Australian Government
Australian Institute of Health and Welfare

National Bowel Cancer Screening Program

Monitoring report

July 2011–June 2012

CANCER SERIES NO. 75

Australian Government
Australian Institute of Health and Welfare

Authoritative information and statistics to promote better health and wellbeing

CANCER SERIES
Number 75

National Bowel Cancer Screening Program

Monitoring report

July 2011–June 2012

Australian Institute of Health and Welfare
Canberra
Cat. no. CAN 71

The Australian Institute of Health and Welfare is a major national agency which provides reliable, regular and relevant information and statistics on Australia's health and welfare. The Institute's mission is *authoritative information and statistics to promote better health and wellbeing*.

This publication is part of the Australian Institute of Health and Welfare's Cancer series. A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>.

ISSN 1039-3307
ISBN 978-1-74249-429-6

Suggested citation
Australian Institute of Health and Welfare 2013. National Bowel Cancer Screening Program monitoring report: July 2011–June 2012. Cancer series no. 75. Cat. no. CAN 71. Canberra: AIHW.

Any enquiries about or comments on this publication should be directed to:
Communications, Media and Marketing Unit
Australian Institute of Health and Welfare
GPO Box 570
Canberra ACT 2601
Tel: (02) 6244 1032
Email: info@aihw.gov.au

Published by the Australian Institute of Health and Welfare

Please note that there is the potential for minor revisions of data in this report. Please check the online version at <www.aihw.gov.au> for any amendments.

Contents

Acknowledgments

This report was prepared by David Meere, Ellen Connell and Justin Harvey. The authors thank the Bowel Screening section staff at the Australian Government Department of Health and Ageing, who helped produce this document.

Data were extracted from the National Bowel Cancer Screening Register and supplied by the Department of Human Services (formerly Medicare Australia).

The financial support of the Bowel Screening section of the Australian Government Department of Health and Ageing is gratefully acknowledged.

Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ACD	Australian Cancer Database
ACPS	Australian clinicopathological staging
ACT	Australian Capital Territory
ARIA	Accessibility/Remoteness Index for Australia
ATSI	Aboriginal and Torres Strait Islander
DoHA	Department of Health and Ageing
DoHS	Department of Human Services (formerly Medicare Australia)
DVA	Department of Veterans' Affairs
FOBT	Faecal occult blood test
FSANZ	Food Standards Australia New Zealand
GP	General practitioner
ICD	International Classification of Diseases
IRSD	Index of Relative Socioeconomic Disadvantage
mm	millimetres
NBCSP	National Bowel Cancer Screening Program
NHMRC	National Health and Medical Research Council
NMD	National Mortality Database
NSW	New South Wales
NT	Northern Territory
PHCP	primary health care practitioner (General practitioner or other primary health care provider)
Qld	Queensland
SA	South Australia
SEIFA	Socio-Economic Index for Areas
Tas	Tasmania
TGA	Therapeutic Goods Administration
Vic	Victoria
WA	Western Australia

Symbols

–	nil or rounded to zero
. .	not applicable
n.a.	not available
n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data

Summary

The National Bowel Cancer Screening Program (NBCSP) aims to reduce the incidence, illness and mortality related to bowel cancer in Australia through screening to detect cancers and pre-cancerous lesions in their early stages, when treatment will be most successful.

The NBCSP has been running since August 2006, and this report focuses on measures of program performance for people invited to screen (currently those turning 50, 55 or 65) between July 2011 and June 2012.

How many 2011–12 invitees participated in the NBCSP?

About 35% of the 930,000 people invited between July 2011 and June 2012 returned a completed bowel cancer screening kit for analysis. This overall participation rate was slightly lower than that of the previous monitoring report (Table 1), and evident for all 3 target age groups. The lower rate of participation may be a consequence of the pause in the program between January and June 2011 (Table S1.3) leading to uncertainty over program continuation and reduced participant confidence. The NBCSP recommenced gradually from 1 July 2011 following the Australian Government's decision in the 2011–12 Budget to make the program ongoing.

How many positive screening results were there?

About 22,500 participants (7.0%) who returned a valid screening test had a positive screening result. These people were encouraged to follow up this result by visiting their primary health care practitioner (PHCP) and having further investigative testing (colonoscopy). Seventy-two per cent of those with a positive screening result were recorded as having had a colonoscopy.

How many bowel cancers and adenomas were detected?

One participant in every 32 who underwent a colonoscopy to follow up a positive screening result was diagnosed with a confirmed (68 participants) or suspected (336 participants) cancer, while advanced adenomas were found in a further 857 participants (1 in 15 colonoscopies) assessed. Adenomas are benign growths that have the potential to become cancerous, and their removal is likely to lower the risk of future bowel cancers in these patients.

Were there differences between subgroups participating in the NBCSP?

As in previous years, women were more likely to screen than men; conversely, men had higher rates of screen-detected bowel cancers, and overall bowel cancer incidence and mortality.

Aboriginal and Torres Strait Islander participants, participants who lived in *Regional* and *Remote* regions, and participants who lived in areas of lower socioeconomic status, had higher rates of positive screening results, yet lower rates of follow-up colonoscopies than other participants.

2011–12 NBCSP data at a glance

Table 1 compares 2011–12 key performance measures for the NBCSP for the target ages of 50, 55 and 65 with those from the previous monitoring report (2008–11 invitees).

Table 1: Performance measures for the NBCSP, people aged 50, 55 and 65, 2008–11 and 2011–12

	2008–11[(a)]	2011–12
Performance measure	**Per cent**	
Participation rate	38.4	35.0
50 years	33.9	29.2
55 years	38.6	34.1
65 years	46.7	44.0
Faecal occult blood test (FOBT) positivity rate	7.8	7.0
Primary health care practitioner (PHCP) follow-up rate	53.5	63.4
Colonoscopy follow-up rate	71.4	72.0
Colonoscopy outcomes		
Suspected/confirmed cancers	3.0	3.1
Advanced adenomas	8.9	6.7
Polyps awaiting histopathology	34.9	39.6
No abnormality	48.4	46.3

(a) 2008–11 data relate to those presented in the previous monitoring report for those eligible for invitation between 1 January 2008 and 31 December 2010 (AIHW 2012b). See Appendix A, 'Final data for 2008–11 invitees' for final data for those invited in 2008–11.

Note: Definitions for these performance measures are in Section 2.

Source: National Bowel Cancer Screening Program Register.

Section 1 Introduction

Structure of this report

This report provides the most up-to-date national data available for the National Bowel Cancer Screening Program (NBCSP).

The first section presents an overview of bowel cancer in Australia, outlines the process of bowel cancer screening, and describes the development and management of the NBCSP. It also provides a brief overview of technical issues that should be considered when interpreting the information in this report.

The second section presents national data for the NBCSP from 1 July 2011 to 30 June 2012. Data are presented against a series of performance measures. A summary of each performance measure, including definition, rationale, information on data quality and a guide for interpretation, form the start of each chapter. This is followed by measure-specific background information and detailed analyses.

Additional data tables for some sections of this report are presented on the AIHW webpage for *National Bowel Cancer Screening Program Monitoring report: July 2011–June 2012 supplementary tables*.

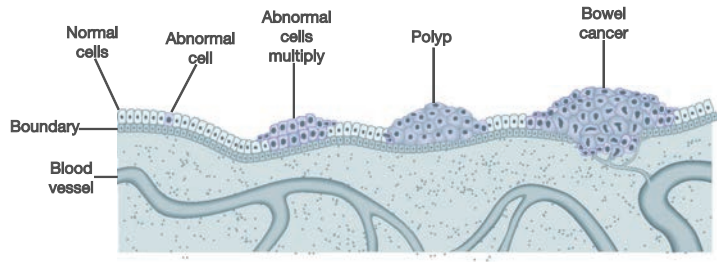
Overview of bowel cancer and bowel screening

What is bowel cancer?

Cancer is a group of several hundred diseases in which abnormal cells are not destroyed by the body, but multiply 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 began.

Bowel cancer refers specifically to cancer of the large intestine (that is, the colon or rectum). It is often referred to as colorectal cancer.

Generally, bowel cancer involves a multistage process in which a series of cellular mutations occur in epithelial cells (the protective layer of surface tissue on exposed bodily surfaces, which also forms the lining of some internal cavities, such as the large intestine) over time. Early stages of these mutations result in benign polyps that are relatively common in old age. However, a polyp may then undergo additional mutations and become a benign adenoma, and ultimately, a malignant bowel cancer that can invade into deeper layers of bowel tissue and then spread to other sites in the body (Figure S1.1).



Source: Cancer Council Victoria 2013.

Figure S1.1: The beginnings of bowel cancer

These mutations occur relatively slowly, making early detection and removal of small cancers—and adenomas and polyps that may become cancerous—effective in preventing ill health or death from bowel cancer.

How common is bowel cancer?

Bowel cancer is a disease predominantly seen in developed and affluent countries, with the highest rates occurring in Australia, New Zealand and Western Europe. It has been estimated that there were about 1.2 million new cases of bowel cancer diagnosed worldwide in 2008 (10% of worldwide cancer diagnoses), and 608,000 deaths attributed (8% of all worldwide cancer deaths). Worldwide, males have bowel cancer incidence rates that are 1.4 times higher than females (Jemal et al. 2011).

Terminology

Incidence: the number of new cases of bowel cancer diagnosed in a year.

Morbidity: illness.

Mortality: the number of deaths from bowel cancer in a year.

Prognosis: the likely outcome of an illness.

In Australia, the incidence of bowel cancer has been increasing slightly each year since 1982 (the year national cancer data were first collected), with 14,410 new cases diagnosed in 2009. The risk of being diagnosed by the age of 85 was 1 in 10 for males and 1 in 15 for females in 2009, with the risk increasing sharply from the age of 45. Bowel cancer also accounts for 9% of all deaths from invasive cancers in Australia (3,982 deaths in 2010), making it the second most common cause of cancer-related death after lung cancer (ABS 2012a; AIHW & AACR 2012).

What causes bowel cancer?

A proportion of bowel cancers (about 20%) are thought to be due to a hereditary component (Weitz et al. 2005). However, a larger proportion can be attributed to known and unknown environmental and lifestyle factors (WCRF/AICR 2011).

An evaluation of the evidence by the World Cancer Research Fund found there was sufficient evidence that tobacco smoking, obesity and the consumption of alcohol and red and processed meats were risk factors for colorectal cancer, while consumption of foods containing dietary fibre and higher levels of physical activity provided a protective effect from bowel cancer (WCRF/AICR 2011).

The incidence rate of bowel cancer is also known to increase with age—about 93% of people diagnosed in Australia in 2009 were 50 or older (see '6 Incidence of bowel cancer', Section 2). This is likely to be due to the accumulation of cellular mutations with increasing age.

How is bowel cancer treated?

Treatment for bowel cancer commonly involves surgery to remove the cancer, with or without additional chemotherapy or radiation therapy. Prognosis depends mainly on what stage of development the cancer had reached, with smaller, less developed cancers having much better prognoses than advanced cancers (Table S1.1). Bowel cancer stages are generally defined using the Australian clinopathological stage (ACPS) classification system shown in Table S1.1 (ACN 2005).

Table S1.1: Defined Australian clinopathological stages of bowel cancer

Australian clinopathological stage	Description	Survival estimates[(a)]
A	Submucosa or into but not through muscularis propria (cancer contained within superficial layers of bowel)	Bowel cancers diagnosed at this stage showed a 93% 5-year survival rate
B	Through muscularis propria (deep invasion into bowel tissue)	Bowel cancers diagnosed at this stage showed an 82% 5-year survival rate
C	Spread of cancer to lymph nodes (invasion through bowel tissue, and cancer found in lymph nodes)	Bowel cancers diagnosed at this stage showed a 59% 5-year survival rate
D	Metastatic disease (cancer also discovered at other sites in the body)	Bowel cancers diagnosed at this stage showed an 8% 5-year survival rate. Palliative care is commonly used at this stage

(a) Survival estimates were sourced from an American study by O'Connell, Maggard and Ko (2004) which used a comparable classification system. Similar rates have been shown in Australia (Morris, Lacopetta & Platell 2007).

Improving treatment outcomes

Early diagnosis of bowel cancer can improve treatment outcomes and survival. Removal of non-benign polyps (polypectomy) and adenomas during a colonoscopy reduces the risk of them developing into bowel cancer. Studies have shown that 14% of patients who refuse polypectomy for adenomas will develop bowel cancer within 10 years (Stryker et al. 1987). The excision of adenomatous polyps, and regular surveillance thereafter, has been found to reduce bowel cancer risk by about 76–90% (Winawer et al. 1993).

A bowel cancer screening program that can highlight individuals with signs of a potential bowel abnormality, allowing earlier investigation by colonoscopy, can therefore reduce bowel cancer morbidity and mortality.

How do we screen for bowel cancer?

Bowel cancer may be present for many years before showing symptoms such as visible rectal bleeding, change in bowel habits, bowel obstruction or anaemia. Often symptoms such as these are not exhibited until the cancer has reached a relatively advanced stage. However, non-visible bleeding of the bowel may have been occurring in the pre-cancerous stages for some time. The relatively slow development of bowel cancer makes it a valid candidate for population screening (APHDPCSS 2008).

Screening tools and target populations for screening for bowel cancer vary around the world (Table S1.2). Evidence from clinical trials has shown that regular (biennial) screening using faecal occult blood testing—which can detect evidence of blood in the stool (faeces) not visible to the naked eye—can reduce mortality from bowel cancer by 15–33% (DoHA 2005).

A faecal occult blood test (FOBT) is a non-invasive test that detects microscopic amounts of blood in the bowel motion—a common sign of a bowel abnormality such as an adenoma or cancer. FOBTs are accepted as the primary screening tool for bowel cancer by a large number of countries, and some supplement the FOBT with flexible sigmoidoscopy (a thin flexible tube that is inserted into the rectum and guided around the lower part of the bowel where most bowel cancers develop) or colonoscopy (a thin flexible tube that is inserted into the rectum and guided around the entire length of the bowel). Table S1.2 summarises the screening tools and target populations of screening programs for a number of countries.

Table S1.2: International bowel cancer screening programs—tools and target populations

Country	Primary screening tool	Frequency	Year program began	Target population (age)	Notes
Australia	FOBT	5-yearly, see notes	2006	50–65	People turning the target ages are sent an FOBT kit. As noted below in Table S1.3, the NBCSP is being expanded to include those aged 70 in 2015 and biennial screening for those aged 50–70 in 2017.
Canada	FOBT	Varies between provinces	see notes	50–74	10 provinces had started programs or pilots by 2010. FOBT is the primary screening tool; however, provinces are free to adopt other primary screening tools.
England	FOBT	Biennial	2006	60–69	FOBTs are supplemented by one-off flexible sigmoidoscopy in individuals aged 55–64.
France	FOBT	Biennial	2002	50–74	
Germany	FOBT	Annual	1971	50–54	Followed by
	FOBT	Biennial		55 and over	or
	Colonoscopy	10-yearly		55 and over	
Italy	FOBT	Biennial	See notes	50–69, see notes	Regionally based programs began between 1982 and 2006 (65 programs in total). The target age ranges from 44 to 75 with all programs screening those aged 50 to 69.
Ireland[(a)]	FOBT	Biennial	2012	60–69	The program is being expanded over time until the full 55–74 age group is reached.
Israel	FOBT	Annual	1993	50–74	
Japan	FOBT	Annual	1992	40 and over	
New Zealand[(b)]	FOBT	Biennial	2011	50–74	Four-year pilot program scheduled to start in late 2011 for residents of the Waitemata District.
Poland	Endoscopy	120 months	2000	40–46	
Scotland	FOBT	Biennial	2006	50–74	
United States	FOBT, sigmoidoscopy and colonoscopy	See note		50–75	While no national organised program exists, screening with FOBT (annual), sigmoidoscopy (5-yearly) and colonoscopy (10-yearly) depending on individual risk factors are promoted through guideline dissemination and media campaigns.

(a) National Cancer Screening Service (2013).

(b) New Zealand Ministry of Health (2013).

Source: Benson, Atkin, Green et al. (2012) except where otherwise noted.

How is bowel cancer screening managed in Australia?

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 who do have symptoms, or a significant family history, are encouraged to discuss these with their primary health care practitioner (PHCP). In accordance with the *Guidelines for the prevention, early detection and*

management of colorectal cancer, approved by the National Health and Medical Research Council (NHMRC) (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 currently invited to screen regardless of evidence of previous symptoms or significant family history.

The *Guidelines for the prevention, early detection and management of colorectal cancer* (ACN 2005) recommend organised screening with an FOBT, performed at least once every 2 years, for the Australian population aged 50 or over.

A variety of FOBT kits to aid the early detection of bowel cancer are available in Australia over the counter from pharmacies, through medical practitioners and through the following programs:

- BowelScreen Australia™—this is a pharmacy-based bowel cancer awareness, education and screening initiative for the Australian community advocating annual screening for all non-symptomatic Australians aged 50 and over (see <www.bowelscreenaustralia.org>).
- BowelScan—this is a community service project of various Rotary clubs and districts in Australia. It has been operating since 1982, advocating annual screening for men and women over the age of 40. It seeks to increase community knowledge of bowel cancer and its symptoms, and distributes subsidised FOBT kits to facilitate early diagnosis (see <www.nationalbowelscan.org.au>).

The NBCSP is the national screening program implemented in 2006 by the Australian Government in partnership with the state and territory governments (see <www.cancerscreening.gov.au>). This report is based on data collected through the NBCSP.

The National Bowel Cancer Screening Program

Initial pilot

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 pilot testing was encouraging, the Australian Government 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.

Start of the National Bowel Cancer Screening Program

After the success of this pilot, the Australian Government implemented Phase 1 of the NBCSP in late 2006. In July 2008, Phase 2 of the NBCSP began. Phase 2 was originally scheduled to end on 30 June 2011 (with most invitations ceasing on 31 December 2010). However, the continuation of Phase 2 with ongoing funding (from July 2011) was then announced in the 2011–12 Australian Budget. This ongoing funding will allow the program to be expanded in coming years with the addition of Australians turning 60 in 2013, those turning 70 in 2015, and the phasing-in of biennial screening starting in 2017–18 (Table S1.3).

Table S1.3: NBCSP phases and target populations

Phase	Start date	End date	Target ages
1	7 August 2006	30 June 2008	55 and 65
2	1 July 2008	30 June 2011[(a)]	50, 55 and 65
2[(b)]	1 July 2011	30 June 2013	50, 55 and 65
3	1 July 2013	ongoing	50, 55, 60 and 65
3	1 July 2015		50, 55, 60, 65 and 70
3	1 July 2017		Phasing in of biennial screening (50–74) commences

(a) Eligible birthdates, and thus invitations, ended on 31 December 2010.

(b) Ongoing NBCSP funding commenced.

Note: The eligible population for all Phase 2 and 3 start dates incorporates those turning the target ages from 1 January of that year, onwards.

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 earlier stage to maximise the effectiveness of treatment.

The NBCSP has been phased in gradually to help ensure that health services, such as colonoscopy and treatment options, 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.

The National Bowel Cancer Screening Register (the Register), currently maintained by the Department of Human Services (DoHS, formerly Medicare Australia), is responsible for inviting people to participate in screening using an FOBT supplied with the invitation pack. To avoid the possibility of samples deteriorating due to exposure to heat and delays in processing (van Rossum et al. 2009; Grazzini et al. 2010), participants living in 'hot zone' postcodes are not sent kits during months where the average temperature has historically been greater than 30.5 degrees Celsius. They are sent their kit either before or after those hotter months.

Once an eligible person has been sent and completed their FOBT, they are asked to post it to a central pathology laboratory for analysis. Results are sent to the participant, the participant's nominated PHCP and the Register. Participants with a positive result, indicating blood in their stool, are advised to consult their PHCP to discuss further diagnostic testing—in most cases, this will be a colonoscopy.

Responses to invitations, and the outcomes for participants 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, Figure B.1 for a complete representation of the current screening pathway from invitation to diagnosis.

How is the National Bowel Cancer Screening Program monitored?

The Australian Institute of Health and Welfare (AIHW) produces these NBCSP monitoring reports for the Australian Government Department of Health and Ageing (DoHA). These reports analyse data extracted from the Register and provide an overview of screening participation and outcomes.

This current report presents statistics on the progression of eligible participants, invited between 1 July 2011 and 30 June 2012, through the screening pathway. It covers measures of

participation, FOBT screening results, and 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.

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

Terminology and concepts used in this report

Eligible population

The eligible population list is compiled from the Medicare enrolment file. To be included in the eligible population for this report, invitees must have turned 50, 55 or 65 between 1 January 2011 and 30 June 2012, and been registered as an Australian citizen or migrant in the Medicare enrolment file, or registered with a Department of Veterans' Affairs gold card.

While all kits returned are analysed and processed by the program, invitees who were outside the target ages or did not live in Australia at the time of invitation were excluded from analyses in this report. There were 767 invitees excluded from the eligible population in 2011–12 (see Table A1.1). These people were mainly participants outside the target ages who independently requested a kit, or were involved in jurisdictional pilot projects (such as those aimed at improving Aboriginal and Torres Strait Islander participation).

Those people in the eligible population who had opted off the NBCSP (due to reasons such as already having regular colonoscopies) or suspended their participation as at 31 December 2012 were included in analyses, as many had progressed through the screening pathway before opting off or suspending their participation.

Participation

The term participation is used to refer to participation in the screening test. Hence, the participation rate is the proportion of the eligible population invited who returned a completed FOBT.

FOBT positivity rate

The FOBT positivity rate refers to the proportion of participants with positive (abnormal) FOBT screening results out of all participants who returned a valid FOBT kit; participants that returned inconclusive kits were excluded from this rate.

Primary health care practitioner and colonoscopy follow-up rates

The proportion of participants with a positive FOBT screening result who subsequently visited a PHCP is referred to as the primary health care practitioner follow-up rate. PHCPs are classified by DoHS as a general practitioner or other primary health care provider. This may include remote health clinics or specialists providing general practitioner services.

The proportion of participants with a positive FOBT screening result who subsequently had a colonoscopy is referred to as the colonoscopy follow-up rate.

Crude versus estimated rates

Due to inherent lag time between invitation and completion of an FOBT, calculation of a crude participation rate for a period can result in an underestimate of the true (final) participation rate, especially if sufficient time to allow all invitees to participate has not passed when calculating the crude rate. To adjust for the lag time, modelled rates based on the time it took each individual invited to respond (by returning a completed FOBT) are calculated. This allows a response rate over time from the date of invitation to be established. The modelled response rates were calculated using the Kaplan-Meier method and provide a rate that adjusts for lag time in those who were invited later in the reported period. The same approach was used to determine current PHCP and colonoscopy follow-up rates, though this method can only minimise the effect of the lag time—it cannot account for non-return of NBCSP forms (see 'NBCSP data collection' below). Details of the Kaplan-Meier method can be found in Appendix D.

Data considerations

The analyses in this report are based on data recorded in the Register for the eligible population invited between 1 July 2011 and 30 June 2012, and includes participation and follow-up activity until 31 December 2012.

NBCSP data collection

Data are collected about participants and their screening outcomes from a variety of sources throughout the screening pathway. The data are collected on forms completed by participants, PHCPs, colonoscopists, pathologists, nurses, medical administrative staff or other specialists, and are ultimately returned and stored in the Register.

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 into the Register in any sequence; however, each must have a positive FOBT screening result to be included. This means that there may be data for colonoscopies without an associated PHCP assessment form, and data for histopathology results without a completed colonoscopy report form. When inconsistencies occur, these are noted to provide an indication of the reliability of the data. Additionally, specific histopathology data collection projects have been undertaken in some states and territories that may distort comparisons of histopathologically confirmed outcomes between jurisdictions.

Because of time lags in reporting and under-reporting by clinicians, data on PHCP consultations, colonoscopies and histopathological outcomes in this report may understate the true performance of the NBCSP in this period and should be interpreted with caution.

Self-reported population subgroup identification

Identification of participants as Aboriginal or Torres Strait Islander, having a disability, or speaking a language other than English at home is by self-identification through return of a completed participant details form along with their completed FOBT. As membership of these subgroups is only known for invitees who participate, it is not possible to accurately determine NBCSP participation rates for these subgroups. Instead, the percentage of participants who identified as members of these subgroups is shown, and compared with the

corresponding percentage of the population (aged 50, 55 and 65) who identified themselves as members of these subgroups in the 2011 Australian Census of Population and Housing. This allows an estimation of under-reporting or under-participation for these subgroups to be made.

Postcode-based subgroup identification

Subgroup analyses based on remoteness area and socioeconomic status (Index of Relative Socioeconomic Disadvantage) area are based on invitee postcodes at the time of invitation. The correspondences (previously known as concordances) used in this report are based on 2011 postal area boundaries and classifications, which are defined only in Census years. See Appendix C for further details.

The need to apply correspondences to determine subgroup identification introduces an unavoidable level of inaccuracy. For example, many postcodes may not have valid socioeconomic status or remoteness correspondence data available (such as for non-residential postcodes, or newly created postcodes), and some areas may have changed classification group since the time of the Census either due to boundaries being redefined by Australia Post, or subsequent population changes. The Australian Bureau of Statistics advises that caution should always be taken when analysing the results of data that have been converted using correspondences, and the potential limitations of the data taken into account.

