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Annual monitoring report 2009

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for the National Bowel Cancer Screening Program**

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Contents

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Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
ARIA	Accessibility/Remoteness Index for Australia
ASR	age-standardised rate standardised to the Australian 2001 population
CD	Census Collection District
CI	confidence interval (see Appendix D)
DoHA	Australian Government Department of Health and Ageing
FOBT	faecal occult blood test
ICD-10	International Classification of Diseases 10th revision
IRSD	Index of Relative Socioeconomic Disadvantage
NBCSP	National Bowel Cancer Screening Program
NCSCH	National Cancer Statistics Clearing House
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
SA	South Australia
SEIFA	Socio-Economic Index for Areas
SES	socioeconomic status
Tas	Tasmania
Vic	Victoria
WA	Western Australia

Symbols

. .	not applicable
>	greater than
<	smaller than
≤	smaller than or equal to
n.a.	not available
n.p.	not publishable because of small numbers, confidentiality concerns or other concerns about the quality of the data

Summary

This monitoring report describes the performance of the National Bowel Cancer Screening Program (NBCSP) for people invited to participate in the program in the period 1 January 2008 to 31 December 2008. Individual progression of participants through the screening pathway is analysed up to 31 January 2009. Data were provided by the NBCSP Register maintained by Medicare Australia, and are presented as measures of program activity, performance and outcome.

Phase 1 of the NBCSP was implemented in August 2006 by the Australian Government, in partnership with state and territory governments. Phase 2, which was introduced mid-2008, continued the phase 1 target ages of 55 and 65 years, and added people aged 50. Therefore, this report on participants invited in 2008 includes data from both phases of the NBCSP.

Of the participants screened by the NBCSP in this period, less than 1% were found to have bowel cancer; however, this represents a partial picture of outcomes due to incomplete reporting.

Participation

Of the 685,915 people invited into the NBCSP in 2008, an estimated 39.3% agreed to participate. This proportion was lower than previous years, mainly due to the later inclusion of invitees aged 50 years—many of whom may not have had time to complete and return the kit. Participation of those aged 55 (39.3%) and 65 years (48.1%) was similar to previous years.

Faecal occult blood test outcomes

The proportion of positive screening test results for the 248,475 participants who correctly completed a faecal occult blood test (FOBT) was 6.6%. This was statistically significantly lower than in 2007, mainly due to the inclusion of invitees aged 50 years from 1 July 2008 who generally had lower positivity rates than the older target ages.

Male (7.7%) participants had a higher FOBT positivity rate than females (5.7%), which correlated with known bowel cancer incidence patterns between the sexes.

FOBT positivity rates increased with increasing disadvantage, from 5.5% for participants with the highest socioeconomic status to 7.8% for those with the lowest socioeconomic status.

Follow-up of positive faecal occult blood test results

Of the 16,436 people who returned a positive FOBT, 42.9% had a primary health care practitioner visit recorded, and 64.5% had been recorded as undergoing a colonoscopy to investigate the positive FOBT result.

Of the participants who visited the primary health care practitioner after their positive FOBT result, 83.7% reported having experienced no symptoms beforehand.

Cancer detection

Of the 7,042 people who returned a positive FOBT and had valid follow-up data, 63 confirmed and 239 suspected cancers were found. Pre-cancerous adenomas were found in a further 979 participants. The 239 suspected cancers, plus 2,467 polyp specimens, were awaiting a final histopathology diagnosis. Outcomes for a further 9,394 participants with a positive FOBT result were unknown as follow-up data was not available.

Introduction

Cancer

Cancer is a group of several hundred diseases in which abnormal cells are not destroyed by normal cell processes but instead proliferate and spread out of control. Cancers are distinguished from each other by the specific type of cell involved and the place in the body in which the disease begins.

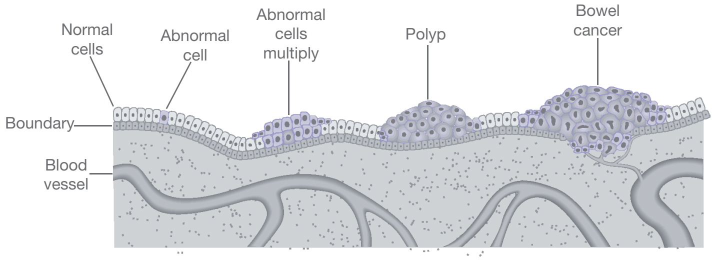
Normally, cells grow and multiply in an orderly way to form tissues and organs that have a specific function in the body. Occasionally, however, cells multiply in an uncontrolled way, after developing from a random genetic mutation, or after being affected by a carcinogen, and form a mass which is called a tumour or neoplasm. Tumours can be benign (not a cancer) or malignant (a cancer). Benign tumours do not invade other tissues or spread to other parts of the body, although they can expand to interfere with surrounding healthy structures. The main features of a malignant tumour are its ability to grow in an uncontrolled way, and to invade and spread to other parts of the body (metastasise).

Although various risk factors for cancer have been identified, for most cancers the causes are not fully known. While some of the causes are modifiable through lifestyle changes, some others are inherited and cannot be avoided through personal action. However, the risk of death due to particular cancers may be reduced through intensive monitoring of individuals at high risk, reducing external risk factors, detecting and treating cancers early in their development, and treating them in accordance with the best available evidence.

Many cancers can be serious and even fatal. However, medical treatment is often successful if the cancer is detected early, which is the aim of cancer screening programs. The goal of treatment is to destroy the cancer cells and stop them from returning. This can be done by surgery to remove the growth or by other methods such as chemotherapy (cancer-destroying drugs) or radiation therapy.

Bowel cancer

Bowel cancer refers specifically to cancer of the large intestine (that is, the colon or rectum). It is also known as colorectal cancer. Generally all bowel cancers involve a multistage process in which a series of cellular mutations occur in epithelial cells of the large intestine over time.



Source: Reproduced with permission by Cancer Council Victoria.

The beginnings of bowel cancer

Early stages of these mutations result in benign polyps that are relatively common in old age. However, a cell may then undergo additional changes and become a benign adenoma, and ultimately, with further mutations, a malignant cancer. These mutations occur relatively slowly making early detection and removal of small cancers, and polyps that may become cancerous, effective in preventing morbidity or mortality from bowel cancer.

Exact causes of these cellular mutations are largely unknown. While a proportion of bowel cancers are thought to be due to a hereditary component, most cases are sporadic (Weitz et al. 2005), with many attributed to environmental factors. Australian males have higher rates of bowel cancer incidence than females (AIHW 2009), and this may be in some part due to differences in environmental risk factors between males and females, some of which may be modified by lifestyle changes.

Diet has been implicated as a risk factor for bowel cancer, with high fat and meat, low fibre diets showing a greater risk in observational studies (Bingham et al. 2005; Norat et al. 2005). However, in a recent study, vegetarian diets were also shown to increase bowel cancer risk (Key et al. 2009). Other environmental influences such as lower physical activity, higher alcohol consumption and excess body weight may also be linked to the higher incidence rates of bowel cancer.

The incidence of bowel cancer is known to increase with age—about 93% of people diagnosed in Australia in 2006 were aged 50 or older (AIHW 2009). Comorbidity with other gastrointestinal conditions (such as Crohn disease, ulcerative colitis and familial adenomatous polyposis) is also seen. Several other hereditary traits also increase the risk of bowel cancer.

Bowel cancer may be present for many years before showing symptoms (such as rectal bleeding, change in bowel habit or anaemia) as they are not generally exhibited until the cancer has reached a relatively advanced stage. However, death can be prevented and survival rates can be significantly improved in cases where the disease is detected and treated early. Evidence from clinical trials has shown that regular (biennial) screening using faecal occult blood testing, which can detect evidence of rectal bleeding not visible to the naked eye, can reduce mortality from bowel cancer by 15%–33% (DoHA 2005).

Bowel cancer treatment

Treatment for bowel cancer always involves surgery to excise the cancer, with or without adjuvant chemotherapy or radiation therapy. Prognosis depends mainly on the stage of development of cancer. It has been recommended that colorectal cancer diagnoses in Australia use the Australian clinopathological stage (ACPS) classification system (ACN 2005):

A. **Submucosa or into but not through muscularis propria**—Cancers diagnosed at this stage showed a 93% 5-year survival rate in a 2004 American study.

B. **Through muscular propria**—Cancers diagnosed at this stage showed an 82% 5-year survival rate.

C. **Spread of cancer to lymph nodes**—Cancers diagnosed at this stage showed a 59% 5-year survival rate.

D. **Metastatic disease**—Cancers diagnosed at this stage showed an 8% 5-year survival rate (O'Connell, Maggard & Ko 2004). Palliative care is commonly used at this stage.

Similar rates have been shown in Australia (Morris, Lacopetta & Platell 2007).

Further, removal of non-benign polyps and adenomas during colonoscopy (for example, as the diagnostic tool following a positive faecal occult blood test) may also reduce the risk of these developing into bowel cancer. It should be highlighted that improved treatment outcomes are expected with an earlier diagnosis.

Bowel cancer incidence and mortality

In Australia in 2006, the risk of being diagnosed with bowel cancer by the age of 85 years was 1 in 10 for males and 1 in 14 for females, with the risk increasing sharply from the age of 45 years (AIHW 2009). Since 1982, incidence of bowel cancer has been increasing slightly each year, with 13,591 new cases diagnosed in 2006. Around 93% of these were in people aged over 50 years, the age at which bowel cancer screening is recommended to start in asymptomatic people.

Bowel cancer accounts for 10% of all deaths from invasive cancers, with 3,801 deaths in 2006, making bowel cancer the second most common cause of cancer-related death after lung cancer (AIHW 2008).

It has been estimated that worldwide in 2002, around 1 million new cases of bowel cancer were diagnosed (9.4% of worldwide cancer diagnoses), and 530,000 deaths from bowel cancer (7.9% of all worldwide cancer deaths) (Parkin et al. 2005).

Screening

Population-based screening involves the systematic use of a test to identify individuals who have a previously unrecognised disease in an asymptomatic target population (that is, in people not showing any symptoms of the disease). The aim of population-based screening is to reduce the burden of disease, which may include a reduction in the incidence, morbidity and mortality of the disease, through detection at an early stage in individuals who would not otherwise know they were affected (Wald 2001; Strong 2005; APHDPCSS 2008).

The screening test used in a population-based screening program is not intended to be diagnostic; rather it aims to distinguish between individuals who test positive (and so may have or may develop the disease) and need further specific testing to determine whether they have the disease, and those who test negative (show no early indications of the disease) and need no further testing (Strong 2005; APHDPCSS 2008). The screening test should both minimise false-positives (a positive screening result that further diagnostic testing showed was actually negative) and maximise true-positives. False-positives place extra load on diagnostic resources, and cause unnecessary stress to those screened. So balanced information as to the benefits and potential harms of the screening should be made available to the target population to ensure they can make an informed decision about their participation (APHDPCSS 2008).

In 1968, the World Health Organization endorsed 10 principles to be used when determining if a new population-based screening program should be introduced for a disease or condition (Wilson & Jungner 1968). These principles were designed to ensure that the disease in question was well-understood and the correct test, treatment and resources were in place to allow screening to be of benefit to the target population. Currently in Australia there are eight National Health Priority Area cancers: lung cancer, bowel cancer, melanoma, non-melanocytic skin cancer, prostate cancer, breast cancer, cervical cancer and non-Hodgkin lymphoma (NHPAC 2006). Of these, bowel, breast and cervical cancer have met the criteria for approved population-based screening programs. This report focuses on the National Bowel Cancer Screening Program.

Bowel cancer screening

Background

In 1996, the Australian Health Technology Advisory Committee systematically reviewed the literature on screening for bowel cancer against the World Health Organization principles for the assessment of a screening program. They concluded that, if further pilot testing was encouraging, Australia should develop a bowel cancer screening program for the at risk population—the 'well population aged over 50' (AHTAC 1997).

The Bowel Cancer Screening Pilot Program was conducted between November 2002 and June 2004 to test the feasibility, acceptability and cost-effectiveness of bowel cancer screening in the Australian community. Following the success of this Pilot, the Australian Government implemented the first phase of the National Bowel Cancer Screening Program (NBCSP) in late 2006. In July 2008, the Australian Government allocated a further $87.4 million over 3 years for the second phase of the Program.

The National Bowel Cancer Screening Program

The goals of the NBCSP are to reduce the incidence of, and mortality due to, bowel cancer, through screening to detect abnormalities of the colon and rectum at a pre-cancerous stage; and, where bowel cancer has developed, to detect cancers at an early stage to maximise the effectiveness of treatment.

Population-based bowel cancer screening involves testing for signs of bowel cancer in people who do not have any obvious symptoms of the disease. People with symptoms or a significant family history are encouraged to discuss these with their primary health care practitioner. In accordance with the National Health and Medical Research Council guidelines for the prevention, early detection and management of colorectal cancer (ACN 2005), these people should be referred directly to diagnostic assessment (generally colonoscopy). However, it is recognised that some people at increased risk may not seek the assistance of a medical professional (for example, those who are symptomatic but reluctant to act on their symptoms). As a result, all people of the target ages are invited to screen regardless of evidence of previous symptoms or a significant family history.

Population-based screening programs require an accurate, reliable, safe and simple test that can detect the presence of disease before the onset of clinical symptoms. A faecal occult blood test (FOBT) is a non-invasive test which detects microscopic amounts of blood in the bowel motion. The NBCSP uses the Fujirebio Inc. immunochemical FOBT, as opposed to the traditional guaiac FOBT used in some other countries, as it has shown higher sensitivity and specificity, does not require dietary restrictions and can be easily used at home (ACN 2005).

The NBCSP has been phased in gradually to help ensure that health services, such as colonoscopy and treatment services, are able to meet any increased demand. This is consistent with the introduction of other screening programs, such as the National Cervical Screening Program, which was also phased in over several years. Start dates and target ages for each phase are outlined in the following table.

NBCSP phases and target populations

Phase	Start date	End date	Target ages	Target age birthdays included
1	7 August 2006	30 June 2008	55 and 65 years	1 May 2006–30 June 2008
2	1 July 2008	30 June 2011	50, 55 and 65 years	1 January 2008–31 December 2010

Note: Data for invitees aged 55 or 65 years is available for the entire reporting period. Data for invitees aged 50 years is only available from 1 July 2008.

Phase 1 of the NBCSP began in Queensland in August 2006, and was progressively rolled out to the remaining states and territories by April 2007. Invitation packs, including a FOBT, were sent directly to participants by the National Bowel Cancer Screening Register (the Register). The method of distributing invitations and FOBT kits varied between jurisdictions, as shown in the following table.

National Bowel Cancer Screening Program phase 1 rollout schedule, states and territories

State	Distribution	Start date
Queensland	Geographic	7 August 2006
New South Wales	Birth date	14 August 2006
Australian Capital Territory	Birth date	11 September 2006
South Australia	Geographic	22 January 2007
Victoria	Birth date	29 January 2007
Western Australia	Geographic	29 January 2007
Northern Territory	Geographic	5 March 2007
Tasmania	Birth date	2 April 2007
Australia	. .	**7 August 2006**

Notes

1. Birth date distribution: involves eligible participants being identified and invited to participate generally within 4 weeks of their 50th, 55th or 65th birthday, with an initial catch-up period for delayed start of the Program.
2. Geographic distribution: involves the full cohort of eligible people being issued invitations across the period of screening according to their postcode, so invitations are sent to people in the eligible age groups at the same time as others living in their area.

All jurisdictions switched to the birth date rollout method for phase 2, with the addition of people aged 50 years being invited to screen. Phase 2 invitations also included a pre-invitation letter (Figure B.2) in an effort to improve participation rates (Cole et al. 2007).

Once completed, participants are requested to post their completed FOBT to a central pathology laboratory for analysis. Results of this analysis are sent to the participant, the participant's nominated primary health care practitioner and the Register. Participants with a positive result, indicating blood in their bowel motion, are advised to consult their primary health care practitioner to discuss further diagnostic testing—in most cases, this will be a colonoscopy.

Responses to invitations, and the outcomes for those who complete the screening test, are monitored to the point of definite diagnosis for those who are found to have bowel cancer (DoHA 2008). Refer to Appendix B for a complete representation of the screening pathway from invitation to diagnosis.

National Bowel Cancer Screening Program monitoring reports

The Australian Institute of Health and Welfare (AIHW) produces annual monitoring reports for the Australian Government Department of Health and Ageing (DoHA) to help manage the NBCSP. These reports analyse data extracted from the Register (maintained by Medicare Australia) and provide an overview of screening participation and outcomes.

Each NBCSP annual monitoring report presents statistics for the previous calendar year on the progression of eligible participants through the screening pathway, and covers participation, FOBT results, follow-up investigations and outcomes. Analyses are presented by age, sex, state and territory, geographic region, socioeconomic status, Aboriginal and Torres Strait Islander status, language spoken at home, and disability status.

As a participant's progression through the screening pathway may span more than a single calendar year, the report also presents trend data from the Program's inception in 2006.

Finally, the most recent incidence and mortality data for bowel cancer are presented as an indication of current status of bowel cancer in Australia. As the NBCSP only began in late 2006, and the relatively small population currently focused on for screening, any influence screening has on incidence and mortality rates may not be shown for several years.

Analytical methods

Invitees who were outside the target ages or did not live in Australia at the time of the invitation were excluded from the eligible population. Those people correctly invited, but who had either opted off or suspended participation in the NBCSP (due to reasons such as a recent colonoscopy or previous diagnosis of bowel cancer) as at 31 January 2009 were also excluded from the NBCSP population eligible for analysis. There were 21,894 invitees excluded from this report for these reasons.

The term 'participation' is used in this report to refer to participation in the screening test. Hence, the participation rate is the proportion of the eligible people invited to participate in the NBCSP who agreed to participate by returning a completed FOBT. The FOBT positivity rate refers to the proportion of positive FOBT results out of all valid FOBT kits returned; kits that were inconclusive were excluded from this rate, and participants were requested to complete another FOBT kit. The proportion of people with a positive FOBT result and who subsequently visited a primary health care practitioner is referred to as the primary health care practitioner follow-up rate. The proportion of people with a positive FOBT who subsequently had a colonoscopy is referred to as the colonoscopy follow-up rate.

Due to the lag time between invitation and completion of an FOBT, calculation of a crude participation rate will result in an underestimate of the true participation rate. For current participation, modelled rates based on the time it takes each individual invited for screening to respond by returning a completed FOBT are calculated by following each invited person, and recording the time it takes him or her to respond. This allows a response rate over time from the date of invitation. The modelled response rates were calculated using the Kaplan-Meier methods. A description of the Kaplan-Meier method appears in Appendix D. A similar approach was used to determine current primary health care practitioner and colonoscopy follow-up rates. As the time taken to progress through the pathway can span calendar years, trend data using crude rates are also provided where applicable to gain a more comprehensive picture of true program performance.

Identification of participants as Aboriginal and Torres Strait Islander peoples, having a disability, or speaking a language other than English is by self-identification to Medicare

Australia through this or other programs. The denominator for initial participation rates stratified by these characteristics is calculated from Australian Bureau of Statistics population estimates from the 2006 Census of Population and Housing. See Appendix D for statistical methods.

Data issues

Data are collected about participants and their screening outcomes from a variety of sources throughout the screening pathway, and stored in the Register. The data are collected on forms completed by participants, primary health care practitioners, colonoscopists, pathologists, nurses and other specialists or administrative staff on behalf of health professionals.

Completion of NBCSP forms by practitioners is not mandatory, and there is the possibility of inconsistent reporting. For example, Assessment, Colonoscopy and Histopathology Report forms are received from different sources and may be entered in any sequence; however, each must have a positive FOBT result to be included. This means that there may be data for colonoscopies without an associated Assessment form, and data for histopathology results without a completed Colonoscopy Report form. When inconsistencies occur, these are noted in monitoring reports to provide an indication of the reliability of the data.

The analyses presented in this report are based on data recorded in the Register for people invited between 1 January 2008 and 31 December 2008, and includes all activity up until 31 January 2009. Data for the whole year were available for people aged 55 and 65 years due to their inclusion in phase 1 of the NBCSP, which ran until 30 June 2008. Data for people aged 50 years is only available for the period 1 July 2008 to 31 December 2008 due to their recent inclusion in phase 2 of the NBCSP only.

Because of time lags in reporting and under-reporting by clinicians, data on primary health care practitioner consultations, colonoscopies and colonoscopy outcomes in this report understate the true performance of the NBCSP in this period and should be interpreted with caution.

The NBCSP has used differing rollout methods across states and territories, and care should be taken in making comparisons between states and territories or geographic locations. Where numbers of responses to invitations are small, caution should also be applied drawing inferences between groups.

As identification of Aboriginal and Torres Strait Islander status, disability status or language spoken other than English is through self-identification through the NBCSP, care should be taken in interpreting data for these groups.

The introduction of a new FOBT kit in December 2008, which was found to be unreliable, may have had a lowering effect on the 2008 positivity rate; however, this effect would have been minimal, as less than 5% of FOBT kits were affected. Those people invited in December 2008 affected by this issue were given the opportunity to retest in 2009.

1 Participation

This chapter discusses program participation for those people invited into the National Bowel Cancer Screening Program between 1 January 2008 and 31 December 2008. This includes invitees from both phase 1 and phase 2 which began on 1 July 2008; however, as people aged 50 years were only included from phase 2, data for people aged 50 years was only available for the final 6 months of 2008.

Fast facts

- Of the 685,915 eligible people invited into the NBCSP in 2008, 251,152 (36.6%) had agreed to participate by 31 January 2009. Using a 26-week Kaplan-Meier estimate to adjust for people invited late in 2008, overall participation was estimated at 39.3%.
- A 52-week Kaplan-Meier estimate of combined participation for those aged 55 and 65 years (as in phase 1 of the NBCSP) showed participation (43.0%) was slightly lower than previous years.
- Kaplan-Meier curves showed that participation rates tended to plateau at around 16 weeks from original invitation.
- There were statistically significant differences in participation between the three target ages. Using Kaplan-Meier estimates at 26 weeks since invitation, the highest rate of participation was by people aged 65 years (47.7%), followed by those aged 55 years (38.9%)—these values were similar to the previous report. Those aged 50 years had the lowest participation at 31.8%.
- There was also a statistically significant difference in participation between the sexes; female participation (42.6%) was 1.2 times the male participation rate (36.0%).
- People with a severe or profound activity limitation were 1.3 times more likely to participate than people without such limitations.

Overall participation

Of the 685,915 invitations issued in 2008 that were eligible for analysis, 251,152 people participated by returning a completed FOBT kit. This gave an overall Australia-wide crude participation rate of 36.6%, as shown in Table 1.1. When compared with crude participation from previous years (Table 1.3), this 2008 rate is statistically significantly lower. Possible reasons for this are:

- the inclusion of people aged 50 years from July 2008. Those aged 50 years were less likely to participate than older aged invitees (Table 1.4). This may lead to invalid conclusions when comparing 2008 participation to that of previous years
- delays between invitation and acceptance by participants. Program invitations are sent to invitees throughout the year and those who receive their invitation in the last 3 months of the year may not have had time to decide on participation and return their completed kit by 31 January 2009. Furthermore, people turning 50 in 2008 were only invited from 1 July 2008, with 74% of them receiving their invitation after 1 September 2008. Reporting (at all stages of the pathway) for people invited in the last 3 months of the year is influenced heavily by lag times; therefore, crude participation rates are likely

to be understated, so 2008 participation data in the participation trends table (Table 1.3) used Kaplan-Meier estimates of participation.

Kaplan-Meier methods (see Appendix D for further information) are standard statistical methods used to model the time to an event and the changes in the rates of an event over time. In this case, the event is a person's response (by returning a completed FOBT kit), and the time to the event is measured in weeks from the date the invitation was originally sent. As invitations are continually sent throughout the year, this allows the calculation of a response rate over time from the date of invitation, which is a more accurate estimation of true participation. Figure 1.2 presents the proportion of individuals who responded to the invitation, by time in weeks, calculated using the Kaplan-Meier estimates. Table 1.2 presents the corresponding 95% confidence intervals at 26 and 52 weeks where available. The effect of invitation reminders 8 weeks after the original invitation can be seen in figures 1.2, 1.4 and 1.5 as a second steep rise in participation between weeks 10 and 12. It can further be seen that participation rates plateau after 16 weeks from original invitation.

Removal of people aged 50 years from the analysis increased the Australia-wide Kaplan-Meier estimate from 39.3% to 43.0%—this figure offers a more valid comparison to crude participation rates from previous years (Table 1.3) in which those aged 50 years were not included in the NBCSP.

Participation by population subgroups

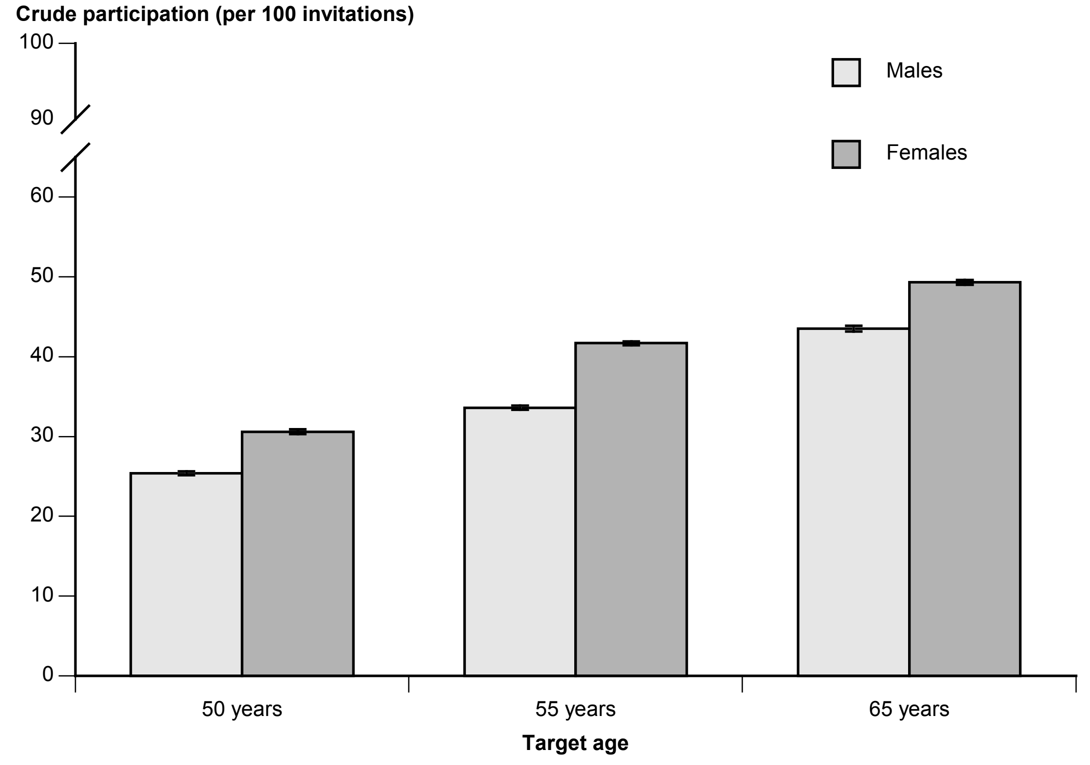
While overall participation is affected by lag time, it does not affect comparisons between population subgroups that have had equivalent time to respond. Where this is the case, crude rates have been used.

Participation by state and territory

Participation by state and territory showed most jurisdictions had similar levels of participation; however, both the Northern Territory (22.3% crude participation) and New South Wales (32.9% crude participation) were statistically significantly lower than the other jurisdictions (Table 1.1). The highest participation rate was in Tasmania (43.2% crude participation). These differences were also evident in the Kaplan-Meier estimates in Table 1.2 and Figure 1.2.

Participation by age and sex

Participation differences between ages and sexes were similar to those shown in previous NBCSP monitoring reports; participation was higher with increasing age, and was also higher in females than males (Figure 1.1). This was a common trend seen across all population subgroups. However, as those aged 50 years have not had the same length of time to respond to the screening invitation as those aged 55 and 65 years, a Kaplan-Meier analysis (Table 1.4 and Figure 1.4) is also provided to give a more complete picture of participation by age group.



Note: Bars on columns represent 95% confidence intervals.

Source: National Bowel Cancer Screening Program Register.

Figure 1.1: Crude participation, by age and sex: 2008

Table 1.4 and Figure 1.4 highlight the difference in participation rates between the three ages invited. Those aged 50 years do not have a 52-week Kaplan-Meier estimate of participation, as they were only invited from July 2008. At 26 weeks, those aged 55 years were 1.2 times and those aged 65 years were 1.5 times more likely to participate than 50 year olds.

Table 1.5 and Figure 1.5 show that females were 1.2 times more likely to participate than males (42.6% Kaplan-Meier estimated participation for females compared with 36.0% for males).

Participation by region and socioeconomic status

Over 62% of participants came from *Major cities*. However, crude participation was statistically significantly higher in *Inner regional* (40.1%) and *Outer regional* (39.1%) areas than the remaining geographical areas (Table 1.6). *Very remote* regions had statistically significantly lower crude participation (25.0%) (Figure 1.6).

Invitees were grouped into population-based socioeconomic status groups (Table 1.7). Participation was similar across these groups; however, participation by invitees from the lowest socioeconomic group was statistically significantly lower than all other socioeconomic groups (Figure 1.7).

Participation by Aboriginal and Torres Strait Islander status, language spoken at home and disability subgroups

Details of an invitee's status regarding these subgroups is not known at the time of invitation—these details are only collected if a person becomes a participant in the NBCSP and completes the relevant section of their Participant Details form. Hence, it is not possible to know the actual number of people of these subgroups that were invited into the NBCSP. Instead an estimated denominator was calculated from the proportion of people known to be in these subgroups using population estimates from the 2006 Census of Population and Housing, multiplied by the number of people invited into the NBCSP in 2008.

Participation was statistically significantly higher (2.2 times) for non-Indigenous invitees than for Aboriginal or Torres Strait Islander peoples. It was also statistically significantly higher (2.9 times) for people who speak English at home compared with people who speak a language other than English at home.

Aboriginal and Torres Strait Islander status relies on self-identification of participants on the Participant Details form. However, for participants invited in 2008, only 63.6% supplied the relevant information, meaning the status was unknown for 91,313 (36.4%) participants. These participants were excluded from the analysis. Similarly, participants who speak a language other than English at home are self-identified to Medicare Australia. Those who do not specify another language were assumed to speak English. It appears that in 2008, a higher proportion of participants were assumed to speak English than in previous years. These data quality issues for the two subgroups must be taken into account when interpreting the results (tables 1.8 and 1.9).

People with a severe or profound activity limitation (43.0%) had 1.3 times the rate of participation than participants without these limitations (34.0%) (Table 1.10). This difference was statistically significant and was similar to the result from the 2008 NBCSP monitoring report.

Participation tables and figures

Table 1.1: Crude participation, by state and territory: 2008

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Number	9,512	7,068	5,800	3,396	2,647	640	444	253	29,760
	Per cent	23.2	26.8	26.2	26.4	27.1	28.2	26.4	18.6	25.4
55 years	Number	12,307	9,657	11,084	5,542	4,777	1,581	712	290	45,950
	Per cent	30.0	34.2	34.8	36.1	37.2	40.4	37.2	21.2	33.6
65 years	Number	11,196	7,847	9,569	4,546	4,088	1,335	538	192	39,311
	Per cent	39.7	42.5	45.2	47.2	49.4	47.5	48.3	29.5	43.5
Total	*Number*	*33,015*	*24,572*	*26,453*	*13,484*	*11,512*	*3,556*	*1,694*	*735*	*115,021*
	Per cent	*29.9*	*33.7*	*35.2*	*35.6*	*37.3*	*39.5*	*36.0*	*21.8*	*33.4*
	95% CI	*29.7–30.2*	*33.3–34.0*	*34.9–35.5*	*35.2–36.1*	*36.7–37.8*	*38.5–40.5*	*34.6–37.3*	*20.4–23.1*	*33.3–33.6*
Females										
50 years	Number	11,376	8,493	6,970	4,201	3,210	816	607	285	35,958
	Per cent	27.8	32.5	31.2	32.5	33.2	35.1	33.1	22.0	30.6
55 years	Number	15,321	12,185	13,494	6,611	5,996	1,988	885	272	56,752
	Per cent	37.3	42.7	43.2	44.3	45.5	49.6	44.5	22.2	41.7
65 years	Number	12,583	8,967	10,407	4,763	4,570	1,406	591	134	43,421
	Per cent	45.4	48.2	51.3	53.3	55.4	53.1	52.3	26.8	49.3
Total	*Number*	*39,280*	*29,645*	*30,871*	*15,575*	*13,776*	*4,210*	*2,083*	*691*	*136,131*
	Per cent	*35.8*	*40.5*	*41.8*	*42.3*	*44.3*	*46.9*	*42.0*	*22.9*	*39.8*
	95% CI	*35.5–36.1*	*40.1–40.8*	*41.5–42.2*	*41.8–42.8*	*43.7–44.8*	*45.8–47.9*	*40.7–43.4*	*21.4–24.4*	*39.7–40.0*
Persons										
50 years	Number	20,888	15,561	12,770	7,597	5,857	1,456	1,051	538	65,718
	Per cent	25.5	29.7	28.7	29.5	30.1	31.7	29.9	20.2	28.0
55 years	Number	27,628	21,842	24,578	12,153	10,773	3,569	1,597	562	102,702
	Per cent	33.6	38.5	39.0	40.1	41.4	45.0	40.9	21.7	37.7
65 years	Number	23,779	16,814	19,976	9,309	8,658	2,741	1,129	326	82,732
	Per cent	42.5	45.4	48.2	50.2	52.4	50.2	50.3	28.3	46.4
Total	**Number**	**72,295**	**54,217**	**57,324**	**29,059**	**25,288**	**7,766**	**3,777**	**1,426**	**251,152**
	Per cent	**32.9**	**37.1**	**38.5**	**38.9**	**40.8**	**43.2**	**39.1**	**22.3**	**36.6**
	95% CI	**32.7–33.1**	**36.8–37.3**	**38.2–38.7**	**38.6–39.3**	**40.4–41.2**	**42.5–43.9**	**38.1–40.0**	**21.3–23.3**	**36.5–36.7**

Notes

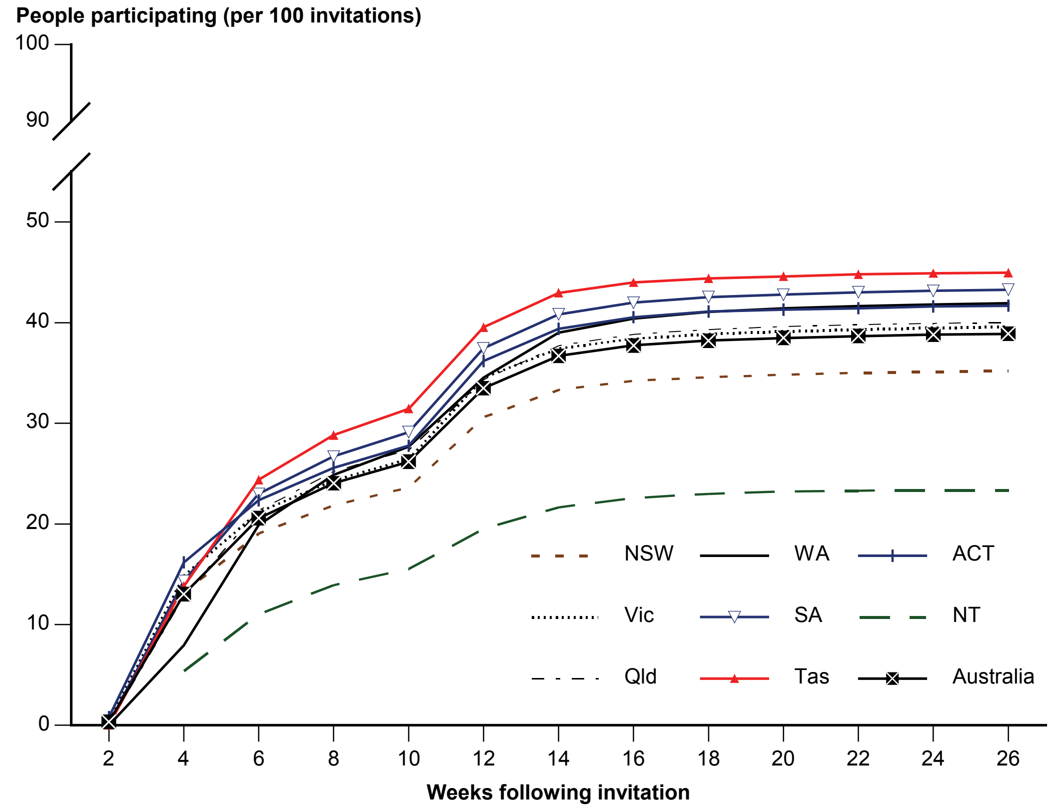
1. Participants in the Program were defined as members of the eligible population who returned a completed FOBT kit.
2. Percentages equal people participating as a proportion of the total number of the eligible population who were invited to screen. This excludes people who suspended or opted off the National Program.
3. People aged 50 years were invited to screen from 1 July 2008.

Table 1.2: Kaplan-Meier estimated participation rates at 26 and 52 weeks since invitation, by state and territory: 2008

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
26 weeks									
People participating (per 100 invitations)	35.2	39.6	40.0	41.9	43.3	45.0	41.7	23.4	38.9
95% CI	35.0–35.4	39.3–39.8	39.8–40.3	41.5–42.3	42.8–43.7	44.2–45.7	40.6–42.7	22.3–24.4	38.8–39.0
52 weeks									
People participating (per 100 invitations)	35.5	40.0	40.4	42.4	43.6	45.3	42.2	23.7	39.3
95% CI	35.3–35.7	39.7–40.3	40.2–40.7	42.0–42.8	43.2–44.1	44.5–46.0	41.1–43.3	22.6–24.8	39.2–39.4

Notes

1. Participation rates equal the estimated Kaplan-Meier participation rate of people who returned a completed FOBT kit as a proportion of the total number of the eligible population who were invited to screen, excluding people who suspended or opted off the Program.
2. People aged 50 years were invited to screen from 1 July 2008.



Source: National Bowel Cancer Screening Program Register.

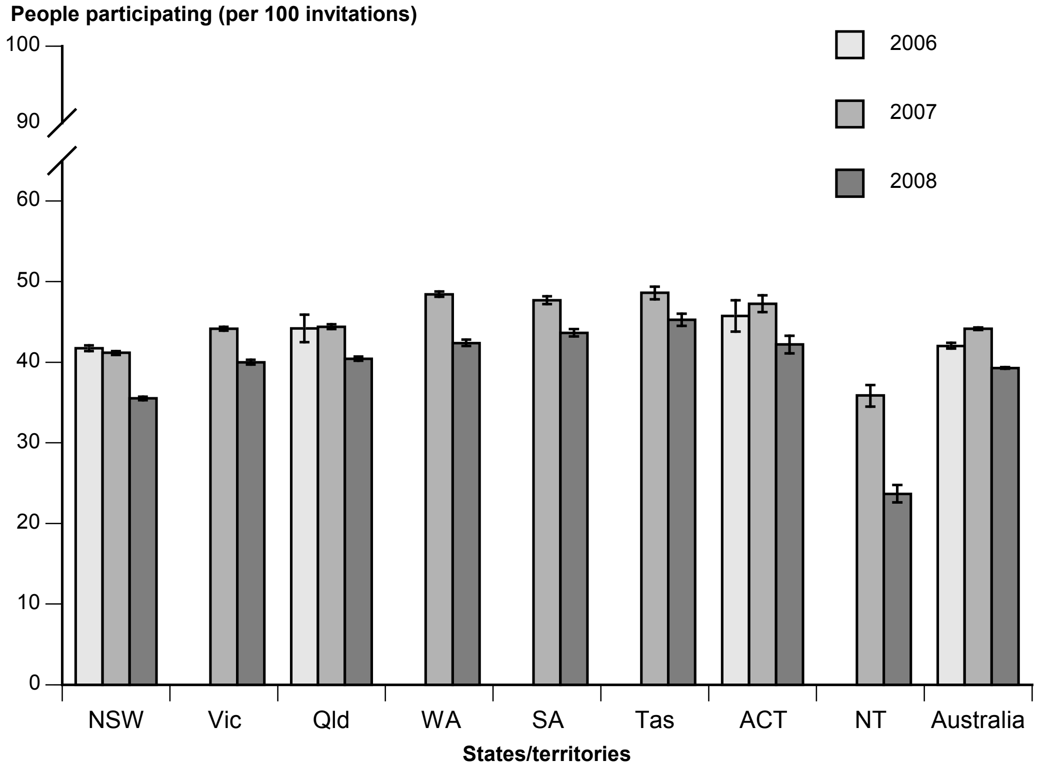
Figure 1.2: Participation, by weeks since invitation using Kaplan-Meier estimates, by state and territory: 2008

Table 1.3: Trends in participation, by state and territory: 2006–2008

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
2006	41.8	. .	44.2	. .	. .	. .	45.8	. .	42.0
95% CI	41.4–42.1	. .	42.5–45.9	. .	. .	. .	43.8–47.7	. .	41.7–42.4
2007	41.2	44.1	44.4	48.4	47.7	48.6	47.3	35.9	44.2
95% CI	40.9–41.4	43.9–44.4	44.1–44.7	48.1–48.8	47.2–48.2	47.8–49.4	46.2–48.3	34.5–37.2	44.0–44.3
2008	35.5	40.0	40.4	42.4	43.6	45.3	42.2	23.7	39.3
95% CI	35.3–35.7	39.7–40.3	40.2–40.7	42.0–42.8	43.2–44.1	44.5–46.0	41.1–43.3	22.6–24.8	39.2–39.4

Notes

1. Only New South Wales, Queensland and the Australian Capital Territory had started the NBCSP in 2006; therefore, 2006 data is only available for these jurisdictions. See page 5.
2. Participation rates for 2006 and 2007 equal crude participation rates, calculated as the number of people who returned a completed FOBT kit as a proportion of the total number of the eligible population who were invited to screen, excluding people who suspended or opted off the Program.
3. Participation rates for 2008 equal the estimated Kaplan-Meier participation rate of people who returned a completed FOBT kit as a proportion of the total number of the eligible population who were invited to screen, excluding people who suspended or opted off the Program.
4. People aged 50 years were invited to screen from 1 July 2008 which lowered overall participation rates for 2008. See page 8.



Note: Bars on columns represent 95% confidence intervals.

Source: National Bowel Cancer Screening Program Register.

Figure 1.3: Trends in participation, by state and territory: 2006–2008

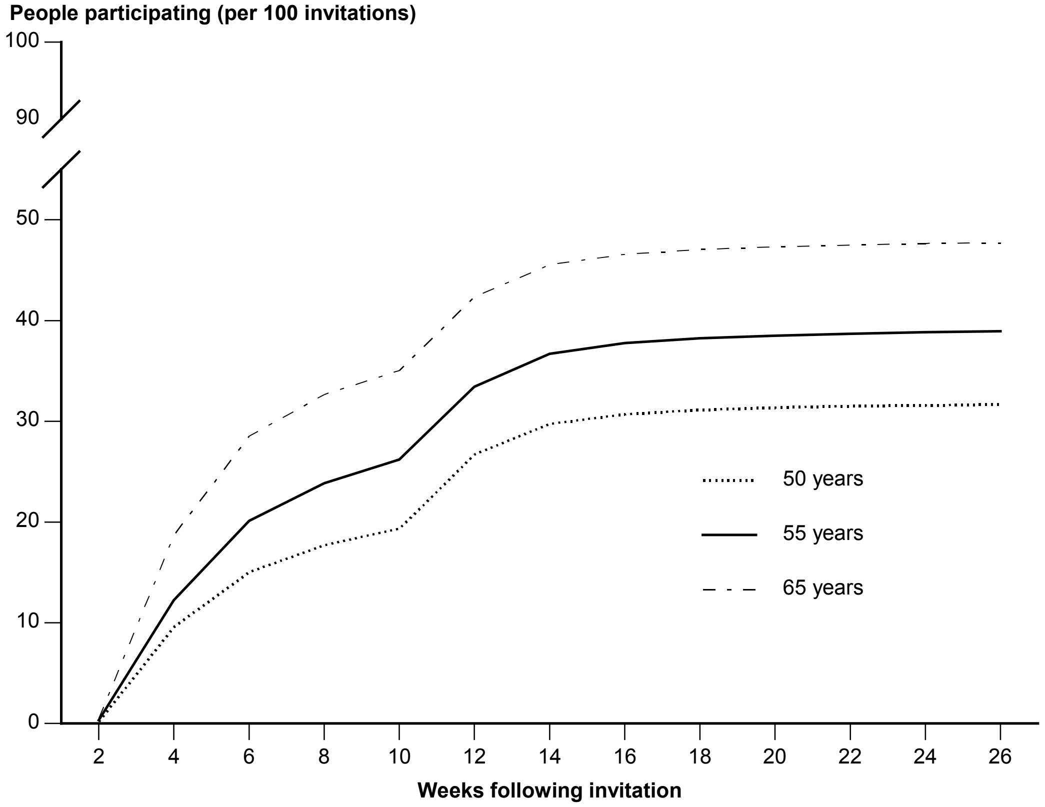
Participation by population subgroups

Table 1.4: Kaplan-Meier estimated participation rates at 26 and 52 weeks since invitation, by age: 2008

	50 years	55 years	65 years
26 weeks			
People participating (per 100 invitations)	31.8	38.9	47.7
95% CI	31.6–32.0	38.7–39.1	47.5–48.0
52 weeks			
People participating (per 100 invitations)	. .	39.3	48.1
95% CI	. .	39.1–39.5	47.8–48.3

Notes

1. Participation rates equal the estimated Kaplan-Meier participation rate of people who returned a completed FOBT kit as a proportion of the total number of the eligible population who were invited to screen, excluding people who suspended or opted off the Program.
2. People aged 50 years were invited to screen from 1 July 2008.



