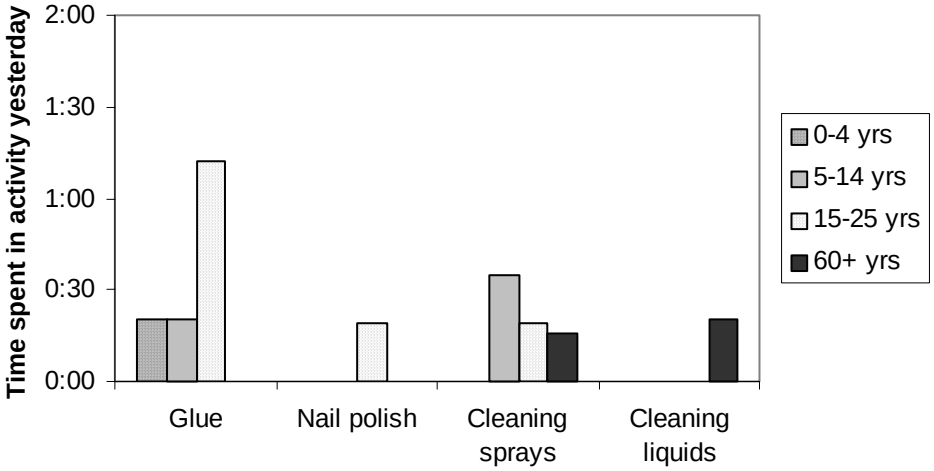
The results for Adelaide (Figure 7.21) show moderate use of volatile chemicals of generally less than 30 minutes in the previous day. There was some more extensive use of glue in the 60 years and over age group.

Figure 7.21: Time spent using volatile chemicals, by type - Adelaide



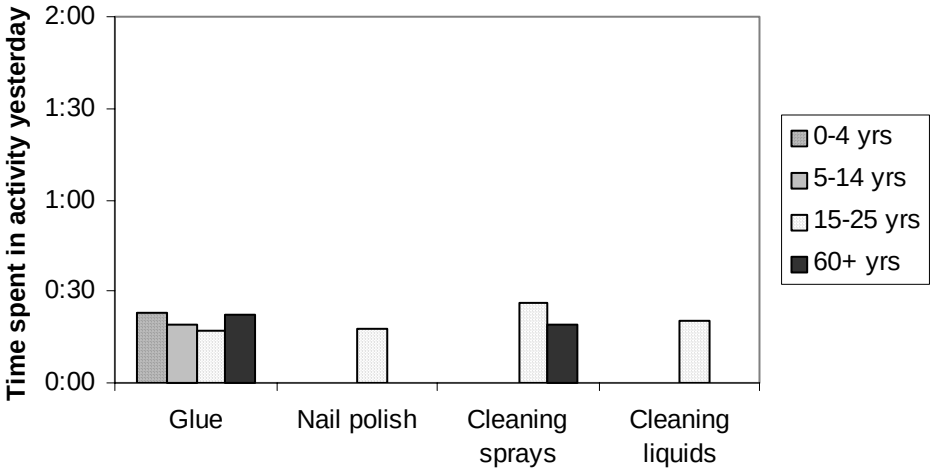
Mean times for volatile chemical use in Brisbane, shown in Figure 7.22, are generally in the order for other centres, apart from one report of use of glue for nearly six hours that substantially increased the mean time for that age group.

Figure 7.22: Time spent using volatile chemicals, by type - Brisbane



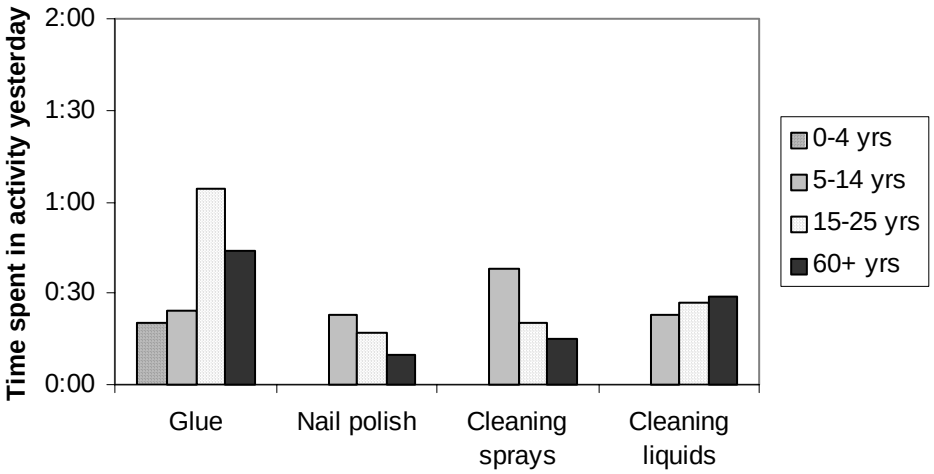
Use of volatile chemicals in Canberra was reported at levels of less than 30 minutes on the previous day, on average. These results are shown in Figure 7.23.

Figure 7.23: Time spent using volatile chemicals, by type - Canberra



Some use of glue and cleaning sprays in Darwin (Figure 7.24) was greater than that for most other centres.

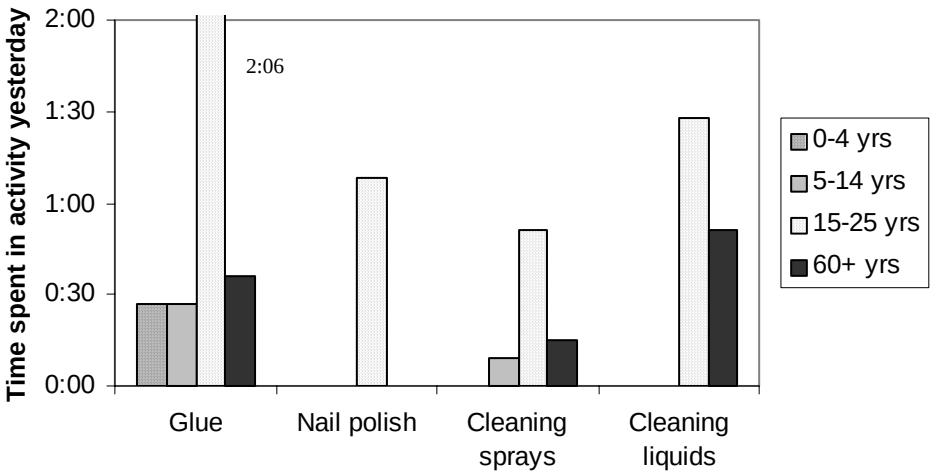
Figure 7.24: Time spent using volatile chemicals, by type - Darwin



Patterns of use of volatile chemicals in Gladstone (Figure 7.25) were quite atypical. This applies mainly to the 15 to 25 years age group. These mean times were inexplicably high in relation to those found across other surveyed cities in Australia. The small sample who reported time using these chemicals can go part way to explaining the variance, but the consistency of results from the other cities suggests