Colonoscopy follow-up

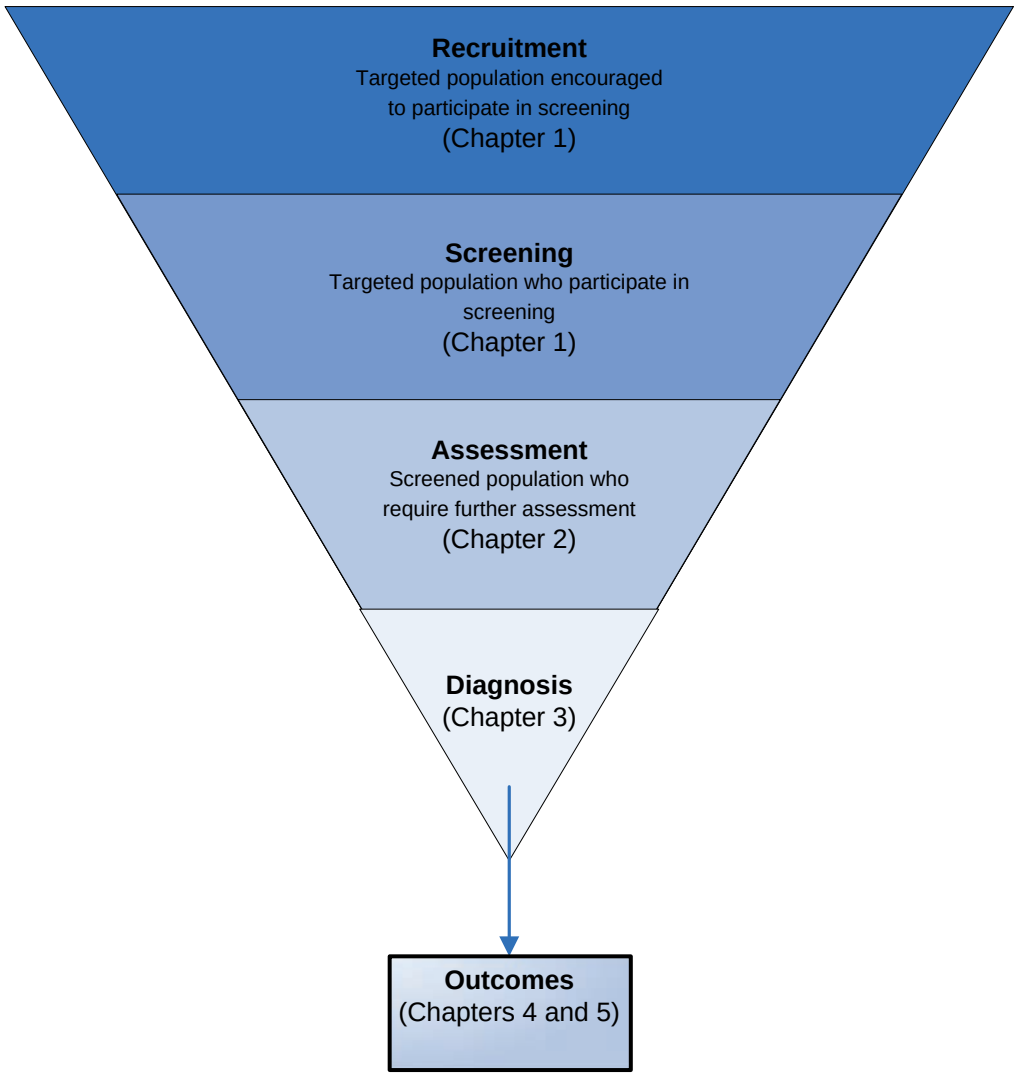
Theoretically, the denominator for the colonoscopy follow-up rate should be all positive FOBTs that were referred for colonoscopy by a PHCP. However, due to the lag time in visiting PHCPs and the low rate of PHCP assessment form return, this cannot be accurately determined. Instead, the total number of positive FOBTs recorded in the Register was used as the denominator.

As not all participants with a positive FOBT will be referred for a colonoscopy (for example, see tables A3.9 and A3.11), this method may result in an underestimation of the true colonoscopy follow-up rate. The use of positive FOBTs as the denominator may also influence the rates shown in unexpected ways. For example, differences in age and sex population subgroups may be masked by differing referral rates; tables A2.2 and A3.9 show that the rate of positive FOBTs (used as the denominator for colonoscopy follow-up) increases with age, yet referrals for colonoscopy generally decrease with age.

Section 2 Performance measures

Structure of this section

The *Population based screening framework* (APHDPCSS 2008) uses 5 incremental stages to describe a screening pathway. Figure S2.1 shows these stages, and details how the following chapters in this section—and thus the NBCSP performance measures—relate. The 2 remaining chapters in this section (Chapter 7, Incidence of bowel cancer, and Chapter 8, Mortality from bowel cancer) provide additional context of bowel cancer in Australia.



Source: APHDPCSS (2008).

Figure S2.1: The five population-based screening framework stages

1 Participation

What do we mean by participation?

Definition: The proportion of the eligible population invited who returned a completed FOBT screening kit for analysis.

Rationale: Through increased participation in bowel cancer screening, abnormalities that could otherwise develop into bowel cancer can be detected and treated. High participation is required for the NBCSP to achieve its major objectives of reducing bowel cancer incidence, morbidity and mortality.

Data source: National Bowel Cancer Screening Register.

Data quality: As the number of invitations issued and FOBT kits returned is known, there are limited data quality issues. See 'Data considerations', Section 1 for further details.

Guide to interpretation: Participation data are based on the eligible population invited to screen between 1 July 2011 and 30 June 2012, as recorded in the Register. Persons are counted only once in the reporting period, even if they were invited or screened more than once. See 'Eligible population', Section 1 for further information.

Participation rate calculations should, in principle, exclude people from the denominator who are unlikely to require screening, such as those who have a previous diagnosis of bowel cancer, those who have had a colonoscopy in the past 5 years, or those who have completed any FOBT kit within the past 2 years. In practice, none of these groups can be reliably identified, and so all invitees are included in the denominator, and the numerator if applicable. Similarly, those who had opted off or suspended their participation are included in this chapter; this may cause a slight underestimation of participation, but increases outcome data for later chapters.

Kaplan-Meier rates are presented to take into account potential participation lag time, as discussed under 'Crude versus estimated rates', Section 1.

Key results

- Of the 929,433 eligible people invited into the NBCSP in 2011–12, a total of 325,276 (35.0%) had participated by 31 December 2012.
- Kaplan-Meier curves showed that participation rates tended to plateau about 16 weeks after original invitation.
- There were statistically significant differences in participation between the three target ages. Using Kaplan-Meier estimates at 52 weeks after invitation, the highest rate of participation was by people aged 65 (44.0%), followed by those aged 55 (34.1%). Those aged 50 had the lowest participation (29.2%).
- There was also a statistically significant difference in participation between the sexes; the women's participation rate (37.5%) was higher than that for the men (32.5%).
- People invited who lived in *Major cities*, *Remote* and (especially) *Very Remote* regions had lower levels of participation than people invited from other regions.
- People living in areas with the lowest socioeconomic status had a lower level of participation than people from other socioeconomic areas.

Detailed analyses of 2011–12 invitee response

Between 1 July 2011 and 30 June 2012, a total of 930,200 FOBT invitations were sent out (Table A1.1). Of these, 767 were sent to people outside the target ages, or to addresses that were not in Australia, and were therefore not part of the eligible NBCSP population. To confirm the Register provided adequate invitation coverage of the target ages, the Australian Bureau of Statistics Estimated Resident Populations for those aged 50, 55 and 65 in 2011 was compared with invitations where the eligible birthday occurred in 2011. Based on this comparison, invitation coverage for the eligible population was considered to be virtually complete.

Of the 929,433 invitation kits issued to the eligible population, 325,276 people participated by returning a completed FOBT for analysis. This gave an overall Australia-wide crude participation rate of 35.0% (Table A1.2). A further 38,225 people did not return a kit but responded by opting off or suspending participation. This meant 363,501 people (39.1% of eligible invitations) responded in some form.

Box 1.1 Why was participation lower than in previous years?

The 35.0% participation rate recorded in this report for 2011–12 was lower than that in the previous monitoring report (38.4%). A range of factors are likely to be involved with this reduction in participation.

A pause in the program between January and June 2011 due to uncertainty of program continuation may have affected its momentum, causing some of this reduction.

Additionally, there was a slight increase since the last report in the percentage of people suspending or opting off the Program (Table A1.1). To quantify the impact of this increase, when invitees who suspended or opted off prior to returning a FOBT were completely excluded from participation calculations in both reports, this increase accounted for about 0.6% of the 3.4% reduction in participation. Further analysis of opt-off and suspend reasons showed a slight increase in people reporting they were already undertaking surveillance or screening options (data not shown), something which is not known at the time of invitation.

Overall, participation rates dropped across all subgroups analysed by a relatively uniform amount; however, areas within subgroups that contributed more greatly to the reduction are highlighted within the following 'Participation by population subgroups' section.

As previous monitoring reports did not allow those invited as much time to participate before the report was produced, the crude rates presented in those reports were not a complete indication of participation for those invitees. Therefore, Kaplan-Meier estimates (along with confidence intervals for those estimates) were also included to give a more accurate participation rate. This report allows a 6-month window between the end of the period being reported and the cut–off for data analysis; however, Kaplan-Meier estimates are still provided to ensure the 6-month wait time for the final data cut-off is sufficient.

Box 1.2 What are Kaplan-Meier estimates?

Kaplan-Meier estimates are statistical methods that calculate 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 (by returning a completed FOBT kit), recording the time (in weeks) it took them to do so. This allows the calculation of an overall response rate over time from the date of invitation, calculated as if all invitations sent throughout the particular period being reported were sent on the same date.

Information on the proportion of individuals who responded to the invitation, by time in weeks calculated using Kaplan-Meier estimates, is in Figure A1.1 and Table A1.3. As adequate follow-up time was used for this report (6 months, which eliminated the effect of the lag time in participation), the crude and Kaplan-Meier estimate provide the same result.

The Kaplan-Meier estimates do, however, allow the effect of invitation reminders 8 weeks after the original invitation to be seen (figures A1.1, A1.2 and A1.3) as a second steep rise in participation between weeks 10 and 14. Participation rates generally plateaued 16 weeks after invitation.

Participation by population subgroups

The eligible population was analysed by a number of population subgroups, as any subgroup with low participation rates may benefit from additional initiatives to increase participation.

Kaplan-Meier estimates are provided for some subgroup analyses to show differences in participation over time since invitation.

Participation by state and territory

Participation rates varied by state and territory. The Northern Territory (24.0% crude participation), New South Wales (32.8%) and Queensland (33.9%) had lower participation rates than the overall 35.0% Australian rate. Conversely, Tasmania (40.3%), South Australia (39.5%), the Australian Capital Territory (38.2%) and Western Australia (37.6%) had higher participation rates than the overall Australian rate.

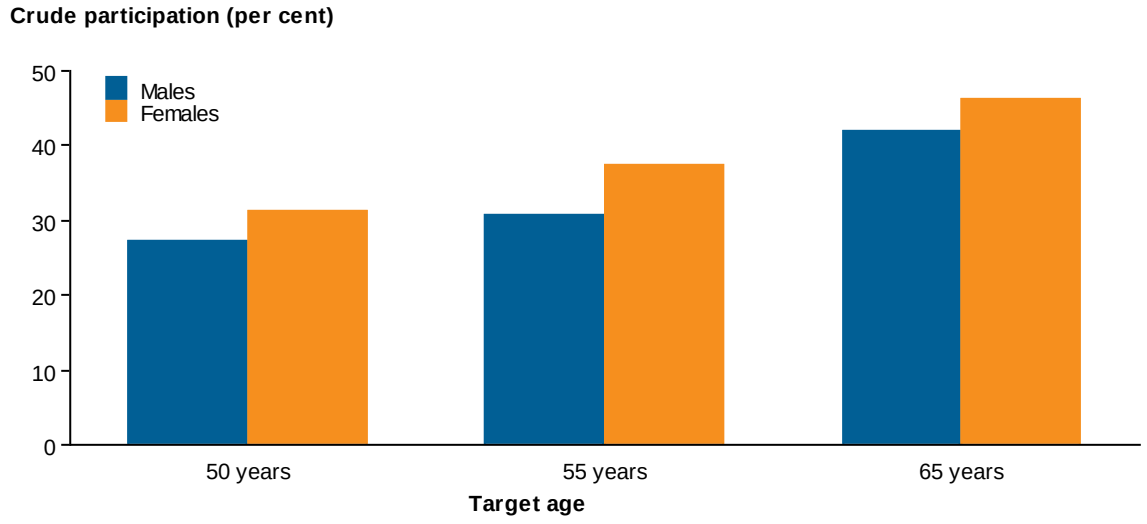
All jurisdictions showed a reduction in their participation rates since the last report. Tasmanian invitees had the smallest decrease in participation (from 42.5% to 40.3%), while West Australian invitees had the greatest decrease (from 42.5% to 37.6%). These differences were also evident in the Kaplan-Meier estimates for both 26 and 52 weeks post-invitation (Table A1.3).

Participation by age and sex

Participation rates were higher for women than men and increased with increasing age (figures 1.1, A1.2 and A1.3). These trends appeared across all population subgroups, and were similar to previous reports.

Using Kaplan-Meier estimates at 52 weeks post-invitation, those aged 55 (34.1% participation) were 1.2 times more likely to have participated than those aged 50 (29.2%). Those aged 65 (44.0%) were 1.5 times more likely to have participated than 50-year-olds (Table A1.4 and Figure A1.2). While all 3 ages had lower participation rates compared to the previous report, the reduction by those aged 50 and 55 contributed most to the overall reduction in participation.

Women were 1.2 times more likely than men to participate in bowel screening (37.5% Kaplan-Meier estimated participation for women compared with 32.5% for men, after 52 weeks) (Table A1.5 and Figure A1.3). Research has suggested that previous cancer screening (such as cervical or breast cancer screening) predicts an improved likelihood of bowel cancer screening (Gregory et al. 2011), and this may be a factor influencing the sex-specific differences in participation.



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

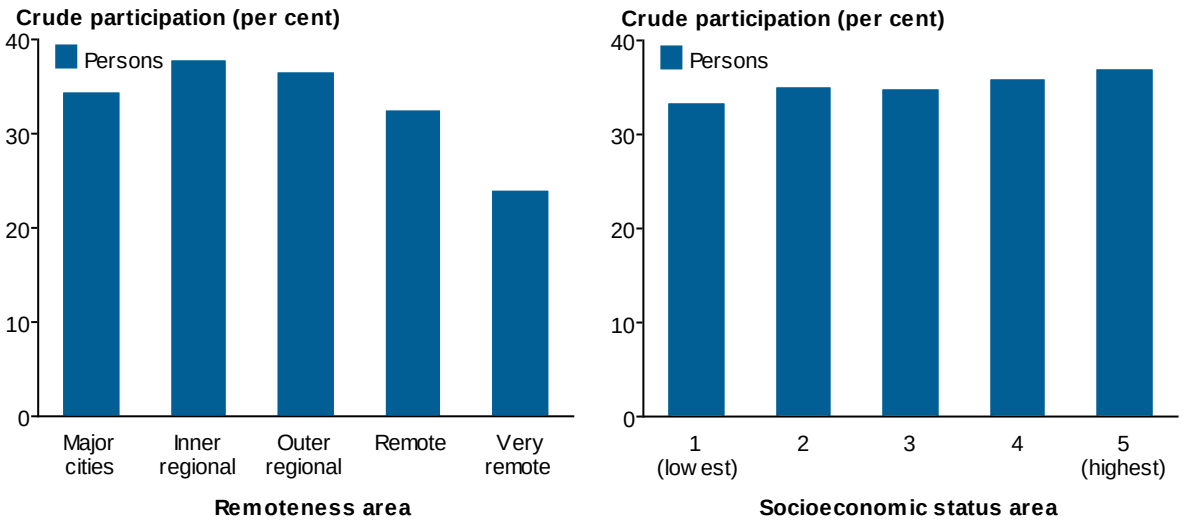
Figure 1.1: Crude participation, by age and sex, 2011–12

Participation by remoteness area and socioeconomic status area

While more than 66% of all participants came from *Major cities* (with a 34.2% crude participation rate), participation was higher in *Inner regional* (37.5%) and *Outer regional* (36.4%) areas than all other geographical areas (Table A1.6 and Figure 1.2). Similar results were found for participation by remoteness area and state and territories, with participation higher in *Inner regional* and O*uter regional* areas and lower in *Remote* and *Very remote* areas (Figure 1.3). Jurisdiction specific figures (figures A1.4a–A1.4h) are in Appendix A.

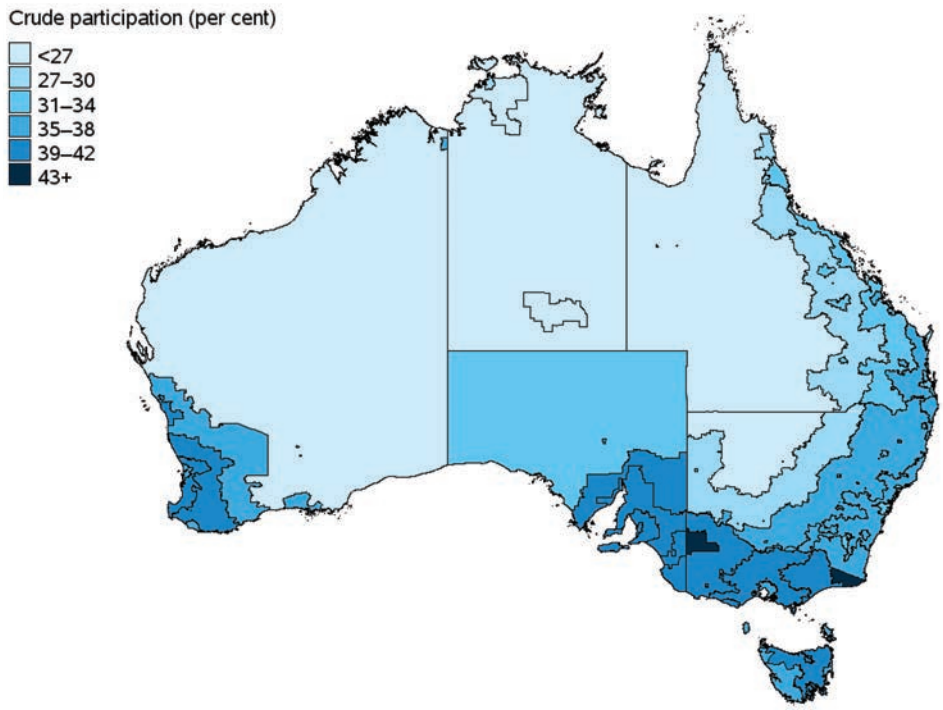
Analysis of invitees grouped into population-based socioeconomic status quintiles showed invitees from within the lowest socioeconomic areas (the areas with the most disadvantage) had lower participation than for those living in all other socioeconomic areas (Table A1.7 and Figure 1.2).

No particular remoteness area or socioeconomic status group more greatly contributed to the reduced participation rate in this report. However, as more than two thirds of invitees lived in *Major cities*, changes in their participation rate more greatly affected the overall Australian participation rate.



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure 1.2: Crude participation, by remoteness area and by socioeconomic status area, 2011–12



Notes

1. Rate per remoteness area is an average of participation across that remoteness area.
2. Participation rates rounded to integers.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure 1.3: Crude participation, by remoteness area, 2011–12

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

As discussed in Section 1 (See 'Data considerations'), identification of invitees by these 3 subgroups is not known at the time of invitation; this information is only collected once an invitee becomes a participant of the NBCSP and completes the relevant section of their participant details form. Therefore, is not possible to accurately determine these subgroup participation levels.

Instead, the proportion of participants who reported their status within these subgroups is shown, along with the corresponding population proportions derived from the 2011 Census of Population and Housing (tables A1.8–A1.10). While these are not ideal comparisons, they do allow some understanding of people in these three subgroups, and if they are participating in the NBCSP at similar levels to their proportions in the Australian population (as recorded at the 2011 Census). For example, if 1.5% of the Australian population in the target ages identified as Indigenous at the 2011 Census, did the same proportion of people who participated in the NBCSP identify as Indigenous?

The following comparisons should be interpreted with caution as the eligible NBCSP population (which includes only those in the target ages, living in Australia, who are registered as Australian citizens or migrants in the Medicare enrolment file, or are registered with a DVA gold card) may differ somewhat from the population recorded in those target ages at the 2011 Census (which did not have the same eligibility criteria, such as Medicare or DVA gold card registration). Further, there were slight differences in the proportion of people who did not identify (did not answer these questions) between the NBCSP and 2011 Census data (tables A1.8 and A1.10). This may affect comparisons shown below, so they should be interpreted with caution.

The proportion of participants who identified as Indigenous in the NBCSP was consistently lower than the comparable proportion who identified as Indigenous in the 2011 Census (Table A1.8). This may have been due to the eligible population who were Indigenous having participated at a lower rate than would be expected. That is, 0.6% of the eligible population who participated identified as Indigenous, compared with 1.5% of the target ages identifying as Indigenous at the time of the 2011 Census.

As the Register assumes all people who do not answer the question about language spoken at home speak English, it was not possible to determine the 'Not stated' percentage for comparison with the percentage from the 2011 Census (Table A1.9). Therefore, no interpretation about participation rates by people who speak a language other than English at home should be made, though Table A1.9 is provided for completeness.

As the proportion of participants who identified as having a severe or profound activity limitation (5.3%) was slightly greater than the proportion identified in the 2011 Census (4.6%), it is likely that participation among invitees in this subgroup was no lower than for those invitees without a severe or profound activity limitation (Table A1.10).

2 Faecal occult blood test outcomes

What do we mean by FOBT outcomes?

Definition: The proportion of the eligible population invited who returned a positive (abnormal) result from a correctly completed FOBT screening kit.

Rationale: Monitoring of FOBT outcomes, including for various subgroups, is important to ensure the quality of the screening test results and participant safety.

Data source: National Bowel Cancer Screening Register.

Data quality: All FOBT kits returned are analysed for outcome, with the result reliably stored in the Register. There are no quality issues with this measure. See 'Data considerations', Section 1 for further details.

Guide to interpretation: FOBT result data are based on data recorded in the Register to 31 December 2012 for persons invited between 1 July 2011 and 30 June 2012.

Persons are counted only once in the reporting period, even if they completed more than one FOBT during this period. 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.

Key results

- Of the 325,276 participants who had completed an FOBT kit, 321,761 (98.9%) had done so correctly, allowing for analysis by the pathology laboratory. However, 68 were then inconclusive when analysed.
- Out of the 321,761 valid FOBT kits analysed, 22,472 returned a positive result, giving an overall positivity rate of 7.0%.
- The positivity rate for men (7.7%) was 1.2 times that for women (6.4%).
- The FOBT positivity rates for both sexes increased with older age, consistent with the increase in polyp, adenoma and bowel cancer incidence rates with increasing age.
- Positivity rates increased with increasing geographic remoteness. Rates for participants in *Very remote* (8.5%), *Remote* (8.2%) and *Outer regional* (7.8%) areas were all higher than those in *Inner regional* (7.2%) and *Major cities* (6.8%).
- Positivity rates were higher for participants living in areas with higher socioeconomic disadvantage—from 6.1% for participants living in areas with the least disadvantage, to 8.0% for participants living in areas with the most disadvantage.
- Participants who self-identified as Aboriginal and Torres Strait Islander (9.8%) had a higher positivity rate than those who reported as non-Indigenous, (6.9%), or those who did not state their Indigenous status (8.5%).
- The positivity rate of participants with a severe or profound activity limitation (11.3%) was higher than participants without those limitations (6.8%).

Background information

Each invitee in the NBCSP is initially sent 1 FOBT screening kit containing 2 sample tubes to be completed, from 2 separate bowel motions, and returned to the pathology laboratory together for analysis.

Completed and returned kits are categorised by pathologists into 3 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 gap of more than 2 weeks between the dates the 2 samples were collected
- the kit having taken more than 14 days between the date of first sample collection and arrival of the completed kit at the pathology laboratory.

Participants with FOBTs that are not correctly completed are asked to complete another FOBT. See Figure B.1, Appendix B for details of the screening pathway.

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

Participants with a positive FOBT are encouraged to visit their PHCP 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 an FOBT. Participants are advised to discuss continuing screening options with their PHCP.

Detailed faecal occult blood test outcome analyses

Between 1 July 2011 and 30 June 2012, 929,433 eligible people were invited to screen, and by 31 December 2012, 325,276 participants had returned at least one completed FOBT kit. Of these, 321,761 (98.9%) had a correctly completed FOBT kit tested by the pathology laboratory (Table A2.1); the rest of the kits had been incorrectly completed. Of the correctly completed kits, some were deemed inconclusive when tested. Those participants who returned an incorrectly completed or inconclusive FOBT kit were requested to complete another FOBT; however, by 31 December 2012, 3,447 participants had returned only an incorrectly completed kit, and 68 had provided only inconclusive kits. These were excluded from the analyses.

Of the 321,693 valid FOBT kits analysed, 22,472 (7.0%) returned a positive FOBT result (Table A2.2). These participants were advised to consult their PHCP to discuss this result and seek further diagnostic testing ('3 Follow-up of positive FOBT results', Section 2).