Source: National Bowel Cancer Screening Program Register.

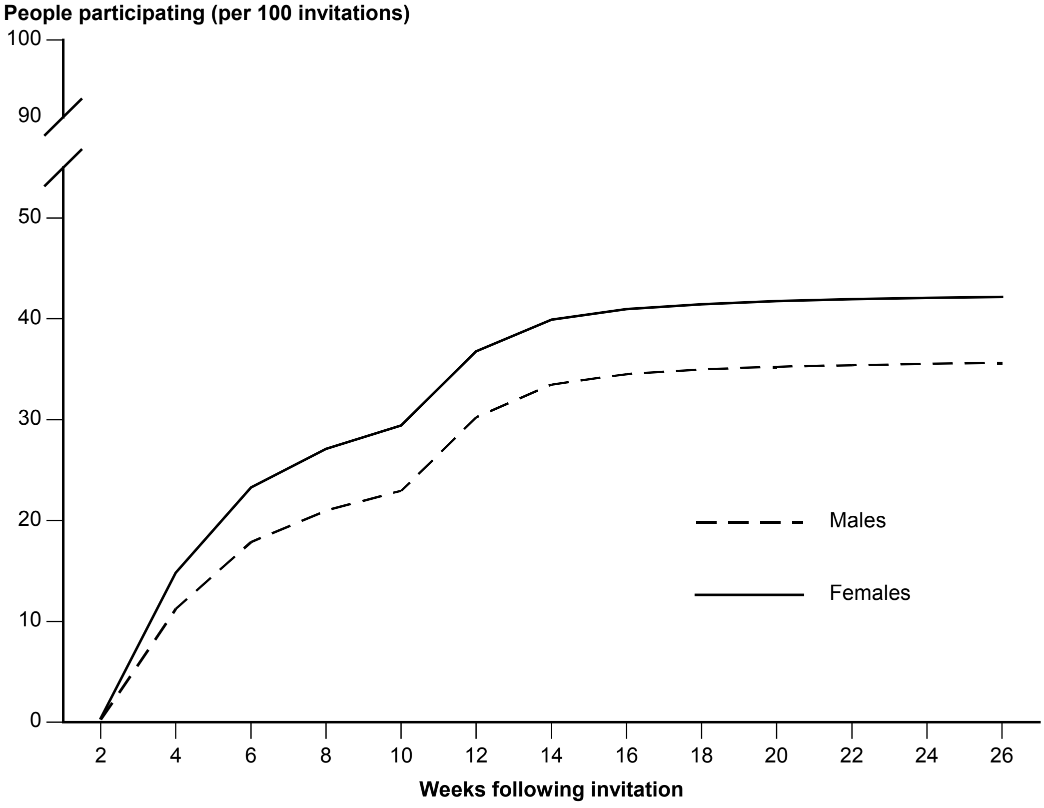
Figure 1.4: Participation, by weeks since invitation using Kaplan-Meier estimates, by age: 2008

Table 1.5: Kaplan-Meier estimated participation rates at 26 and 52 weeks since invitation, by sex: 2008

	Males	Females
26 weeks		
People participating (per 100 invitations)	35.6	42.2
95% CI	35.5–35.8	42.0–42.4
52 weeks		
People participating (per 100 invitations)	36.0	42.6
95% CI	35.9–36.2	42.4–42.7

Notes

1. Participation rates equal the estimated Kaplan-Meier participation rate of people who returned a completed FOBT kit as a proportion of the total number of the eligible population who were invited to screen, excluding people who suspended or opted off the Program.
2. People aged 50 years were invited to screen from 1 July 2008.



Source: National Bowel Cancer Screening Program Register.

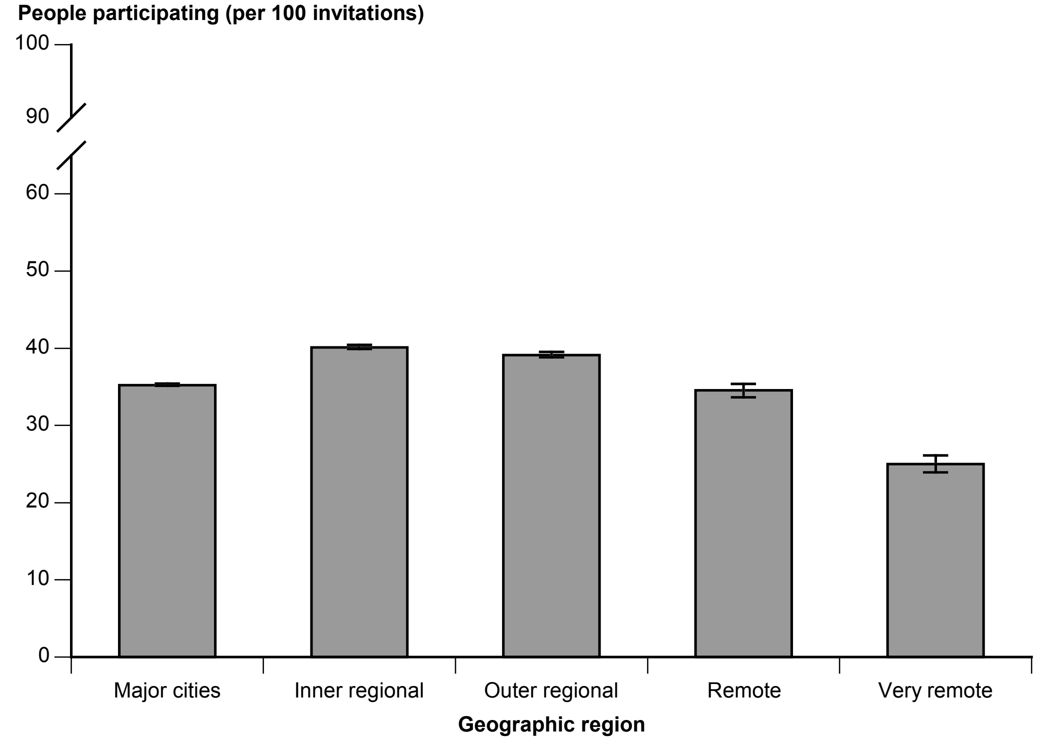
Figure 1.5: Participation, by weeks since invitation using Kaplan-Meier estimates, by sex: 2008

Table 1.6: Crude participation, by geographic region: 2008

		Major cities	Inner regional	Outer regional	Remote	Very remote	Total
Males							
50 years	Number	19,881	6,220	3,061	416	170	29,747
	Per cent	25.3	26.0	25.8	22.6	17.4	25.4
55 years	Number	27,980	10,992	5,685	887	387	45,931
	Per cent	32.4	36.9	35.5	31.8	24.6	33.6
65 years	Number	23,289	10,106	4,970	674	248	39,286
	Per cent	42.1	47.2	45.4	40.3	30.1	43.5
Total	*Number*	*71,150*	*27,317*	*13,716*	*1,977*	*804*	*114,964*
	Per cent	*32.3*	*36.4*	*35.3*	*31.4*	*23.9*	*33.4*
	95% CI	*32.1–32.5*	*36.0–36.7*	*34.8–35.8*	*30.3–32.6*	*22.4–25.3*	*33.3–33.6*
Females							
50 years	Number	23,904	7,761	3,610	497	174	35,945
	Per cent	30.0	32.7	31.8	29.2	20.3	30.6
55 years	Number	35,249	13,393	6,809	890	380	56,721
	Per cent	39.9	45.8	45.7	38.6	27.5	41.7
65 years	Number	25,894	11,383	5,230	677	217	43,401
	Per cent	47.2	53.9	52.5	48.8	31.4	49.3
Total	*Number*	*85,047*	*32,537*	*15,649*	*2,064*	*770*	*136,067*
	Per cent	*38.2*	*43.9*	*43.2*	*38.3*	*26.4*	*39.8*
	95% CI	*38.0–38.4*	*43.6–44.3*	*42.7–43.7*	*37.0–39.6*	*24.8–28.0*	*39.7–40.0*
Persons							
50 years	Number	43,784	13,981	6,672	912	343	65,692
	Per cent	27.6	29.4	28.7	25.8	18.8	28.0
55 years	Number	63,230	24,385	12,494	1,777	767	102,652
	Per cent	36.2	41.3	40.4	34.9	26.0	37.7
65 years	Number	49,183	21,489	10,200	1,351	464	82,687
	Per cent	44.6	50.5	48.8	44.2	30.7	46.4
Total	**Number**	**156,197**	**59,854**	**29,365**	**4,040**	**1,574**	**251,031**
	Per cent	**35.2**	**40.1**	**39.1**	**34.6**	**25.0**	**36.6**
	95% CI	**35.1–35.4**	**39.9–40.4**	**38.8–39.5**	**33.7–35.4**	**23.9–26.1**	**36.5–36.7**

Notes

1. A participant's geographic region was classified using the participant's residential postcode according to the Australian Standard Geographic Classification for 2006.
2. There were 121 respondents and 372 invitations with postcodes that did not correspond with the Australian Standard Geographic Classification for 2006 by postal area. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
3. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
4. Percentages equal the number of people returning a completed FOBT kit as a proportion of the total number of the eligible population who were invited to screen.
5. People aged 50 years were invited to screen from 1 July 2008.



Note: Bars on columns represent 95% confidence intervals.

Source: National Bowel Cancer Screening Program Register.

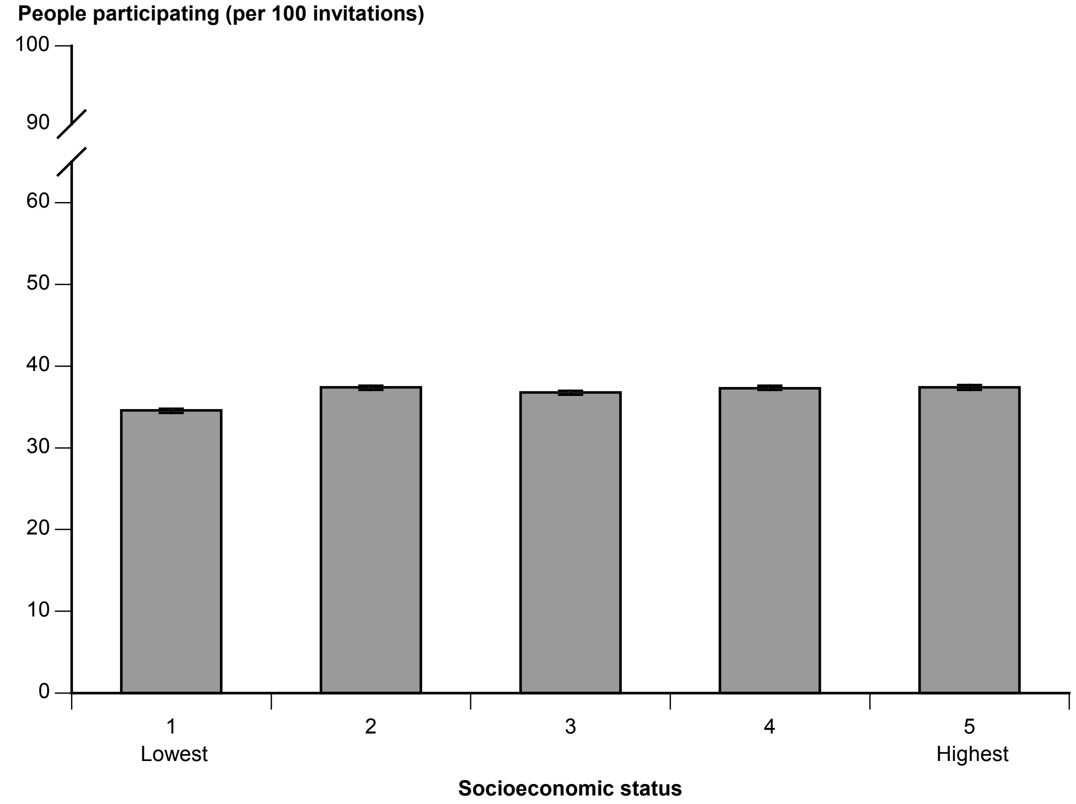
Figure 1.6: Crude participation, by geographic region: 2008

Table 1.7: Crude participation, by socioeconomic status: 2008

		Lowest SES 1	2	3	4	Highest SES 5	Total
Males							
50 years	Number	5,464	5,805	5,908	5,879	6,313	29,369
	Per cent	23.7	24.6	25.4	26.2	27.1	25.4
55 years	Number	8,633	9,608	9,331	8,891	8,939	45,402
	Per cent	31.4	34.3	34.1	34.2	34.6	33.7
65 years	Number	8,271	8,744	7,608	7,137	7,106	38,866
	Per cent	41.3	44.6	43.6	44.8	44.2	43.6
Total	*Number*	*22,368*	*24,157*	*22,847*	*21,907*	*22,358*	*113,637*
	Per cent	*31.7*	*33.9*	*33.6*	*34.0*	*34.3*	*33.5*
	95% CI	*31.3–32.0*	*33.6–34.3*	*33.2–33.9*	*33.7–34.4*	*34.0–34.7*	*33.3–33.6*
Females							
50 years	Number	6,279	7,063	7,086	7,175	7,946	35,549
	Per cent	28.2	30.7	30.2	31.7	32.2	30.6
55 years	Number	10,610	11,764	11,446	11,077	11,242	56,139
	Per cent	39.1	42.6	42.1	42.6	42.3	41.7
65 years	Number	8,993	9,792	8,626	7,763	7,899	43,073
	Per cent	46.2	50.8	49.9	50.2	50.1	49.4
Total	*Number*	*25,882*	*28,619*	*27,158*	*26,015*	*27,087*	*134,761*
	Per cent	*37.6*	*40.9*	*40.0*	*40.6*	*40.4*	*39.9*
	95% CI	*37.2–38.0*	*40.6–41.3*	*39.6–40.4*	*40.2–41.0*	*40.0–40.8*	*39.7–40.1*
Persons							
50 years	Number	11,743	12,868	12,994	13,054	14,259	64,918
	Per cent	25.9	27.6	27.8	29.0	29.7	28.0
55 years	Number	19,243	21,372	20,777	19,968	20,181	101,541
	Per cent	35.2	38.4	38.1	38.4	38.5	37.7
65 years	Number	17,264	18,536	16,234	14,900	15,005	81,939
	Per cent	43.7	47.7	46.8	47.5	47.2	46.5
Total	**Number**	**48,250**	**52,776**	**50,005**	**47,922**	**49,445**	**248,398**
	Per cent	**34.6**	**37.4**	**36.8**	**37.3**	**37.4**	**36.7**
	95% CI	**34.3–34.8**	**37.1–37.6**	**36.5–37.0**	**37.1–37.6**	**37.1–37.7**	**36.6–36.8**

Notes

1. A participant's socioeconomic status was classified using the participant's residential postcode according to the ABS Index of Relative Socioeconomic Disadvantage (IRSD) for 2006.
2. There were 2,754 respondents and 8,736 invitations with postcodes that did not correspond with the 2006 ABS IRSD classifications by postal area. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
3. Percentages equal the number of people returning a completed FOBT kit as a proportion of the total number of the eligible population who were invited to screen.
4. People aged 50 years were invited to screen from 1 July 2008.



Note: Bars on columns represent 95% confidence intervals.

Source: National Bowel Cancer Screening Program Register.

Figure 1.7: Crude participation, by socioeconomic status: 2008

Table 1.8: Crude participation, by Aboriginal and Torres Strait Islander status: 2008

		Aboriginal and Torres Strait Islander	Non-Indigenous	Total
Males				
50 years	Number	87	11,156	11,243
	Per cent	4.7	9.7	9.6
55 years	Number	219	33,303	33,522
	Per cent	13.3	24.7	24.5
65 years	Number	133	28,118	28,251
	Per cent	16.9	31.4	31.3
Total	*Number*	*439*	*72,577*	*73,016*
	Per cent	*10.2*	*21.4*	*21.2*
	95% CI	*9.3–11.2*	*21.2–21.5*	*21.1–21.3*
Females				
50 years	Number	91	13,493	13,584
	Per cent	4.8	11.7	11.6
55 years	Number	265	41,780	42,045
	Per cent	14.6	31.1	30.9
65 years	Number	150	31,044	31,194
	Per cent	15.8	35.6	35.4
Total	*Number*	*506*	*86,317*	*86,823*
	Per cent	*10.9*	*25.6*	*25.4*
	95% CI	*10.0–11.7*	*25.5–25.8*	*25.3–25.6*
Persons				
50 years	Number	178	24,649	24,827
	Per cent	4.7	10.7	10.6
55 years	Number	484	75,083	75,567
	Per cent	14.0	27.9	27.7
65 years	Number	283	59,162	59,445
	Per cent	16.2	33.5	33.3
Total	**Number**	**945**	**158,894**	**159,839**
	Per cent	**10.6**	**23.5**	**23.3**
	95% CI	**9.9–11.2**	**23.4–23.6**	**23.2–23.4**

Notes

1. Aboriginal and Torres Strait Islander status was defined by the participant on the Participant Details form.
2. There were 91,313 participants with Aboriginal and Torres Strait Islander status not stated. These were treated as missing data and excluded from this analysis. Hence, the totals in this table may be less than the national totals; data in this table is therefore considered unreliable.
3. Percentages equal the number of people returning a completed FOBT kit as a proportion of the total number of the eligible population who were invited to screen.
4. People aged 50 years were invited to screen from 1 July 2008.

Table 1.9: Crude participation, by language spoken at home: 2008

		Language other than English	English	Total
Males				
50 years	Number	1,110	28,650	29,760
	Per cent	5.9	29.1	25.4
55 years	Number	3,395	42,555	45,950
	Per cent	16.7	36.6	33.6
65 years	Number	2,829	36,482	39,311
	Per cent	18.3	48.7	43.5
Total	*Number*	*7,334*	*107,687*	*115,021*
	Per cent	*13.4*	*37.2*	*33.4*
	95% CI	*13.2–13.7*	*37.0–37.4*	*33.3–33.6*
Females				
50 years	Number	1,381	34,577	35,958
	Per cent	6.7	35.7	30.6
55 years	Number	4,308	52,444	56,752
	Per cent	19.6	45.9	41.7
65 years	Number	2,748	40,673	43,421
	Per cent	17.8	56.0	49.3
Total	*Number*	*8,437*	*127,694*	*136,131*
	Per cent	*14.5*	*45.0*	*39.8*
	95% CI	*14.2–14.8*	*44.8–45.2*	*39.7–40.0*
Persons				
50 years	Number	2,491	63,227	65,718
	Per cent	6.3	32.4	28.0
55 years	Number	7,703	94,999	102,702
	Per cent	18.2	41.2	37.7
65 years	Number	5,577	77,155	82,732
	Per cent	18.1	52.3	46.4
Total	**Number**	**15,771**	**235,381**	**251,152**
	Per cent	**14.0**	**41.1**	**36.6**
	95% CI	**13.8–14.2**	**40.9–41.2**	**36.5–36.7**

Notes

1. Participants were assumed to speak English at home unless otherwise indicated. See Appendix B for a detailed explanation of language spoken at home.
2. Denominator data is estimated from the 2006 Census of Population and Housing data for language spoken at home. See Appendix C for method of estimation.
3. Percentages equal the number of people returning a completed FOBT kit as a proportion of the total number of the eligible population who were invited to screen.
4. People aged 50 years were invited to screen from 1 July 2008.

Table 1.10: Crude participation, by disability status: 2008

		Severe or profound activity limitation	No severe or profound activity limitation	Total
Males				
50 years	Number	1,099	26,359	27,458
	Per cent	30.5	23.2	23.4
55 years	Number	2,113	41,039	43,152
	Per cent	38.0	31.3	31.6
65 years	Number	2,663	34,132	36,795
	Per cent	43.5	40.6	40.8
Total	*Number*	*5,875*	*101,530*	*107,405*
	Per cent	*38.4*	*30.9*	*31.2*
	95% CI	*37.6–39.2*	*30.7–31.0*	*31.0–31.4*
Females				
50 years	Number	1,645	31,825	33,470
	Per cent	46.2	27.9	28.5
55 years	Number	2,509	51,480	53,989
	Per cent	48.4	39.3	39.6
65 years	Number	2,466	38,654	41,120
	Per cent	48.9	46.6	46.7
Total	*Number*	*6,620*	*121,959*	*128,579*
	Per cent	*48.0*	*37.2*	*37.6*
	95% CI	*47.2–48.9*	*37.0–37.4*	*37.5–37.8*
Persons				
50 years	Number	2,744	58,184	60,928
	Per cent	38.3	25.6	25.9
55 years	Number	4,622	92,519	97,141
	Per cent	43.0	35.3	35.6
65 years	Number	5,129	72,786	77,915
	Per cent	46.0	43.5	43.7
Total	**Number**	**12,495**	**223,489**	**235,984**
	Per cent	**43.0**	**34.0**	**34.4**
	95% CI	**42.4–43.6**	**33.9–34.1**	**34.3–34.5**

Notes

1. Disability status was reported by the participant on the Participant Details form.
2. There were 15,967 participants with disability status not stated. These were treated as missing data and excluded from this analysis. Hence, the totals in this table may be less than the national totals.
3. A ‘profound’ disability status indicates that a person always needs assistance with self-care, movement and/or communications activities. A ‘severe’ disability status indicates that a person sometimes needs assistance with these activities.
4. Percentages equal the number of people returning a completed FOBT kit as a proportion of the total number of the eligible population who were invited to screen.
5. People aged 50 years were invited to screen from 1 July 2008.

2 Faecal occult blood test outcomes

Of the 685,915 people invited into the NBCSP in 2008, 251,152 people agreed to participate by returning a completed FOBT kit. This chapter analyses the FOBT outcomes of these participants.

Fast facts

- Of the 251,152 participants who had completed a FOBT kit, 248,475 (98.9%) had done so correctly, allowing for a valid analysis by the pathology laboratory.
- Out of the 248,475 valid FOBT kits analysed, 16,436 returned a positive result, giving an overall positivity rate of 6.6%.
- The positivity rate of male participants (7.7%) was 1.4 times that of females (5.7%).
- The FOBT positivity rates of both sexes increased with older age, consistent with the increase in bowel cancer incidence with increasing age (Chapter 6).
- Positivity rates increased with increasing geographic remoteness. Rates for participants in *Very remote* (8.4%), *Remote* (7.8%) and *Outer regional* (7.3%) areas were all statistically significantly higher than for participants in *Major cities* (6.4%).
- Positivity rates increased with increasing socioeconomic disadvantage, from 5.5% for participants with the highest socioeconomic status to 7.8% for participants with the lowest socioeconomic status.
- The positivity rate of participants with a severe or profound activity limitation (10.2%) was statistically significantly higher than participants without those limitations (6.5%).

The National Bowel Cancer Screening Program faecal occult blood test process

Each participant in the NBCSP is initially sent one FOBT kit containing two sample tubes to be completed and returned to the pathology laboratory for analysis. Pathologists categorise these returned FOBTs into three groups: correctly completed, incorrectly completed or unsatisfactory. A kit may be incorrectly completed or unsatisfactory (and thus ineligible for analysis) due to:

- the participant not completing the test correctly
- the completed kit having expired
- a delay of more than 2 weeks between the taking of the two samples
- the kit having taken more than 1 month to arrive at the pathology laboratory.

Participants with FOBTs that were not correctly completed were requested to complete another FOBT.

Results of correctly completed FOBT kits are classified by pathologists as either positive (blood is detected in either sample), negative (blood is not detected in either sample) or inconclusive (only one sample was taken, and it was negative). Valid kits were considered to be those from which it is possible to determine a positive or negative outcome. See Table 2.1 for FOBT result details.

Participants with a positive FOBT are encouraged to visit their primary health care practitioner to follow-up this finding. Those with an inconclusive kit are requested to complete another FOBT kit, while those with a negative result are reminded that it is recommended they rescreen every 2 years with a FOBT. Participants are advised to discuss continuing screening options with their primary health care practitioner. See Figure B.1, Appendix B for details of the screening pathway.

For participants who returned more than one FOBT kit, the results were analysed according to the following order of precedence: a positive result was selected over any other result, and a negative result was selected over an inconclusive result.

Overall faecal occult blood test outcomes

There were 685,915 people invited to screen in the NBCSP in 2008, and by 31 January 2009, 251,152 participants had returned at least one completed FOBT kit. Of these participants, 248,816 (99.1%) had a correctly completed FOBT kit tested by the pathology laboratory (Table 2.1); the remainder had been incorrectly completed. Of the correctly completed kits, 341 were deemed inconclusive when tested. Those participants recorded as having inconclusive or incorrectly completed FOBT kits were requested to complete another FOBT but had not returned a correctly completed kit by 31 January 2009.

Of the 248,475 valid FOBT kits analysed, 16,436 (6.6%) returned a positive FOBT result. These people were advised to consult their primary health care practitioner to discuss this result and seek further diagnostic testing (Chapter 3).

Faecal occult blood test outcomes by population subgroups

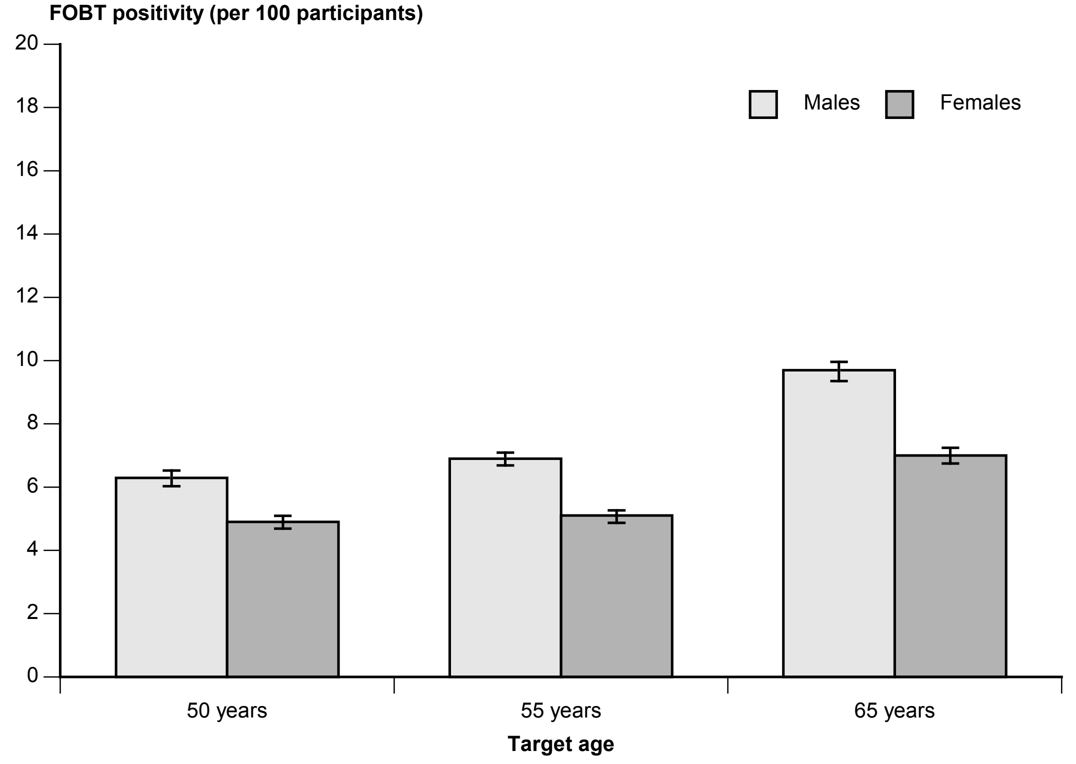
Faecal occult blood test outcomes by state and territory

Most jurisdictions had overall positivity rates that did not significantly differ from the Australian positivity rate (Table 2.4). However, the positivity rate for Tasmania was statistically significantly higher than the Australian rate, while the rate for the Australian Capital Territory was statistically significantly lower.

Notable sex-specific differences included South Australian males and Tasmanian females having statistically significantly higher positivity rates than the sex-specific Australian rates, and males from the Australian Capital Territory having a statistically significantly lower rate than the Australian male rate.

Faecal occult blood test outcomes by age and sex

There was in increase in the positivity rate with an increase in age. This was true in both males and females (Figure 2.1 and Table 2.2).



Note: Bars on columns represent 95% confidence intervals.

Source: National Bowel Cancer Screening Program Register.

Figure 2.1: FOBT positivity, by age and sex: 2008

Each age-specific male rate was higher than the corresponding female rate (Table 2.2). The positivity rate of male participants (7.7%) was 1.4 times that of females (5.7%), meaning both age and sex affect the FOBT positivity rate.

Total male, female and person positivity rates in 2008 were all statistically significantly lower than the rates in 2007 (Table 2.3). This is mainly explained by the inclusion of people aged 50 years in 2008, lowering the overall positivity rate; however, age-specific rates for those aged 55 and 65 years were also lower in 2008 than in 2007, and reasons for this year-to-year variability were unclear.

The introduction of a new FOBT kit in December 2008, which was found to be unreliable, may also have had a lowering effect on the 2008 positivity rate; however, this effect would have been minimal, as less than 5% of FOBT kits were affected. Those people invited in December 2008 affected by this issue were given the opportunity to retest in 2009.

Faecal occult blood test outcomes by region and socioeconomic status

Analysis of the person-based positivity rate by region (Table 2.5) showed a constant trend. All regions were statistically significantly higher than *Major cities* (6.4%). *Inner regional, Outer regional, Remote* and *Very remote* areas had positivity rates 1.05, 1.1, 1.2 and 1.3 times the positivity rate of *Major cities* respectively.

FOBT positivity rates increased with decreasing socioeconomic status (Table 2.6). The positivity rate for participants with the lowest socioeconomic status (7.8%) was 1.4 times that of participants with the highest socioeconomic status (5.5%).

Faecal occult blood test outcomes by Aboriginal and Torres Strait Islander status, language spoken at home and disability subgroups

Aboriginal and Torres Strait Islander participants showed a non-statistically significant higher positivity rate (8.1%) than non-Indigenous participants (6.6%); however, due to the low numbers of Aboriginal and Torres Strait Islander participants, Table 2.7 should be interpreted with caution.

There were no statistically significant differences shown in the positivity rate when comparing participants who spoke a language other than English at home to participants who spoke English (Table 2.8); however, the low numbers of participants identified as speaking a language other than English at home should be considered when interpreting these results.

People with a severe or profound activity limitation recorded a statistically significantly higher positivity rate (10.2%) than people without these limitations (6.5%) (Table 2.9). Reasons for this difference are speculative, but may include a lower level of physical activity, or comorbidities that increase bowel conditions in people with a severe or profound activity limitation. Subsequent investigation by colonoscopy and histopathology revealed participants with a severe or profound activity limitation actually had a slightly lower rate of cancer or polyps when compared with participants without those limitations (data not shown). This group may therefore return a higher rate of false positive FOBT results.

Faecal occult blood test tables

Table 2.1: FOBT results, by age and sex: 2008

	FOBT positive		FOBT negative		FOBT inconclusive		All results
	Number	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**	**Number**
Males							
50 years	1,841	6.3	27,532	93.5	61	0.2	29,434
55 years	3,149	6.9	42,421	93.0	67	0.1	45,637
65 years	3,799	9.7	35,205	90.2	43	0.1	39,047
Total	*8,789*	*7.7*	*105,158*	*92.1*	*171*	*0.1*	*114,118*
95% CI		*7.5–7.9*		*92.0–92.3*		*0.1–0.2*	
Females							
50 years	1,739	4.9	33,643	94.9	61	0.2	35,443
55 years	2,882	5.1	53,333	94.8	65	0.1	56,280
65 years	3,026	7.0	39,905	92.9	44	0.1	42,975
Total	*7,647*	*5.7*	*126,881*	*94.2*	*170*	*0.1*	*134,698*
95% CI		*5.6–5.8*		*94.1–94.3*		*0.1–0.1*	
Persons							
50 years	3,580	5.5	61,175	94.3	122	0.2	64,877
55 years	6,031	5.9	95,754	94.0	132	0.1	101,917
65 years	6,825	8.3	75,110	91.6	87	0.1	82,022
Total	**16,436**	**6.6**	**232,039**	**93.3**	**341**	**0.1**	**248,816**
95% CI		**6.5–6.7**		**93.2–93.4**		**0.1–0.2**	

Notes

1. Percentages equal the number of participants with FOBT results in each category in terms of ‘positive’, ‘negative’ and ‘inconclusive’ as a proportion of the total number of participants with correctly completed FOBTs.
2. For participants who returned more than one FOBT kit, a positive result was selected over any other result, and a negative result was selected over an inconclusive result.

Table 2.2: FOBT positivity rates, by age and sex: 2008

	Positive results	Valid results	Per cent
Males			
50 years	1,841	29,373	6.3
55 years	3,149	45,570	6.9
65 years	3,799	39,004	9.7
Total	*8,789*	*113,947*	*7.7*
Females			
50 years	1,739	35,382	4.9
55 years	2,882	56,215	5.1
65 years	3,026	42,931	7.0
Total	*7,647*	*134,528*	*5.7*
Persons			
50 years	3,580	64,755	5.5
55 years	6,031	101,785	5.9
65 years	6,825	81,935	8.3
Total	**16,436**	**248,475**	**6.6**

Note: Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.

Table 2.3: Trends in FOBT positivity rates, by age and sex: 2006–2008

	2006		2007		2008	
	Per cent	95% CI	Per cent	95% CI	Per cent	95% CI
Males						
50 years	. .	. .	. .	. .	6.3	6.0–6.5
55 years	6.6	6.0–7.1	7.9	7.7–8.1	6.9	6.7–7.1
65 years	9.0	8.3–9.7	11.0	10.7–11.3	9.7	9.4–10.0
Total	*7.7*	*7.2–8.1*	*9.3*	*9.1–9.5*	*7.7*	*7.6–7.9*
Females						
50 years	. .	. .	. .	. .	4.9	4.7–5.1
55 years	4.8	4.3–5.2	5.7	5.6–5.9	5.1	4.9–5.3
65 years	6.1	5.5–6.6	7.8	7.6–8.1	7.0	6.8–7.3
Total	*5.3*	*5.0–5.7*	*6.6*	*6.5–6.7*	*5.7*	*5.6–5.8*
Persons						
50 years	. .	. .	. .	. .	5.5	5.4–5.7
55 years	5.6	5.2–5.9	6.7	6.6–6.8	5.9	5.8–6.1
65 years	7.5	7.0–7.9	9.4	9.2–9.5	8.3	8.1–8.5
Total	**6.4**	**6.1–6.7**	**7.8**	**7.7–8.0**	**6.6**	**6.5–6.7**

Notes

1. People aged 50 years were invited to screen from 1 July 2008.
2. Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.

Faecal occult blood test positivity rates by population subgroups

Table 2.4: FOBT positivity rates, by state and territory: 2008

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Positive results	572	467	354	198	177	39	17	17	1,841
	Per cent	6.1	6.7	6.2	5.9	6.8	6.2	3.9	6.7	6.3
55 years	Positive results	828	631	758	373	380	121	36	22	3,149
	Per cent	6.8	6.6	6.9	6.8	8.0	7.7	5.1	7.7	6.9
65 years	Positive results	1,119	751	866	439	412	147	40	25	3,799
	Per cent	10.1	9.6	9.1	9.8	10.2	11.1	7.5	13.1	9.7
Total	*Positive results*	*2,519*	*1,849*	*1,978*	*1,010*	*969*	*307*	*93*	*64*	*8,789*
	Per cent	*7.7*	*7.6*	*7.5*	*7.6*	*8.5*	*8.7*	*5.5*	*8.8*	*7.7*
	95% CI	*7.4–8.0*	*7.3–7.9*	*7.2–7.9*	*7.1–8.0*	*8.0–9.0*	*7.8–9.6*	*4.4–6.6*	*6.7–10.9*	*7.6–7.9*
Females										
50 years	Positive results	540	451	314	193	150	43	32	16	1,739
	Per cent	4.8	5.4	4.6	4.7	4.8	5.3	5.3	5.7	4.9
55 years	Positive results	757	627	675	344	305	116	42	16	2,882
	Per cent	5.0	5.2	5.0	5.3	5.1	5.9	4.8	6.0	5.1
65 years	Positive results	920	623	688	305	311	127	45	7	3,026
	Per cent	7.4	7.1	6.7	6.4	6.9	9.1	7.7	5.3	7.0
Total	*Positive results*	*2,217*	*1,701*	*1,677*	*842*	*766*	*286*	*119*	*39*	*7,647*
	Per cent	*5.7*	*5.8*	*5.5*	*5.5*	*5.6*	*6.8*	*5.8*	*5.7*	*5.7*
	95% CI	*5.5–6.0*	*5.5–6.1*	*5.2–5.7*	*5.1–5.8*	*5.2–6.0*	*6.1–7.6*	*4.8–6.8*	*4.0–7.5*	*5.6–5.8*
Persons										
50 years	Positive results	1,112	918	668	391	327	82	49	33	3,580
	Per cent	5.4	6.0	5.3	5.2	5.7	5.7	4.7	6.2	5.5
55 years	Positive results	1,585	1,258	1,433	717	685	237	78	38	6,031
	Per cent	5.8	5.8	5.9	6.0	6.4	6.7	4.9	6.9	5.9
65 years	Positive results	2,039	1,374	1,554	744	723	274	85	32	6,825
	Per cent	8.7	8.3	7.8	8.1	8.4	10.1	7.6	9.9	8.3
Total	**Positive results**	**4,736**	**3,550**	**3,655**	**1,852**	**1,735**	**593**	**212**	**103**	**16,436**
	Per cent	**6.6**	**6.6**	**6.4**	**6.4**	**6.9**	**7.7**	**5.7**	**7.3**	**6.6**
	95% CI	**6.5–6.8**	**6.4–6.8**	**6.2–6.6**	**6.2–6.7**	**6.6–7.2**	**7.1–8.3**	**4.9–6.4**	**6.0–8.7**	**6.5–6.7**

Note: Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.

Table 2.5: FOBT positivity rates, by geographic region: 2008

		Major cities	Inner regional	Outer regional	Remote	Very remote	Total
Males							
50 years	Positive results	1,193	385	220	32	11	1,841
	Per cent	6.1	6.3	7.3	7.8	6.5	6.3
55 years	Positive results	1,838	769	425	80	36	3,148
	Per cent	6.6	7.0	7.5	9.1	9.4	6.9
65 years	Positive results	2,144	986	556	82	30	3,798
	Per cent	9.3	9.8	11.3	12.3	12.4	9.7
Total	*Positive results*	*5,175*	*2,140*	*1,202*	*194*	*77*	*8,787*
	Per cent	*7.3*	*7.9*	*8.8*	*9.9*	*9.7*	*7.7*
	95% CI	*7.2–7.5*	*7.6–8.2*	*8.4–9.3*	*8.6–11.3*	*7.6–11.8*	*7.6–7.9*
Females							
50 years	Positive results	1,180	345	174	24	14	1,738
	Per cent	5.0	4.5	4.9	5.0	8.2	4.9
55 years	Positive results	1,782	672	360	45	23	2,882
	Per cent	5.1	5.0	5.3	5.1	6.2	5.1
65 years	Positive results	1,739	839	385	48	16	3,026
	Per cent	6.8	7.4	7.4	7.1	7.8	7.1
Total	*Positive results*	*4,701*	*1,855*	*919*	*117*	*54*	*7,646*
	Per cent	*5.6*	*5.8*	*5.9*	*5.7*	*7.1*	*5.7*
	95% CI	*5.4–5.8*	*5.5–6.0*	*5.6–6.3*	*4.7–6.7*	*5.3–8.9*	*5.6–5.8*
Persons							
50 years	Positive results	2,373	730	395	56	25	3,579
	Per cent	5.5	5.3	6.0	6.3	7.3	5.5
55 years	Positive results	3,620	1,440	785	125	59	6,030
	Per cent	5.8	5.9	6.3	7.1	7.8	5.9
65 years	Positive results	3,883	1,824	941	130	46	6,824
	Per cent	8.0	8.6	9.3	9.7	10.2	8.3
Total	**Positive results**	**9,876**	**3,995**	**2,121**	**311**	**131**	**16,433**
	Per cent	**6.4**	**6.7**	**7.3**	**7.8**	**8.4**	**6.6**
	95% CI	**6.3–6.5**	**6.5–6.9**	**7.0–7.6**	**6.9–8.6**	**7.1–9.8**	**6.5–6.7**

Notes

1. There were 3 positive FOBT results and 119 valid FOBT results with postcodes that did not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
2. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
3. Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.

Table 2.6: FOBT positivity rates, by socioeconomic status: 2008

		Lowest SES 1	2	3	4	Highest SES 5	Total
Males							
50 years	Positive results	397	398	382	329	315	1,821
	Per cent	7.4	6.9	6.6	5.7	5.0	6.3
55 years	Positive results	714	691	623	597	482	3,107
	Per cent	8.4	7.2	6.7	6.8	5.4	6.9
65 years	Positive results	921	897	726	638	570	3,752
	Per cent	11.2	10.4	9.6	9.0	8.1	9.7
Total	*Positive results*	*2,032*	*1,986*	*1,731*	*1,564*	*1,367*	*8,680*
	Per cent	*9.2*	*8.3*	*7.6*	*7.2*	*6.2*	*7.7*
	95% CI	*8.8–9.6*	*8.0–8.7*	*7.3–8.0*	*6.9–7.5*	*5.8–6.5*	*7.6–7.9*
Females							
50 years	Positive results	324	347	349	336	365	1,721
	Per cent	5.3	5.0	5.0	4.7	4.6	4.9
55 years	Positive results	605	623	566	550	511	2,855
	Per cent	5.8	5.3	5.0	5.0	4.6	5.1
65 years	Positive results	751	672	591	551	441	3,006
	Per cent	8.5	6.9	6.9	7.2	5.6	7.1
Total	*Positive results*	*1,680*	*1,642*	*1,506*	*1,437*	*1,317*	*7,582*
	Per cent	*6.6*	*5.8*	*5.6*	*5.6*	*4.9*	*5.7*
	95% CI	*6.3–6.9*	*5.5–6.1*	*5.3–5.9*	*5.3–5.9*	*4.6–5.2*	*5.6–5.8*
Persons							
50 years	Positive results	721	745	731	665	680	3,542
	Per cent	6.3	5.9	5.7	5.2	4.8	5.5
55 years	Positive results	1,319	1,314	1,189	1,147	993	5,962
	Per cent	6.9	6.2	5.8	5.8	5.0	5.9
65 years	Positive results	1,672	1,569	1,317	1,189	1,011	6,758
	Per cent	9.8	8.5	8.2	8.0	6.8	8.3
Total	**Positive results**	**3,712**	**3,628**	**3,237**	**3,001**	**2,684**	**16,262**
	Per cent	**7.8**	**6.9**	**6.5**	**6.3**	**5.5**	**6.6**
	95% CI	**7.6–8.1**	**6.7–7.2**	**6.3–6.8**	**6.1–6.5**	**5.3–5.7**	**6.5–6.7**

Notes

1. There were 174 positive FOBT results and 2,727 valid FOBT results with postcodes that did not correspond with the ABS Socio-Economic Index for Areas classifications for 2006 by postal area. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
2. Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.

