Statistical snapshots of people with asthma in Australia 2001

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Acronyms

ABS	Australian Bureau of Statistics
ACAM	Australian Centre for Asthma Monitoring
AIHW	Australian Institute of Health and Welfare
ASGC	Australian Standard Geographical Classification
BMI	body mass index
BP	blood pressure
COB	country of birth
COPD	chronic obstructive pulmonary disease
CURF	confidentialised unit record file
IHD	ischaemic heart disease
LTC	long-term condition
NHS	National Health Survey
SAHS	self-assessed health status
SES	socioeconomic status

Summary

Asthma is a chronic inflammatory disease of the airways. Affecting approximately 2 million Australians, it is a common but complex disease. Most of the knowledge we have of asthma, and its impact on people's lives, is derived from self-report surveys such as the National Health Survey (NHS). This report provides statistical snapshots of Australians with asthma and how they differ from those who have never had asthma, using the 2001 NHS.

This report highlights those characteristics that are present in a majority of people with asthma (defining characteristics) and those that differ significantly between people with asthma and those who have never had asthma (distinguishing characteristics). Across six age groups, a total of 60 characteristics are examined covering five dimensions—demographics, health actions, health status and outcomes, risk factors, and long-term health conditions.

Defining characteristics

More than half of people with asthma, across all age groups, live in a major city or inner regional area; were born in Australia; and have no regular smoker in the household. While the majority of adults with asthma are female, in the younger age groups the opposite is true—more than half of children with asthma are male.

People with asthma, across applicable age groups, are more likely than not to:

- feel mostly satisfied or better about their quality of life
- have health the same or better than 1 year ago
- have no days of reduced activity due to illness or injury over any fortnight
- have no days out of role (no days away from work or school/study and no other days of reduced activity) due to illness or injury over any fortnight
- have received all recommended childhood immunisations
- have received the influenza vaccination in the past year.

Other defining characteristics include rating their health as good or better, having at least the recommended usual daily intake of fruit and having a normal body mass index.

Additionally, more than half of people with asthma consult a doctor within a 3-month period, use at least one medication for asthma, experience the burden of three or more long-term health conditions (including asthma) and have an income unit grossing less than $1,000 per week.

Distinguishing characteristics

People with current asthma use the health care system more and experience a greater burden of long-term health conditions than those who have never had asthma. In particular, they are more likely to consult a doctor within a 3-month period, visit a doctor/hospital over any 2-week period and have three or more long-term health conditions.

While none of the additional long-term health conditions examined are present in the majority of people with asthma, 16 out of 22 conditions are more likely to be present among people with asthma, as a group, than among people who have never had asthma.

Not surprisingly, allergic and inflammatory conditions such as hay fever, unspecified allergy, chronic sinusitis and bronchitis/emphysema are consistently more common among those with asthma. Also, migraine, back pain, affective problems, such as depression, and anxiety-related conditions are more frequent among people with asthma.

Even though more than half of people with asthma rate their health as good or better, people with asthma are generally less likely than those who have never had asthma to rate their health as good or better. People with asthma are also more likely than those who have never had asthma to have psychological distress, 7 or more days out of role over 2 weeks, 7 or more days of reduced activity over 2 weeks and to be obese—even though the majority of people with asthma don't have these aspects as defining characteristics.

Despite the differences in health-related characteristics between people with asthma and those who have never had asthma, the majority of people with asthma are generally in good health and have positive health outcomes.

1 Introduction

This report highlights the overall burden experienced by people with asthma, including the presence of other diseases, the use of medications and other health services, and effects on quality of life. This has implications for how the disease is measured in population-based, self-report surveys and for how asthma is managed. We also reveal areas and relationships that should be targeted for further examination.

The objectives of this report are to identify the demographic and health-related characteristics that define people with asthma and that distinguish them from those who have never had asthma. To this end, the report provides a series of statistical snapshots of people with asthma, constructed from 2001 NHS data. As the prevalence and impact of asthma in Australia vary with age (AIHW: ACAM 2005; Marks & Poulos 2005), separate snapshots are presented for six age groups.

Asthma is a chronic inflammatory disease of the airways. Much of what we know about the distribution and nature of this common but complex disease is derived from self-report surveys. In Australia and elsewhere, surveys and clinical studies have shown that, compared to those without asthma, people with asthma have more additional long-term health conditions, such as hay fever, sinusitis and chronic obstructive pulmonary disease (Adams et al. 2006; Soriano et al. 2005). Many of these comorbidities may relate to a common underlying allergic or inflammatory process or to exposure to common risk factors, such as tobacco smoke. People with asthma also report more depression and lower health-related quality of life than those without asthma (Forrest et al. 1997; Goldney et al. 2003).

Large-scale surveys, such as the NHS, usually collect information on demographic and several health-related dimensions (such as risk factors and health outcomes). Reports of the findings from such surveys are usually based on some of the available dimensions and a fraction of the available information—rarely is the information used to draw a broader profile of people with a particular disease (what we refer to as a 'statistical snapshot'). One reason for not putting together all the available information is that much of it is not disease-specific and therefore is difficult to interpret. However, the North West Adelaide Health Study (Taylor et al. 2002) and the Western Australia Health and Wellbeing Surveillance System (Daly & Molster 2006) are examples of local and state-wide data that have been used to construct statistical snapshots of people with asthma.

A statistical snapshot constructed from as much of the available information as possible can improve our understanding of the demographic and health-related aspects of a particular disease. For example, we know that people with asthma often have other allergic diseases, such as hay fever, but these diseases are also common in the general community. It is therefore important to know not only what proportion of people with asthma have allergic and other diseases but also to what degree they are of particular concern to people with asthma.

The NHS, conducted by the Australian Bureau of Statistics (ABS) at regular intervals, is a major source of information about the prevalence of self-reported asthma and the characteristics of people with that disease. It has the advantage of national coverage and generates information on a number of dimensions related to health and wellbeing. In essence, the NHS provides a snapshot of people with (and without) asthma where all the relevant demographic and health-related aspects of the disease are linked.

The snapshots in this report, which cover more dimensions of health and wellbeing than are usually reported at any one time, identify the proportion of people with asthma that have particular characteristics. These proportions can be compared to those of people who have never had asthma. We refer to a characteristic as 'defining' when the majority (more than half) of people with asthma have the characteristic (Figure 1.1). A characteristic is referred to as 'distinguishing' when the proportion of people with asthma that have the characteristic is significantly greater or smaller than for those who have never had asthma. Identifying defining and distinguishing characteristics provides a better understanding of who has asthma and what it means to have asthma.

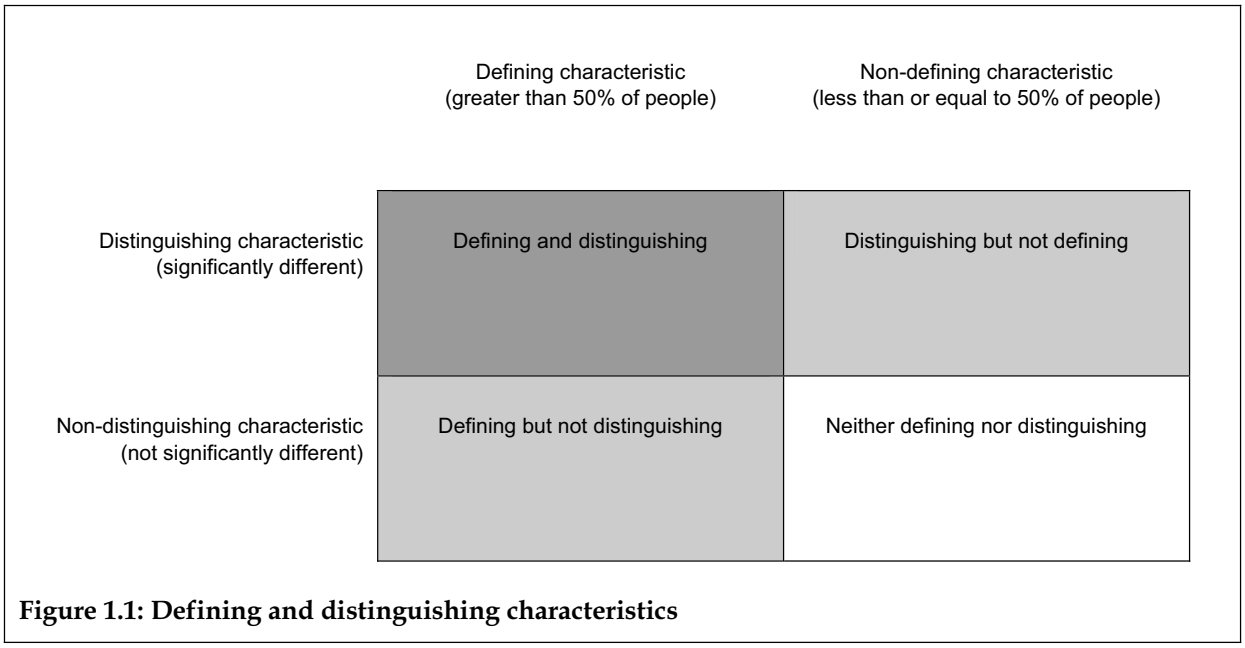


Figure 1.1: Defining and distinguishing characteristics

This report focuses on those characteristics that both define people with asthma and distinguish them from those who have never had asthma. Characteristics that are defining but not distinguishing are also of interest as they help us draw a picture of who has asthma, even though these characteristics are more or less shared with those who have never had asthma. Characteristics that are distinguishing but not defining are also of interest as they tell us what it means to have asthma, even though for a minority of people with asthma.

This report uses the term 'snapshot' rather than 'profile', because profiles, as used in other disciplines, are usually applied to individuals. They are often used to describe a typical individual in a particular context (as in criminal profiling), or are used to show the concordance or discrepancy of an individual compared with the established norm (as in personality profiling). In this report, the statistical snapshots consider each characteristic independently of the others. Therefore, the snapshots should not be taken to represent a 'typical' person with asthma, as the number of variables used in the snapshots would mean that they would not include many actual cases.

Structure of the report

The report consists of four chapters. Chapter 2 describes the methodology for constructing the statistical snapshots of people who reported to have asthma in the 2001 NHS. This includes a description of the relevant items in the 2001 NHS, the statistical issues involved, and the techniques used for comparing snapshots. Chapter 3 contains statistical snapshots of people with asthma for six age groups and all ages combined. The chapter includes a description of the characteristics of people with asthma overall and describes the characteristics that both define people with asthma and distinguish them from those who never had asthma. Chapter 4 provides a summary of the findings and how they relate to past research. Key issues and potential steps forward are discussed.

2 Method

Data from the 2001 NHS were used to construct statistical snapshots of people across six age groups who reported to have current asthma, and to compare these snapshots to those people who reported to have never had asthma. This chapter describes the data source, data types, and statistical techniques used for comparisons.

2001 National Health Survey

The 2001 NHS was conducted from February to November 2001 by the ABS. The survey covered usual residents only of private dwellings; 'special' dwellings such as hospitals, hotels, motels, hostels and prisons were not included. Approximately 26,900 people were surveyed from all states and territories and across all age groups. The survey collected information relating to health and health risk factors as well as demographic information.

Asthma status

As a National Health Priority Area, asthma is covered extensively by the NHS. The self-reported prevalence of current, long-term asthma is measured by a variable derived from items asking whether the respondent was ever told by a doctor or nurse that he or she has asthma, whether the asthma was current, and whether the asthma was long term. The response categories and population estimates for this variable are shown in Table 2.1.

Table 2.1: Self-reported asthma status of Australians, 2001

Response category	Per cent	Estimated total
1. Ever told has condition, still current and long term	11.6	2,197,280
2. Ever told has condition, still current but not long term	0.0	0
3. Ever told has condition, not current	8.8	1,664,963
4. Not known if ever told, but condition current and long term	0.0	0
5. Never told, not current or long term	79.6	15,053,398
Total	**100.0**	**18,915,641**

Source: ABS 2001 NHS.

For the purpose of this report, 'people with asthma' are respondents falling into Category 1 (ever told has condition, still current and long term). As there were no respondents in Category 2 it is assumed that if asthma is current it is also long term.

Comparisons are made in Chapter 3 with people who have never had asthma; that is, respondents falling into Category 5.

Dimensions

Statistical snapshots of people with asthma, encompassing 60 demographic and health-related characteristics, were constructed from responses to items in the 2001 NHS.

The items in the NHS can be grouped into various demographic and health-related clusters or dimensions. For the purpose of this report, five dimensions provide a statistical snapshot of people with asthma. These are:

- Demographics—items measuring age, sex, state, remoteness area, country of birth, labour force status, income, relative socioeconomic disadvantage and private health insurance coverage.
- Asthma-related and general health actions—items measuring possession of a written asthma action plan, medications used for asthma, visits to health professionals and immunisation.
- Health status and outcomes—items measuring quality of life, self-assessed health, activity limitation and psychological distress.
- Risk factors—items measuring alcohol risk level, consumption of fruit and vegetables, exercise level, body mass index and smoking status.
- Long-term health conditions (comorbidities)—items measuring respiratory disorders, allergic disorders, circulatory disorders, musculoskeletal disorders and psychological disorders.

Not all items apply to all survey participants, particularly for the younger age groups (see Appendix A).

The items represent variables measured with various scales. Some scales are categorical (categories such as country of birth, which follow no logical order), others are ordinal (for example low to high, less to more), while several others are dichotomous (yes/no, with/without, etc.).

Each 'score' comprising the snapshot is a percentage representing the estimated proportion of the population with a 'hit'. A hit is when the respondent replies in the affirmative in the case of a dichotomy, to the category of interest in the case of categorical variables, or beyond a particular cut-off value in the case of ordinal variables.

In only a few instances, where categories of interest were selected or cut-off values applied, were the categories or cut-offs chosen arbitrarily (such as dichotomising states such as New South Wales versus the rest). Some variables had clearly defined cut-off values, such as high psychological distress and risky alcohol consumption level. In some instances (such as socioeconomic status, daily intake of fruit and vegetables) the selected category or cut-off value reflected the state of current knowledge of risk factors for asthma and/or general health. For some variables, such as the number of days out of role and smoking status, both the complete absence and a level suggesting a strong adverse influence were of interest and both extremes were investigated. For variables such as quality of life and self-assessed health, a positive, but not extreme, cut-off position was adopted.

More detailed information about the variables and values used to construct the snapshots is provided in Appendix B.

Age structure

The prevalence of asthma varies with age. To show the distinguishing characteristics of people with asthma across age, statistical snapshots are provided for six age groups (0–4 years, 5–14 years, 15–17 years, 18–34 years, 35–64 years, and 65 years and over) as well as for all ages combined. The six age groups are not uniform—some cover a span of just a few years while others cover a substantial age span. The choice of age groups was based on

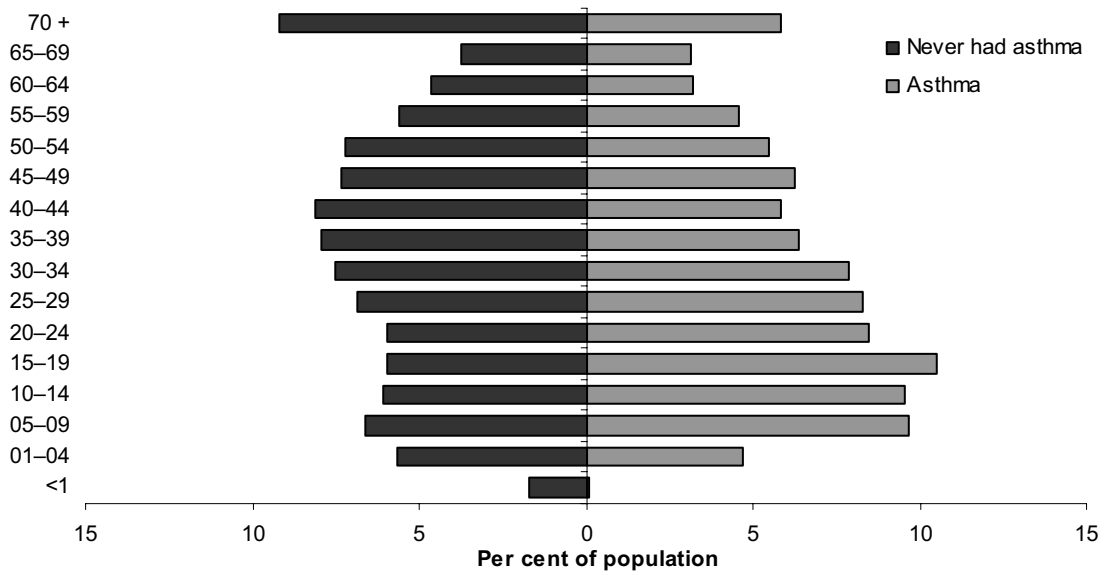
two factors: the structure of the NHS and age groups considered important by previous research.