Faecal occult blood test outcomes by population subgroups

Faecal occult blood test outcomes by state and territory

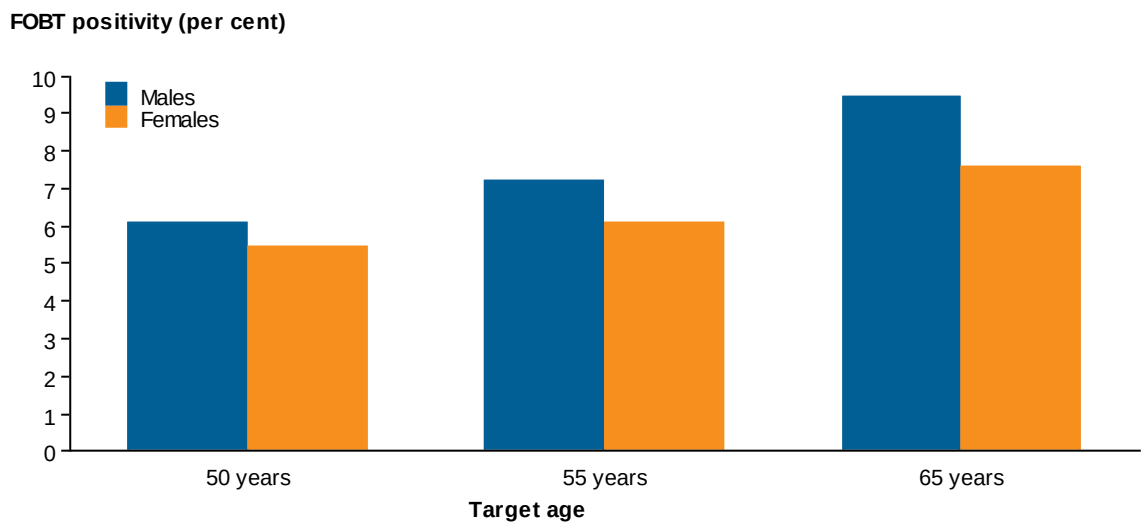
The positivity rates for the Northern Territory (9.2%), Tasmania (7.5%) and South Australia (7.4%) were higher than the overall Australian rate (Table A2.3). The Northern Territory rate

in particular was about 30% higher; however, this rate was based on a lower number of analysed kits (1,428) compared with other jurisdictions.

Faecal occult blood test outcomes by age and sex

The FOBT positivity rate increased with increasing age. This was true for both men and women (Figure 2.1 and Table A2.2). These findings are consistent with the increase in prevalence of polyps and adenomas with age (Winawer et al. 1997).

The men's positivity rate (7.7%) was 1.2 times the women's (6.4%), indicating both age and sex affect the FOBT positivity rate (Table A2.2).



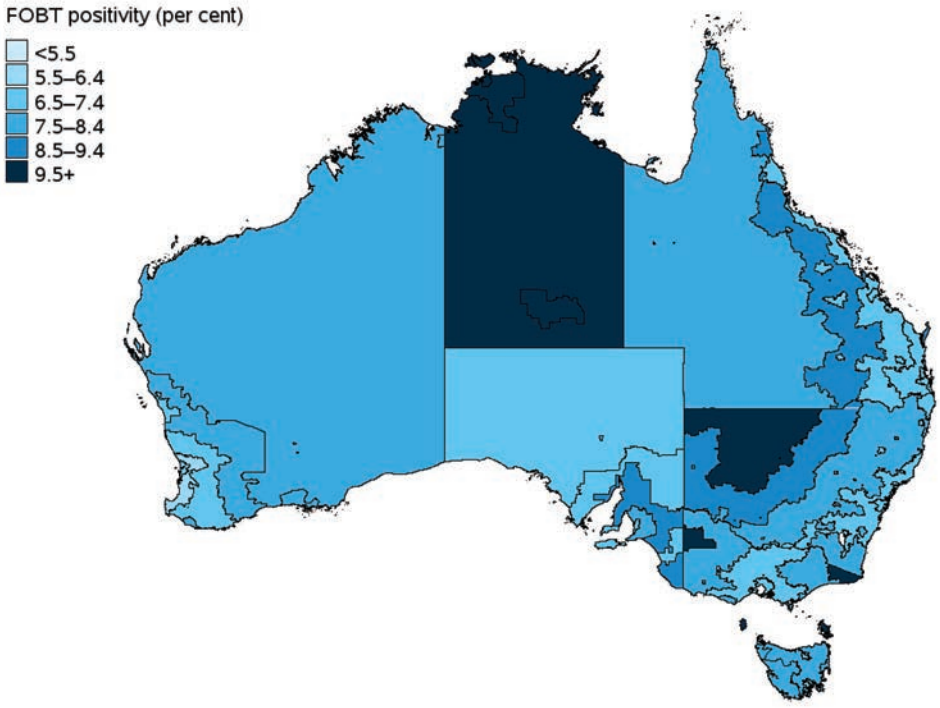
Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure 2.1: FOBT positivity, by age and sex, 2011–12

Faecal occult blood test outcomes by remoteness area and socioeconomic status area

Analysis of the positivity rate by area (Table A2.4) showed increasing positivity with increasing remoteness. *Inner regional, Outer regional, Remote* and *Very remote* areas had positivity rates 1.1, 1.1, 1.2 and 1.3 times the positivity rate of *Major cities* respectively. This was a similar result to previous reports. Positivity rates by remoteness area and state and territories are shown in Figure 2.2. Jurisdiction specific figures (figures A2.1a–A2.1h) are in Appendix A.

FOBT positivity rates also increased for people living in areas of increasing disadvantage (Table A2.5). The positivity rate for participants living in areas with the lowest socioeconomic status (8.0%) was 1.3 times that of participants living in areas with the highest socioeconomic status (6.1%). Socioeconomic status analyses for the Participation measure ('1 Participation', Section 2) and the FOBT analyses in this chapter show that those living in areas with lower socioeconomic status participate less in the NBCSP (Table A1.8); yet those who do participate return a higher proportion of positive FOBT results (Table A2.5).



Notes

1. Remoteness areas shaded white contain data that are not publishable due to small numbers, confidentiality, or other concerns.
2. Rate per remoteness area is an average of positivity across that remoteness area.
3. Positivity rates rounded to one decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure 2.2: FOBT positivity, by remoteness area, 2011–12

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 had a positivity rate (9.8%) that was 1.4 times higher than that of non-Indigenous participants (6.9%) (Table A2.6).

The positivity rate of those who spoke a language other than English at home (7.2%) was similar to participants who spoke English (7.0%) (Table A2.7); however, as those who do not report their language spoken at home are assumed to speak English, the interpretability of this result is limited.

People with a severe or profound activity limitation recorded a 1.7 times higher positivity rate (11.3%) than people without such limitations (6.8%) (Table A2.8). Reasons for this difference are speculative, but may include a lower level of physical activity (Wolin, Yan & Colditz 2011), or comorbidities and medications that increase FOBT screening positivity in people with a severe or profound activity limitation.

3 Follow-up of positive FOBT results

What do we mean by FOBT follow-up?

Definition: The proportion of the eligible population invited who returned a positive (abnormal) result from a correctly completed FOBT kit and received follow-up care by a PHCP and colonoscopist.

Rationale: People who complete a screening test and receive a positive result are likely to be concerned; however, not all positive screening results are 'true' positives for bowel cancer. Monitoring of follow-up care for participants with a positive FOBT is important to ensure those participants follow up their screening result with medical specialists.

Data source: National Bowel Cancer Screening Register.

Data quality: All positive FOBT results are recorded in the Register; however, reporting of follow-up care by PHCPs, colonoscopists, surgeons and pathologists is not mandatory, so follow-up rates may be underestimated. See 'Data considerations', Section 1 for further details.

Guide to interpretation: This chapter discusses the follow-up procedures, including PHCP visits, colonoscopy procedures and histopathology diagnoses for those participants who were invited between 1 July 2011 and 30 June 2012. Persons are counted only once in the reporting period, even if they attended more than one follow-up consultation during this period. For participants who attended more than one follow-up consultation, the first consultation after the positive result was used to establish time to follow-up, while the most serious follow-up result was used for outcomes.

Kaplan-Meier rates (see 'Crude versus estimated rates', Section 1) are used to take into account potential lag time between a positive FOBT result and both PHCP and colonoscopy follow-up dates.

The rates of colonoscopy follow-up are discussed in this chapter, while the actual outcomes of colonoscopic investigation are discussed in '4 Bowel abnormality detection', Section 2.

Key results

- Using Kaplan-Meier estimates, of the 22,472 participants who had a positive FOBT, 64.0% had a follow-up PHCP visit and 73.2% had a follow-up colonoscopy within 1 year of their screening result; PHCP visits appear to be under-reported (see Box 3.1).
- PHCP follow-up was highest for participants living in *Inner and outer regional* areas.
- Of the 14,242 participants who had reported a PHCP consultation, 82.5% reported experiencing no symptoms before their positive FOBT result and 92.4% were referred for colonoscopy.
- Aboriginal and Torres Strait Islander participants, participants who spoke a language other than English at home, and those with a severe or profound activity limitation had a lower rate of colonoscopy follow-up than other participants.

Background information

The NBCSP uses an FOBT as the tool to screen for potential bowel problems that require further investigation. A procedure such as colonoscopy is required to actually diagnose a bowel condition after a positive screening test.

Participants who receive a positive FOBT result are encouraged to follow up this outcome with their PHCP. In accordance with the *Guidelines for the prevention, early detection and management of colorectal cancer* (ACN 2005), PHCPs 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.

Colonoscopy is currently considered the most accurate method of investigation to assess the colon and rectum, as it enables biopsy and subsequent histopathological diagnosis. Colonoscopy also allows identification and endoscopic removal of polyps and adenomas.

As most bowel cancers are known to initiate from polyps (Cappell 2005), their removal at colonoscopy provides a preventive measure to lower the risk of future bowel cancers. A study by Stryker and colleagues (1987) estimated the cumulative risk of bowel cancer at the site of an untreated polyp was 2.5% at 5 years, 8% at 10 years and 24% at 20 years post-discovery.

This is one of the advantages of the NBCSP; while bowel cancer screening aims to find cancers at an earlier and treatable stage, follow-up colonoscopy after a positive screen may also identify and remove pre-cancerous lesions. This should result in lower bowel cancer incidence rates in future years. However, the effect may not be apparent until about 10 years from the start the program.

Detailed primary health care practitioner follow-up analyses

Of the 22,472 participants invited who returned a positive FOBT result, 14,242 (63.4%) had a PHCP visit registered by 31 December 2012 (Table A3.1). Using Kaplan-Meier estimates to minimise any effect from lag time, an estimated 64.0% of participants had consulted a PHCP within 1 year of their positive FOBT result (Table A3.2). The reminder letter sent to participants and their PHCP 8 weeks after a positive FOBT clearly had a positive effect, with an increase in the follow-up rate seen between 10 and 14 weeks (figures A3.1a–c).

Box 3.1 Interpretation of follow-up results

Assessment form return has improved over that recorded in previous monitoring reports. Some of this improvement is due to the increase in time between the invitation and final data cut-offs used in the last two reports, which have allowed sufficient time for the majority of participants with a positive FOBT result to attend their PHCP, thus reducing the effect of lag time. This is apparent as the similar crude and Kaplan-Meier rates. However, both crude and Kaplan-Meier rates have again increased in this report, suggesting that form return by PHCPs is also vastly improving over previously reported levels; PHCP follow-up rates have increased by about 20% since July 2008.

There is still room for more improvement in assessment form return as there were more recorded colonoscopies than recorded PHCP visits (tables A3.1 and A3.12), and PHCP referral is generally required to progress to colonoscopy.

Of the participants who had a reported PHCP consultation:

- 82.5% reported having no symptoms before the positive FOBT result (Table A3.8).
- 92.4% were referred for colonoscopy (Table A3.9).
- For those not referred for colonoscopy (1,076), the main reasons were having had a colonoscopy in the previous 18 months (45.0%), other medical condition(s) (28.8%), or the participant declining a colonoscopy (28.4%) (Table A3.11).
- Of the 306 participants who declined colonoscopy (Table A3.11), 198 were not referred for any other assessment (data not shown).

As the current invitation strategy sends invitations to all people turning the target ages regardless of recent screening or surveillance—or current bowel cancer status—it is possible to have participants move through the screening pathway before these reasons potentially negate the need for further follow-up. However, without complete PHCP form return (as well as participant opt-off form return), it is not possible to accurately quantify the number of people that should be excluded from asymptomatic population-based bowel screening.

Primary health care practitioner follow-up by population subgroups

Primary health care practitioner follow-up by state and territory

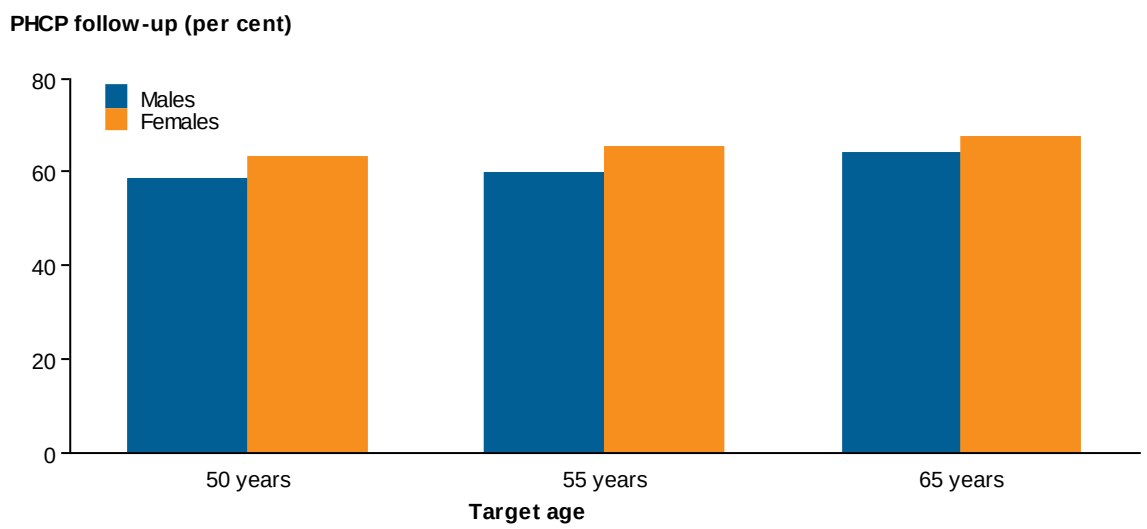
NBCSP implementation is the responsibility of each jurisdiction, and states and territories may have different follow-up policies and procedures. There were large differences recorded in PHCP follow-up between the jurisdictions, with the Northern Territory, Victoria and the Australian Capital Territory recording the lowest levels of PHCP follow-up (Table A3.1). The Kaplan-Meier PHCP follow-up rates up to 52 weeks from a positive FOBT result showed a similar pattern to the crude data regarding state and territory differences (Table A3.2 and figures A3.1b and A3.1c). For clarity, Kaplan-Meier curves for the states and territories were divided between figures A3.1b and A3.1c. With the exception of those living in the Northern Territory and the Australian Capital Territory, about 40% of all people with a positive FOBT had recorded a follow-up with their PHCP within 2 weeks.

Primary health care practitioner follow-up by age and sex

PHCP follow-up rates increased with age (Figure 3.1 and Table A3.1). As it is unlikely that PCHPs would return assessment forms differently for different-aged participants, this suggests that people are more likely to follow up the result with increasing age.

More women (65.5%) than men (61.3%) had an assessment form recorded, suggesting that women are more likely to follow up a positive FOBT with their PHCP. This was a common finding when comparing sexes across all PHCP subgroup tables.

From the PHCP visits recorded, women had a slightly higher rate of reported symptoms (Table A3.8), and a slightly lower rate of referral for colonoscopy (Table A3.9), possibly due to a higher percentage of women (30.8%) declining colonoscopy than men (25.7%) (Table A3.11). However, women also had 1.7 times the rate of male non-colonoscopy follow-up procedures.



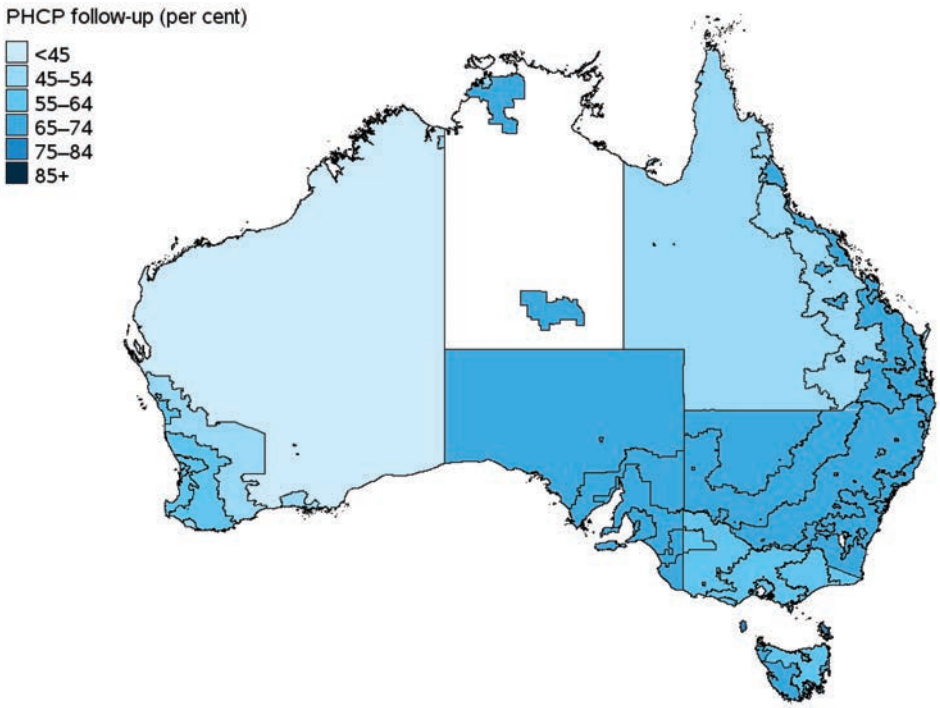
Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure 3.1: Primary health care practitioner follow-up, by age and sex, 2011–12

Primary health care practitioner follow-up by remoteness area and socioeconomic status

Participants in *Inner regional* (65.7%) and *Outer regional* areas (67.1%) had the highest rates of PHCP consultations—about 1.1 times the rate of *Major cities* (62.1%) (Table A3.3). Participants in *Remote* (59.9%) areas had the lowest rate of PHCP follow-up recorded. Follow-up to a PHCP varied by remoteness area and state and territories (Figure 3.2). New South Wales and South Australia had high participant PHCP follow-up for most remoteness areas. However, this could reflect differences in the return of assessment forms rather than a true difference in follow-up. Jurisdiction specific figures (figures A3.2a–A3.2h) are in Appendix A. Of those with PHCP follow-up, referral for colonoscopy was slightly more common in *Remote* and *Very remote* areas than in other regions, but this finding may be affected by the small number of consultations in these areas and should be interpreted with caution (Table A3.10).

PHCP follow-up between participants from different socioeconomic status areas was similar (Table A3.4).



Notes

1. Remoteness areas shaded white contain data that are not publishable due to small numbers, confidentiality, or other concerns.
2. Rate per remoteness area is an average of PHCP follow-up reported across that remoteness area.
3. PHCP follow-up rates rounded to integers.
4. Differences in PHCP follow-up rates across remoteness areas may involve differences in assessment form return and not a real difference in follow-up.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure 3.2: Follow-up by primary health care practitioners after a positive FOBT result, by remoteness area, 2011–12

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

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

Therefore, while Aboriginal and Torres Strait Islander participants (69.9%) had a higher rate of PHCP visits compared with non-Indigenous participants (64.8%), the low number of visits reported (128 compared with 13,903) means no conclusions should be drawn from these data (Table A3.5).

There were no differences in the rates of PHCP visits when comparing participants by language spoken at home or disability status (tables A3.6 and A3.7).

Detailed colonoscopy follow-up

Background

This section presents the rate at which participants with a positive FOBT had follow-up assessment by colonoscopy. Due to the recommendation that all referrals be for colonoscopy,

it is not possible to analyse follow-up by other assessment methods (for example, sigmoidoscopy) as data are not available.

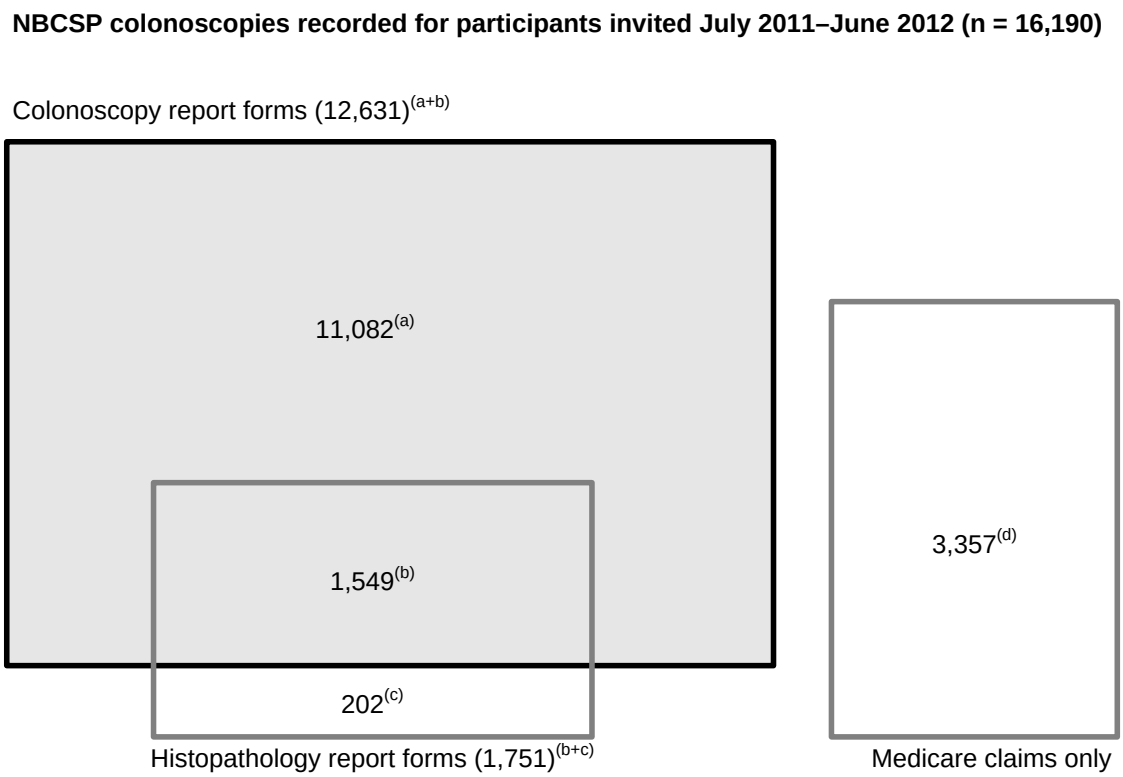
Following a positive FOBT screening result, PHCPs should refer a participant for colonoscopy, and the results should be returned to the Register on a colonoscopy report form (Figure B.1, Appendix B). Some of these colonoscopies would also have sent pathology samples for analysis, and these additional results should be returned to the Register on histopathology report forms. Lastly, each participant may choose to have their colonoscopy through the private or public healthcare systems (depending on their individual circumstances and choice), and those who had a private colonoscopy may then make a Medicare claim for that procedure. The Register records claims from NBCSP-related private colonoscopies.

As not all colonoscopy forms are returned to the Register, a count of colonoscopy report forms only will not be a complete count of all colonoscopies performed as part of NBCSP follow-up. Therefore, in an effort to obtain the most comprehensive picture of true NBCSP colonoscopy follow-up, colonoscopy procedures up until 31 December 2012 were identified through three sources:

1. colonoscopy report forms (counts (a) and (b) in Figure 3.3). Colonoscopy outcomes can be analysed using data on these forms
2. additional histopathology report forms (count (c) in Figure 3.3) from colonoscopies that, although not directly reported on a colonoscopy report form, must have sent samples to histopathology—which were reported
3. claims for Medicare benefits for NBCSP-related private colonoscopies that were not reported through a colonoscopy or histopathology report form (count (d) in Figure 3.3), as identified by DoHS.

Figure 3.3 visually presents the number of colonoscopies counted, and from which source(s) they were identified from. If all colonoscopy forms were returned and recorded, it would be expected that no extra colonoscopies would be counted from outside the colonoscopy report forms box. However, 3,357 colonoscopies due to NBCSP involvement were identified by a private colonoscopy Medicare claim only, and a further 202 were identified through a histopathology report form only.

Details such as colonoscopic findings could not be obtained for these colonoscopies; however, they should still be counted towards known colonoscopies performed as part of NBCSP follow-up activities. Even though using these sources allows the count of NBCSP colonoscopies to be as complete as possible, a number will remain unaccounted for, so colonoscopy follow-up rates are underestimated.



People invited in 2011–12 with*:*

(a) colonoscopy report forms recorded in the NBCSP Register for which no histopathology report form has been received

(b) colonoscopies performed 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 performed as part of the NBCSP where only a histopathology report form was recorded

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

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure 3.3: Sources of colonoscopy follow-up data, 2011–12

2011–12 colonoscopy follow-up

Of the 22,472 positive FOBT results from participants invited, 16,190 had a colonoscopy registered by 31 December 2012, giving a crude colonoscopy follow-up rate of 72.0% (Table A3.12). Of these, 3,357 colonoscopies were known to have taken place only due to a Medicare claim for the procedure; no colonoscopy or histopathology report forms were recorded for those colonoscopies.

Reasons for this non-complete rate of follow-up are likely to be similar to reasons for the low rate of PHCP follow-up: not all participants may follow up a positive FOBT result (and the positive FOBT count was used as the denominator for colonoscopy follow-up instead of all PHCP colonoscopy referrals), there is a lag time between booking and having a colonoscopy, and there is some delay in returning colonoscopy report forms. See 'Data considerations' and 'Colonoscopy follow-up', Section 1 for further details.