Table 2.7: FOBT positivity rates, by Aboriginal and Torres Strait Islander status: 2008

		Aboriginal and Torres Strait Islander	Non-Indigenous	Total
Males				
50 years	Positive results	4	683	687
	Per cent	4.7	6.2	6.2
55 years	Positive results	25	2,194	2,219
	Per cent	11.8	6.6	6.7
65 years	Positive results	12	2,703	2,715
	Per cent	9.2	9.7	9.7
Total	*Positive results*	*41*	*5,580*	*5,621*
	Per cent	*9.6*	*7.7*	*7.8*
	95% CI	*6.8–12.4*	*7.6–7.9*	*7.6–8.0*
Females				
50 years	Positive results	8	669	677
	Per cent	9.0	5.0	5.1
55 years	Positive results	15	2,088	2,103
	Per cent	5.9	5.0	5.0
65 years	Positive results	10	2,114	2,124
	Per cent	6.8	6.9	6.9
Total	*Positive results*	*33*	*4,871*	*4,904*
	Per cent	*6.7*	*5.7*	*5.7*
	95% CI	*4.5–8.9*	*5.5–5.9*	*5.5–5.9*
Persons				
50 years	Positive results	12	1,352	1,364
	Per cent	6.9	5.6	5.6
55 years	Positive results	40	4,282	4,322
	Per cent	8.5	5.7	5.8
65 years	Positive results	22	4,817	4,839
	Per cent	7.9	8.2	8.2
Total	**Positive results**	**74**	**10,451**	**10,525**
	Per cent	**8.1**	**6.6**	**6.6**
	95% CI	**6.3–9.8**	**6.5–6.8**	**6.5–6.8**

Notes

1. Aboriginal and Torres Strait Islander status was defined by the participant on the Participant Details form.
2. There were 5,911 positive FOBT results and 90,000 valid FOBT results where Aboriginal and Torres Strait Islander status was not stated. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
3. Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.

Table 2.8: FOBT positivity rates, by language spoken at home: 2008

		Language other than English	English	Total
Males				
50 years	Positive results	64	1,777	1,841
	Per cent	5.9	6.3	6.3
55 years	Positive results	221	2,928	3,149
	Per cent	6.6	6.9	6.9
65 years	Positive results	259	3,540	3,799
	Per cent	9.3	9.8	9.7
Total	*Positive results*	*544*	*8,245*	*8,789*
	Per cent	*7.5*	*7.7*	*7.7*
	95% CI	*6.9–8.2*	*7.6–7.9*	*7.6–7.9*
Females				
50 years	Positive results	66	1,673	1,739
	Per cent	4.9	4.9	4.9
55 years	Positive results	226	2,656	2,882
	Per cent	5.4	5.1	5.1
65 years	Positive results	185	2,841	3,026
	Per cent	6.9	7.1	7.0
Total	*Positive results*	*477*	*7,170*	*7,647*
	Per cent	*5.8*	*5.7*	*5.7*
	95% CI	*5.3–6.3*	*5.5–5.8*	*5.6–5.8*
Persons				
50 years	Positive results	130	3,450	3,580
	Per cent	5.4	5.5	5.5
55 years	Positive results	447	5,584	6,031
	Per cent	5.9	5.9	5.9
65 years	Positive results	444	6,381	6,825
	Per cent	8.2	8.3	8.3
Total	**Positive results**	**1,021**	**15,415**	**16,436**
	Per cent	**6.6**	**6.6**	**6.6**
	95% CI	**6.2–7.0**	**6.5–6.7**	**6.5–6.7**

Notes

1. Participants were assumed to speak English at home unless otherwise indicated. See Appendix B for a detailed explanation of language spoken at home.
2. Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.

Table 2.9: FOBT positivity rates, by disability status: 2008

		Severe or profound activity limitation	No severe or profound activity limitation	Total
Males				
50 years	Positive results	95	1,606	1,701
	Per cent	9.0	6.2	6.3
55 years	Positive results	201	2,790	2,991
	Per cent	9.7	6.9	7.0
65 years	Positive results	361	3,240	3,601
	Per cent	13.8	9.6	9.9
Total	*Positive results*	*657*	*7,636*	*8,293*
	Per cent	*11.4*	*7.6*	*7.8*
	95% CI	*10.6–12.2*	*7.4–7.8*	*7.7–8.0*
Females				
50 years	Positive results	132	1,484	1,616
	Per cent	8.3	4.7	4.9
55 years	Positive results	192	2,592	2,784
	Per cent	7.9	5.1	5.2
65 years	Positive results	259	2,634	2,893
	Per cent	11.0	6.9	7.1
Total	*Positive results*	*583*	*6,710*	*7,293*
	Per cent	*9.1*	*5.6*	*5.8*
	95% CI	*8.4–9.8*	*5.4–5.7*	*5.6–5.9*
Persons				
50 years	Positive results	227	3,090	3,317
	Per cent	8.6	5.4	5.5
55 years	Positive results	393	5,382	5,775
	Per cent	8.7	5.9	6.0
65 years	Positive results	620	5,874	6,494
	Per cent	12.4	8.2	8.4
Total	**Positive**	**1,240**	**14,346**	**15,586**
	Per cent	**10.2**	**6.5**	**6.7**
	95% CI	**9.7–10.8**	**6.4–6.6**	**6.6–6.8**

Notes

1. Disability status is reported by the participant on the Participant Details form.
2. There were 850 positive FOBT results and 15,594 valid FOBT results where disability status was not stated. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
3. A ‘profound’ disability status indicates that a person always needs assistance with self-care, movement and/or communications activities. A ‘severe’ disability status indicates that a person sometimes needs assistance with these activities.
4. Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.

3 Follow-up of positive faecal occult blood test results

Participants who have a valid FOBT kit tested by the pathology laboratory and receive a positive result are encouraged to follow up this outcome with their primary health care practitioner. This chapter discusses the follow-up procedures, including primary health care practitioner visits, colonoscopy procedures and histopathology diagnoses, for those participants who were invited in 2008.

Fast facts

- Using Kaplan-Meier estimates, of the 16,436 participants who had a positive FOBT, 42.9% had a follow-up primary health care practitioner visit recorded and 64.5% had a colonoscopy recorded by 31 January 2009.
- Primary health care practitioner follow-up was highest for participants with the lowest socioeconomic status and lowest for participants with the highest socioeconomic status; however, this was not mirrored in colonoscopy follow-up, where participants with the lowest socioeconomic status had the lowest colonoscopy follow-up rates.
- Participants who spoke a language other than English at home had a statistically significantly higher rate of colonoscopy follow-up than participants who spoke English.
- Participants with a severe or profound activity limitation had a statistically significantly lower rate of colonoscopy follow-up than participants without such limitations.
- Of the 6,496 participants who had reported a primary health care practitioner consultation: 83.7% reported experiencing no symptoms before receiving their positive FOBT result; and 91.7% were referred on for colonoscopy.

The National Bowel Cancer Screening Program follow-up process

Participants are advised to visit their primary health care practitioner to discuss follow-up testing upon receiving notification of a positive FOBT result. In accordance with National Health and Medical Research Council guidelines, primary health care practitioners are encouraged to refer all participants with a positive FOBT for a colonoscopy, unless other information gained at the consultation suggests an alternative course of action.

The Australian Cancer Network Colorectal Cancer Guidelines Revision Committee (ACN 2005) recommends colonoscopy as the most accurate investigation method to assess the colon and rectum, as it enables biopsy and subsequent histopathological diagnosis. Colonoscopies also allow identification and endoscopic removal of polyps.

Primary health care practitioner, colonoscopy and histopathology (if applicable) follow-up details are collected on specific NBCSP forms and returned to the register for analysis.

Overall primary health care practitioner follow-up

Background

Primary health care practitioners are classified by Medicare Australia as a general practitioner or other primary health care provider. This may include remote health clinics or other specialists providing general practitioner services.

Practitioners are requested to complete an Assessment form for consultations relating to the NBCSP, and this information is used to analyse details of participant follow-up in the NBCSP. However, completion of Assessment forms is not mandatory, so primary health care attendance rates presented in this section may be underestimated.

Underestimation of crude rates of practitioner follow-up also occurs due to lag time between a participant receiving a positive FOBT result and visiting a primary health care practitioner. This is a particular issue due to the annual nature of this report—many people who were issued an invitation in the last half of 2008 may have completed a FOBT and had a positive result, but not had sufficient time to visit their primary health care practitioner (and have the Assessment form returned to the Register) before this report was finalised. This underestimation does not affect comparisons between rates for different subgroups, but it does mean that the absolute levels of follow-up are understated.

A Kaplan-Meier estimate (similar to Chapter 1) of primary health care practitioner follow-up is used to minimise the effect of lag time, but it cannot account for non-return of Assessment forms from primary health care practitioners. This estimate calculates primary health care practitioner follow-up over time using the time in weeks from notification of a positive FOBT result and the date a participant first consulted their primary health care practitioner.

2008 primary health care practitioner follow-up

Of the 16,436 positive FOBT results from participants invited in 2008, 6,496 (39.5%) had a primary health care practitioner visit registered by 31 January 2009 (Table 3.1). Using Kaplan-Meier estimates, the follow-up rate was estimated at 42.9% at 26 weeks since receiving a positive FOBT (Table 3.2). The reminder letter sent to participants and their primary health care practitioner 8 weeks after a positive FOBT had a positive effect (Figure 3.2a). The low level of primary health care practitioner follow-up may be explained by two observations:

- Not all Assessment forms were returned by primary health care practitioners; there were more recorded colonoscopies than there were recorded primary health care practitioner visits (tables 3.1 and 3.13).
- Participants invited in the second half of the year may not have had time to organise a consultation, or for an Assessment form from a recent visit to be returned. An analysis of the data mid-year shows the overall primary health care practitioner follow-up rate for participants invited in the first half of 2008 was 48.8%. While the overall follow-up rate for participants invited in the second half of 2008 was 29.6%, with similar rates for those aged 50 years (28.5%), 55 years (29.2%) and 65 years (31.8%). The lower follow-up rate is therefore heavily influenced by the inclusion of people aged 50 years in the NBCSP late in 2008.

Of the 6,496 participants who had a reported primary health care practitioner consultation:

- 83.7% reported having no symptoms before the positive FOBT result (Table 3.9)
- 91.7% were referred for colonoscopy (Table 3.10)
- the main reasons for a non-referral were having had a recent colonoscopy (43.8%), or the participant declining a colonoscopy (31.9%) (Table 3.12).

Primary health care practitioner follow-up by population subgroups

Primary health care practitioner follow-up by state and territory

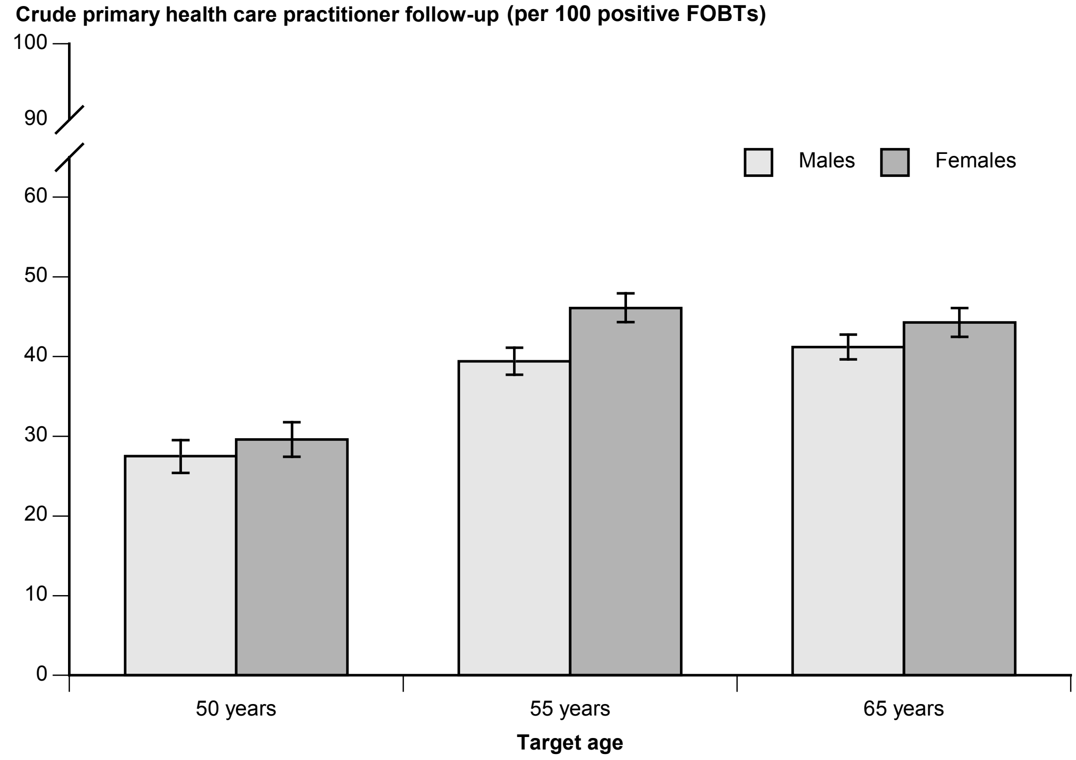
NBCSP implementation is the responsibility of each jurisdiction. Hence, states and territories may have different follow-up policies and procedures. There were significant differences recorded in primary health care practitioner follow-up between the jurisdictions. Queensland (52.5%), the Northern Territory (45.6%) and Tasmania (45.4%) had the highest crude rates of follow-up; however, the low numbers of consultations in the Northern Territory meant only Queensland and Tasmania's results were statistically significant (Table 3.1).

Table 3.2 and figures 3.2b and 3.2c show the Kaplan-Meier general practitioner follow-up rates up to 26 weeks from a positive FOBT result. For clarity, Kaplan-Meier curves for the states and territories were divided between figures 3.2b and 3.2c. All rates were slightly higher using this method to estimate true follow-up rates than the crude rates; however, the results still show a similar state and territory trend to the crude data.

Trends in primary health care practitioner follow-up (Table 3.3 and Figure 3.3) use crude rates for previous years and Kaplan-Meier estimates for 2008. Due to the low level of data available to calculate 52-week Kaplan-Meier estimates, the follow-up is only calculated to 26 weeks since notification of a positive FOBT result. Therefore, comparative trend data for primary health care follow-up and this table should be interpreted with caution.

Primary health care practitioner follow-up by age and sex

There were no differences shown in crude primary health care practitioner follow-up rates between those aged 55 years and those aged 65 years (42.6%). People aged 50 years had a lower rate (28.5%), but this was mainly due to the majority of this age group only receiving invitations late in 2008 and having less time to progress through the pathway (Figure 3.1 and Table 3.1).



Note: Bars on columns represent 95% confidence intervals.

Source: National Bowel Cancer Screening Program Register.

Figure 3.1: Primary health care practitioner follow-up, by age and sex: 2008

More female participants (41.6%) had a returned Assessment form than males (37.7%). This was a common finding when comparing sexes across all subgroup tables.

From the primary health care practitioner visits recorded, women had a slightly higher rate of reported symptoms (Table 3.9), and a slightly lower rate of referral for colonoscopy (Table 3.10). A breakdown of reasons for non-referral is given in Table 3.12.

Primary health care practitioner follow-up by region and socioeconomic status

Inner regional (44.0%) and *Outer regional* (45.1%) areas had the highest rates of primary health care practitioner consultations—1.2 times the rate of *Major cities* (36.5%) (Table 3.4). *Remote* and *Very remote* areas showed no statistically significant differences in primary health care practitioner follow-up to *Major cities*.

Referral for colonoscopy was slightly more common in *Remote* and *Very remote* areas than in other regions, but this was not statistically significant due to the small numbers of consultations in these areas (Table 3.11).

The rate of primary health care practitioner follow-up was highest in participants with the lowest socioeconomic status (41.5%), decreasing across the socioeconomic groups to a rate of 35.1% for participants with the highest socioeconomic status (Table 3.5). This meant participants with the lowest socioeconomic status had 1.2 times the rate of follow-up of those with the highest socioeconomic status.

Primary health care practitioner follow-up by Aboriginal and Torres Strait Islander status, language spoken at home and disability subgroups

All three of these population subgroups had low numbers of participants with returned Assessment forms. Care must be taken when analysing results in these tables.

While Aboriginal and Torres Strait Islander participants had a similar rate of primary health care practitioner visits to non-Indigenous participants, the very low number of visits reported (33) means no conclusions can be drawn for these data (Table 3.6).

While people who spoke a language other than English at home had a statistically significantly higher rate of primary health care practitioner visits (44.8%) compared with participants who spoke English (39.2%); this difference was only statistically significant for females, not for males (Table 3.7).

Males with a severe or profound activity limitation had statistically significantly higher rates of primary health care practitioner follow-up (47.2%) than those without such limitations (38.1%). However, this trend was not observed for females which meant the difference in the overall primary health care practitioner follow-up rate between people with and without a severe or profound activity limitation was not statistically significant (Table 3.8).

Primary health care practitioner follow-up tables and figures

Table 3.1: Crude follow-up by primary health care practitioners following a positive FOBT result, by state and territory: 2008

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Number	107	118	160	49	51	14	2	5	506
	Per cent	18.7	25.3	45.2	24.7	28.8	35.9	11.8	29.4	27.5
55 years	Number	267	249	394	123	133	50	12	12	1,240
	Per cent	32.2	39.5	52.0	33.0	35.0	41.3	33.3	54.5	39.4
65 years	Number	401	293	447	163	165	74	10	14	1,567
	Per cent	35.8	39.0	51.6	37.1	40.0	50.3	25.0	56.0	41.2
Total	*Number*	*775*	*660*	*1,001*	*335*	*349*	*138*	*24*	*31*	*3,313*
	Per cent	*30.8*	*35.7*	*50.6*	*33.2*	*36.0*	*45.0*	*25.8*	*48.4*	*37.7*
	95% CI	*29.0–32.6*	*33.5–37.9*	*48.4–52.8*	*30.3–36.1*	*33.0–39.0*	*39.4–50.5*	*16.9–34.7*	*36.2–60.7*	*36.7–38.7*
Females										
50 years	Number	113	126	161	36	53	8	10	7	514
	Per cent	20.9	27.9	51.3	18.7	35.3	18.6	31.3	43.8	29.6
55 years	Number	302	271	377	152	138	64	20	4	1,328
	Per cent	39.9	43.2	55.9	44.2	45.2	55.2	47.6	25.0	46.1
65 years	Number	377	245	380	125	133	59	17	5	1,341
	Per cent	41.0	39.3	55.2	41.0	42.8	46.5	37.8	71.4	44.3
Total	*Number*	*792*	*642*	*918*	*313*	*324*	*131*	*47*	*16*	*3,183*
	Per cent	*35.7*	*37.7*	*54.7*	*37.2*	*42.3*	*45.8*	*39.5*	*41.0*	*41.6*
	95% CI	*33.7–37.7*	*35.4–40.0*	*52.4–57.1*	*33.9–40.4*	*38.8–45.8*	*40.0–51.6*	*30.7–48.3*	*25.6–56.5*	*40.5–42.7*
Persons										
50 years	Number	220	244	321	85	104	22	12	12	1,020
	Per cent	19.8	26.6	48.1	21.7	31.8	26.8	24.5	36.4	28.5
55 years	Number	569	520	771	275	271	114	32	16	2,568
	Per cent	35.9	41.3	53.8	38.4	39.6	48.1	41.0	42.1	42.6
65 years	Number	778	538	827	288	298	133	27	19	2,908
	Per cent	38.2	39.2	53.2	38.7	41.2	48.5	31.8	59.4	42.6
Total	**Number**	**1,567**	**1,302**	**1,919**	**648**	**673**	**269**	**71**	**47**	**6,496**
	Per cent	**33.1**	**36.7**	**52.5**	**35.0**	**38.8**	**45.4**	**33.5**	**45.6**	**39.5**
	95% CI	**31.7–34.4**	**35.1–38.3**	**50.9–54.1**	**32.8–37.2**	**36.5–41.1**	**41.4–49.4**	**27.1–39.8**	**36.0–55.3**	**38.8–40.3**

Notes

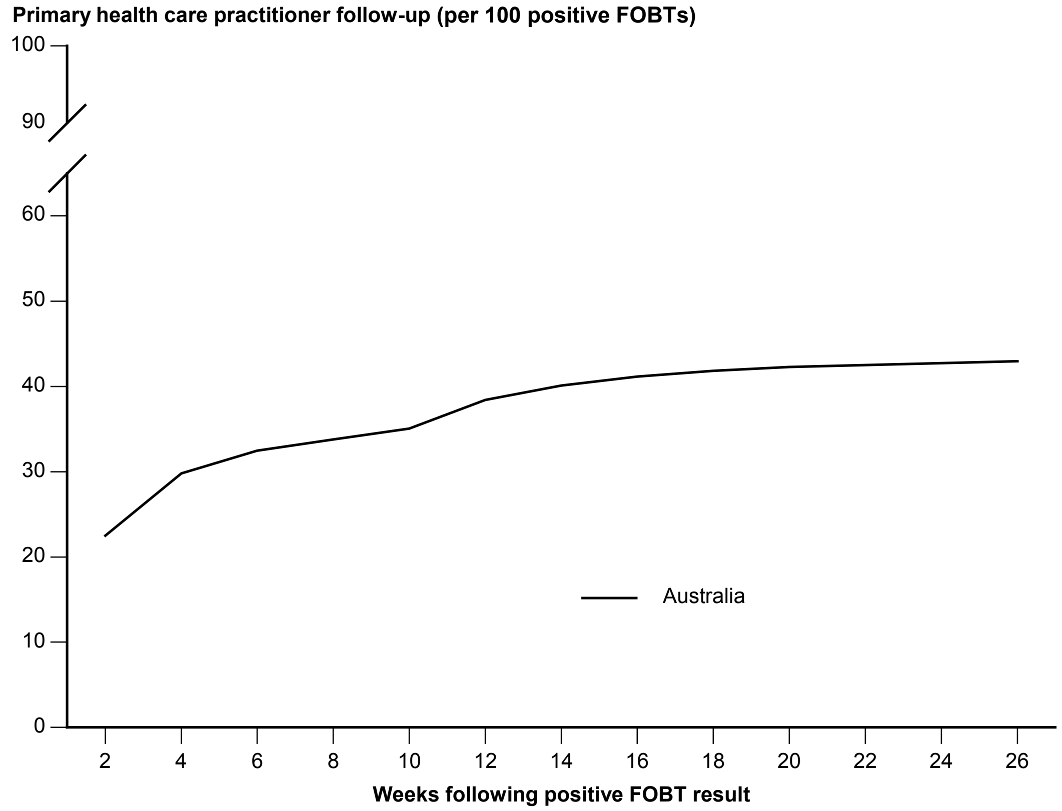
1. Percentages equal the number of people having consulted a primary health care practitioner following a positive FOBT result as a proportion of the total number of people with positive FOBT results.
2. As progression through the pathway to the consultation stage may take some time, some participants may not have had sufficient time to obtain a consultation. Additionally, reporting of primary health care practitioner follow-up is not mandatory. Therefore, actual numbers of participant consultations may be underestimated.
3. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to visit a primary health care practitioner after notification of a positive FOBT result.

Table 3.2: Kaplan-Meier documented primary health care practitioner follow-up per 100 positive FOBTs at 26 weeks since positive FOBT, by state and territory: 2008

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Primary health care practitioner follow-up rate	38.5	40.3	53.9	38.6	41.5	46.4	35.7	52.2	42.9
95% CI	36.9–40.1	38.6–42.1	52.2–55.6	36.2–41.0	39.0–43.9	42.3–50.5	28.9–42.5	40.1–64.4	42.1–43.8

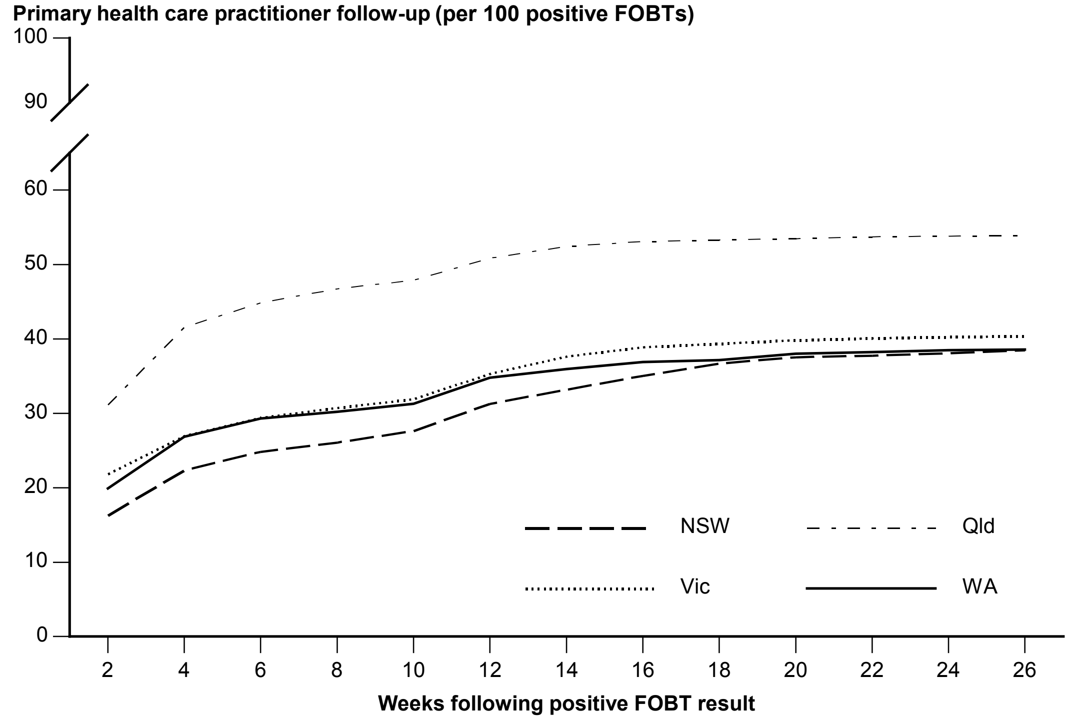
Notes

1. Primary health care practitioner follow-up rates equal the estimated Kaplan-Meier follow-up rate of people who consulted a primary health care practitioner as a proportion of the total number of people with positive FOBT results. This excludes people who suspended or opted off the Program.
2. People aged 50 years were invited to screen from 1 July 2008.



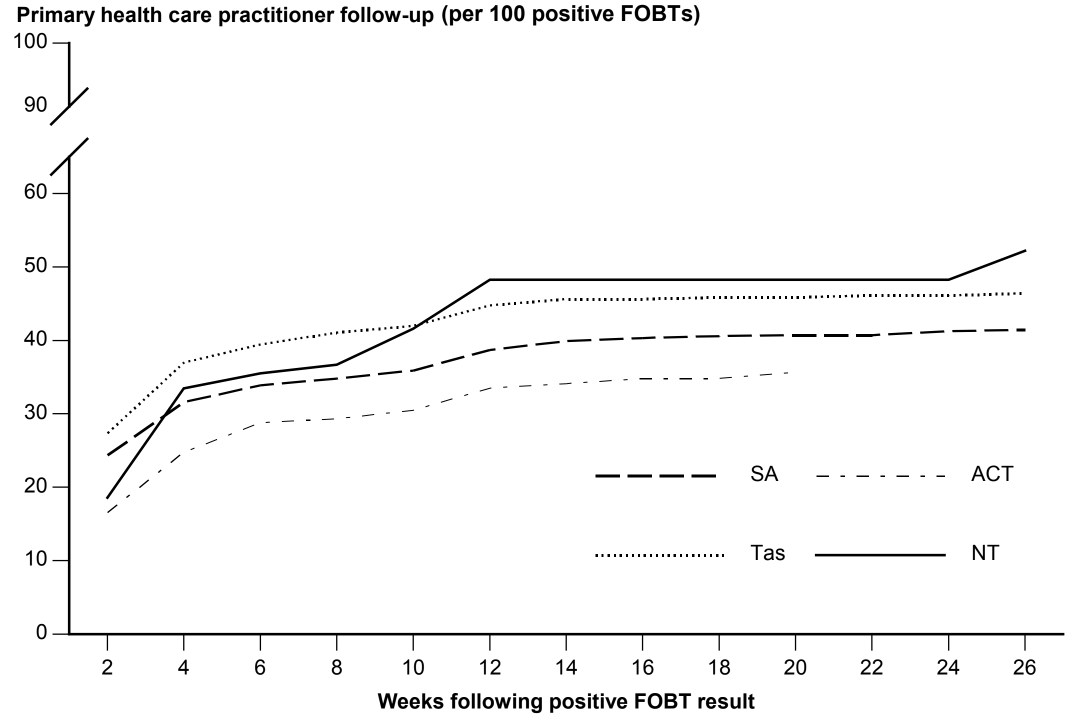
Source: National Bowel Cancer Screening Program Register.

Figure 3.2a: Primary health care practitioner follow-up rate, by weeks since positive FOBT using Kaplan-Meier estimates, Australia: 2008



Source: National Bowel Cancer Screening Program Register.

Figure 3.2b: Primary health care practitioner follow-up rate, by weeks since positive FOBT using Kaplan-Meier estimates, New South Wales, Victoria, Queensland and Western Australia: 2008



Source: National Bowel Cancer Screening Program Register.

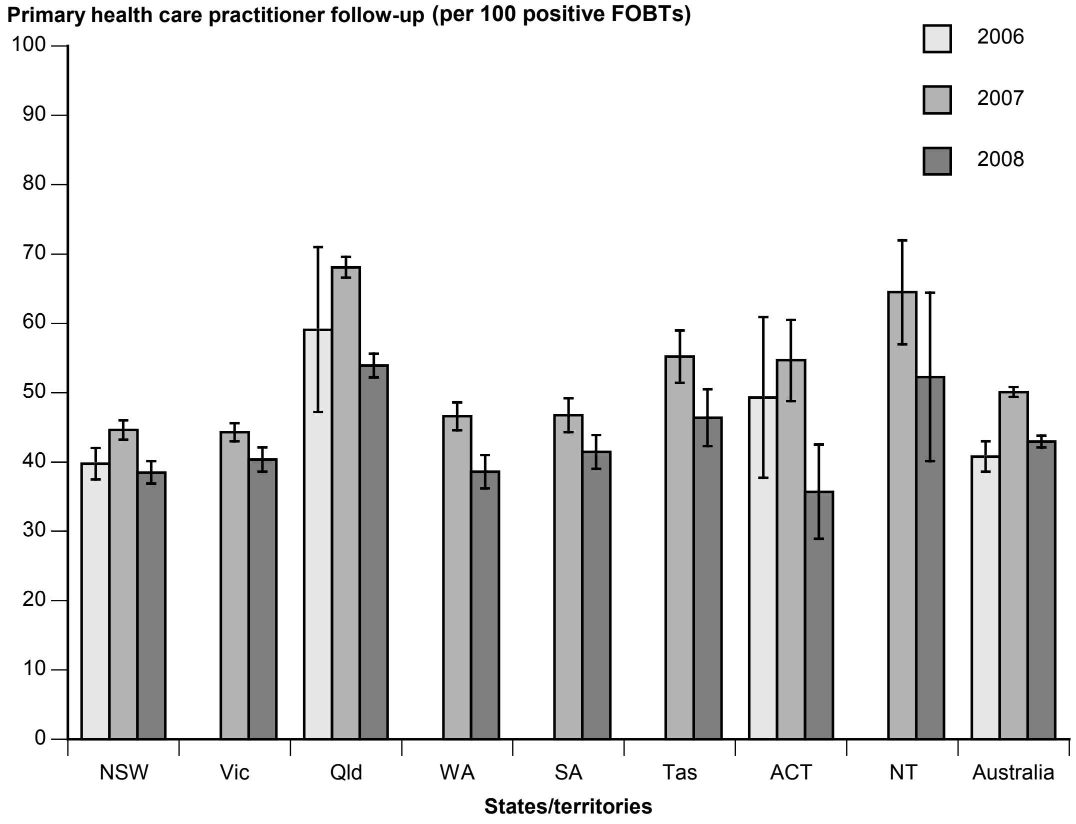
Figure 3.2c: Primary health care practitioner follow-up rate, by weeks since positive FOBT using Kaplan-Meier estimates, South Australia, Tasmania, Australian Capital Territory and Northern Territory: 2008

Table 3.3: Trends in primary health care practitioner follow-up, by state and territory: 2006–2008

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
2006	39.8	. .	59.1	. .	. .	. .	49.3	. .	40.8
95% CI	37.5–42.0	. .	47.2–71.0	. .	. .	. .	37.7–60.9	. .	38.6–43.0
2007	44.6	44.3	68.1	46.6	46.8	55.2	54.7	64.5	50.1
95% CI	43.2–46.0	43.0–45.6	66.6–69.6	44.6–48.6	44.3–49.2	51.4–59.0	48.8–60.5	57.0–72.0	49.4–50.8
2008	38.5	40.3	53.9	38.6	41.5	46.4	35.7	52.2	42.9
95% CI	36.9–40.1	38.6–42.1	52.2–55.6	36.2–41.0	39.0–43.9	42.3–50.5	28.9–42.5	40.1–64.4	42.1–43.8

Notes

1. Only New South Wales, Queensland and the Australian Capital Territory had started the NBCSP in 2006; therefore, 2006 data is only available for these jurisdictions. See page 5.
2. Primary health care practitioner follow-up rates for 2006 and 2007 equal crude follow-up rates calculated as the number of people with a positive FOBT who consulted a primary health care practitioner as a proportion of the total number of people with positive FOBT results.
3. Primary health care practitioner follow-up rates for 2008 equal estimated Kaplan-Meier follow-up rates calculated as the number of people with a positive FOBT who consulted a primary health care practitioner as a proportion of the total number of people with positive FOBT results.
4. People aged 50 years were invited to screen from 1 July 2008, and this may affect results for 2008.



Note: Bars on columns represent 95% confidence intervals.

Source: National Bowel Cancer Screening Program Register.

Figure 3.3: Trends in primary health care practitioner follow-up, by state and territory: 2006–2008

Primary health care practitioner follow-up by population subgroups

Table 3.4: Crude follow-up by primary health care practitioners following a positive FOBT result, by geographic region: 2008

		Major cities	Inner regional	Outer regional	Remote	Very remote	Total
Males							
50 years	Number	292	127	77	8	2	506
	Per cent	24.5	32.9	35.2	24.0	20.5	27.5
55 years	Number	640	354	200	30	16	1,240
	Per cent	34.8	46.0	47.1	37.5	43.8	39.4
65 years	Number	830	433	262	33	9	1,567
	Per cent	38.7	43.9	47.2	39.9	29.5	41.3
Total	*Number*	*1,763*	*913*	*540*	*70*	*27*	*3,313*
	Per cent	*34.1*	*42.7*	*45.0*	*36.3*	*34.9*	*37.7*
	95% CI	*32.8–35.4*	*40.6–44.8*	*42.2–47.8*	*29.5–43.0*	*24.2–45.6*	*36.7–38.7*
Females							
50 years	Number	336	105	60	10	3	514
	Per cent	28.5	30.6	34.2	39.3	20.1	29.6
55 years	Number	785	344	164	26	9	1,328
	Per cent	44.1	51.2	45.5	57.9	39.6	46.1
65 years	Number	723	394	192	23	9	1,341
	Per cent	41.6	47.0	49.8	48.9	52.2	44.3
Total	*Number*	*1,845*	*843*	*415*	*59*	*21*	*3,183*
	Per cent	*39.2*	*45.5*	*45.2*	*50.4*	*38.4*	*41.6*
	95% CI	*37.9–40.6*	*43.2–47.7*	*41.9–48.4*	*41.3–59.5*	*25.4–51.4*	*40.5–42.7*
Persons							
50 years	Number	628	232	137	17	5	1,020
	Per cent	26.5	31.8	34.7	30.6	20.3	28.5
55 years	Number	1,425	697	364	56	25	2,568
	Per cent	39.4	48.4	46.4	44.8	42.1	42.6
65 years	Number	1,554	827	454	56	17	2,908
	Per cent	40.0	45.3	48.3	43.2	37.5	42.6
Total	**Number**	**3,608**	**1,756**	**955**	**129**	**47**	**6,496**
	Per cent	**36.5**	**44.0**	**45.1**	**41.6**	**36.3**	**39.5**
	95% CI	**35.6–37.5**	**42.4–45.5**	**42.9–47.2**	**36.1–47.0**	**28.1–44.6**	**38.8–40.3**

Notes

1. There were 3 positive FOBT results with postcodes that did not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
2. Percentages equal the number of people having consulted a primary health care practitioner following a positive FOBT result as a proportion of the total number of people with positive FOBT results.
3. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
4. As progression through the pathway to the consultation stage may take some time, some participants may not have had sufficient time to obtain a consultation. Additionally, reporting of primary health care practitioner follow-up is not mandatory. Therefore, actual numbers of participant consultations may be underestimated.
5. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to visit a primary health care practitioner after notification of a positive FOBT result.

Table 3.5: Crude follow-up by primary health care practitioners following a positive FOBT result, by socioeconomic status: 2008

		Lowest SES				**Highest SES**	
		1	**2**	**3**	**4**	**5**	**Total**
Males							
50 years	Number	115	103	102	97	84	501
	Per cent	29.0	25.9	26.7	29.5	26.7	27.5
55 years	Number	305	282	233	241	165	1,226
	Per cent	42.7	40.8	37.4	40.4	34.2	39.5
65 years	Number	411	383	299	250	206	1,549
	Per cent	44.6	42.7	41.2	39.2	36.1	41.3
Total	*Number*	*831*	*768*	*634*	*588*	*455*	*3,276*
	Per cent	*40.9*	*38.7*	*36.6*	*37.6*	*33.3*	*37.7*
	95% CI	*38.8–43.0*	*36.5–40.8*	*34.4–38.9*	*35.2–40.0*	*30.8–35.8*	*36.7–38.8*
Females							
50 years	Number	88	107	103	112	99	509
	Per cent	27.2	30.8	29.5	33.3	27.1	29.6
55 years	Number	276	293	281	246	219	1,315
	Per cent	45.6	47.0	49.6	44.7	42.9	46.1
65 years	Number	344	305	274	239	168	1,330
	Per cent	45.8	45.4	46.4	43.4	38.1	44.2
Total	*Number*	*708*	*705*	*658*	*597*	*486*	*3,154*
	Per cent	*42.1*	*42.9*	*43.7*	*41.5*	*36.9*	*41.6*
	95% CI	*39.8–44.5*	*40.5–45.3*	*41.2–46.2*	*39.0–44.1*	*34.3–39.5*	*40.5–42.7*
Persons							
50 years	Number	203	210	205	209	183	1,010
	Per cent	28.2	28.2	28.0	31.4	26.9	28.5
55 years	Number	581	575	514	487	384	2,541
	Per cent	44.0	43.8	43.2	42.5	38.7	42.6
65 years	Number	755	688	573	489	374	2,879
	Per cent	45.2	43.8	43.5	41.1	37.0	42.6
Total	**Number**	**1,539**	**1,473**	**1,292**	**1,185**	**941**	**6,430**
	Per cent	**41.5**	**40.6**	**39.9**	**39.5**	**35.1**	**39.5**
	95% CI	**39.9–43.0**	**39.0–42.2**	**38.2–41.6**	**37.7–41.2**	**33.3–36.9**	**38.8–40.3**

Notes

1. There were 66 recorded primary health care practitioner visits and 174 positive FOBT results with postcodes that do not correspond with the ABS Index of Relative Socioeconomic Disadvantage classifications for 2006 by postal area. These were regarded as missing data and were excluded from this table. Hence, the totals in this table may be less than the national totals.
2. Percentages equal the number of people having consulted a primary health care practitioner following a positive FOBT result as a proportion of the total number of people with positive FOBT results.
3. As progression through the pathway to the consultation stage may take some time, some participants may not have had sufficient time to obtain a consultation. Additionally, reporting of primary health care practitioner follow-up is not mandatory. Therefore, actual numbers of participant consultations may be underestimated.
4. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to visit a primary health care practitioner after notification of a positive FOBT result.

Table 3.6: Crude follow-up by primary health care practitioners following a positive FOBT result, by Aboriginal and Torres Strait Islander status: 2008

		Aboriginal and Torres Strait Islander	Non-Indigenous	Total
Males				
50 years	Number	0	188	188
	Per cent	0.0	27.5	27.4
55 years	Number	12	946	958
	Per cent	48.0	43.1	43.2
65 years	Number	6	1,209	1,215
	Per cent	50.0	44.7	44.8
Total	*Number*	*18*	*2,343*	*2,361*
	Per cent	*43.9*	*42.0*	*42.0*
	95% CI	*28.7–59.1*	*40.7–43.3*	*40.7–43.3*
Females				
50 years	Number	1	179	180
	Per cent	12.5	26.8	26.6
55 years	Number	11	1,063	1,074
	Per cent	73.3	50.9	51.1
65 years	Number	3	1,019	1,022
	Per cent	30.0	48.2	48.1
Total	*Number*	*15*	*2,261*	*2,276*
	Per cent	*45.5*	*46.4*	*46.4*
	95% CI	*28.5–62.4*	*45.0–47.8*	*45.0–47.8*
Persons				
50 years	Number	1	367	368
	Per cent	8.3	27.1	27.0
55 years	Number	23	2,009	2,032
	Per cent	57.5	46.9	47.0
65 years	Number	9	2,228	2,237
	Per cent	40.9	46.3	46.2
Total	**Number**	**33**	**4,604**	**4,637**
	Per cent	**44.6**	**44.1**	**44.1**
	95% CI	**33.3–55.9**	**43.1–45.0**	**43.1–45.0**

Notes

1. Aboriginal and Torres Strait Islander status was defined by the participant.
2. There were 1,859 primary health care practitioner visits following a positive FOBT result and 5,911 valid FOBT results where Aboriginal and Torres Strait Islander status was not stated. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
3. Percentages equal the number of people having consulted a primary health care practitioner following a positive FOBT result as a proportion of the total number of people with positive FOBT results.
4. As progression through the pathway to the consultation stage may take some time, some participants may not have had sufficient time to obtain a consultation. Additionally, reporting of primary health care practitioner follow-up is not mandatory. Therefore, actual numbers of participant consultations may be underestimated.
5. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to visit a primary health care practitioner after notification of a positive FOBT result.

Table 3.7: Crude follow-up by primary health care practitioners following a positive FOBT result, by language spoken at home: 2008

		Language other than English	English	Total
Males				
50 years	Number	14	492	506
	Per cent	21.9	27.7	27.5
55 years	Number	100	1,140	1,240
	Per cent	45.2	38.9	39.4
65 years	Number	117	1,450	1,567
	Per cent	45.2	41.0	41.2
Total	*Number*	*231*	*3,082*	*3,313*
	Per cent	*42.5*	*37.4*	*37.7*
	95% CI	*38.3–46.6*	*36.3–38.4*	*36.7–38.7*
Females				
50 years	Number	18	496	514
	Per cent	27.3	29.6	29.6
55 years	Number	113	1,215	1,328
	Per cent	50.0	45.7	46.1
65 years	Number	95	1,246	1,341
	Per cent	51.4	43.9	44.3
Total	*Number*	*226*	*2,957*	*3,183*
	Per cent	*47.4*	*41.2*	*41.6*
	95% CI	*42.9–51.9*	*40.1–42.4*	*40.5–42.7*
Persons				
50 years	Number	32	988	1,020
	Per cent	24.6	28.6	28.5
55 years	Number	213	2,355	2,568
	Per cent	47.7	42.2	42.6
65 years	Number	212	2,696	2,908
	Per cent	47.7	42.3	42.6
Total	**Number**	**457**	**6,039**	**6,496**
	Per cent	**44.8**	**39.2**	**39.5**
	95% CI	**41.7–47.8**	**38.4–39.9**	**38.8–40.3**

Notes

1. Participants were assumed to speak English at home unless otherwise indicated. See Appendix B for a detailed explanation of language spoken at home.
2. Percentages equal the number of people having consulted a primary health care practitioner following a positive FOBT result as a proportion of the total number of people with positive FOBT results.
3. As progression through the pathway to the consultation stage may take some time, some participants may not have had sufficient time to obtain a consultation. Additionally, reporting of primary health care practitioner follow-up is not mandatory. Therefore, actual numbers of participant consultations may be underestimated.
4. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to visit a primary health care practitioner after notification of a positive FOBT result.