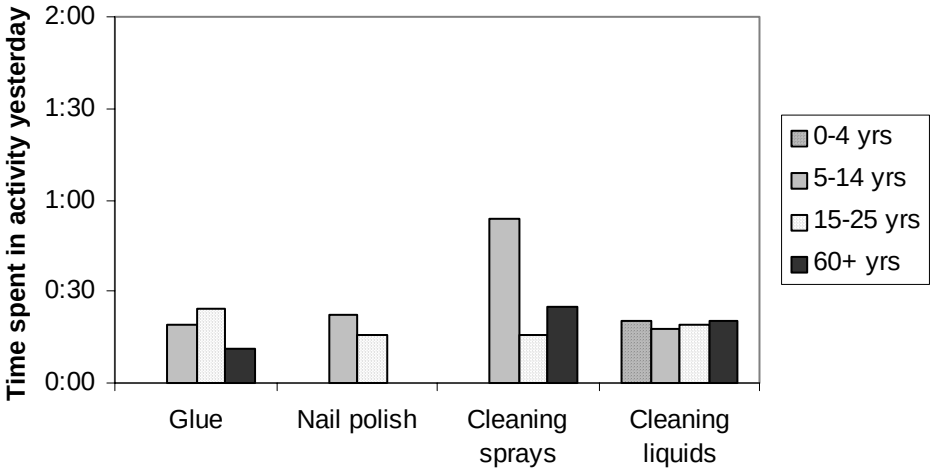
that there is a unique feature of the Gladstone results that has not been detected in the survey.

Figure 7.25: Time spent using volatile chemicals, by type - Gladstone



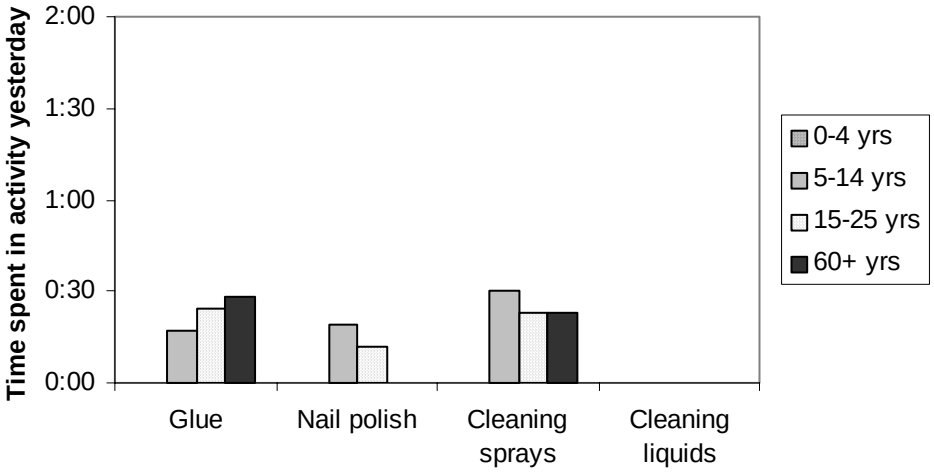
There was a slight elevation in the reported time using cleaning sprays in Hobart, shown in Figure 7.26.

Figure 7.26: Time spent using volatile chemicals, by type - Hobart



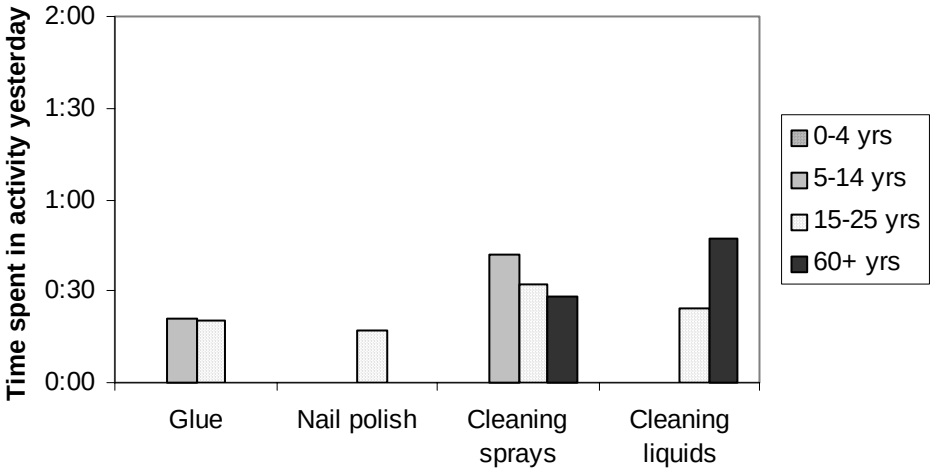
Results for use of volatile chemicals in Launceston (Figure 7.27) show levels of 30 minutes in the previous day on average. This is consistent with findings in most of the surveyed cities.

Figure 7.27: Time spent using volatile chemicals, by type - Launceston



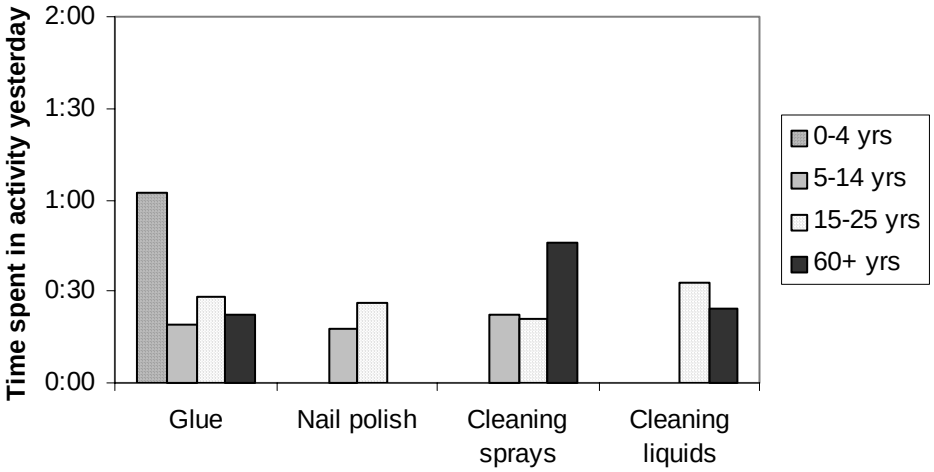
Cleaning products were reported used for slightly higher periods of time in Melbourne, whereas glue and nail polish were less than for other centres (Figure 7.28).