To adjust for the effect of lag time on the follow-up rate, an analysis using Kaplan-Meier estimates was performed. The Kaplan-Meier analysis of colonoscopy follow-up estimated 69.7% of participants with a positive FOBT had a colonoscopy within 26 weeks of notification

of their positive result, which increased to 73.2% at 52 weeks post-positive FOBT notification (Table A3.13). As these Kaplan-Meier rates were similar to the crude rate reported, the lag time waiting for a colonoscopy procedure was not a major factor in this report.

Colonoscopy follow-up by population subgroups

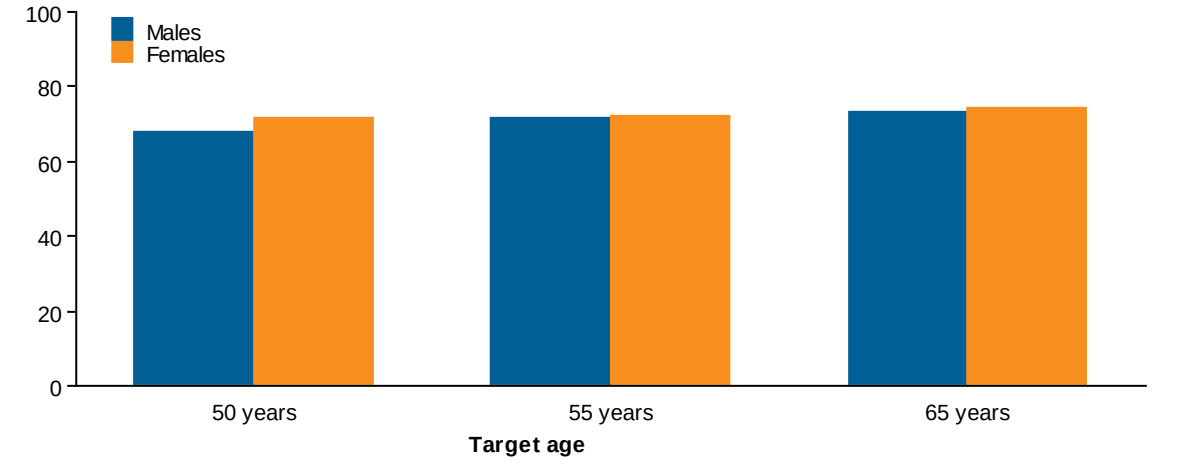
Colonoscopy follow-up by state and territory

There were differences in colonoscopy follow-up rates between states and territories (tables A3.12 and A3.13). Queensland (82.8%), South Australia (76.8%) and Tasmania (75.5%) had the highest rates of crude colonoscopy follow-up. Much like the PHCP follow-up differences by jurisdiction (Table A3.1), these colonoscopy follow-up differences may also be affected by program implementation procedures specific to each jurisdiction (tables A3.12 and A3.13 and figures A3.3a–A3.3c). Overall, 53% of those with a positive FOBT had undergone a colonoscopy within 12 weeks of their positive screen.

Colonoscopy follow-up by age and sex

The crude rate of colonoscopy follow-up for people aged 65 (73.6%) was higher than for those aged 50 and 55 (69.7% and 71.9% respectively) (Figure 3.4 and Table A3.12).

However, the difference in crude colonoscopy follow-up between men and women was minimal (Table A3.12).



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure 3.4: Colonoscopy follow-up, by age and sex, 2011–12

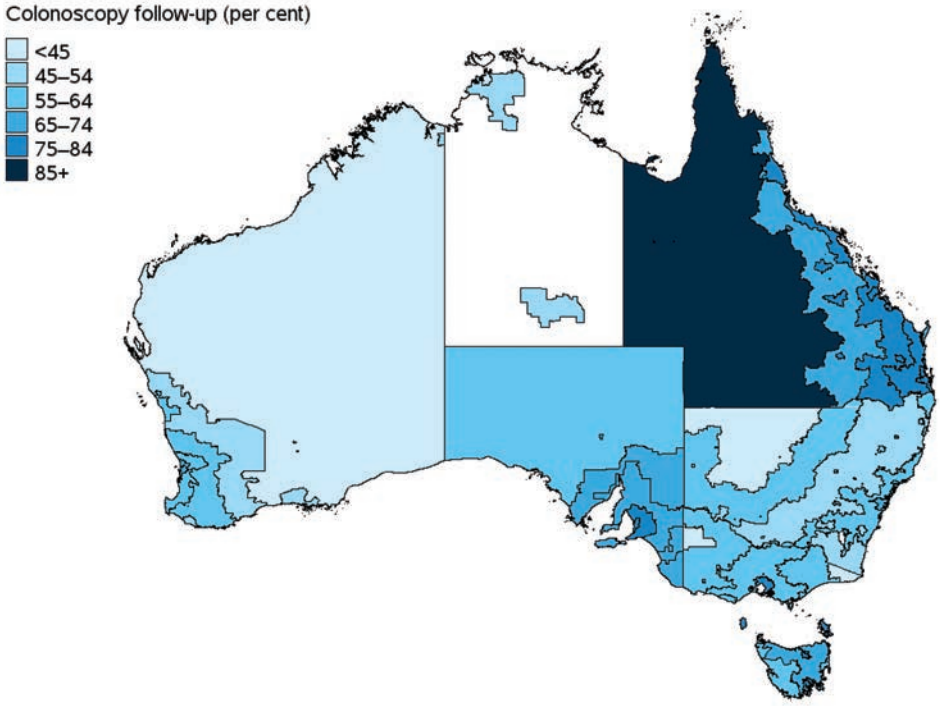
Colonoscopy follow-up by region and socioeconomic status

Colonoscopy follow-up for participants living in *Major cities* was higher than in all other regions (Table A3.14), yet PHCP follow-up in *Major cities* was lower than the overall Australian PHCP follow-up rate. As lag time is not considered a contributing factor towards PHCP or colonoscopy rates in this report, there may be differences in form return between PHCPs and colonoscopists within regions.

Colonoscopy follow-up rates varied by remoteness area and jurisdiction (Figure 3.5). Queensland had a high rate of colonoscopy follow-up across most remoteness areas. However, rates may be affected by colonoscopy and histopathology form return differences

within medical facilities across remoteness areas and jurisdictions. Jurisdiction specific figures (figures A3.4a–A3.4h) are in Appendix A.

There were also differences in colonoscopy follow-up between participants living in areas of differing socioeconomic status (Table A3.15); those living in areas with greater socioeconomic disadvantage had lower rates of colonoscopy follow-up than those living in areas with less socioeconomic disadvantage.



Notes

1. Remoteness areas shaded white contain data that are not publishable due to small numbers, confidentiality, or other concerns.
2. Rate per remoteness area is an average of colonoscopy follow-up reported across that remoteness area.
3. Colonoscopy follow-up rates rounded to integers.
4. Differences in colonoscopy follow-up rates across remoteness areas may involve differences in form return and not a real difference in follow-up.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure 3.5: Colonoscopy follow-up after a positive FOBT result, by remoteness area, 2011–12

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

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

Although Aboriginal and Torres Strait Islander participants had a lower rate of colonoscopy follow-up (60.7%) than non-Indigenous participants (72.9%), this comparison should be made with caution due to the low number of Aboriginal and Torres Strait Islander participants (111) who were recorded as having a colonoscopy (Table A3.16).

Participants who spoke English at home had a higher rate of colonoscopy follow-up (72.7%) than participants who spoke a language other than English (67.8%) (Table A3.17).

Participants with a severe or profound activity limitation had a lower rate of colonoscopy follow-up (60.8%) than participants without such limitations (74.4%) (Table A3.18). This is different from the PHCP follow-up result, where participants with a severe or profound activity limitation had a similar rate of PHCP follow-up (65.6% versus 65.5%) (Table A3.7). Further analysis of referral (Table A3.9) and reason for non-referral (Table A3.11) data showed 10.6% of participants with a severe or profound activity limitation were not referred to colonoscopy, compared with 7.1% of participants without such limitations (data not shown). Participants with a severe or profound activity limitation were more likely to cite limited life expectancy, a significant comorbidity or other medical condition as the reason for non-referral. They were less likely to report having had a recent colonoscopy as the reason for non-referral.

Detailed histopathology follow-up

Background

If a NBCSP-related colonoscopy removed specimens (such as polyps or adenomas) for analysis by histopathology, this is noted on the colonoscopy report form and the result of the histopathology analysis should then be returned to the Register on a completed histopathology report form. However, there was a high rate of non-return of histopathology report forms, which may be due to the lag time in processing of samples, or poor form return from pathology laboratories.

In recent years, a number of jurisdictions have started projects to improve histopathology data return, and this may have resulted in some jurisdictions having a higher proportion of confirmed colonoscopy outcomes than other jurisdictions.

As final diagnosis of cancers suspected at colonoscopy requires confirmation by histopathology, the suspected amount of missing histopathology report forms means the confirmed cancer numbers in '4 Bowel abnormality detection', Section 2 are likely to be under-reported, and by different amounts depending on jurisdiction.

2011–12 histopathology follow-up

Data recorded on the 12,631 colonoscopy report forms returned indicated samples were sent to histopathology for 6,729 participants (53.3%, data not shown). However, as at 31 December 2012, only 1,751 histopathology report forms (26.0%) had been returned. Outcomes of these are discussed in '4 Bowel abnormality detection', Section 2.

4 Bowel abnormality detection

What do we mean by bowel abnormality detection?

Definition: The proportion of the eligible population invited who returned a positive result from a correctly completed FOBT kit and then had an abnormality detected at follow-up.

Rationale: Monitoring of abnormalities detected through the NBCSP by various stratifications is important to determine the effectiveness of the program, and to help determine the rate of false positive screening results.

Data source: National Bowel Cancer Screening Register

Data quality: Reporting of follow-up care by colonoscopists, surgeons and pathologists is not mandatory, so outcomes may be underestimated. See 'Data considerations', Section 1 for further details.

Guide to interpretation: Follow-up data are based on data recorded in the Register to 31 December 2012 for persons invited between 1 July 2011 and 30 June 2012. Due to the time delay between notification of a positive FOBT result and progression to colonoscopy and histopathological confirmation of results, outcome data is incomplete.

Only outcomes from colonoscopies that returned colonoscopy report forms are included in Table A4.1; additional data from histopathology report forms are then included in Figure 4.1 and tables A4.2–A4.4. While additional colonoscopies are known to be have taken place (due to the return of Medicare claim forms, see '3 Follow-up of positive FOBT results', Section 2) they do not have outcome data available.

Persons are counted only once in the reporting period, even if they have more than one abnormality detected during this period. Histopathologically confirmed results are reported over (colonoscopist-)suspected results.

The abnormalities analysed in this chapter include polyps, adenomas and cancers diagnosed, and these are reported firstly using colonoscopy findings only, then with the addition of available histopathology confirmation data. The stage of confirmed cancer spread is not reported as sufficient staging data were not available.

Some jurisdictions have started specific data collection projects to improve the quantity and quality of the outcome data reported to the Register in recent years.

Key results

- Of the 22,472 participants with a positive FOBT, 12,833 (57%) had a valid colonoscopy or histopathology report form recorded. A further 4,433 (20%) had other recorded outcomes (Figure 3.3 and Table A3.9). Recorded outcomes for 5,326 (23%) people who had returned a positive FOBT were unknown as at 31 December 2012.
- There were 68 confirmed and 336 suspected cancers found in those with outcome data available, equating to 1 suspected or confirmed cancer being found for every 32 participants undergoing colonoscopy after a positive FOBT.
- A further 857 participants had an advanced adenoma detected during colonoscopy.
- The proportion of people for whom abnormalities were detected at colonoscopy increased with age and was higher for men than women.

Background information

This chapter presents outcomes from the NBCSP as at 31 December 2012 based on those people invited who returned a positive FOBT and 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 and histopathology report forms. In 2011, a new combined colonoscopy/histopathology form was piloted, with the aim to replace the previous two separate forms and improve the level of outcome data returned to the Register. A new surgical resection form that will collect staging data is also to be implemented.

Outcome information comes from the last points in the NBCSP pathway, and by 31 December 2012 there were still many colonoscopy and histopathology report forms yet to be returned. Ultimately, for cancers and adenomas detected at colonoscopy, the final diagnosis must be returned by histopathology. However, as reporting by clinicians to the NBCSP is not mandatory, a participant may have colonoscopy details, histopathology details or both recorded in the Register. As a result, outcomes were classified in the following order:

- Confirmed cancers include cancers suspected at colonoscopy where a biopsy sample was taken and confirmed as cancer by histopathology. Confirmed cancers also included any tissue samples from surgical resection or colonoscopic excisions that were confirmed to be cancerous, and subsequently reported by histopathology report form. Confirmed cancers were given a higher priority than suspected cancers.
- Suspected cancers were abnormalities detected at colonoscopy that the colonoscopist suspected to be cancer, but did not have histopathology outcomes available. Final diagnoses cannot be confirmed until histopathology results are returned, though bowel cancer is highly likely if the colonoscopist has suspected a cancerous lesion.
- Adenomas confirmed by histopathology were categorised into three risk levels—advanced, small and diminutive. These risk levels are described fully in Appendix B.
- Polyps awaiting histopathology were polyps detected at colonoscopy that had not had an associated histopathology report form returned. There is the potential that a number of these may be re-classified as adenomas by histopathology, so the number of adenomas counted may be under-reported.
- 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 confirmed as non-adenomatous by histopathology.

Detailed analyses

Two separate analyses regarding abnormality detection are presented here. As it is important to understand what results the colonoscopists are reporting initially, the first analysis (Table A4.1) reports findings when only using colonoscopy report forms. The second analysis (Figure 4.1 and tables A4.2 and A4.3) reports updated colonoscopy outcomes, after including histopathology results recorded following colonoscopy procedures; therefore, Table A4.1 and the later tables show different numbers of suspected cancers.

Bowel abnormality detection at colonoscopy

Of the 325,276 people invited into the NBCSP between 1 July 2011 and 30 June 2012 who returned FOBT kits, 22,472 were found to have blood in their samples (Figure 4.1), giving a positive result that should be followed up by colonoscopy. However, only 12,631 (56.2%) of these had colonoscopy report form details recorded from which colonoscopy outcome data could be reported (Figure 3.3).

Results from the 12,631 colonoscopies with a completed colonoscopy report form showed there were 427 (3.4%) participants with a suspected cancer and 1,705 (13.5%) with one or more polyps greater than 10 millimetres in size (Table A4.1). The cumulative risk of polyps (mainly adenomas) greater than 10 millimetres developing into bowel cancer within 10 years is considered to be 8% (Stryker et al. 1987). The removal of these polyps alone could be estimated to have stopped a future bowel cancer from developing in about 136 participants screened in 2011–12.

There were a further 5,017 (39.7%) participants with polyps less than or equal to 10 millimetres, and 3,078 (24.4%) other diagnoses such as diverticulitis or haemorrhoids (Table A4.1). About 1 in 5 participants with a positive FOBT who had a colonoscopy report form returned were found to have no abnormality.

Specimen samples were sent to histopathology for most polyps and suspected cancers found (data not shown).

Bowel abnormality detection, including histopathology

After including the 1,751 histopathology report forms—many of which updated the original 'suspected' colonoscopy diagnosis—the outcomes available for the 12,833 who had a colonoscopy or histopathology report form were:

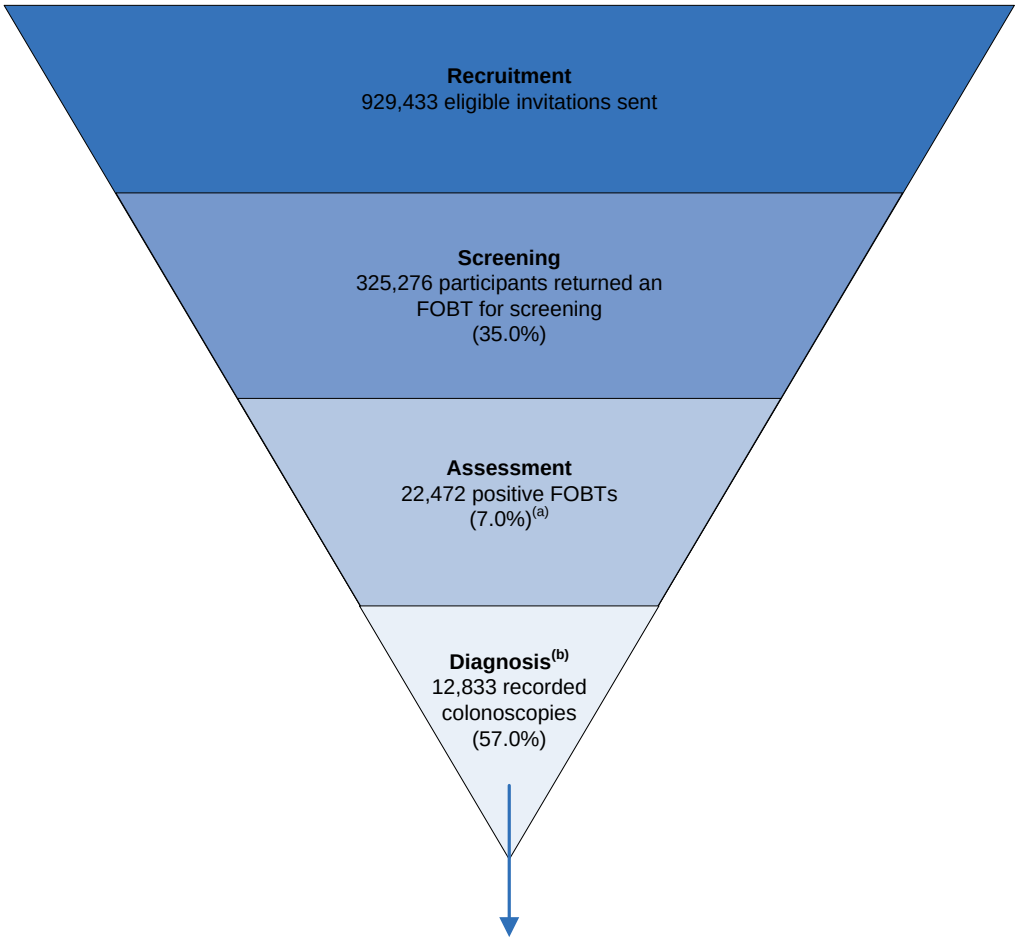
- 68 participants had a bowel cancer confirmed by histopathology.
- 336 suspected bowel cancers were still awaiting histopathological diagnosis.
- 1,406 participants had an adenoma diagnosed by histopathology.
- 5,940 participants were found to have no abnormality (Table A4.2).

Results for another 5,083 participants awaiting histopathology outcomes for excised polyps were not available by 31 December 2012.

In summary, of the 22,472 people with a positive FOBT:

- 12,833 had diagnostic outcome information available (above).
- 3,357 had a colonoscopy that was identified only through a NBCSP-related Medicare claim and therefore had no diagnostic outcome data (Figure 3.3).
- 1,076 were not referred to colonoscopy (Table A3.9).

Therefore, there were 5,236 (23.3%) people remaining who had received a positive FOBT but had no follow-up information recorded.



Recorded colonoscopy outcomes

No cancer or adenoma	5,940	(46.3%)
Polyp awaiting histopathology	5,083	(39.6%)
Diminutive adenoma	309	(2.4%)
Small adenoma	240	(1.9%)
Advanced adenoma	857	(6.7%)
Suspected cancer	336	(2.6%)
Confirmed cancer	68	(0.5%)

(a) Based on the 321,693 participants who returned a valid FOBT.

(b) 3,357 additional participants underwent colonoscopic diagnostic assessment as identified through a Medicare claim. However, these were not included as there were no associated outcome data available for analysis.

Notes

1. Adenoma classifications are described in Appendix B.
2. Figure is not to scale.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure 4.1: NBCSP participant outcomes, 2011–12

Bowel abnormality detection, including histopathology, by population subgroups

Bowel abnormality detection by state and territory

As mentioned in the previous chapter, a number of jurisdictions have undertaken projects to improve their level of returned histopathology data. For example, Queensland had much higher proportions of histopathology-confirmed abnormalities (adenomas and cancers)

compared with the other jurisdictions (Table A4.2). However, this is mainly due to having more complete data for participant outcomes, rather than a geographical link to higher bowel cancer incidence. Therefore, outcome data completeness between jurisdictions needs to be taken into account when analysing Table A4.2.

Considering a number of jurisdictions had run projects to improve histopathology data collection, at the national level the percentage of histology-confirmed outcomes (and the percentage of polyps awaiting histopathology) was not greatly different from the percentage in previous reports (AIHW 2009; AIHW 2010; AIHW 2012b).

Bowel abnormality detection by age and sex

As would be expected from the known increase in bowel cancer incidence with age (see '6 Incidence of bowel cancer', Section 2), the incidence of abnormalities detected at colonoscopy increased with age; 2.0% of people aged 50 who had a colonoscopy returned a suspected or confirmed cancer outcome compared with 4.0% for those aged 65 (Table A4.3).

Similarly, men (3.7%) showed an incidence of suspected or confirmed cancers that was 1.4 times that of women (2.6%) (Table A4.3). This was also consistent with known bowel cancer incidence in the Australian population.

Cancer spread status

While the scope of the NBCSP is to monitor participants up to the point of 'definite diagnosis' (DoHA 2008), staging data for confirmed cancers are useful to determine the effectiveness of the NBCSP at detecting bowel cancers at a more treatable stage than for those diagnosed with symptomatic bowel cancers. Cancers diagnosed at earlier stages are generally associated with improved patient prognosis (Morris, Lacopetta & Platell 2007).

A biopsy of a suspected cancer taken at colonoscopy 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 these data, a sample from a surgical resection (or colonoscopic local excision) plus additional biopsies (for example, lymph node) are required. If available, these additional data can be recorded on the histopathology report form.

However, these data cannot be presented in this report due to limited cancer spread information returned for the 68 participants with confirmed cancers.

5 Adverse events

What is the adverse event rate within the NBCSP?

Definition: The proportion of the eligible population invited between 1 July 2011 and 30 June 2012 who had an adverse event (such as bleeding or perforation) reported after having a colonoscopy as part of NBCSP follow-up.

Rationale: As with any invasive procedure, there is the risk of an adverse event occurring with a colonoscopy. Monitoring of adverse events through the NBCSP is important to ensure participant safety in the program.

Data source: National Bowel Cancer Screening Register.

Data quality: Reporting of adverse events after a NBCSP colonoscopy is not mandatory. There is a risk an adverse event that occurs days or weeks after the colonoscopy (for example, unplanned hospital admission within 30 days of procedure) will not be associated with the NBCSP procedure, thus not be recorded on the Register using the relevant NBCSP adverse event form. These issues would be expected to cause an underestimation of adverse events. See 'Data considerations', Section 1 for further details.

Guide to interpretation: This chapter discusses the recorded adverse events for participants invited into the NBCSP who had a colonoscopy as a result of a positive FOBT. Adverse event data are based on data recorded in the Register to 31 December 2012 for persons invited between 1 July 2011 and 30 June 2012. Due to the time delay between notification of a positive FOBT result and progression to colonoscopy or surgery, data may be incomplete.

While the NBCSP records the number of people referred by PHCPs for various procedures (for example, sigmoidoscopy, barium enema, colonoscopy), only outcomes (including adverse) of colonoscopy are analysed in this report.

Persons are counted only once in the reporting period, even if they have more than one adverse event reported during this period.

As per the adverse event form, unplanned hospital admissions after a colonoscopy are recorded only if they occurred within 30 days of the procedure.

Key results

- For participants invited in 2011–12, 60 out of 16,190 who underwent colonoscopy (about 1 in every 270 participants undergoing colonoscopy) recorded an adverse event.
- Bleeding was the most commonly recorded adverse event, with more recorded for men than women.
- About 1 in every 280 participants undergoing colonoscopy required an unplanned hospital admission within 30 days of the colonoscopy.

Background information

Colonoscopy is an invasive procedure performed after preparation of the bowel. The procedure is performed under sedation and is considered 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 0.00% to 0.03%. The incidence rate of perforation varied between 0.07% and 0.30%, and bleeding was found to have an incidence rate between 0.03% and 2.0% (NBCSP-QWG 2008).

Overall adverse events

Table A5.1 shows adverse events recorded up to 31 December 2012 for people invited to participate in the NBCSP between 1 July 2011 and 30 June 2012. Of participants with a positive FOBT, 16,190 were known to have had a colonoscopy, with 60 (0.4%) having an adverse outcome recorded. Men recorded more adverse events, with bleeding being the most common. The most frequent additional service required because of an adverse event was unplanned hospital admission within 30 days of colonoscopy.

Overall, the recorded incidence rate of a bleeding event related to colonoscopy was 0.3%. Relatively very small numbers were recorded for all other types of adverse event.

6 Incidence of bowel cancer

What do we mean by bowel cancer incidence?

Definition: The number of people diagnosed with bowel cancer, reported by various population subgroups.

Rationale: Monitoring of bowel cancer incidence statistics alongside the implementation of the NBCSP allows an understanding of the potential effect of screening on incidence.

Data source: Australian Cancer Database (ACD).

Data quality: Each Australian state and territory has legislation that makes the reporting of cancers (excluding basal cell and squamous cell carcinomas of the skin) mandatory. The AIHW compiles and maintains the ACD, in partnership with the Australasian Association of Cancer Registries, whose member registries provide data to the AIHW annually. This began with cases first diagnosed in 1982, and the ACD currently has data on cancers diagnosed up to and including 2009, though the 2009 incidence counts for New South Wales and the Australian Capital Territory are estimates, as their 2009 incidence data were not available.