Table 3.8: Crude follow-up by primary health care practitioners following a positive FOBT result, by disability status: 2008

		Severe or profound activity limitation	No severe or profound activity limitation	Total
Males				
50 years	Number	35	447	482
	Per cent	36.8	27.8	28.3
55 years	Number	101	1,112	1,213
	Per cent	50.2	39.9	40.6
65 years	Number	174	1,349	1,523
	Per cent	48.2	41.6	42.3
Total	*Number*	*310*	*2,908*	*3,218*
	Per cent	*47.2*	*38.1*	*38.8*
	95% CI	*43.4–51.0*	*37.0–39.2*	*37.8–39.9*
Females				
50 years	Number	40	451	491
	Per cent	30.3	30.4	30.4
55 years	Number	76	1,234	1,310
	Per cent	39.6	47.6	47.1
65 years	Number	117	1,190	1,307
	Per cent	45.2	45.2	45.2
Total	*Number*	*233*	*2,875*	*3,108*
	Per cent	*40.0*	*42.8*	*42.6*
	95% CI	*36.0–43.9*	*41.7–44.0*	*41.5–43.8*
Persons				
50 years	Number	75	898	973
	Per cent	33.0	29.1	29.3
55 years	Number	177	2,346	2,523
	Per cent	45.0	43.6	43.7
65 years	Number	291	2,539	2,830
	Per cent	46.9	43.2	43.6
Total	**Number**	**543**	**5,783**	**6,326**
	Per cent	**43.8**	**40.3**	**40.6**
	95% CI	**41.0–46.6**	**39.5–41.1**	**39.8–41.4**

Notes

1. Disability status is reported by the participant on the Participant Details form.
2. There were 170 primary health care practitioner consultations following positive FOBT results and 850 positive FOBT results where disability status was not stated. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
3. A ‘profound’ disability status indicates that a person always needs assistance with self-care, movement and/or communications activities. A ‘severe’ disability status indicates that a person sometimes needs assistance with these activities.
4. Percentages equal the number of people having consulted a primary health care practitioner following a positive FOBT result as a proportion of the total number of people with positive FOBT results.
5. As progression through the pathway to the consultation stage may take some time, some participants may not have had sufficient time to obtain a consultation. Additionally, reporting of primary health care practitioner follow-up is not mandatory. Therefore, actual numbers of participant consultations may be underestimated.
6. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to visit a primary health care practitioner after notification of a positive FOBT result.

Table 3.9: Symptoms reported to primary health care practitioners following a positive FOBT result: 2008

		No symptoms	Recent onset rectal bleeding ≤6 months	Longer standing rectal bleeding >6 months	Significant change in bowel habits	Iron deficiency anaemia	Abdominal pain	All participants reporting symptom status
Males								
50 years	Number	409	22	32	11	3	16	477
	Per cent	85.7	4.6	6.7	2.3	0.6	3.4	
55 years	Number	981	57	76	15	11	29	1,153
	Per cent	85.1	4.9	6.6	1.3	1.0	2.5	
65 years	Number	1,230	61	93	41	18	41	1,455
	Per cent	84.5	4.2	6.4	2.8	1.2	2.8	
Total	*Number*	*2,620*	*140*	*201*	*67*	*32*	*86*	*3,085*
	Per cent	*84.9*	*4.5*	*6.5*	*2.2*	*1.0*	*2.8*	
Females								
50 years	Number	395	28	24	15	14	15	480
	Per cent	82.3	5.8	5.0	3.1	2.9	3.1	
55 years	Number	997	69	77	53	15	52	1,228
	Per cent	81.2	5.6	6.3	4.3	1.2	4.2	
65 years	Number	1,026	56	64	49	19	51	1,226
	Per cent	83.7	4.6	5.2	4.0	1.5	4.2	
Total	*Number*	*2,418*	*153*	*165*	*117*	*48*	*118*	*2,934*
	Per cent	*82.4*	*5.2*	*5.6*	*4.0*	*1.6*	*4.0*	
Persons								
50 years	Number	804	50	56	26	17	31	957
	Per cent	84.0	5.2	5.9	2.7	1.8	3.2	
55 years	Number	1,978	126	153	68	26	81	2,381
	Per cent	83.1	5.3	6.4	2.9	1.1	3.4	
65 years	Number	2,256	117	157	90	37	92	2,681
	Per cent	84.1	4.4	5.9	3.4	1.4	3.4	
Total	**Number**	**5,038**	**293**	**366**	**184**	**80**	**204**	**6,019**
	Per cent	**83.7**	**4.9**	**6.1**	**3.1**	**1.3**	**3.4**	

Notes

1. Only participants who had a symptom status (including 'no symptoms') recorded in the Assessment form question 2 were included in this analysis. There were 477 participants with missing data for this question excluded from the analysis.
2. Percentages equal the number of primary health care practitioner consultations reporting specific symptoms following a positive FOBT result as a proportion of the total number of consultations following a positive FOBT result in which respondents reported any symptoms.
3. Excluding the last column, percentages can add to more than 100, as respondents may have reported more than one symptom.
4. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to visit a primary health care practitioner after notification of a positive FOBT result.

Table 3.10: Referrals for colonoscopy or other outcomes following a positive FOBT result and subsequent consultation with primary health care practitioner: 2008

		Colonoscopy	Double contrast barium enema	Sigmoidoscopy	CT colonography	Other	No referral	All follow-up visits
Males								
50 years	Number	481	0	0	0	5	20	506
	Per cent	95.1	0.0	0.0	0.0	1.0	4.0	
55 years	Number	1,166	2	0	1	14	57	1,240
	Per cent	94.0	0.2	0.0	0.1	1.1	4.6	
65 years	Number	1,411	11	0	2	38	105	1,567
	Per cent	90.0	0.7	0.0	0.1	2.4	6.7	
Total	*Number*	*3,058*	*13*	*0*	*3*	*57*	*182*	*3,313*
	Per cent	*92.3*	*0.4*	*0.0*	*0.1*	*1.7*	*5.5*	
Females								
50 years	Number	476	0	0	0	18	20	514
	Per cent	92.6	0.0	0.0	0.0	3.5	3.9	
55 years	Number	1,219	0	0	2	41	66	1,328
	Per cent	91.8	0.0	0.0	0.2	3.1	5.0	
65 years	Number	1,207	7	1	2	34	90	1,341
	Per cent	90.0	0.5	0.1	0.1	2.5	6.7	
Total	*Number*	*2,902*	*7*	*1*	*4*	*93*	*176*	*3,183*
	Per cent	*91.2*	*0.2*	*0.0*	*0.1*	*2.9*	*5.5*	
Persons								
50 years	Number	957	0	0	0	23	40	1,020
	Per cent	93.8	0.0	0.0	0.0	2.3	3.9	
55 years	Number	2,385	2	0	3	55	123	2,568
	Per cent	92.9	0.1	0.0	0.1	2.1	4.8	
65 years	Number	2,618	18	1	4	72	195	2,908
	Per cent	90.0	0.6	0.0	0.1	2.5	6.7	
Total	**Number**	**5,960**	**20**	**1**	**7**	**150**	**358**	**6,496**
	Per cent	**91.7**	**0.3**	**0.0**	**0.1**	**2.3**	**5.5**	

Notes

1. Percentages equal the number of people consulting a primary health care practitioner following a positive FOBT who received/did not receive referral for either colonoscopy or other examination as a proportion of the total number of follow-up consultations following a positive FOBT.
2. Referrals may sum to more than all follow-up primary health care practitioner visits, as more than one referral may be given at each visit.

Table 3.11: Referrals for colonoscopy or other examination following a positive FOBT result, by geographic location: 2008

		Colonoscopy		Double contrast barium enema		Sigmoidoscopy		CT colonography		Other		No referral		All follow-up visits
		Number	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**	**Number**
Major cities	Males	1,623	92.1	7	0.4	0	0.0	2	0.1	33	1.9	98	5.5	1,763
	Females	1,672	90.6	3	0.2	1	0.1	2	0.1	54	2.9	112	6.1	1,845
	Persons	*3,296*	*91.4*	*10*	*0.3*	*1*	*0.0*	*4*	*0.1*	*87*	*2.4*	*210*	*5.8*	*3,608*
	95% CI		*90.4–92.3*		*0.1–0.4*		*0.0–0.1*		*0.0–0.2*		*1.9–2.9*		*5.1–6.6*	
Inner regional	Males	848	92.9	2	0.2	0	0.0	0	0.0	12	1.3	51	5.5	913
	Females	773	91.7	4	0.5	0	0.0	0	0.0	25	3.0	41	4.8	843
	Persons	*1,622*	*92.3*	*6*	*0.4*	*0*	*0.0*	*0*	*0.0*	*37*	*2.1*	*91*	*5.2*	*1,756*
	95% CI		*91.1–93.6*		*0.1–0.6*		*0.0–0.0*		*0.0–0.0*		*1.5–2.8*		*4.2–6.2*	
Outer regional	Males	495	91.6	4	0.7	0	0.0	1	0.2	11	2.1	29	5.4	540
	Females	383	92.2	0	0.0	0	0.0	1	0.2	12	2.9	19	4.6	415
	Persons	*878*	*91.9*	*4*	*0.4*	*0*	*0.0*	*2*	*0.2*	*24*	*2.5*	*48*	*5.0*	*955*
	95% CI		*90.1–93.6*		*0.0–0.8*		*0.0–0.0*		*0.0–0.5*		*1.5–3.5*		*3.6–6.4*	
Remote	Males	66	94.3	0	0.0	0	0.0	0	0.0	0	0.0	4	5.7	70
	Females	54	91.5	0	0.0	0	0.0	1	1.7	1	1.5	3	5.3	59
	Persons	*120*	*93.0*	*0*	*0.0*	*0*	*0.0*	*1*	*0.8*	*1*	*0.7*	*7*	*5.5*	*129*
	95% CI		*88.6–97.4*		*0.0–0.0*		*0.0–0.0*		*0.0–2.3*		*0.0–2.1*		*1.6–9.5*	
Very remote	Males	25	93.4	0	0.0	0	0.0	0	0.0	1	3.7	1	2.9	27
	Females	20	94.7	0	0.0	0	0.0	0	0.0	0	0.5	1	4.8	21
	Persons	*45*	*93.9*	*0*	*0.0*	*0*	*0.0*	*0*	*0.0*	*1*	*2.3*	*2*	*3.8*	*48*
	95% CI		*87.1–100.0*		*0.0–0.0*		*0.0–0.0*		*0.0–0.0*		*0.0–6.6*		*0.0–9.2*	

Notes

1. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
2. Percentages equal the number of people consulting a primary health care practitioner following a positive FOBT who received/did not receive referral for either colonoscopy or other examination as a proportion of the total number of follow-up consultations following a positive FOBT.

Table 3.12: Reason for non-referrals for colonoscopy by primary health care practitioners: 2008

		Bowel cancer previously diagnosed	Limited life expectancy	Recent colonoscopy (<18 months)	Patient declines colonoscopy	Significant comorbidity	Other medical condition(s)	All non-referred participants
Males								
50 years	Number	0	1	16	4	1	8	25
	Per cent	0.0	4.0	64.0	16.0	4.0	32.0	
55 years	Number	1	1	34	28	5	18	74
	Per cent	1.4	1.4	45.9	37.8	6.8	24.3	
65 years	Number	4	4	61	45	26	47	156
	Per cent	2.6	2.6	39.1	28.8	16.7	30.1	
Total	*Number*	*5*	*6*	*111*	*77*	*32*	*73*	*255*
	Per cent	*2.0*	*2.4*	*43.5*	*30.2*	*12.5*	*28.6*	
Female								
50 years	Number	0	0	13	14	1	13	38
	Per cent	0.0	0.0	34.2	36.8	2.6	34.2	
55 years	Number	0	2	44	41	3	27	109
	Per cent	0.0	1.8	40.4	37.6	2.8	24.8	
65 years	Number	5	3	67	39	11	29	134
	Per cent	3.7	2.2	50.0	29.1	8.2	21.6	
Total	*Number*	*5*	*5*	*124*	*94*	*15*	*69*	*281*
	Per cent	*1.8*	*1.8*	*44.1*	*33.5*	*5.3*	*24.6*	
Persons								
50 years	Number	0	1	29	18	2	21	63
	Per cent	0.0	1.6	46.0	28.6	3.2	33.3	
55 years	Number	1	3	78	69	8	45	183
	Per cent	0.5	1.6	42.6	37.7	4.4	24.6	
65 years	Number	9	7	128	84	37	76	290
	Per cent	3.1	2.4	44.1	29.0	12.8	26.2	
Total	**Number**	**10**	**11**	**235**	**171**	**47**	**142**	**536**
	Per cent	**1.9**	**2.1**	**43.8**	**31.9**	**8.8**	**26.5**	

Notes

1. Percentages equal the number of consultations for each reason (following a positive FOBT) that did not refer for colonoscopy as a proportion of the total number of positive FOBT consultations that did not refer for a colonoscopy.
2. A participant may have multiple reasons for non-referral for colonoscopy indicated.

Overall colonoscopy follow-up

Background

The colonoscopy follow-up rates in this section present the rate at which participants with a positive FOBT underwent follow-up by colonoscopy. Due to the National Health and Medical Research Council recommendation that all referrals be for colonoscopy, follow-up by other methods (for example, sigmoidoscopy) were not analysed in this report.

Three main factors influence the data presented in this section: lag time, under-reporting by clinicians, and the denominator used for the rate of follow-up.

First, the lag time between receiving a positive FOBT result and undergoing a colonoscopy means colonoscopy follow-up rates for the current reporting period are likely to underestimate the true rate. To reduce the effect of lag time, Kaplan-Meier estimates of colonoscopy follow-up based on the time in weeks from notification of a positive FOBT result and the date a participant first underwent a colonoscopy were calculated.

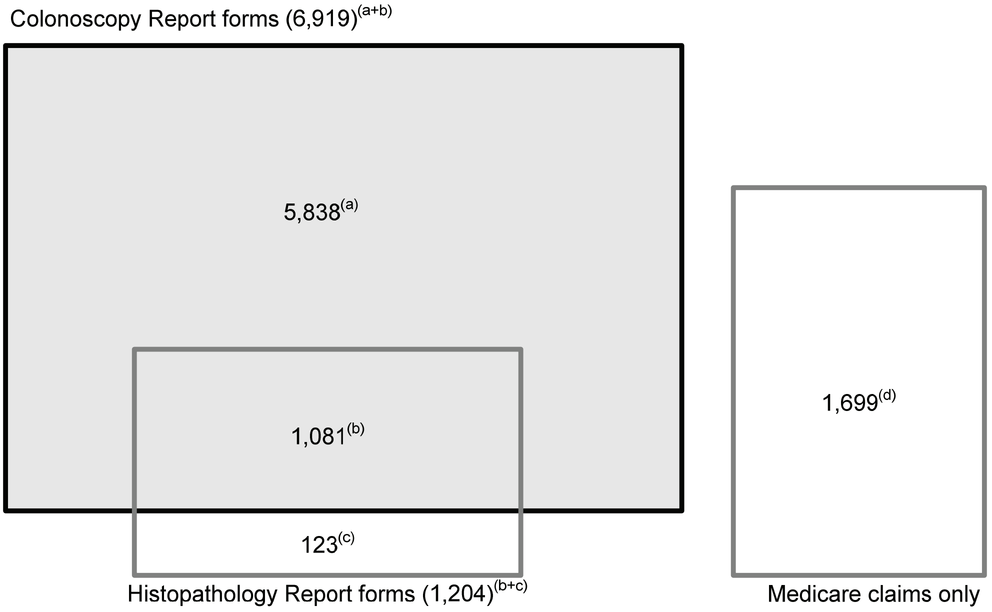
Second, completion of Colonoscopy Report forms by practitioners is not mandatory. To obtain the most comprehensive picture of colonoscopy follow-up, colonoscopy procedures were identified to the Register through three sources (Figure 3.4):

- Colonoscopy Report forms (from which colonoscopy quality and findings can be analysed)
- Histopathology Report forms (from the subset of colonoscopies that sent suspicious samples to histopathology for analysis)
- claims for Medicare benefits for colonoscopic services relating to the NBCSP (from the subset of colonoscopies that were undertaken through the private health care system).

However, many colonoscopies will remain unaccounted for, so rates may be underestimated.

If all forms were returned and recorded, it would be expected that no extra colonoscopies would be counted from outside the Colonoscopy Report forms box (Figure 3.4); all Medicare claims shown should be included as a subset within the Colonoscopy Report forms box. As it stands, 1,699 colonoscopies were reported by a Medicare claim only, and a further 123 were reported by a Histopathology Report form only; Colonoscopy Report forms for these participants' colonoscopies have not been recorded. Therefore, details such as colonoscopic findings could not be obtained for these colonoscopies.

Finally, the denominator used also affects the colonoscopy follow-up rate. Theoretically, the denominator for the colonoscopy follow-up rate should be all primary health care practitioner visits that resulted in referral for colonoscopy. However, due to the low return rate of Assessment forms, the number of positive FOBTs was used as a substitute for the denominator. As not all participants with a positive FOBT will be referred for a colonoscopy (for example, see Table 3.12), this may result in an underestimation of the true follow-up rate. The use of positive FOBTs as the denominator may also influence the rates shown in unexpected ways—differences in age and sex population subgroups may be masked by differing referral rates.



People invited in 2008 with:

(a) Colonoscopy Report forms recorded in the NBCSP Register for which no Histopathology Report form has been received.

(b) Colonoscopies done as part of the NBCSP where a Colonoscopy and Histopathology Report form were recorded on which confirmed outcomes can be calculated. The total number of Colonoscopy Report forms is given by (a)+(b).

(c) Colonoscopies done as part of the NBCSP where only a Histopathology Report form was recorded.

(d) Colonoscopies done as part of the NBCSP where only a Medicare claim was recorded.

Source: National Bowel Cancer Screening Program Register.

Figure 3.4: Sources of colonoscopy follow-up data: 2008

2008 colonoscopy follow-up

Of the 16,436 positive FOBT results from participants invited in 2008, 8,741 had a colonoscopy registered by 31 January 2009, giving a crude rate of colonoscopy follow-up of 53.2% (Table 3.13). Of these, 1,699 colonoscopies were only known to have taken place through a Medicare claim for the procedure; no Colonoscopy or Histopathology Report forms were recorded for these colonoscopies.

Reasons for this low rate of follow-up were similar to reasons for the low rate of primary health care practitioner follow-up: return of these forms is not mandatory, there is some delay in returning Colonoscopy Report forms and there is lag time (especially in participants who received their positive FOBT notification late in 2008) between booking and undergoing a colonoscopy.

To remove the effect of lag time on the follow-up rate, a Kaplan-Meier analysis was performed. The Kaplan-Meier analysis of colonoscopy follow-up estimated 64.5% of participants with a positive FOBT had a colonoscopy within 26 weeks of notification of their positive result (Table 3.14). Outcomes of colonoscopic investigation are discussed in Chapter 4 Cancer detection.

Colonoscopy follow-up by population subgroups

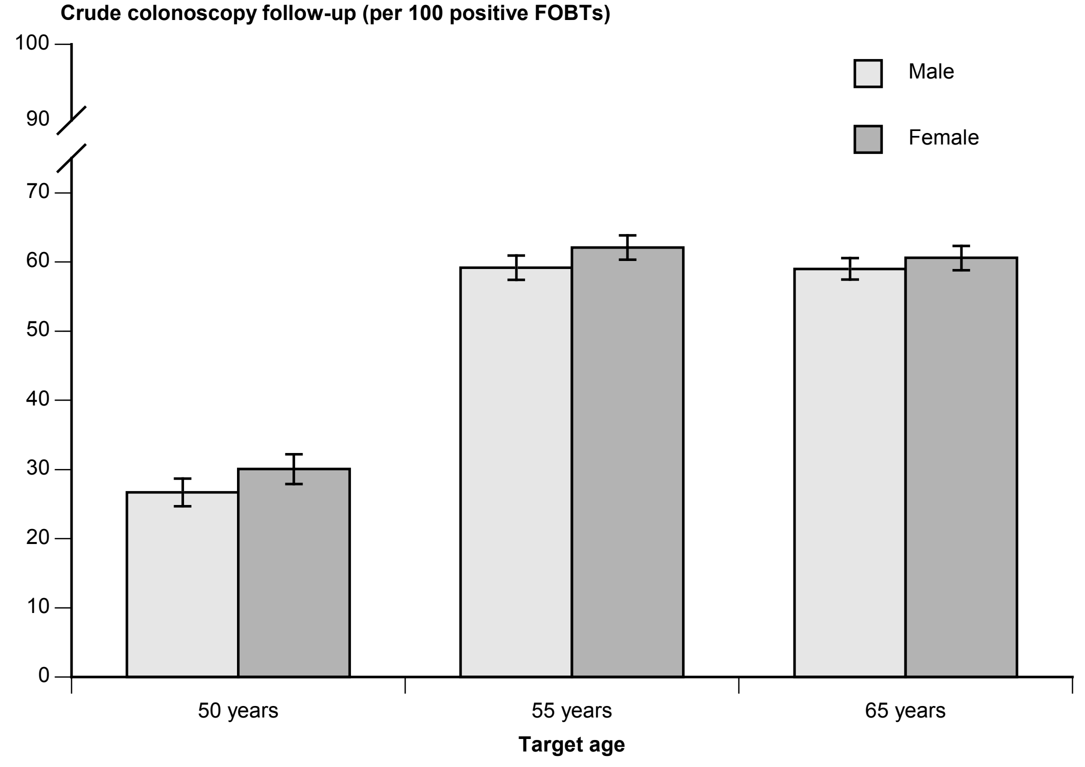
Colonoscopy follow-up by state and territory

There were statistically significant differences in colonoscopy follow-up rates between states and territories. Kaplan-Meier estimates at 26 weeks since a positive FOBT result showed Queensland (76.9%), South Australia (74.1%) and Tasmania (74.0%) had statistically significantly higher rates of colonoscopy follow-up than the other jurisdictions. This was a similar finding to primary health care practitioner follow-up and may relate to program implementation procedures specific to each jurisdiction (tables 3.13 and 3.14 and figures 3.6a–3.6c).

Trends in state and territory follow-up rates since 2006 showed all jurisdictions were lower in 2008 than previous years (Table 3.15 and Figure 3.7). This was mainly due to the inclusion of people aged 50 years in the NBCSP mid-2008, which lowered the overall 2008 colonoscopy follow-up rate. However, the available data only allowed 26-week Kaplan-Meier colonoscopy follow-up estimates to be calculated, not 52-week estimates.

Colonoscopy follow-up by age and sex

The crude rate of colonoscopy follow-up for people aged 55 years (60.6%) was slightly higher than for those aged 65 years (59.7%) (Figure 3.5 and Table 3.13).



Note: Bars on columns represent 95% confidence intervals.

Source: National Bowel Cancer Screening Program Register.

Figure 3.5: Colonoscopy follow-up, by age and sex: 2008

Although this was a common trend across all subgroup comparisons, the validity of this result may be questionable due to the use of positive FOBTs as a substitute denominator. Lower follow-up rates for people aged 65 years may be a reflection of lower referral rates for colonoscopy for this age group (Table 3.10). Once again, crude colonoscopy follow-up rates were lower for people aged 50 years but this was mainly due to their mid-year start in the NBCSP.

The difference in crude colonoscopy follow-up between males and females was not statistically significant (Table 3.13). However, the substitute denominator used for colonoscopy follow-up may be influencing the rates shown in unexpected ways, as actual referral from primary health care practitioners is not taken into account; therefore, this result should be interpreted with caution.

Colonoscopy follow-up by region and socioeconomic status

There were no statistically significant differences noted in crude colonoscopy follow-up rate between the geographic areas (Table 3.16). There were, however, differences in colonoscopy follow-up between participants with different socioeconomic status, although no clear trend was shown (Table 3.17).

Colonoscopy follow-up by Aboriginal and Torres Strait Islander status, language spoken at home and disability subgroups

All three of these population subgroups had low numbers of participants with returned Assessment forms. Care must be taken when analysing results in these tables.

Only 6,713 of the 8,741 participants who underwent a colonoscopy had their Indigenous status recorded. Of these, only 37 were Aboriginal and Torres Strait Islander peoples (Table 3.18); therefore, comparisons of colonoscopy follow-up rates between Aboriginal and Torres Strait Islander peoples and non-Indigenous people should be made with caution.

Participants who spoke a language other than English at home had a statistically significantly higher rate of colonoscopy follow-up (59.2%) than participants who spoke English (52.8%) (Table 3.19).

Participants with a severe or profound activity limitation had statistically significantly lower rates of colonoscopy follow-up (46.8%) than participants without such limitations (55.8%) (Table 3.20). This is an opposite finding to the primary health care practitioner follow-up result where participants with a severe or profound activity limitation had the higher rate of follow-up (Table 3.8). This may be a reflection of lower referral rates for these participants, and requires further analysis, which was not done in this report.

Overall histopathology follow-up

Background

If a colonoscopy procedure removed polyps or a biopsy for analysis by histopathology, the result of the analysis should have been returned to the Register via a completed Histopathology Report form. As only a small proportion of people originally invited into the

NBCSP ultimately require histopathology, numbers of Histopathology Report forms were low. There is also a high rate of non-return of these forms, as can be seen by comparing the number of colonoscopy procedures where specimens were sent to histopathology (3,579) to the number of Histopathology Report forms returned (1,204).

As final diagnosis of cancers suspected at colonoscopy require confirmation by histopathology, the low number of Histopathology Report forms means confirmed cancer numbers are most likely under-reported (Chapter 4).

2008 histopathology follow-up

Samples were sent to histopathology for 3,579 participants who underwent colonoscopy. However, as at 31 January 2009, only 1,204 Histopathology Report forms had been returned. Outcomes of these are discussed in Chapter 4 Cancer detection.

Colonoscopy follow-up tables and figures

Table 3.13: Crude colonoscopy follow-up following a positive FOBT result, by state and territory: 2008

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Number	94	119	162	43	51	15	4	3	491
	Per cent	16.4	25.5	45.8	21.7	28.8	38.5	23.5	17.6	26.7
55 years	Number	367	368	578	179	255	88	18	10	1,863
	Per cent	44.3	58.3	76.3	48.0	67.1	72.7	50.0	45.5	59.2
65 years	Number	526	440	629	231	278	107	22	9	2,242
	Per cent	47.0	58.6	72.6	52.6	67.5	72.8	55.0	36.0	59.0
Total	*Number*	*987*	*927*	*1,369*	*453*	*584*	*210*	*44*	*22*	*4,596*
	Per cent	*39.2*	*50.1*	*69.2*	*44.9*	*60.3*	*68.4*	*47.3*	*34.4*	*52.3*
	95% CI	*37.3–41.1*	*47.9–52.4*	*67.2–71.2*	*41.8–47.9*	*57.2–63.3*	*63.2–73.6*	*37.2–57.5*	*22.7–46.0*	*51.2–53.3*
Females										
50 years	Number	100	154	157	37	48	16	6	5	523
	Per cent	18.5	34.1	50.0	19.2	32.0	37.2	18.8	31.3	30.1
55 years	Number	401	382	498	175	215	86	21	11	1,789
	Per cent	53.0	60.9	73.8	50.9	70.5	74.1	50.0	68.8	62.1
65 years	Number	453	379	515	165	206	89	23	3	1,833
	Per cent	49.2	60.8	74.9	54.1	66.2	70.1	51.1	42.9	60.6
Total	*Number*	*954*	*915*	*1,170*	*377*	*469*	*191*	*50*	*19*	*4,145*
	Per cent	*43.0*	*53.8*	*69.8*	*44.8*	*61.2*	*66.8*	*42.0*	*48.7*	*54.2*
	95% CI	*41.0–45.1*	*51.4–56.2*	*67.6–72.0*	*41.4–48.1*	*57.8–64.7*	*61.3–72.2*	*33.1–50.9*	*33.0–64.4*	*53.1–55.3*
Persons										
50 years	Number	194	273	319	80	99	31	10	8	1,014
	Per cent	17.4	29.7	47.8	20.5	30.3	37.8	20.4	24.2	28.3
55 years	Number	768	750	1,076	354	470	174	39	21	3,652
	Per cent	48.5	59.6	75.1	49.4	68.6	73.4	50.0	55.3	60.6
65 years	Number	979	819	1,144	396	484	196	45	12	4,075
	Per cent	48.0	59.6	73.6	53.2	66.9	71.5	52.9	37.5	59.7
Total	**Number**	**1,941**	**1,842**	**2,539**	**830**	**1,053**	**401**	**94**	**41**	**8,741**
	Per cent	**41.0**	**51.9**	**69.5**	**44.8**	**60.7**	**67.6**	**44.3**	**39.8**	**53.2**
	95% CI	**39.6–42.4**	**50.2–53.5**	**68.0–71.0**	**42.6–47.1**	**58.4–63.0**	**63.9–71.4**	**37.7–51.0**	**30.4–49.3**	**52.4–53.9**

Notes

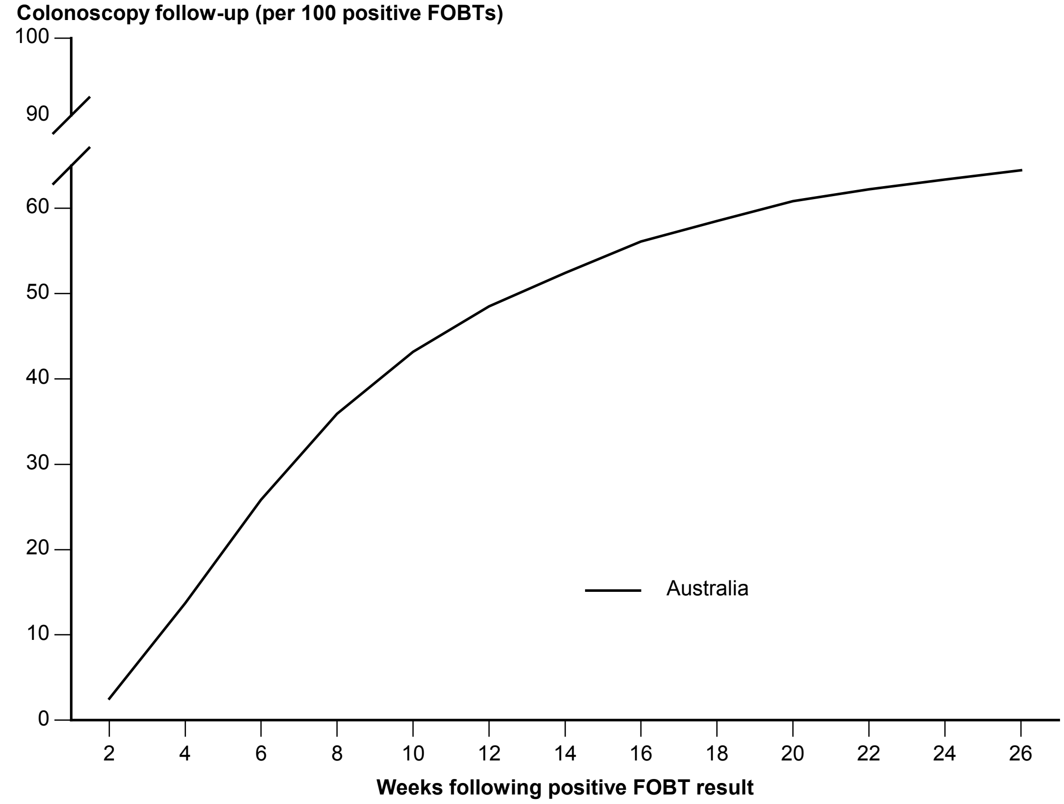
1. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded following a positive FOBT as a proportion of the total number of people with positive FOBT results.
2. Record of a colonoscopy as part of the NBCSP is identified from the Colonoscopy Report form, Histopathology Report form and/or Medicare claims.
3. As progression through the pathway to the colonoscopy stage may take some time, some participants may not have had sufficient time to undergo a colonoscopy. Additionally, reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
4. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to proceed through the screening pathway to colonoscopy after notification of a positive FOBT result.

Table 3.14: Kaplan-Meier documented colonoscopy follow-up per 100 positive FOBTs at 26 weeks since positive FOBT, by state and territory: 2008

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Colonoscopy follow-up rate	53.9	62.8	76.9	55.0	74.1	74.0	54.4	50.7	64.5
95% CI	52.1–55.8	60.8–64.9	75.3–78.5	52.1–57.8	71.4–76.7	70.0–78.1	45.9–63.0	37.9–63.4	63.6–65.4

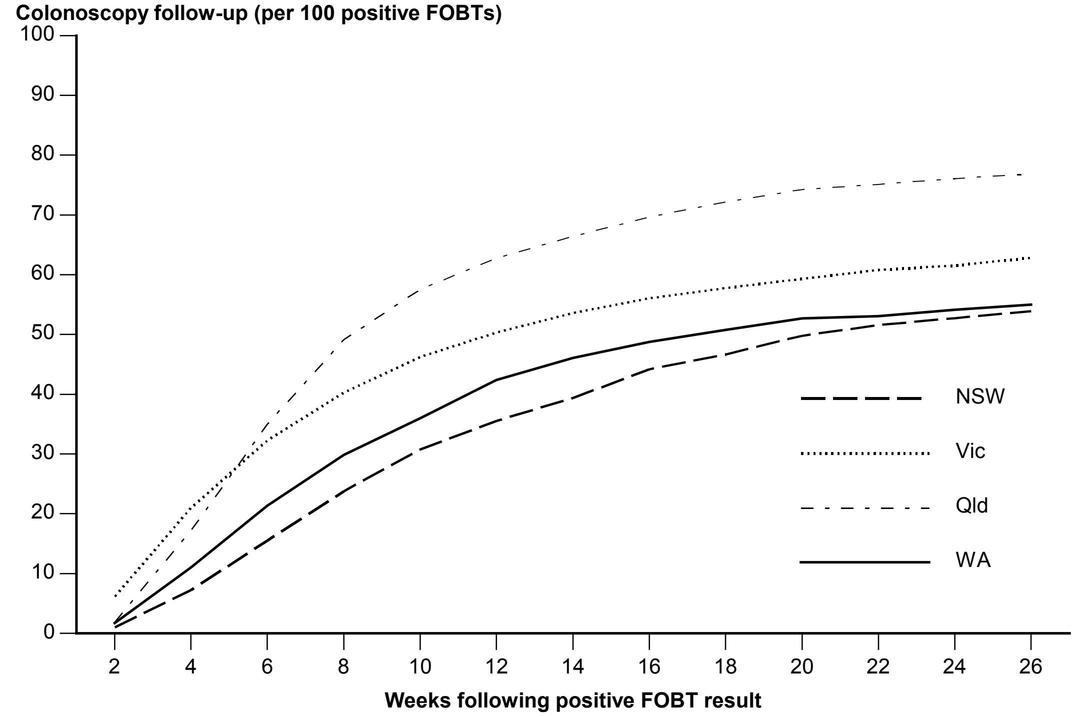
Notes

1. Colonoscopy follow-up rates equal the estimated Kaplan-Meier follow-up rate of people who have had a colonoscopy as a proportion of the total number of people with positive FOBT results, excluding people who suspended or opted off the Program.
2. People aged 50 years were invited to screen from 1 July 2008.



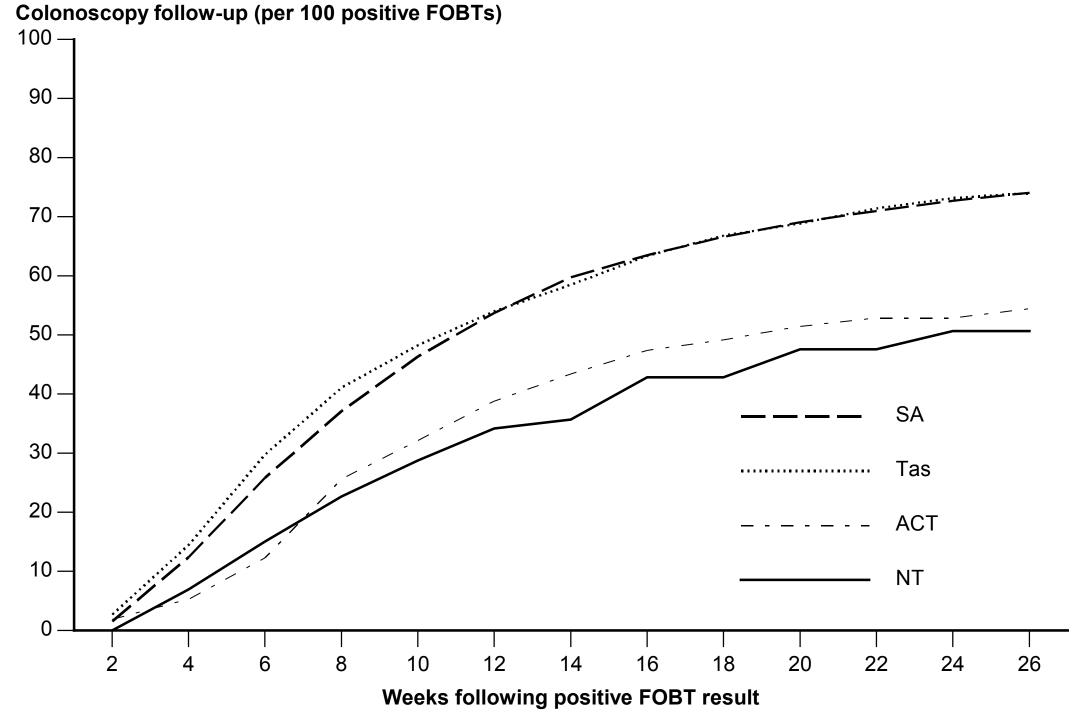
Source: National Bowel Cancer Screening Program Register.

Figure 3.6a: Colonoscopy follow-up, by weeks since positive FOBT using Kaplan-Meier estimates, Australia: 2008



Source: National Bowel Cancer Screening Program Register.

Figure 3.6b: Colonoscopy follow-up, by weeks since positive FOBT using Kaplan-Meier estimates, New South Wales, Victoria, Queensland and Western Australia: 2008



Source: National Bowel Cancer Screening Program Register.

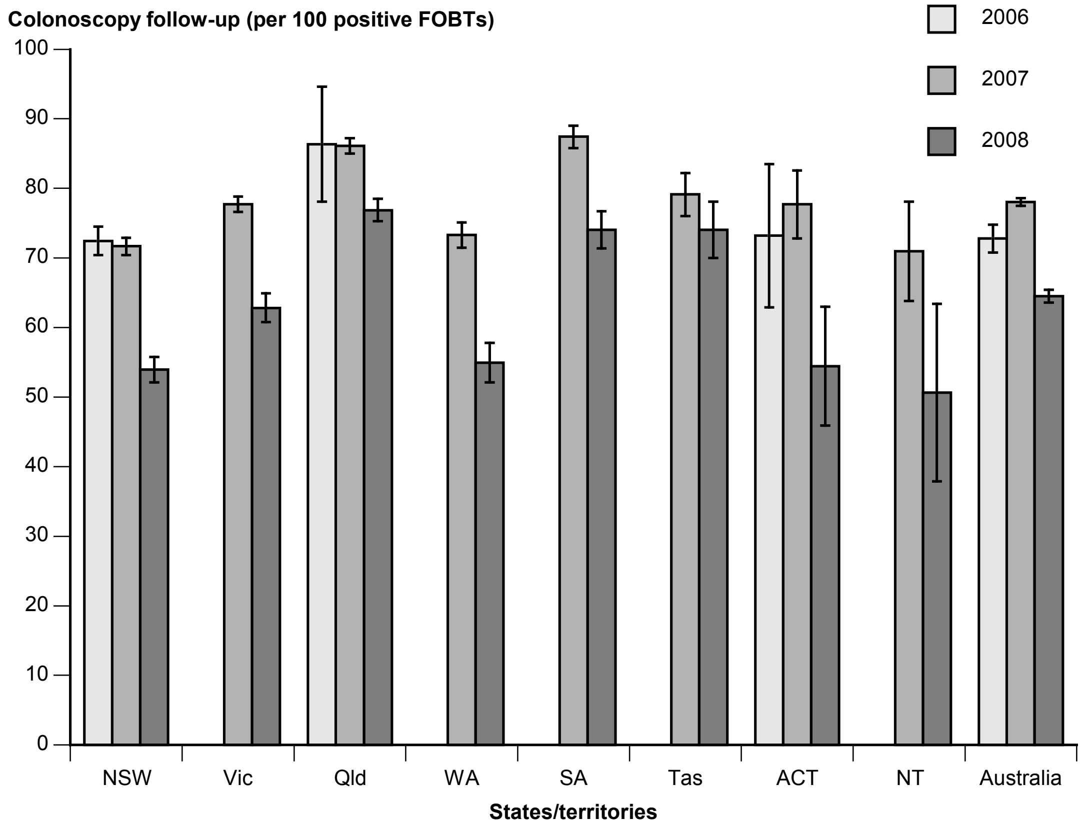
Figure 3.6c: Colonoscopy follow-up, by weeks since positive FOBT using Kaplan-Meier estimates, South Australia, Tasmania, Australian Capital Territory and Northern Territory: 2008

Table 3.15: Trends in colonoscopy follow-up, by state and territory: 2006–2008

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
2006	72.4	. .	86.4	. .	. .	. .	73.2	. .	72.8
95% CI	70.4–74.5	. .	78.1–94.6	. .	. .	. .	62.9–83.5	. .	70.8–74.8
2007	71.7	77.7	86.1	73.3	87.4	79.1	77.7	71.0	78.1
95% CI	70.4–72.9	76.6–78.8	85.0–87.2	71.5–75.1	85.8–89.0	76.0–82.2	72.8–82.6	63.8–78.1	77.5–78.6
2008	53.9	62.8	76.9	55.0	74.1	74.0	54.4	50.7	64.5
95% CI	52.1–55.8	60.8–64.9	75.3–78.5	52.1–57.8	71.4–76.7	70.0–78.1	45.9–63.0	37.9–63.4	63.6–65.4

Notes

1. New South Wales, Queensland and the Australian Capital Territory had started the NBCSP in 2006; therefore, 2006 data is only available for these jurisdictions. See page 5.
2. Colonoscopy follow-up rates for 2006 and 2007 equal crude follow-up rates calculated as the number of people with a positive FOBT who underwent a colonoscopy as a proportion of the total number of people with positive FOBT results
3. Colonoscopy follow-up rates for 2008 equal estimated 26-week Kaplan-Meier follow-up rates calculated as the number of people with a positive FOBT who underwent a colonoscopy as a proportion of the total number of people with positive FOBT results.
4. People aged 50 years were invited to screen from 1 July 2008, and this may affect results for 2008.



Note: Bars on columns represent 95% confidence intervals.

Source: National Bowel Cancer Screening Program Register.

Figure 3.7: Trends in colonoscopy follow-up, by state and territory: 2006–2008

Colonoscopy follow-up by population subgroups

Table 3.16: Crude colonoscopy follow-up following a positive FOBT result, by geographic location: 2008

		Major cities	Inner regional	Outer regional	Remote	Very remote	Total
Males							
50 years	Number	311	104	66	7	3	491
	Per cent	26.1	27.0	29.8	22.1	30.0	26.7
55 years	Number	1,076	450	265	47	25	1,863
	Per cent	58.5	58.6	62.4	58.5	69.4	59.2
65 years	Number	1,285	566	326	46	19	2,242
	Per cent	60.0	57.4	58.6	55.7	63.4	59.0
Total	*Number*	*2,672*	*1,120*	*657*	*100*	*47*	*4,596*
	Per cent	*51.6*	*52.4*	*54.7*	*51.3*	*61.5*	*52.3*
	95% CI	*50.3–53.0*	*50.2–54.5*	*51.8–57.5*	*44.3–58.4*	*50.6–72.4*	*51.3–53.3*
Females							
50 years	Number	351	108	52	8	3	523
	Per cent	29.8	31.4	29.8	34.4	22.8	30.1
55 years	Number	1,094	427	229	28	11	1,789
	Per cent	61.4	63.5	63.7	61.6	48.3	62.1
65 years	Number	1,081	491	227	26	8	1,833
	Per cent	62.1	58.6	59.1	54.1	50.8	60.6
Total	*Number*	*2,526*	*1,026*	*509*	*62*	*23*	*4,145*
	Per cent	*53.7*	*55.3*	*55.3*	*52.9*	*42.4*	*54.2*
	95% CI	*52.3–55.2*	*53.0–57.6*	*52.1–58.5*	*43.8–61.9*	*29.2–55.6*	*53.1–55.3*
Persons							
50 years	Number	662	212	118	15	6	1,014
	Per cent	27.9	29.1	29.8	27.4	25.9	28.3
55 years	Number	2,170	877	495	74	36	3,652
	Per cent	59.9	60.9	63.0	59.7	61.1	60.6
65 years	Number	2,366	1,057	553	72	27	4,075
	Per cent	60.9	57.9	58.8	55.1	58.9	59.7
Total	**Number**	**5,198**	**2,146**	**1,165**	**161**	**70**	**8,741**
	Per cent	**52.6**	**53.7**	**55.0**	**51.9**	**53.6**	**53.2**
	95% CI	**51.6–53.6**	**52.2–55.3**	**52.8–57.1**	**46.4–57.5**	**45.1–62.2**	**52.4–54.0**

Notes

1. There were 3 positive FOBT results with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
2. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
3. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded following a positive FOBT as a proportion of the total number of people with positive FOBT results.
4. As progression through the pathway to the colonoscopy stage may take some time, some participants may not have had sufficient time to undergo a colonoscopy. Additionally, reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
5. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to proceed through the screening pathway to colonoscopy after notification of a positive FOBT result.