To describe asthma morbidity and mortality patterns, the Australian Centre for Asthma Monitoring (2005) used five age groups (0–4 years, 5–14 years, 15–34 years, 35–64 years and 65 years and over). The choice of these groups was based partly on the difficulty of diagnosing asthma and distinguishing it from similar disorders at various ages.

To coincide with the broad structure of the NHS, the 15–34 years age group was divided into 15–17 years and 18–34 years. The 15–17 years age group has the smallest age span, and is therefore the most homogenous with respect to characteristics associated with age. This might minimise the probability of finding significant differences with those aged 15–17 years who have never had asthma. On the other hand, this group has the highest proportion of people with current, long-term asthma (16.8%).

In order to make comparisons between groups and over time, age standardisation is normally used to minimise the effects of differences in age structures. These effects have been addressed to some extent in this report by dividing the sample into six age groups. However, for the 18–34 years age group, age may have a potentially confounding effect when comparing those with asthma and those who have never had asthma. To minimise this potential, the estimates for the 18–34 years and the 35–64 years age groups were standardised to the Australian population as at 30 June 2001.

Figure 2.1 shows the age distribution of people with asthma compared with that of people who have never had asthma (using 5-year groups as are usually the basis for age standardisation).



Source: ABS NHS 2001 Expanded V2 CURF.

Figure 2.1: Age distribution by asthma status, persons, 2001

Statistical comparisons

An important feature of the statistical snapshots in this report is the ability to compare the snapshot of an individual or group against a reference group (for example the whole population, a group with other characteristics, or a group with the same characteristics at a different point in time). For each estimated proportion, 95% confidence intervals were calculated and used to determine the statistical significance of the difference between proportions of people with asthma and those who reportedly have never had asthma.

Confidence intervals

The statistics in this report are based on a surveyed sample rather than a census of the population. Therefore, the estimates may vary from one sample to the next. The NHS data are considered representative of the Australian population but may not be as accurate in representing smaller subpopulations, such as those with a specific disease, due to the small number of people with the disease actually surveyed. Also, because of limited sample sizes, as well as the influence of natural variation, the percentages shown in this report may vary from the true population value. The standard error is a measure of the variation in the sample-based estimates. From the standard error, one can calculate a confidence interval centred on a sample estimate. The 95% confidence interval includes values within approximately two standard errors of the estimate—there is a 95% chance that the interval includes the true population value.

Confidence intervals can be used to identify significant differences (that is, differences unlikely to be due to chance) observed between pairs of estimates, such as between those with asthma and those who have never had asthma. Confidence intervals that do not overlap indicate a statistically significant difference (in the case of 95% confidence intervals, at the $p < 0.05$ level). That is, there is 95% confidence that the proportions in the two groups differ in the whole population of Australia other than by chance alone. On the other hand, confidence intervals that overlap indicate a non-significant difference. The overlap may be due to little actual difference in the true population values or because the numbers of observations contributing to the estimates are small, and therefore the variability or standard error is large, such that it is difficult to discern any real statistically significant difference. This means that with smaller sample sizes, significant differences are harder to detect, and therefore less likely to be identified.

To simplify the text in this report, where estimated percentages are significantly different at the 95% level of confidence ($p < 0.05$), they have been described simply as 'significantly different'.

3 Characteristics of people with asthma

This chapter describes the demographic and health-related characteristics of people with asthma, as revealed by the 2001 NHS. This includes highlighting those characteristics present in a majority of people with asthma (defining characteristics) and those that differ significantly between people with asthma and those who have never had asthma (distinguishing characteristics).

The first part of the chapter is a general description of people with asthma as presented in the statistical snapshots for six age groups (Table 3.1). This is followed by a description of the defining characteristics according to their demographic and health-related dimension. The third part of the chapter highlights the distinguishing characteristics, as identified in a series of figures (figures 3.1 to 3.16), by each of the age groups.

Statistical snapshots

Table 3.1 shows the proportions of people with asthma in each age group who had each characteristic. Five main dimensions are examined: demographics, health actions, health status and outcomes, risk factors and long-term health conditions (conditions lasting, or expected to last, at least 6 months). Within each age group, the proportions having each characteristic provide the snapshots of people with current long-term asthma. The proportions can also be considered in relation to those in other age groups, and to those of all ages combined, to provide a more complete picture.

Some of the estimates, especially for 0–4 year olds, are based on small sample sizes and are subject to high sampling variability. These estimates, shaded and marked by asterisks in the table, should be treated with caution. Also as some items do not apply to all ages, the estimated percentages for the 'all ages' group are based on the total number of people actually asked the question, rather than the whole population.

Demographics

The majority of young people with asthma were male, particularly those aged 5–14 years (Table 3.1). However, the majority of adults with asthma were female. Around one-third of those with asthma lived in New South Wales, both overall and within each age group. Similarly, close to 90% across all the age groups lived in Major city or Inner regional areas. The greatest proportion of people with asthma who were Australian-born was in the youngest age group and decreased with age but most people with asthma were born in Australia (85.4%).

Except among 0–4 year olds (48.1%), more than half of people with asthma had an income unit which grossed less than $1,000 a week, with the greatest proportion among those aged 65 years and over (97.6%). In most age groups, less than 20% lived in areas in the first quintile of socioeconomic disadvantage, that is, in areas of most disadvantage. An exception was among those aged 65 years and over (27%). Overall, around half had private health

insurance (41% and 42% of those aged 18–34 years and 65 years and over respectively and 56% and 60% of those aged 15–17 and 35–64 years).

Health actions

In general, children with asthma were more likely to have a written asthma action plan than adults with asthma. But, despite support for written asthma action plans, only 17% of people with asthma had a written asthma action plan in 2001. Almost 60% of people with asthma reported using medications for asthma in the 2 weeks before the survey. Medication use for asthma increased with age, with the lowest level reported among those aged 5–14 years (49.7%), increasing to 75.1% among those aged 65 years and over. Around one-third used asthma medications for both prevention and relief of asthma.

Around two-thirds of people with asthma consulted a doctor in the 3 months before the survey with the proportion ranging from 54.9% among those aged 5–14 years to as high as 93.7% among those aged 65 years and over. Also, around one-third visited a doctor and/or hospital in the 2 weeks before the survey, ranging from 25.8% among those aged 15–17 years to over half (56.3%) among those aged 65 years and over. Almost all (98.6%) of those aged 0–4 years received all recommended immunisations while close to two-thirds (64.9%) of those aged 65 years and over received an influenza vaccination in the year before the survey.

Health status and outcomes

Almost three-quarters of people aged over 14 years with asthma rated their health as good or better. This proportion decreased with age from 87.9% among those aged 15–17 years to less than half among those aged 65 years and over (48.3%). In addition, almost 70% of adults with asthma were mostly satisfied with their quality of life.

Over 80% of those aged over 14 years reported that their health was the same as or better than the previous year, decreasing with age from 92% among those aged 15–17 years to 74.2% among those aged 65 years and over. Further, the proportion of adults with asthma who had psychological distress was less than 20% and decreased with age from 21.8% among those aged 18–34 years to 15.4% among those aged 65 years and over.

The majority of people with asthma reported no days out of role (no days away from work or school/study and no other days of reduced activity due to illness or injury) and no days of reduced activity due to illness or injury (75.4% and 81.6% respectively) in the 2 weeks before the survey. However, the proportion that reported at least 7 days of reduced activity in the 2 weeks before the survey increased with age from 2.7% among those aged 5–14 years to 14.1% among those aged 65 years and over.

Risk factors

Close to three-quarters of adults with asthma drank alcohol in the month before the survey with the proportion decreasing with age. Around 11% of adults drank alcohol at risky to high-risk levels in the week before the survey. This proportion decreased with age from 13.1% of those aged 18–34 years to 7.9% of those aged 65 years and over. Similarly, the proportion of adults with asthma who were current smokers decreased with age from 36% to 9.2%.

Only 31% of people with asthma aged 15 years and over had 4 or more usual daily serves of vegetables and less than half had at least the recommended daily intake of fruit with the smallest proportion of both these characteristics among those aged 18–34 years.

In general, people with asthma tended not to be sedentary (30.7% sedentary); however, the likelihood of being sedentary increased with age from 17.5% of those aged 15–17 years to 50.5% of those aged 65 years and over. This is supported by a decrease with age in the proportion of people doing moderate and vigorous activity in the 2 weeks before the survey. Also, around 53% of 15–34 year olds with asthma had a normal body mass index, but this decreased to around 38% in the older age groups, with a higher proportion obese among those aged 35 years and over than among those aged 15–34 years.

Long-term health conditions

Overall, people with asthma tended to have three or more long-term health conditions (including asthma). However, the proportion increased with age from only 16.1% of those aged less than 5 years to 95.9% of those aged 65 years and over. Hay fever was the most common additional long-term condition overall (33.8%) and among 5–34 year olds. The proportion of people with asthma who had hay fever initially increased with age, reaching a maximum among those aged 18–34 years, and then declined in the older age groups. Back pain and hay fever were the most common additional long-term health conditions for 35–64 year olds. In general, the likelihood of back pain increased with age with a slight decrease in the oldest age group. For those aged 65 years and over the most common additional long-term condition was hypertension. Both high cholesterol and hypertension were uncommon in younger age groups but a higher proportion of those aged 35 years and over reported these conditions, with the oldest age group having the greatest proportion. Unspecified allergy was the most common additional long-term health condition for 0–4 year olds, although this finding should be considered with caution due to high sampling variability.

Table 3.1: Characteristics of people with asthma, by age group, 2001

Variable	Value	0–4 years	5–14 years	15–17 years	18–34 years	35–64 years	65+ years	All ages
Demographics								
People with asthma	Estimated total	104,708	422,771	131,639	642,050	697,843	198,269	2,197,280
People with asthma	% with	8.2	15.8	16.8	14.0	9.5	8.8	11.6
Sex	% male	54.2	59.0	52.1	42.8	38.3	39.5	45.3
State	% NSW	34.3	34.3	32.7	29.1	33.3	35.3	32.5
Remoteness area of residence	Major city/ Inner regional	86.7	89.9	87.5	89.3	85.8	88.9	88.0
Country of birth	% Australia	99.1	95.5	94.4	88.3	76.3	73.5	85.4
Labour force status	% full time	. .	. .	4.1*	53.1	44.7	2.5*	39.7
Total gross weekly cash income	% <$1000	48.1	55.1	52.9	65.9	54.3	97.6	61.5
Relative SES disadvantage	% 1st quintile	19.7	16.8	17.8	17.4	16.7	27.1	18.1
Private health insurance coverage	% with	. .	. .	56.4	41.3	59.6	42.4	50.3

(continued)

Table 3.1 (continued): Characteristics of people with asthma, by age group, 2001

Variable	Value	0–4 years	5–14 years	15–17 years	18–34 years	35–64 years	65+ years	All ages
Health actions								
Written asthma action plan	% with	25.2	24.6	23.8	11.9	16.1	12.1	17.0
Medications for asthma in last 2 weeks	% used	54.6	49.7	55.8	58.0	62.2	75.1	59.0
No. of medications for asthma	% 2+	23.7	30.1	25.8	24.5	34.0	51.3	31.1
Purpose for using all medications for asthma	% prevent & relieve	32.2	30.4	30.2	33.2	32.8	43.9	33.3
Time since last consulted a doctor	% within 3 months	69.7	54.9	63.6	62.2	68.4	93.7	66.0
Combination (health) action taken in last 2 weeks	% doctor &/or hospital visit	32.9	28.0	25.8	29.0	38.4	56.3	34.3
Flu vaccination status	% in last 12 months	. .	. .	. .	. .	. .	64.9	. .
Reported child immunisation level	% all recommended	98.6	. .	. .	. .	. .	. .	. .
Health status and outcomes								
Quality of life	% mostly satisfied+	. .	. .	. .	73.8	64.8	70.4	69.3
Self-assessed health	% good+	. .	. .	87.9	81.5	68.0	48.3	72.4
Health vs 1 year ago	% same+	. .	. .	91.5	85.4	82.5	74.2	83.4
No. of days out of role in last 2 weeks	% zero	. .	69.3	70.0	78.2	77.1	. .	75.4
No. of days out of role in last 2 weeks	% 7+	. .	5.3	4.3*	4.8	12.3	. .	8.3
No. of days with reduced activity in last 2 weeks	% zero	. .	81.5	84.4	83.9	80.4	76.6	81.6
No. of days with reduced activity in last 2 weeks	7+	. .	2.7*	2.6**	4.0	10.8	14.1	6.9
Psychological distress (Kessler score)	% high+ (score 22+)	. .	. .	. .	21.8	19.9	15.4	19.7
Risk factors								
Time since last drank alcohol	% within last month	. .	. .	. .	78.7	71.5	65.6	73.7
Alcohol consumption risk level over last 7 days (2000 guidelines)	% risky–high risk	. .	. .	. .	13.1	9.6	7.9*	10.8
Usual daily serves of vegetables	% 4+	. .	. .	30.3	24.4	33.5	42.3	30.8
Usual daily serves of fruit	% 2+	. .	. .	57.1	38.8	51.7	64.5	48.7
Self-reported body mass index	% normal (18.5–25)	. .	. .	53.3	52.8	38.4	38.5	45.1
Self-reported body mass index	% obese (30+)	. .	. .	7.0*	15.9	26.0	21.9	20.2
Smoking status	% never	. .	. .	. .	49.2	48.0	43.1	46.9
Smoking status	% current	. .	. .	. .	36.0	21.3	9.2	25.3
No. regular smokers in household	% none	56.7	60.0	61.4	51.5	65.0	82.0	61.0
No. regular smokers in household	% 2+	15.5*	11.5	12.6*	21.6	13.2	2.2*	14.4

(continued)

Table 3.1 (continued): Characteristics of people with asthma, by age group, 2001

Variable	Value	0–4 years	5–14 years	15–17 years	18–34 years	35–64 years	65+ years	All ages
Risk factors (continued)								
Exercise level in last 2 weeks	% sedentary	. .	. .	17.5	26.1	31.9	50.5	30.7
Moderate exercise in last 2 weeks	% did	. .	. .	57.4	46.8	35.2	20.2	39.6
Vigorous exercise in last 2 weeks	% did	. .	. .	36.3	25.9	10.6	3.1*	17.6
Long-term health conditions (comorbidities)								
No. of long-term conditions	% 3+	16.1	33.1	51.8	63.9	87.8	95.9	65.5
Hay fever	% with	5.1*	20.2	34.7	47.4	37.2	21.5	33.8
Allergy unspecified	% with	12.5*	13.5	14.9	11.0	12.3	10.6	12.2
Bronchitis/emphysema (COPD)	% with	5.4*	8.2	5.9*	8.2	11.6	30.3	11.0
Chronic sinusitis	% with	3.7*	11.4	18.5	24.0	26.4	20.0	20.7
Dermatitis/eczema	% with	5.8*	2.8*	1.0**	1.8*	0.8*	0.4**	1.7
Psoriasis	% with	0.7**	0.6**	1.1**	2.0*	3.2	2.9*	2.1
Affective problems	% with	0.4**	2.9*	4.6*	7.7	9.0	5.7*	6.4
Anxiety-related problems	% with	0.0**	4.7	4.0*	8.2	8.8	4.0*	6.7
Migraine	% with	0.0**	2.7*	8.8*	13.4	14.5	2.8*	9.8
Back pain (incl. sciatica)	% with	0.7**	1.6*	10.0*	25.7	37.9	32.9	23.5
Diabetes	% with	0.0**	0.1**	0.7**	0.3**	6.7	14.3	3.6
Ischaemic heart disease (IHD)	% with	0.0**	0.0**	0.0**	0.0**	2.3*	15.0	2.1
High cholesterol	% with	0.0**	0.0**	0.1**	2.0*	9.9	24.3	5.9
Hypertension (high BP)	% with	0.0**	0.5**	0.0**	0.7*	18.2	44.5	10.1
Gout	% with	0.0**	0.0**	0.0**	0.5**	1.7*	5.3*	1.2
Ulcer	% with	0.0**	0.1**	1.1**	2.6	5.3	9.5	3.4
Infectious & parasitic diseases	% with	0.0**	0.3**	0.2**	2.3*	1.1*	1.5**	1.2
Osteoarthritis	% with	0.0**	0.3**	0.0**	1.8*	14.8	37.0	8.6
Rheumatoid arthritis	% with	0.0**	0.0**	0.2**	1.0*	5.5	10.3	3.0
Rheumatism	% with	0.0**	0.0**	0.0**	0.8*	2.3*	6.1*	1.5
Osteoporosis	% with	0.0**	0.0**	0.4**	0.1**	2.8	15.8	2.4
Blood disorders (incl. anaemia)	% with	0.2**	1.2*	0.9**	2.1*	2.2*	2.8*	1.9

. . Not applicable

* Subject to high standard errors and should be used with caution (relative standard error between 25% and 50%).