Guide to interpretation: 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 that might develop into cancer, thereby reducing future incidence. However, it is expected that during the first few years of the NBCSP incidence rates may increase, as pre-existing, developed cancers (in addition to polyps and adenomas) that had not resulted in symptoms are found earlier through screening. This should stabilise over time as retesting of participants occurs (for example, 50-year-olds who are reinvited when they turn 55).

This chapter provides bowel cancer incidence data, grouped by age, sex and population subgroups. See the AIHW *National Bowel Cancer Screening Program Monitoring report: July 2011–June 2012 supplementary tables* webpage for additional tables.

Detailed numbers and rates for bowel cancer in Australia over time are in the AIHW *Australian Cancer Incidence and Mortality* workbook for colorectal cancer, an interactive workbook that currently includes incidence data from 1982 to 2009 and mortality data from 1968 to 2007. It is available at <www.aihw.gov.au/acim-books>.

Key results

In 2009:

- 14,410 people were diagnosed with bowel cancer (7,982 males; 6,428 females).
- Bowel cancer accounted for 13% 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, 51 per 100,000 females and 61 per 100,000 persons.
- The risk of being diagnosed by the age of 85 was 1 in 10 for males and 1 in 15 for females.
- The average age of diagnosis was 69 for males and 70 for females.

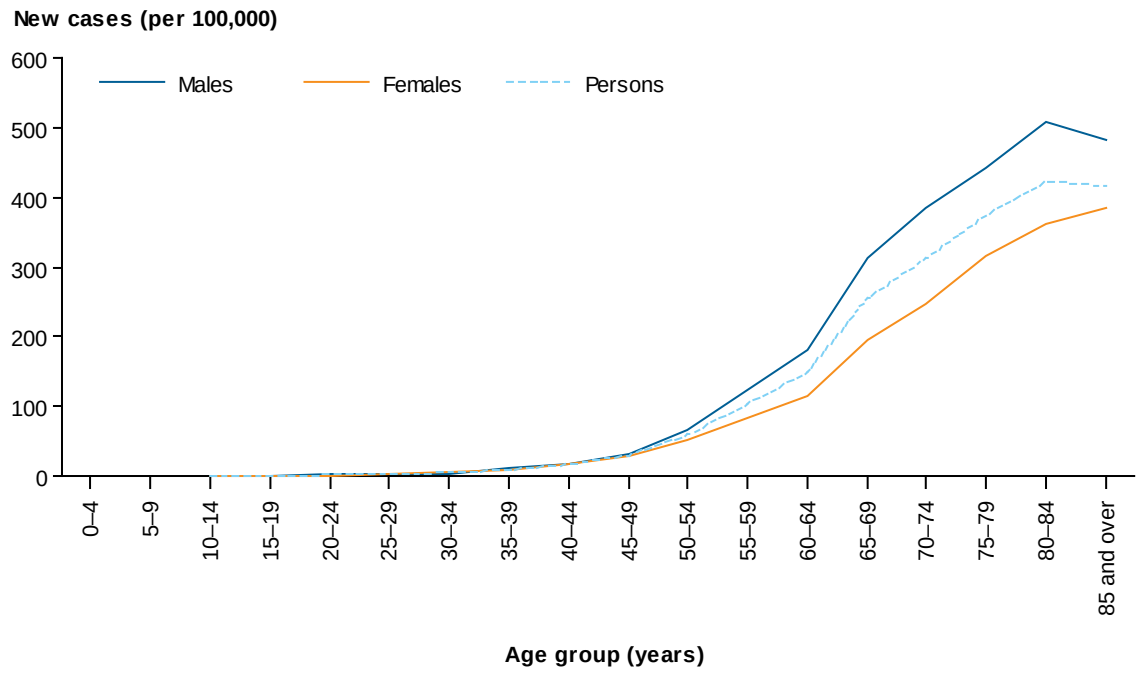
Detailed bowel cancer incidence analyses

Bowel cancer incidence by state and territory

The incidence of bowel cancer varied between jurisdictions in the period 2005 to 2009 (Supplementary tables S1.3a–S1.4c). Tasmania (74 cases per 100,000 persons), Queensland (65) and South Australia (63) had the highest age-standardised incidence rates, and the Northern Territory (57) had the lowest.

Bowel cancer incidence by age and sex

In 2009, and similar to previous years, newly diagnosed cases of bowel cancer were relatively rare in people under 45; however, the incidence rate was sharply higher for older age groups (Figure 6.1). The highest incidence rates were in people aged 80 and over (more than 400 cases per 100,000 population).

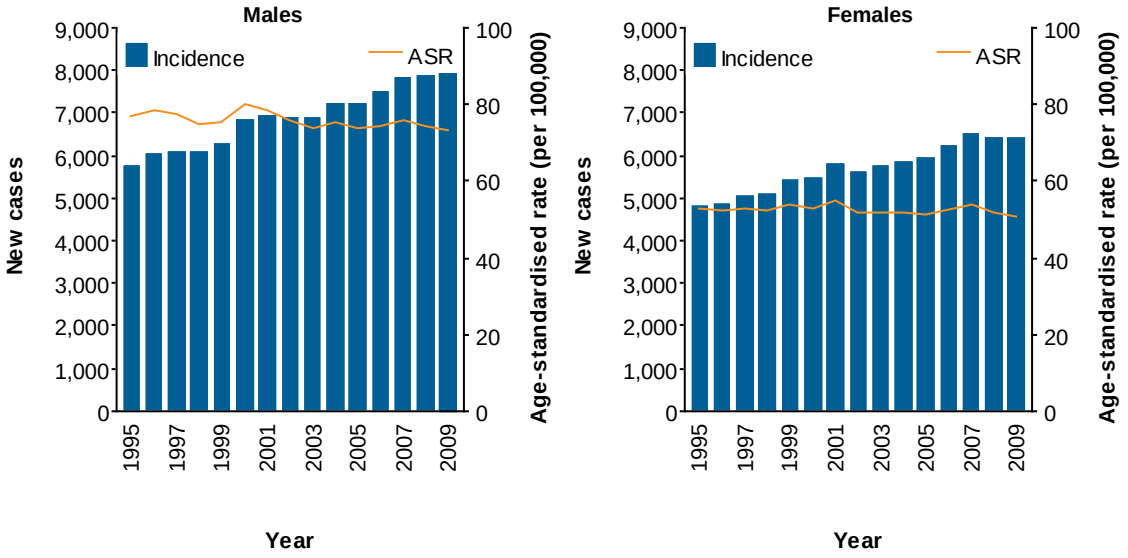


Source: AIHW Australian Cancer Database.

Figure 6.1: Age-specific incidence rates of bowel cancer, Australia, 2009

Trends

The number of new cases of bowel cancer for males increased between 1995 and 2009 by 39%, with incidence in females showing a similar increase (34%). While the age-standardised rates have decreased slowly between 1995 and 2009 for males (0.3% per year) and for females (0.2% per year), the increase in the number of cases due to the ageing population in Australia means the burden bowel cancer places on the health care system is still increasing (Figure 6.2 and supplementary tables S1.1a–S1.2c).



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, 1995–2009

Analysis of NBCSP data shows 282 suspected cancers were detected within the NBCSP in 2009 (data not shown). Due to limitations in histopathology report form return, it is not possible to accurately determine how many of these were actually confirmed and thus registered in the ACD as bowel cancers (the NBCSP data for 2009 shows 79 of these were confirmed by NBCSP histopathology report form). However, it is likely that NBCSP activities accounted for at least the number of suspected cancers detected (considering not all colonoscopies were recorded in the register).

7 Mortality from bowel cancer

What do we mean by bowel cancer mortality?

Definition: The number of people who have died from bowel cancer (as the underlying cause of death), by various population subgroups.

Rationale: Changes in the number and rate of bowel cancer deaths are monitored to help understand the effect of interventions (such as screening and improved treatments).

Data source: National Mortality Database (NMD).

Data quality: See Appendix C for further information on mortality data.

Guide to interpretation: Bowel cancer mortality data from the NMD includes deaths up to 2010. The denominator is based on ABS estimated resident populations up to 2010. As these data are for years prior to the screening data in this report, these outcomes are not currently related in any way to the screening activities presented in this report. However, they provide a baseline to monitor future outcomes against.

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. It is hoped these outcomes will eventually 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. However, even then it is not possible to provide a causal link between any changes in mortality rates in relation to the NBCSP.

See the AIHW *National Bowel Cancer Screening Program Monitoring report: July 2011–June 2012 supplementary tables* webpage for additional tables. As mortality data are enumerated by age at death, not age at diagnosis, it is not accurate to analyse NBCSP performance by looking at mortality rates of people aged 50, 55 and 65; the NBCSP target ages were included for illustrative purposes only.

Key results

In 2010:

- There were 3,982 deaths from bowel cancer in Australia (2,205 males; 1,777 females). Bowel cancer accounted for 9% of all deaths from invasive cancers, second only to lung cancer.
- The age-standardised death rate was 20 per 100,000 males and 13 per 100,000 females.
- The risk of dying from bowel cancer by the age of 85 was 1 in 36 for males, 1 in 56 for females and 1 in 45 for persons.

Detailed bowel cancer mortality analyses

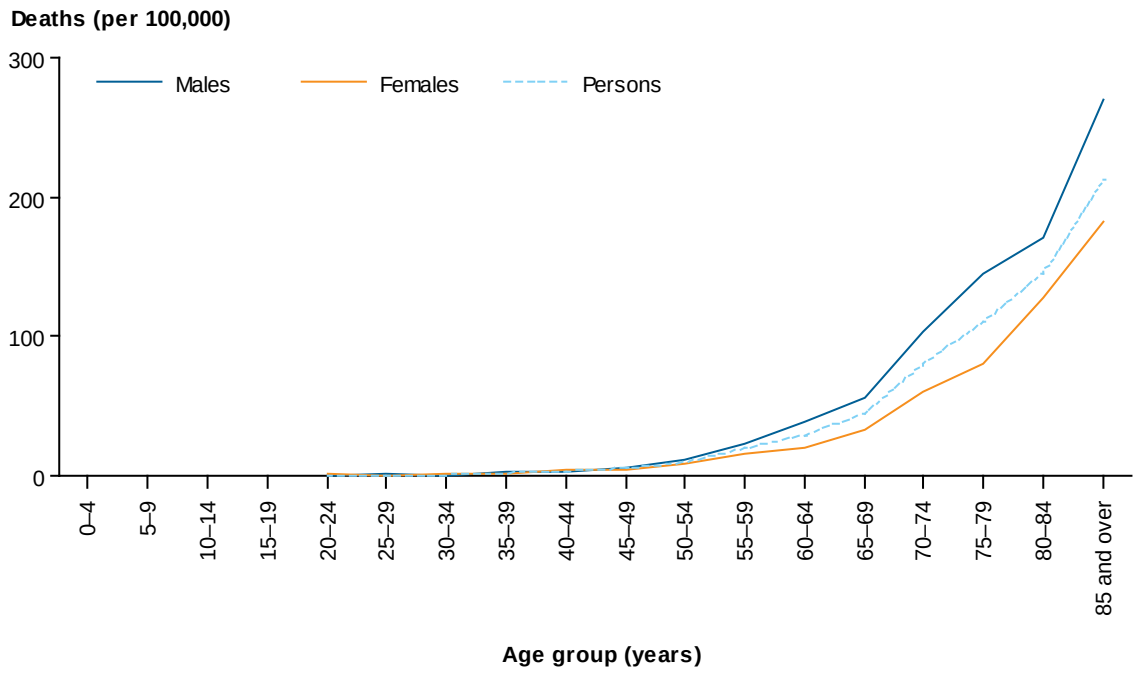
Bowel cancer mortality by state and territory

In 2006–2010, Tasmania had the highest age-standardised rate of deaths from bowel cancer (21 deaths per 100,000 population) followed by the Northern Territory (20). Western Australia experienced the lowest age-standardised rate deaths from bowel cancer (15) (supplementary tables S2.3a–S2.4c).

Bowel cancer mortality by age and sex

Death from bowel cancer is relatively rare before 50 years of age, with 95% of deaths for those aged 50 or more (Figure 7.1). In 2010, the highest age-specific death rates were in the oldest age groups—people aged 80–84 (146 per 100,000 population) and 85 and over (212 per 100,000).

There were 1,156 deaths in the 50–69 year age group, 29% of all bowel cancer deaths. This age group is currently targeted by the NBCSP; however, benefits of screening may also continue into older ages.



Notes

1. Rates age-standardised to the Australian 2001 population and are expressed per 100,000 population.
2. Mortality data for 2010 are preliminary and are subject to revision.
3. Mortality data for 2010 have been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010. For more detail please refer to Technical note 3 in Causes of death, Australia, 2010 (ABS Cat. no. 3303.0).

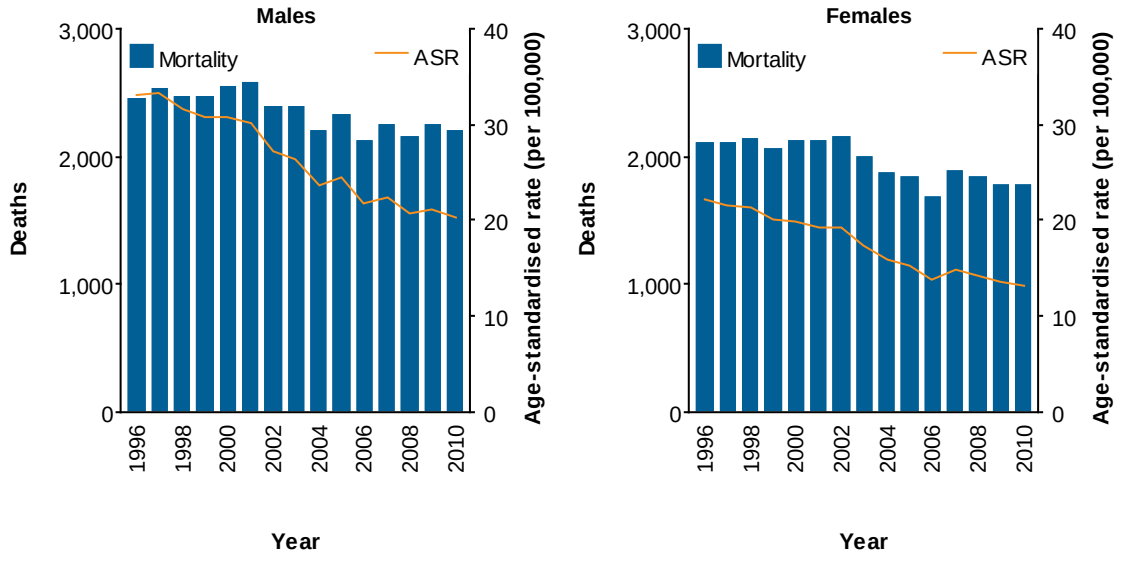
Source: AIHW analysis of National Mortality Database.

Figure 7.1: Age-specific mortality rates for bowel cancer, Australia, 2010

Trends

Between 1996 and 2010, the age-standardised death rate from bowel cancer fell by an average of 2.6% per year for males, 2.7% per year for females, and 2.6% per year for persons

(Figure 7.2 and supplementary tables S3.1a–S3.2c). It is expected the NBCSP will, in time, continue this decline in the death rate.



Notes

1. Rates age-standardised to the Australian 2001 population and are expressed per 100,000 population.
2. Mortality data for 1996–2008 are final, 2009 are revised and 2010 are preliminary. Data for 2009 and 2010 are subject to revision.
3. Mortality data for 2010 have been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010. For more detail please refer to Technical note 3 in *Causes of death, Australia, 2010* (ABS cat. no. 3303.0).

Source: AIHW analysis of National Mortality Database.

Figure 7.2: Age-standardised mortality rates for bowel cancer, Australia, 1996–2010

Bowel cancer mortality by region

In 2006–2010, age-standardised deaths from bowel cancer were higher in *Outer regional* (19 deaths per 100,000) and *Inner regional* (18) areas of Australia (supplementary tables S3.5a–S3.6c). Age-standardised death rates were lowest in *Very remote* areas (14 deaths per 100,000).

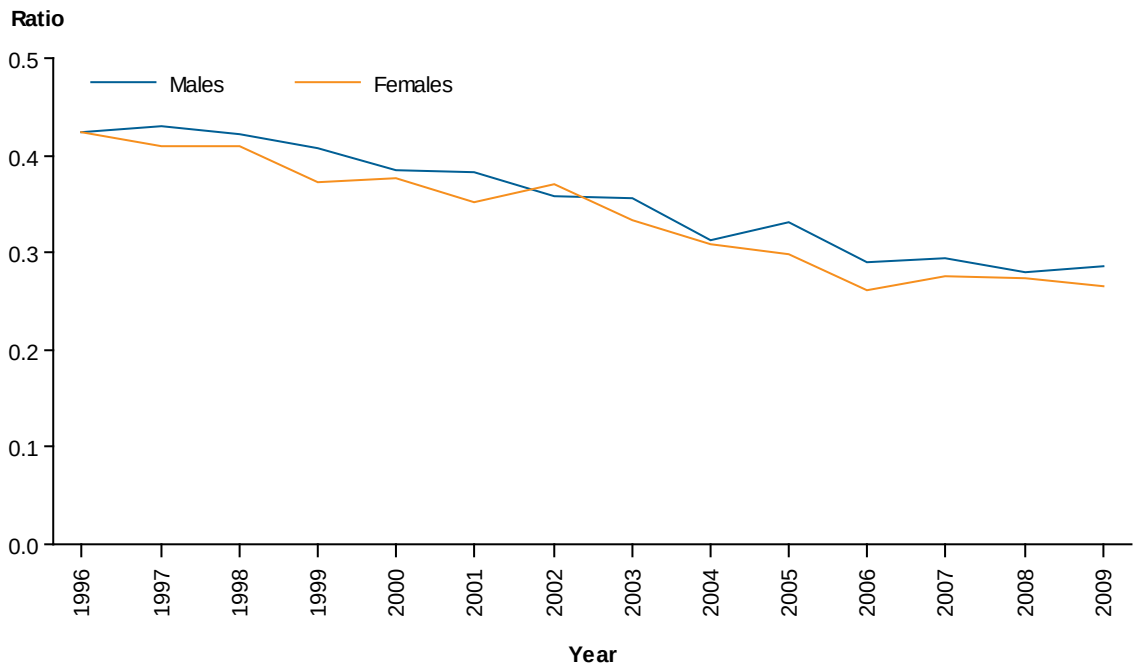
Bowel cancer mortality of Aboriginal and Torres Strait Islander peoples

Information in the NMD on Aboriginal and Torres Strait Islander status is considered of sufficient quality for reporting for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only.

In 2006–2010 in these jurisdictions, the age-standardised rate of deaths from bowel cancer was lower for Aboriginal and Torres Strait Islander people (15 deaths per 100,000) than for non-Indigenous people (17) (supplementary tables S3.7a and S3.7b).

Bowel cancer mortality-to-incidence ratio

The trends in bowel cancer mortality-to-incidence ratios have been steadily falling for many years (Figure 7.3). Any change in these rates 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 cancers were detected. However, it would be expected that, at least until biennial screening is fully implemented, the NBCSP would assist in ongoing reductions in these ratios.



Notes

1. Ratios calculated from rates, age-standardised to the Australian 2001 population.
2. Mortality data for 1996–2008 are final and 2009 are revised. Data for 2009 are subject to revision.

Source: AIHW Australian Cancer Database and AIHW analysis of National Mortality Database.

Figure 7.3: Trends in mortality-to-incidence ratios for bowel cancer, Australia, 1996–2009

Appendix A Additional data

A1 Participation tables and figures

Table A1.1: Screening invitation, by state and territory, 2011–12

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Invitations issued to the eligible population[a,b]									
50 years	119,406	86,540	70,271	34,573	25,155	8,334	5,939	2,665	352,883
55 years	106,362	78,070	61,527	31,510	23,302	7,648	5,396	2,295	316,110
65 years	88,063	64,766	51,120	24,020	20,360	6,791	4,146	1,174	260,440
Total	**313,831**	**229,376**	**182,918**	**90,103**	**68,817**	**22,773**	**15,481**	**6,134**	**929,433**
Persons suspended[c]									
50 years	903	704	542	277	239	92	66	19	2,842
55 years	1,001	785	646	354	295	76	72	19	3,248
65 years	1,502	1,094	902	453	431	152	97	24	4,655
Total	*3,406*	*2,583*	*2,090*	*1,084*	*965*	*320*	*235*	*62*	*10,745*
Persons opting off[d]									
50 years	1,937	1,535	1,218	544	451	148	112	26	5,971
55 years	2,551	1,904	1,571	738	620	184	131	28	7,727
65 years	4,746	3,317	2,709	1,261	1,118	385	215	31	13,782
Total	*9,234*	*6,756*	*5,498*	*2,543*	*2,189*	*717*	*458*	*85*	*27,480*
Persons participating[e]									
50 years	32,877	26,605	19,284	10,946	8,132	2,668	1,899	544	102,955
55 years	33,898	27,591	20,171	11,601	8,821	3,074	2,012	568	107,736
65 years	36,140	28,619	22,516	11,290	10,225	3,427	2,005	363	114,585
Total	*102,915*	*82,815*	*61,971*	*33,837*	*27,178*	*9,169*	*5,916*	*1,475*	*325,276*
Total respondents[f]									
50 years	35,717	28,844	21,044	11,767	8,822	2,908	2,077	589	111,768
55 years	37,450	30,280	22,388	12,693	9,736	3,334	2,215	615	118,711
65 years	42,388	33,030	26,127	13,004	11,774	3,964	2,317	418	133,022
Total	**115,555**	**92,154**	**69,559**	**37,464**	**30,332**	**10,206**	**6,609**	**1,622**	**363,501**

(a) Invitations to screen were issued between 1 July 2011 and 30 June 2012 to members of the Australian population (registered as Australian citizens or migrants in the Medicare enrolment file, or who are registered with a Department of Veterans' Affairs gold card) who turned 50, 55 or 65 between 1 January 2011 and 30 June 2012. Some invitations were sent to non-target ages on request, or due to various pilot projects.

(b) There were 767 invitations sent to those not of the 3 target ages at the time of invitation, or to addresses overseas (making 930,200 invitations in total). These were excluded from the eligible population and further analysis.

(c) 'Persons suspended' refers to the eligible population invited who did not return an FOBT kit, but elected to suspend participation until a later date.

(d) 'Persons opting off' refers to the eligible population invited who did not return an FOBT kit, but elected to opt off.

(e) 'Persons participating' refers to the eligible population invited who returned an FOBT kit for analysis, regardless of whether it was correctly completed or if they later suspended or opted off.

(f) 'Total respondents' refers to the eligible population invited who returned a response (returned an FOBT kit, or suspension/opt off request).

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A1.2: Crude participation, by state and territory, 2011–12

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Number	15,481	12,270	8,866	5,155	3,830	1,197	891	259	47,949
	Per cent	25.8	28.3	25.4	29.5	30.4	28.7	31.2	18.6	27.1
55 years	Number	15,441	12,339	9,034	5,287	3,896	1,393	905	271	48,566
	Per cent	29.1	31.7	29.5	33.0	33.8	36.4	34.4	23.0	30.8
65 years	Number	17,277	13,467	10,933	5,583	4,874	1,625	951	201	54,911
	Per cent	39.0	41.8	42.0	45.2	48.2	47.3	46.1	31.1	41.9
Total	*Number*	*48,199*	*38,076*	*28,833*	*16,025*	*12,600*	*4,215*	*2,747*	*731*	*151,426*
	Per cent	*30.7*	*33.3*	*31.5*	*34.9*	*36.8*	*36.9*	*36.4*	*22.7*	*32.5*
Females										
50 years	Number	17,396	14,335	10,418	5,791	4,302	1,471	1,008	285	55,006
	Per cent	29.3	33.2	29.5	33.9	34.3	35.3	32.7	22.4	31.2
55 years	Number	18,457	15,252	11,137	6,314	4,925	1,681	1,107	297	59,170
	Per cent	34.6	39.0	36.1	40.7	41.8	44.1	40.0	26.6	37.4
65 years	Number	18,863	15,152	11,583	5,707	5,351	1,802	1,054	162	59,674
	Per cent	43.1	46.6	46.1	48.9	52.2	53.7	50.6	30.7	46.1
Total	*Number*	*54,716*	*44,739*	*33,138*	*17,812*	*14,578*	*4,954*	*3,169*	*744*	*173,850*
	Per cent	*34.9*	*38.9*	*36.3*	*40.3*	*42.2*	*43.7*	*39.9*	*25.5*	*37.5*
Persons										
50 years	Number	32,877	26,605	19,284	10,946	8,132	2,668	1,899	544	102,955
	Per cent	27.5	30.7	27.4	31.7	32.3	32.0	32.0	20.4	29.2
55 years	Number	33,898	27,591	20,171	11,601	8,821	3,074	2,012	568	107,736
	Per cent	31.9	35.3	32.8	36.8	37.9	40.2	37.3	24.7	34.1
65 years	Number	36,140	28,619	22,516	11,290	10,225	3,427	2,005	363	114,585
	Per cent	41.0	44.2	44.0	47.0	50.2	50.5	48.4	30.9	44.0
Total	**Number**	**102,915**	**82,815**	**61,971**	**33,837**	**27,178**	**9,169**	**5,916**	**1,475**	**325,276**
	Per cent	**32.8**	**36.1**	**33.9**	**37.6**	**39.5**	**40.3**	**38.2**	**24.0**	**35.0**

Notes

1. Participants in the program were defined as members of the eligible population who returned a completed FOBT kit, regardless of whether it was correctly completed.
2. Percentages equal people participating as a proportion of the total number of the eligible population who were invited to screen. This includes people who suspended or opted off.