Table 3.17: Crude colonoscopy follow-up following a positive FOBT result, by socioeconomic status: 2008

		Lowest SES				Highest SES	
		1	**2**	**3**	**4**	**5**	**Total**
Males							
50 years	Number	102	90	103	102	90	487
	Per cent	25.7	22.6	27.0	31.0	28.6	26.7
55 years	Number	409	407	395	351	277	1,839
	Per cent	57.3	58.9	63.4	58.8	57.5	59.2
65 years	Number	511	514	430	425	340	2,220
	Per cent	55.5	57.3	59.2	66.6	59.6	59.2
Total	*Number*	*1,022*	*1,011*	*928*	*878*	*707*	*4,546*
	Per cent	*50.3*	*50.9*	*53.6*	*56.1*	*51.7*	*52.4*
	95% CI	*48.1–52.5*	*48.7–53.1*	*51.3–56.0*	*53.7–58.6*	*49.1–54.4*	*51.3–53.4*
Females							
50 years	Number	94	85	113	125	101	518
	Per cent	29.0	24.5	32.4	37.2	27.7	30.1
55 years	Number	365	375	368	350	317	1,775
	Per cent	60.3	60.2	65.0	63.6	62.0	62.2
65 years	Number	428	386	377	363	270	1,824
	Per cent	57.0	57.4	63.8	65.9	61.2	60.7
Total	*Number*	*887*	*846*	*858*	*838*	*688*	*4,117*
	Per cent	*52.8*	*51.5*	*57.0*	*58.3*	*52.2*	*54.3*
	95% CI	*50.4–55.2*	*49.1–53.9*	*54.5–59.5*	*55.8–60.9*	*49.5–54.9*	*53.2–55.4*
Persons							
50 years	Number	196	175	216	227	191	1,005
	Per cent	27.2	23.5	29.5	34.1	28.1	28.4
55 years	Number	774	782	763	701	594	3,614
	Per cent	58.7	59.5	64.2	61.1	59.8	60.6
65 years	Number	939	900	807	788	610	4,044
	Per cent	56.2	57.4	61.3	66.3	60.3	59.8
Total	**Number**	**1,909**	**1,857**	**1,786**	**1,716**	**1,395**	**8,663**
	Per cent	**51.4**	**51.2**	**55.2**	**57.2**	**52.0**	**53.3**
	95% CI	**49.8–53.0**	**49.6–52.8**	**53.5–56.9**	**55.4–59.0**	**50.1–53.9**	**52.5–54.0**

Notes

1. There were 78 recorded colonoscopies and 174 positive FOBT results with postcodes that do not correspond with the ABS Index of Relative Socioeconomic Disadvantage classifications for 2006 by postal area. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
2. Totals may not sum due to rounding caused by postcodes overlapping category boundaries. See Appendix C.
3. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded following a positive FOBT as a proportion of the total number of people with positive FOBT results.
4. As progression through the pathway to the colonoscopy stage may take some time, some participants may not have had sufficient time to undergo a colonoscopy. Additionally, reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
5. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to proceed through the screening pathway to colonoscopy after notification of a positive FOBT result.

Table 3.18: Crude colonoscopy follow-up following a positive FOBT result, by Aboriginal and Torres Strait Islander status: 2008

		Aboriginal and Torres Strait Islander	Non-Indigenous	Total
Males				
50 years	Number	n.p.	n.p.	179
	Per cent	n.p.	n.p.	26.1
55 years	Number	n.p.	n.p.	1,508
	Per cent	n.p.	n.p.	68.0
65 years	Number	n.p.	n.p.	1,833
	Per cent	n.p.	n.p.	67.5
Total	*Number*	*22*	*3,498*	*3,520*
	Per cent	*53.7*	*62.7*	*62.6*
	95% CI	*38.4–68.9*	*61.4–64.0*	*61.4–63.9*
Females				
50 years	Number	n.p.	n.p.	208
	Per cent	n.p.	n.p.	30.7
55 years	Number	n.p.	n.p.	1,508
	Per cent	n.p.	n.p.	71.7
65 years	Number	n.p.	n.p.	1,477
	Per cent	n.p.	n.p.	69.5
Total	*Number*	*15*	*3,178*	*3,193*
	Per cent	*45.5*	*65.2*	*65.1*
	95% CI	*28.5–62.4*	*63.9–66.6*	*63.8–66.4*
Persons				
50 years	Number	n.p.	n.p.	387
	Per cent	n.p.	n.p.	28.4
55 years	Number	n.p.	n.p.	3,016
	Per cent	n.p.	n.p.	69.8
65 years	Number	n.p.	n.p.	3,310
	Per cent	n.p.	n.p.	68.4
Total	**Number**	**37**	**6,676**	**6,713**
	Per cent	**50.0**	**63.9**	**63.8**
	95% CI	**38.6–61.4**	**63.0–64.8**	**62.9–64.7**

Notes

1. Aboriginal and Torres Strait Islander status was defined by the participant on the Participant Details form.
2. There were 2,028 recorded colonoscopies and 5,911 positive FOBT results where Aboriginal and Torres Strait Islander status was not stated. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
3. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded following a positive FOBT as a proportion of the total number of people with positive FOBT results.
4. As progression through the pathway to the colonoscopy stage may take some time, some participants may not have had sufficient time to undergo a colonoscopy. Additionally, reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
5. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to proceed through the screening pathway to colonoscopy after notification of a positive FOBT result.

Table 3.19: Crude colonoscopy follow-up following a positive FOBT result, by language spoken at home: 2008

		Language other than English	English	Total
Males				
50 years	Number	14	477	491
	Per cent	21.9	26.9	26.7
55 years	Number	143	1,720	1,863
	Per cent	64.7	58.7	59.2
65 years	Number	173	2,069	2,242
	Per cent	66.8	58.4	59.0
Total	*Number*	*330*	*4,266*	*4,596*
	Per cent	*60.7*	*51.8*	*52.3*
	95% CI	*56.6–64.8*	*50.7–52.8*	*51.2–53.3*
Females				
50 years	Number	19	504	523
	Per cent	28.8	30.1	30.1
55 years	Number	149	1,640	1,789
	Per cent	65.9	61.7	62.1
65 years	Number	106	1,727	1,833
	Per cent	57.3	60.8	60.6
Total	*Number*	*274*	*3,871*	*4,145*
	Per cent	*57.4*	*54.0*	*54.2*
	95% CI	*53.0–61.9*	*52.8–55.1*	*53.1–55.3*
Persons				
50 years	Number	33	981	1,014
	Per cent	25.4	28.5	28.4
55 years	Number	292	3,360	3,652
	Per cent	65.3	60.2	60.6
65 years	Number	279	3,796	4,075
	Per cent	62.8	59.5	59.7
Total	**Number**	**604**	**8,137**	**8,741**
	Per cent	**59.2**	**52.8**	**53.2**
	95% CI	**56.1–62.2**	**52.0–53.6**	**52.4–53.9**

Notes

1. Participants were assumed to speak English at home unless otherwise indicated. See Appendix B for a detailed explanation of language spoken at home.
2. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded following a positive FOBT as a proportion of the total number of people with positive FOBT results.
3. As progression through the pathway to the colonoscopy stage may take some time, some participants may not have had sufficient time to undergo a colonoscopy. Additionally, reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
4. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to proceed through the screening pathway to colonoscopy after notification of a positive FOBT result.

Table 3.20: Documented colonoscopy follow-up following a positive FOBT result, by disability status: 2008

		Severe or profound activity limitation	No severe or profound activity limitation	Total
Males				
50 years	Number	25	463	488
	Per cent	26.3	28.8	28.7
55 years	Number	108	1,719	1,827
	Per cent	53.7	61.6	61.1
65 years	Number	173	2,013	2,186
	Per cent	47.9	62.1	60.7
Total	*Number*	*306*	*4,195*	*4,501*
	Per cent	*46.6*	*54.9*	*54.3*
	95% CI	*42.8–50.4*	*53.8–56.1*	*53.2–55.3*
Females				
50 years	Number	38	481	519
	Per cent	28.8	32.4	32.1
55 years	Number	106	1,663	1,769
	Per cent	55.2	64.2	63.5
65 years	Number	130	1,671	1,801
	Per cent	50.2	63.4	62.3
Total	*Number*	*274*	*3,815*	*4,089*
	Per cent	*47.0*	*56.9*	*56.1*
	95% CI	*42.9–51.0*	*55.7–58.0*	*54.9–57.2*
Persons				
50 years	Number	63	944	1,007
	Per cent	27.8	30.6	30.4
55 years	Number	214	3,382	3,596
	Per cent	54.5	62.8	62.3
65 years	Number	303	3,684	3,987
	Per cent	48.9	62.7	61.4
Total	**Number**	**580**	**8,010**	**8,590**
	Per cent	**46.8**	**55.8**	**55.1**
	95% CI	**44.0–49.6**	**55.0–56.6**	**54.3–55.9**

Notes

1. Disability status was defined by the participant on the Participant Details form.
2. There were 151 colonoscopies following positive FOBT results and 850 positive FOBT results where disability status was not stated. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.
3. A 'profound' disability status indicates that a person always needs assistance with self-care, movement and/or communications activities. A 'severe' disability status indicates that a person sometimes needs assistance with these activities.
4. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded following a positive FOBT as a proportion of the total number of people with positive FOBT results.
5. As progression through the pathway to the colonoscopy stage may take some time, some participants may not have had sufficient time to undergo a colonoscopy. Additionally, reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
6. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to proceed through the screening pathway to colonoscopy after notification of a positive FOBT result.

4 Cancer detection

For participants who return a positive FOBT kit result, colonoscopy is recommended to determine if the cause of the rectal bleeding is cancer-related. This chapter discusses outcomes for participants invited into the NBCSP in 2008 who underwent a colonoscopy as a result of a positive FOBT.

Fast facts

- Of the 16,436 participants with a positive FOBT, only 7,042 (42.8%) had valid Colonoscopy or Histopathology Report forms recorded; outcomes for the remaining 9,394 participants with a positive screening result were unknown.
- There were 63 confirmed and 239 suspected cancers found in those with outcome data available.
- The proportion of people for whom abnormalities were detected at colonoscopy increased with age.
- The proportion of abnormalities detected at colonoscopy was higher for males when compared with females.

How National Bowel Cancer Screening Program outcomes are determined for participants with a positive faecal occult blood test

In 2008, people turning 55 and 65 years (with the addition of those aged 50 years from 1 July 2008) were invited to screen in the NBCSP. An estimated 39.3% of these invitees agreed to participate by returning their completed FOBT kit. Of these participants, 6.6% returned a positive result, indicating the participant should consult their primary health care practitioner to investigate the use of a follow-up colonoscopy as a diagnostic step. This section presents outcomes from the NBCSP as at 31 January 2009 based on those people invited in 2008 who returned a positive FOBT and who proceeded to colonoscopy. Program outcomes at key pathway points are summarised in Figure 4.1.

Data for colonoscopy outcomes were derived from information recorded on the Colonoscopy Report form and the Histopathology Report form. Ultimately, for abnormalities detected at colonoscopy that were sent to histopathology, the final diagnosis must be returned on the Histopathology Report form. However, as reporting by clinicians to the NBCSP is not mandatory, a participant may have a Colonoscopy Report form, a Histopathology Report form or both recorded in the Register. As a result, outcomes were classified as follows:

- Confirmed cancers include suspected cancers at colonoscopy where a biopsy sample was sent to histopathology and confirmed as cancer by histopathology, plus any tissue samples from surgical resection or colonoscopic local excisions that were confirmed to be cancerous by histopathology. Confirmed cancers were given a higher priority than suspected cancer.

- Suspected cancers were abnormalities detected at colonoscopy that the colonoscopist suspects to be cancer but were not yet confirmed by histopathology. Their final diagnosis is not known until histopathology results are available.
- Adenomas confirmed by histopathology were classified next; they were categorised into three risk levels, as described in Appendix B.
- Polyps awaiting histopathology were polyps detected at colonoscopy that had not yet had an associated Histopathology Report form recorded. These may be either pre-cancerous (adenomous) or hyperplastic (non-adenomous) polyps, so may affect the current number of adenomas documented, once their histopathology results are known.
- Participants recorded as having no cancer or adenoma were those who had no polyps or suspected cancers detected at colonoscopy, or had polyps detected at colonoscopy that were classified as non-adenomous by histopathology.

Outcome information comes from the last steps in the NBCSP pathway, and by 31 January 2009, there were still many Colonoscopy and Histopathology Report forms yet to be returned.

Bowel abnormality detection at colonoscopy

Of the 685,915 people invited into the NBCSP in 2008, 251,152 returned FOBT kits, with 16,436 of these found to have blood in the sample, giving a positive result that should be followed up by colonoscopy. However, only 6,919 (42.1%) of the 16,436 participants with a positive FOBT had Colonoscopy Report form details recorded, meaning 9,517 participants had either not had a colonoscopy, or had no colonoscopy outcomes recorded.

Results from the 6,919 colonoscopies with a completed Colonoscopy Report form (Figure 3.4), showed there were 335 (4.8%) participants with a suspected cancer, 3,637 (52.6%) with one or more polyps found and 1,602 (23.2%) other diagnoses (Table 4.1). Around one in five participants with a positive FOBT, who had a Colonoscopy Report form returned, were found to have no abnormality. Suspected cancers and most polyps had samples sent to histopathology.

Overall cancer detection

After including the 1,204 Histopathology Report forms—many of which updated the original suspected colonoscopy diagnosis—the outcomes were as follows:

- 63 participants had bowel cancer found by the NBCSP and confirmed by histopathology
- 239 suspected bowel cancers were still awaiting histopathological diagnosis
- 979 participants were identified with confirmed adenomas by histopathology
- 2,467 participants had excised polyps still waiting on histopathology for classification
- 3,294 participants were found to have no abnormality (Table 4.2).

Histopathology Report forms were only available for 33.6% of samples sent to histopathology; therefore, results for the 2,706 participants awaiting histopathology outcomes were not available for analysis by 31 January 2009. Furthermore, another 1,699 known colonoscopies identified through Medicare claims had neither a Colonoscopy or Histopathology Report form recorded, and therefore, no colonoscopy outcome data.

Cancer detection by population subgroups

Cancer detection by state and territory

The higher rate of recorded follow-up in Queensland, South Australia and Tasmania (Table 3.13) meant these jurisdictions showed higher numbers of abnormalities found at colonoscopy (Table 4.2). However, this is mainly due to these states having more complete data for participant outcomes rather than a geographical link to higher bowel cancer incidence. For example, Queensland (4.3%) actually recorded a lower proportion of suspected and confirmed cancers per 100 colonoscopies than New South Wales (4.5%) and Victoria (5.0%). Therefore, colonoscopy follow-up rates between jurisdictions need to be taken into account when analysing Table 4.2.

Cancer detection by age and sex

Table 4.1 presents the recorded diagnoses from Colonoscopy Report forms for people invited into the NBCSP in 2008. The numbers recorded in this table under the various diagnoses do not take into account those cases where data from histopathology were also available and may have updated the colonoscopic diagnosis (for example, diagnosis of the suspected cancer as a confirmed cancer). Conversely, suspected cancers shown in Table 4.3 only include those that have not been updated by histopathology to their final diagnosis.

As would be expected from the known increase in bowel cancer incidence with age (Chapter 6), the incidence of abnormalities detected at colonoscopy increased with age (tables 4.1 and 4.3). Less than 2.0% of people aged 50 years who underwent a colonoscopy returned a suspected or confirmed cancer outcome compared with 5.6% for those aged 65 years (Table 4.3).

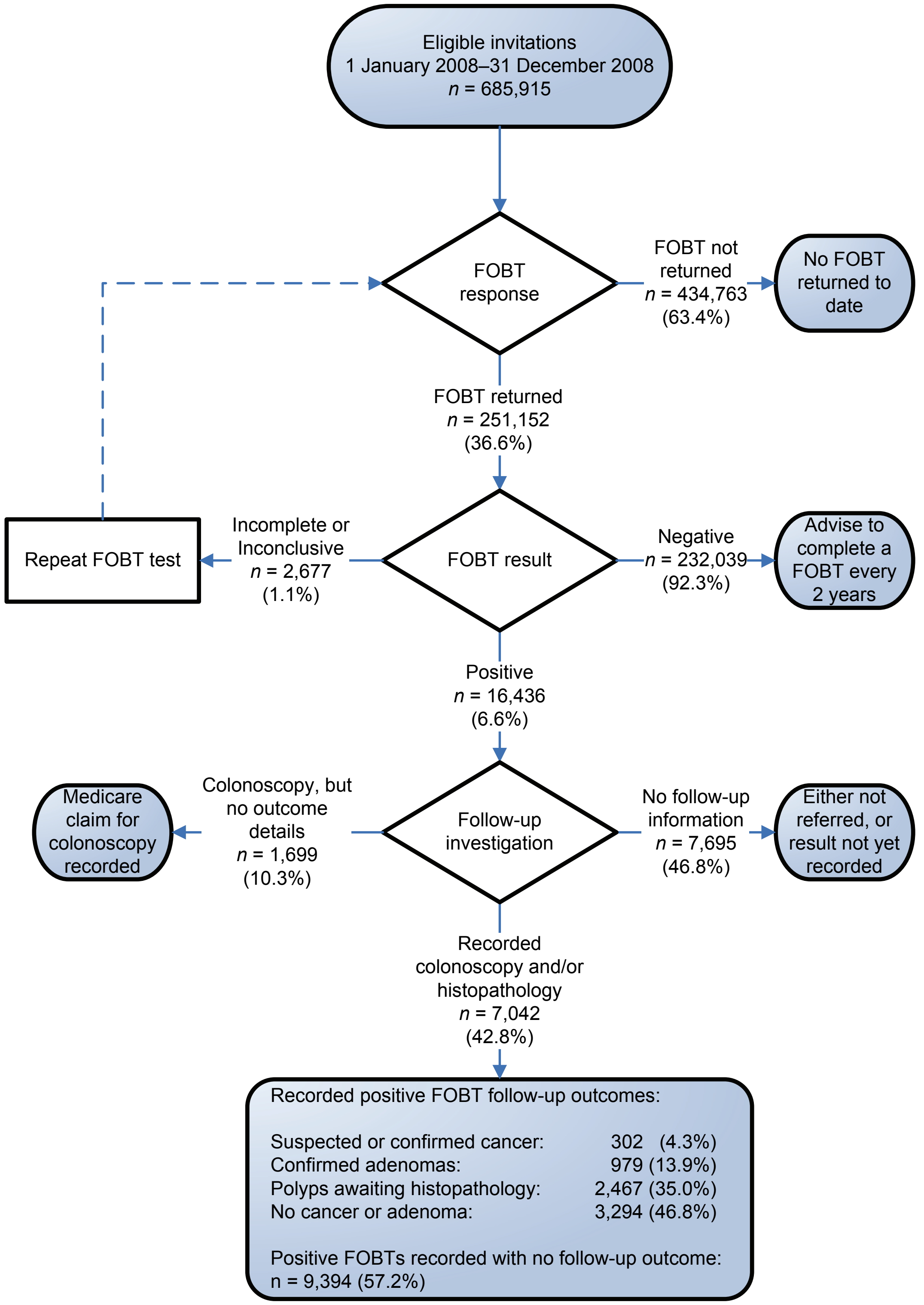
Similarly, males (4.9%) showed an incidence of suspected or confirmed cancers that was 1.4 times that of females (3.6%) (Table 4.3). This is consistent with known bowel cancer incidence in the Australian population (Chapter 6).

Cancer spread status

A biopsy sample of a suspected cancer is adequate to confirm a cancerous growth, but is not usually sufficient to obtain information on the stage and potential metastatic spread of the cancer. To gain such data, a tissue sample from a surgical resection (or colonoscopic local excision), plus lymph node biopsy or other clinical data are required.

Staging data is only available for 22 of the 63 confirmed cancers. Out of these 22, 2 were found to have spread to lymph nodes or metastasized to other secondary sites. The remaining 20 were detected at an earlier stage of spread; cancers diagnosed at these earlier stages are generally associated with improved patient prognosis (Morris, Lacopetta & Platell 2007). Biopsy samples accounted for the remaining 41 confirmed cancers (Table 4.4).

The scope of the NBCSP is to monitor participants up to the 'point of definite diagnosis' (DoHA 2005); however, staging information is often reliant on surgery, which is beyond the scope of the screening pathway.



Source: National Bowel Cancer Screening Program Register.

Figure 4.1: NBCSP participant outcomes: 2008

Cancer detection tables

Table 4.1: Colonoscopic diagnoses recorded on Colonoscopy Report forms (excludes histopathology): 2008

		Suspected cancer	One or more polyps	Other diagnoses	No abnormality	All Colonoscopy Report forms
Males						
50 years	Number	11	217	67	90	385
	Per cent	2.9	56.4	17.4	23.4	
55 years	Number	68	889	312	223	1,492
	Per cent	4.6	59.6	20.9	14.9	
65 years	Number	123	1,121	316	196	1,756
	Per cent	7.0	63.8	18.0	11.2	
Total	*Number*	*202*	*2,227*	*695*	*509*	*3,633*
	Per cent	*5.6*	*61.3*	*19.1*	*14.0*	
	95% CI	*2.4–8.7*	*59.3–63.3*	*16.2–22.1*	*11.0–17.0*	
Females						
50 years	Number	7	150	112	142	411
	Per cent	1.7	36.5	27.3	34.5	
55 years	Number	45	568	387	423	1,423
	Per cent	3.2	39.9	27.2	29.7	
65 years	Number	81	692	408	268	1,449
	Per cent	5.6	47.8	28.2	18.5	
Total	*Number*	*133*	*1,410*	*907*	*833*	*3,283*
	Per cent	*4.1*	*42.9*	*27.6*	*25.4*	
	95% CI	*0.7–7.4*	*40.4–45.5*	*24.7–30.5*	*22.4–28.3*	
Persons						
50 years	Number	18	367	179	232	796
	Per cent	2.3	46.1	22.5	29.1	
55 years	Number	113	1,457	699	646	2,915
	Per cent	3.9	50.0	24.0	22.2	
65 years	Number	204	1,813	724	464	3,205
	Per cent	6.4	56.6	22.6	14.5	
Total	**Number**	**335**	**3,637**	**1,602**	**1,342**	**6,916**
	Per cent	**4.8**	**52.6**	**23.2**	**19.4**	
	95% CI	**2.5–7.1**	**51.0–54.2**	**21.1–25.2**	**17.3–21.5**	

Notes

1. Only colonoscopies with a Colonoscopy Report form (6,913) could be included in this analysis; colonoscopies identified from Histopathology Report forms or Medicare claims only were not included. However, 3 colonoscopies had unreliable abnormality values recorded. These were regarded as missing data and excluded from this table.
2. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to proceed through the screening pathway to colonoscopy after notification of a positive FOBT result.

Table 4.2: Preliminary overall participant summary outcomes, by state and territory: 2008

					FOBT positive							
State		Invitations issued(a)	Number screened(b)	Total positive FOBT	Colonoscopy recorded(c)	No cancer or adenoma(d)	Polyps awaiting histo-pathology(e)	Confirmed diminutive adenoma(f)	Confirmed small adenoma(f)	Confirmed advanced adenoma(f)	Suspected cancer(g)	Confirmed cancer(h)
NSW	Number	219,996	72,295	4,736	1,373	653	554	18	24	62	54	8
	Per cent					47.6	40.3	1.3	1.7	4.5	3.9	0.6
Vic	Number	146,263	54,217	3,550	1,486	759	551	15	18	68	68	7
	Per cent					51.1	37.1	1.0	1.2	4.6	4.6	0.5
Qld	Number	148,986	57,324	3,655	2,124	910	666	61	99	296	65	27
	Per cent					42.8	31.4	2.9	4.7	13.9	3.1	1.3
WA	Number	74,639	29,059	1,852	618	219	294	16	13	57	17	2
	Per cent					35.4	47.6	2.6	2.1	9.2	2.8	0.3
SA	Number	61,989	25,288	1,735	969	515	272	19	26	107	20	10
	Per cent					53.1	28.1	2.0	2.7	11.0	2.1	1.0
Tas	Number	17,977	7,766	593	356	187	73	11	11	55	10	9
	Per cent					52.5	20.5	3.1	3.1	15.4	2.8	2.5
ACT	Number	9,666	3,777	212	79	34	40	0	0	1	4	0
	Per cent					43.0	50.6	0.0	0.0	1.3	5.1	0.0
NT	Number	6,399	1,426	103	37	17	17	0	0	2	1	0
	Per cent					45.9	45.9	0.0	0.0	5.4	2.7	0.0
Australia	**Number**	**685,915**	**251,152**	**16,436**	**7,042**	**3,294**	**2,467**	**140**	**191**	**648**	**239**	**63**
	Per cent					**46.8**	**35.0**	**2.0**	**2.7**	**9.2**	**3.4**	**0.9**

(a) 'Invitations issued' equals the number of eligible people who were issued an invitation to screen in the NBCSP.

(b) 'Number screened' equals the number of people who completed an FOBT kit and had results forwarded to the Register.

(c) 'Colonoscopy recorded' includes colonoscopies recorded via the Colonoscopy Report and/or Histopathology Report forms. It does not include colonoscopies identified through Medicare claims.

(d) No cancers were suspected at colonoscopy or confirmed non-cancerous by histopathology; no polyps identified at colonoscopy, or polyps confirmed as non-adenomous at histopathology.

(e) Polyps detected at colonoscopy and sent to histopathology for analysis. No Histopathology Report form received by Register.

(f) Confirmed adenoma figures were based on a combination of the Colonoscopy and Histopathology Report forms for a person received by the Register.

(g) Cancer suspected at colonoscopy but not yet confirmed by histopathology.

(h) Cancer confirmed by histopathology.

Table 4.3: Preliminary overall participant summary outcomes, by age and sex: 2008

					FOBT positive							
		Invitations issued[(a)]	Number screened[(b)]	Total positive FOBT	Colonoscopy recorded[(c)]	No cancer or adenoma[(d)]	Polyps awaiting histo-pathology[(e)]	Confirmed diminutive adenoma[(f)]	Confirmed small adenoma[(f)]	Confirmed advanced adenoma[(f)]	Suspected cancer[(g)]	Confirmed cancer[(h)]
Males												
50 years	Number	117,340	29,760	1,841	391	178	157	9	10	26	9	2
	Per cent					45.5	40.2	2.3	2.6	6.6	2.3	0.5
55 years	Number	136,570	45,950	3,149	1,520	605	613	32	52	156	50	12
	Per cent					39.8	40.3	2.1	3.4	10.3	3.3	0.8
65 years	Number	90,289	39,311	3,799	1,796	621	750	31	52	234	79	29
	Per cent					34.6	41.8	1.7	2.9	13.0	4.4	1.6
Total	*Number*	*344,199*	*115,021*	*8,789*	*3,707*	*1,404*	*1,520*	*72*	*114*	*416*	*138*	*43*
	Per cent					*37.9*	*41.0*	*1.9*	*3.1*	*11.2*	*3.7*	*1.2*
Females												
50 years	Number	117,488	35,958	1,739	421	267	122	3	4	20	5	0
	Per cent					63.4	29.0	0.7	1.0	4.8	1.2	0.0
55 years	Number	136,181	56,752	2,882	1,441	873	385	27	28	86	32	10
	Per cent					60.6	26.7	1.9	1.9	6.0	2.2	0.7
65 years	Number	88,047	43,421	3,026	1,473	750	440	38	45	126	64	10
	Per cent					50.9	29.9	2.6	3.1	8.6	4.3	0.7
Total	*Number*	*341,716*	*136,131*	*7,647*	*3,335*	*1,890*	*947*	*68*	*77*	*232*	*101*	*20*
	Per cent					*56.7*	*28.4*	*2.0*	*2.3*	*7.0*	*3.0*	*0.6*

(continued)

Table 4.3 (continued): Preliminary overall participant summary outcomes, by age and sex: 2008

					FOBT positive						
		Invitations issued[a]	Number screened[b]	Total positive FOBT	Colonoscopy recorded[c]	No cancer or adenoma[d]	Polyps awaiting histo-pathology[e]	Confirmed diminutive adenoma[f]	Confirmed small adenoma[f]	Confirmed advanced adenoma[f]	Suspected cancer[g]	Confirmed cancer[h]
Persons												
50 years	Number	234,828	65,718	3,580	812	445	279	12	14	46	14	2
	Per cent					54.8	34.4	1.5	1.7	5.7	1.7	0.2
55 years	Number	272,751	102,702	6,031	2,961	1,478	998	59	80	242	82	22
	Per cent					49.9	33.7	2.0	2.7	8.2	2.8	0.7
65 years	Number	178,336	82,732	6,825	3,269	1,371	1,190	69	97	360	143	39
	Per cent					41.9	36.4	2.1	3.0	11.0	4.4	1.2
Total	**Number**	**685,915**	**251,152**	**16,436**	**7,042**	**3,294**	**2,467**	**140**	**191**	**648**	**239**	**63**
	Per cent					**46.8**	**35.0**	**2.0**	**2.7**	**9.2**	**3.4**	**0.9**

(a) 'Invitations issued' equals the number of eligible people who were issued an invitation to screen in the NBCSP.

(b) 'Number screened' equals the number of people who completed an FOBT kit and had results forwarded to the Register.

(c) 'Colonoscopy recorded' includes colonoscopies recorded via the Colonoscopy Report and/or Histopathology Report forms. It does not include colonoscopies identified through Medicare claims.

(d) No cancers were suspected at colonoscopy or confirmed non-cancerous by histopathology; no polyps identified at colonoscopy, or polyps confirmed as non-adenomous at histopathology.

(e) Polyps detected at colonoscopy and sent to histopathology for analysis. No Histopathology Report form received by Register.

(f) Confirmed adenoma figures were based on a combination of the Colonoscopy and Histopathology Report forms for a person received by the Register.

(g) Cancer suspected at colonoscopy but not yet confirmed by histopathology.

(h) Cancer confirmed by histopathology.

Table 4.4: Cancer spread status, by age and sex: 2008

	Cancer confirmed by histopathology					
	Submucosa or into but not through muscularis propria	Through muscular propria	Spread of cancer to lymph nodes	Metastatic disease	Not reported	All confirmed cancers
Males						
50 years	1	0	0	0	1	2
55 years	4	2	0	1	5	12
65 years	5	2	0	0	22	29
Total	*10*	*4*	*0*	*1*	*28*	*43*
Females						
50 years	0	0	0	0	0	0
55 years	1	2	1	0	6	10
65 years	1	2	0	0	7	10
Total	*2*	*4*	*1*	*0*	*13*	*20*
Persons						
50 years	1	0	0	0	1	2
55 years	5	4	1	1	11	22
65 years	6	4	0	0	29	39
Total	**12**	**8**	**1**	**1**	**41**	**63**

Source: Histopathology Report form sections 4B and 4C.

5 Adverse events

As with any invasive surgical procedure, there is the risk of an adverse event occurring with a colonoscopy. This chapter discusses the recorded adverse events for participants invited into the NBCSP in 2008 who underwent a colonoscopy as a result of a positive FOBT.

Fast facts

- For participants invited in 2008, 31 out of 8,741 known colonoscopies (0.4%) resulted in an adverse event.
- Bleeding or 'other' adverse events were the most commonly recorded, with males recording more events than females.
- The low rate of adverse events recorded in 2008 was similar to 2007.

Overall adverse events

While the NBCSP records the number of people referred for various procedures (for example, sigmoidoscopy, barium enema, colonoscopy), only outcomes (including adverse) of colonoscopy were looked at, as it is the recommended follow-up procedure after a positive FOBT (ACN 2005). The use of Adverse Event forms is not mandatory in the NBCSP; therefore, these may be under-reported.

Colonoscopy is an invasive procedure performed after preparation of the bowel. The procedure is performed under sedation, and is safe and relatively pain free. However, several complications and adverse events are associated with colonoscopy, including:

- intolerance of the bowel preparation—some people develop dizziness, headaches or vomiting
- reaction to the sedatives or anaesthetic—this is very uncommon but is of concern in people who have severe heart disease or lung disease
- perforation (making a hole in the bowel wall)
- major bleeding from the bowel—this can occur as a result of polyps being removed.

The draft report of the Quality Working Group to the NBCSP noted that the two main complications arising were perforation and post-colonoscopic bleeding. A literature review by the Quality Working Group showed the risk of death associated with colonoscopy to be low, with incidence rates ranging from 0.0% to 0.03%. The incidence rate of perforation also varied between 0.07% and 0.3%, and bleeding was found to have an incidence rate between 0.03% and 2.0% (NBCSP-QWG 2008).

Table 5.1 shows adverse events recorded up to 31 January 2009 for people participating in the NBCSP in 2008. Of these invitees, 8,741 were known to have undergone a colonoscopy, with 31 recording an adverse outcome. Males recorded more adverse events, with bleeding and 'other' adverse events being the most common. The most frequent outcome of the adverse events recorded was unplanned hospital admission within 30 days of colonoscopy.

Table 5.2 shows trends in adverse events since 2007. The above findings for 2008 appear to be similar to those recorded for 2007; however, rates of adverse bleeding events appear to have reduced since 2007, though this reduction was not statistically significant.

Adverse event tables

Table 5.1: Adverse outcomes following investigation of positive FOBT by colonoscopy: 2008

			Adverse outcomes								
		Colonoscopies	**Bleeding**	**Infection/ sepsis**	**Perforation**	**Reaction to sedation/ anaesthesia**	**Death**	**Other**	**Delayed discharge**	**Unplanned hospital admission within 30 days**	**Surgery required**
Males	Number	4,596	10	1	1	0	0	10	4	11	4
	Per cent	52.6	0.2	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1
Females	Number	4,145	2	0	2	1	0	7	5	7	2
	Per cent	47.4	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.0
Persons	**Number**	**8,741**	**12**	**1**	**3**	**1**	**0**	**17**	**9**	**18**	**6**
	Per cent	**100.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.1**	**0.2**	**0.1**
	95% CI		**0.1–0.2**	**0.0–0.0**	**0.0–0.1**	**0.0–0.0**	**0.0–0.0**	**0.1–0.3**	**0.0–0.2**	**0.1–0.3**	**0.0–0.1**

Note: A colonoscopy may have more than one adverse event.

Source: Adverse Outcome form sections 2 and 3.

Table 5.2: Trends in adverse outcomes following investigation of positive FOBT by colonoscopy: 2007–2008

		Adverse outcomes								
		Bleeding	**Infection/ sepsis**	**Perforation**	**Reaction to sedation/ anaesthesia**	**Death**	**Other**	**Delayed discharge**	**Unplanned hospital admission within 30 days**	**Surgery required**
2007	Per cent	0.2	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1
	95% CI	0.1–0.2	0.0–0.1	0.0–0.1	0.0–0.1	0.0–0.0	0.1–0.3	0.1–0.2	0.1–0.3	0.0–0.1
2008	Per cent	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1
	95% CI	0.1–0.2	0.0–0.0	0.0–0.1	0.0–0.0	0.0–0.0	0.1–0.3	0.0–0.2	0.1–0.3	0.0–0.1

Note: A colonoscopy may have more than one adverse event.

Source: Adverse Outcome form sections 2 and 3.

6 Incidence of bowel cancer

Bowel cancer incidence statistics in Australia are held in the Australian Cancer Database maintained by the National Cancer Statistics Clearing House (NCSCH). The aim of the NCSCH is to foster the development and dissemination of national cancer statistics for Australia.

The NCSCH receives data from individual state and territory cancer registries on cancer diagnosed in residents of Australia. This began with cases first diagnosed in 1982, and currently contains data on cancers diagnosed up to and including 2006.

Fast facts

In 2006:

- there were 13,591 people diagnosed with bowel cancer (7,432 males; 6,159 females)
- bowel cancer accounted for 13.1% of all invasive cancers diagnosed, making it the second most commonly diagnosed cancer in Australia, after prostate cancer
- the age-standardised incidence rate for bowel cancer was 74 per 100,000 males, 52 per 100,000 females and 62 per 100,000 persons
- the risk of being diagnosed with bowel cancer by age 85 years was 1 in 10 for males, 1 in 14 for females and 1 in 12 for persons
- the average age of diagnosis was 69 years for males and 71 years for females.

Bowel cancer incidence

Bowel cancer comprises cancer of the colon and cancer of the rectum, collectively known as colorectal cancer. An objective of the NBCSP is to reduce the incidence of bowel cancer in Australia. Positive FOBTs and subsequent colonoscopies identify and treat polyps and adenomas which might develop into cancer, thereby reducing incidence. However, it is expected that during the first few years of the NBCSP incidence rates may increase, as developed cancers (as well as polyps and adenomas) that had not shown symptoms are found earlier through screening. This should stabilise over time.

This chapter provides bowel cancer incidence data, grouped by age, sex and population subgroups. Supplementary data tables are included in Appendix A. Detailed numbers and rates for bowel cancer in Australia over time can be found in the AIHW *Australian Cancer Incidence and Mortality* (ACIM) workbook for colorectal cancer, an interactive workbook that includes incidence data from 1982 to 2006 and mortality data from 1968 to 2006. This workbook is available at <www.aihw.gov.au/cancer/data/acim_books/index.cfm>.

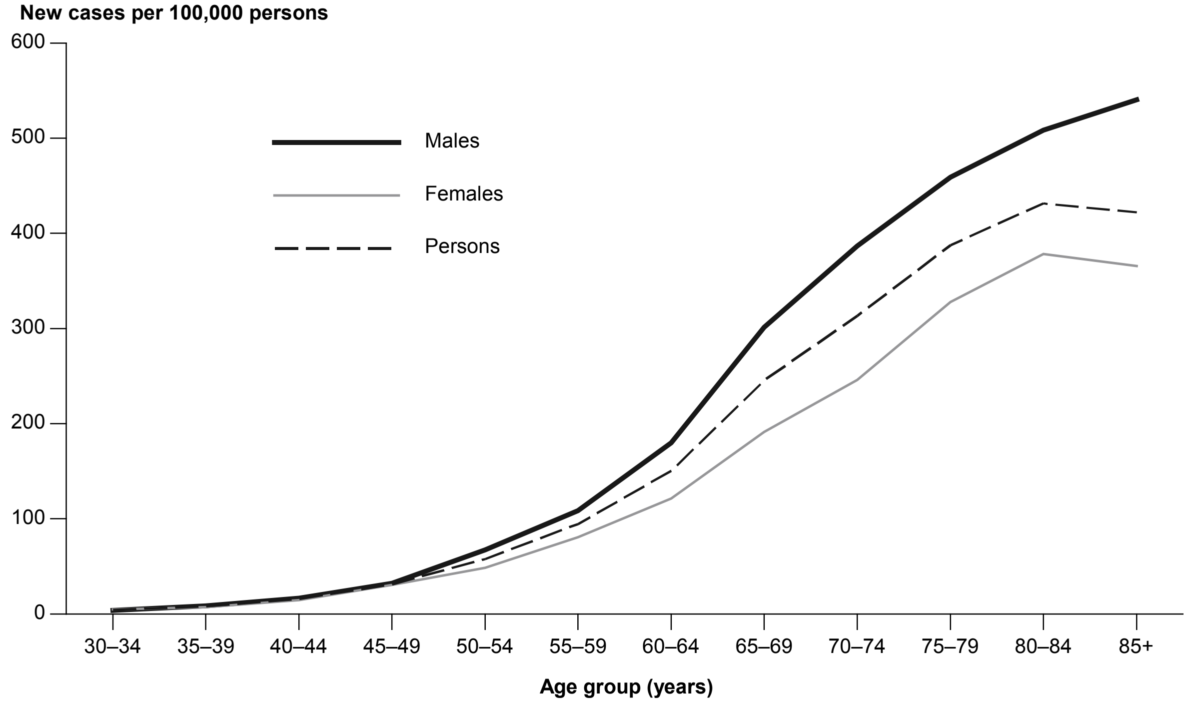
Bowel cancer incidence by state and territory

The incidence of bowel cancer varied between jurisdictions in the period 2001–2005 (tables A.3a–A.4c). Queensland (64.5 cases per 100,000 persons), South Australia (64.0) and Victoria (63.7) had the highest age-standardised incidence rate of bowel cancer. The lowest age-standardised incidence rate was in the Northern Territory (50.0 per 100,000 persons).

Bowel cancer incidence by age and sex

Similar to previous years, bowel cancer incidence was relatively rare before age 45 in 2006; however, the incidence rate increased sharply with age thereafter (Figure 6.1). The highest incidence rate was in people aged 80 years and over (more than 400 cases per 100,000 population).

About 27% of the new cases diagnosed were in people aged 50–65 years, with 5% being diagnosed in people specifically aged 50, 55 or 65 years—the current NBCSP target ages.

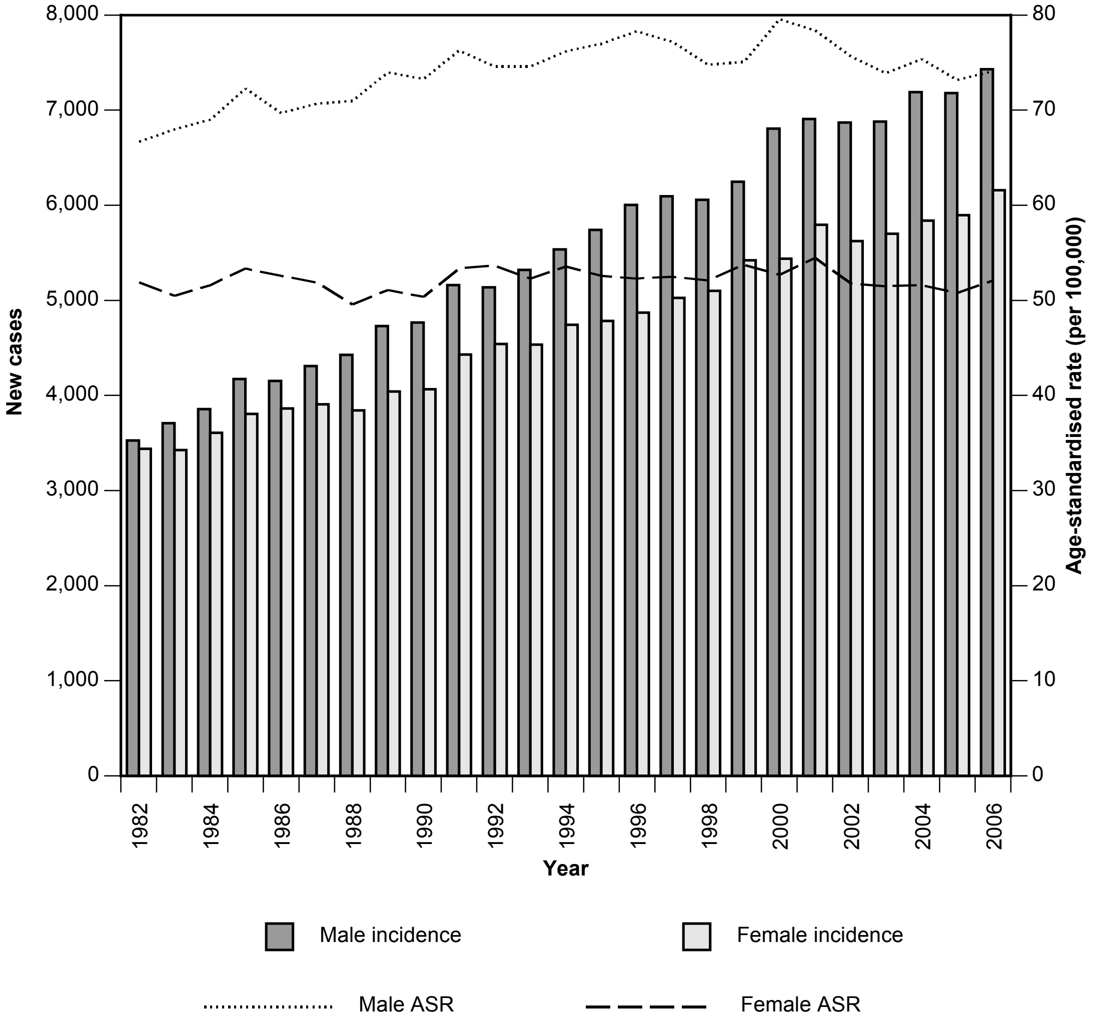


Source: AIHW Australian Cancer Database.