Figure 7.28: Time spent using volatile chemicals, by type - Melbourne



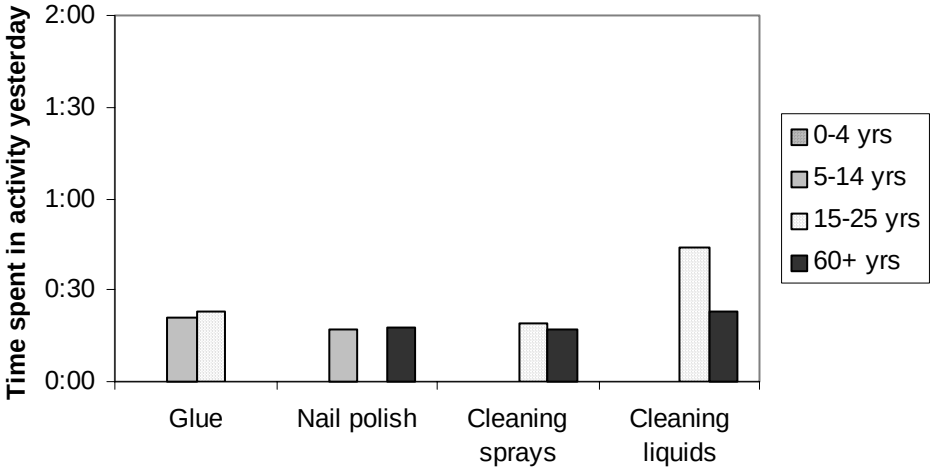
Perth generally showed results consistent with the other cities (Figure 7.29), except for peaks in use for glue and cleaning sprays. These products were variable in their results and such peaks should therefore not be taken as significant.

Figure 7.29: Time spent using volatile chemicals, by type - Perth



The results for Sydney, shown in Figure 7.30, are lower than for other cities, being mainly for a mean of less than 30 minutes in the previous day.

Figure 7.30: Time spent using volatile chemicals, by type - Sydney



The time spent in the use of paints was recorded for the previous week, not the previous day as presented for the other volatile chemicals above. As a result there was a large range of values recorded. Respondents reported this time in days, hours, and/or minutes. These data were recoded into hours or part thereof.

The values ranged from 1 hour to 168 hours in the previous week. Nearly 70% of responses were for 1 hour only, making the data highly skewed. The median value was therefore considered to be the best measure for reporting, however when this analysis was conducted for each of the surveyed cities the median was found to be 1 hour. In consequence, it is not meaningful to present these data in tabular or graphical form.

The conclusion to be drawn from the data on time spent in the last week painting is that there was no detectable difference between the surveyed cities in the time spent in this activity.

7.1.8 Bedroom or main living area painted, varnished or had timber floors treated in past month

Questions were included in the survey to cover other common sources of smells, odours, fumes, or vapours that could be the source of irritation or ill health in the household. The data presented in Table 7.19 are for the proportion of households who reported that either bedrooms or the main living room had been painted in the previous month. These data differ from those on the use of paint by the respondent, shown in Table 7.18, in that the paint may have been applied when the respondent was not present.

The data in Table 7.19 show that the overall reported rate of painting of these rooms was 5.7% of households in the previous month. The rates for individual cities varied little from this overall rate, indicating no exceptional differences between cities.

Table 7.19: Bedroom or main living area painted, by city

Bedroom or main living area painted in previous month	Households %
Adelaide	3.5
Brisbane	4.8
Canberra	6.1
Darwin	3.2
Gladstone	6.3
Hobart	6.3
Launceston	8.2
Melbourne	6.5
Perth	7.0
Sydney	5.5
Overall	5.7

7.1.9 Bedroom or main living area had new carpet in past month

New carpet installations were a matter of interest in this survey. The proportions of households that had new carpet installed in either bedrooms or the main living area in the last month are shown in Table 7.20. Overall, just less than 2% of households had new carpet in these areas. There was some variation between cities in this rate. Rates were less than 1% in both Melbourne and Sydney. This was contrasted with considerably higher rates in Brisbane and Hobart. There was no immediate explanation for the differences between these cities, but further information on new building and renovation rates in these cities may offer a solution.

Table 7.20: Bedroom or main living area had new carpet, by city

Bedroom or main living area had new carpet in previous month	Households %
Adelaide	1.3
Brisbane	3.8
Canberra	1.7
Darwin	1.0
Gladstone	1.2
Hobart	4.0
Launceston	2.5
Melbourne	0.5
Perth	1.9
Sydney	0.8
Overall	1.9

7.1.10 Windows or doors left open in house yesterday

Respondents were asked if windows or doors in the house had been left open at any time on the previous day. The results are shown in Table 7.21. Overall, a high proportion (83.8%) of households opened their house in this way on the day previous to the survey. There was a higher proportion in those cities with warmer climates i.e. Darwin, Brisbane, and Gladstone. In these centres greater than 90% of households opened windows and doors. A lower proportion opened windows and doors in the colder cities of Canberra, Melbourne, and Launceston, however Hobart showed a rate that was not substantially different from the overall rate.

Table 7.21: Windows or doors left open in house, by city

Windows or doors left open yesterday	Households %
Adelaide	80.3
Brisbane	91.8
Canberra	79.7
Darwin	94.3
Gladstone	93.8
Hobart	81.8
Launceston	76.1
Melbourne	71.8
Perth	80.7
Sydney	88.1
Overall	83.8

7.1.11 Bothered by smoke from wood fires

A question in the survey asked about whether the respondent had, in the last week, been bothered by smoke from wood fires. There was no specific mention made of the type of wood fire that caused the smoke, however these data are compared with the data on the use of wood burning for home heating previously presented in Section 7.1.2. The relevant data on the use of wood combustion heaters appears in Table 7.5 on that page.

The results on being bothered by smoke from wood fires are shown in Table 7.22, stratified by city. The overall rate of being bothered by smoke was 8.8% of respondents. It was to be expected that there would be higher rates of this in Hobart and Launceston because of the greater use of wood combustion heaters, shown in Table 7.5. The rates for these cities are indeed higher than the overall rate, suggesting that the use of wood combustion heaters in those cities could well lead to more reports of being bothered by wood smoke.

The rate, however, for Sydney is little different from the Tasmanian cities, and the reported rate in Darwin is substantially greater than for any other city. This suggests that there may be multiple sources of wood smoke, such as bush fires or outdoor burning of wood for heating or cooking in warmer climates at this time of year, that are the cause of the reported disturbance.

Table 7.22: Bothered by smoke from wood fires, by city

Smoke from wood fires	Households %
Adelaide	5.8
Brisbane	4.5
Canberra	5.9
Darwin	16.2
Gladstone	8.3
Hobart	11.5
Launceston	10.7
Melbourne	7.5
Perth	8.0
Sydney	10.6
Overall	8.8

7.1.12 Mould growing on inside walls

Reports of mould growing on inside walls of the respondent's house are shown in Table 7.23. Overall, 17% of households reported mould growing on inside walls. There appears to be a cline of mould growth with warmer tropical areas experiencing more mould than cooler temperate areas. Darwin reported the highest rate of mould on inside walls, and Hobart and Launceston the lowest rate.

Table 7.23: Mould growing on inside walls, by city

Mould grows on inside walls	Households %
Adelaide	14.4
Brisbane	15.5
Canberra	16.1
Darwin	32.9
Gladstone	20.3
Hobart	8.5
Launceston	13.2
Melbourne	13.3
Perth	17.4
Sydney	19.2
Overall	17.0

Those households reporting mould on inside walls were further asked in which rooms this mould occurred. These results are shown in Table 7.24. The room most reported to have mould was the bathroom, with 76% of homes with mould having it growing in this room. The only other room to have substantial reports of mould was the bedroom.