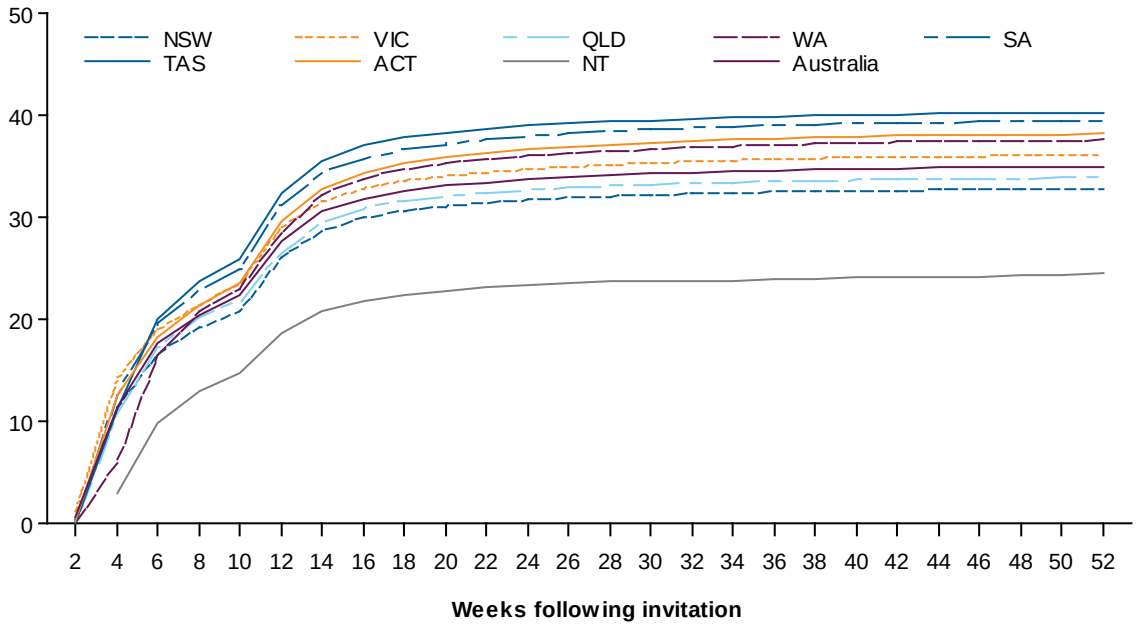
Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A1.3: Kaplan-Meier estimated participation rates at 26 and 52 weeks since invitation, by state and territory, 2011–12

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
26 weeks									
Participation (per cent)	31.9	34.9	32.9	36.3	38.2	39.2	36.9	23.5	33.9
95% confidence interval	31.7–32.0	34.7–35.1	32.7–33.1	36.0–36.6	37.8–38.6	38.6–39.8	36.1–37.7	22.4–24.5	33.8–34.0
52 weeks									
Participation (per cent)	32.8	36.1	33.9	37.6	39.5	40.2	38.2	24.5	35.0
95% confidence interval	32.6–32.9	35.9–36.3	33.7–34.1	37.3–37.9	39.1–39.8	39.6–40.9	37.4–38.9	23.3–25.6	34.9–35.1

Note: Participation rates equal the estimated Kaplan-Meier participation rate of people who returned a completed FOBT kit (regardless of whether it was correctly completed) as a proportion of the eligible population invited to screen, including people who suspended or opted off the program.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

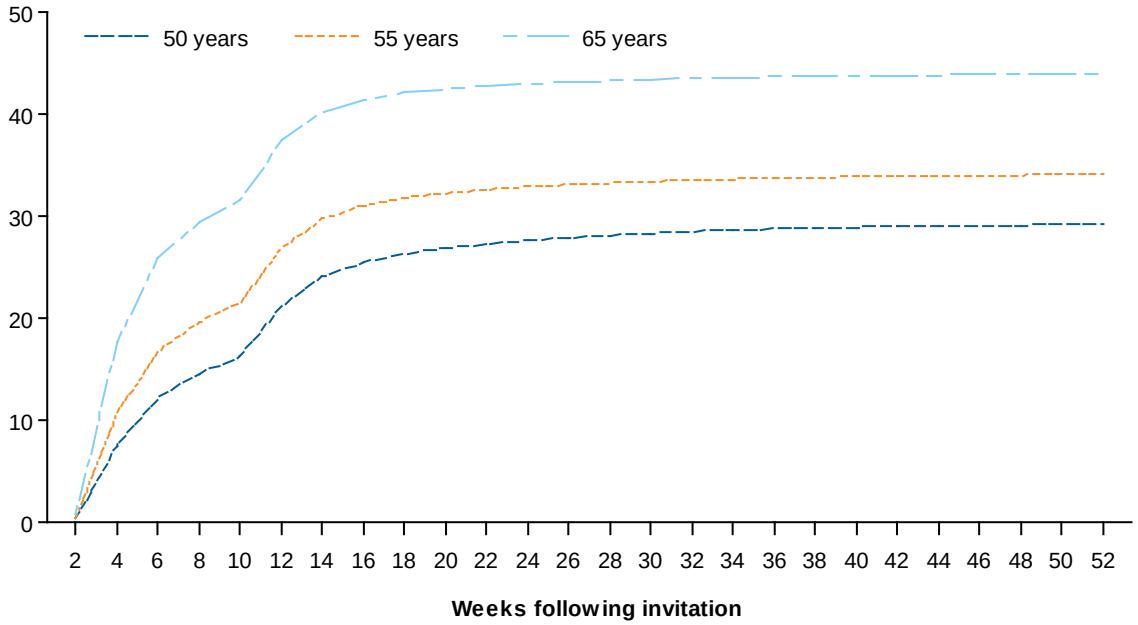
Figure A1.1: Participation, by weeks since invitation using Kaplan-Meier estimates, by state and territory, 2011–12

Table A1.4: Kaplan-Meier estimated participation rates at 26 and 52 weeks since invitation, by age, 2011–12

	50 years	55 years	65 years
26 weeks			
Participation (per cent)	27.9	33.1	43.2
95% confidence interval	27.7–28.0	32.9–33.2	43.0–43.3
52 weeks			
Participation (per cent)	29.2	34.1	44.0
95% confidence interval	29.0–29.3	33.9–34.2	43.8–44.1

Note: Participation rates equal the estimated Kaplan-Meier participation rate of people who returned a completed FOBT kit (regardless of whether it was correctly completed) as a proportion of the eligible population invited to screen, including people who suspended or opted off the program.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

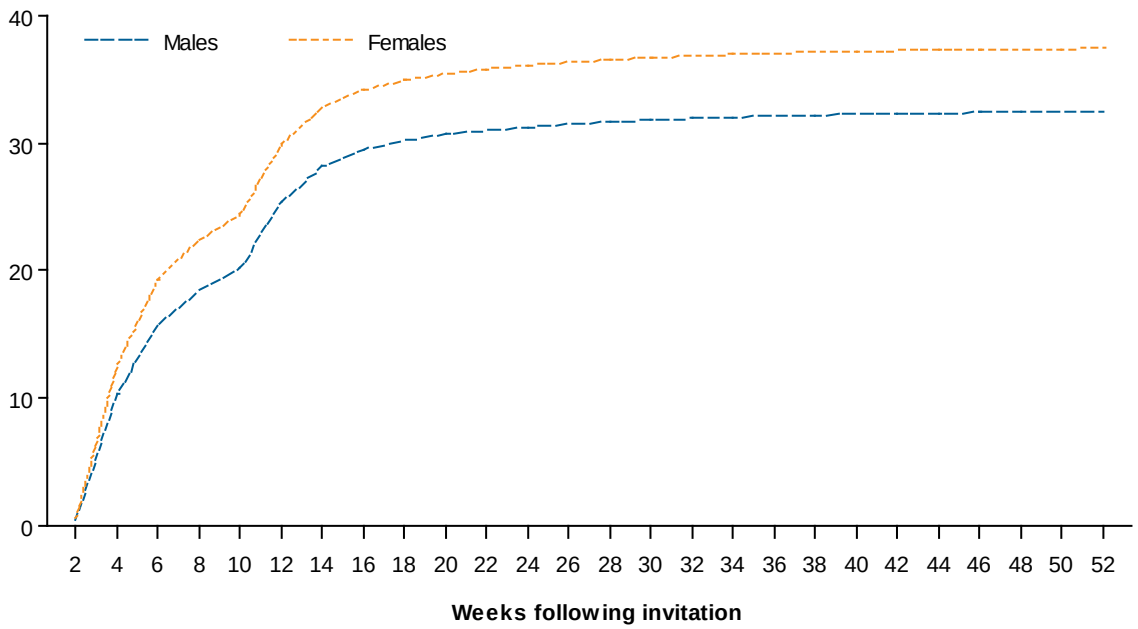
Figure A1.2: Participation, by weeks since invitation using Kaplan-Meier estimates, by age, 2011–12

Table A1.5: Kaplan-Meier estimated participation rates at 26 and 52 weeks since invitation, by sex, 2011–12

	Males	Females
26 weeks		
Participation (per cent)	31.5	36.4
95% confidence interval	31.4–31.6	36.2–36.5
52 weeks		
People participating (per cent)	32.5	37.5
95% confidence interval	32.4–32.7	37.3–37.6

Note: Participation rates equal the estimated Kaplan-Meier participation rate of people who returned a completed FOBT kit (regardless of whether it was correctly completed) as a proportion of the eligible population invited to screen, including people who suspended or opted off the program.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A1.3: Participation, by weeks since invitation using Kaplan-Meier estimates, by sex, 2011–12

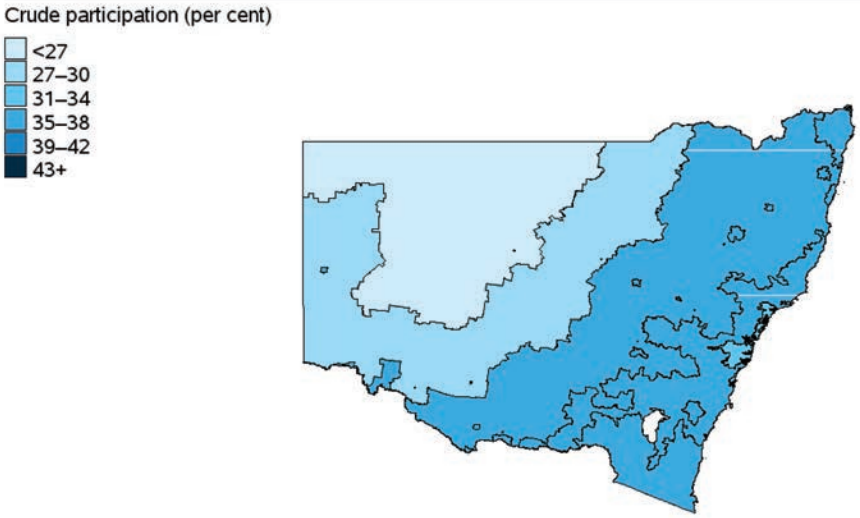
Table A1.6: Crude participation, by remoteness area, 2011–12

		Remoteness area						
		Major cities	**Inner regional**	**Outer regional**	**Remote**	**Very remote**	**Unknown**	**Total**
Males								
50 years	Number	33,302	9,216	4,268	509	163	492	47,949
	Per cent	27.3	27.6	26.4	23.5	17.0	25.9	27.1
55 years	Number	32,535	10,130	4,564	562	225	549	48,566
	Per cent	30.4	32.7	30.6	28.4	24.0	29.5	30.8
65 years	Number	34,902	12,979	5,725	597	167	541	54,911
	Per cent	40.5	45.6	44.5	41.2	30.1	35.1	41.9
Total	*Number*	*100,738*	*32,326*	*14,557*	*1,669*	*555*	*1,582*	*151,426*
	Per cent	*31.9*	*34.8*	*33.1*	*29.8*	*22.7*	*29.8*	*32.5*
Females								
50 years	Number	37,958	10,801	5,037	546	169	495	55,006
	Per cent	31.0	31.9	32.4	28.8	20.0	30.9	31.2
55 years	Number	39,739	12,446	5,603	613	208	561	59,170
	Per cent	36.4	40.3	39.9	34.9	26.2	34.6	37.4
65 years	Number	38,648	14,017	5,853	534	144	478	59,674
	Per cent	44.4	50.5	49.6	46.7	32.7	41.4	46.1
Total	*Number*	*116,346*	*37,263*	*16,493*	*1,693*	*520*	*1,534*	*173,850*
	Per cent	*36.5*	*40.3*	*39.8*	*35.3*	*25.0*	*35.0*	*37.5*
Persons								
50 years	Number	71,260	20,017	9,306	1,055	331	987	102,955
	Per cent	29.2	29.7	29.3	26.0	18.4	28.2	29.2
55 years	Number	72,274	22,576	10,167	1,175	433	1,110	107,736
	Per cent	33.4	36.5	35.1	31.5	25.0	31.9	34.1
65 years	Number	73,550	26,996	11,578	1,132	311	1,019	114,585
	Per cent	42.4	48.0	46.9	43.6	31.2	37.8	44.0
Total	**Number**	**217,084**	**69,589**	**31,050**	**3,362**	**1,075**	**3,116**	**325,276**
	Per cent	**34.2**	**37.5**	**36.4**	**32.4**	**23.8**	**32.2**	**35.0**

Notes

1. Percentages equal the number of people returning a completed FOBT kit (regardless of whether it was correctly completed) as a proportion of the eligible population invited to screen.
2. The residential postcodes of invitees and respondents were mapped to remoteness areas in the 2011 Australian Statistical Geographical Standard remoteness structure through a postal area correspondence. Those that could not be mapped were included in the 'Unknown' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

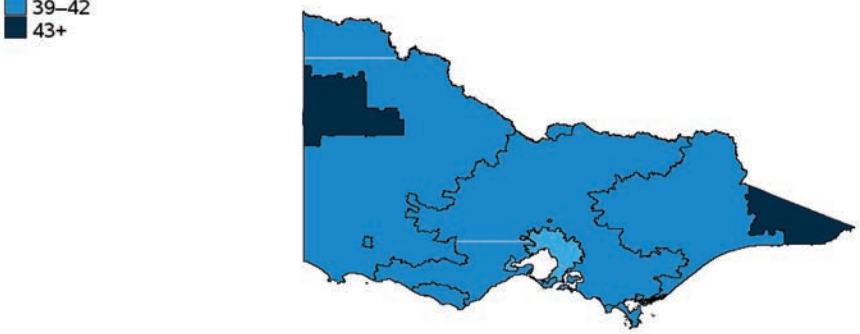


Notes

1. Rate per remoteness area is an average of participation across that remoteness area.
2. Participation rates rounded to integers.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A1.4a: Crude participation, by remoteness area, New South Wales, 2011–12

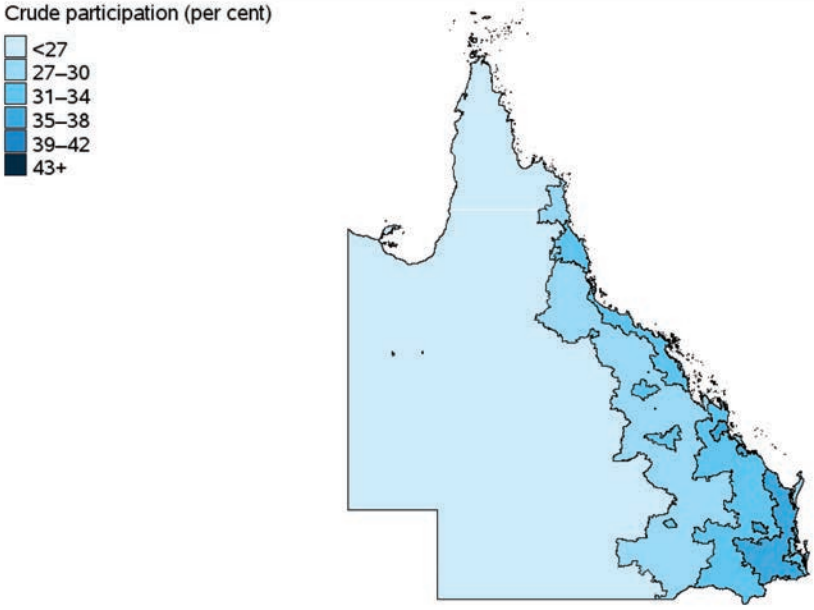


Notes

1. Rate per remoteness area is an average of participation across that remoteness area.
2. Participation rates rounded to integers.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A1.4b: Crude participation, by remoteness area, Victoria, 2011–12

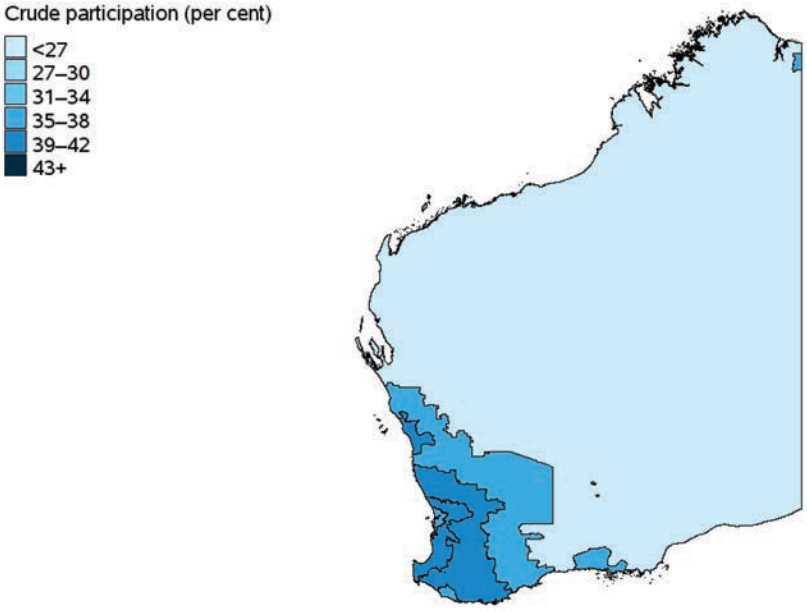


Notes

1. Rate per remoteness area is an average of participation across that remoteness area.
2. Participation rates rounded to integers.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A1.4c: Crude participation, by remoteness area, Queensland, 2011–12

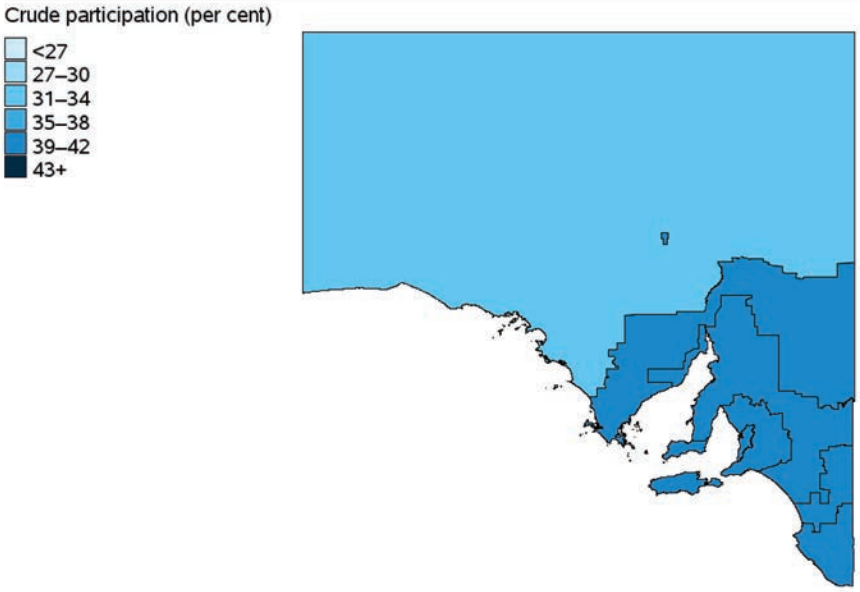


Notes

1. Rate per remoteness area is an average of participation across that remoteness area.
2. Participation rates rounded to integers.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A1.4d: Crude participation, by remoteness area, Western Australia, 2011–12

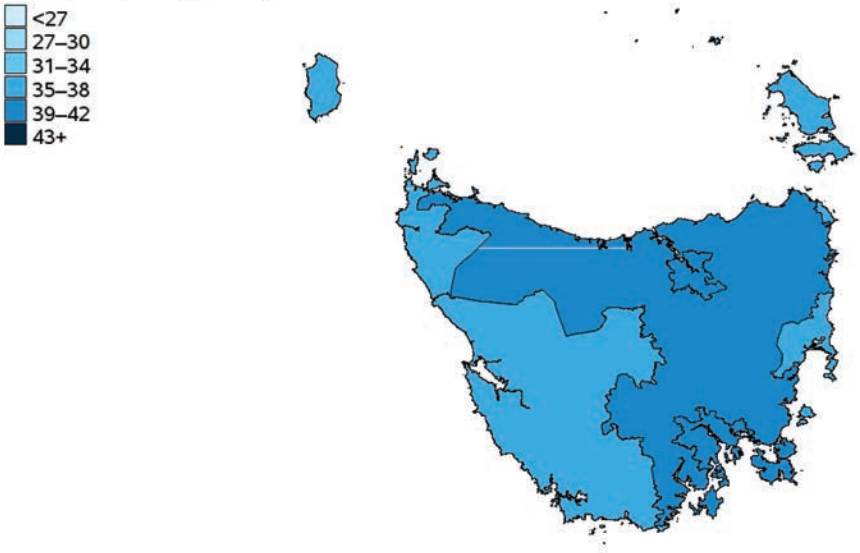


Notes

1. Rate per remoteness area is an average of participation across that remoteness area.
2. Participation rates rounded to integers.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A1.4e: Crude participation, by remoteness area, South Australia, 2011–12

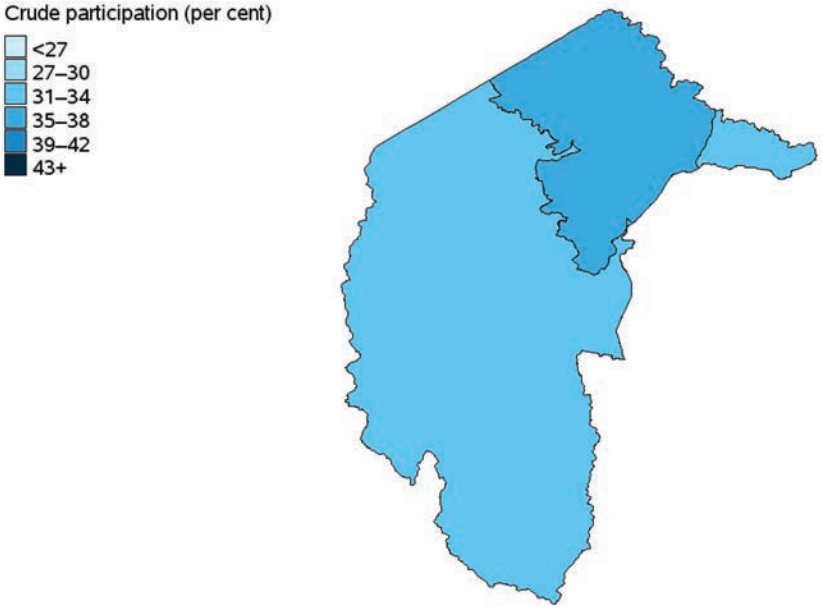


Notes

1. Rate per remoteness area is an average of participation across that remoteness area.
2. Participation rates rounded to integers.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A1.4f: Crude participation, by remoteness area, Tasmania, 2011–12

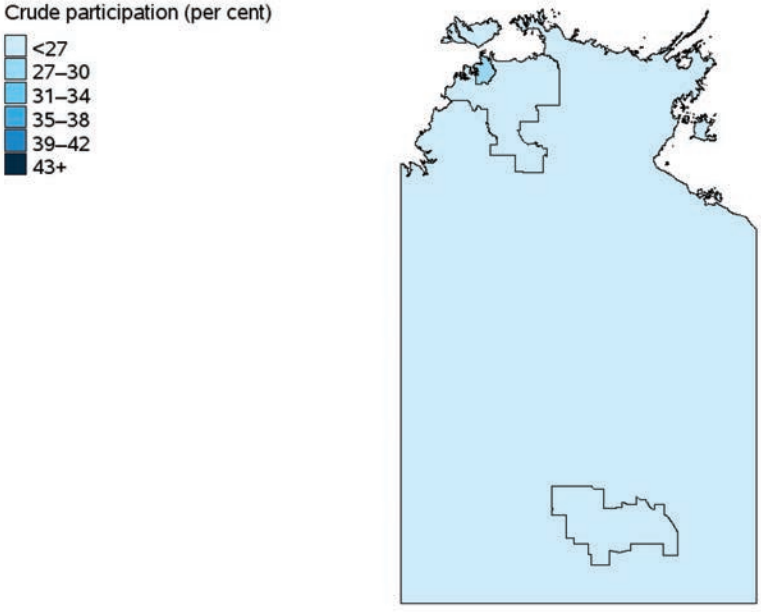


Notes

1. Rate per remoteness area is an average of participation across that remoteness area.
2. Participation rates rounded to integers.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A1.4g: Crude participation, by remoteness area, Australian Capital Territory, 2011–12



Notes

1. Rate per remoteness area is an average of participation across that remoteness area.
2. Participation rates rounded to integers.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A1.4h: Crude participation, by remoteness area, Northern Territory, 2011–12