Figure 6.1: Age-specific incidence rates of bowel cancer, Australia: 2006

Trends

The number of new cases of bowel cancer for males has doubled (100% increase) between 1982 and 2006, with incidence in females showing a slightly smaller (80%) increase. While the age-standardised rates for bowel cancer were similar between 1982 and 2006 (a 0.4% increase for males and a 0.1% decrease for females) the effect of the ageing population in Australia means the burden bowel cancer places on the health care system (through the number of new cases requiring treatment) is still increasing (Figure 6.2 and tables A.1a–A.2c). Any changes due to the NBCSP will not be apparent for a number of years.



Note: Rates age-standardised to the Australian 2001 population.

Source: AIHW Australian Cancer Database.

Figure 6.2: Incidence and age-standardised incidence rates of bowel cancer, Australia: 1982–2006

Bowel cancer incidence by region

The age-standardised incidence rates of bowel cancer between 2001 and 2006 were highest in *Inner regional* areas (62.5 cases per 100,000) and *Major cities* (62.1) (tables A.5a–A.6c). *Very remote* areas had a statistically significant lower age-standardised incidence rate (43.9 per 100,000) than the other regions.

7 Mortality from bowel cancer

The Registrars of Births, Deaths and Marriages in each state and territory in Australia collect death data, and then pass it to the Australian Bureau of Statistics (ABS) where they are compiled and coded nationally according to the International Classification of Diseases (ICD). For bowel cancer, the relevant ICD-10 codes are C18–C20.

National mortality data, with cause of death information, are provided to the AIHW annually, and the AIHW National Mortality Database currently contains data on deaths up until the end of 2006. Bowel cancer mortality statistics in this chapter were analysed using these data.

Fast facts

In 2006:

- there were 3,801 deaths from bowel cancer in Australia (2,126 males; 1,675 females). Bowel cancer accounted for 9.7% of all deaths from invasive cancers, second only to lung cancer
- the age-standardised death rate was 22 per 100,000 males and 14 per 100,000 females
- the risk of dying from bowel cancer by age 85 years was 1 in 35 for males, 1 in 53 for females and 1 in 43 for persons
- bowel cancer was responsible for 48,538 potential years of life lost by age 85 years (30,050 for males; 18,488 for females).

Bowel cancer mortality

A major objective of the NBCSP is to reduce mortality from bowel cancer in Australia through early detection and treatment of bowel cancers, and through identifying and treating polyps and adenocarcinomas that might develop into cancer. These outcomes should result in a reduction in the number of people who die from bowel cancer; however, it may take many years for this effect to become apparent, as polyps and adenomas detected at screening now may not have become cancers resulting in death for many years.

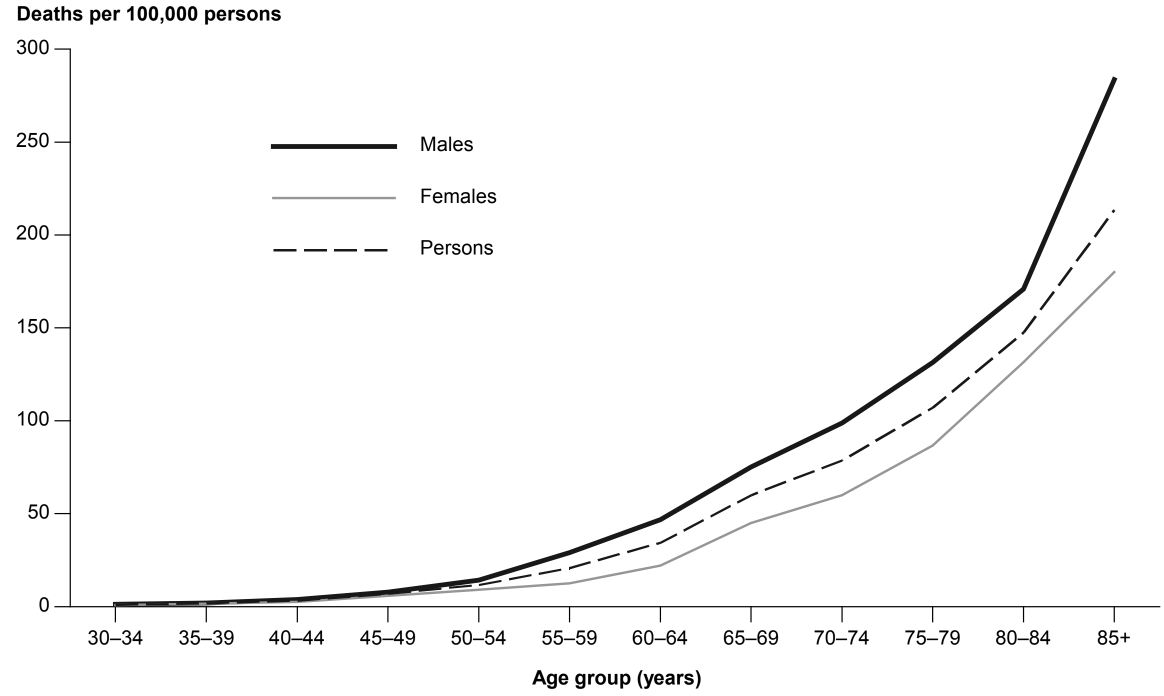
Bowel cancer mortality by state and territory

Tasmania experienced the highest age-standardised rate of deaths from bowel cancer for 2002–2006 (23.6 deaths per 100,000 population) followed by Victoria (22.0); these were significantly higher that the Australian age-standardised rate (20.8) (tables A.9a–A.10c). Only New South Wales (18.3) had significantly lower age-standardised mortality rate than the Australian age-standardised rate for 2002–2006.

Bowel cancer mortality by age and sex

In 2006, death from bowel cancer was relatively rare before age 50 years (Figure 7.1). The highest age-specific death rates were in the oldest age groups—people aged 80–84 years

(148 per 100,000 population) and 85 years and over (214 per 100,000). There were 1,569 deaths in the 55–74 year age group, 41% of all bowel cancer deaths.



Note: Rates age-standardised to the Australian 2001 population.

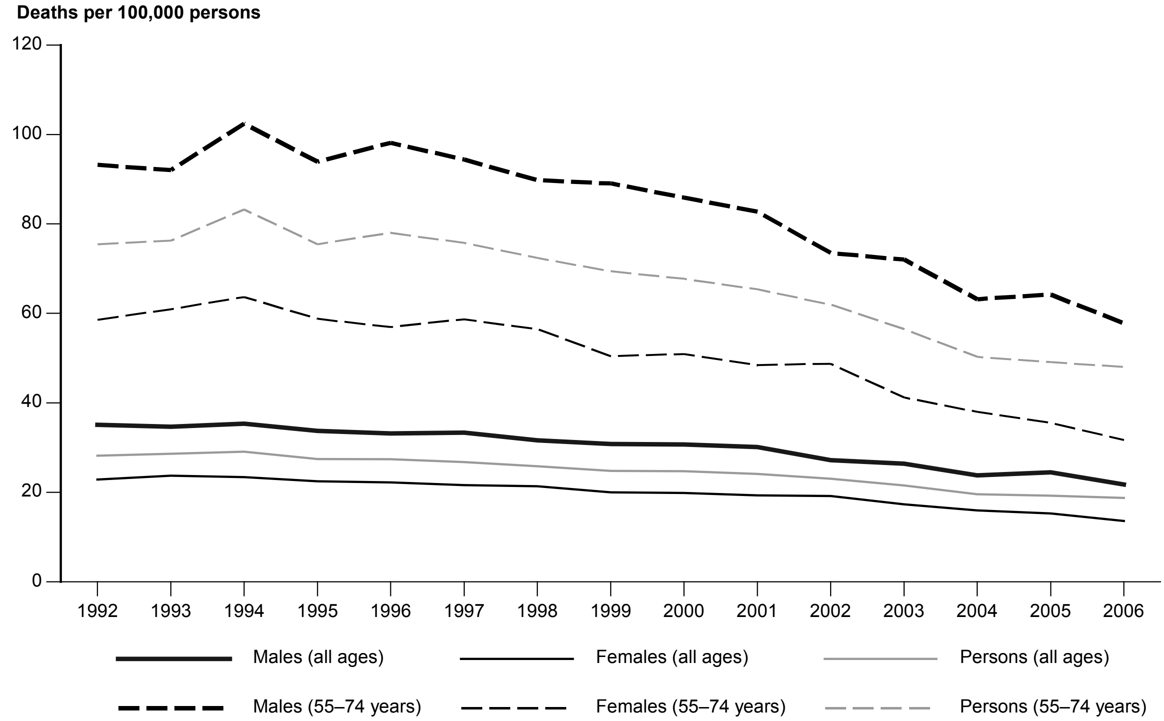
Source: AIHW Australian Cancer Database.

Figure 7.1: Age-specific mortality rates for bowel cancer (ICD-10 C18–C20), Australia: 2006

Trends

Between 1992 and 2006 the age-standardised death rate from bowel cancer fell by an average of 3.4% per year for males, 3.7% per year for females, and 3.4% per year for persons (Figure 7.2 and tables A.7a–A.8c). The expected effect of the NBCSP in time will be to accelerate this decline in the death rate.

It is not feasible to analyse NBCSP performance by looking at mortality rates of people aged 50, 55 and 65 years, as the mortality tables (in Appendix A) are enumerated by age of death, not age of diagnosis. The NBCSP target ages were included for illustrative purposes only.



Note: Rates age-standardised to the Australian 2001 population.

Source: AIHW National Mortality Database.

Figure 7.2: Age-standardised mortality rates for bowel cancer, Australia: 1992–2006

Bowel cancer mortality by region

Age-standardised deaths from bowel cancer were highest in *Outer regional* (21.4 deaths per 100,000) and *Inner regional* (21.3) areas of Australia in 2002–2006 (tables A.11a–A.12c). Age-standardised death rates were significantly lower in *Very remote* areas (12.2 deaths per 100,000), *Remote* areas (17.1) and *Major cities* (19.3).

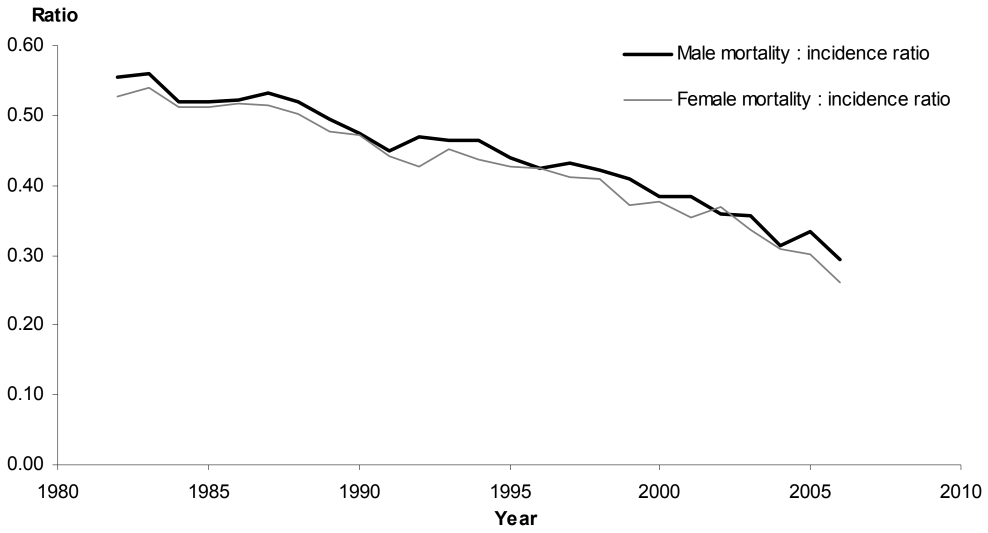
Bowel cancer mortality of Aboriginal and Torres Strait Islander peoples

Only Queensland, Western Australia, South Australia and the Northern Territory have Aboriginal and Torres Strait Islander death registration data considered to be of a publishable standard; therefore, data from these jurisdictions only were included in the analysis by Aboriginal and Torres Strait Islander status.

In Queensland, Western Australia, South Australia and the Northern Territory between 2002 and 2006, the age-standardised rate of deaths from bowel cancer was lower in Aboriginal and Torres Strait Islander peoples (17.9 deaths per 100,000) than in non-Indigenous people (19.8) (tables A.13a and A.13b).

Bowel cancer mortality to incidence

As shown in Figure 7.3, the ratio of bowel cancer mortality to incidence has been steadily dropping for many years, mainly due to improved treatments. Any changes in this rate due to the NBCSP would depend on the number of people screened, the number of pre-cancerous polyps removed and the stage of growth at which detected cancers were treated.



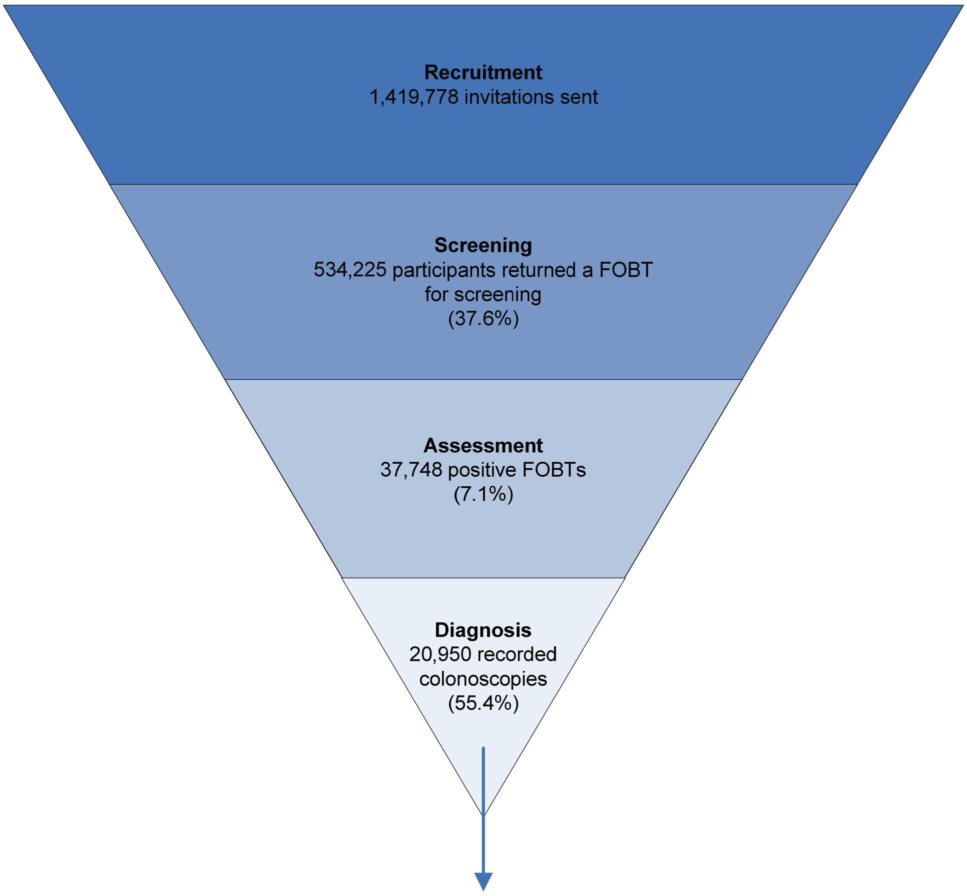
Note: Ratios calculated from rates, age-standardised to the Australian 2001 population.

Source: AIHW Australian Cancer Database.

Figure 7.3: Trends in mortality : incidence ratios for bowel cancer, Australia: 1982–2006

8 Overall NBCSP outcomes (2006–2008)

The Population based screening framework (APHDPCSS 2008) uses five stages to describe a screening pathway. Overall data on invitees to the NBCSP (2006–2008), and their progression through the pathway, have been applied to these stages in Figure 8.1.



Recorded colonoscopy outcomes

No cancer or adenoma	9,678	(46.1%)
Polyp awaiting histopathology	7,532	(36.0%)
Diminutive adenoma	468	(2.2%)
Small adenoma	486	(2.3%)
Advanced adenoma	1,822	(8.7%)
Suspected cancer	784	(3.7%)
Confirmed cancer	180	(0.9%)

Notes

1. Invitees aged 50, 55 and 65 years were included; other aged invitees (for example, Pilot invitees from phase 1) were excluded.
2. 4,269 colonoscopies identified through Medicare claim only were not included, as there were no associated outcome data available for analysis.
3. Adenoma classifications are described in Appendix B.
4. Figure is not to scale.

Source: National Bowel Cancer Screening Program Register.

Figure 8.1: Overall NBCSP outcomes for all invitees aged 50, 55 and 65 years: 2006–2008

There are no formal performance indicators for the NBCSP; however, the current overall screening rate of 37.6% is lower than the 45.4% rate achieved in the Pilot Program (DoHA 2005). Ignoring the different invitee ages recruited into the Pilot and the NBCSP, this equates to around 110,000 fewer people deciding to screen in the NBCSP than may have been expected within 2006–2008. The overall crude colonoscopy follow-up (diagnosis) rate of 55.4% is similar to that achieved in the Pilot Program. Increases in the number of people participating in screening, plus an increase in the rate of return of Colonoscopy and Histopathology Report forms, would improve monitoring of the NBCSP and its invitees.

Since the inception of the NBCSP in 2006, 964 participants have been found with suspected or confirmed cancers and 1,822 more have been diagnosed with advanced adenomas. Furthermore, 954 participants have been diagnosed with earlier-stage adenomas. While the NBCSP only follows participants up to the point of definite diagnosis, and outcomes (about treatment) for these participants are unknown, it would be expected that the earlier treatment the NBCSP afforded these participants should improve their treatment outcomes. This may eventually be shown as reductions in colorectal cancer incidence and mortality in the coming years.

Appendix A Supplementary data tables

Bowel cancer incidence

Table A.1a: Number of new cases of bowel cancer, by age, Australia: 1992–2006, males

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10–14	0	3	0	0	0	2	4	0	2	1	1	2	0	1	0
15–19	0	1	3	2	0	2	1	1	1	2	4	1	6	2	6
20–24	5	3	3	4	2	8	5	3	3	7	8	3	15	12	8
25–29	9	10	10	10	9	9	18	19	17	14	11	18	14	11	14
30–34	19	19	20	22	29	20	25	25	32	26	38	23	33	33	30
35–39	38	43	47	48	57	45	53	59	55	65	52	61	61	62	64
40–44	101	137	108	114	119	105	117	92	127	101	101	105	127	126	126
45–49	212	219	201	216	223	223	216	216	233	236	208	209	206	218	238
50–54	322	343	351	371	378	416	378	405	438	410	458	416	422	429	456
55–59	529	505	536	551	641	598	602	567	629	662	626	645	693	718	691
60–64	786	775	763	767	767	804	740	796	877	820	898	846	920	927	893
65–69	877	935	1,034	1,038	990	1,035	1,017	979	1,001	1,011	1,028	1,101	1,085	1,082	1,163
70–74	829	917	955	988	1,132	1,081	1,133	1,163	1,258	1,259	1,183	1,170	1,197	1,128	1,174
75–79	694	762	730	826	798	864	856	998	1,071	1,140	1,112	1,141	1,151	1,175	1,160
80–84	443	408	485	485	554	578	531	539	625	701	700	700	805	811	845
85+	270	244	291	299	307	311	364	390	444	445	434	433	454	467	564
Not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All ages	**5,134**	**5,324**	**5,537**	**5,741**	**6,006**	**6,101**	**6,060**	**6,252**	**6,813**	**6,900**	**6,862**	**6,874**	**7,189**	**7,203**	**7,432**
50	47	63	51	51	55	66	49	81	65	56	75	63	73	64	67
55	94	104	84	83	98	96	107	108	108	132	108	114	113	103	112
65	170	164	182	175	163	184	192	177	167	209	196	219	230	193	243

Source: AIHW Australian Cancer Database.

Table A.1b: Number of new cases of bowel cancer, by age, Australia: 1992–2006, females

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10–14	1	1	0	0	1	2	1	0	1	0	2	1	1	1	1
15–19	1	0	1	4	3	2	4	3	4	6	5	2	7	11	5
20–24	2	6	7	3	8	6	4	6	7	7	3	7	10	11	14
25–29	11	8	12	12	9	6	12	13	12	12	10	14	14	17	18
30–34	29	18	25	22	25	31	27	37	31	31	35	32	24	40	35
35–39	63	47	53	48	49	55	53	67	54	63	73	62	61	60	55
40–44	109	85	90	105	97	120	105	120	111	110	113	112	119	124	112
45–49	164	175	178	160	188	205	185	201	204	215	201	218	199	182	230
50–54	277	256	281	285	281	298	282	294	330	310	320	342	342	318	332
55–59	399	397	411	388	399	402	405	424	418	405	432	423	418	470	513
60–64	484	509	497	444	476	445	542	493	548	558	564	571	538	557	598
65–69	669	643	676	664	658	685	659	669	640	681	641	696	720	673	756
70–74	693	692	755	794	795	761	808	837	833	877	827	817	845	813	805
75–79	643	624	696	731	722	803	779	868	892	997	909	874	923	944	983
80–84	564	582	558	622	595	632	653	705	668	755	732	820	860	899	906
85+	437	494	504	504	559	569	579	687	685	775	746	719	746	796	796
Not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All ages	**4,546**	**4,537**	**4,744**	**4,786**	**4,865**	**5,022**	**5,098**	**5,424**	**5,438**	**5,802**	**5,613**	**5,710**	**5,827**	**5,916**	**6,159**
50	44	43	60	48	38	59	38	47	58	51	51	48	46	60	56
55	74	60	67	65	75	66	74	74	70	69	80	67	73	80	95
65	124	131	124	115	116	122	117	97	108	136	117	141	131	123	148

Source: AIHW Australian Cancer Database.

Table A.1c: Number of new cases of bowel cancer, by age, Australia: 1992–2006, persons

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10–14	1	4	0	0	1	4	5	0	3	1	3	3	1	2	1
15–19	1	1	4	6	3	4	5	4	5	8	9	3	13	13	11
20–24	7	9	10	7	10	14	9	9	10	14	11	10	25	23	22
25–29	20	18	22	22	18	15	30	32	29	26	21	32	28	28	32
30–34	48	37	45	44	54	51	52	62	63	57	73	55	57	73	65
35–39	101	90	100	96	106	100	106	126	109	128	125	123	122	122	119
40–44	210	222	198	219	216	225	222	212	238	211	214	217	246	250	238
45–49	376	394	379	376	411	428	401	417	437	451	409	427	405	400	468
50–54	599	599	632	656	659	714	660	699	768	720	778	758	764	747	788
55–59	928	902	947	939	1,040	1,000	1,007	991	1,047	1,067	1,058	1,068	1,111	1,188	1,204
60–64	1,270	1,284	1,260	1,211	1,243	1,249	1,282	1,289	1,425	1,378	1,462	1,417	1,458	1,484	1,491
65–69	1,546	1,578	1,710	1,702	1,648	1,720	1,676	1,648	1,641	1,692	1,669	1,797	1,805	1,755	1,919
70–74	1,522	1,609	1,710	1,782	1,927	1,842	1,941	2,000	2,091	2,136	2,010	1,987	2,042	1,941	1,979
75–79	1,337	1,386	1,426	1,557	1,520	1,667	1,635	1,866	1,963	2,137	2,021	2,015	2,074	2,119	2,143
80–84	1,007	990	1,043	1,107	1,149	1,210	1,184	1,244	1,293	1,456	1,432	1,520	1,665	1,710	1,751
85+	707	738	795	803	866	880	943	1,077	1,129	1,220	1,180	1,152	1,200	1,263	1,360
Not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All ages	**9,680**	**9,861**	**10,281**	**10,527**	**10,871**	**11,123**	**11,158**	**11,676**	**12,251**	**12,702**	**12,475**	**12,584**	**13,016**	**13,119**	**13,591**
50	91	106	111	99	93	125	87	128	123	107	126	111	119	124	123
55	168	164	151	148	173	162	181	182	178	201	188	181	186	183	207
65	294	295	306	290	279	306	309	274	275	345	313	360	361	316	391

Source: AIHW Australian Cancer Database.

Table A.2a: Age-specific and age-standardised incidence rates for bowel cancer, Australia: 1992–2006, males

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.5	0.0	0.0	0.0	0.3	0.6	0.0	0.3	0.1	0.1	0.3	0.0	0.1	0.0
15–19	0.0	0.2	0.5	0.3	0.0	0.3	0.2	0.2	0.1	0.3	0.6	0.1	0.8	0.3	0.8
20–24	0.7	0.4	0.4	0.6	0.3	1.2	0.7	0.5	0.5	1.1	1.2	0.4	2.1	1.6	1.1
25–29	1.3	1.5	1.5	1.4	1.3	1.2	2.5	2.6	2.4	2.0	1.6	2.6	2.0	1.6	2.0
30–34	2.6	2.6	2.7	3.0	4.0	2.8	3.6	3.6	4.5	3.6	5.1	3.0	4.4	4.4	4.0
35–39	5.6	6.3	6.8	6.8	7.8	6.1	7.1	7.9	7.3	8.8	7.1	8.4	8.4	8.4	8.4
40–44	15.5	21.0	16.4	17.1	17.6	15.3	16.8	13.0	17.6	13.8	13.5	13.8	16.6	16.5	16.6
45–49	37.7	36.8	32.6	34.0	34.1	34.3	33.0	32.6	34.9	35.0	30.3	29.9	28.9	30.0	32.2
50–54	72.2	75.2	73.9	74.8	73.0	74.6	63.8	65.9	69.0	62.8	70.5	63.8	64.1	64.5	67.3
55–59	141.4	131.7	136.1	135.5	152.7	137.6	134.1	120.9	128.3	129.1	113.8	110.7	114.9	115.5	108.7
60–64	216.7	216.5	214.8	217.0	216.8	222.4	198.9	206.8	218.8	198.1	210.7	193.4	202.4	195.5	180.0
65–69	269.9	283.5	311.0	309.7	293.4	306.7	303.2	293.3	301.5	301.3	298.9	311.4	297.8	287.3	301.2
70–74	346.5	366.0	362.0	365.9	410.0	383.4	393.0	394.8	419.9	414.8	389.6	387.9	398.4	376.0	386.7
75–79	428.2	466.6	447.1	487.3	444.3	454.7	426.5	470.3	487.7	501.4	477.2	476.4	469.4	470.7	459.1
80–84	501.3	437.8	492.2	472.7	523.4	531.6	479.3	478.6	525.3	546.6	512.0	482.4	524.5	507.4	508.5
85+	570.3	484.6	546.2	526.7	509.1	486.7	533.6	535.7	572.8	543.2	508.5	492.4	500.9	479.2	540.4
All ages															
Crude rate	58.9	60.5	62.3	63.8	65.9	66.3	65.2	66.5	71.7	71.6	70.4	69.6	71.9	71.1	72.3
ASR	74.6	74.6	76.2	77.0	78.3	77.3	74.8	75.2	79.7	78.3	75.6	73.9	75.3	73.4	74.1
95% CI	72.5–76.8	72.6–76.7	74.1–78.3	75.0–79.1	76.3–80.3	75.3–79.3	72.9–76.7	73.3–77.1	77.8–81.6	76.5–80.2	73.8–77.4	72.1–75.6	73.6–77.1	71.7–75.2	72.4–75.9
Age specific															
50	49.2	66.0	48.2	46.4	49.0	49.1	37.5	63.3	49.9	42.5	57.1	47.0	54.4	46.7	47.2
55	116.9	126.1	99.1	95.2	108.9	102.4	112.1	103.2	99.1	116.8	81.6	88.7	89.8	80.4	87.2
65	243.2	233.4	258.9	251.2	227.5	269.5	285.3	259.4	245.0	282.2	257.1	283.5	287.6	234.9	290.2

Note: Rates equal the number of cases of bowel cancer per 100,000 males. All-age totals were age-standardised to the Australian 2001 population.

Source: AIHW Australian Cancer Database.

Table A.2b: Age-specific and age-standardised incidence rates for bowel cancer, Australia: 1992–2006, females

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.2	0.2	0.0	0.0	0.2	0.3	0.2	0.0	0.2	0.0	0.3	0.1	0.1	0.1	0.1
15–19	0.2	0.0	0.2	0.6	0.5	0.3	0.6	0.5	0.6	0.9	0.7	0.3	1.0	1.6	0.7
20–24	0.3	0.8	1.0	0.4	1.2	0.9	0.6	0.9	1.1	1.1	0.5	1.0	1.5	1.6	1.9
25–29	1.6	1.2	1.8	1.7	1.3	0.8	1.6	1.8	1.7	1.7	1.5	2.1	2.1	2.5	2.6
30–34	4.0	2.5	3.4	3.0	3.5	4.3	3.8	5.2	4.3	4.2	4.6	4.2	3.1	5.2	4.7
35–39	9.3	6.8	7.6	6.7	6.7	7.4	7.0	8.8	7.1	8.4	9.8	8.4	8.3	8.0	7.2
40–44	17.0	13.1	13.7	15.7	14.3	17.3	15.0	16.8	15.2	14.8	14.9	14.5	15.3	16.0	14.5
45–49	30.5	30.5	29.9	26.0	29.4	31.9	28.3	30.2	30.3	31.5	28.9	30.8	27.5	24.6	30.5
50–54	65.3	59.0	62.0	59.9	56.5	55.5	49.2	49.2	53.0	47.8	49.3	52.2	51.5	47.2	48.5
55–59	108.9	105.7	106.6	98.1	97.9	95.4	93.4	93.7	88.3	81.7	80.6	74.1	70.3	76.2	80.7
60–64	132.5	141.5	139.2	124.4	133.5	122.4	145.5	128.3	138.1	136.8	134.5	132.6	119.9	118.4	121.3
65–69	189.5	180.9	190.7	187.5	185.5	194.5	188.8	193.3	185.5	196.3	180.7	191.2	192.0	174.5	191.3
70–74	236.9	228.0	237.9	245.8	243.1	231.6	244.1	251.1	249.7	261.9	248.9	248.6	259.3	250.0	246.0
75–79	280.7	271.3	305.5	313.2	296.1	313.1	289.8	309.0	310.0	341.4	308.9	294.1	308.5	315.2	327.8
80–84	372.4	367.7	333.8	360.7	336.9	351.4	358.7	385.1	351.6	374.1	347.0	371.9	374.7	381.1	378.2
85+	377.9	405.4	395.3	375.2	394.8	381.0	369.4	413.6	391.1	422.8	393.9	370.8	376.3	383.3	365.6
All ages															
Crude rate	51.8	51.2	52.9	52.7	52.9	53.9	54.1	56.9	56.4	59.3	56.7	57.0	57.5	57.6	59.1
ASR	53.7	52.3	53.5	52.7	52.2	52.5	52.0	53.8	52.7	54.6	51.7	51.6	51.5	51.0	52.1
95% CI	52.1–55.3	50.8–53.9	52.0–55.1	51.2–54.2	50.8–53.7	51.0–54.0	50.6–53.5	52.4–55.3	51.3–54.2	53.2–56.0	50.4–53.1	50.2–53.0	50.2–52.9	49.7–52.3	50.8–53.4
Age specific															
50	48.7	47.2	59.2	45.2	35.2	45.6	29.9	37.2	44.5	38.3	38.7	35.5	33.8	43.0	39.2
55	94.9	75.1	82.1	78.3	86.7	73.4	80.5	73.2	66.5	63.0	61.6	53.1	58.2	62.1	73.2
65	172.0	179.6	172.8	161.3	156.7	177.2	168.9	140.3	153.5	180.2	152.7	180.5	162.3	149.5	175.8

Note: Rates equal the number of cases of bowel cancer per 100,000 females. All-age totals were age-standardised to the Australian 2001 population.

Source: AIHW Australian Cancer Database.

Table A.2c: Age-specific and age-standardised incidence rates for bowel cancer, Australia: 1992–2006, persons

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.1	0.3	0.0	0.0	0.1	0.3	0.4	0.0	0.2	0.1	0.2	0.2	0.1	0.1	0.1
15–19	0.1	0.1	0.3	0.5	0.2	0.3	0.4	0.3	0.4	0.6	0.7	0.2	0.9	0.9	0.8
20–24	0.5	0.6	0.7	0.5	0.7	1.0	0.7	0.7	0.8	1.1	0.8	0.7	1.8	1.6	1.5
25–29	1.4	1.3	1.6	1.6	1.3	1.0	2.0	2.2	2.0	1.8	1.5	2.3	2.1	2.0	2.3
30–34	3.3	2.5	3.1	3.0	3.7	3.6	3.7	4.4	4.4	3.9	4.9	3.6	3.7	4.8	4.4
35–39	7.5	6.6	7.2	6.7	7.3	6.8	7.1	8.4	7.2	8.6	8.5	8.4	8.3	8.2	7.8
40–44	16.2	17.1	15.0	16.4	15.9	16.3	15.9	14.9	16.4	14.3	14.2	14.2	15.9	16.2	15.5
45–49	34.2	33.7	31.3	30.0	31.8	33.1	30.6	31.4	32.6	33.2	29.6	30.4	28.2	27.3	31.3
50–54	68.8	67.3	68.1	67.5	64.9	65.2	56.7	57.7	61.1	55.4	59.9	58.0	57.8	55.8	57.8
55–59	125.3	118.8	121.5	117.0	125.7	116.8	114.1	107.5	108.6	105.8	97.4	92.6	92.8	95.9	94.7
60–64	174.5	178.9	176.9	170.5	175.0	172.2	172.2	167.6	178.6	167.6	172.9	163.2	161.4	157.1	150.7
65–69	228.0	230.3	248.9	246.9	238.1	249.4	244.9	242.4	242.4	247.9	238.9	250.4	244.1	230.2	245.6
70–74	286.2	290.4	294.3	300.5	319.5	301.7	313.4	318.5	330.2	334.6	316.1	315.2	326.0	310.5	313.7
75–79	341.8	352.4	364.6	386.4	359.0	373.4	348.2	378.5	386.9	411.5	383.3	375.4	381.0	385.9	387.8
80–84	419.9	393.6	392.5	402.5	406.8	419.3	404.3	420.7	418.5	441.1	411.9	415.8	434.7	432.1	431.5
85+	433.8	428.6	439.7	420.2	428.9	412.6	419.2	450.8	446.8	460.0	429.5	408.7	415.4	413.9	422.2
All ages															
Crude rate	55.3	55.8	57.6	58.3	59.4	60.1	59.6	61.7	64.0	65.4	63.5	63.3	64.7	64.3	65.7
ASR	62.7	62.4	63.5	63.6	64.0	63.7	62.3	63.5	64.9	65.4	62.7	61.8	62.5	61.5	62.2
95% CI	61.5–64.0	61.2–63.7	62.3–64.8	62.4–64.8	62.8–65.2	62.5–64.9	61.1–63.4	62.4–64.7	63.8–66.1	64.3–66.6	61.6–63.8	60.8–62.9	61.5–63.6	60.4–62.5	61.2–63.3
Age specific															
50	49.0	56.8	53.5	45.8	42.2	47.4	33.8	50.3	47.2	40.4	47.9	41.2	44.1	44.8	43.2
55	106.1	101.0	90.7	86.9	98.0	88.2	96.6	88.5	83.0	90.4	71.7	71.0	74.0	71.2	80.1
65	207.0	206.0	215.4	205.7	191.5	223.2	226.3	199.4	198.5	230.7	204.8	231.7	224.7	192.2	232.8

Note: Rates equal the number of cases of bowel cancer per 100,000 persons. All-age totals were age-standardised to the Australian 2001 population.

Source: AIHW Australian Cancer Database.

Table A.3a: Number of new cases of bowel cancer, by age, states and territories: 2002–2006, males

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0	0	0	0	0	1	0	0	1
5–9	0	0	0	0	0	0	0	0	0
10–14	2	0	0	1	1	0	0	0	4
15–19	9	4	4	0	2	0	0	0	19
20–24	13	5	12	8	4	3	1	0	46
25–29	21	14	13	8	6	2	2	2	68
30–34	54	41	31	11	12	4	2	2	157
35–39	100	83	58	27	24	2	4	2	300
40–44	180	146	123	48	43	15	18	12	585
45–49	338	268	224	104	90	21	18	16	1,079
50–54	678	510	439	219	210	62	42	21	2,181
55–59	1,115	840	675	310	272	70	61	30	3,373
60–64	1,542	1,102	888	384	364	119	62	23	4,484
65–69	1,847	1,372	1,083	448	462	144	80	23	5,459
70–74	1,956	1,535	1,126	479	527	143	68	18	5,852
75–79	1,892	1,594	1,067	433	535	154	52	12	5,739
80–84	1,306	1,078	678	296	348	108	40	7	3,861
85+	772	630	409	204	242	74	17	4	2,352
Not stated	0	0	0	0	0	0	0	0	0
All ages	**11,825**	**9,222**	**6,830**	**2,980**	**3,142**	**922**	**467**	**172**	**35,560**
50	104	89	63	29	41	7	6	3	342
55	169	132	128	45	51	13	7	5	550
65	364	258	225	93	92	23	17	9	1,081

Source: AIHW Australian Cancer Database.

Table A.3b: Number of new cases of bowel cancer, by age, states and territories: 2002–2006, females

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0
10–14	1	1	0	2	2	0	0	0	6
15–19	10	7	6	1	2	1	3	0	30
20–24	14	9	11	6	5	0	0	0	45
25–29	22	19	9	10	8	1	3	1	73
30–34	42	54	40	16	9	1	3	1	166
35–39	98	86	66	24	23	4	3	7	311
40–44	174	171	111	57	36	11	13	7	580
45–49	321	274	209	81	79	36	23	7	1,030
50–54	543	408	325	164	136	48	19	11	1,654
55–59	765	547	470	168	198	51	43	14	2,256
60–64	1,000	678	539	266	206	73	47	19	2,828
65–69	1,211	851	722	260	297	99	37	9	3,486
70–74	1,381	1,055	791	322	399	99	54	6	4,107
75–79	1,544	1,174	891	387	434	142	50	11	4,633
80–84	1,442	1,151	728	332	407	111	41	5	4,217
85+	1,303	1,042	623	305	386	110	31	3	3,803
Not stated	0	0	0	0	0	0	0	0	0
All ages	**9,871**	**7,527**	**5,541**	**2,401**	**2,627**	**787**	**370**	**101**	**29,225**
50	95	58	54	27	17	7	2	1	261
55	125	93	95	28	31	9	11	3	395
65	229	160	135	57	53	19	6	1	660

Source: AIHW Australian Cancer Database.

Table A.3c: Number of new cases of bowel cancer, by age, states and territories: 2002–2006, persons

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0	0	0	0	0	1	0	0	1
5–9	0	0	0	0	0	0	0	0	0
10–14	3	1	0	3	3	0	0	0	10
15–19	19	11	10	1	4	1	3	0	49
20–24	27	14	23	14	9	3	1	0	91
25–29	43	33	22	18	14	3	5	3	141
30–34	96	95	71	27	21	5	5	3	323
35–39	198	169	124	51	47	6	7	9	611
40–44	354	317	234	105	79	26	31	19	1,165
45–49	659	542	433	185	169	57	41	23	2,109
50–54	1,221	918	764	383	346	110	61	32	3,835
55–59	1,880	1,387	1,145	478	470	121	104	44	5,629
60–64	2,542	1,780	1,427	650	570	192	109	42	7,312
65–69	3,058	2,223	1,805	708	759	243	117	32	8,945
70–74	3,337	2,590	1,917	801	926	242	122	24	9,959
75–79	3,436	2,768	1,958	820	969	296	102	23	10,372
80–84	2,748	2,229	1,406	628	755	219	81	12	8,078
85+	2,075	1,672	1,032	509	628	184	48	7	6,155
Not stated	0	0	0	0	0	0	0	0	0
All ages	**21,696**	**16,749**	**12,371**	**5,381**	**5,769**	**1,709**	**837**	**273**	**64,785**
50	199	147	117	56	58	14	8	4	603
55	294	225	223	73	82	22	18	8	945
65	593	418	360	150	145	42	23	10	1,741

Source: AIHW Australian Cancer Database.

Table A.4a: Age-specific and age-standardised incidence rates for bowel cancer, states and territories: 2002–2006, males

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.2	0.0	0.0	0.3	0.4	0.0	0.0	0.0	0.1
15–19	0.8	0.5	0.6	0.0	0.7	0.0	0.0	0.0	0.5
20–24	1.1	0.6	1.7	2.2	1.5	4.0	1.4	0.0	1.3
25–29	1.8	1.6	2.0	2.3	2.4	3.0	3.0	4.5	2.0
30–34	4.3	4.3	4.3	3.0	4.5	5.2	3.1	4.3	4.2
35–39	8.2	9.0	8.3	7.2	8.7	2.5	6.6	4.5	8.1
40–44	14.2	15.6	16.9	12.4	14.8	16.8	29.5	28.2	15.4
45–49	28.6	30.7	32.8	28.4	32.4	23.8	31.3	42.9	30.3
50–54	62.4	63.9	68.1	64.3	80.7	74.4	76.2	61.6	66.0
55–59	112.7	117.0	113.4	103.3	114.2	90.8	127.2	110.3	112.7
60–64	201.9	198.2	195.6	172.9	200.5	194.7	195.1	127.2	195.9
65–69	298.5	303.7	308.9	259.9	309.7	293.9	354.1	223.1	299.2
70–74	375.9	402.8	405.1	349.7	407.7	355.0	391.0	302.8	387.7
75–79	447.4	511.5	488.7	406.4	481.3	480.1	382.9	320.9	470.4
80–84	491.1	556.2	495.7	460.5	492.8	547.6	466.4	438.6	507.1
85+	480.6	525.9	483.2	516.5	555.5	617.8	367.6	396.8	505.0
All ages									
Crude rate	71.0	74.9	70.2	59.6	82.5	77.6	57.6	32.4	71.1
ASR	72.6	77.5	75.9	67.4	77.7	74.7	74.0	60.7	74.5
95% CI	71.3–74.0	76.0–79.2	74.0–77.7	65.0–69.9	75.0–80.5	69.9–79.7	67.2–81.2	49.7–73.0	73.7–75.2
Age specific									
50	46.6	53.8	48.0	41.3	77.0	41.0	53.9	42.5	50.4
55	79.9	85.6	100.8	68.4	99.4	79.1	65.4	79.9	85.5
65	270.6	262.7	288.7	243.8	287.4	213.8	332.7	340.0	270.7

Note: Rates equal the number of cases of bowel cancer per 100,000 males. All-age totals were age-standardised to the Australian 2001 population.

Source: AIHW Australian Cancer Database.