Table 7.24: Rooms with mould on walls, by type of room

Rooms with mould on walls	Households
	%
Bathroom	76.0
Bedroom	33.4
Toilet	12.6
Living room	11.9
Dining room	9.3
Kitchen	8.9
Other	9.9

7.1.13 Nature of dwelling

The survey asked two questions about the dwelling in which the respondent lived. The questions concerned the type of dwelling it was, and the nature of its construction. These results are shown in Table 7.25 and Table 7.26.

The majority of respondents (87.1%) reported living in a detached house (Table 7.25).

Table 7.25: Nature of dwelling

Nature of dwelling	Households %
Detached house	87.1
Attached house	6.0
Flat or apartment	5.8
Mobile home	0.2
Other	0.9
Total	100.0

The main building material of dwellings was reported to be brick, with nearly 70% of respondents living in a brick house (Table 7.26).

Table 7.26: Building material used for dwelling

Building material	Households %
Brick	69.7
Timber	16.8
Concrete	4.6
Plywood	1.6
Other	6.8
Don't know	0.4
Total	100.0

7.1.14 Direct access to house from under-roof garage

Respondents were asked further about the house in which they live, in particular whether there was direct access from an under-roof garage into the house. The results are presented in Table 7.27.

Overall, 28.5% of household have such a garage connected to the house. This rate is substantially higher in Queensland, with over 40% of respondents in Brisbane and Gladstone reporting access to the house from an under-roof garage.

Table 7.27: Direct access to house from under-roof garage, by city

Direct access to house from under-roof garage	Households %
Adelaide	22.6
Brisbane	46.9
Canberra	16.6
Darwin	32.7
Gladstone	42.5
Hobart	19.0
Launceston	23.6
Melbourne	22.9
Perth	28.9
Sydney	30.6
Overall	28.5

7.1.15 Live within 100m of a busy 4-lane road or highway

The effects of traffic fumes and noise were assessed by measuring the proportions of households in each city that live within 100m of a busy 4-lane road or highway. As expected, the smaller centres that are not capital cities were lower than the overall figure of 24.3% of households. Canberra was also low at 16.1%. The highest rates of living near a busy road or highway were in Adelaide, Melbourne and Sydney, which were all at around 29% of households.

Table 7.28: Live close to highway, by city

Live close to highway	Households %
Adelaide	29.0
Brisbane	28.1
Canberra	16.1
Darwin	26.8
Gladstone	18.5
Hobart	20.8
Launceston	19.2
Melbourne	29.0
Perth	26.2
Sydney	29.1
Overall	24.3

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3. Cole T, Bellizzi M, Flegal K, Dietz W (2000): Establishing A Standard Definition For Child Overweight And Obesity Worldwide: International Survey. *British Medical Journal*, 320: 1-6.

4. *Risk Factor Prevalence Study*: Survey no 3 (1989). National Heart Foundation of Australia

5. AIHW (2002): *2001 National Drug Household Survey: detailed results.* AIHW Catalogue number PHE 41. Canberra: AIHW (Drug Statistics Series No. 11).

APPENDIX 1: LETTER OF INVITATION

EPHC
Environment Protection and Heritage Council

Incorporating
NEPC
National Environment Protection Council

NEPC Service Corporation
Level 5, 81 Flinders Street
Adelaide SA 5000

Telephone 08 8419 1200
Facsimile 08 8224 0912

Eec@ephc.gov.au
www.ephc.gov.au

12 August 2002

Dear Householder

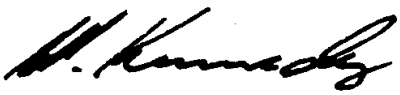
I am writing to seek your assistance in an important general health and well-being survey in relation to environmental issues being conducted by the Environmental Protection and Heritage Council. The Council, together with the National Environment Protection Council, is responsible for developing air quality standards for the protection of health in Australia.

The Council has contracted the Centre for Population Studies in Epidemiology at the South Australian Department of Human Services, to conduct this survey.

Should you be able to assist us, one of our interviewers will be contacting you in the next couple of weeks to conduct a telephone interview. This interview will take approximately 10 to 15 minutes. **All information collected will be confidential**. This research aims to bring benefits to the community by increasing our understanding of community health and the extent of any concerns and about environmental health issues.

If you have any queries about the survey or if you do not wish to participate, please contact Anne Taylor, Programme Co-ordinator on **1800 635 352**.

Yours faithfully



Dr B.P. Kennedy
Executive Officer

APPENDIX 2: QUESTIONNAIRE

NATIONAL ENVIRONMENTAL SURVEY August 2002

TIME OF SURVEY

DEM1 Enter Year

(Single Response. Enter 9999 if not stated)

1. *Enter Year* _ _ _ _

DEM2 Enter month

(Single Response)

1.	January	[ ]
2.	February	[ ]
3.	March	[ ]
4.	April	[ ]
5.	May	[ ]
6.	June	[ ]
7.	July	[ ]
8.	August	[ ]
9.	September	[ ]
10.	October	[ ]
11.	November	[ ]
12.	December	[ ]
13.	Not stated	[ ]

DEM3 Enter day of the week

(Single Response)

1.	Monday	[ ]
2.	Tuesday	[ ]
3.	Wednesday	[ ]
4.	Thursday	[ ]
5.	Friday	[ ]
6.	Saturday	[ ]
7.	Sunday	[ ]
8.	Not stated	[ ]

DEM4 Enter date

(Single Response)

1.	Enter Date	___
2.	Not stated	[ ]

INTRODUCTION

Good ..... My name is ..... calling on behalf of the National Environment Protection Council, a government body involved with health and the environment. We are conducting a survey about the health of Australians.

Intro 1: Receiving the letter

A.1 We recently sent you a letter telling you about the survey. Did you receive the letter?

(Single Response)

1.	Yes	[ ]
2.	No	[ ]
3.	Don't know	[ ]

Intro 2: Selection

A.2 How many people <u>25 years of age or less</u> live in the household (including children)?

(Single Response. Enter 999 if not stated. Enter number)

1.	*Enter number*	[ ]
2.	None	[ ]
3.	Don’t know	[ ]

Sequence guide:
If QA.2= 1, Go to Section B.
If QA.2 = 2, 3 Go to QA.3

A.3 How many people aged 60 years and over live in the household?

(Single Response. Enter 999 if not stated. Enter number)

1. *Enter number* [ ]
2. None [ ]
3. Don't know [ ]

Sequence guide:
If QA.3= 1, Go to Intro 3
If QA.3 = 2, 3 Go to TERMINATE

B. SELECTION OF RESPONDENT (DEMOGRAPHICS)

Could you please tell me the age of the person in the household who was the last to have a birthday in this age groups [<=25 or >60 years**. This includes children living in the household.]**

B.1 Age of respondent

(Single Response. Enter 9999 if not stated.)

1. *Enter years* [ ]
2. *Enter months* [ ]
3. *Enter weeks* [ ]
4. Not stated [9999]

Sequence guide:
If QB.1 = 4 Go to QB.2

Sequence guide:
If Age ≥16 years, Go to QB.3
If Aged <16 years, Go to QB.4

B.2 Which age group [are you / is the person who was last to have a birthday] in? Would it be

(Read Options. Single Response.)