** Subject to sampling variability too high for practical purposes (relative standard error greater than 50%).

Source: ABS NHS 2001 Expanded V2 CURF.

Defining characteristics

The characteristics which describe more than half of people with asthma can be examined both within and across age groups. Both options can be examined using Tables 3.1 and 3.2.

In general, there were fewer defining characteristics in the younger age groups—only 7 among those aged 0–4 years and 8 among those aged 5–14 years (Table 3.2). This is partly due to fewer questions that were asked of people of these ages. Among those aged 15–17, 18–34 and 35–64 years, there were 16 defining characteristics, and 17 among those aged

65 years and over, if being female is also considered a defining characteristic. The majority of these defining characteristics were common between two or three of these age groups, as discussed below.

There were four characteristics which each described more than half of people with asthma in all age groups (Table 3.2). These were: area of residence—a major city or inner regional area; country of birth—Australia; consulted a doctor in the 3 months before the survey; and no regular smoker in the household.

More than half of those aged 0–17 years were male, while of those aged 18 years or greater, more than half were female. The majority of those aged 15–17 and 35–64 years had private health insurance. Only the 18–34 years age group were more likely to be in full-time employment than not, and from 5 years of age people with asthma tended to have an income unit grossing less than $1,000 per week.

People with asthma were more likely than not to have used medications for asthma in the 2 weeks before the survey, except among 5–14 year olds. More than half of people with asthma aged 15 years and over experienced the burden of three or more long-term conditions (including asthma). Further, those aged 65 years and over were also more likely to have used two or more medications for asthma; visited a doctor and/or hospital; and had a sedentary exercise level. Only those aged 15–17 years were more likely to have done moderate exercise, and more than half of adults drank alcohol in the month before the survey.

On the positive side, more than half of those with asthma, across all applicable age groups, had the following characteristics: mostly satisfied or better with their quality of life; health same or better compared with 1 year before the survey; no days out of role in the past 2 weeks; no days of reduced activity; had received all recommended childhood immunisations; and received influenza vaccination in the year before the survey. More than half of those aged 15–64 years rated their health as good or better. Also, among those aged 15–17 and 35 years and over, more than half had at least the recommended usual daily fruit intake and the majority of those aged 15–34 years had a normal body mass index.

Table 3.2: Defining characteristics of people with asthma, by age group, 2001

Variable	Value	0–4 years	5–14 years	15–17 years	18–34 years	35–64 years	65+ years
Demographics							
Sex	% male	+	+	+			
Remoteness area of residence	Major city/inner regional	+	+	+	+	+	+
Country of birth	% Australia	+	+	+	+	+	+
Labour force status	% full time	. .	. .		+		
Total gross weekly cash income	% <$1000		+	+	+	+	+
Private health insurance coverage	% with	. .	. .	+		+	
Health actions							
Medications for asthma in last 2 weeks	% used	+		+	+	+	+
No. of medications for asthma	% 2+						+
Time since last consulted a doctor	% within 3 months	+	+	+	+	+	+
Combination (health) action taken in last 2 weeks	% doctor &/or hospital visit						+
Flu vaccination status	% in last 12 months	. .	. .	. .	. .	. .	+
Reported child immunisation level	% all recommended	+	. .	. .	. .	. .	. .
Health status and outcomes							
Quality of life	% mostly satisfied+	. .	. .	. .	+	+	+
Self-assessed health	% good+	. .	. .	+	+	+	
Health vs 1 year ago	% same+	. .	. .	+	+	+	+
No. of days out of role in last 2 weeks	% zero	. .	+	+	+	+	. .
No. of days with reduced activity in last 2 weeks	% zero	. .	+	+	+	+	+
Risk factors							
Time since last drank alcohol	% within last month	. .	. .	. .	+	+	+
Usual daily serves of fruit	% 2+	. .	. .	+		+	+
Self-reported body mass index	% normal (18.5–25)	. .	. .	+	+		
No. regular smokers in household	% none	+	+	+	+	+	+
Exercise level in last 2 weeks	% sedentary	. .	. .				+
Moderate exercise in last 2 weeks	% did	. .	. .	+			
Long-term conditions (comorbidities)							
No. of long-term conditions	% 3+			+	+	+	+

. . Not applicable

\+ More than 50% of people with asthma have this characteristic.

Source: ABS NHS 2001 Expanded V2 CURF.

Distinguishing characteristics

Identifying the characteristics of people with asthma is only half of the story, as many of these characteristics are shared, more or less, with the population as a whole or with other important reference groups. Therefore, an important question to ask is 'what characteristics distinguish people with asthma from those without asthma or, more specifically, those who

have never had asthma?' This question is addressed for each age group by a series of comparisons between snapshots of people with asthma and those who have never had asthma (figures 3.1 to 3.16).

The horizontal bars in the figures represent 95% confidence intervals around the proportions of people estimated to have each characteristic (the wider the bar the more uncertainty or sampling error associated with the estimate). When the confidence intervals do not overlap, the difference between the compared estimates is statistically significant at the $p < 0.05$ level, and people with asthma are statistically more (or less) likely to have the characteristic than those who has never had asthma. Each comparison was made independently of the others. Therefore, when it is said that group A was significantly more likely than group B to have characteristic X and characteristic Y, it does not necessarily mean that an individual with characteristic X also had characteristic Y.

0–4 year olds

Children with asthma aged 0–4 years had just two distinguishing characteristics (Table 3.3).

Demographics, health actions and risk factors: There were no significant differences among any of the six demographics, three health actions, or two risk factors applicable to this age group (Figure 3.1).

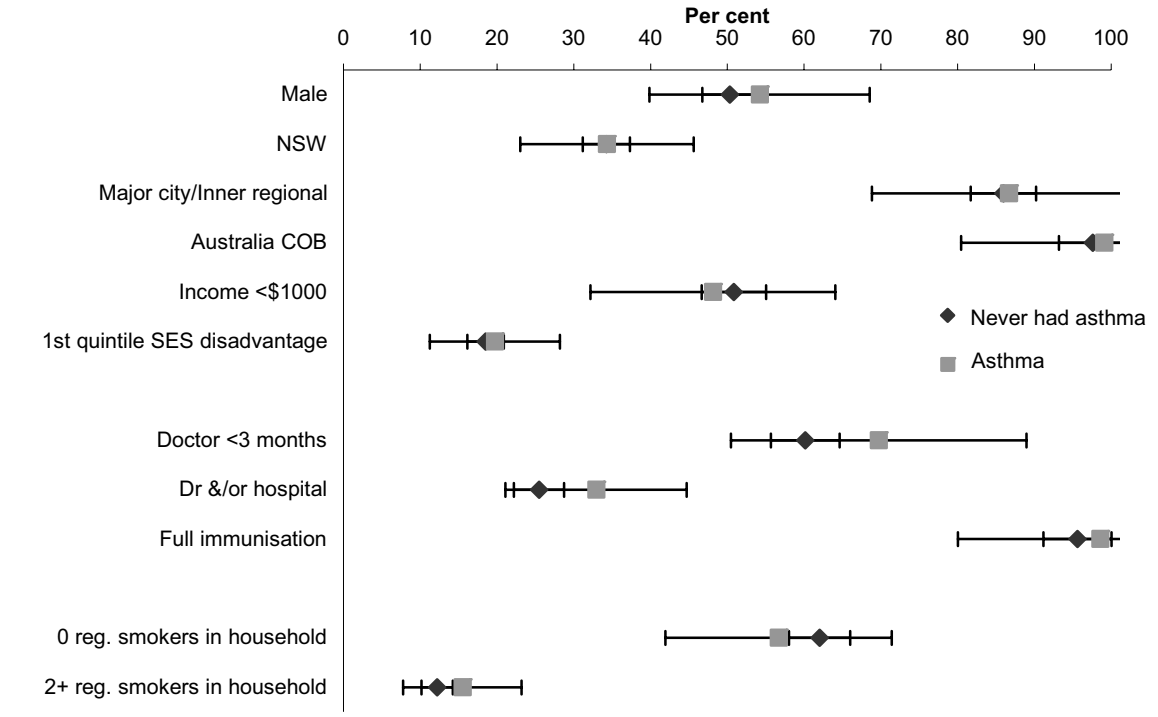
Long-term health conditions: Compared with 0–4 year olds who have never had asthma, children aged 0–4 years with asthma were more likely to have three or more long-term health conditions (Figure 3.2). They were also more likely to have an unspecified allergy.

There were no characteristics that both defined and distinguished 0–4 year olds with asthma (Table 3.3).

Table 3.3: Defining and distinguishing characteristics among people with asthma, 0–4 years, 2001

	Defining (>50%)	Not defining (≤50%)
Distinguishing (significant)		Long-term conditions (3 or more) Allergy unspecified (had)
Not distinguishing (not significant)	Sex (male) Remoteness (major city/inner regional) Country of birth (Australia) Asthma medications (used) Consulted a doctor (within 3 months) Immunisation level (all recommended) Regular smokers in household (none)	(a)

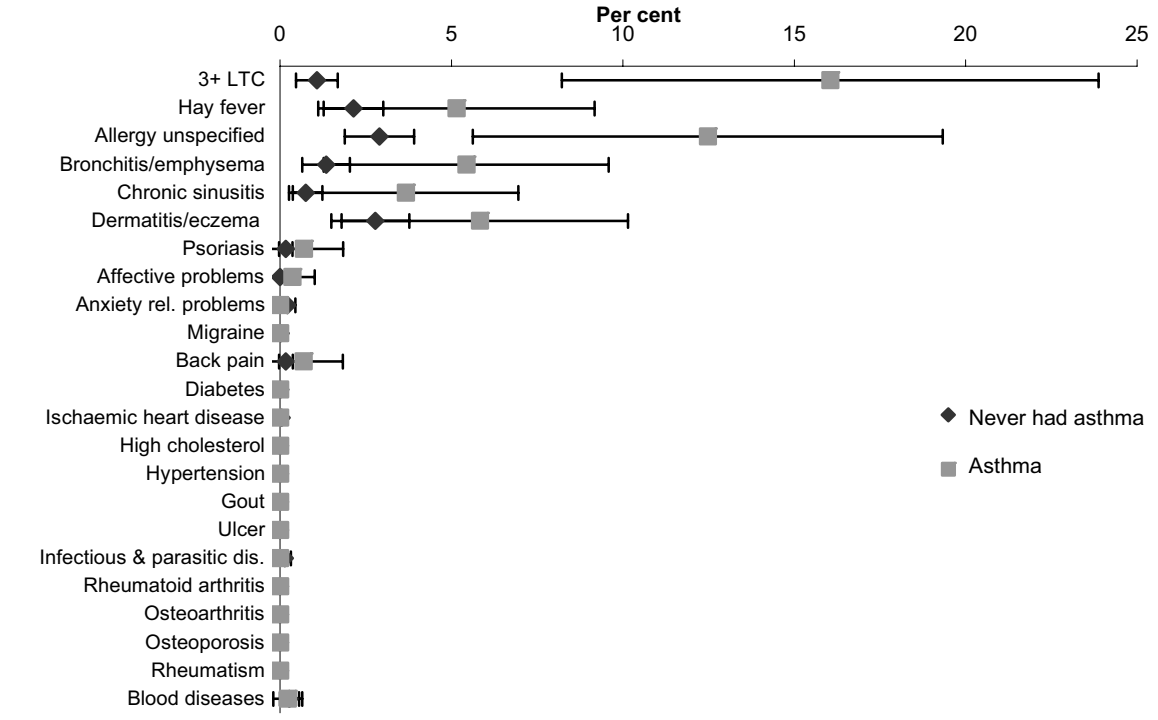
(a) Contains the remainder of the characteristics listed in Table 3.1.



Note: Confidence intervals without an upper end stroke extend beyond 100%.

Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.1: Demographics, actions and risk factors, by asthma status, persons aged 0–4 years, 2001



Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.2: Long-term conditions, by asthma status, persons aged 0–4 years, 2001

5–14 year olds

There were 11 characteristics that distinguished children with asthma aged 5–14 years from those aged 5–14 years who have never had asthma (figures 3.3 and 3.4).

Demographics: Compared with those aged 5–14 years who have never had asthma, children aged 5–14 years with asthma were more likely to be male.

Health actions: Significant differences were found for both of the health actions applicable to this age group. That is, those aged 5–14 years with asthma were more likely to have consulted a doctor in the 3 months before the survey and to have visited a doctor and/or hospital in the 2 weeks before the survey.

Health status and outcomes: Among this age group, children with asthma were more likely to have had 7 or more days out of role, but less likely to have had no days out of role, in the 2 weeks before the survey.

Risk factors: There were no significant differences among the two risk factors applicable to this age group.

Long-term health conditions: Children with asthma aged 0–4 years were more likely to have three or more long-term health conditions. Among these conditions, they were more likely to have hay fever, unspecified allergy, bronchitis/emphysema, chronic sinusitis, and affective problems.

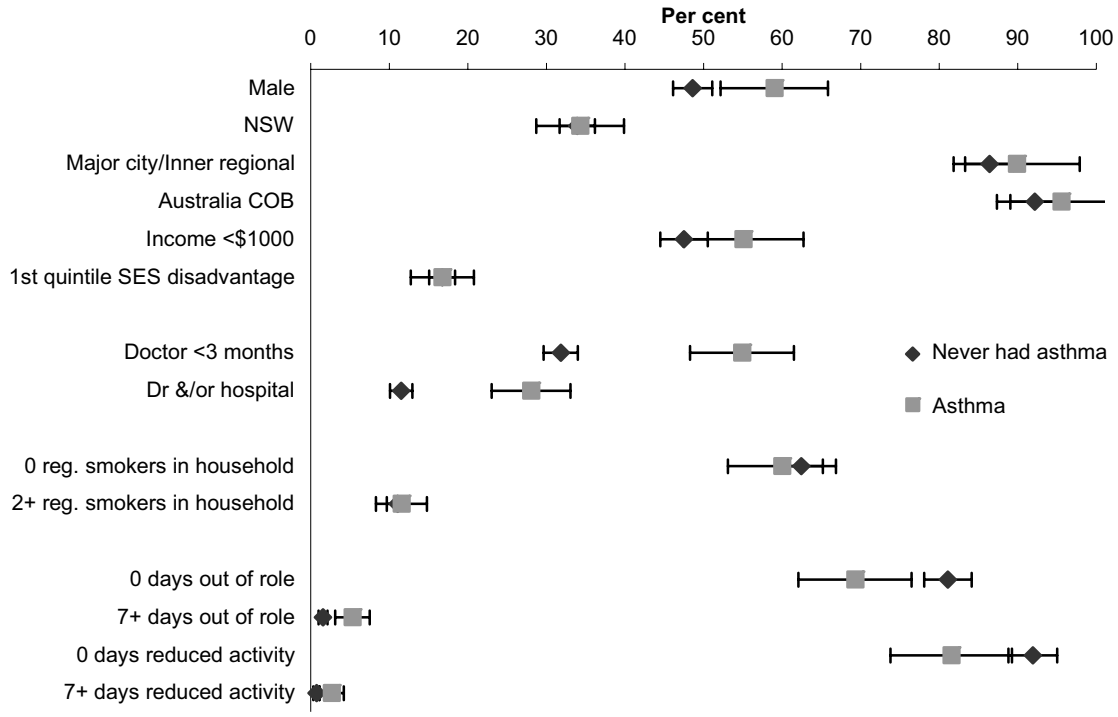
Three characteristics both defined and distinguished those aged 5–14 years with asthma (Table 3.4):

- no days out of role in the 2 weeks before the survey (less likely)
- male (more likely)
- consulted a doctor within the 3 months before the survey (more likely).