Table A.4b: Age-specific and age-standardised incidence rates for bowel cancer, states and territories: 2002–2006, females

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.1	0.1	0.0	0.6	0.8	0.0	0.0	0.0	0.2
15–19	0.9	0.8	0.9	0.3	0.8	1.2	5.0	0.0	0.9
20–24	1.2	1.0	1.6	1.8	2.0	0.0	0.0	0.0	1.3
25–29	1.9	2.2	1.4	3.0	3.4	1.5	4.6	2.3	2.1
30–34	3.3	5.6	5.5	4.4	3.4	1.2	4.5	2.2	4.4
35–39	8.0	9.1	9.2	6.5	8.4	4.8	4.8	17.0	8.3
40–44	13.6	17.9	14.8	14.8	12.3	11.9	20.3	18.1	15.0
45–49	26.9	30.8	30.0	22.1	27.9	40.0	37.0	20.1	28.5
50–54	49.8	49.9	50.6	49.0	50.9	57.0	32.6	36.5	49.7
55–59	78.5	75.2	81.4	59.2	81.3	66.1	88.7	64.9	76.4
60–64	131.6	121.2	123.2	125.1	110.4	120.5	145.4	140.9	125.0
65–69	188.8	179.1	210.0	150.1	186.9	197.4	154.2	115.9	186.0
70–74	241.9	250.0	273.3	221.7	277.2	227.2	282.9	119.6	250.5
75–79	295.5	303.2	347.0	308.6	312.9	365.0	295.7	316.8	310.9
80–84	360.6	391.7	373.5	354.6	375.5	362.2	320.2	227.5	371.1
85+	369.6	398.9	362.9	354.9	399.6	405.4	302.2	187.7	377.7
All ages									
Crude rate	58.3	59.6	56.6	48.6	67.3	64.4	44.6	20.7	57.6
ASR	50.7	52.0	54.4	47.3	52.5	52.6	50.7	39.1	51.6
95% CI	49.7–51.8	50.9–53.3	53.0–55.9	45.4–49.2	50.5–54.6	48.9–56.4	45.6–56.2	30.7–48.8	51.0–52.2
Age specific									
50	42.2	34.5	40.9	38.6	31.3	40.6	16.8	15.5	38.1
55	59.6	58.9	76.2	44.4	59.1	54.6	99.8	59.1	61.7
65	168.0	158.9	178.9	151.9	157.2	175.0	112.9	51.8	164.2

Note: Rates equal the number of cases of bowel cancer per 100,000 females. All-age totals were age-standardised to the Australian 2001 population.

Source: AIHW Australian Cancer Database.

Table A.4c: Age-specific and age-standardised incidence rates for bowel cancer, states and territories: 2002–2006, persons

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.1	0.1	0.0	0.4	0.6	0.0	0.0	0.0	0.1
15–19	0.8	0.6	0.7	0.1	0.8	0.6	2.4	0.0	0.7
20–24	1.2	0.8	1.7	2.0	1.8	2.0	0.7	0.0	1.3
25–29	1.9	1.9	1.7	2.7	2.9	2.2	3.8	3.4	2.1
30–34	3.8	5.0	4.9	3.7	3.9	3.2	3.8	3.3	4.3
35–39	8.1	9.0	8.7	6.8	8.5	3.7	5.7	10.6	8.2
40–44	13.9	16.8	15.8	13.6	13.5	14.3	24.8	23.4	15.2
45–49	27.8	30.8	31.4	25.2	30.1	32.0	34.3	31.8	29.4
50–54	56.1	56.8	59.3	56.7	65.6	65.7	53.8	49.8	57.9
55–59	95.7	95.9	97.7	81.9	97.6	78.4	107.9	90.2	94.6
60–64	166.9	159.6	160.1	149.5	154.8	157.7	170.1	133.1	160.7
65–69	242.7	239.8	259.9	204.8	246.4	245.1	251.1	177.1	241.8
70–74	305.8	322.5	337.9	283.8	339.0	288.6	334.4	218.9	316.3
75–79	363.4	396.1	412.1	353.5	387.8	417.0	334.5	319.0	382.7
80–84	412.7	457.1	423.9	397.7	421.8	434.8	378.8	316.3	425.7
85+	404.4	438.8	402.6	405.8	448.1	470.4	322.5	268.6	417.9
All ages									
Crude rate	64.6	67.1	63.4	54.1	74.8	70.9	51.0	26.8	64.3
ASR	60.8	63.7	64.5	56.7	64.0	62.5	61.5	50.0	62.2
95% CI	60.0–61.7	62.7–64.7	63.4–65.7	55.1–58.2	62.4–65.7	59.5–65.5	57.4–65.9	43.1–57.5	61.7–62.6
Age specific									
50	44.4	44.0	44.4	39.9	53.9	40.8	34.7	29.6	44.2
55	69.8	72.1	88.7	56.6	79.0	66.9	82.8	70.6	73.6
65	219.0	210.1	234.7	198.2	220.6	194.3	220.7	218.5	217.3

Note: Rates equal the number of cases of bowel cancer per 100,000 persons. All-age totals were age-standardised to the Australian 2001 population.

Source: AIHW Australian Cancer Database.

Table A.5a: Number of new cases of bowel cancer, by age and region: 2002–2006, males

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0	1	0	0	0	1
5–9	0	0	0	0	0	0
10–14	4	0	0	0	0	4
15–19	15	3	1	0	0	19
20–24	30	10	4	1	1	46
25–29	40	13	8	2	4	68
30–34	108	29	12	7	1	157
35–39	216	58	17	5	3	300
40–44	378	124	61	16	5	585
45–49	702	233	112	23	8	1,079
50–54	1,443	446	246	35	12	2,181
55–59	2,190	740	378	48	17	3,373
60–64	2,824	1,083	487	60	26	4,480
65–69	3,357	1,348	631	97	22	5,455
70–74	3,664	1,431	650	83	22	5,849
75–79	3,722	1,361	574	67	12	5,736
80–84	2,575	893	349	31	6	3,854
85+	1,572	541	213	19	7	2,352
Not stated	0	0	0	0	0	0
All ages	**22,839**	**8,314**	**3,744**	**496**	**145**	**35,539**
50	231	67	36	6	2	342
55	348	130	57	10	5	550
65	659	268	123	24	5	1,079

Notes

1. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
2. There were 21 persons with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW Australian Cancer Database.

Table A.5b: Number of new cases of bowel cancer, by age and region: 2002–2006, females

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0	0	0	0	0	0
5–9	0	0	0	0	0	0
10–14	5	0	0	1	0	6
15–19	23	7	0	0	0	30
20–24	37	5	2	0	1	45
25–29	60	8	2	1	1	73
30–34	119	24	20	1	2	166
35–39	218	52	32	6	3	311
40–44	390	120	50	15	5	580
45–49	673	237	104	10	6	1,029
50–54	1,101	347	174	19	13	1,654
55–59	1,511	474	230	28	8	2,252
60–64	1,808	645	323	40	10	2,826
65–69	2,181	889	371	33	10	3,484
70–74	2,668	1,000	387	43	9	4,106
75–79	3,075	1,050	430	57	15	4,627
80–84	2,908	899	368	32	7	4,214
85+	2,615	859	293	27	8	3,801
Not stated	0	0	0	0	0	0
All ages	**19,392**	**6,614**	**2,787**	**312**	**99**	**29,204**
50	176	45	32	2	5	261
55	278	69	42	3	2	394
65	407	169	75	9	0	660

Notes

1. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
2. There were 21 persons with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW Australian Cancer Database.

Table A.5c: Number of new cases of bowel cancer, by age and region: 2002–2006, persons

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0	1	0	0	0	1
5–9	0	0	0	0	0	0
10–14	9	0	0	1	0	10
15–19	38	10	1	0	0	49
20–24	66	15	6	1	2	91
25–29	101	21	11	3	5	141
30–34	227	52	31	9	3	323
35–39	434	110	49	11	7	611
40–44	769	244	112	31	10	1,165
45–49	1,375	470	216	33	14	2,108
50–54	2,544	793	420	53	25	3,835
55–59	3,701	1,214	608	77	26	5,625
60–64	4,632	1,728	809	100	36	7,306
65–69	5,537	2,237	1,003	130	32	8,939
70–74	6,331	2,431	1,037	125	31	9,955
75–79	6,797	2,411	1,004	124	27	10,363
80–84	5,483	1,792	717	64	12	8,068
85+	4,187	1,400	506	46	14	6,153
Not stated	0	0	0	0	0	0
All ages	**42,232**	**14,928**	**6,531**	**808**	**244**	**64,743**
50	407	112	68	9	7	603
55	626	199	100	12	7	944
65	1,066	437	198	33	5	1,739

Notes

1. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
2. There were 42 persons with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW Australian Cancer Database.

Table A.6a: Age-specific and age-standardised incidence rates for bowel cancer, by region: 2002–2006, males

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0.0	0.1	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.2	0.0	0.0	0.0	0.0	0.1
15–19	0.6	0.4	0.2	0.3	0.0	0.5
20–24	1.1	1.6	1.5	2.2	2.8	1.3
25–29	1.6	2.3	2.8	3.6	10.5	2.0
30–34	4.1	4.4	3.4	10.8	3.1	4.2
35–39	8.6	8.5	4.8	7.0	8.8	8.2
40–44	14.9	16.0	15.4	23.6	13.1	15.3
45–49	30.2	30.9	29.4	36.9	24.1	30.3
50–54	67.2	62.6	68.2	60.4	42.6	66.0
55–59	113.0	111.9	114.2	96.5	74.8	112.3
60–64	195.5	203.7	183.0	158.2	155.8	195.0
65–69	295.0	304.8	289.7	350.6	196.0	297.0
70–74	387.8	390.3	376.7	397.3	284.5	386.7
75–79	476.8	463.6	436.2	446.5	228.2	467.9
80–84	513.2	505.1	459.1	394.9	201.5	503.6
85+	505.0	498.5	444.5	362.0	328.8	495.1
All ages						
Crude rate	68.8	80.3	72.4	58.1	30.7	71.0
ASR	74.6	74.7	70.6	70.9	48.2	74.0
95% CI	73.6–75.6	73.1–76.3	68.3–72.9	64.6–77.7	40.0–57.2	73.2–74.8
Age specific						
50	56.0	41.4	45.4	39.9	22.0	50.4
55	89.4	84.4	75.0	65.0	55.0	85.5
65	283.1	264.6	237.2	262.6	114.2	270.2

Notes

1. Rates equal the number of cases of bowel cancer per 100,000 males. All-age totals were age-standardised to the Australian 2001 population.
2. There were 21 persons with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW Australian Cancer Database.

Table A.6b: Age-specific and age-standardised incidence rates for bowel cancer, by region: 2002–2006, females

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.2	0.0	0.1	0.9	0.0	0.2
15–19	1.0	0.9	0.1	0.4	0.1	0.9
20–24	1.5	0.9	0.7	0.2	3.2	1.3
25–29	2.4	1.5	0.8	2.4	1.6	2.1
30–34	4.5	3.5	5.7	2.1	5.6	4.4
35–39	8.6	7.1	9.0	9.9	10.0	8.4
40–44	15.2	14.9	13.1	24.2	16.7	15.1
45–49	28.0	30.9	28.8	17.5	23.7	28.5
50–54	49.6	49.0	52.2	38.5	59.5	49.7
55–59	77.8	72.6	75.5	69.8	47.4	76.1
60–64	125.1	122.4	131.9	132.6	82.8	125.1
65–69	181.1	199.2	184.9	144.0	117.5	185.0
70–74	249.9	259.5	232.1	235.4	141.6	249.8
75–79	309.4	308.3	299.7	411.2	307.7	309.2
80–84	377.7	356.1	351.4	321.8	203.4	369.5
85+	379.2	385.1	310.7	292.3	278.4	373.1
All ages						
Crude rate	57.1	63.0	56.0	41.0	23.8	57.7
ASR	51.6	51.7	49.6	49.3	38.7	51.4
95% CI	50.9–52.4	50.4–52.9	47.8–51.5	44.0–55.2	31.1–47.4	50.8–52.0
Age specific						
50	41.2	27.8	43.7	18.2	61.5	38.1
55	69.7	45.4	60.1	21.9	31.8	61.5
65	168.5	166.5	156.4	112.0	13.2	164.2

Notes

1. Rates equal the number of cases of bowel cancer per 100,000 females. All-age totals were age-standardised to the Australian 2001 population.
2. There were 21 persons with postcodes that do not correspond with ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW Australian Cancer Database.

Table A.6c: Age-specific and age-standardised incidence rates for bowel cancer, by region: 2002–2006, persons

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0.0	0.1	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.2	0.0	0.1	0.4	0.0	0.1
15–19	0.8	0.6	0.2	0.3	0.0	0.7
20–24	1.3	1.3	1.1	1.3	3.0	1.3
25–29	2.0	1.9	1.8	3.0	6.3	2.1
30–34	4.3	3.9	4.5	6.6	4.3	4.3
35–39	8.6	7.8	6.9	8.4	9.4	8.3
40–44	15.1	15.4	14.2	23.9	14.7	15.2
45–49	29.1	30.9	29.1	27.9	24.0	29.4
50–54	58.3	55.8	60.5	50.5	50.2	57.8
55–59	95.4	92.4	95.6	84.5	62.9	94.4
60–64	160.3	163.2	158.5	146.8	124.6	160.3
65–69	236.4	251.8	239.4	257.2	161.5	240.3
70–74	314.7	323.3	305.7	322.2	218.3	315.4
75–79	383.1	380.2	365.0	429.5	266.1	380.6
80–84	431.2	417.5	396.7	354.2	202.5	423.4
85+	418.3	422.2	355.8	318.0	300.0	411.9
All ages						
Crude rate	62.9	71.6	64.4	50.0	27.5	64.3
ASR	62.1	62.5	59.8	60.8	43.9	61.9
95% CI	61.5–62.7	61.5–63.5	58.4–61.3	56.6–65.2	38.2–50.1	61.4–62.3
Age specific						
50	48.4	34.6	44.6	29.6	39.5	44.2
55	79.4	65.1	67.8	45.2	45.0	73.5
65	224.7	215.5	198.5	193.5	71.7	217.0

Notes

1. Rates equal the number of cases of bowel cancer per 100,000 persons. All-age totals were age-standardised to the Australian 2001 population.
2. There were 42 persons with postcodes that do not correspond with ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW Australian Cancer Database.

Bowel cancer mortality

Table A.7a: Number of deaths from bowel cancer, Australia: 1992–2006, males

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
10–14	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
15–19	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
20–24	0	0	3	1	1	2	1	3	1	1	2	1	1	2	0
25–29	2	3	2	1	3	4	4	4	2	2	3	0	5	4	1
30–34	7	7	6	6	5	5	12	4	10	5	10	6	9	6	9
35–39	10	15	14	11	13	13	18	11	21	19	10	6	11	15	14
40–44	34	33	44	31	29	31	37	19	33	19	17	31	27	21	29
45–49	60	77	69	77	62	76	68	47	61	70	58	65	50	55	57
50–54	137	115	127	118	119	126	105	114	126	111	106	101	99	122	97
55–59	195	192	238	185	196	204	213	205	195	196	193	200	176	157	185
60–64	284	288	306	283	286	297	276	271	304	287	239	264	216	257	232
65–69	369	393	424	388	422	378	365	351	357	337	321	317	291	311	290
70–74	373	362	430	446	478	470	452	494	446	460	412	386	359	358	300
75–79	355	374	346	345	338	413	366	403	424	454	455	432	411	417	332
80–84	260	252	282	289	289	273	322	272	312	333	297	311	303	323	284
85+	198	211	188	219	212	233	225	265	251	275	263	262	238	274	296
Not stated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All ages	**2,284**	**2,322**	**2,480**	**2,400**	**2,453**	**2,526**	**2,465**	**2,463**	**2,543**	**2,570**	**2,386**	**2,382**	**2,197**	**2,322**	**2,126**
50	17	19	25	17	28	22	26	16	22	25	17	13	15	16	18
55	27	41	31	33	28	34	41	31	28	36	40	34	29	26	24
65	66	65	73	72	64	63	70	56	70	59	65	62	58	69	53

Source: AIHW National Mortality Database.

Table A.7b: Number of deaths from bowel cancer, Australia: 1992–2006, females

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10–14	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
15–19	0	1	0	0	0	0	2	0	0	0	2	0	0	0	2
20–24	0	3	0	2	1	2	0	1	3	1	2	1	1	1	1
25–29	4	1	4	1	4	3	1	0	1	3	4	2	4	3	1
30–34	5	5	7	7	10	6	7	9	9	10	7	11	4	4	5
35–39	15	17	12	16	11	14	13	20	13	21	16	15	10	14	12
40–44	36	29	28	35	29	23	33	32	19	29	24	34	35	23	19
45–49	64	56	56	48	63	52	70	52	58	45	57	55	49	43	44
50–54	91	83	78	90	94	96	91	80	76	101	79	85	80	76	62
55–59	124	142	149	135	136	148	125	132	138	125	112	103	113	91	79
60–64	174	175	197	175	173	184	177	158	175	146	166	149	122	131	109
65–69	233	245	262	250	227	237	244	198	203	211	225	183	177	170	178
70–74	304	318	328	316	319	320	323	296	286	296	295	252	235	225	196
75–79	290	317	298	322	307	307	364	336	359	325	344	314	303	297	260
80–84	287	303	303	310	330	314	271	327	307	347	347	337	299	317	315
85+	322	381	385	361	402	397	413	423	469	457	471	449	441	447	392
Not stated	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
All ages	**1,949**	**2,076**	**2,107**	**2,068**	**2,106**	**2,104**	**2,134**	**2,064**	**2,116**	**2,117**	**2,152**	**1,990**	**1,873**	**1,843**	**1,675**
50	13	12	7	17	18	18	18	12	16	16	15	20	15	15	7
55	21	17	31	22	19	23	24	18	22	17	19	16	17	23	9
65	44	38	42	36	40	37	36	30	36	29	41	39	36	33	32

Source: AIHW National Mortality Database.

Table A.7c: Number of deaths from bowel cancer, Australia: 1992–2006, persons

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
10–14	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0
15–19	0	1	0	0	0	0	2	0	0	1	2	0	1	0	2
20–24	0	3	3	3	2	4	1	4	4	2	4	2	2	3	1
25–29	6	4	6	2	7	7	5	4	3	5	7	2	9	7	2
30–34	12	12	13	13	15	11	19	13	19	15	17	17	13	10	14
35–39	25	32	26	27	24	27	31	31	34	40	26	21	21	29	26
40–44	70	62	72	66	58	54	70	51	52	48	41	65	62	44	48
45–49	124	133	125	125	125	128	138	99	119	115	115	120	99	98	101
50–54	228	198	205	208	213	222	196	194	202	212	185	186	179	198	159
55–59	319	334	387	320	332	352	338	337	333	321	305	303	289	248	264
60–64	458	463	503	458	459	481	453	429	479	433	405	413	338	388	341
65–69	602	638	686	638	649	615	609	549	560	548	546	500	468	481	468
70–74	677	680	758	762	797	790	775	790	732	756	707	638	594	583	496
75–79	645	691	644	667	645	720	730	739	783	779	799	746	714	714	592
80–84	547	555	585	599	619	587	593	599	619	680	644	648	602	640	599
85+	520	592	573	580	614	630	638	688	720	732	734	711	679	721	688
Not stated	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
All ages	**4,233**	**4,398**	**4,587**	**4,468**	**4,559**	**4,630**	**4,599**	**4,527**	**4,659**	**4,687**	**4,538**	**4,372**	**4,070**	**4,165**	**3,801**
50	30	31	32	34	46	40	44	28	38	41	32	33	30	31	25
55	48	58	62	55	47	57	65	49	50	53	59	50	46	49	33
65	110	103	115	108	104	100	106	86	106	88	106	101	94	102	85

Source: AIHW National Mortality Database.

Table A.8a: Age-specific and age-standardised mortality rates for bowel cancer, Australia: 1992–2006, males

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
20–24	0.0	0.0	0.4	0.1	0.1	0.3	0.1	0.5	0.2	0.2	0.3	0.1	0.1	0.3	0.0
25–29	0.3	0.4	0.3	0.1	0.4	0.6	0.5	0.5	0.3	0.3	0.4	0.0	0.7	0.6	0.1
30–34	1.0	1.0	0.8	0.8	0.7	0.7	1.7	0.6	1.4	0.7	1.3	0.8	1.2	0.8	1.2
35–39	1.5	2.2	2.0	1.5	1.8	1.8	2.4	1.5	2.8	2.6	1.4	0.8	1.5	2.0	1.8
40–44	5.2	5.1	6.7	4.7	4.3	4.5	5.3	2.7	4.6	2.6	2.3	4.1	3.5	2.7	3.8
45–49	10.7	12.9	11.2	12.1	9.5	11.7	10.4	7.1	9.1	10.4	8.5	9.3	7.0	7.6	7.7
50–54	30.7	25.2	26.7	23.8	23.0	22.6	17.7	18.6	19.9	17.0	16.3	15.5	15.0	18.3	14.3
55–59	52.1	50.1	60.4	45.5	46.7	46.9	47.4	43.7	39.8	38.2	35.1	34.3	29.2	25.3	29.1
60–64	78.3	80.4	86.1	80.1	80.8	82.1	74.2	70.4	75.8	69.3	56.1	60.3	47.5	54.2	46.8
65–69	113.5	119.1	127.5	115.8	125.1	112.0	108.8	105.2	107.5	100.4	93.3	89.7	79.9	82.6	75.1
70–74	155.9	144.5	163.0	165.2	173.1	166.7	156.8	167.7	148.9	151.5	135.7	128.0	119.5	119.3	98.8
75–79	219.0	229.0	211.9	203.5	188.2	217.3	182.3	189.9	193.1	199.7	195.3	180.4	167.6	167.0	131.4
80–84	294.2	270.4	286.2	281.7	273.0	251.1	290.7	241.5	262.3	259.6	217.2	214.3	197.4	202.1	170.9
85+	418.2	419.1	352.8	385.8	351.6	364.6	329.8	364.0	323.8	335.7	308.2	297.9	262.6	281.1	283.6
All ages															
Crude rate	26.2	26.4	27.9	26.7	26.9	27.4	26.5	26.2	26.8	26.7	24.5	24.1	22.0	22.9	20.7
ASR	35.1	34.6	35.3	33.8	33.2	33.3	31.6	30.8	30.7	30.1	27.2	26.4	23.7	24.4	21.7
95% CI	33.6–36.7	33.2–36.2	33.9–36.8	32.4–35.2	31.8–34.6	32.0–34.7	30.3–32.9	29.6–32.1	29.5–31.9	29.0–31.3	26.1–28.3	25.3–27.5	22.7–24.8	23.4–25.4	20.8–22.7
Age specific															
50	17.8	19.9	23.6	15.5	24.9	16.4	19.9	12.5	16.9	19.0	12.9	9.7	11.2	11.7	12.7
55	33.6	49.7	36.6	37.8	31.1	36.3	42.9	29.6	25.7	31.9	30.2	26.4	23.0	20.3	18.7
65	94.4	92.5	103.8	103.3	89.3	92.3	104.0	82.1	102.7	79.7	85.3	80.2	72.5	84.0	63.3

Note: Rates equal the number of deaths from bowel cancer per 100,000 males. All-age totals were age-standardised to the Australian 2001 population.

Source: AIHW National Mortality Database.

Table A.8b: Age-specific and age-standardised mortality rates for bowel cancer, Australia: 1992–2006, females

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
20–24	0.0	0.4	0.0	0.3	0.1	0.3	0.0	0.2	0.5	0.2	0.3	0.1	0.1	0.1	0.1
25–29	0.6	0.1	0.6	0.1	0.6	0.4	0.1	0.0	0.1	0.4	0.6	0.3	0.6	0.4	0.1
30–34	0.7	0.7	1.0	1.0	1.4	0.8	1.0	1.3	1.3	1.4	0.9	1.4	0.5	0.5	0.7
35–39	2.2	2.5	1.7	2.2	1.5	1.9	1.7	2.6	1.7	2.8	2.2	2.0	1.4	1.9	1.6
40–44	5.6	4.5	4.3	5.2	4.3	3.3	4.7	4.5	2.6	3.9	3.2	4.4	4.5	3.0	2.5
45–49	11.9	9.8	9.4	7.8	9.8	8.1	10.7	7.8	8.6	6.6	8.2	7.8	6.8	5.8	5.8
50–54	21.5	19.1	17.2	18.9	18.9	17.9	15.9	13.4	12.2	15.6	12.2	13.0	12.1	11.3	9.1
55–59	33.8	37.8	38.6	34.1	33.4	35.1	28.8	29.2	29.1	25.2	20.9	18.0	19.0	14.8	12.4
60–64	47.6	48.7	55.2	49.0	48.5	50.6	47.5	41.1	44.1	35.8	39.6	34.6	27.2	27.8	22.1
65–69	66.0	68.9	73.9	70.6	64.0	67.3	69.9	57.2	58.8	60.8	63.4	50.3	47.2	44.1	45.0
70–74	103.9	104.8	103.4	97.8	97.5	97.4	97.6	88.8	85.7	88.4	88.8	76.7	72.1	69.2	59.9
75–79	126.6	137.8	130.8	138.0	125.9	119.7	135.4	119.6	124.8	111.3	116.9	105.7	101.3	99.2	86.7
80–84	189.5	191.4	181.3	179.8	186.9	174.6	148.9	178.6	161.6	172.0	164.5	152.9	130.3	134.4	131.5
85+	278.5	312.7	301.9	268.7	283.9	265.8	263.5	254.7	267.8	249.3	248.7	231.5	222.5	215.3	180.0
All ages															
Crude rate	22.2	23.4	23.5	22.8	22.9	22.6	22.7	21.7	21.9	21.6	21.7	19.9	18.5	18.0	16.1
ASR	22.9	23.7	23.4	22.5	22.2	21.6	21.3	20.0	19.9	19.3	19.2	17.3	16.0	15.3	13.6
95% CI	21.9–23.9	22.7–24.8	22.4–24.5	21.5–23.4	21.3–23.2	20.7–22.6	20.4–22.3	19.1–20.9	19.1–20.8	18.5–20.2	18.4–20.0	16.6–18.1	15.2–16.7	14.6–16.0	12.9–14.2
Age specific															
50	14.4	13.2	6.9	16.0	16.7	13.9	14.2	9.5	12.3	12.0	11.4	14.8	11.0	10.8	4.9
55	26.9	21.3	38.0	26.5	22.0	25.6	26.1	17.8	20.9	15.5	14.6	12.7	13.5	17.8	6.9
65	61.0	52.1	58.5	50.5	54.0	53.8	52.0	43.4	51.2	38.4	53.5	49.9	44.6	40.1	38.0

Note: Rates equal the number of deaths from bowel cancer per 100,000 females. All-age totals were age-standardised to the Australian 2001 population.

Source: AIHW National Mortality Database.

Table A.8c: Age-specific and age-standardised mortality rates for bowel cancer, Australia: 1992–2006, persons

Age group	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1
20–24	0.0	0.2	0.2	0.2	0.1	0.3	0.1	0.3	0.3	0.2	0.3	0.1	0.1	0.2	0.1
25–29	0.4	0.3	0.4	0.1	0.5	0.5	0.3	0.3	0.2	0.4	0.5	0.1	0.7	0.5	0.1
30–34	0.8	0.8	0.9	0.9	1.0	0.8	1.3	0.9	1.3	1.0	1.1	1.1	0.9	0.7	0.9
35–39	1.8	2.3	1.9	1.9	1.6	1.8	2.1	2.1	2.3	2.7	1.8	1.4	1.4	2.0	1.7
40–44	5.4	4.8	5.5	5.0	4.3	3.9	5.0	3.6	3.6	3.2	2.7	4.2	4.0	2.9	3.1
45–49	11.3	11.4	10.3	10.0	9.7	9.9	10.5	7.5	8.9	8.5	8.3	8.5	6.9	6.7	6.8
50–54	26.2	22.2	22.1	21.4	21.0	20.3	16.8	16.0	16.1	16.3	14.3	14.2	13.5	14.8	11.7
55–59	43.1	44.0	49.6	39.9	40.1	41.1	38.3	36.6	34.6	31.8	28.1	26.3	24.1	20.0	20.8
60–64	62.9	64.5	70.6	64.5	64.6	66.3	60.8	55.8	60.1	52.7	47.9	47.6	37.4	41.1	34.5
65–69	88.8	93.1	99.9	92.5	93.8	89.2	89.0	80.7	82.7	80.3	78.1	69.7	63.3	63.1	59.9
70–74	127.3	122.7	130.4	128.5	132.1	129.4	125.1	125.8	115.6	118.4	111.2	101.2	94.8	93.3	78.6
75–79	164.9	175.7	164.7	165.5	152.3	161.3	155.5	149.9	154.3	150.0	151.5	139.0	131.2	130.0	107.1
80–84	228.1	220.7	220.2	217.8	219.1	203.4	202.5	202.6	200.3	206.0	185.2	177.3	157.2	161.7	147.6
85+	319.1	343.8	316.9	303.5	304.1	295.4	283.6	288.0	285.0	276.0	267.2	252.3	235.1	236.3	213.6
All ages															
Crude rate	24.2	24.9	25.7	24.7	24.9	25.0	24.6	23.9	24.3	24.1	23.1	22.0	20.2	20.4	18.4
ASR	28.1	28.4	28.7	27.3	27.1	26.8	25.8	24.8	24.8	24.1	22.8	21.4	19.5	19.4	17.2
95% CI	27.2–28.9	27.6–29.3	27.9–29.6	26.5–28.1	26.3–27.9	26.0–27.5	25.1–26.6	24.0–25.5	24.1–25.5	23.5–24.8	22.1–23.4	20.8–22.1	18.9–20.1	18.9–20.1	16.7–17.8
Age specific															
50	16.1	16.6	15.4	15.7	20.9	15.2	17.1	11.0	14.6	15.5	12.2	12.2	11.1	11.2	8.8
55	30.3	35.7	37.3	32.3	26.6	31.0	34.7	23.8	23.3	23.8	22.5	19.6	18.3	19.1	12.8
65	77.5	71.9	80.9	76.6	71.4	72.9	77.6	62.6	76.5	58.9	69.3	65.0	58.5	62.0	50.6

Note: Rates equal the number of deaths from bowel cancer per 100,000 persons. All-age totals were age-standardised to the Australian 2001 population.

Source: AIHW National Mortality Database.

Table A.9a: Number of deaths from bowel cancer, by age, states and territories: 2002–2006, males

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0
10–14	0	0	0	0	0	0	0	0	0
15–19	1	0	0	0	0	0	0	0	1
20–24	2	1	2	1	0	0	0	0	6
25–29	3	6	2	1	0	1	0	0	13
30–34	9	8	8	5	6	1	2	1	40
35–39	21	11	13	3	6	0	0	2	56
40–44	34	37	24	12	9	5	3	1	125
45–49	78	74	51	36	23	11	8	4	285
50–54	141	139	83	59	63	15	15	10	525
55–59	277	244	192	69	82	20	17	10	911
60–64	374	291	252	123	92	47	23	6	1,208
65–69	505	383	300	129	149	42	13	9	1,530
70–74	610	515	351	144	117	56	19	3	1,815
75–79	643	619	350	159	183	64	25	4	2,047
80–84	468	443	288	148	118	35	15	3	1,518
85+	416	403	233	114	116	42	7	2	1,333
Not stated	0	0	0	0	0	0	0	0	0
All ages	**3,582**	**3,174**	**2,149**	**1,003**	**964**	**339**	**147**	**55**	**11,413**
50	25	20	9	9	8	5	0	3	79
55	47	32	40	14	16	2	2	0	153
65	102	66	65	28	38	5	2	1	307

Note: State and territory refers to the state or territory of usual residence.

Source: AIHW National Mortality Database.

Table A.9b: Number of deaths from bowel cancer, by age, states and territories: 2002–2006, females

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0
10–14	0	0	0	0	0	0	0	0	0
15–19	1	0	1	0	0	1	1	0	4
20–24	1	3	1	1	0	0	0	0	6
25–29	4	4	2	2	1	1	0	0	14
30–34	4	14	4	2	3	3	0	1	31
35–39	24	19	11	6	5	2	0	0	67
40–44	44	35	20	16	10	5	2	3	135
45–49	71	65	46	28	28	4	5	1	248
50–54	126	102	77	30	29	10	5	3	382
55–59	161	119	107	37	47	21	5	1	498
60–64	234	170	117	49	62	27	13	5	677
65–69	310	259	189	75	61	23	10	6	933
70–74	366	348	251	98	89	28	20	3	1,203
75–79	472	423	274	131	141	53	20	4	1,518
80–84	496	485	273	140	157	45	17	2	1,615
85+	673	624	377	193	217	88	26	2	2,200
Not stated	0	0	0	1	0	1	0	0	2
All ages	**2,987**	**2,670**	**1,750**	**809**	**850**	**312**	**124**	**31**	**9,533**
50	27	13	15	9	6	1	0	1	72
55	28	22	14	6	12	2	0	0	84
65	59	50	38	17	13	1	1	2	181

Note: State and territory refers to the state or territory of usual residence.

Source: AIHW National Mortality Database.

Table A.9c: Number of deaths from bowel cancer, by age, states and territories: 2002–2006, persons

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0
10–14	0	0	0	0	0	0	0	0	0
15–19	2	0	1	0	0	1	1	0	5
20–24	3	4	3	2	0	0	0	0	12
25–29	7	10	4	3	1	2	0	0	27
30–34	13	22	12	7	9	4	2	2	71
35–39	45	30	24	9	11	2	0	2	123
40–44	78	72	44	28	19	10	5	4	260
45–49	149	139	97	64	51	15	13	5	533
50–54	267	241	160	89	92	25	20	13	907
55–59	438	363	299	106	129	41	22	11	1,409
60–64	608	461	369	172	154	74	36	11	1,885
65–69	815	642	489	204	210	65	23	15	2,463
70–74	976	863	602	242	206	84	39	6	3,018
75–79	1,115	1,042	624	290	324	117	45	8	3,565
80–84	964	928	561	288	275	80	32	5	3,133
85+	1,089	1,027	610	307	333	130	33	4	3,533
Not stated	0	0	0	1	0	1	0	0	2
All ages	**6,569**	**5,844**	**3,899**	**1,812**	**1,814**	**651**	**271**	**86**	**20,946**
50	52	33	24	18	14	6	0	4	151
55	75	54	54	20	28	4	2	0	237
65	161	116	103	45	51	6	3	3	488

Note: State and territory refers to the state or territory of usual residence.

Source: AIHW National Mortality Database.

Table A.10a: Age-specific and age-standardised mortality rates for bowel cancer, states and territories: 2002–2006, males

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20–24	0.2	0.1	0.3	0.3	0.0	0.0	0.0	0.0	0.2
25–29	0.3	0.7	0.3	0.3	0.0	1.5	0.0	0.0	0.4
30–34	0.7	0.8	1.1	1.3	2.2	1.3	3.1	2.1	1.1
35–39	1.7	1.2	1.9	0.8	2.2	0.0	0.0	4.5	1.5
40–44	2.7	4.0	3.3	3.1	3.1	5.6	4.9	2.4	3.3
45–49	6.6	8.5	7.5	9.8	8.3	12.5	13.9	10.7	8.0
50–54	13.0	17.4	12.9	17.3	24.2	18.0	27.2	29.3	15.9
55–59	28.0	34.0	32.3	23.0	34.4	25.9	35.5	36.8	30.4
60–64	49.0	52.3	55.5	55.4	50.7	76.9	72.4	33.2	52.8
65–69	81.6	84.8	85.6	74.8	99.9	85.7	57.5	87.3	83.9
70–74	117.2	135.1	126.3	105.1	90.5	139.0	109.2	50.5	120.3
75–79	152.0	198.6	160.3	149.2	164.6	199.5	184.1	107.0	167.8
80–84	176.0	228.6	210.6	230.2	167.1	177.5	174.9	188.0	199.4
85+	259.0	336.4	275.3	288.6	266.3	350.6	151.4	198.4	286.2
All ages									
Crude rate	21.5	25.8	22.1	20.1	25.3	28.5	18.1	10.4	22.8
ASR	22.6	27.5	24.7	23.8	24.1	28.0	23.9	20.2	24.6
95% CI	21.9–23.4	26.5–28.5	23.7–25.8	22.3–25.3	22.6–25.7	25.1–31.2	20.0–28.2	13.8–28.1	24.2–25.1
Age specific									
50	11.2	12.1	6.9	12.8	15.0	29.3	0.0	42.5	11.6
55	22.2	20.8	31.5	21.3	31.2	12.2	18.7	0.0	23.8
65	75.8	67.2	83.4	73.4	118.7	46.5	39.1	37.8	76.9

Notes

1. Rates equal the number of deaths from bowel cancer per 100,000 males. All-age totals were age-standardised to the Australian 2001 population.
2. State and territory refers to the state or territory of usual residence.

Source: AIHW National Mortality Database.

Table A.10b: Age-specific and age-standardised mortality rates for bowel cancer, states and territories: 2002–2006, females

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.1	0.0	0.1	0.0	0.0	1.2	1.7	0.0	0.1
20–24	0.1	0.3	0.1	0.3	0.0	0.0	0.0	0.0	0.2
25–29	0.3	0.5	0.3	0.6	0.4	1.5	0.0	0.0	0.4
30–34	0.3	1.4	0.5	0.5	1.1	3.7	0.0	2.2	0.8
35–39	2.0	2.0	1.5	1.6	1.8	2.4	0.0	0.0	1.8
40–44	3.4	3.7	2.7	4.1	3.4	5.4	3.1	7.8	3.5
45–49	5.9	7.3	6.6	7.6	9.9	4.4	8.0	2.9	6.9
50–54	11.6	12.5	12.0	9.0	10.9	11.9	8.6	10.0	11.5
55–59	16.5	16.4	18.5	13.0	19.3	27.2	10.3	4.6	16.9
60–64	30.8	30.4	26.7	23.1	33.2	44.6	40.2	37.1	29.9
65–69	48.3	54.5	55.0	43.3	38.4	45.9	41.7	77.3	49.8
70–74	64.1	82.5	86.7	67.5	61.8	64.3	104.8	59.8	73.4
75–79	90.3	109.2	106.7	104.5	101.7	136.2	118.3	115.2	101.9
80–84	124.0	165.0	140.0	149.5	144.8	146.9	132.8	91.0	142.1
85+	190.9	238.9	219.6	224.6	224.6	324.3	253.5	125.2	218.5
All ages									
Crude rate	17.6	21.1	17.9	16.4	21.8	25.5	14.9	6.4	18.8
ASR	14.8	17.7	16.8	15.5	16.0	19.8	17.5	14.5	16.2
95% CI	14.2–15.3	17.0–18.4	16.0–17.6	14.4–16.6	14.9–17.1	17.6–22.1	14.6–20.9	9.3–21.2	15.9–16.5
Age specific									
50	12.0	7.7	11.4	12.9	11.0	5.8	0.0	15.5	10.5
55	13.4	13.9	11.2	9.5	22.9	12.1	0.0	0.0	13.1
65	43.3	49.6	50.4	45.3	38.6	9.2	18.8	103.7	45.0

Notes

1. Rates equal the number of deaths from bowel cancer per 100,000 females. All-age totals were age-standardised to the Australian 2001 population.
2. State and territory refers to the state or territory of usual residence.

Source: AIHW National Mortality Database.

Table A.10c: Age-specific and age-standardised mortality rates for bowel cancer, states and territories: 2002–2006, persons

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.1	0.0	0.1	0.0	0.0	0.6	0.8	0.0	0.1
20–24	0.1	0.2	0.2	0.3	0.0	0.0	0.0	0.0	0.2
25–29	0.3	0.6	0.3	0.4	0.2	1.5	0.0	0.0	0.4
30–34	0.5	1.1	0.8	0.9	1.7	2.5	1.5	2.2	0.9
35–39	1.8	1.6	1.7	1.2	2.0	1.2	0.0	2.3	1.7
40–44	3.1	3.8	3.0	3.6	3.2	5.5	4.0	4.9	3.4
45–49	6.3	7.9	7.0	8.7	9.1	8.4	10.9	6.9	7.4
50–54	12.3	14.9	12.4	13.2	17.4	14.9	17.6	20.2	13.7
55–59	22.3	25.1	25.5	18.2	26.8	26.6	22.8	22.6	23.7
60–64	39.9	41.3	41.4	39.6	41.8	60.8	56.2	34.8	41.4
65–69	64.7	69.3	70.4	59.0	68.2	65.6	49.4	83.0	66.6
70–74	89.4	107.5	106.1	85.7	75.4	100.2	106.9	54.7	95.9
75–79	117.9	149.1	131.3	125.0	129.7	164.8	147.6	110.9	131.5
80–84	144.8	190.3	169.1	182.4	153.6	158.8	149.7	131.8	165.1
85+	212.2	269.6	238.0	244.7	237.6	332.4	221.7	153.5	239.9
All ages									
Crude rate	19.6	23.4	20.0	18.2	23.5	27.0	16.5	8.4	20.8
ASR	18.3	22.0	20.5	19.3	19.7	23.6	20.8	17.2	20.0
95% CI	17.9–18.7	21.5–22.6	19.8–21.1	18.4–20.2	18.8–20.6	21.9–25.5	18.3–23.4	13.1–22.1	19.7–20.3
Age specific									
50	11.6	9.9	9.1	12.8	13.0	17.5	0.0	29.6	11.1
55	17.8	17.3	21.5	15.5	27.0	12.2	9.2	0.0	18.5
65	59.4	58.3	67.1	59.5	77.6	27.8	28.8	65.6	60.9

Notes

1. Rates equal the number of deaths from bowel cancer per 100,000 persons. All-age totals were age-standardised to the Australian 2001 population.
2. State and territory refers to the state or territory of usual residence.

Source: AIHW National Mortality Database.

Table A.11a: Number of deaths from bowel cancer, by age and region: 2002–2006, males

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0	0	0	0	0	0
5–9	0	0	0	0	0	0
10–14	0	0	0	0	0	0
15–19	1	0	0	0	0	1
20–24	3	3	0	0	0	6
25–29	6	6	1	0	0	13
30–34	33	5	1	0	1	40
35–39	33	14	7	0	1	56
40–44	74	22	23	5	0	125
45–49	168	74	34	6	1	283
50–54	340	102	75	8	1	525
55–59	570	215	115	6	5	910
60–64	720	304	161	14	6	1,205
65–69	908	392	195	29	5	1,529
70–74	1,108	495	189	16	3	1,812
75–79	1,293	485	234	30	5	2,047
80–84	977	383	147	8	3	1,518
85+	834	327	159	8	3	1,332
Not stated	0	0	0	0	0	0
All ages	**7,069**	**2,827**	**1,341**	**130**	**35**	**11,402**
50	46	23	9	1	0	79
55	101	35	16	0	1	153
65	197	73	33	3	0	307

Notes

1. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
2. There were 11 persons with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW National Mortality Database.

Table A.11b: Number of deaths from bowel cancer, by age and region: 2002–2006, females

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0	0	0	0	0	0
5–9	0	0	0	0	0	0
10–14	0	0	0	0	0	0
15–19	2	2	0	0	0	4
20–24	3	2	0	0	1	6
25–29	12	1	1	0	0	14
30–34	15	8	8	0	0	31
35–39	48	13	4	1	0	67
40–44	93	20	16	5	1	135
45–49	169	47	28	2	2	248
50–54	244	90	38	9	1	382
55–59	322	119	51	4	0	497
60–64	411	172	86	7	1	677
65–69	585	221	108	12	4	931
70–74	751	306	130	11	2	1,199
75–79	958	391	154	14	1	1,517
80–84	1,088	352	156	11	6	1,614
85+	1,437	544	197	14	4	2,196
Not stated	0	0	0	0	1	1
All ages	**6,137**	**2,289**	**977**	**90**	**26**	**9,519**
50	50	14	6	1	1	72
55	57	19	7	0	0	83
65	119	39	20	2	0	180

Notes

1. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
2. There were 14 persons with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW National Mortality Database.

Table A.11c: Number of deaths from bowel cancer, by age and region: 2002–2006, persons

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0	0	0	0	0	0
5–9	0	0	0	0	0	0
10–14	0	0	0	0	0	0
15–19	3	2	0	0	0	5
20–24	6	5	0	0	1	12
25–29	18	8	2	0	0	27
30–34	48	13	9	0	1	71
35–39	82	28	12	1	1	123
40–44	167	42	39	10	1	260
45–49	337	121	62	8	3	531
50–54	583	191	113	17	2	907
55–59	892	334	165	10	5	1,407
60–64	1,131	475	247	21	8	1,882
65–69	1,494	614	303	41	9	2,460
70–74	1,859	801	319	27	5	3,011
75–79	2,251	875	388	43	6	3,564
80–84	2,065	735	303	19	10	3,132
85+	2,271	872	355	22	8	3,528
Not stated	0	0	0	0	1	1
All ages	**13,206**	**5,116**	**2,319**	**220**	**61**	**20,921**
50	95	37	15	2	1	151
55	158	54	22	1	1	236
65	316	113	54	5	0	487

Notes

1. Because some postcodes cross regional boundaries, totals may not add up due to rounding.
2. There were 25 persons with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW National Mortality Database.