1. **0 to 2** [ ]
2. **3 to 4** [ ]
3. **5 to 14** [ ]
4. **15 to 25** [ ]
5. **60+** [ ]
6. Not stated [ ]

Sequence guide:
If QB.2 = 6 Go to TERMINATE

Sequence guide:
If Age ≥16 years, Go to QB.3
If Age <16 years, Go to QB.4

B.3 Are you that person in the household who was last to have a birthday?

Interviewer select the appropriate type:

1. Yes - speaking [ ]
2. No - somebody else [ ]
3. Refusal [ ]

Enter reasons _____

Sequence guide:
If QB.3 = 1, Go to Section D
If QB.3 = 2, repeat Intro 1, 2 & 3, clarify age, then Go to Section D

B.4 Are you the most appropriate person to answer questions on their behalf?

(Single Response.)

1. Yes [ ]
2. No [ ]

Sequence guide:
If QB.4 = 1 Go to QB.5
If QB.4= 2 Either: a) Get the person & repeat Introduction, clarify age, Go to QB.5
b) Make an appointment to call back later (within 24 hours)

B.5 Because we are going to ask questions about this child, could you please tell me this child's first name so that we can use this during the interview?

(Single Response.)

1. *Yes,* [ ]
   *Enter name :*_____
2. Refused [ ]

B.6 Could you please tell me your relationship to [child's name]?

(Single Response.)

1. **Mother** [ ]
2. **Father** [ ]
3. **Step Mother** [ ]
4. **Step Father** [ ]
5. **Other relative** [ ]
6. Other [ ]

*Specify*_____

C. TERMINATE

The questions that we will be asking only concern people of particular age groups. You have indicated that there are no people of these age groups in your household. Thank you very much for your time.

D. HEALTH CONDITIONS

Intro 3: Confidentiality and assurance

I can assure you that information given will remain confidential. The answers from all people interviewed will be gathered together and presented in a report. No individual answers will be passed on.

Sequence guide:

If AGE <= 2 Go to NS

D.1 [Have you / has child's name] ever been told by a doctor that [you have / he has / she has] asthma?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

Sequence guide:

If QD.1= 2 Go to QD.3

If AGE < 16 Go to QD.3

D.2 [Do you / does child's name] still have asthma?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

D.3 In the last month, how often, if at all, did [you/*child's name*] suffer from WHEEZING?

(Read Options. Single Response)

1. **Daily or most days** [ ]
2. **Once or twice a week** [ ]
3. **Once or twice a month** [ ]
4. **Rarely or never** [ ]
5. Don't know / not sure [ ]

D.4 [Have you / has child's name] ever been told by a doctor that [you have / he has / she has] any of the following respiratory problems that have lasted six months or more?

(Read Options. Multiple Response.)

1. **Bronchitis** [ ]
2. **Emphysema** [ ]
3. **Chronic lung disease** [ ]
4. None of the above [ ]

Sequence guide:

If QD.4 = 4 & AGE >=16 Go to QD.6

If QD.4 = 4 AGE < 16 Go to NS

D.5 [Do you / does *child's name*] still have [these / this] other respiratory problem(s)?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

Sequence guide:

If AGE < 16 Go to NS

D.6 Have you ever been told by a doctor that you have any of the following conditions?

(Read Options. Multiple Response.)

1. **Heart attack** [ ]
2. **Angina** [ ]
3. **Heart disease** [ ]
4. **Stroke** [ ]
5. None of the above [ ]

E. SYMPTOMS OF ILL HEALTH

E.1 During the last two weeks, have [you/child's name] experienced any of the following complaints or symptoms?

(Read Options. Multiple Response)

1. **Stuffy or runny nose** [ ]
2. **Sore or scratchy throat** [ ]
3. **Cough** [ ]
4. **Hay fever attacks** [ ]
5. **Headache** [ ]
6. **Diarrhoea** [ ]
7. **Nausea (felt sick but did not vomit)** [ ]
8. **Vomiting** [ ]
9. **Itching or burning eyes** [ ]
10. **Skin rashes, irritation or itching** [ ]
11. **Difficulty breathing** [ ]
12. **Disturbed sleep** [ ]
13. None [ ]

F. HEIGHT AND WEIGHT - BODY MASS INDEX (BMI)

Sequence guide:
If Age < 2 Go to NS

F.1 What is [your / *child's name*] height without shoes?

(Single Response. Enter 999 if not stated)

1. *Enter Centimetres* [ ]

OR

2. *Enter Feet : Inches* [ ]
3. Don't know [ ]
4. Refused [ ]
5. Not stated [999]

F.2 What is [your / *child's name*] weight? (Undressed in the morning)

(Single Response. Enter 999 if not stated)

1. *Enter Kilograms (Kg)* [ ]

OR

2. *Enter Stones : Pounds* [ ]
3. Don't know [ ]
4. Refused [ ]
5. Not stated [999]

G. ALCOHOL CONSUMPTION

Sequence guide:
If age < 18 Go to NS

The following questions are about drinking alcohol.

G.1 How often do you usually drink alcohol?

(Single Response.)

1. I don't drink alcohol [ ]
2. Less than once a week [ ]
3. *Specify number of days per week* ___
4. Refused [ ]

Sequence guide:
If QG.1 = 1 Go to NS

G.2 A Standard Drink is equivalent to a schooner or midi of full strength beer, a glass of wine or a nip of spirits. On a day when you drink alcohol, how many drinks do you usually have?

(Single Response.)

1. *Specify number drinks* ___
2. Refused [ ]

H. SMOKING

The following question(s are/ is) about tobacco smoking. This includes cigarettes, cigars and pipes.

H.1 Which of the following best describes [your /child's name's] home situation?

(Single Response.)

1. **[My /child's name] home is smoke free** (includes smoking is allowed outside) [ ]
2. **People occasionally smoke in the house** [ ]
3. **People frequently smoke in the house** [ ]
4. Don't know [ ]
5. Refused [ ]

Sequence guide:
If QH.1 = 1, 5 & age < 16 Go to NS
If QH.1 = 1, 5 & age >= 16 Go to QH.4

H.2 How many cigarettes were smoked in [your/child's name] house yesterday?

(Single Response. Enter 999 if not stated. Enter number)

1. *Enter number* [ ]
2. None [ ]
3. Don't know [ ]

Sequence guide:
If Age < 16 Go to NS

H.3 How many pipes or cigars were smoked in [your/child's name] house yesterday?

(Single Response. Enter 999 if not stated. Enter number)

4. *Enter number* [ ]
5. None [ ]
6. Don't know [ ]

H.4 Which of the following best describes your smoking status?

(Read options. Single Response.)

1. **I smoke daily** [ ]
2. **I smoke occasionally** [ ]
3. **I don't smoke now but I used to** [ ]
4. **I've tried it a few times but never smoked regularly** [ ]
5. **I've never smoked** [ ]
6. Refused [ ]

I. PHYSICAL ACTIVITY

Sequence guide:
If AGE ≥ 65 or < 2 Go to NS
If AGE < 16 Go to QI.4

The next few questions are about any physical activities that you may have done in the last week.