Table 3.4: Defining and distinguishing characteristics among people with asthma, 5–14 years, 2001

	Defining (>50%)	Not defining (≤50%)
Distinguishing (significant)	Sex (male) Consulted a doctor (within 3 months) Days out of role (none)	Health action (doctor and/or hospital) Days out of role (7 or more) Long-term conditions (3 or more) Hay fever (had) Allergy unspecified (had) Bronchitis/emphysema (had) Chronic sinusitis (had) Affective problems (had)
Not distinguishing (not significant)	Remoteness (major city/inner regional) Country of birth (Australia) Gross weekly income (<$1000) Days of reduced activity (none) Regular smokers in household (none)	(a)

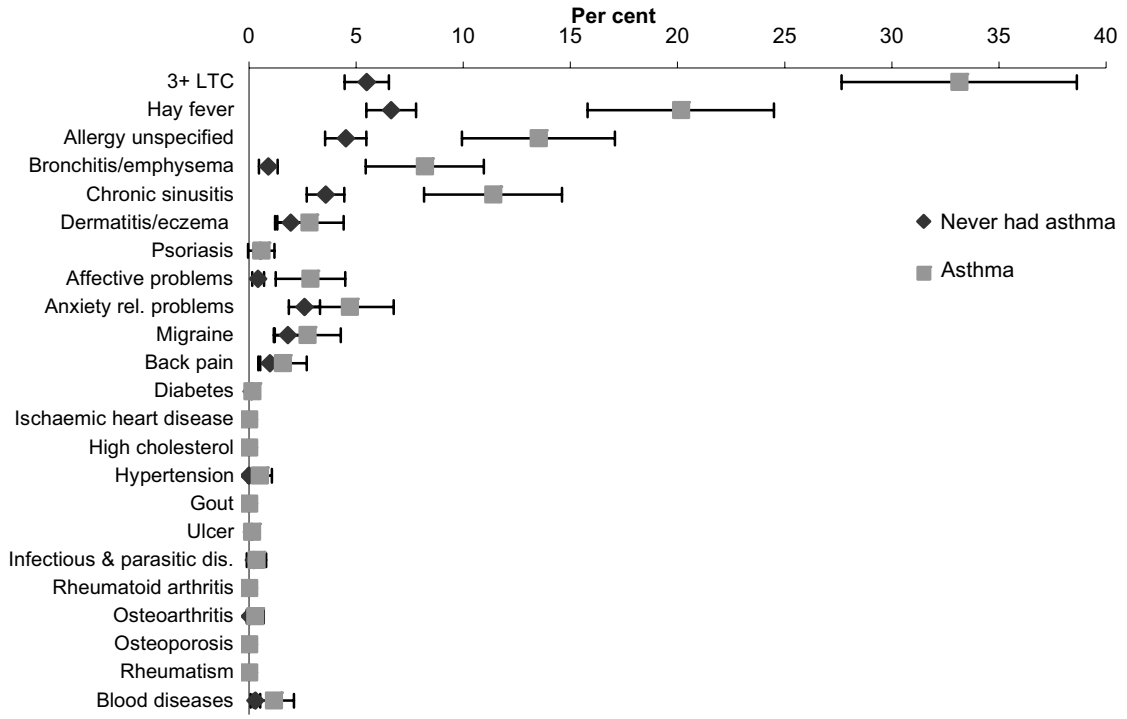
(a) Contains the remainder of the characteristics listed in Table 3.1.



Note: Confidence intervals without an upper end stroke extend beyond 100%.

Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.3: Demographics, actions, risk factors and outcomes, by asthma status, persons aged 5–14 years, 2001



Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.4: Long-term conditions, by asthma status, persons aged 5–14 years, 2001

15–17 year olds

Children with asthma aged 15–17 years had six characteristics that distinguished them from 15–17 year olds who have never had asthma (figures 3.5 to 3.7).

Demographics: There were no significant differences among any of the eight demographics applicable to this age group.

Health actions: Compared with those aged 15–17 years who have never had asthma, children with asthma were more likely to have consulted a doctor in the 3 months before the survey. This was the only significant difference among the two health actions applicable to this age group.

Health status and outcomes: There were no significant differences among any of the six health status and outcome characteristics applicable to this age group.

Risk factors: There were no significant differences among any of the nine risk factors applicable to this age group.

Long-term health conditions: Children with asthma aged 15–17 years were more likely to have three or more long-term health conditions. Among these conditions, they were more likely to have hay fever, unspecified allergy, bronchitis/emphysema and chronic sinusitis.

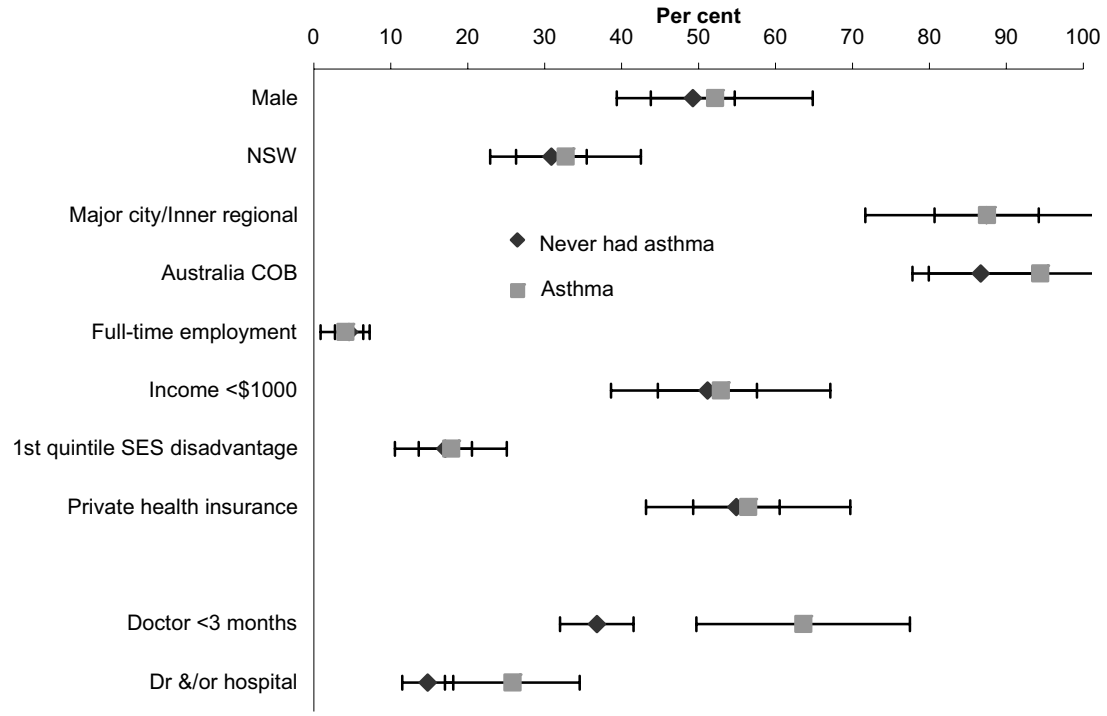
Two characteristics both defined and distinguished those aged 15–17 years with asthma (Table 3.5):

- consulted a doctor within the 3 months before the survey (more likely)
- three or more long-term health conditions (more likely).

Table 3.5: Defining and distinguishing characteristics among people with asthma, 15–17 years, 2001

	Defining (>50%)	Not defining (≤50%)
Distinguishing (significant)	Consulted a doctor (within 3 months) Long-term conditions (3 or more)	Hay fever (had) Allergy unspecified (had) Bronchitis/emphysema (had) Chronic sinusitis (had)
Not distinguishing (not significant)	Sex (male) Remoteness (major city/inner regional) Country of birth (Australia) Gross weekly income (<$1000) Private health insurance (had) Asthma medications (used) Self-assessed health (good+) Health vs. 1 year ago (same+) Days out of role (none) Days of reduced activity (none) Daily serves of fruit (2+) Body mass index (normal) Regular smokers in household (none) Moderate exercise (did)	(a)

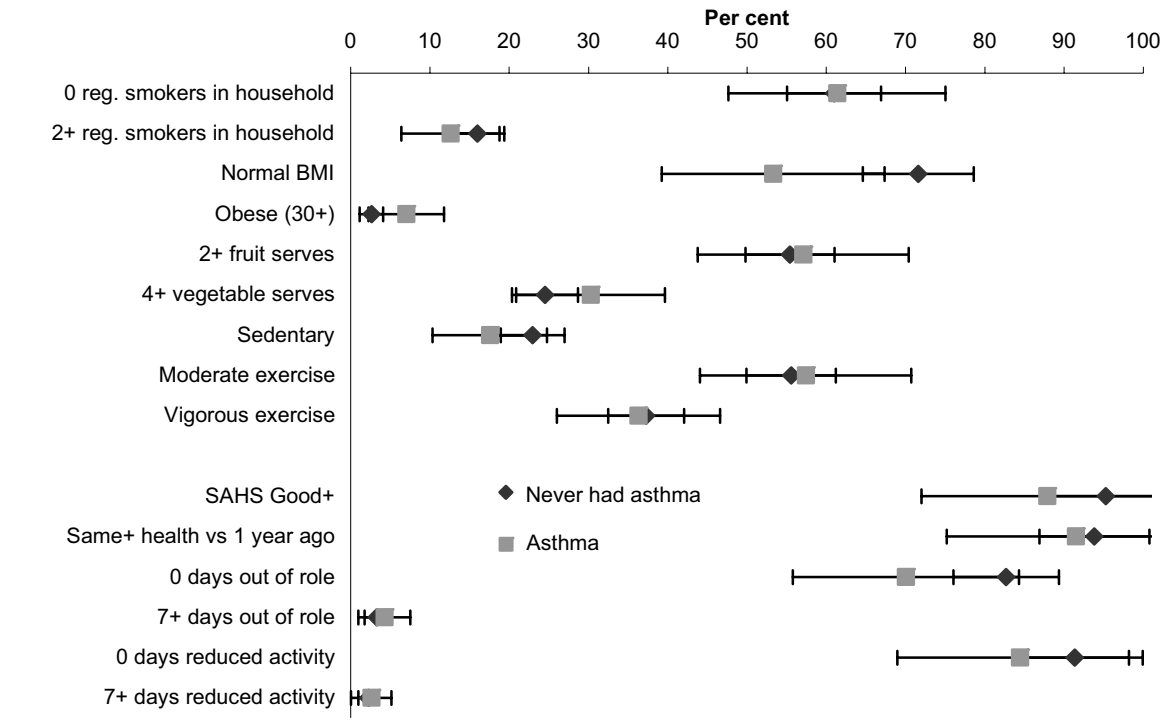
(a) Contains the remainder of the characteristics listed in Table 3.1.



Note: Confidence intervals without an upper end stroke extend beyond 100%.

Source: ABS NHS 2001 Expanded V2 CURF.

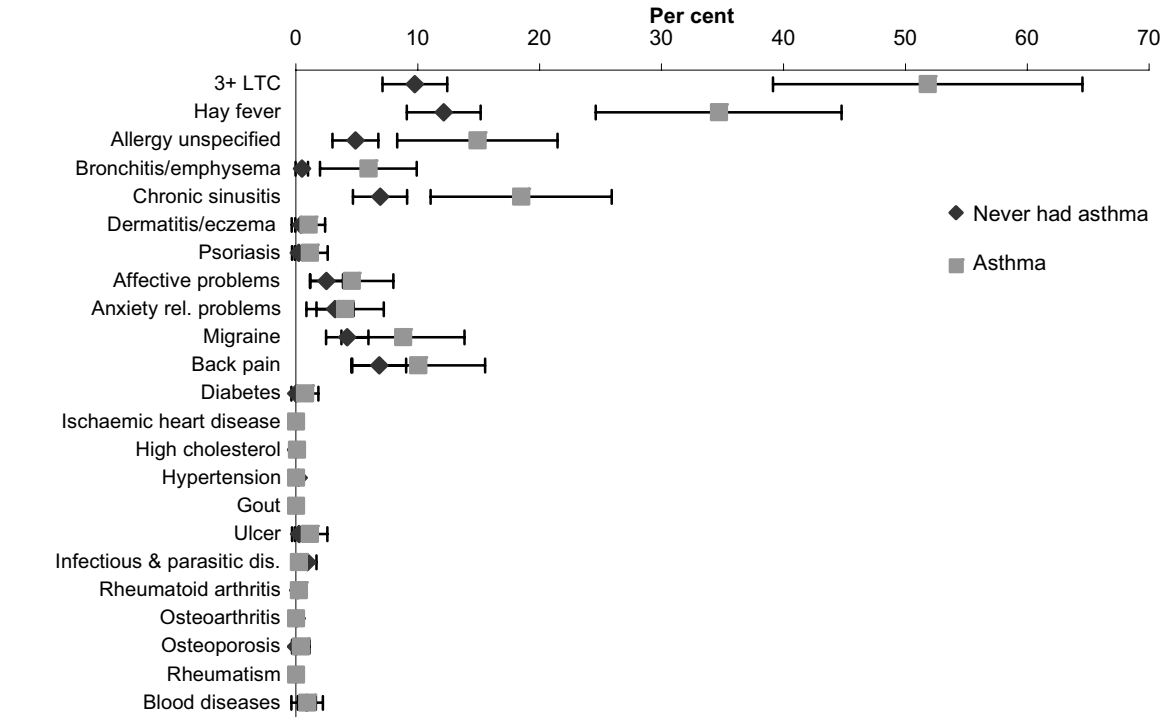
Figure 3.5: Demographics and actions, by asthma status, persons aged 15–17 years, 2001



Note: Confidence intervals without an upper end stroke extend beyond 100%.

Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.6: Risk factors and outcomes, by asthma status, persons aged 15–17 years, 2001



Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.7: Long-term conditions, by asthma status, persons aged 15–17 years, 2001

18–34 year olds

Adults with asthma aged 18–34 years had 16 characteristics that distinguished them from those aged 18–34 years who have never had asthma (figures 3.8 to 3.10).

Demographics: Compared with those aged 18–34 years who have never had asthma, adults with asthma aged 18–34 years were more likely to be female and born in Australia, but less likely to live in New South Wales.

Health actions: Significant differences were found for both of the health actions applicable to this age group. That is, those aged 18–34 years with asthma were more likely to have consulted a doctor in the 3 months before the survey and to have visited a doctor and/or hospital in the 2 weeks before the survey.

Health status and outcomes: Adults with asthma aged 18–34 years were more likely to have a high level of psychological distress.

Risk factors: There was one significant difference among the 13 risk factors applicable to this age group. That is, those aged 18–34 years with asthma were more likely to be obese.

Long-term health conditions: Compared with those aged 18–34 years who have never had asthma, adults with asthma aged 18–34 years were more likely to have three or more long-term health conditions. Among these conditions, they were more likely to have hay fever, unspecified allergy, bronchitis/emphysema, chronic sinusitis, anxiety-related problems, migraine, back pain, and infectious and parasitic diseases.

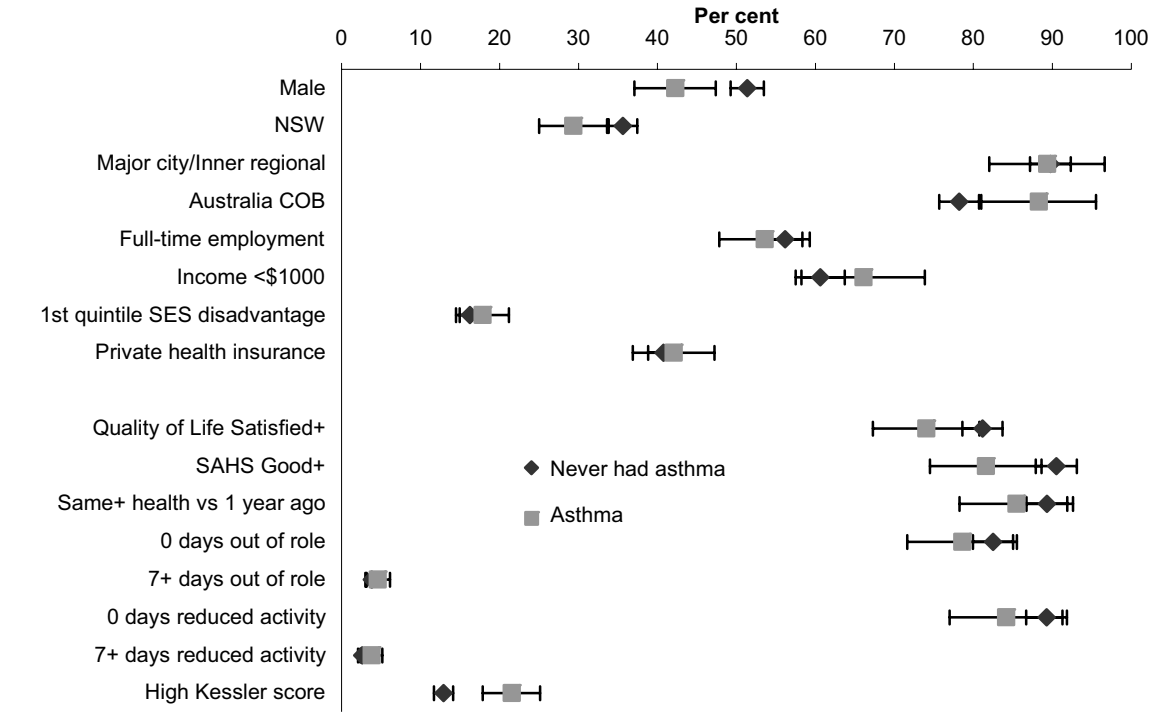
Four characteristics both defined and distinguished those aged 18–34 years with asthma (Table 3.6):

- female (more likely)
- born in Australia (more likely)
- consulted a doctor in the 3 months before the survey (more likely)
- three or more long-term health conditions (more likely).