Table A1.7: Crude participation, by socioeconomic status area, 2011–12

		Socioeconomic status area						
		1 (lowest)	**2**	**3**	**4**	**5 (Highest)**	**Unknown**	**Total**
Males								
50 years	Number	8,375	9,006	9,261	9,838	10,927	542	47,949
	Per cent	24.7	26.2	26.7	28.0	29.9	25.7	27.1
55 years	Number	8,894	9,539	9,406	9,674	10,452	601	48,566
	Per cent	28.6	30.4	30.6	31.6	32.7	29.5	30.8
65 years	Number	10,969	11,477	10,445	10,438	10,997	585	54,911
	Per cent	40.5	42.6	41.6	42.4	42.8	35.2	41.9
Total	*Number*	*28,238*	*30,022*	*29,112*	*29,950*	*32,376*	*1,728*	*151,426*
	Per cent	*30.7*	*32.4*	*32.1*	*33.2*	*34.4*	*29.8*	*32.5*
Females								
50 years	Number	9,454	10,444	10,803	11,298	12,472	535	55,006
	Per cent	28.8	30.2	31.1	32.0	33.7	30.8	31.2
55 years	Number	10,888	11,481	11,553	11,870	12,763	615	59,170
	Per cent	35.5	36.8	37.1	38.5	39.1	35.1	37.4
65 years	Number	11,877	12,277	11,611	11,390	11,990	529	59,674
	Per cent	44.6	46.9	45.9	46.8	46.8	42.0	46.1
Total	*Number*	*32,219*	*34,202*	*33,967*	*34,558*	*37,225*	*1,679*	*173,850*
	Per cent	*35.7*	*37.2*	*37.3*	*38.2*	*39.1*	*35.3*	*37.5*
Persons								
50 years	Number	17,829	19,450	20,064	21,136	23,399	1,077	102,955
	Per cent	26.7	28.2	28.9	30.0	31.8	28.0	29.2
55 years	Number	19,782	21,020	20,959	21,544	23,215	1,216	107,736
	Per cent	32.0	33.6	33.8	35.1	35.9	32.1	34.1
65 years	Number	22,846	23,754	22,056	21,828	22,987	1,114	114,585
	Per cent	42.5	44.7	43.8	44.6	44.8	38.1	44.0
Total	**Number**	**60,457**	**64,224**	**63,079**	**64,508**	**69,601**	**3,407**	**325,276**
	Per cent	**33.2**	**34.8**	**34.7**	**35.7**	**36.8**	**32.3**	**35.0**

Notes

1. 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.
2. An invitee's socioeconomic status area was classified by mapping their residential postcode (through a postal area) to the ABS IRSD for 2011. Those that could not be mapped were included in the 'Unknown' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A1.8: Proportion of participants who indicated Aboriginal and Torres Strait Islander status, 2011–12

	NBCSP participants							2011 Census		
	Indigenous		Non-Indigenous		Not stated		Total	Indigenous	Non-Indigenous	Not stated
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent		
Males										
50 years	370	0.8	45,751	95.4	1,828	3.8	47,949	1.7	93.1	5.2
55 years	299	0.6	46,434	95.6	1,833	3.8	48,566	1.5	93.4	5.1
65 years	223	0.4	52,633	95.9	2,055	3.7	54,911	1.0	94.2	4.9
Total	*892*	*0.6*	*144,818*	*95.6*	*5,716*	*3.8*	*151,426*	*1.5*	*93.5*	*5.1*
Females										
50 years	403	0.7	53,153	96.6	1,450	2.6	55,006	1.9	94.2	3.9
55 years	354	0.6	57,242	96.7	1,574	2.7	59,170	1.6	94.5	4.0
65 years	270	0.5	57,674	96.6	1,730	2.9	59,674	1.1	94.7	4.2
Total	*1,027*	*0.6*	*168,069*	*96.7*	*4,754*	*2.7*	*173,850*	*1.6*	*94.4*	*4.0*
Persons										
50 years	773	0.8	98,904	96.1	3,278	3.2	102,955	1.8	93.7	4.5
55 years	653	0.6	103,676	96.2	3,407	3.2	107,736	1.5	93.9	4.5
65 years	493	0.4	110,307	96.3	3,785	3.3	114,585	1.0	94.4	4.5
Total	**1,919**	**0.6**	**312,887**	**96.2**	**10,470**	**3.2**	**325,276**	**1.5**	**93.9**	**4.5**

Notes

1. NBCSP percentages equal the number of people returning a completed FOBT who indicated their Aboriginal and Torres Strait Islander status as a proportion of all people returning an FOBT (regardless of whether they were correctly completed).
2. NBCSP Aboriginal and Torres Strait Islander status was reported by the participant on the returned participant details form. Participants who did not indicate Aboriginal and Torres Strait Islander status were included in the 'Not stated' column.
3. Indigenous status proportions as recorded at the 2011 Australian Census of Population and Housing are included for comparative purposes.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A1.9: Proportion of participants who indicated preferred language spoken at home, 2011–12

	NBCSP participants					2011 Census		
	Language other than English		English		Total	Language other than English	English	Not stated
	Number	Per cent	Number	Per cent	Number	Per cent		
Males								
50 years	6,549	13.7	41,400	86.3	47,949	16.4	78.3	5.3
55 years	6,689	13.8	41,877	86.2	48,566	15.8	79.1	5.1
65 years	5,951	10.8	48,960	89.2	54,911	14.5	80.8	4.7
Total	*19,189*	*12.7*	*132,237*	*87.3*	*151,426*	*15.7*	*79.2*	*5.1*
Females								
50 years	7,998	14.5	47,008	85.5	55,006	17.4	78.9	3.7
55 years	8,462	14.3	50,708	85.7	59,170	17.6	78.6	3.8
65 years	6,485	10.9	53,189	89.1	59,674	15.5	80.6	3.9
Total	*22,945*	*13.2*	*150,905*	*86.8*	*173,850*	*17.0*	*79.2*	*3.8*
Persons								
50 years	14,547	14.1	88,408	85.9	102,955	16.9	78.6	4.5
55 years	15,151	14.1	92,585	85.9	107,736	16.7	78.8	4.4
65 years	12,436	10.9	102,149	89.1	114,585	15.0	80.7	4.3
Total	**42,134**	**13.0**	**283,142**	**87.0**	**325,276**	**16.3**	**79.2**	**4.4**

Notes

1. NBCSP percentages equal the number of people returning a completed FOBT who indicated their preferred language spoken at home as a proportion of all people returning an FOBT (regardless of whether they were correctly completed).
2. NBCSP preferred language spoken at home was reported by the participant on the returned participant details form. Participants who did not indicate preferred language spoken at home were assumed to speak English.
3. Language spoken at home proportions as recorded at the 2011 Australian Census of Population and Housing are included for comparative purposes.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A1.10: Proportion of participants who indicated disability status, 2011–12

	NBCSP participants							2011 Census		
	Severe or profound activity limitation		No severe or profound activity limitation		Not stated		Total	Severe or profound activity limitation	No severe or profound activity limitation	Not stated
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent		
Males										
50 years	1,865	3.9	42,697	89.0	3,387	7.1	47,949	3.1	91.0	5.9
55 years	2,283	4.7	42,774	88.1	3,509	7.2	48,566	3.9	90.5	5.6
65 years	3,973	7.2	46,843	85.3	4,095	7.5	54,911	8.1	86.7	5.2
Total	*8,121*	*5.4*	*132,314*	*87.4*	*10,991*	*7.3*	*151,426*	*4.7*	*89.7*	*5.6*
Females										
50 years	2,491	4.5	49,449	89.9	3,066	5.6	55,006	3.3	92.4	4.3
55 years	3,179	5.4	52,707	89.1	3,284	5.6	59,170	4.3	91.4	4.3
65 years	3,568	6.0	52,635	88.2	3,471	5.8	59,674	6.2	89.5	4.4
Total	*9,238*	*5.3*	*154,791*	*89.0*	*9,821*	*5.6*	*173,850*	*4.4*	*91.3*	*4.3*
Persons										
50 years	4,356	4.2	92,146	89.5	6,453	6.3	102,955	3.2	91.7	5.1
55 years	5,462	5.1	95,481	88.6	6,793	6.3	107,736	4.1	91.0	4.9
65 years	7,541	6.6	99,478	86.8	7,566	6.6	114,585	7.1	88.1	4.8
Total	**17,359**	**5.3**	**287,105**	**88.3**	**20,812**	**6.4**	**325,276**	**4.6**	**90.5**	**4.9**

Notes

1. NBCSP percentages equal the number of people returning a completed FOBT who indicated their disability status as a proportion of all people returning an FOBT (regardless of whether they were correctly completed).
2. NBCSP disability status was reported by the participant on the participant details form. Participants who did not indicate disability status are included in the 'Not stated' column.
3. A 'profound' activity limitation indicates that a person always needs assistance with self-care, movement and/or communications activities. A 'severe' activity limitation indicates that a person sometimes needs assistance with these activities.
4. Activity limitation status proportions as recorded at the 2011 Australian Census of Population and Housing are included for comparative purposes.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

A2 Faecal occult blood test outcome tables

Table A2.1: FOBT results, by age and sex, 2011–12

	FOBT positive		FOBT negative		FOBT inconclusive		Total
	Number	Per cent	Number	Per cent	Number	Per cent	Number
Males							
50 years	2,893	6.1	44,466	93.9	8	0.02	47,367
55 years	3,464	7.2	44,576	92.8	10	0.02	48,050
65 years	5,136	9.4	49,280	90.6	5	0.01	54,421
Total	*11,493*	*7.7*	*138,322*	*92.3*	*23*	*0.02*	*149,838*
Females							
50 years	2,970	5.5	51,368	94.5	20	0.04	54,358
55 years	3,548	6.1	54,964	93.9	12	0.02	58,524
65 years	4,461	7.6	54,567	92.4	13	0.02	59,041
Total	*10,979*	*6.4*	*160,899*	*93.6*	*45*	*0.03*	*171,923*
Persons							
50 years	5,863	5.8	95,834	94.2	28	0.03	101,725
55 years	7,012	6.6	99,540	93.4	22	0.02	106,574
65 years	9,597	8.5	103,847	91.5	18	0.02	113,462
Total	**22,472**	**7.0**	**299,221**	**93.0**	**68**	**0.02**	**321,761**

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.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A2.2: FOBT positivity rates, by age and sex, 2011–12

	Positive tests	Valid results	Positivity rate (per cent)
Males			
50 years	2,893	47,359	6.1
55 years	3,464	48,040	7.2
65 years	5,136	54,416	9.4
Total	*11,493*	*149,815*	*7.7*
Females			
50 years	2,970	54,338	5.5
55 years	3,548	58,512	6.1
65 years	4,461	59,028	7.6
Total	*10,979*	*171,878*	*6.4*
Persons			
50 years	5,863	101,697	5.8
55 years	7,012	106,552	6.6
65 years	9,597	113,444	8.5
Total	**22,472**	**321,693**	**7.0**

Note: Positivity equals 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.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A2.3: FOBT positivity rates, by state and territory, 2011–12

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Positive tests	887	747	551	290	264	71	58	25	2,893
	Positivity rate	5.8	6.1	6.3	5.7	7.0	6.0	6.6	9.9	6.1
55 years	Positive tests	1,086	893	671	345	290	109	45	25	3,464
	Positivity rate	7.1	7.3	7.5	6.6	7.5	7.9	5.0	9.5	7.2
65 years	Positive tests	1,639	1,189	995	558	483	163	81	28	5,136
	Positivity rate	9.6	8.9	9.2	10.1	10.0	10.1	8.6	14.2	9.4
Total	*Positive tests*	*3,612*	*2,829*	*2,217*	*1,193*	*1,037*	*343*	*184*	*78*	*11,493*
	Positivity rate	*7.6*	*7.5*	*7.8*	*7.5*	*8.3*	*8.2*	*6.8*	*10.9*	*7.7*
Females										
50 years	Positive tests	917	792	602	285	219	87	51	17	2,970
	Positivity rate	5.3	5.6	5.9	5.0	5.1	6.0	5.1	6.1[(a)]	5.5
55 years	Positive tests	1,100	930	638	381	318	100	61	20	3,548
	Positivity rate	6.0	6.2	5.8	6.1	6.5	6.0	5.5	7.0[(a)]	6.1
65 years	Positive tests	1,428	1,113	853	412	425	147	67	16	4,461
	Positivity rate	7.7	7.4	7.4	7.3	8.0	8.2	6.4	10.7[(a)]	7.6
Total	*Positive tests*	*3,445*	*2,835*	*2,093*	*1,078*	*962*	*334*	*179*	*53*	*10,979*
	Positivity rate	*6.4*	*6.4*	*6.4*	*6.1*	*6.7*	*6.8*	*5.7*	*7.4*	*6.4*
Persons										
50 years	Positive tests	1,804	1,539	1,153	575	483	158	109	42	5,863
	Positivity rate	5.6	5.8	6.1	5.3	6.0	6.0	5.8	7.9	5.8
55 years	Positive tests	2,186	1,823	1,309	726	608	209	106	45	7,012
	Positivity rate	6.5	6.7	6.6	6.3	7.0	6.9	5.3	8.2	6.6
65 years	Positive tests	3,067	2,302	1,848	970	908	310	148	44	9,597
	Positivity rate	8.6	8.1	8.3	8.7	9.0	9.1	7.4	12.7	8.5
Total	**Positive tests**	**7,057**	**5,664**	**4,310**	**2,271**	**1,999**	**677**	**363**	**131**	**22,472**
	Positivity rate	**6.9**	**6.9**	**7.0**	**6.8**	**7.4**	**7.5**	**6.2**	**9.2**	**7.0**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Note: Positivity equals 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.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A2.4: FOBT positivity rates, by geographic region, 2011–12

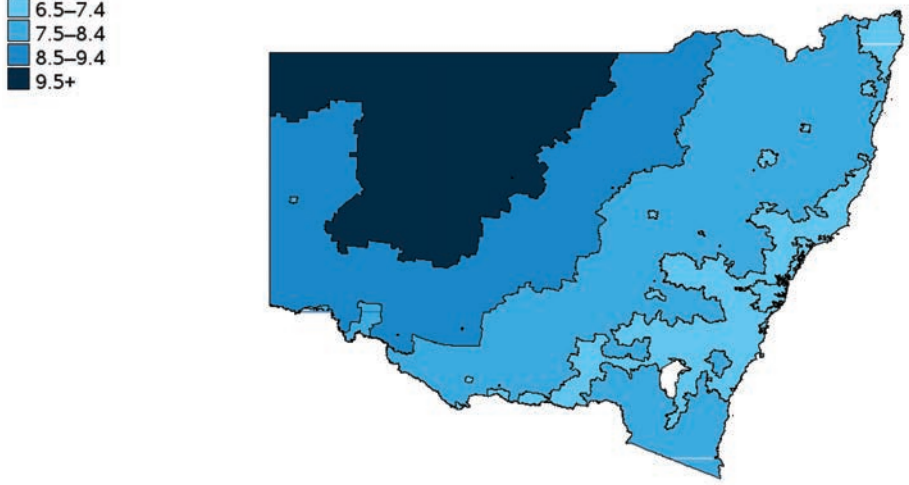
		Remoteness area						
		Major cities	**Inner regional**	**Outer regional**	**Remote**	**Very remote**	**Unknown**	**Total**
Males								
50 years	Positive tests	1,932	595	289	43	10	25	2,893
	Positivity rate	5.9	6.5	6.8	8.5	6.4[(a)]	5.2	6.1
55 years	Positive tests	2,222	760	367	52	16	47	3,464
	Positivity rate	6.9	7.6	8.1	9.5	7.6[(a)]	8.7	7.2
65 years	Positive tests	3,182	1,189	617	65	30	54	5,136
	Positivity rate	9.2	9.2	10.9	11.0	18.3[(a)]	10.2	9.4
Total	*Positive tests*	*7,336*	*2,543*	*1,272*	*159*	*56*	*126*	*11,493*
	Positivity rate	*7.4*	*7.9*	*8.8*	*9.7*	*10.5*	*8.1*	*7.7*
Females								
50 years	Positive tests	2,032	570	306	38	8	16	2,970
	Positivity rate	5.4	5.3	6.1	7.0	5.3[(a)]	3.3[(a)]	5.5
55 years	Positive tests	2,374	755	339	38	12	29	3,548
	Positivity rate	6.0	6.1	6.1	6.3	6.0[(a)]	5.2	6.1
65 years	Positive tests	2,832	1,073	477	36	11	33	4,461
	Positivity rate	7.4	7.7	8.2	6.8	8.1[(a)]	7.0	7.6
Total	*Positive tests*	*7,238*	*2,398*	*1,123*	*111*	*32*	*78*	*10,979*
	Positivity rate	*6.3*	*6.5*	*6.9*	*6.7*	*6.4*	*5.2*	*6.4*
Persons								
50 years	Positive tests	3,964	1,164	595	80	18	41	5,863
	Positivity rate	5.6	5.9	6.5	7.8	5.8[(a)]	4.2	5.8
55 years	Positive tests	4,597	1,515	706	90	28	76	7,012
	Positivity rate	6.4	6.8	7.0	7.8	6.8	7.0	6.6
65 years	Positive tests	6,013	2,261	1,094	100	41	87	9,597
	Positivity rate	8.3	8.4	9.5	9.0	13.6	8.7	8.5
Total	**Positive tests**	**14,574**	**4,941**	**2,395**	**270**	**88**	**204**	**22,472**
	Positivity rate	**6.8**	**7.2**	**7.8**	**8.2**	**8.5**	**6.7**	**7.0**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Positivity equals 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.
2. The residential postcodes of participants were mapped to remoteness areas in the 2011 Australian Statistical Geographical Standard remoteness structure through a postal area correspondence. Those that could not be mapped were included in the 'Unknown' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

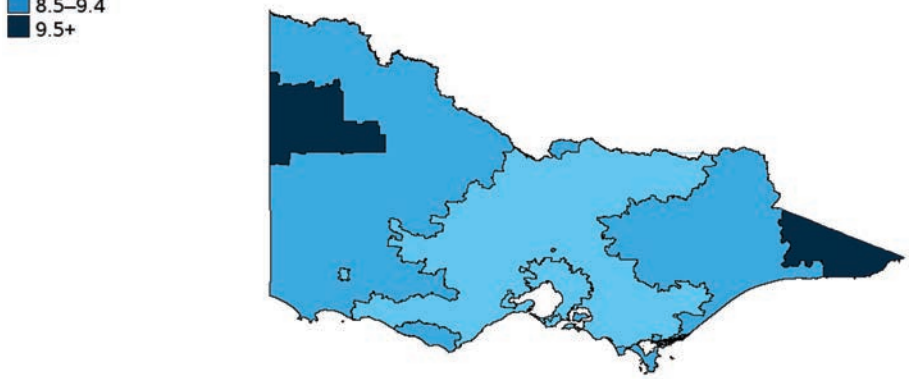


Notes

1. Rate per remoteness area is an average of positivity across that remoteness area.
2. Positivity rates rounded to one decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A2.1a: FOBT positivity, by remoteness area, New South Wales, 2011–12

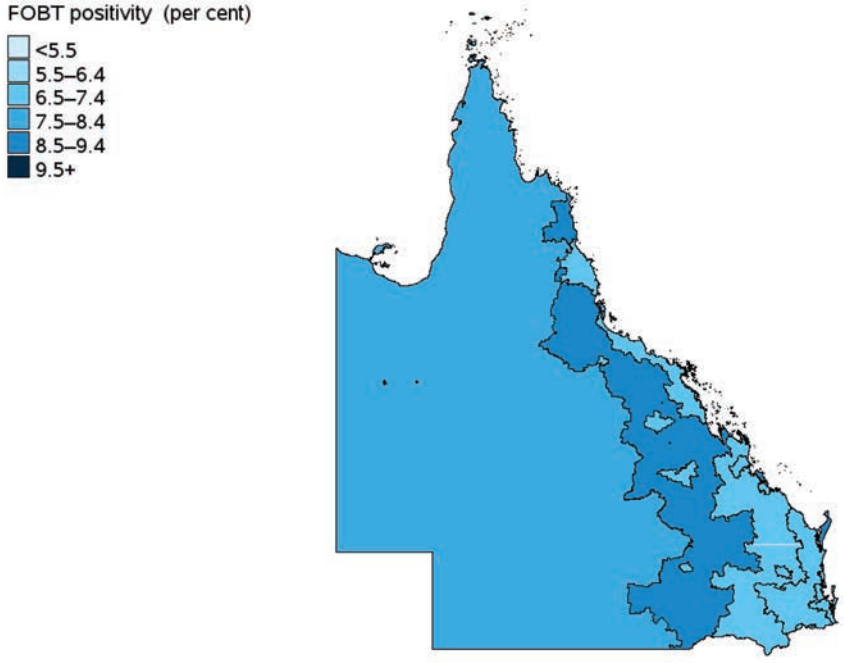


Notes

1. Rate per remoteness area is an average of positivity across that remoteness area.
2. Positivity rates rounded to one decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A2.1b: FOBT positivity, by remoteness area, Victoria, 2011–12

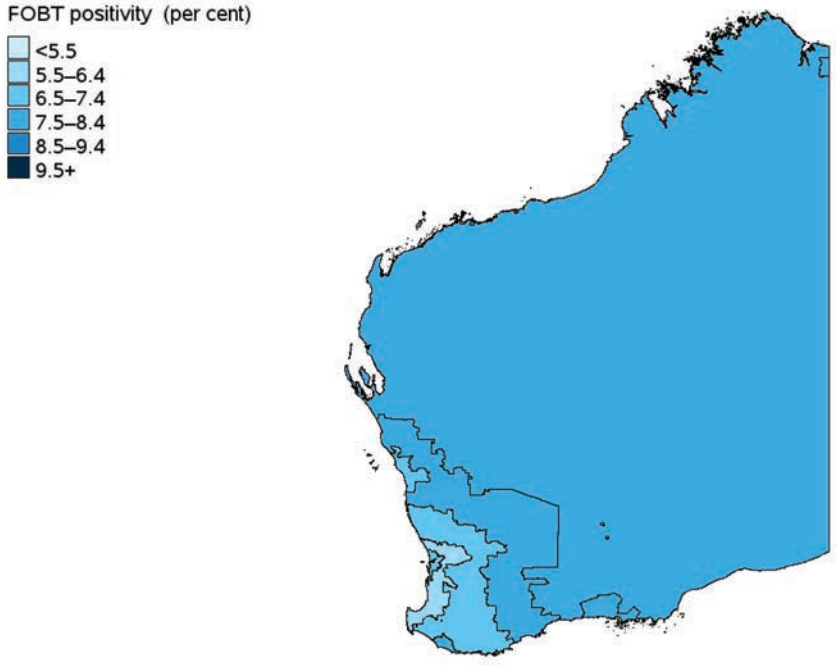


Notes

1. Rate per remoteness area is an average of positivity across that remoteness area.
2. Positivity rates rounded to one decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A2.1c: FOBT positivity, by remoteness area, Queensland, 2011–12

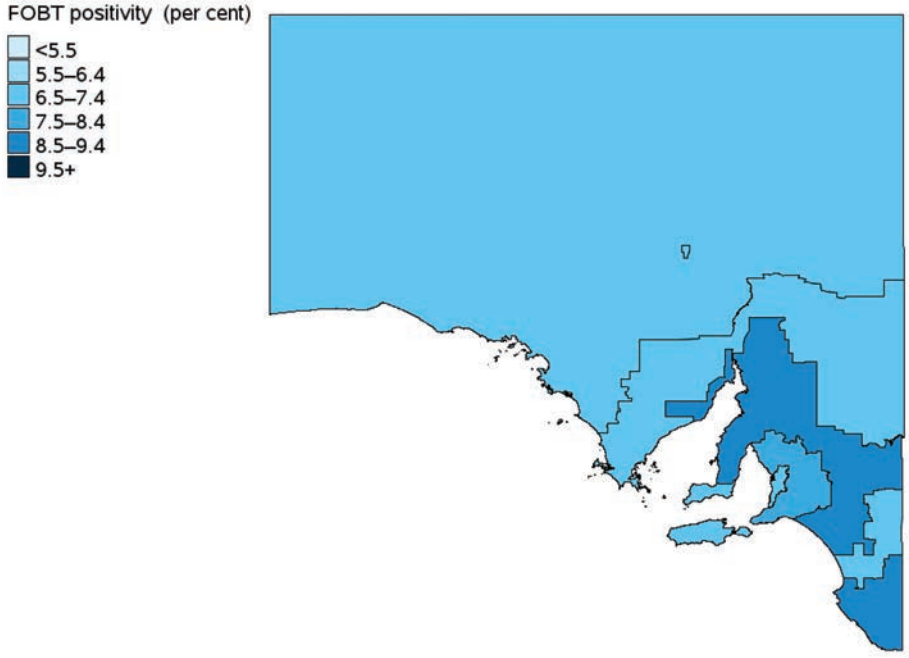


Notes

1. Rate per remoteness area is an average of positivity across that remoteness area.
2. Positivity rates rounded to one decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A2.1d: FOBT positivity, by remoteness area, Western Australia, 2011–12