I.1 In the last week, how many times have you walked continuously, for at least 10 minutes, for recreation, exercise or to get to or from places?

(Single Response. Enter number of times. Enter 0 if none)

1. None [ ]
2. *Enter number of times* __ __
3. Not stated/Don't know [}

I.2 This question excludes household chores or gardening. In the last week, how many times did [you/child's name] do any vigorous physical activity which made you breathe harder or puff and pant? (e.g. tennis, jogging, cycling, keep fit exercises).

(Single Response. Enter number of times. Enter 0 if none)

1. None [ ]
2. *Enter number of times* __ __
3. Not stated/Don't know [999]

I.3 This question excluded household chores or gardening. In the last week, how many times did you do other more moderate physical activities that you have not already mentioned? (e.g. lawn bowls, golf, gentle swimming, etc)

(Single Response. Enter number of times. Enter 0 if none)

1. None [ ] Go to NS
2. *Enter number of times* __ __
3. Not stated/Don't know [999]

Sequence guide:
If AGE ≥ 16 Go to NS

I.4 Over the course of the last month do you consider [*child's name*] to have been physically active?

(Read Options. Single Response)

1. **Very active** [ ]
2. **Active** [ ]
3. **Not very active** [ ]
4. **Not at all active** [ ]
5. Don't know [ ]

I.5 On average, how many hours per day or per week does [child's name] spend doing organised sport outside?

(Single Response. *Interviewer note: Does not = PE at school, organised means regular commitment to activity. Enter number of hours/ day or hours/ week*)

1. None [ ]
2. *Enter hours per day* ____
3. *Enter hours per week* ____
4. Don't know [99]
5. Refused [999]

J. TIME SPENT OUTDOORS

The next few questions are about the time people spend outdoors, and their level of exertion while outside. <u>This excludes the time spent in cars or other vehicles</u>.

J.1 How much time did [you/child's name] spend outdoors yesterday during the following time periods?

(Record Response for every time period. Enter 999 if not stated. *Interviewer note*: Enter number of hours and/or nearest 15 minutes.)

1. **Between 6am and 9am** __ __
2. **Between 9am and 12 midday** __ __
3. **Between 12 midday and 3pm** __ __
4. **Between 3pm and 6pm** __ __
5. **Between 6pm and 9pm** __ __
6. **Between 9pm and 6am** __ __
7. Didn't go outside [ ]
8. Don't know [ ]
9. Refused /never go outside [ ]

Sequence Guide:
If QJ.1 = 7 Go to QJ.3.

J.2 For each of those time periods when you were outside yesterday, how much time did [you/child's name] spend doing work or exercise that caused [you/child's name] to breathe heavily?

(Record Response for every time period displayed. Enter 999 if not stated. *Interviewer note*: Enter number of hours and/or nearest 15 minutes.)

1. **Between 6am and 9am** __ __
2. **Between 9am and 12 midday** __ __
3. **Between 12 midday and 3pm** __ __
4. **Between 3pm and 6pm** __ __
5. **Between 6pm and 9pm** __ __
6. **Between 9pm and 6am** __ __
10. Refused /never go outside [ ]
11. Didn't go outside [ ]
12. Don't know [ ]
13. None [ ]

(CATI programming to display only periods where response >0 in QJ.1 *and check to be included which prevents period per category for QJ.2 to exceed period for* QJ.1*)*

I would now like to ask you the same two questions about <u>the day before yesterday</u>, that is [*interviewer to calculate and name day***]**

J.3 How much time did [you/child's name] spend outdoors on [interviewer to calculate day], the day before yesterday during the following time periods?

(Record Response for every time period. Enter 999 if not stated. *Interviewer note*: Enter number of hours and/or nearest 15 minutes.)

1. **Between 6am and 9am** __ __
2. **Between 9am and 12 midday** __ __
3. **Between 12 midday and 3pm** __ __
4. **Between 3pm and 6pm** __ __
5. **Between 6pm and 9pm** __ __
6. **Between 9pm and 6am** __ __
7. Didn't go outside [ ]
8. Don't know [ ]
9. Refused /never go outside [ ]

Sequence Guide:
If QJ.3 = 7 Go to QJ.5

J.4 For each of those time periods when you were outside on interviewer to calculate day], the day before yesterday, how much time did [you/child's name] spend doing work or exercise that caused [you/child's name] to breathe heavily?

(Record Response for every time period displayed. Enter 999 if not stated. *Interviewer note*: Enter number of hours and/or nearest 15 minutes.)

1.	**Between 6am and 9am**	__ __
2.	**Between 9am and 12 midday**	__ __
3.	**Between 12 midday and 3pm**	__ __
4.	**Between 3pm and 6pm**	__ __
5.	**Between 6pm and 9pm**	__ __
6.	**Between 9pm and 6am**	__ __
7.	Refused /never go outside	[ ]
8.	Didn't go outside	[ ]
9.	Don't know	[ ]
10.	None	[ ]

(CATI programming to display only periods where response >0 in QJ.3 *and check to be included which prevents period per category for QJ.4 to exceed period for* QJ.3*)*

J.5 How much time did (you/child's name) spend in /on any of the following vehicles <u>yesterday</u>?

(Read options. Multiple Response.) (Record Response for every vehicle displayed. Enter 999 if not stated. *Interviewer note*: Enter number of hours and/or nearest 15 minutes.)

1.	**Car**	__ __
2.	**Bus**	__ __
3.	**Train**	__ __
4.	**Tram**	__ __
5.	**Ferry**	__ __
6.	**Truck**	__ __
7.	**Motorbike / Scooter**	__ __
8.	**Pushbike**	__ __
9.	No	[ ]
10.	Don't know	[999]

Sequence Guide:
If QJ.5= 9, 10 Go to NS
If QJ.5 ≠ 1 Go to QJ.7

J.6 What is the year of manufacture of the car that (you/child's name) were [in / mainly in (if more than one)]?

(Single Response. Enter 999 if not stated.)

1.	*Enter year*	___
2.	Don't know	[ ]
3.	Not stated	[999]

J.7 How much time did (you/child's name) spend in medium or heavy traffic yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1.	*Enter hours*	___
2.	*Enter minutes*	___
3.	none	[ ]
4.	Not stated/Don't know	[999]

K. INDOOR AIR RISKS

K.1 Did your household use any of the following products yesterday?

(Read Options. Multiple Response)

1. **Room fresheners or sprays** (Interviewer note: products that emitted a spray or scent etc) [ ]
2. **Bathroom or toilet bowl deodorisers** [ ]
3. **Humidifiers** [ ]
4. Don't know [ ]
5. None [ ]

K.2 Did your household use any of the following heating methods yesterday?