Table 3.6: Defining and distinguishing characteristics among people with asthma, 18–34 years, 2001

	Defining (>50%)	Not defining (≤50%)
Distinguishing (significant)	Sex (female) Country of birth (Australia) Consulted a doctor (within 3 months) Long-term conditions (3 or more)	State (NSW) Health action (doctor and/or hospital) Psychological distress (had) Body mass index (obese) Hay fever (had) Allergy unspecified (had) Bronchitis/emphysema (had) Chronic sinusitis (had) Anxiety-related problems (had) Migraine (had) Back pain (had) Infectious & parasitic diseases (had)
Not distinguishing (not significant)	Remoteness (major city/inner regional) Labour force status (full time) Gross weekly income (<$1000) Asthma medications (used) Quality of life (mostly satisfied+) Self-assessed health (good+) Health vs. 1 year ago (same+) Days out of role (none) Days of reduced activity (none) Time since drank alcohol (<1 month) Body mass index (normal) Regular smokers in household (none)	(a)

(a) Contains the remainder of the characteristics listed in Table 3.1.



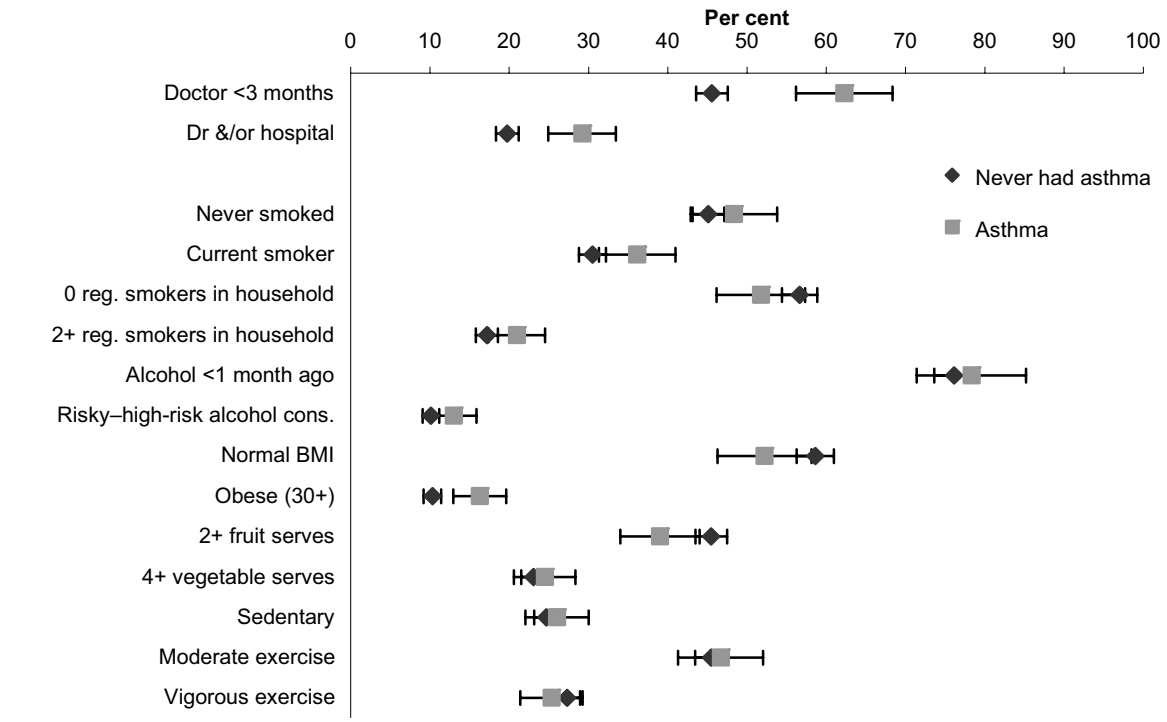
Notes

1. Comparisons were made using age-standardised proportions due to the differences in the age distribution between those with current asthma and those who have never had asthma for this age group. Estimates may differ slightly from those presented in Table 3.1.

2. Age standardised to the Australian population as at 30 June 2001.

Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.8: Demographics and outcomes, by asthma status, persons aged 18–34 years, 2001

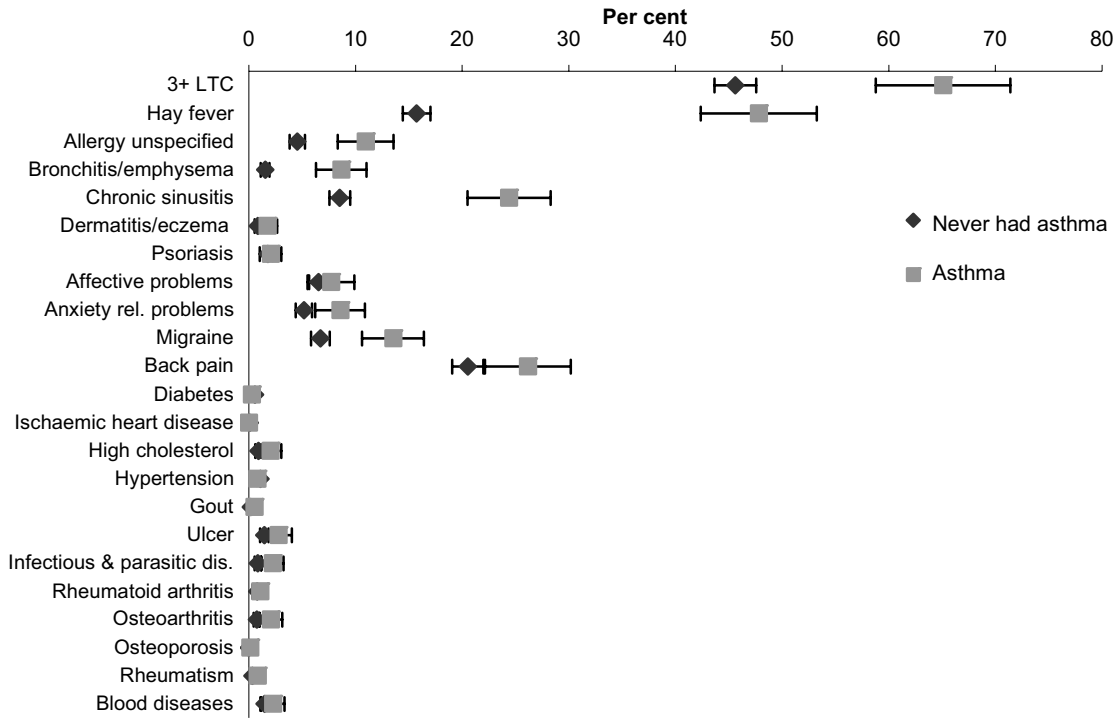


Notes

1. Comparisons were made using age-standardised proportions due to the differences in the age distribution between those with current asthma and those who have never had asthma for this age group. Estimates may differ slightly from those presented in Table 3.1.
2. Age standardised to the Australian population as at 30 June 2001.

Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.9: Actions and risk factors, by asthma status, persons aged 18–34 years, 2001



Notes

1. Comparisons were made using age-standardised proportions due to the differences in the age distribution between those with current asthma and those who have never had asthma for this age group. Estimates may differ slightly from those presented in Table 3.1.
2. Age standardised to the Australian population as at 30 June 2001.

Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.10: Long-term conditions, by asthma status, persons aged 18–34 years, 2001

35–64 year olds

There were 25 characteristics that distinguished adults with asthma aged 35–64 years from 35–64 year olds who have never had asthma (figures 3.11 to 3.13).

Demographics: Adults with asthma aged 35–64 years were more likely to be female and born in Australia, but less likely to be employed full-time.

Health actions: Compared with those aged 35–64 years who have never had asthma, adults with asthma aged 35–64 years were more likely to have consulted a doctor in the 3 months before the survey and to have visited a doctor and/or hospital in the 2 weeks before the survey.

Health status and outcomes: Among this age group, adults with asthma were more likely to have seven or more days out of role in the 2 weeks before the survey, 7 or more days with reduced activity in the 2 weeks before the survey and a high level of psychological distress. But they were less likely to feel mostly satisfied or better about life overall, rate their health as good or better and to have no days with reduced activity in the 2 weeks before the survey.

Risk factors: Compared with those aged 35–64 years who have never had asthma, adults with asthma aged 35–64 years were more likely to be obese.

Long-term health conditions: Adults with asthma aged 35–64 years were more likely to have three or more long-term health conditions. Of the long-term health conditions examined, they were more likely to have hay fever, unspecified allergy, bronchitis/emphysema, chronic sinusitis, affective problems, anxiety-related problems, migraine, back pain, diabetes, hypertension, rheumatoid arthritis, and osteoarthritis.

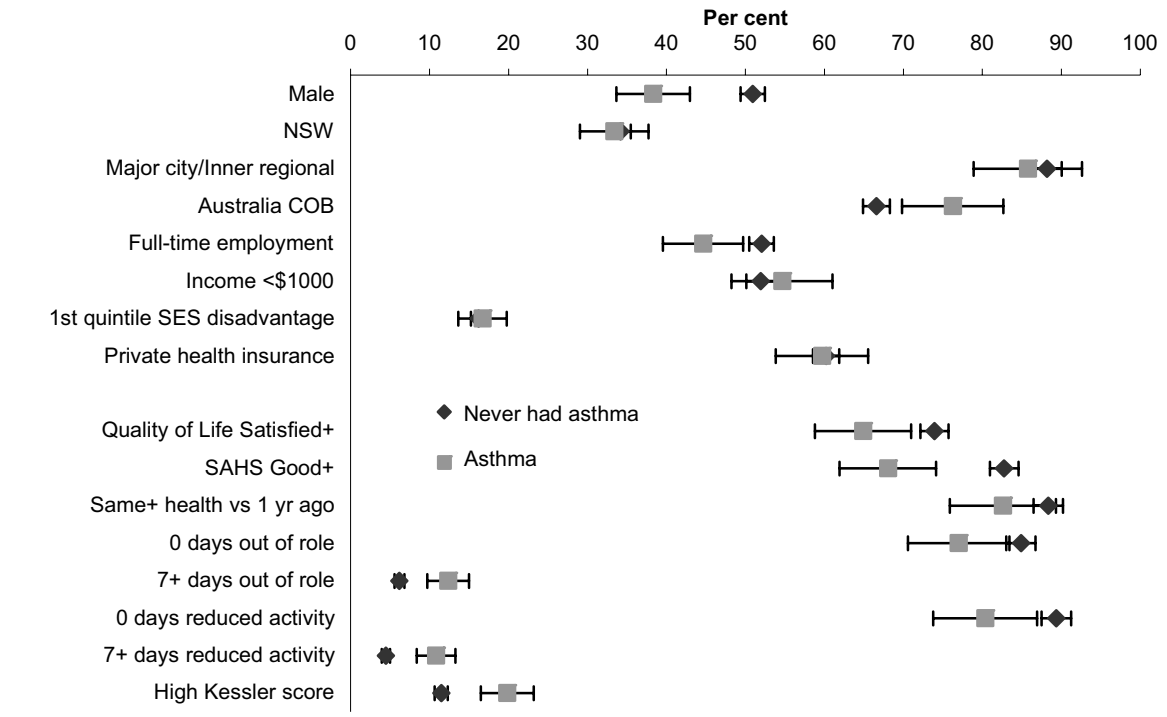
Seven characteristics both defined and distinguished 35–64 year olds with asthma (Table 3.7):

- felt mostly satisfied or better about life overall (less likely)
- health rated as good or better (less likely)
- no days with reduced activity in the two weeks before the survey (less likely)
- female (more likely)
- born in Australia (more likely)
- consulted a doctor within the 3 months before the survey (more likely)
- three or more long-term health conditions (more likely).

Table 3.7: Defining and distinguishing characteristics among people with asthma, 35–64 years, 2001

	Defining (>50%)	Not defining (≤50%)
Distinguishing (significant)	Sex (female) Country of birth (Australia) Consulted a doctor (within 3 months) Quality of life (mostly satisfied+) Self-assessed health (good+) Days of reduced activity (none) Long-term conditions (3 or more)	Labour force status (full-time) Health action (doctor and/or hospital) Days out of role (7 or more) Days of reduced activity (7 or more) Psychological distress (had) Body mass index (obese) Hay fever (had) Allergy unspecified (had) Bronchitis/emphysema (had) Chronic sinusitis (had) Affective problems (had Anxiety-related problems (had) Migraine (had) Back pain (had) Diabetes (had) Hypertension (had) Rheumatoid arthritis (had) Osteoarthritis (had)
Not distinguishing (not significant)	Remoteness (major city/inner regional) Gross weekly income (<$1000) Private health insurance (had) Asthma medications (used) Health vs. 1 year ago (same+) Days out of role (none) Time since drank alcohol (<1 month) Daily serves of fruit (2+) Regular smokers in household (none)	(a)

(a) Contains the remainder of the characteristics listed in Table 3.1.

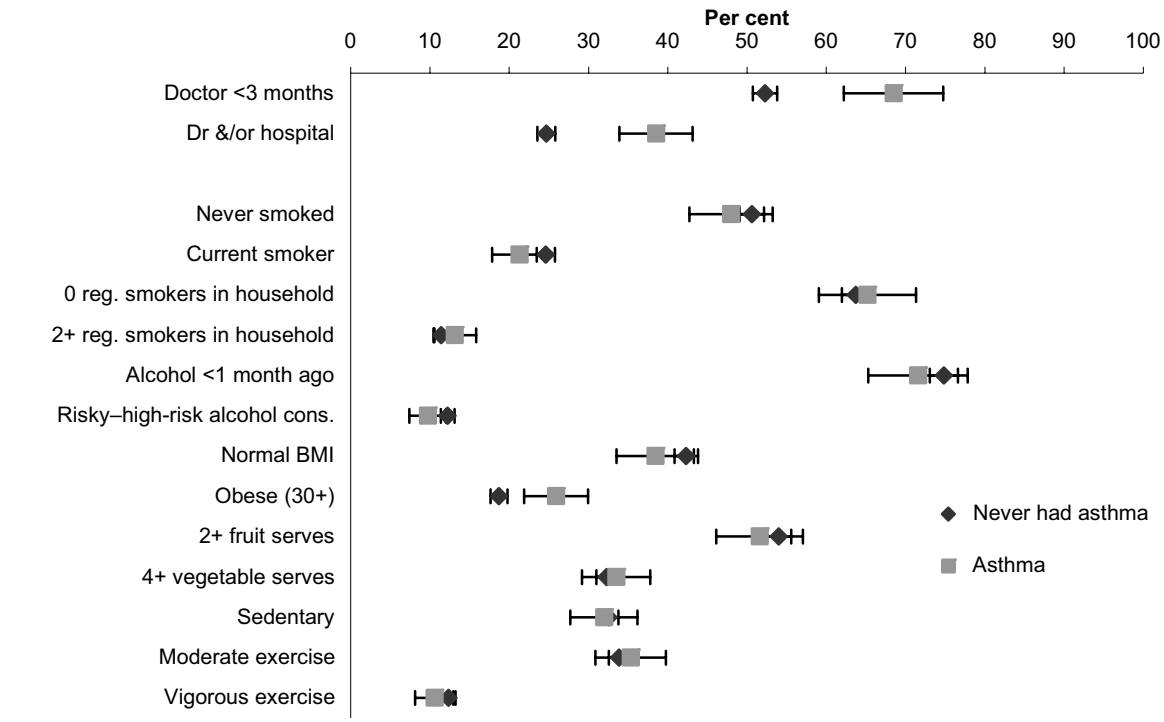


Notes

1. Comparisons were made using age-standardised proportions due to the differences in the age distribution between those with current asthma and those who have never had asthma for this age group. Estimates may differ slightly from those presented in Table 3.1.
2. Age standardised to the Australian population as at 30 June 2001.

Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.11: Demographics and outcomes, by asthma status, persons aged 35–64 years, 2001

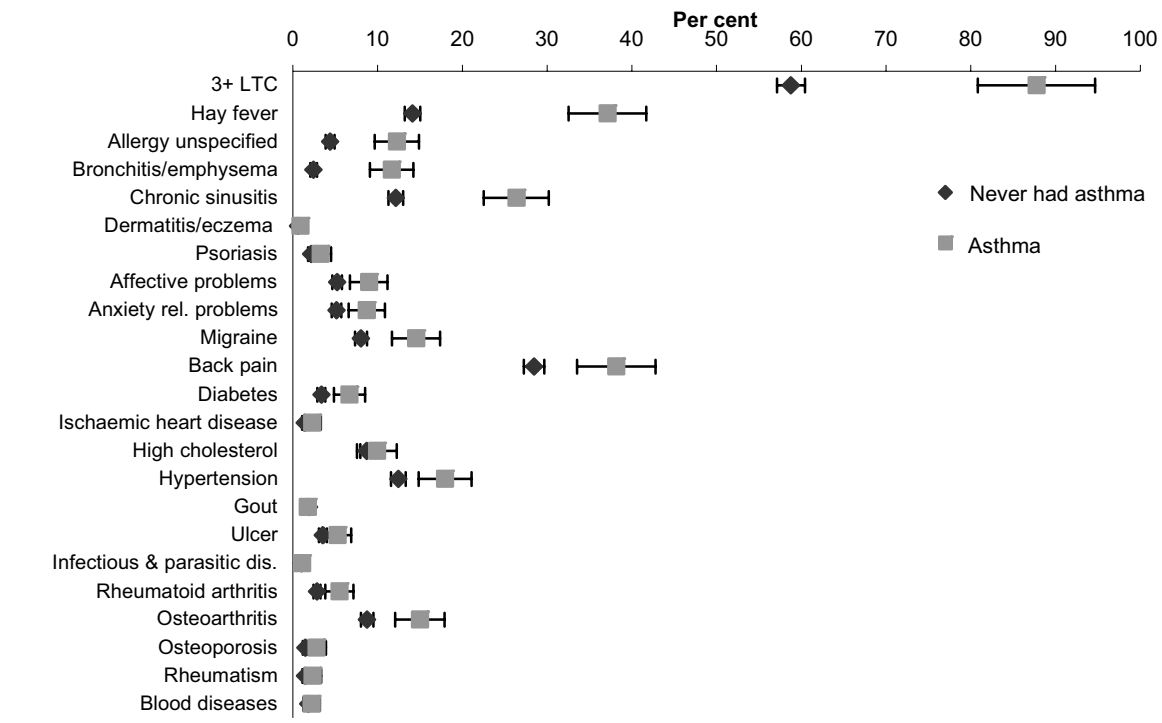


Notes

1. Comparisons were made using age-standardised proportions due to the differences in the age distribution between those with current asthma and those who have never had asthma for this age group. Estimates may differ slightly from those presented in Table 3.1.
2. Age standardised to the Australian population as at 30 June 2001.

Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.12: Actions and risk factors, by asthma status, persons aged 35–64 years, 2001



Notes

1. Comparisons were made using age-standardised proportions due to the differences in the age distribution between those with current asthma and those who have never had asthma for this age group. Estimates may differ slightly from those presented in Table 3.1.
2. Age standardised to the Australian population as at 30 June 2001.

Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.13: Long-term conditions, by asthma status, persons aged 35–64 years, 2001

65 years and over

Adults with asthma aged 65 years and over had eight demographic and health-related characteristics that distinguished them from adults aged 65 years and over who have never had asthma (figures 3.14 to 3.16).

Demographics: There were no significant differences among any of the eight demographics applicable to this age group.

Health actions: Among the three health actions applicable to this age group, adults with asthma aged 65 years and over were more likely to have visited a doctor and/or hospital in the 2 weeks before the survey and to have received an influenza vaccination in the year before the survey.

Health status and outcomes: Compared with people aged 65 years and over who have never had asthma, adults with asthma aged 65 years and over were less likely to rate their health as good or better.

Risk factors: There were no significant differences among the 13 risk factors applicable to this age group.

Long-term health conditions: At these ages, having three or more long-term health conditions (although very common at almost 96%) did not distinguish people with asthma from those who have never had asthma. However, those with asthma were more likely to have hay fever, unspecified allergy, bronchitis/emphysema, chronic sinusitis and osteoporosis.

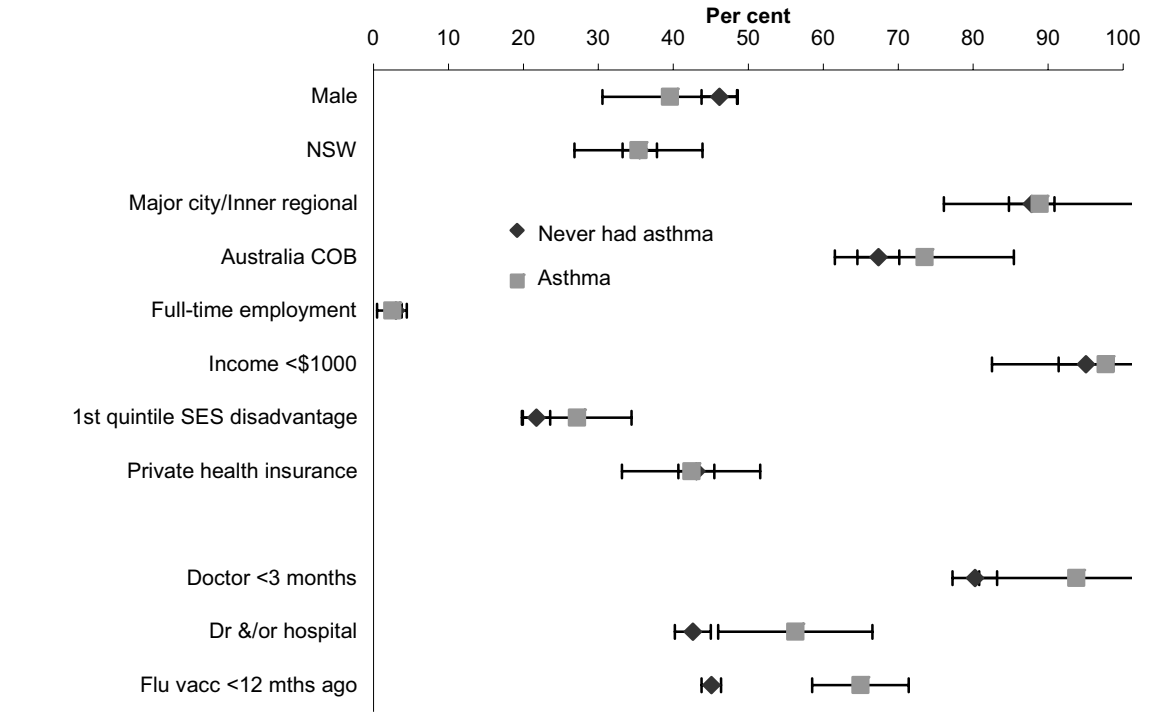
Two characteristics both defined and distinguished adults aged 65 years and over with asthma (Table 3.8):

- visited a doctor and/or hospital in the 2 weeks before the survey (more likely)
- received an influenza vaccination in the year before the survey (more likely).

Table 3.8: Defining and distinguishing characteristics among people with asthma, 65 years and over, 2001

	Defining (>50%)	Not defining (≤50%)
Distinguishing (significant)	Health action (doctor and/or hospital) Flu vaccination (<12 months ago)	Self-assessed health (good+) Hay fever (had) Allergy unspecified (had) Bronchitis/emphysema (had) Chronic sinusitis (had) Osteoporosis (had)
Not distinguishing (not significant)	Sex (female) Remoteness (major city/inner regional) Country of birth (Australia) Gross weekly income (<$1000) Asthma medications (used) Number of asthma medications (2+) Consulted a doctor (within 3 months) Quality of life (mostly satisfied+) Health vs. 1 year ago (same+) Days of reduced activity (none) Time since drank alcohol (<1 month) Daily serves of fruit (2+) Regular smokers in household (none) Exercise level (sedentary) Long-term conditions (3 or more)	(a)

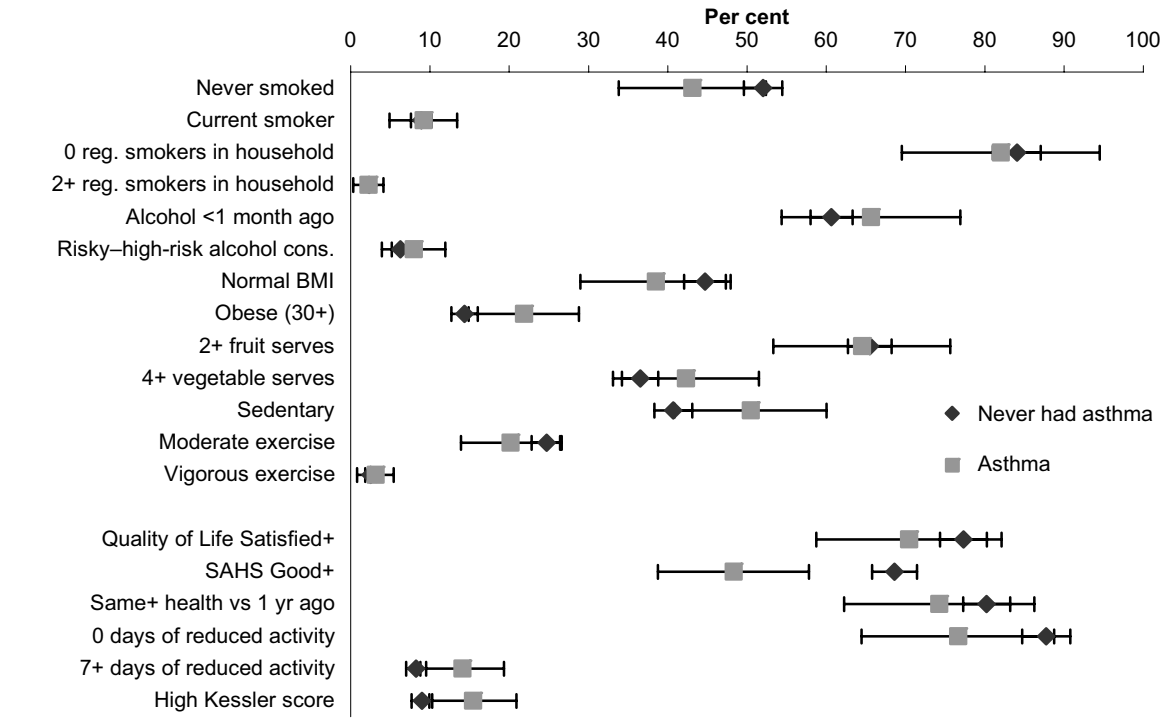
(a) Contains the remainder of the characteristics listed in Table 3.1.



Note: Confidence intervals without an upper end stroke extend beyond 100%.

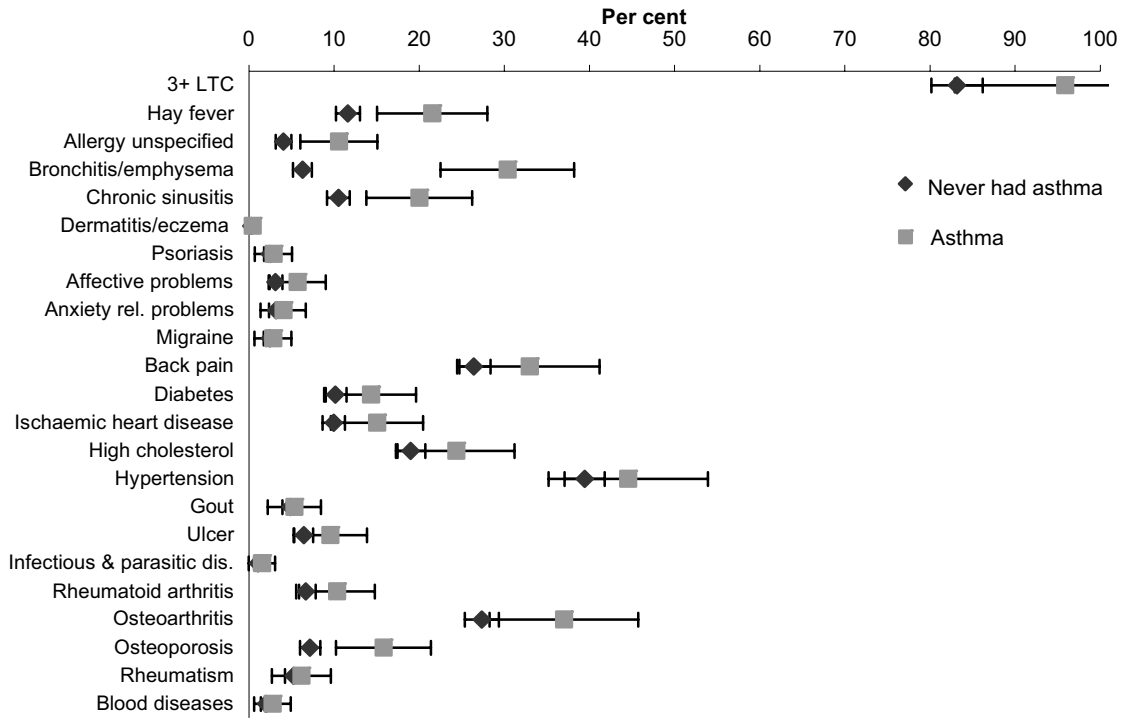
Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.14: Demographics and actions, by asthma status, persons aged 65 years and over, 2001



Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.15: Risk factors and outcomes, by asthma status, persons aged 65 years and over, 2001



Note: Confidence intervals without an upper end stroke extend beyond 100%.

Source: ABS NHS 2001 Expanded V2 CURF.

Figure 3.16: Long-term conditions, by asthma status, persons aged 65 years and over, 2001

Distinguishing characteristics across age groups

The comparisons in Figures 3.1 to 3.16 reveal those characteristics that distinguish people with current asthma from those who have never had asthma. Of further interest are those distinguishing characteristics that occur in adjacent age groups or recur in later age groups, that is, that persist across age groups (Table 3.9).

Before 65 years of age, a higher proportion of people with asthma than people who have never had asthma had three or more long-term health conditions. Although a higher proportion of people with asthma than those who have never had asthma had certain long-term health conditions, there were no diseases reported by more than 50% of any age group. That is, there were no comorbidities that were both defining and distinguishing characteristics.

Hay fever, unspecified allergy, chronic sinusitis and bronchitis/emphysema were the four long-term health conditions that were consistently more prevalent in people with asthma than in those who have never had asthma. Unspecified allergy was a distinguishing characteristic at all stages of life, while the other three conditions became distinguishing characteristics from 5 years of age.

For those aged 18–34 years and 35–64 years, migraine, back pain, obesity, and anxiety-related problems were other long-term health conditions that distinguished people with asthma from those who have never had asthma.

Use of the health care system was also a distinguishing characteristic that persisted across age groups. A higher proportion of those aged 5–64 years with asthma than those who have never had asthma consulted a doctor in the 3 months before the survey. Also, a higher proportion of those aged 5–14 years and adults with asthma visited a doctor and/or hospital in the 2 weeks before the survey.

Another distinguishing characteristic between people with asthma and those who have never had asthma was gender, although not in a consistent manner. For those aged 5–14 years the proportion of males was significantly higher among those with asthma than those who have never had asthma, but for those aged 18–34 years and 35–64 years the proportion of males was significantly lower. That is, the proportion of females was significantly higher.

Table 3.9: Distinguishing characteristics across age groups

Variable	Value	0–4 years	5–14 years	15–17 years	18–34 years	35–64 years	65+ years
Demographics							
Sex	% male		+		—	—	
Country of birth	% Australia				+	+	
Health actions							
Time since last consulted a doctor	% within 3 months		+	+	+	+	
Combination (health) action taken in last 2 weeks	% doctor &/or hospital visit		+		+	+	+
Health status and outcomes							
Self-assessed health	% good+	. .	. .			—	—
No. of days out of role in last 2 weeks	% 7+	. .	+			+	. .
Psychological distress (Kessler score)	% high+ (score 22+)	. .	. .	. .	+	+	
Risk factors							
Self-reported body mass index	% obese (30+)	. .	. .		+	+	
Long-term health conditions (comorbidities)							
No. of long-term conditions	% 3+	+	+	+	+	+	
Hay fever	% with		+	+	+	+	+
Allergy unspecified	% with	+	+	+	+	+	+
Bronchitis/emphysema (COPD)	% with		+	+	+	+	+
Chronic sinusitis	% with		+	+	+	+	+
Affective problems	% with		+			+	
Anxiety-related problems	% with				+	+	
Migraine	% with				+	+	
Back pain (incl. sciatica)	% with				+	+	

. . Not applicable

\+ People with asthma have a significantly greater proportion than those who have never had asthma.

— People with asthma have a significantly smaller proportion than those who have never had asthma.

Note: Only those characteristics that significantly distinguished people with asthma from those who never had asthma in two or more age groups are presented.

4 Discussion

The aims of this report were to identify the demographic and health-related characteristics that define people with current, long-term asthma, and distinguish them from those who have never had asthma. This was achieved by constructing statistical snapshots of people with asthma at different stages of life using 2001 NHS data and comparing them to snapshots of people who have never had asthma.

Defining and distinguishing characteristics

The statistical snapshots show several characteristics unique to people with asthma, such as having a written asthma action plan and using medications for asthma in the two weeks before the survey. Other characteristics, such as country of birth being Australia, were reported by a majority of people with asthma. We refer to these as *defining* characteristics, although many of them are shared with the rest of the population, including those who have never had asthma. When there was a significant difference between the proportion among people with asthma and those who have never had asthma, we refer to the characteristic as *distinguishing*. Labelling characteristics as defining and/or distinguishing is useful for revealing each characteristic's prominence and role.