Table A.12a: Age-specific and age-standardised mortality rates for bowel cancer, by region: 2002–2006, males

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0	0.0	0.0
20–24	0.1	0.5	0.1	0.0	0.0	0.2
25–29	0.2	1.2	0.2	0.0	0.0	0.4
30–34	1.2	0.8	0.3	0.0	2.5	1.1
35–39	1.3	2.0	2.1	0.0	2.7	1.5
40–44	2.9	2.9	5.9	7.1	0.6	3.3
45–49	7.2	9.8	8.9	10.1	3.2	7.9
50–54	15.8	14.3	20.8	13.5	4.2	15.9
55–59	29.4	32.5	34.7	11.9	20.6	30.3
60–64	49.8	57.1	60.6	36.7	38.2	52.5
65–69	79.8	88.7	89.4	104.1	41.0	83.2
70–74	117.3	135.0	109.6	77.3	45.8	119.8
75–79	165.7	165.1	178.1	197.2	96.2	167.0
80–84	194.7	216.6	193.2	97.2	116.4	198.3
85+	268.1	301.5	330.7	157.0	169.3	280.4
All ages						
Crude rate	21.3	27.3	26.0	15.2	7.5	22.8
ASR	23.7	26.1	26.3	19.6	13.4	24.4
95% CI	23.2–24.3	25.1–27.1	24.9–27.8	16.2–23.4	8.9–18.9	24.0–24.9
Age specific						
50	11.0	14.0	11.8	9.4	0.3	11.6
55	25.9	22.8	20.4	1.2	11.9	23.8
65	84.6	72.7	63.8	35.2	1.2	76.9

Notes

1. Rates equal the number of deaths from bowel cancer per 100,000 males. All-age totals were age-standardised to the Australian 2001 population.
2. There were 11 persons with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW National Mortality Database.

Table A.12b: Age-specific and age-standardised mortality rates for bowel cancer, by region: 2002–2006, females

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.1	0.3	0.0	0.0	0.0	0.1
20–24	0.1	0.4	0.0	0.0	3.0	0.2
25–29	0.5	0.2	0.3	0.0	0.0	0.4
30–34	0.5	1.2	2.3	0.0	0.0	0.8
35–39	1.9	1.8	1.2	1.5	0.2	1.8
40–44	3.6	2.5	4.2	7.7	4.0	3.5
45–49	7.0	6.1	7.7	3.6	7.8	6.9
50–54	11.0	12.7	11.5	18.6	5.4	11.5
55–59	16.6	18.2	16.6	10.5	2.7	16.8
60–64	28.4	32.6	35.2	24.5	8.8	30.0
65–69	48.6	49.6	53.8	53.1	47.8	49.4
70–74	70.3	79.4	78.0	59.9	24.7	72.9
75–79	96.4	114.7	107.2	97.8	27.0	101.4
80–84	141.3	139.5	149.5	109.4	195.7	141.5
85+	208.3	244.2	208.4	156.0	152.2	215.6
All ages						
Crude rate	18.1	21.8	19.6	11.8	6.2	18.8
ASR	15.7	17.2	17.0	14.2	10.6	16.1
95% CI	15.3–16.1	16.5–17.9	15.9–18.1	11.4–17.4	6.6–15.7	15.8–16.4
Age specific						
50	11.6	8.9	8.0	7.4	12.7	10.5
55	14.3	12.7	9.3	2.5	0.0	13.0
65	49.1	38.6	42.8	23.2	0.0	44.8

Notes

1. Rates equal the number of deaths from bowel cancer per 100,000 females. All-age totals were age-standardised to the Australian 2001 population.
2. There were 14 persons with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW National Mortality Database.

Table A.12c: Age-specific and age-standardised mortality rates for bowel cancer, by region: 2002–2006, persons

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
0–4	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.1	0.1	0.0	0.0	0.0	0.1
20–24	0.1	0.4	0.0	0.0	1.4	0.2
25–29	0.4	0.7	0.3	0.0	0.0	0.4
30–34	0.9	1.0	1.3	0.0	1.3	0.9
35–39	1.6	1.9	1.6	0.7	1.5	1.7
40–44	3.3	2.7	5.0	7.4	2.2	3.4
45–49	7.1	8.0	8.3	7.1	5.3	7.4
50–54	13.4	13.5	16.3	15.8	4.7	13.7
55–59	23.0	25.4	26.0	11.3	12.8	23.6
60–64	39.1	44.9	48.4	31.3	25.7	41.3
65–69	63.8	69.1	72.3	81.0	44.0	66.1
70–74	92.4	106.5	94.1	69.2	35.9	95.4
75–79	126.9	138.0	141.1	149.3	63.2	130.9
80–84	162.4	171.2	167.9	104.0	158.6	164.3
85+	226.9	263.0	249.6	156.4	159.5	236.2
All ages						
Crude rate	19.7	24.5	22.9	13.6	6.9	20.8
ASR	19.3	21.3	21.4	17.1	12.2	19.9
95% CI	18.9–19.6	20.7–21.9	20.5–22.3	14.9–19.6	9.2–15.9	19.6–20.2
Age specific						
50	11.3	11.4	9.9	8.5	5.8	11.1
55	20.0	17.8	15.1	1.8	6.8	18.4
65	66.5	55.6	53.8	29.7	0.7	60.8

Notes

1. Rates equal the number of deaths from bowel cancer per 100,000 persons. All-age totals were age-standardised to the Australian 2001 population.
2. There were 25 persons with postcodes that do not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table.

Source: AIHW National Mortality Database.

Table A.13a: Number of deaths from bowel cancer, by age and Aboriginal and Torres Strait Islander status, Queensland, Western Australia, South Australia, Northern Territory: 2002–2006

	Aboriginal and Torres Strait Islander			Non-Indigenous			Australia		
Age group	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
0–4	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0
10–14	0	0	0	0	0	0	0	0	0
15–19	0	0	0	0	1	1	0	1	1
20–24	0	0	0	3	2	5	3	2	5
25–29	0	0	0	3	5	8	3	5	8
30–34	1	2	3	19	8	27	20	10	30
35–39	1	1	2	22	20	42	24	22	46
40–44	2	2	4	44	46	90	46	49	95
45–49	4	2	6	110	100	210	114	103	217
50–54	6	4	10	206	134	340	215	139	354
55–59	7	2	9	344	190	534	353	192	545
60–64	4	7	11	465	223	688	473	233	706
65–69	5	8	13	577	319	896	587	331	918
70–74	0	1	1	610	436	1,046	615	441	1,056
75+	7	5	12	1,700	1,887	3,587	1,718	1,911	3,629
Not stated	0	1	1	0	0	0	0	1	1
All ages	**37**	**35**	**72**	**4,103**	**3,371**	**7,474**	**4,171**	**3,440**	**7,611**
50	1	1	2	26	30	56	29	31	60
55	4	0	4	64	32	96	70	32	102
65	2	2	4	129	68	197	132	70	202

Notes

1. Only Queensland, Western Australia, South Australia and the Northern Territory have Aboriginal and Torres Strait Islander death registration data considered to be of a publishable standard; therefore, data from these jurisdictions only were included in the analysis by Aboriginal and Torres Strait Islander status.
2. Deaths where Aboriginal and Torres Strait Islander status was not recorded or was unknown were included in the Australia columns, but they were not included in the other columns; there were 65 deaths where Aboriginal and Torres Strait Islander status was not recorded or was unknown.

Source: AIHW National Mortality Database.

Table A.13b: Age-standardised and age-specific mortality rates for bowel cancer, by Aboriginal and Torres Strait Islander status, Queensland, Western Australia, South Australia, Northern Territory: 2002–2006

	Aboriginal and Torres Strait Islander			Non-Indigenous			Australia		
Age group	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
20–24	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2
25–29	0.0	0.0	0.0	0.2	0.4	0.3	0.2	0.4	0.3
30–34	2.3	4.2	3.3	1.4	0.6	1.0	1.4	0.7	1.1
35–39	2.7	2.4	2.5	1.6	1.5	1.5	1.7	1.6	1.6
40–44	6.2	5.6	5.9	3.1	3.2	3.2	3.2	3.3	3.3
45–49	15.8	7.2	11.3	8.2	7.4	7.8	8.3	7.5	7.9
50–54	30.5	18.3	24.1	16.3	10.7	13.5	16.8	10.9	13.9
55–59	50.8	13.3	31.2	30.0	17.1	23.7	30.4	17.1	23.8
60–64	46.7	66.9	57.8	53.6	26.6	40.3	54.0	27.4	40.9
65–69	84.9	107.6	97.6	85.3	47.2	66.2	86.0	48.4	67.2
70–74	0.0	20.7	11.3	111.7	75.3	93.0	111.8	75.6	93.1
75+	166.5	82.8	117.2	193.7	148.2	166.8	194.8	149.4	167.9
All ages									
Crude rate	6.4	5.9	6.1	22.2	18.2	20.2	0.2	0.2	0.2
ASR	21.2	15.4	17.9	23.8	16.3	19.8	24.0	16.5	20.0
95% CI	13.5–30.9	10.1–22.3	13.3–23.3	23.1–24.5	15.8–16.9	19.4–20.3	-0.1–0.1	0.0–0.2	0.1–0.2

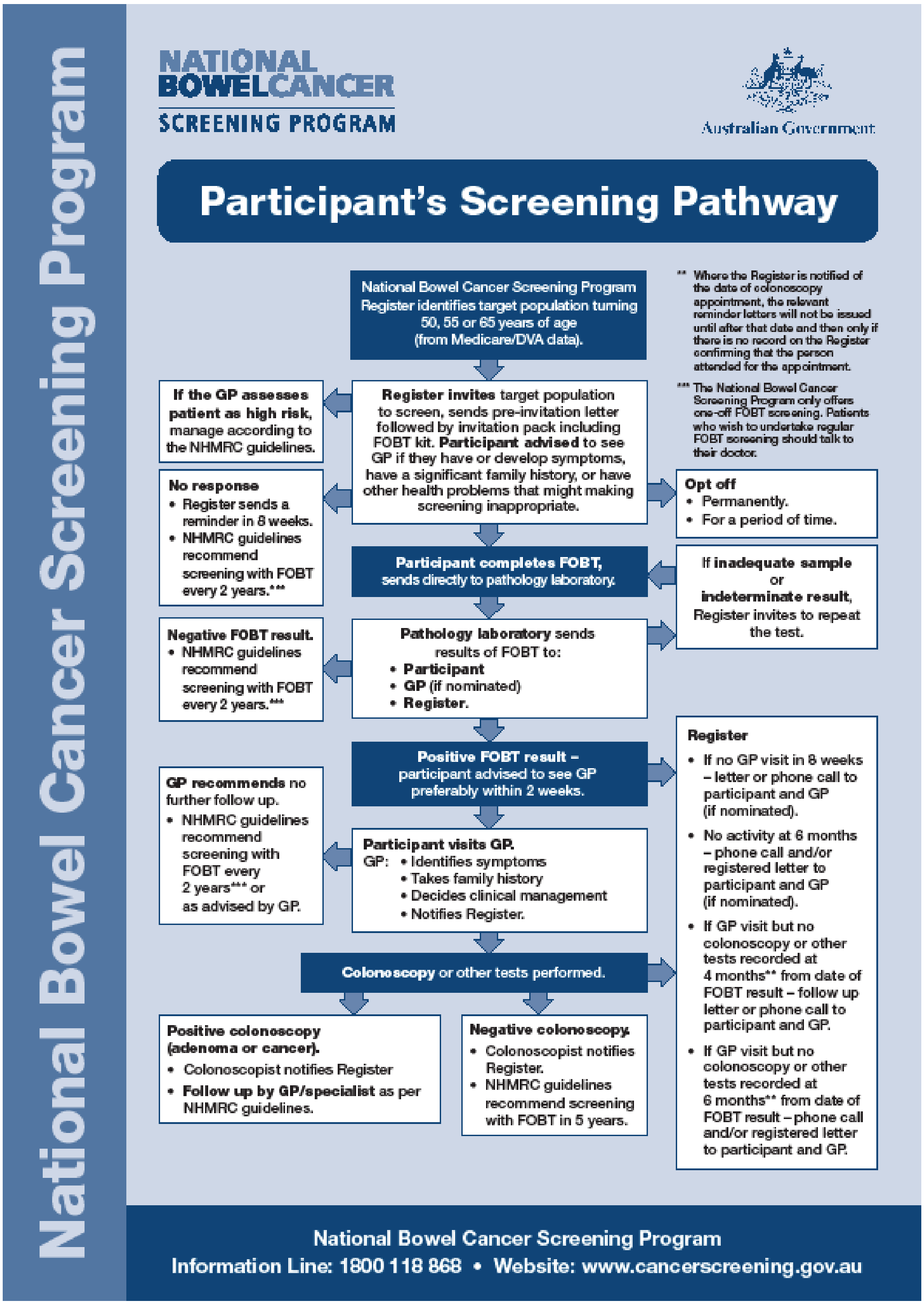
Notes

1. Only Queensland, Western Australia, South Australia and the Northern Territory have Aboriginal and Torres Strait Islander death registration data considered to be of a publishable standard; therefore, data from these jurisdictions only were included in the analysis by Aboriginal and Torres Strait Islander status.
2. Deaths where Aboriginal and Torres Strait Islander status was not recorded or was unknown were included in the Australia columns, but they were not included in the other columns; there were 65 deaths where Aboriginal and Torres Strait Islander status was not recorded or was unknown.
3. Rates equal the number of deaths from bowel cancer per 100,000 males, females and persons. All-age totals were age-standardised to the Australian 2001 population.
4. Age specific rates were not available.

Source: AIHW National Mortality Database.

Appendix B   NBCSP information

NBCSP resources



National Bowel Cancer Screening Program

NATIONAL BOWELCANCER SCREENING PROGRAM

Australian Government

Participant's Screening Pathway

National Bowel Cancer Screening Program Register identifies target population turning 50, 55 or 65 years of age (from Medicare/DVA data).

Register invites target population to screen, sends pre-invitation letter followed by invitation pack including FOBT kit. **Participant advised** to see GP if they have or develop symptoms, have a significant family history, or have other health problems that might making screening inappropriate.

If the GP assesses patient as high risk, manage according to the NHMRC guidelines.

No response
- Register sends a reminder in 8 weeks.
- NHMRC guidelines recommend screening with FOBT every 2 years.***

Opt off
- Permanently.
- For a period of time.

Participant completes FOBT, sends directly to pathology laboratory.

If **inadequate sample** or **indeterminate result,** Register invites to repeat the test.

Pathology laboratory sends results of FOBT to:
- **Participant**
- **GP** (if nominated)
- **Register.**

Negative FOBT result.
- NHMRC guidelines recommend screening with FOBT every 2 years.***

Positive FOBT result – participant advised to see GP preferably within 2 weeks.

Participant visits GP.
GP:
- Identifies symptoms
- Takes family history
- Decides clinical management
- Notifies Register.

GP recommends no further follow up.
- NHMRC guidelines recommend screening with FOBT every 2 years*** or as advised by GP.

Register
- If no GP visit in 8 weeks – letter or phone call to participant and GP (if nominated).
- No activity at 6 months – phone call and/or registered letter to participant and GP (if nominated).
- If GP visit but no colonoscopy or other tests recorded at 4 months** from date of FOBT result – follow up letter or phone call to participant and GP.
- If GP visit but no colonoscopy or other tests recorded at 6 months** from date of FOBT result – phone call and/or registered letter to participant and GP.

Colonoscopy or other tests performed.

Positive colonoscopy (adenoma or cancer).
- Colonoscopist notifies Register
- **Follow up by GP/specialist** as per NHMRC guidelines.

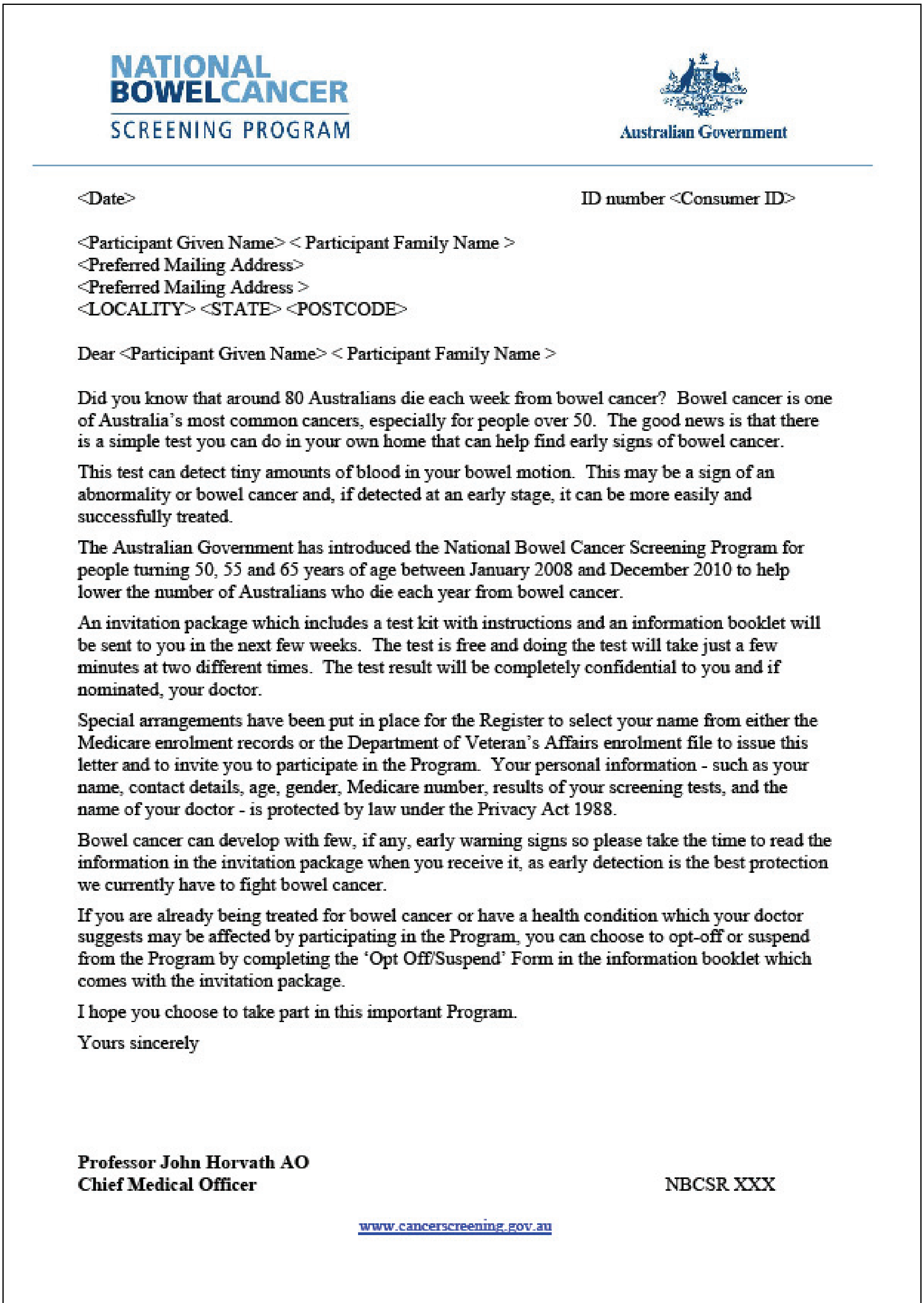
Negative colonoscopy.
- Colonoscopist notifies Register.
- NHMRC guidelines recommend screening with FOBT in 5 years.

** Where the Register is notified of the date of colonoscopy appointment, the relevant reminder letters will not be issued until after that date and then only if there is no record on the Register confirming that the person attended for the appointment.

*** The National Bowel Cancer Screening Program only offers one-off FOBT screening. Patients who wish to undertake regular FOBT screening should talk to their doctor.

National Bowel Cancer Screening Program
Information Line: 1800 118 868 • Website: www.cancerscreening.gov.au

Figure B.1: The NBCSP participant's screening pathway



NATIONAL
BOWELCANCER
SCREENING PROGRAM

Australian Government

<Date>

ID number <Consumer ID>

<Participant Given Name> < Participant Family Name >
<Preferred Mailing Address>
<Preferred Mailing Address >
<LOCALITY> <STATE> <POSTCODE>

Dear <Participant Given Name> < Participant Family Name >

Did you know that around 80 Australians die each week from bowel cancer? Bowel cancer is one of Australia's most common cancers, especially for people over 50. The good news is that there is a simple test you can do in your own home that can help find early signs of bowel cancer.

This test can detect tiny amounts of blood in your bowel motion. This may be a sign of an abnormality or bowel cancer and, if detected at an early stage, it can be more easily and successfully treated.

The Australian Government has introduced the National Bowel Cancer Screening Program for people turning 50, 55 and 65 years of age between January 2008 and December 2010 to help lower the number of Australians who die each year from bowel cancer.

An invitation package which includes a test kit with instructions and an information booklet will be sent to you in the next few weeks. The test is free and doing the test will take just a few minutes at two different times. The test result will be completely confidential to you and if nominated, your doctor.

Special arrangements have been put in place for the Register to select your name from either the Medicare enrolment records or the Department of Veteran's Affairs enrolment file to issue this letter and to invite you to participate in the Program. Your personal information - such as your name, contact details, age, gender, Medicare number, results of your screening tests, and the name of your doctor - is protected by law under the Privacy Act 1988.

Bowel cancer can develop with few, if any, early warning signs so please take the time to read the information in the invitation package when you receive it, as early detection is the best protection we currently have to fight bowel cancer.

If you are already being treated for bowel cancer or have a health condition which your doctor suggests may be affected by participating in the Program, you can choose to opt-off or suspend from the Program by completing the 'Opt Off/Suspend' Form in the information booklet which comes with the invitation package.

I hope you choose to take part in this important Program.

Yours sincerely

Professor John Horvath AO
Chief Medical Officer

NBCSR XXX

www.cancerscreening.gov.au

Figure B.2: The NBCSP phase 2 pre-invitation letter

National Bowel Cancer Screening Program definitions

Target population

The NBCSP has been phased in gradually to ensure demand for services such as colonoscopy can be met. Table B.1 outlines the start dates of each phase, and the target age groups.

Table B.1: NBCSP phases and target populations

Phase	Start date	End date	Target ages	Target age birthdays included
1	7 August 2006	30 June 2008	55 and 65 years	1 May 2006–30 June 2008
2	1 July 2008	30 June 2011	50, 55 and 65 years	1 January 2008–31 December 2010

Eligible population

Invitees who were outside the target ages were ineligible to participate and were excluded from the analyses.

In addition, a person may choose to opt off or suspend participation in the NBCSP, or their primary health care practitioner may recommend they opt off or suspend participation in the NBCSP (for example, because of a recent colonoscopy or previous diagnosis of bowel cancer). A person can opt off or suspend participation at various points along the pathway; for example, before completing an FOBT, or when following up a FOBT result with their doctor. People choosing to opt off or suspend participation were classified as ineligible and excluded from further analysis.

Aboriginal and Torres Strait Islander status

Identification of an individual as Aboriginal and Torres Strait Islander person is based on self-identification to Medicare Australia through this or other programs. The denominator for initial participation rates for Aboriginal and Torres Strait Islander peoples is estimated from the 2006 Census of Population and Housing. See Appendix C for a description of the method of estimation.

Language spoken at home

Persons were identified as speaking a language other than English at home to Medicare Australia through this or other programs. The denominator for initial participation rates stratified by language spoken at home is estimated from the 2006 Census. See Appendix C for a description of the method of estimation.

Disability status

Disability status refers to those people who returned a completed FOBT kit, and identified a need for assistance due to a disability. The denominator for initial participation rates stratified by disability level is estimated from the 2006 Census of Population and Housing. See Appendix C for a description of the method of estimation.

Polyps

Colorectal polyps are small growths of colon tissue that protrude into the colonic or rectal lumen. They are usually asymptomatic, but sometimes cause rectal bleeding, and rarely, other symptoms. Polyps may occur individually but it is common for a person to have multiple polyps. They occur more commonly in later life, and hereditary and dietary (lifestyle) factors may play a part. Polyps may become cancerous and are generally defined as two main types:

- Hyperplastic: a type of polyp that has a low risk, if any, of developing into a cancer. However, people with multiple hyperplastic polyps are associated with an increased risk of bowel cancer.
- Adenoma (Adenomatous): a polyp that has a higher chance of becoming cancerous, as it contains molecular characteristics that are common with adenocarcinoma. See Adenoma classifications (below).

Polyp number, size and microscopic features may also predict the likelihood of a polyp becoming cancerous, with larger and flatter (non-stalked) polyps having the higher risk. During a colonoscopy polyps are removed, thus lowering the risk of bowel cancer developing in the person.

Adenoma classifications

An adenoma (adenomatous polyp) is a benign tumour that arises from epithelial cells that line the inside surface of an organ. All adenomas have malignant potential. Adenomas in the rectum or colon have a higher chance of developing into cancer (adenocarcinoma) than adenomas in most other organs.

Although nearly all cancers in the colon (adenocarcinoma) arise from adenomas, only a small minority of adenomas (1 in 20 or less) actually progress to cancer (Ahnen & Macrae 2008). While most small tubular adenomas have a low risk of progressing to cancer, the risk is much higher in advanced adenomas.

Adenoma classifications are derived from information reported by colonoscopists and histopathologists, and are classified as listed below from highest risk (advanced) to lowest risk (diminutive). Where a person has multiple adenomas, he or she is classified according to the adenoma having the highest risk.

Advanced adenoma

If any of the indicators of higher risk listed below are present, the adenoma is classified as advanced:

- Adenoma multiplicity—three or more adenomas present at examination, regardless of histopathology or size.
- Adenoma size—a size of 10 millimetres or greater. The measurement of size is subject to certain problems with accuracy. Where colonoscopy and pathology reports differ in their recording of size, the larger size has been used.
- High-grade dysplasia.

- Significant villous change or serrated—adenomas recorded as serrated, tubulovillous or villous on pathology reports.

Small adenoma

A tubular or mixed adenoma between 5 millimetres and 9 millimetres.

Diminutive adenoma

A tubular or mixed adenoma smaller than 5 millimetres.

Appendix C Data sources and classifications

Data sources

Multiple data sources were analysed to produce this report. These are summarised in Table C.1. All data used in this report were based on calendar years.

Table C.1: Sources for data presented in this report

Description	Data source
Participation	National Bowel Cancer Screening Program Register
Cancer detection	National Bowel Cancer Screening Program Register
Population data	Australian 2001 standard population; 2006 Census of Population and Housing, ABS
Incidence (ICD-10 C18–20)	Australian Cancer Database (formerly the National Cancer Statistics Clearing House), AIHW
Mortality (ICD-9 153, 154.0–154.1, ICD-10 C18–20)	National Mortality Database, AIHW

National Bowel Cancer Screening Program data

As data items were collected from a variety of sources, not all may be recorded in the Register in sequence. Assessment, Colonoscopy and Histopathology Report forms are received from different sources, and there are both time lags in submitting forms, and failure of clinicians to complete and submit forms to the Register. Hence, there are data for colonoscopies without an associated Assessment form, and histopathology results without a completed Colonoscopy Report form. The effect of this under-reporting is that the data on the actions resulting from a positive FOBT are significantly underestimated. Hence, the data on colonoscopies done and conditions found should be interpreted with great caution.

Population data

Participation denominators for Aboriginal and Torres Strait Islander status (Table 1.8), language spoken at home (Table 1.9) and disability level (Table 1.10) were estimated from the proportion of people in these groups in the 2006 Census of Population and Housing. See Table C.2 for age- and sex-specific percentages.

Table C.2: Age- and sex-specific population percentages

	Aboriginal and Torres Strait Islander	Language other than English spoken at home	Severe or profound activity limitation
Males			
50 years	1.57	16.04	3.07
55 years	1.21	14.87	4.08
65 years	0.87	17.11	6.78
Total	*1.27*	*16.56*	*4.32*
Females			
50 years	1.62	17.57	3.03
55 years	1.33	16.18	3.80
65 years	1.08	17.50	5.73
Total	*1.39*	*17.03*	*3.94*
Persons			
50 years	1.60	16.82	3.05
55 years	1.27	15.53	3.94
65 years	0.98	17.31	6.25
Total	**1.33**	**16.80**	**4.13**

Source: ABS 2006 Census of Population and Housing.

ABS Australian 2001 standard population data were used to calculate age-standardised rates for bowel cancer incidence and mortality tables.

Incidence data

Incidence data in this report came from the Australian Cancer Database (ACD), maintained by the National Cancer Statistics Clearing House (NCSCH)—a national collection of cancer statistics held and operated by the AIHW. The NCSCH receives data from individual state and territory cancer registries on cancers diagnosed in residents of Australia, and produces reports on national incidence.

Incidence of bowel cancer in this report is given for 1992–2006, the latest year for which national incidence data is available.

Mortality data

Data for this measure came from the AIHW's National Mortality Database. The National Mortality Database is a national collection of de-identified information for all deaths in Australia, and is maintained by the AIHW. Information on the characteristics and causes of death of the deceased is provided by the Registrars of Births, Deaths and Marriages, and coded nationally by the ABS. Information on the cause of death is supplied by the medical practitioner certifying the death, or by a coroner. The data are updated each calendar year.

Mortality data in this report were given for 1992–2006. During this time, changes have been made to the coding and processing of mortality data that affect comparability of the data. Data for holdings for 1987–1996 were manually coded using the ninth revision of the International Classification of Diseases (ICD-9). Data holdings for 1997 onwards were coded using ICD-10, using an automated system with slightly different coding rules.

The change to the coding and processing of mortality data introduced a break in the data time series. The ABS has developed comparability factors, which are applied to pre-1997 data, so that a single time series may still be derived (ABS 2006). For bowel cancer, the comparability factor is close to 1 (0.98).

Data were analysed using the year of occurrence of death for the period 1992–2005 and year of registration of death for 2006. This is because mortality data by year of occurrence of death is a more accurate reflection of mortality during a particular year than year of registration data; however, year of occurrence data for 2006 are still incomplete because of late registrations.

All states and territories have provision for the identification of Aboriginal and Torres Strait Islander deaths on their death registration forms. However, the coverage of deaths identified as Indigenous varies across states and territories and over time. While the identification of Indigenous deaths is incomplete in all state and territory registration systems, four jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) have been assessed by the ABS and the AIHW as having adequate identification. These four jurisdictions represent about 60% of the Aboriginal and Torres Strait Islander population of Australia.

Data for Aboriginal and Torres Strait Islander deaths, state and territory and geographic location have been combined for the 5-year period 2002–2006 due to the small number of deaths from bowel cancer in each year.

Classifications

Geographic classification

Geographic location was classified according to the Australian Bureau of Statistics (ABS) Australian Standard Geographical Classification Remoteness Structure, which groups geographic areas into six categories. These categories, called Remoteness Areas, are based on Census Collection Districts and defined using the Accessibility/Remoteness Index for Australia (ARIA). ARIA is a measure of the remoteness of a location from the services provided by large towns or cities. Accessibility is judged purely on distance to one of the metropolitan centres. A higher ARIA score denotes a more remote location. The six Remoteness Areas of the Australian Standard Geographical Classification Remoteness Structure are listed in Table C.3; the sixth *Migratory* area is not used in this publication.

Residential address postcodes of participants were mapped to 2006 Census Collection Districts and then classified to the five main Remoteness Areas, ranging from *Major cities* to *Very remote* areas. As some postcodes can span different Remoteness Areas, a weighting for each Remoteness Area is attributed to the postcode. This can result in non-integer counts for remoteness classifications. For example, the Northern Territory postal area 0822 is classified as 70.54% *Very remote*, 6.64% *Remote* and 22.82% *Outer regional*. Participants with postcode 0822 have their counts apportioned accordingly.

Tables in this report based on geographical location were rounded to integer values. Where figures were rounded, discrepancies may occur between totals and sums of the component items.

Table C.3: Remoteness areas for the Australian Standard Geographical Classification

Region	Collection districts within region
Major cities of Australia	CDs with an average ARIA index value of 0 to 0.2
Inner regional Australia	CDs with an average ARIA index value greater than 0.2 and less than or equal to 2.4
Outer regional Australia	CDs with an average ARIA index value greater than 2.4 and less than or equal to 5.92
Remote Australia	CDs with an average ARIA index value greater than 5.92 and less than or equal to 10.53
Very remote Australia	CDs with an average ARIA index value greater than 10.53
Migratory	Areas composed of off-shore, shipping and migratory CDs

Socioeconomic classification

Socioeconomic classifications were based on the ABS Index of Relative Socioeconomic Disadvantage (IRSD). Geographic areas are assigned a score based on attributes such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations. It does not refer to the socioeconomic situation of a particular individual, but instead refers to the area in which a person lives. A low score means an area has many low income families, people with little training and high unemployment, and may be considered disadvantaged relative to other areas. Areas with high index scores may be considered less disadvantaged relative to other areas. Geographic areas may be excluded where no score is determined due to low populations or high levels of non-response in the underlying census. In the 2006 Socio-Economic Index For Areas 36 postal areas have been excluded.

In this report, a participant's socioeconomic status was classified using the participant's residential postcode according to the IRSD for 2006. Five socioeconomic groups, based on the level of the index, were used for analysis where group 1 represents the most disadvantaged fifth of the population and group 5 the least disadvantaged fifth.

NBCSP classifications

See Appendix B for classifications specific to the NBCSP.

Appendix D Statistical methods

Comparisons and tests of statistical significance

This report includes statistical tests of the significance of comparisons of rates between population groups. Any statistical comparison applied to one variable must take account of any other potentially relevant variables. For example, any comparison of participation by state must also take account of differences in the distribution of age and sex between the states. These other variables are known as confounding variables.

Crude rates

A crude rate is defined as the number of events over a specified period divided by the total population. The crude rate (for participation, attendance and follow-up) is the proportion of people who have proceeded to a key point on the screening pathway (at the date of the data extraction) out of those eligible to proceed to that point. For example, the crude participation rate is the proportion of the eligible people invited in 2008 who return a completed FOBT kit by 31 January 2009. The crude colonoscopy follow-up is the proportion of people invited in 2008 with a positive FOBT result who proceeded to colonoscopy by 31 January 2009.

The crude proportions will generally underestimate the true proportions of the population who participated in the NBCSP. This is because at any point in time there are members of the population who are eligible to proceed to the next point on the screening pathway, but who have not yet had time to do so. For example, a person who has just received an invitation to screen may intend to participate in screening but may not have had time to do so. They will be counted in the denominator of the crude participation but not in the numerator. Similarly, there is a time lag between when a person with a positive FOBT result is referred for colonoscopy and when they can actually have the colonoscopy. A colonoscopy follow-up calculated during this lag includes them in the denominator but not in the numerator.

Age-specific rates

Age-specific rates were calculated by dividing the number of cases occurring in each specified age group by the corresponding population in the same age group, expressed as per 100,000 persons.

Age-standardised rates

Rates are adjusted for age to help comparisons between populations that have different age structures; for example, between youthful and ageing communities. Two different methods are commonly used to adjust for age. In this publication direct standardisation was used, in which age-specific rates were multiplied against a constant population (the Australian 2001 population). This effectively removes the influence of age structure on the summary rate, and is described as the age-standardised rate. The method used for this calculation comprises three steps:

- Calculate the age-specific rate for each age group.
- Calculate the expected number of cases in each 5-year age group by multiplying the age-specific rates by the corresponding standard population, and dividing by 100,000, giving the expected number of cases.
- Calculate the age-standardised rate by summing the expected number of cases in each age group, and dividing this sum by the total of the standard population used in the calculation and multiplying by 100,000.

Confidence intervals

Different methods of calculating 95% confidence intervals were used for the crude rates in NBCSP chapters 1–5 (Box D.1), and the age-standardised rates presented in the incidence and mortality chapters (Box D.2). These confidence intervals indicate the variation that might be expected in such estimates purely by chance.

Box D.1: Confidence intervals for proportions

Confidence intervals for crude proportions (p) in chapters 1–5 were calculated using the basic confidence interval formula for binomial proportions:

$$95\%\text{ CI for proportions} = p \pm 1.96 \times \sqrt{\frac{p \times (1-p)}{\text{Number of cases}}}$$

Box D.2: Confidence intervals for age-standardised rates

The confidence intervals for age-standardised rates in the incidence and mortality chapters were calculated using the methods presented by Holman et al. (1987). A relatively simple approximation of the confidence intervals that readers might use when looking at age-standardised rates is:

$$95\%\text{ CI approximation} = \text{AS rate} \pm 1.96 \times \frac{\text{ASR}}{\sqrt{\text{Number of cases}}}$$

Kaplan-Meier estimates of participation and follow-up

The Bowel Cancer Screening Pilot Program employed the use of Kaplan-Meier estimates of participation, attendance and follow-up. This statistical method calculates a modelled rate based on the time it takes each individual invited for screening to move between points on the screening pathway. For example, participation is calculated by following each invited person and, for those who respond, recording the time it takes them to respond. This allows the calculation of a response rate over time from the date of invitation. Kaplan-Meier methods are standard methods used to model the time to an event and the changes in the rates of an event over time. In this case, the event is a person's response (by returning a completed FOBT kit), and the time to the event is measured in weeks from the date the invitation was sent. These Kaplan-Meier estimates represent valid estimates of the true FOBT participation. The use of Kaplan-Meier estimates in the NBCSP was endorsed by the

Implementation Advisory Group, and allows direct comparison of participation, attendance and follow-up rates with the Bowel Cancer Screening Pilot Program.

In principle, the Kaplan-Meier estimate only gives a result at a specific point in time. The estimate is likely to grow for later points in time. However, inspection of these estimates shows that they reach a plateau, after which they have only a negligible increase. Kaplan-Meier estimates in this report were calculated for participation at 52 weeks and primary health care practitioner and colonoscopy follow-up at 26 weeks. Further, preliminary analyses based on modelling the survival time with both a Weibull and an exponential distribution showed that the latest observed Kaplan-Meier estimate differed from the long-term modelled estimate by less than 1 percentage point. Hence, the latest Kaplan-Meier estimate can be taken as an approximate estimate of the overall rate.

The Kaplan-Meier estimates require that classifying variables be known for the population. Hence, they can be calculated for participation classified by age, sex and state. However, they cannot be used for participation classified by Aboriginal and Torres Strait Islander status, language group, or disability status, which are not known for all the invited population. These variables are only known for those participants who identify themselves as a member of these groups on their returned Participant Details form. In these cases, a crude participation can be calculated by using known population counts (from the Australian Bureau of Statistics Census data) in the denominator. However, the Kaplan-Meier estimates cannot be applied in this situation. In these cases, all analyses will be based solely on the crude participation. Therefore, the participation presented in this report for Aboriginal and Torres Strait Islander peoples, people with a disability and people with a language other than English may represent underestimates of the true proportions.

Aboriginal and Torres Strait Islander status, language group status and disability status will be known for all people completing FOBT kits (at least to the extent that people self-identify as members of these groups). Hence, in principle, Kaplan-Meier estimates can be calculated for these groups for participation at subsequent points on the screening pathway. In practice, these calculations depend on sufficient numbers of people self-identifying as group members to allow the calculation of reliable estimates.

Positive predictive value

The calculation of an accurate positive predictive value for the screening test relies on completeness of both colonoscopy and histopathology data. Due to the time lags between the receipt of a positive FOBT and colonoscopy and histopathology procedures, and under-reporting by clinicians, positive predictive values have not been calculated.

Glossary

Age-standardised rate: a method of removing the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure, which allows comparison of disease rates (AIHW 2006).

Asymptomatic: without symptoms.

Benign: not malignant.

Bowel cancer: comprises cancer of the colon and cancer of the rectum, collectively known as colorectal cancer.

Cancer death: a death where the underlying cause of death is indicated as cancer. Persons with cancer who die of other causes are not counted in the mortality statistics in this publication.

Cancer (malignant neoplasm): a large range of diseases in which some of the body's cells become defective, and begin to multiply out of control. These cells can invade and damage the area around them, and can also spread to other parts of the body to cause further damage (AIHW 2006).

Confidence interval: a range determined by variability in data, within which there is a specified (usually 95%) chance that the true value of a calculated parameter lies.

Colonoscopy: procedure to examine the bowel using a special scope (colonoscope) usually carried out in a hospital or day clinic.

Colonoscopy follow-up rate: the proportion of people with a positive FOBT who subsequently had a colonoscopy.

CT colonography: a procedure that produces computed tomography (CT) pictures of the bowel by X-raying from many different angles.

Double contrast barium enema: a type of bowel X-ray in which barium sulphate and air are added into the bowel to assist in visualising the outline of the bowel and detecting abnormal growths.

Eligible population: for this report monitoring people invited in 2008, Australians turning 50, 55 and 65 years of age between 1 January 2008 and 31 December 2008 who have not opted off or suspended participation in the Program.

False-positive: a test result that incorrectly indicates a person has the condition being tested when they do not have the condition.

FOBT: immunochemical faecal occult blood test—a self-administered test to detect blood in bowel motions, but not bowel cancer itself. The FOBT is analysed by a pathology laboratory, and results forwarded to the register participant and primary health care practitioner (if nominated). Pathologists categorise the returned FOBT into one of three groups:

1. correctly completed
2. incorrectly completed
3. unsatisfactory.

Participants are provided with specific instructions on how to complete the FOBT. Any tests not completed according to these instructions are classified as incorrectly completed. Unsatisfactory tests refer to those tests that could not be processed due to a problem with the kit (for example, an expired kit, kit samples that have been taken more then 2 weeks apart, or a kit that has taken over 1 month in transit to arrive). Participants with FOBTs that are not correctly completed are requested to complete another FOBT. See Appendix B for details of the participant screening pathway.

FOBT result: FOBT results are classified by pathologists as either:

1. positive (blood is detected in at least one of two samples)
2. negative (blood is not detected)
3. inconclusive (the participant is asked to complete another kit).

Histopathology: the microscopic study of the structure and composition of tissues and associated disease.

Incidence: the number of new cases (for example, of an illness or event) occurring during a given period (AIHW 2006).

Indigenous Australian: a person of Aboriginal and/or Torres Strait Islander descent who identifies as Aboriginal and/or Torres Strait Islander.

Invitee: a person who has been invited to participate in the National Bowel Cancer Screening Program.

Lymph node: mass of lymphatic tissue, often bean-shaped, that produces lymphocytes and through which lymph filters. These are located throughout the body.

Malignant: abnormal changes consistent with cancer.

Metastasis: the process by which cancerous cells are transferred from one part of the body to another to form a secondary cancer; for example, via the lymphatic system or the bloodstream.

Mortality: see *Cancer death*.

Opt off: invitees who do not wish to participate in the National Bowel Cancer Screening Program now or in the future may opt off the Program. Invitees will not be contacted again. Invitees may elect to opt back on at a later date.

Participant: a person who has agreed to participate in the National Bowel Cancer Screening Program by returning a completed FOBT kit and Participant Details form.

Positive predictive value: proportion of people with a positive FOBT who have adenomas or cancer detected at colonoscopy and confirmed by histopathology.

Positivity rate: number of positive FOBT results as a percentage of the total number of valid FOBT results.

Primary health care practitioner: classified by Medicare Australia as a general practitioner or other primary health care provider. This may include remote health clinics or other specialists providing general practitioner services.

Primary health care practitioner follow-up rate: the proportion of people who were sent a positive FOBT result and who subsequently visit a primary health care practitioner.

Radiation therapy: the treatment of disease with any type of radiation, most commonly with ionising radiation, such as X-rays, beta rays and gamma rays.

Register: National Bowel Cancer Screening Program Register maintained by Medicare Australia.

Screening: repeated testing, at regular intervals, of apparently well people to detect a medical condition at an earlier stage than would otherwise be the case.

Sigmoidoscopy: inspection of last portion of the bowel through either a rigid or flexible hollow tube.

Significant difference: where rates are referred to as significantly different, or one rate is deemed significantly higher or lower than another, these differences are statistically significant. Rates are deemed statistically significantly different when their confidence intervals do not overlap, since their difference is greater than what could be explained by chance. See Confidence intervals in Appendix D for more information.

Socioeconomic status: see Appendix C for details.

Suspend: invitees who would like to participate in the National Bowel Cancer Screening Program but are unable to do so at this time. Invitees will be contacted once the nominated suspension period has elapsed.

Target population: For the NBCSP, Australians turning 55 or 65 years of age between 1 May 2006 and 31 December 2008 (Phase 1), or Australians turning 50, 55 or 65 years of age between 1 January 2008 and 31 December 2010 (Phase 2).

Tumour: an abnormal growth of tissue. Can be benign (not a cancer) or malignant (a cancer) (AIHW 2006).

Underlying cause of death: the condition, disease or injury initiating the sequence of events leading directly to death; that is, the primary, chief, main or principal cause (AIHW 2006).

Valid results: only FOBT results that are either positive or negative are classified as valid results. Inconclusive results are excluded.

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List of tables

List of figures