(Read Options. Multiple Response)

1. **Wood combustion heater** [ ]
2. **Open fire** [ ]
3. **Gas heater** [ ]
4. Don't know [ ]
5. None [ ]

Sequence Guide:
If QK.2 = 1 Go to QK.3
If QK.2 = 2 Go to QK.4
If QK.2 = 3 Go to QK.5
If QK.2 = 4,5 Go to QK.7

K.3 How much time was a wood heater used in the room while [you/child's name] were present yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Hours [ ]
2. minutes [ ]
3. Not used [ ]
4. Not stated/Don't know [999]

Sequence Guide:
If QK.2 = 2, Go to QK.4
If QK.2 = 3 Go to QK.5
Else Go to QK.7

K.4 How much time was an open fire used in the room while [you/child's name] were present yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [ ]
2. *Enter minutes* [ ]
3. Not used [ ]
4. Not stated/Don't know [999]

Sequence Guide:
If QK.2 = 3 Go to QK.5
Else Go to QK.7

K.5 How much time was a gas heater used in the room while [you/child's name] were present yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [
2. minutes [ ]
3. Not used [ ]
4. Not stated/Don't know [ ]

K.6 Does the gas heater used have a flue or chimney, or is it ducted?

(Single Response.)

1. Flue [ ]
2. Chimney [ ]
3. Ducted [ ]
4. No [ ]
5. Don't know [ ]

K.7 Did your household use air conditioning for cooling or heating (reverse cycle) yesterday?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

Sequence Guide:
If QK.7>=2 Go to QK.9

K.8 How much time was an air-conditioner used for cooling or heating while [you were / child's name was] in the house yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [ ]
2. minutes [ ]
3. Not stated/Don't know [ ]

K.9 Do you have an electric or gas cook top or oven stove?

(Read Options. Multiple Response.)

1. **Electric cook top** [ ]
2. **Gas cook top** [ ]
3. **Electric oven** [ ]
4. **Gas oven** [ ]
5. No [ ]
6. Don't know [ ]

Sequence Guide:
If QK.9 = 1 Go to QK.10
If QK.9 = 2 Go to QK.11
If QK.9 = 3 Go to QK.12
If QK.9 = 4 Go to QK.13
If QK.9 >= 5 Go to QK.14

K.10 How much time was your <u>electric</u> cook top used while [you were /child's name was] present in the kitchen <u>yesterday?</u>

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [ ]
2. *Enter minutes* [ ]
3. Not used [ ]
4. Not stated/Don't know [999]

Sequence Guide:
If QK.9 = 2 Go to QK.11
If QK.9 = 3 Go to QK.12
If QK.9 = 4 Go to QK.13
Else Go to QK.14

K.11 For how much time was your <u>gas</u> cook top used while [you were /child's name was] present in the kitchen <u>yesterday?</u>

(Single Response. Enter 999 if **not stated. Enter number of hours and/or minutes)**

1. *Enter hours* [ ]
2. *Enter minutes* [ ]
3. Not used [ ]
4. Not stated/Don't know [999]

Sequence Guide:
If QK.9 = 3 Go to QK.12
If QK.9 = 4 Go to QK.13
Else Go to QK.14

K.12 For how much time was your <u>electric</u> oven used while [you were /child's name was] present in the kitchen <u>yesterday?</u>

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [ ]
2. *Enter minutes* [ ]
3. Not used [ ]
4. Not stated/Don't know [999]

Sequence Guide:
If QK.9 = 4 Go to QK.13
Else Go to QK.14

K.13 For how much time was your <u>gas</u> oven used while [you were /child's name was] present in the kitchen <u>yesterday?</u>

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [ ]
2. *Enter minutes* [ ]
3. Not used [ ]
4. Not stated/Don't know [999]

K.14 Did [you/child's name] use any of the following products yesterday?

(Read Options. Multiple Response)

1. **Glues** (*Interviewer note:* any type) [ ]
2. **Nail polish or removers** [ ]
3. **Household cleaning sprays** [ ]
4. **Household cleaning liquids (not washing up detergent)**
5. None [ ]
6. Don't know [ ]

Sequence Guide:
If QK.14=1 Go to QK.15
If QK.14=2 Go to QK.16
If QK.14=3 Go to QK.17
If QK.14=4 Go to QK.18
Else Go to QK.19

K.15 How much time did [you/child's name] use glue yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [ ]
2. *Enter minutes* [ ]
3. Not used [ ]
4. Not stated/Don't know [999]

Sequence Guide:
If QK.14=2 Go to QK.16
If QK.14=3 Go to QK.17
If QK.14=4 Go to QK.18
Else Go to QK.19

K.16 How much time did [you/child's name] use nail polish or remover yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [ ]
2. *Enter minutes* [ ]
3. Not used [ ]
4. Not stated/Don't know [999]

Sequence Guide:
If QK.14=3 Go to QK.17
If QK.14=4 Go to QK.18
Else Go to QK.19

K.17 How much time did [you/child's name] use used household cleaning sprays yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [ ]
2. *Enter minutes* [ ]
3. Not used [ ]
4. Not stated/Don't know [999]

Sequence Guide:
If QK.14=4 Go to QK.18
Else Go to QK.19

K.18 How much time did [you/child's name] use used household cleaning liquids yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [ ]
2. *Enter minutes* [ ]
3. Not used [ ]
4. Not stated/Don't know [999]

K.19 Did [you/child's name] visit a service station yesterday (to buy petrol, groceries, pump tyres etc)?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

K.20 Did [you/child's name] visit an enclosed car park yesterday?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

K.21 In the last month, has [your/child's name] bedroom or main living areas been painted, varnished or had timber floors treated?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

K.22 In the last week, has [you/child's name] done any painting, staining or varnishing?

(Single Response. (*Interviewer note:* any type of painting, including at pre-school)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

Sequence Guide:
If QK.22 =2 Go to QK.24

K.23 How much time did [you/child's name] spend painting, staining or varnishing?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter Days* [ ]
2. *Enter hours* [ ]
3. *Enter minutes* [ ]
4. Not stated/Don't know [ ]

K.24 In the last month, has [your/child's name] bedroom or main living area had new carpet?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

K.25 Were windows or doors left open in [your/child's name] house yesterday?

(Single Response)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

K.26 Does mould grow on the inside walls of [your/child's name] dwelling?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Don't know [ ]

Sequence Guide:
If QK.26 =2,3 Go to QK.28

K.27 In which rooms of the dwelling does mould grow?

(**Read Options.** Multiple Response.)

1. Bathroom [ ]
2. Toilet [ ]
3. Bedroom [ ]
4. Living room [ ]
5. Dining room [ ]
6. Kitchen [ ]
7. Other [ ]
   *Specify*_____
8. Don't know [ ]

K.28 What is the nature of [your/child's name] dwelling? Is it a :

(Read Options. Single Response)

1. **Detached house** [ ]
2. **Attached house** [ ]
3. **Flat or Apartment** [ ]
4. **Mobile home** [ ]
5. Other [ ]
   Specify_____
6. Don't know [ ]

K.29 What is the main building material in [your/child's name] dwelling? Is it:

(Read Options. Single Response)

1. **Timber** [ ]
2. **Brick** [ ]
3. **Concrete** [ ]
4. **Plywood** [ ]
5. Other [ ]
   Specify_____
6. Don't know [ ]

K.30 Does [your/child's name] dwelling have an under-roof garage with direct access to the house?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Not stated/Don't know [ ]

K.31 In the last week, have [you/child's name] been bothered by smoke from wood fires?