Children with asthma aged 0–4 years are only distinguishable from those who have never had asthma by being more likely to have three or more long-term health conditions (including asthma) and by being more likely to have an unspecified allergy. From the age of five years, however, there are several distinguishing characteristics, many occurring in more than one age group.

In more than one age group, the following defining and distinguishing characteristics of people with asthma were the most important: their sex; the use of the health care system (especially consulting a doctor in the 3 months before the survey); and the number of long-term health conditions (conditions lasting, or expected to last, at least 6 months).

Obesity was the only risk factor that was a distinguishing characteristic for more than one age group, although it was not a defining characteristic. Further, although there were several distinguishing comorbidities, none of them were also defining characteristics.

Each of the aforementioned characteristics has been identified in previous Australian and overseas research.

Sex

Asthma is more common in boys before adolescence and in females after adolescence. The reason for this switch in sex predominance is not fully understood (Lee et al. 2006) but the pattern has been demonstrated in Australia and overseas (AIHW: ACAM 2005; Lee et al. 2006). The switch is also reflected in patterns of hospitalisation for asthma (AIHW: ACAM 2005; Schatz et al. 2006). However, even when controlling for underlying differences in prevalence and tobacco smoking, adults females are more likely than males to be hospitalised for asthma (Prescott et al. 1997).

Use of the health care system

As a long-term health condition, asthma has a considerable impact on people's health and wellbeing and on their use of the health care system. For those aged 5–64 years, consulting a doctor in the three months before the survey was a defining and distinguishing characteristic. Visiting a doctor and/or hospital in the 2 weeks before the survey was a defining and distinguishing characteristic for those aged 65 years and over and a distinguishing characteristic for those aged 5–14 years and 18–64 years. About 10% of people with asthma (18.7% of those aged 0–4 years) reported visiting a doctor or hospital specifically for asthma in the 2 weeks before the survey.

Many of these asthma-specific visits may be associated with recurrent exacerbations resulting from exposure to tobacco smoke, ongoing exposure to allergens (such as house dust mites) as well as non-compliance with recommended management and medication (ten Brinke et al. 2005). The greater likelihood of having multiple comorbidities, especially sinusitis and psychological distress (ten Brinke et al. 2005), may account for the greater tendency of people with asthma to have recently visited a doctor or hospital for any reason.

Obesity

People with asthma aged 18 to 64 years are more likely to be obese than those who have never had asthma. The association between asthma and excessive weight or obesity has been demonstrated by several recent studies (Chinn & Rona 2001; Gilliland et al. 2003; Saint-Pierre et al. 2006; Varraso et al. 2005). However, Chinn and Rona (2001) suggest that an increase in asthma incidence cannot be explained simply by a preceding increase in the incidence of obesity as the relationship appears to be a recent phenomenon. Although there is some evidence from longitudinal studies that being overweight or obese raises the risk of the onset of asthma in children, especially among boys (Gilliland et al. 2003), it is not clear whether the link between obesity and asthma is physiological or due to subsequent changes in lifestyle. For example, it may be argued that asthma leads to obesity due to an associated reduction in physical activity (Gilliland et al. 2003), or that it affects the quality of asthma management, thereby aggravating the condition (Saint-Pierre et al. 2006). The recent discovery of a protein central to both fatty-acid metabolism and airway inflammation suggests a possible genetic link (Shum et al. 2006).

Allergic and inflammatory conditions

Until the age of 65 years, people with asthma are more likely to have three or more long-term health conditions, particularly those related to allergy and inflammation.

At all ages, unspecified allergy is a distinguishing long-term health condition for people with asthma. From the age of 5 years, hay fever, sinusitis and bronchitis/emphysema are also distinguishing comorbidities. It is not surprising that people with asthma are more likely to have one or more allergy-related long-term health conditions, as up to 80% of people with asthma are allergic to at least one allergen (Court et al. 2002; Faniran et al. 1999; Kemp & Kemp 2001). The relationship between asthma and allergic (atopic) diseases, especially hay fever, has been well established by longitudinal and cross-sectional studies (Huovinen et al. 2006; Plaschke et al. 2000; Porsbjerg et al. 2006; Strachan et al. 1996; Wolfe et al. 2000; Xuan et al. 2002).

The finding that a higher proportion of people with asthma also have bronchitis and/or emphysema may partly reflect the difficulty in distinguishing between the conditions at diagnosis, especially at older ages (Mannino et al. 2000). Tobacco smoking is well-recognised as the major cause of chronic obstructive lung disease (of which emphysema and chronic bronchitis are the major forms). And, although the evidence for a causal link remains mixed, researchers have found that smoking increases the risk of wheeze and asthma, especially in non-atopics (Genuneit et al. 2006; Plaschke et al. 2000), and that tobacco smoke is known to worsen asthma symptoms in those with established disease (Siroux et al. 2000; Strachan et al. 1996). Therefore, a high proportion of current and ex-smokers are likely to report chronic obstructive lung disease and asthma concurrently.

Mental health conditions

People with asthma aged 18–64 years are more likely than those who have never had asthma to have psychological distress and anxiety-related disorders. Those aged 35–64 years, as well as those aged 5–14 years, are also more likely to have affective problems (such as depression). Hurwitz and Morgenstern (1999) also found a relationship between asthma and depression. They suggested that pro-inflammatory cells released during an allergic asthma episode leads to hyper-reactive responses to subsequent psycho-social stress. This relationship is also supported Wright et al. (2005), but there are several alternative explanations.

It is reasonable to suggest that having asthma, particularly if it is poorly managed or associated with one or more other chronic health conditions, would increase the likelihood of having a mental health disorder, such as anxiety or depression (Annesi-Maesano et al. 2006; Bender 2006; Goldney et al. 2003). Secondly, underlying anxiety may lead to risky behaviour, such as tobacco smoking, and exacerbated asthma symptoms (Annesi-Maesano et al. 2006). Depression may also lead to non-compliance with asthma management and medication, particularly among adolescents, which could then worsen asthma symptoms and lead to further depression (Bender 2006; DiMatteo et al. 2000). However, the cause–effect relationship is not clear, as non-compliance may result from other behavioural traits. Further, results from a 21-year longitudinal study of a birth cohort in New Zealand suggests a non-causal relationship between asthma and either depression or anxiety (Goodwin et al. 2004). Rather, Goodwin and colleagues (2004) suggest that the relationship may be confounded by other genetic, social or individual factors associated with both outcomes.

Other comorbidities

As with mental health conditions, other comorbidities that distinguish people with asthma, from those who have never had asthma, form more complex and less understood relationships than with allergic and inflammatory conditions. For example, migraine and back pain have been associated with asthma. In this study, these comorbidities distinguished those aged 18–64 years with asthma from those who have never had asthma.

An association between asthma and migraine has been found in a number of cohort studies (Strachan et al. 1996) and case-control studies (Davey et al. 2002). As yet, no causal link or common mechanism, including an underlying allergic mechanism, has been identified (Davey et al. 2002; Ozge et al 2005).

Hurwitz and Morgenstern (1999) found a relationship between asthma and back pain. They suggested that it was based on a mechanism involving hyper-reactivity to mechanical stress after an allergic asthma attack (as suggested with subsequent psychosocial stress and depression).

Previous snapshot studies

The findings from this study are similar to those of other Australian studies using different data sources. To determine the demographic and risk factor characteristics that best describe people with current asthma (as well as chronic obstructive pulmonary disease and diabetes), Taylor and colleagues (2002) constructed profiles with data from the North West Adelaide Health Study. They found that people with asthma are significantly more likely than people without asthma to have an allergy (especially to rye grass pollen, cats, house dust mites and mould) and to access health care services such as general practitioners and hospitals.

Daly and Molster (2006) used data from the Western Australia Health and Wellbeing Surveillance System to produce profiles of people with asthma in 2004. They investigated the prevalence of asthma among people with certain characteristics, such as health status outcomes, selected risk factors and measures of socioeconomic disadvantage. Daly and Molster's associations were analysed differently to this study and cannot be generalised to conclude that people with current asthma were more likely to report these characteristics than those without asthma. But, in general, they found associations in the same areas as in the present project. For example, people who reported their health as being worse than a year before the survey were more likely to have asthma than those whose health was reported as the same or better. Also, adults who had a mental health problem, were obese, did not have enough money to get by each week, lived in an area that was classified as the most disadvantaged socially and economically, or who were currently smoking, were more likely to report asthma (Daly & Molster 2006).

Issues for consideration

Unlike Taylor and colleagues (2002) and Daly and Molster (2006), this report uses the term 'snapshot' rather than 'profile' to describe the collection of characteristics of people with asthma. This is because profiles, as used in other various disciplines, are usually applied to individuals. That is, they are often used to describe a typical individual in a particular context (as in criminal profiling), or are used to show the concordance or discrepancy of an individual with the established norm (as in personality profiling). In this report each characteristic comprising the statistical snapshots was considered independently of the others. Therefore, the snapshots should not be taken to represent a 'typical' person with asthma. A snapshot or profile of a typical person with asthma that was based on as many variables as used to construct the snapshots in this project would not include many actual cases. For such a profile to be more inclusive it would have to be based on only a few key variables. However, our findings may help to identify the key variables required to construct profiles of a typical person with asthma, if such an exercise were considered worthwhile.

An important consideration is the potential influence of sample size (and population estimates) on the findings. The 35–64 years age group had by far the greatest number of significant differences between people with asthma and those who have never had asthma. However, this age group was the largest numerically and would therefore tend to have

estimates with smaller confidence intervals, thereby increasing the opportunity to detect significant differences. On the other hand, the age groups with smaller numbers, such as the 0–4 years age group, would have estimates with larger confidence intervals, and therefore reduced opportunities to detect significant differences.

The snapshots show that a person's sex is an important characteristic when viewed in relation to age. Under 18 years, males predominate (59% of those aged 5–14 years with asthma are male), whereas from the age of 18 years, females predominate (62% of those aged 35–64 years with asthma are female). However, it was beyond the scope of this report to construct snapshots of people with asthma by both age and sex and to compare these to corresponding snapshots of those who have never had asthma. The size of the sample contributing to the snapshots with the smaller age groups would limit the ability to detect uncommon occurrences, particularly some comorbidities, and significant differences.

Diagnostic confusion, which can occur with a self-report survey, may account for some of the comorbidities reported by people with asthma. However, people with current asthma, as a group, are more likely than people who have never had asthma to have 16 of the 22 comorbid long-term health conditions examined. The presence of so many comorbidities has implications for how asthma is managed—some comorbidities can be closely tied pathologically to asthma. Adams and colleagues (2006) suggest that at younger ages, when there are fewer comorbidities, an asthma-targeted approach is required, while in older people, with many comorbidities, an integrated chronic disease approach may be necessary.

We have referred to characteristics that are defining and/or distinguishing across ages. This implies that the manifestation of such characteristics is dependent on age, such as having few comorbidities at younger ages but many at older ages. However, it is important to recognise that a single cross-sectional survey does not allow the separation of age effects and so-called 'cohort' effects. Although we can demonstrate a difference between 4 year olds and 14 year olds, for example, it is impossible to say that in 10 years time today's 4 year olds will resemble today's 14 year olds as they are distinct cohorts. Further investigation of these effects requires longitudinal studies in addition to regular and compatible cross-sectional studies (Marks & Poulos 2005).

Many of the differences between those with and without asthma might be amplified if we were to look at people with recent symptoms of asthma, such as wheezing (Forrest et al. 1997). Forrest and colleagues found that teenagers with asthma, with or without recent wheeze, had more comorbidities than teenagers without asthma, but those with recent wheeze had the most acute and recurrent comorbidities and the greatest effects on health and wellbeing. This type of analysis was not conducted in this study but may be a consideration for future work. Unfortunately, the presence of recent wheeze was not included in the 2004–05 NHS.

Conclusions

By providing statistical snapshots using 2001 NHS data, this report reveals the demographic and health-related characteristics that define and distinguish people with asthma. These characteristics improve our understanding of the nature and consequences of the disease. It may be argued that the NHS does not provide an entirely reliable indicator of the prevalence of asthma, due to the self-reporting nature of the survey. However, most of the key defining and distinguishing characteristics have been identified by other studies, both in Australia and overseas. To this extent, the NHS is a valid source of information on the prevalence of

asthma as well as the characteristics of the people who have the disease and the burden of disease they experience. The survey also has the advantages of national coverage and of including items on a large number of demographic and health-related dimensions.

The 2004–05 NHS provides an opportunity to repeat the project with updated data and an existing template of what to expect at different age groups.

Appendix A: Age applicability

Table A.1: Variables used and applicable ages

Variable	CURF variable name	Applicable ages
Demographics		
People with asthma	asstat	All ages
Asthma status	asstat	All ages
Sex	sex	All ages
State	state	All ages
Remoteness area of residence	ra_2001	All ages
Country of birth	q006	All ages
Labour force status	empstat	15 years and over
Total gross weekly cash income	uinc	All ages
Relative SES disadvantage	d_low_ca	All ages
Private health insurance coverage	q751	15 years and over
Health actions		
Written asthma action plan	q361	All ages
Medications for asthma in last 2 weeks	q364	All ages
No. of medications for asthma	q365	All ages
Purpose for using all medications for asthma	rasthmed	All ages
Time since last consulted a doctor	timedoc	All ages
Combination (health) action taken in last 2 weeks	combact	All ages
Flu vaccination status	immstflu	50 years and over
Reported child immunisation level	repimm	1 month – 6 years
Health status and outcomes		
Quality of life	qlife	18 years and over
Self-assessed health	sahlth	15 years and over
Health vs 1 year ago	hlthtran	15 years and over
No of days out of role in last 2 weeks	stdisab	5–64 years
No. of days out of role in last 2 weeks	stdisab	5–64 years
No. of days with reduced activity in last 2 weeks	dayredac	5 years and over
No. of days with reduced activity in last 2 weeks	dayredac	5 years and over
Psychological distress (Kessler score)	k10	18 years and over

(continued)

Table A.1 (continued): Variables used and applicable ages

Variable	CURF variable name	Applicable ages
Risk factors		
Time since last drank alcohol	q311	18 years and over
Alcohol consumption risk level over last 7 days (2000 guidelines)	alcr00wk	18 years and over
Usual daily serves of vegetables	q302	12 years and over
Usual daily serves of fruit	q303	12 years and over
Self-reported body mass index (BMI)	bminew	15 years and over
Self-reported body mass index	bminew	15 years and over
Smoking status	smokstat	18 years and over
Smoking status	smokstat	18 years and over
No. regular smokers in household	numsmoke	All ages
No. regular smokers in household	numsmoke	All ages
Exercise level in last 2 weeks	exlevelnew	15 years and over
Moderate exercise in last 2 weeks	q210	15 years and over
Vigorous exercise in last 2 weeks	q213	15 years and over
Long-term health conditions (comorbidities)		
No. of long-term conditions	numltc	All ages
Hay fever	ICD10a–ICD10s	All ages
Allergy unspecified	ICD10a–ICD10s	All ages
Bronchitis/emphysema (COPD)	ICD10a–ICD10s	All ages
Chronic sinusitis	ICD10a–ICD10s	All ages
Dermatitis/eczema	ICD10a–ICD10s	All ages
Psoriasis	ICD10a–ICD10s	All ages
Affective problems	ICD10a–ICD10s	All ages
Anxiety-related problems	ICD10a–ICD10s	All ages
Migraine	ICD10a–ICD10s	All ages
Back pain (incl. sciatica)	ICD10a–ICD10s	All ages
Diabetes	ICD10a–ICD10s	All ages
Ischaemic heart disease (IHD)	ICD10a–ICD10s	All ages
High cholesterol	ICD10a–ICD10s	All ages
Hypertension (high BP)	ICD10a–ICD10s	All ages
Gout	ICD10a–ICD10s	All ages
Ulcer	ICD10a–ICD10s	All ages
Infectious & parasitic diseases	ICD10a–ICD10s	All ages
Osteoarthritis	ICD10a–ICD10s	All ages
Rheumatoid arthritis	ICD10a–ICD10s	All ages
Rheumatism	ICD10a–ICD10s	All ages
Osteoporosis	ICD10a–ICD10s	All ages
Blood disorders (incl. anaemia)	ICD10a–ICD10s	All ages

Appendix B: Variables and values

Table B.1: Groupings used and values excluded from proportions

Variable	Groupings used	Values in groups	Values excluded
Demographics			
People with asthma	With asthma	1 Ever told has condition, still current and long term	n.a.
	Other	3 Ever told has condition, not current; 5 Never told, not current or long term	
Asthma status	Current LT asthma	1 Ever told has condition, still current and long term	3 Never told, not current or long term
	Never had asthma	5 Never told, not current or long term	
Sex	Male	1 Males	n.a.
	Female	2 Females	
State	NSW	1 New South Wales	n.a.
	Not in NSW	2–8 (Vic, Qld, SA, WA, Tas, NT, ACT)	
Remoteness area of residence	Major city/inner regional	0 Major cities of Australia; 1 Inner regional Australia	n.a.
	Other	2 Other areas	
Country of birth	COB Australia	01 Australia	n.a.
	COB other	02 New Zealand; 03 Other Oceania; 04 UK and Ireland; 05 Other North/West Europe; 06 Southern & Eastern Europe; 07 North Africa; 08 Middle East; 09 Other Africa; 10 Southeast Asia; 11 Other Asia; 12 Americas; 99 Other	
Labour force status	Full time	1 Employed, full time	0 Not applicable
	Not full time	2 Employed, part time; 3 Unemployed, looking for full-time work; 4 Unemployed, looking for part-time work; 5 Not in labour force	
Total gross weekly cash income	<$1000	01 Not income; 02–12 (<$120–$999)	99 Not known
	≥$1000	13–38 ($1,000–$3,500 or more)	
Relative SES disadvantage	1st quintile	01 First decile; 02 Second decile	n.a.
	2nd–5th quintile	03 Third decile; 04 Fourth decile; 05 Fifth decile; 06 Sixth decile; 07 Seventh decile; 08 Eighth decile; 09 Ninth decile; 10 Tenth decile	
Private health insurance coverage	Private health insurance	1 With private health insurance	0 Not applicable; 9 Not known
	No private health insurance	2 Without private health insurance	
Health actions			
Written asthma action plan	Has asthma action plan	1 Has written asthma action plan	0 Not applicable
	No or unknown asthma action plan	2 Does not have a written asthma action plan; 3 Never heard of a written asthma action plan; 9 Not known if has a written asthma action plan	
Medications for asthma in last 2 weeks	Used drugs for asthma	1 Used pharmaceutical medications for asthma	0 Not applicable
	Didn't use drugs for asthma	2 Not used pharmaceutical medications for asthma; 9 Not known if used pharmaceutical medications for asthma	
No. of medications for asthma	Used 2+ drugs for asthma	2 Two; 3 Three; 4 Four or more	n.a.
	Used <2 drugs for asthma	1 One; 0 Not applicable (+ current LT asthma)	

(continued)

Table B.1 (continued): Groupings used and values excluded from proportions

Variable	Groupings used	Values in groups	Values excluded
Health actions (continued)			
Purpose for using all medications for asthma	Used drugs for prevention & relief	3 Prevention and relief	n.a.
	Not used drugs for both prevention & relief	1 Prevention only; 2 Relief only; 3 Neither prevention or relief; 9 Not known; 0 Not applicable (+ current LT asthma)	
Time since last consulted a doctor	Consulted a doctor <3 months ago	1 2 weeks or less; 2 More than 2 weeks to less than 3 months	n.a.
	Didn't consult a doctor <3 months ago	3 3 months to less than 6 months; 4 6 months to less than 12 months; 5 12 months or more; 6 Never; 9 Not known	
Combination (health) action taken in last 2 weeks	Seen a doctor and/or hospital	01–12	00 Not applicable
	Not seen a doctor and/or hospital	13–98	
Flu vaccination status	Had flu vaccination in year	3 had influenza vaccination in last 12 months	0 Not applicable
	Didn't have flu vaccination in year	1 Never had influenza vaccination; 2 Had influenza vaccination but not in last 12 months; 4 Had influenza vaccination but not known if in last 12 months; 9 Not known if ever had influenza vaccination	
Reported child immunisation level	All recommended vaccinations	1Received all vaccinations recommended for age	0 Not applicable
	Not all recommended vaccinations	2 Received some recommended vaccinations; 3 Not received any vaccinations; 4 Not known if received all recommended vaccinations; 9 Not known if received any recommended vaccinations	
Health status and outcomes			
Quality of life	Mostly satisfied or better	1 Delighted; 2 Pleased; 3 Mostly satisfied	0 Not applicable
	Less than mostly satisfied	4 Mixed; 5 Mostly dissatisfied; 6 Unhappy; 7 Terrible	
Self-assessed health	Good or better	1 Excellent; 2 Very good; 3 Good	0 Not applicable
	Not good or better	4 Fair; 5 Poor; 8 Not stated	
Health vs 1 year ago	Same or better	1 Much better; 2 Somewhat better; 3 About the same	0 Not applicable
	Not the same or better	4 Somewhat worse; 5 Much worse	
No. of days out of role in last 2 weeks	No days out of role	00	n.a.
	1+ days out of role	01–14	
No. of days out of role in last 2 weeks	7 or more days out of role	07–14	n.a.
	<7 days out of role	00–06	
No. of days with reduced activity in last 2 weeks	No days of reduced activity	00	n.a.
	1+ days of reduced activity	01–14	
No. of days with reduced activity in last 2 weeks	7 or more days of reduced activity	07–14	n.a.
	<7 days of reduced activity	00–06	
Psychological distress (Kessler score)	High psychological distress	22–50	n.a.
	Not high psychological distress	0–21	

(continued)

Table B.1 (continued): Groupings used and values excluded from proportions

Variable	Groupings used	Values in groups	Values excluded
Risk factors			
Time since last drank alcohol	Drank alcohol in last month	1 1 week or less; 2 More than 1 week to less than 2 weeks; 3 2 weeks to less than 1 month	0 Not applicable
	Didn't drink alcohol in last month	4 1 month to less than 3 months; 5 3 months to less than 12 months; 6 12 months or more; 7 Never; 9 Not known	
Alcohol consumption risk level over last 7 days (2000 guidelines)	Risky-high risk alcohol cons.	2 Risky; 3 High risk	0 Not applicable
	Not risky or high risk alcohol cons.	1 Low risk; 4 Last consumed alcohol 1 week to less than 12 months ago; 5 Last consumed alcohol 12 months or more ago; 6 Never consumed alcohol of time since last consumed not known	
Usual daily serves of vegetables	4+ daily serves of vegetables	3 4–5 serves; 4 6 serves or more	0 Not applicable
	<4 daily serves of vegetables	1 1 serve or less; 2 2–3 serves; 5 Doesn't eat vegetables	
Usual daily serves of fruit	2+ usual daily serves of fruit	2 2–3 serves; 3 4–5 serves; 4 6 serves or more	0 Not applicable
	<2 usual daily serves of fruit	1 1 serve or less; 5 Doesn't eat vegetables	
Self-reported body mass index (BMI)	Normal self-reported BMI	4 Normal (BMI 18.50–19.99); 5 Normal (20.00–24.99)	0 Not applicable 98 Not known
	Not normal self-reported BMI	1 Grade 3 thinness (BMI less than 16.00); 2 Grade 2 thinness (BMI 16.00–16.99); 3 Grade 1 thinness (BMI 17.00–18.49); 6 Grade 1 overweight (BMI 25.00–29.99); 7 Grade 2 overweight (BMI 30.00–39.99); 8 Grade 3 overweight (BMI greater than or equal to 40.00)	
Self-reported body mass index	Obese self-reported BMI	7 Grade 2 overweight (BMI 30.00–39.99); 8 Grade 3 overweight (BMI greater than or equal to 40.00)	0 Not applicable 98 Not known
	Not obese self-reported BMI	1 Grade 3 thinness (BMI less than 16.00); 2 Grade 2 thinness (BMI 16.00–16.99); 3 Grade 1 thinness (BMI 17.00–18.49); 4 Normal (BMI 18.50–19.99); 5 Normal (20.00–24.99); 6 Grade 1 overweight (BMI 25.00–29.99)	
Smoking status	Never smoked	4 Never smoked regularly	0 Not applicable
	Ever smoked	1 Current regular smoker – daily; 2 Other current smoker; 3 Ex-regular smoker	
Smoking status	Current smoker	1 Current regular smoker – daily; 2 Other current smoker	0 Not applicable
	Not current smoker	3 Ex-regular smoker; 4 Never smoked regularly	
No. regular smokers in household	No regular smokers in household	1 None	0 Not applicable 9 Not known
	1+ regular smoker in household	2 One; 3 Two; 4 Three or more	
No. regular smokers in household	2+ regular smokers in household	3 Two; 4 Three or more	0 Not applicable 9 Not known
	<2 regular smokers in household	1None; 2 One	
Exercise level in last 2 weeks	Sedentary exercise level	4 Sedentary (very low); 5 Sedentary (no exercise)	0 Not applicable
	Not sedentary exercise level	1High ; 2 Moderate; 3 Low	
Moderate exercise in last 2 weeks	Did moderate exercise	1 Did moderate exercise	0 Not applicable
	Didn't do moderate exercise	2 Did not do moderate exercise	
Vigorous exercise in last 2 weeks	Did vigorous exercise	1 Did vigorous exercise	0 Not applicable
	No vigorous exercise	2 Did not do vigorous exercise	

(continued)

Table B.1 (continued): Groupings used and values excluded from proportions

Variable	Groupings used	Values in groups	Values excluded
Long-term health conditions (comorbidities)			
Number of long-term conditions	3 or more long-term conditions	3 Three; 4 Four; 5 Five or more	n.a.
	Less than 3 long-term conditions	0 None; 1 One; 2 Two	
Hay fever	With hay fever	55	n.a.
	Without hay fever	None of the variables had this value	
Allergy unspecified	With unspecified allergy	91	n.a.
	Without unspecified allergy	None of the variables had this value	
Bronchitis/emphysema (COPD)	With bronchitis or emphysema	52; 53	n.a.
	Without bronchitis or emphysema	None of the variables had these values	
Chronic sinusitis	With chronic sinusitis	56	n.a.
	Without chronic sinusitis	None of the variables had this value	
Dermatitis/eczema	With dermatitis or eczema	67	n.a.
	Without dermatitis or eczema	None of the variables had this value	
Psoriasis	With psoriasis	68	n.a.
	Without psoriasis	None of the variables had this value	
Affective problems	With affective problems	13; 14	n.a.
	Without affective problems	None of the variables had these values	
Anxiety-related problems	With anxiety-related problems	15	n.a.
	Without anxiety-related problems	None of the variables had this value	
Migraine	With migraine	21	n.a.
	Without migraine	None of the variables had this value	
Back pain (incl. sciatica)	With back pain	78; 79	n.a.
	Without back pain	None of the variables had these values	
Diabetes	With diabetes	07; 08; 09	n.a.
	Without diabetes	None of the variables had these values	
Ischaemic heart disease (IHD)	With IHD	110; 111	n.a.
	Without IHD	None of the variables had these values	
High cholesterol	With high cholesterol	10	n.a.
	Without high cholesterol	None of the variables had this value	
Hypertension (high BP)	With hypertension	39	n.a.
	Without hypertension	None of the variables had this value	
Gout	With gout	71	n.a.
	Without gout	None of the variables had this value	
Ulcer	With ulcer	60	n.a.
	Without ulcer	None of the variables had this value	
Infectious & parasitic diseases	With infectious & parasitic dis's	01	n.a.
	Without infectious & parasitic dis's	None of the variables had this value	

(continued)

Table B.1 (continued): Groupings used and values excluded from proportions

Variable	Groupings used	Values in groups	Values excluded
Long-term health conditions (comorbidities) (continued)			
Osteoarthritis	With osteoarthritis	73	n.a.
	Without osteoarthritis	None of the variables had this value	
Rheumatoid arthritis	With rheumatoid arthritis	72	n.a.
	Without rheumatoid arthritis	None of the variables had this value	
Rheumatism	With rheumatism	76	n.a.
	Without rheumatism	None of the variables had this value	
Osteoporosis	With osteoporosis	80	n.a.
	Without osteoporosis	None of the variables had this value	
Blood disorders (incl. anaemia)	With blood disorders	05; 06	n.a.
	Without blood disorders	None of the variables had these values	

Glossary

age standardisation: A method of removing the influence of age when comparing populations with different age structures either across all ages or across a broad age group. In this report, the standard population used is Australia as at 30 June 2001.

age-standardised proportion: The age standardised rate per 100 persons. It is the rate which would have occurred in the standard population if it experienced the same rate as that of the population of interest—either people with current asthma or people who have never had asthma in this report.

alcohol risk level: The level or risk associated with estimated average daily consumption using the NHMRC risk levels for harm in the long term (ABS 2003).

atopy: A genetic predisposition for allergic reactions.

body mass index (BMI): Weight in kilograms divided by the square of height in centimetres. In this report, BMI is calculated using self-reported weight and self-reported height and so refers to self-reported BMI.

comorbities: health conditions present at the same time as other health conditions.

confidence interval: A measure of confidence in the estimate. This report uses 95% confidence intervals. If many samples were taken from the same population, 95% of the confidence intervals from these repeated samples would include the true population value.

current asthma: Includes people who had been told by a doctor or nurse that they had asthma and whose asthma is still current.

current smokers: Includes both current regular (daily) smokers and current not regular smokers.

days out of role: Days away from work or school/study for at least half the day plus other days of reduced activity due to own illness or injury (ABS 2003).

defining characteristics: Characteristics present in a majority (more than half) of people. In this report, defining characteristics refer to characteristics present in more than half of people with current asthma.

distinguishing characteristics: Characteristics that differ significantly between two groups of people. In this report distinguishing characteristics refer to characteristics that differ significantly between people with current asthma and people who have never had asthma.

exercise level: A grouping of the exercise score derived from frequency, intensity and duration of exercise.

hypertension: high blood pressure.

income unit: Consists of either a single person or a group of related persons, within a household, whose income is shared (or is assumed to be shared). In the definition of income unit, the relationships are restricted to those of marriage (either registered or de facto) and of parent/dependent child. Income units can therefore include the partner (for couples), all children aged less than 15 years, and unmarried children who are full-time students aged 15–24 years who don't have children of their own (ABS 2003).

Kessler score: See *Psychological distress*.

long-term health condition: A health condition that has lasted, or is expected to last, at least six months. Conditions which were assumed to be long-term include asthma, cancer, diabetes insipidus, diabetes mellitus types 1 and 2, rheumatic heart disease, heart attack and stroke (ABS 2003).

never had asthma: Includes people who were never told by a doctor or nurse that they had asthma and had no current asthma.

normal body mass index (BMI): Values of BMI from 18.5 to less than 25, in accordance with World Health Organization standards.

obese: BMI values 30 or higher, in accordance with World Health Organization standards.

other days of reduced activity: Days on which a person had cut down on their usual activities for at least half the day due to own illness or injury not including days away from work or from school/study (ABS 2003).

p: Significance level or probability that a significant result is due to chance alone.

pharmaceuticals for asthma: Any medication used for asthma other than medications identified by respondents as vitamins or minerals, or natural or herbal medication (ABS 2003).

psychological distress: Levels of psychological distress, described by a score value, are derived from the Kessler Psychological Distress Scale–10 items (K–10). This is a scale of non-specific psychological distress based on 10 questions about negative emotional states. The levels are grouped into low (10–15), moderate (16–21), high (22–29) and very high (30–50) (ABS 2003).

relative SES disadvantage: Based on the index of relative socioeconomic disadvantage. This index uses attributes such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations (ABS 2003). It does not refer to the socioeconomic situation of a particular individual but instead refers to the area in which a person lives. In this report, the index of relative socioeconomic disadvantage is analysed using quintiles (that is, five groups) which are based on the level of the index.

remoteness area of residence: Location of place of usual residence using the ASGC Remoteness classification based on the updated Accessibility and Remoteness Index for Australia (ABS 2003).

reported child immunisation level: The degree to which the recommended course of vaccinations for a particular disease has been received, defined using the National Health and Medical Research Council Standard Childhood Vaccination Schedules (ABS 2003).

risky – high-risk alcohol consumption: In males this refers to an average daily consumption of more than 50 ml of alcohol while in females it refers to more than 25 ml (ABS 2003).

sedentary exercise level: An exercise score of less than 100, including no exercise (ABS 2003).

self-reported body mass index (BMI): Self-reported weight in kilograms divided by the square of self-reported height in centimetres.

standard error: A measure of the variation in sample-based estimates.

total gross weekly cash income of income unit: The sum of the respondent's gross cash income and the gross cash income of their spouse/partner (where applicable). The income of any children within the unit is not included (ABS 2003).

usual daily serves of fruit: The usual number of serves of fruit consumed each day where a serve of fruit is around 150 g of fresh fruit (1 medium piece or 2 small pieces of fruit or a cup of diced fruit) or 50 g of dried fruit.

usual daily serves of vegetables: The usual number of serves of vegetables consumed each day where a serve of vegetables is around 75 g of vegetables (½ cup of cooked vegetables or 1 cup of salad vegetables).

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