(Single Response)

1. Yes [ ]
2. No [ ]
3. Not stated/Don't know [ ]

K.32 Do [your/child's name] live within 100m of a busy 4-lane road or highway?

(Single Response)

1. Yes [ ]
2. No [ ]
3. Not stated/Don't know [ ]

K.33 In the last week, were [you/ has child's name] present when any petrol engine garden tools were used?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Not stated/Don't know [ ]

Sequence guide:
If QK.33 =2,3 Go to NS

K.34 In the last week, how much time were [you/ child's name] present when petrol engine garden tools were used?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. *Enter hours* [ ]
2. *Enter minutes* [ ]
3. Not stated/Don't know [ ]

L. DEMOGRAPHICS

Now to finish off with some general questions.

L.1 Voice (ask if unsure) / Sex of selected respondent.

1. Male [ ]
2. Female [ ]

L.2 Including (yourself / child's name) how many people living in this household are in each of the following age groups?

(Multiple Response. *Interviewer note: enter number of people in each age group*)

1. **0 to 4** [ ]
2. **5 to 14** [ ]
3. **15 to 24** [ ]
4. **60+** [ ]
5. Not stated [ ]

L.3 What is the Postcode of the house?

(Single Response.)

1. *Enter postcode* [ ]
2. Not stated [9999]

Sequence Guide:

If QL.3 < 9999 & AGE >= 18 years Go to QL.5
If QL.3 < 9999 & AGE <18 years, Go to QL.11

L.4 What town, suburb or community do [you/ child's name] live in?

(Single Response.)

1. *Enter town/suburb* [ ]
2. Not stated [ ]

Sequence guide: If AGE <18 years, Go to QL.11

L.5 What is your marital status?

(Read options - Single Response.)

1. **Married** [ ]
2. **Living with a partner** [ ]
3. **Separated** [ ]
4. **Divorced** [ ]
5. **Widowed** [ ]
6. **Never married** [ ]
7. Refused [ ]

L.6 What is your work status?

(Read options - Single Response.)

1. **Full time employed** [ ]
2. **Part time/casual employment** [ ]
3. **Unemployed** [ ]
4. **Engaged in Home duties** [ ]
5. **Retired** [ ]
6. **Unable to work** [ ]
7. **Student** [ ]
8. Other (specify)_____

L.7 What kind of work have you done for most of your life?

(Single Response.)

1. Specify_____
2. Never Worked [ ]

Sequence guide:
If QL.6 >=3 Go to QL.11

L.8 Did you work <u>yesterday</u>?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Not stated/Don't know [ ]

L.9 Did you work the <u>day before that</u>?

(Single Response.)

1. Yes [ ]
2. No [ ]
3. Not stated/Don't know [ ]

L.10 Where do you work?

(Read Options. Multiple Response)

1. **At home** [ ]
2. **In a shopping centre** [ ]
3. **In a factory / workshop** [ ]
4. **In an office** [ ]
5. **In a vehicle** [ ]
6. **Outdoors** [ ]
7. Other [ ]
   Specify_____
8. Not stated/Don't know [ ]

L.11 What is [your/child's name's] country of birth?

(Single Response.)

1. Australia [ ]
2. Austria [ ]
3. Bosnia-Herzegovina [ ]
4. Canada [ ]
5. China [ ]
6. Croatia [ ]
7. France [ ]
8. Germany [ ]
9. Greece [ ]
10. Holland/Netherlands [ ]
11. Hong Kong [ ]
12. Iran [
13. Italy [ ]
14. Japan [ ]
15. Malaysia [ ]
16. New Zealand [ ]
17. Philippines [ ]
18. Poland [ ]
19. Slovenia [ ]
20. Spain [ ]
21. U.K. and Ireland [ ]
22. USA [ ]
23. Vietnam [ ]
24. Former Yugoslav Republic of Macedonia [ ]
25. Former Yugoslav Republic of Serbia and Montenegro [ ]
26. Other country (specify)_____
27. Don't know [ ]

Sequence guide:
If Age ≥16 years, Go to QL.12
If Age <16 years, Go to QL.13

L.12 Which best describes the highest education qualification you [have/ child's name has] obtained?

(Read options - Single Response.)

1. **Still at school** [ ]
2. **Left school at 15 years or less** [ ]
3. **Left school after age 15** [ ]
4. **Left school after age 15 but still studying** [ ]
5. **Trade/Apprenticeship** [ ]
6. **Certificate/Diploma** [ ]
7. **Bachelor degree or higher** [ ]
8. Not Stated/Refused [ ]
9. Don't know [ ]

L.13 Can you tell me the approximate annual gross income of [your / child's name's] household? That is, for all people in the household before tax is taken out. I'll read out some categories and could you please tell me into which one your household's income falls?

(Read options - Single Response.)

1. **Up to $12,000** [ ]
2. **$12,001 - $20,000** [ ]
3. **$20,001 - $30,000** [ ]
4. **$30,001 - $40,000** [ ]
5. **$40,001 - $50,000** [ ]
6. **$50,001 - $60,000** [ ]
7. **$60,001 - $80,000** [ ]
8. **More than $80,000** [ ]
9. **Don't know** [ ]
10. Not stated/refused [ ]

L.14 How many residential telephone numbers, including mobile phones, can be used to speak to someone in this household?

(Single Response. Interviewer note: do not include Internet or fax numbers)

1. Enter number __
2. Don't know [99]

L.15 How many times [do these / does this] number(s) appear in the White Pages?

(Single Response. Interviewer note: do not include Internet or fax numbers. Total number of entries includes numbers that are listed more than once.)

1. Enter number __
2. Don't know [99]

L.16 Because of the differences in weather and activity during different times of the years, we would like to ask you these questions again in Summer. Could we please phone you again sometime around February for another interview?

(Single response)

1. Yes (specify - record first name only) _____
2. No [ ]

That concludes the survey. On behalf of the National Environmental Protection Council, thank you very much for taking part in this survey.

APPENDIX 3: BODY MASS INDEX

Body Mass Index classification for children[2]

Classification of overweight and obesity for children and adolescents	BMI equivalent to 25 kg/m^2		BMI equivalent to 30 kg/m^2	
Age (years)	**Males**	**Females**	**Males**	**Females**
2	18.41	18.02	20.09	19.81
3	17.89	17.56	19.57	19.36
4	17.55	17.28	19.29	19.15
5	17.42	17.15	19.30	19.34
6	17.55	17.34	19.78	19.65
7	17.92	17.75	20.63	20.51
8	18.44	18.35	21.60	21.57
9	19.10	19.07	22.77	22.81
10	19.84	19.86	24.00	24.11
11	20.55	20.74	25.10	25.42
12	21.22	21.68	26.02	26.67
13	21.91	22.58	26.84	27.76
14	22.62	23.34	27.63	28.57
15	23.29	23.94	28.30	29.11
16	23.90	24.37	28.88	29.43
17	24.46	24.70	29.41	29.69
18	25	25	30	30