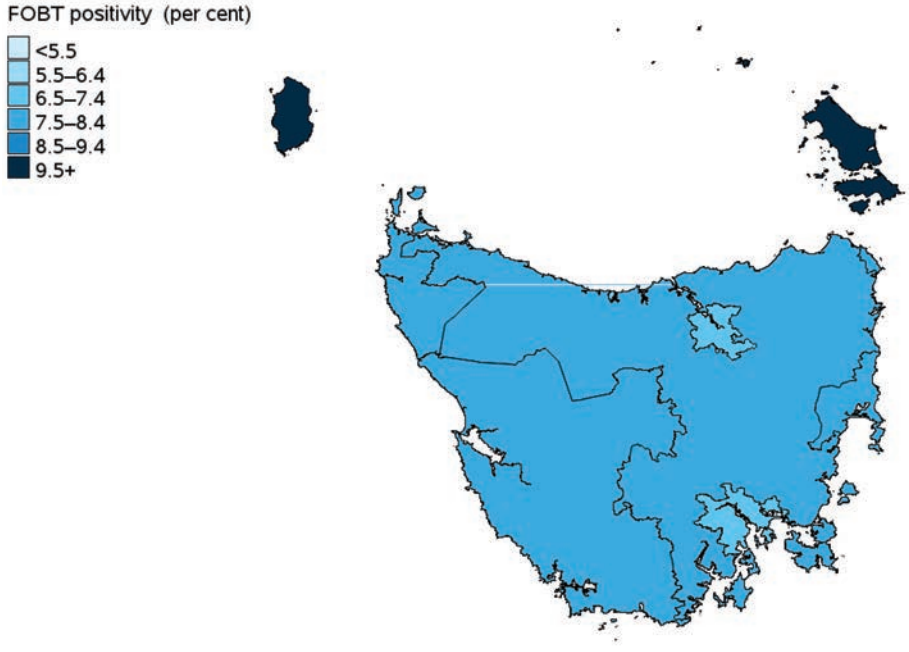


Notes

1. Rate per remoteness area is an average of positivity across that remoteness area.
2. Positivity rates rounded to one decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A2.1e: FOBT positivity, by remoteness area, South Australia, 2011–12

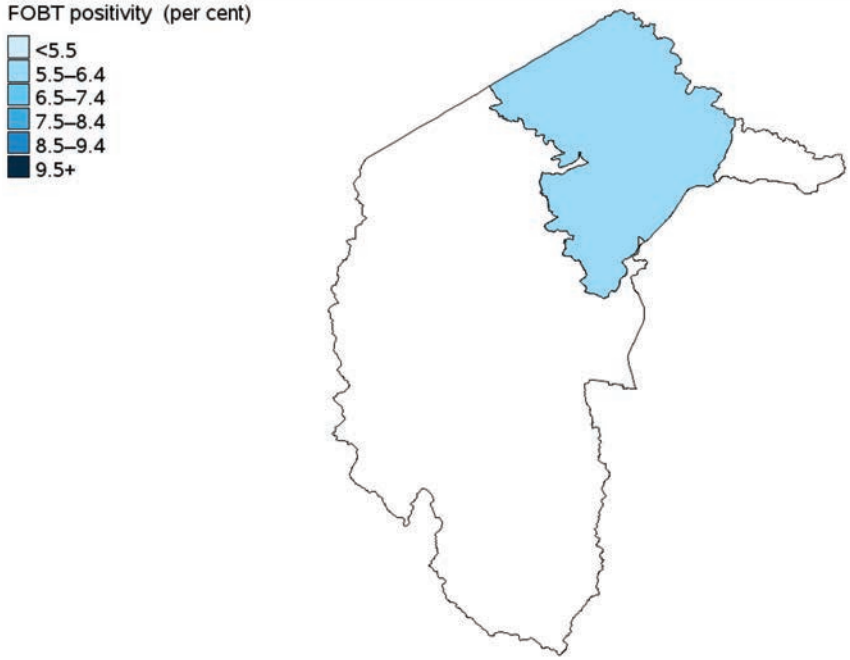


Notes

1. Rate per remoteness area is an average of positivity across that remoteness area.
2. Positivity rates rounded to one decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A2.1f: FOBT positivity, by remoteness area, Tasmania, 2011–12

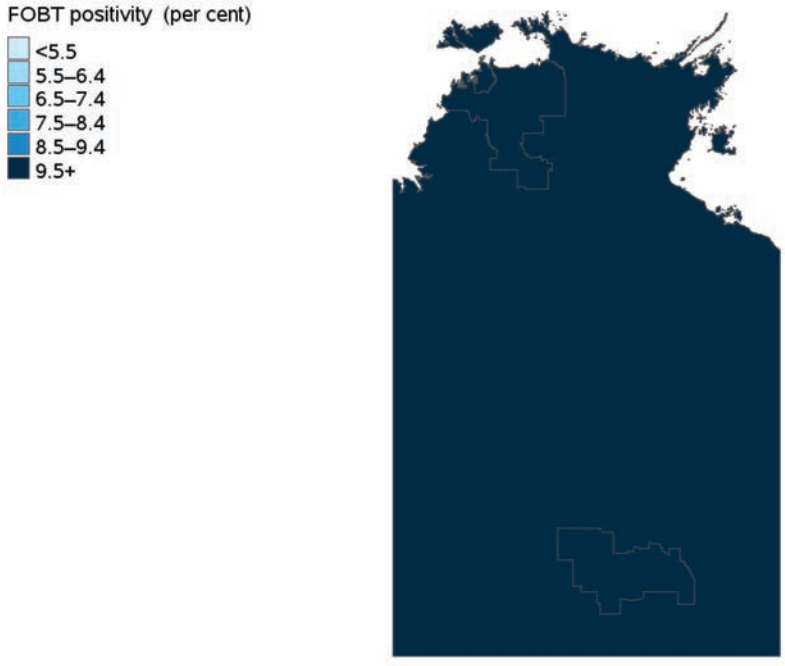


Notes

1. Remoteness areas shaded white contain data that are not publishable due to small numbers, confidentiality, or other concerns.
2. Rate per remoteness area is an average of positivity across that remoteness area.
3. Positivity rates rounded to one decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A2.1g: FOBT positivity, by remoteness area, Australian Capital Territory, 2011–12



Notes

1. Rate per remoteness area is an average of positivity across that remoteness area.
2. Positivity rates rounded to one decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A2.1h: FOBT positivity, by remoteness area, Northern Territory, 2011–12

Table A2.5: FOBT positivity rates, by socioeconomic status area, 2011–12

		Socioeconomic status area						
		1 (lowest)	2	3	4	5 (highest)	Unknown	Total
Males								
50 years	Positive tests	602	590	561	556	557	27	2,893
	Positivity rate	7.3	6.6	6.1	5.7	5.2	5.1	6.1
55 years	Positive tests	713	771	644	657	630	49	3,464
	Positivity rate	8.1	8.2	6.9	6.8	6.1	8.3	7.2
65 years	Positive tests	1,123	1,178	1,010	905	862	58	5,136
	Positivity rate	10.4	10.4	9.7	8.7	7.9	10.1	9.4
Total	*Positive tests*	*2,438*	*2,539*	*2,215*	*2,118*	*2,049*	*134*	*11,493*
	Positivity rate	*8.8*	*8.6*	*7.7*	*7.1*	*6.4*	*7.9*	*7.7*
Females								
50 years	Positive tests	572	583	605	567	623	20	2,970
	Positivity rate	6.2	5.7	5.7	5.1	5.0	3.8	5.5
55 years	Positive tests	752	698	682	666	718	32	3,548
	Positivity rate	7.0	6.1	6.0	5.7	5.7	5.3	6.1
65 years	Positive tests	992	923	882	819	807	38	4,461
	Positivity rate	8.5	7.6	7.7	7.3	6.8	7.3	7.6
Total	*Positive tests*	*2,316*	*2,204*	*2,169*	*2,052*	*2,148*	*90*	*10,979*
	Positivity rate	*7.3*	*6.5*	*6.5*	*6.0*	*5.8*	*5.4*	*6.4*
Persons								
50 years	Positive tests	1,174	1,173	1,166	1,123	1,180	47	5,863
	Positivity rate	6.7	6.1	5.9	5.4	5.1	4.5	5.8
55 years	Positive tests	1,465	1,469	1,326	1,323	1,348	81	7,012
	Positivity rate	7.5	7.1	6.4	6.2	5.9	6.8	6.6
65 years	Positive tests	2,115	2,101	1,892	1,724	1,669	96	9,597
	Positivity rate	9.4	8.9	8.7	8.0	7.3	8.8	8.5
Total	**Positive tests**	**4,754**	**4,743**	**4,384**	**4,170**	**4,197**	**224**	**22,472**
	Positivity rate	**8.0**	**7.5**	**7.0**	**6.5**	**6.1**	**6.7**	**7.0**

Notes

1. Positivity equals 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.
2. A participant's socioeconomic status area was classified by mapping their residential postcode (through a postal area) to the ABS IRSD for 2011. Those that could not be mapped were included in the 'Unknown' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A2.6: FOBT positivity rates, by Aboriginal and Torres Strait Islander status, 2011–12

		Indigenous	Non-Indigenous	Not stated	Total
Males					
50 years	Positive tests	28	2,727	138	2,893
	Positivity rate	7.7	6.0	8.0	6.1
55 years	Positive tests	43	3,249	172	3,464
	Positivity rate	14.8[(a)]	7.1	9.9	7.2
65 years	Positive tests	24	4,880	232	5,136
	Positivity rate	11.0[(a)]	9.3	11.7	9.4
Total	*Positive tests*	*95*	*10,856*	*542*	*11,493*
	Positivity rate	*10.9*	*7.6*	*9.9*	*7.7*
Females					
50 years	Positive tests	39	2,848	83	2,970
	Positivity rate	9.8	5.4	6.1	5.5
55 years	Positive tests	32	3,430	86	3,548
	Positivity rate	9.4	6.1	5.8	6.1
65 years	Positive tests	17	4,309	135	4,461
	Positivity rate	6.6[(a)]	7.5	8.3	7.6
Total	*Positive tests*	*88*	*10,587*	*304*	*10,979*
	Positivity rate	*8.8*	*6.4*	*6.8*	*6.4*
Persons					
50 years	Positive tests	67	5,575	221	5,863
	Positivity rate	8.8	5.7	7.1	5.8
55 years	Positive tests	75	6,679	258	7,012
	Positivity rate	11.9	6.5	8.0	6.6
65 years	Positive tests	41	9,189	367	9,597
	Positivity rate	8.6	8.4	10.2	8.5
Total	**Positive tests**	**183**	**21,443**	**846**	**22,472**
	Positivity rate	**9.8**	**6.9**	**8.5**	**7.0**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Positivity equals 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.
2. NBCSP Aboriginal and Torres Strait Islander status was reported by the participant on the returned participant details form. Participants who did not indicate Aboriginal and Torres Strait Islander status were included in the 'Not stated' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A2.7: FOBT positivity rates, by language spoken at home, 2011–12

		Language other than English	English	Total
Males				
50 years	Positive tests	387	2,506	2,893
	Positivity rate	6.0	6.1	6.1
55 years	Positive tests	478	2,986	3,464
	Positivity rate	7.2	7.2	7.2
65 years	Positive tests	586	4,550	5,136
	Positivity rate	10.0	9.4	9.4
Total	*Positive tests*	*1,451*	*10,042*	*11,493*
	Positivity rate	*7.7*	*7.7*	*7.7*
Females				
50 years	Positive tests	461	2,509	2,970
	Positivity rate	5.8	5.4	5.5
55 years	Positive tests	569	2,979	3,548
	Positivity rate	6.8	5.9	6.1
65 years	Positive tests	499	3,962	4,461
	Positivity rate	7.8	7.5	7.6
Total	*Positive tests*	*1,529*	*9,450*	*10,979*
	Positivity rate	*6.8*	*6.3*	*6.4*
Persons				
50 years	Positive tests	848	5,015	5,863
	Positivity rate	5.9	5.7	5.8
55 years	Positive tests	1,047	5,965	7,012
	Positivity rate	7.0	6.5	6.6
65 years	Positive tests	1,085	8,512	9,597
	Positivity rate	8.9	8.4	8.5
Total	**Positive tests**	**2,980**	**19,492**	**22,472**
	Positivity rate	**7.2**	**7.0**	**7.0**

Notes

1. Positivity equals 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.
2. NBCSP preferred language spoken at home was reported by the participant on the returned participant details form. Participants who did not indicate preferred language spoken at home were assumed to speak English.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A2.8: FOBT positivity rates, by disability status, 2011–12

		Severe or profound activity limitation	No severe or profound activity limitation	Not stated	Total
Males					
50 years	Positive tests	187	2,526	180	2,893
	Positivity rate	10.2	6.0	5.6	6.1
55 years	Positive tests	244	3,010	210	3,464
	Positivity rate	11.0	7.1	6.2	7.2
65 years	Positive tests	533	4,318	285	5,136
	Positivity rate	13.7	9.3	7.2	9.4
Total	*Positive tests*	*964*	*9,854*	*675*	*11,493*
	Positivity rate	*12.1*	*7.5*	*6.4*	*7.7*
Females					
50 years	Positive tests	228	2,617	125	2,970
	Positivity rate	9.4	5.3	4.3	5.5
55 years	Positive tests	322	3,085	141	3,548
	Positivity rate	10.4	5.9	4.5	6.1
65 years	Positive tests	394	3,893	174	4,461
	Positivity rate	11.3	7.5	5.2	7.6
Total	*Positive tests*	*944*	*9,595*	*440*	*10,979*
	Positivity rate	*10.5*	*6.3*	*4.7*	*6.4*
Persons					
50 years	Positive tests	415	5,143	305	5,863
	Positivity rate	9.7	5.6	4.9	5.8
55 years	Positive tests	566	6,095	351	7,012
	Positivity rate	10.6	6.4	5.4	6.6
65 years	Positive tests	927	8,211	459	9,597
	Positivity rate	12.6	8.3	6.3	8.5
Total	**Positive tests**	**1,908**	**19,449**	**1,115**	**22,472**
	Positivity rate	**11.3**	**6.8**	**5.6**	**7.0**

Notes

1. Positivity equals 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.
2. NBCSP disability status was reported by the participant on the participant details form. Participants who did not indicate disability status are included in the 'Not stated' column.
3. A 'profound' activity limitation indicates that a person always needs assistance with self-care, movement and/or communications activities. A 'severe' activity limitation indicates that a person sometimes needs assistance with these activities.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

A3 Primary health care practitioner and colonoscopy follow-up tables and figures

Table A3.1: Crude follow-up by primary health care practitioners after a positive FOBT result, by state and territory, 2011–12

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Number	564	387	326	162	165	44	31	13	1,692
	Per cent	63.6	51.8	59.2	55.9	62.5	n.p.	n.p.	n.p.	58.5
55 years	Number	717	460	401	196	191	61	23	16	2,065
	Per cent	66.0	51.5	59.8	56.8	65.9	56.0[(a)]	n.p.	n.p.	59.6
65 years	Number	1,099	678	674	346	322	107	50	16	3,292
	Per cent	67.1	57.0	67.7	62.0	66.7	65.6[(a)]	n.p.	n.p.	64.1
Total	*Number*	*2,380*	*1,525*	*1,401*	*704*	*678*	*212*	*104*	*45*	*7,049*
	Per cent	*65.9*	*53.9*	*63.2*	*59.0*	*65.4*	*61.8*	*56.5[(a)]*	*57.7[(a)]*	*61.3*
Females										
50 years	Number	602	446	397	172	154	64	29	8	1,872
	Per cent	65.6	56.3	65.9	60.4[(a)]	70.3[(a)]	n.p.	n.p.	n.p.	63.0
55 years	Number	781	539	423	248	224	58	33	12	2,318
	Per cent	71.0	58.0	66.3	65.1	70.4	58.0[(a)]	n.p.	n.p.	65.3
65 years	Number	1,030	672	601	258	298	93	44	7	3,003
	Per cent	72.1	60.4	70.5	62.6	70.1	63.3[(a)]	n.p.	n.p.	67.3
Total	*Number*	*2,413*	*1,657*	*1,421*	*678*	*676*	*215*	*106*	*27*	*7,193*
	Per cent	*70.0*	*58.4*	*67.9*	*62.9*	*70.3*	*64.4*	*59.2[(a)]*	*n.p.*	*65.5*
Persons										
50 years	Number	1,166	833	723	334	319	108	60	21	3,564
	Per cent	64.6	54.1	62.7	58.1	66.0	68.4[(a)]	55.0[(a)]	n.p.	60.8
55 years	Number	1,498	999	824	444	415	119	56	28	4,383
	Per cent	68.5	54.8	62.9	61.2	68.3	56.9[(a)]	52.8[(a)]	n.p.	62.5
65 years	Number	2,129	1,350	1,275	604	620	200	94	23	6,295
	Per cent	69.4	58.6	69.0	62.3	68.3	64.5[(a)]	63.5[(a)]	n.p.	65.6
Total	**Number**	**4,793**	**3,182**	**2,822**	**1,382**	**1,354**	**427**	**210**	**72**	**14,242**
	Per cent	**67.9**	**56.2**	**65.5**	**60.9**	**67.7**	**63.1**	**57.9**	**55.0[(a)]**	**63.4**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages equal the number of people having consulted a PHCP after a positive FOBT result as a proportion of the total number of people with positive FOBT results.

2. Reporting of PHCP follow-up is not mandatory; actual numbers of participant consultations may be underestimated.

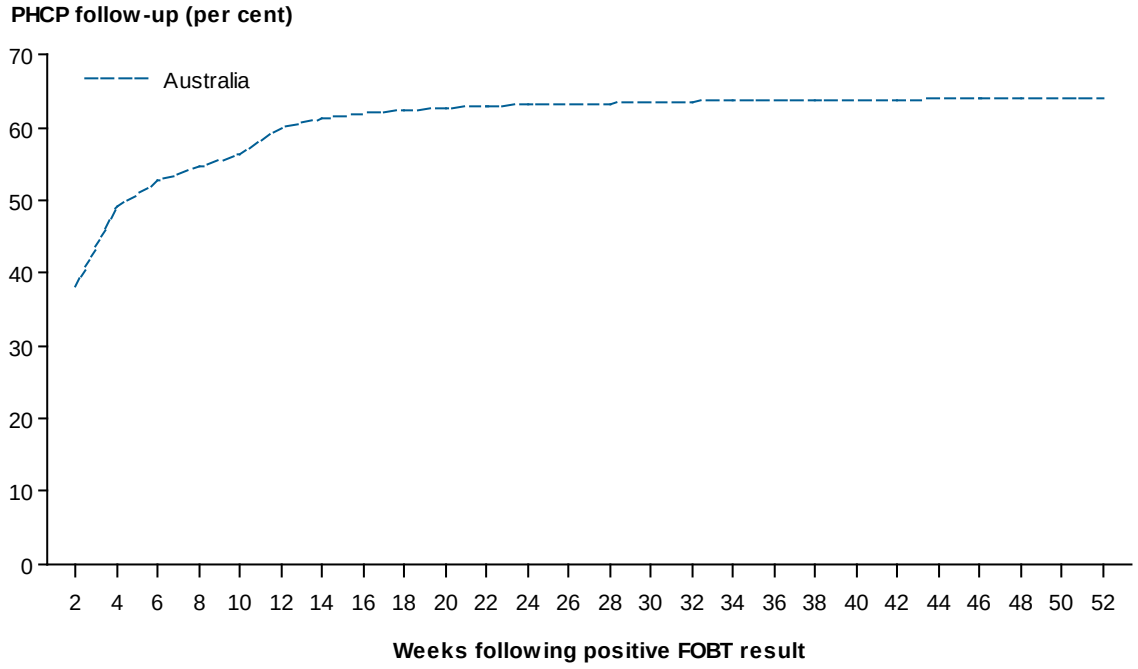
Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.2: Kaplan-Meier primary health care practitioner follow-up at 26 and 52 weeks after a positive FOBT, by state and territory, 2011–12

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
26 weeks									
PHCP follow-up (per cent)	67.3	56.4	65.3	61.0	67.7	63.0	57.7	56.0	63.2
95% confidence interval	66.2–68.4	55.1–57.7	63.8–66.7	59.0–63.0	65.7–69.8	59.4–66.7	52.6–62.8	47.3–64.7	62.6–63.9
52 weeks									
PHCP follow-up (per cent)	69.0	56.8	65.9	61.1	68.1	63.5	59.0	56.0	64.0
95% confidence interval	67.9–70.1	56.2–58.1	65.5–67.4	60.9–63.1	67.7–70.2	63.1–67.1	57.9–64.3	55.0–64.7	63.4–64.7

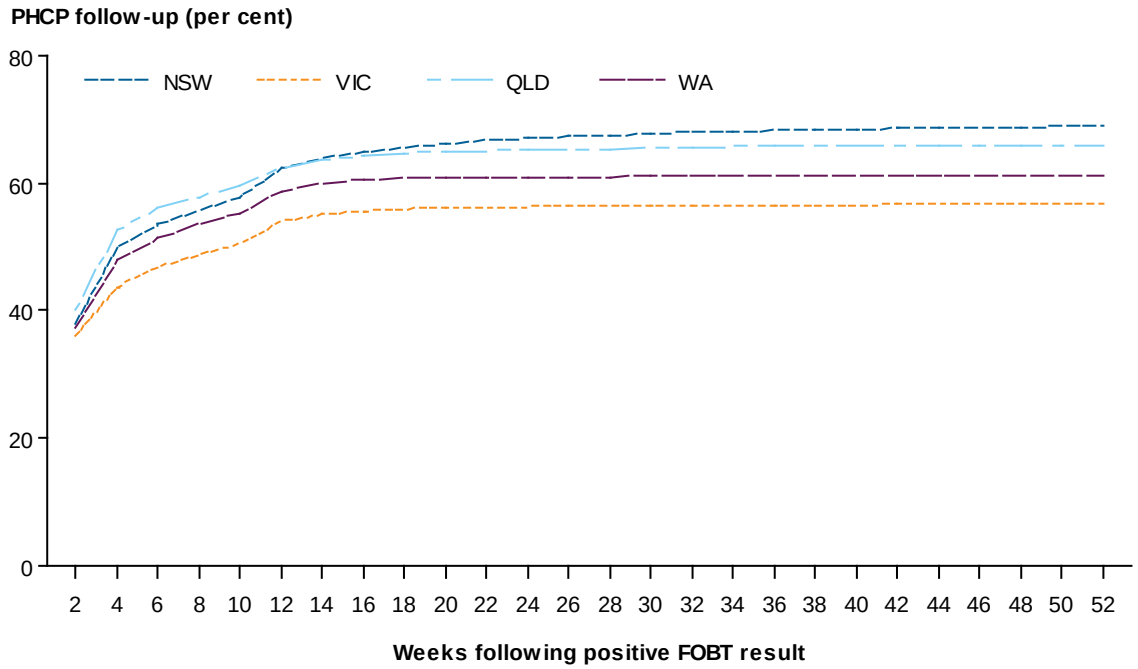
Note: PHCP follow-up rates equal the estimated Kaplan-Meier follow-up rate of people who consulted a PHCP as a proportion of the total number of people with positive FOBT results.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.



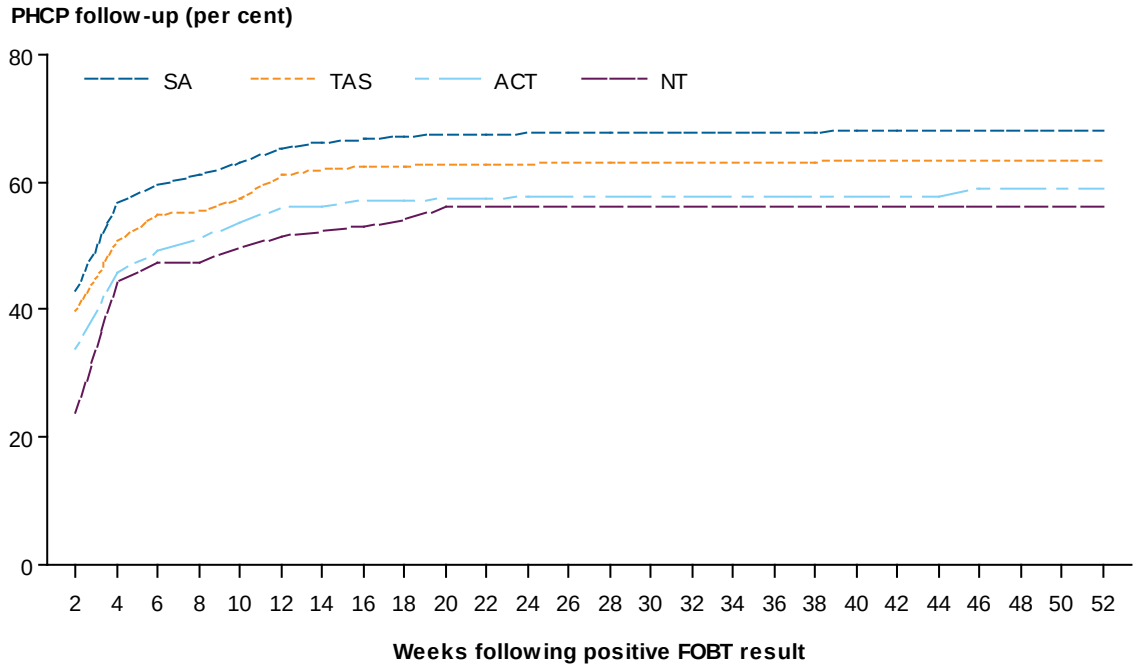
Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.1a: Primary health care practitioner follow-up rate after positive FOBT using Kaplan-Meier estimates, Australia, 2011–12



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.1b: Primary health care practitioner follow-up rate after positive FOBT using Kaplan-Meier estimates, New South Wales, Victoria, Queensland and Western Australia, 2011–12



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.1c: Primary health care practitioner follow-up rate after positive FOBT using Kaplan-Meier estimates, South Australia, Tasmania, Australian Capital Territory and Northern Territory, 2011–12

Table A3.3: Crude follow-up by primary health care practitioners after a positive FOBT result, by remoteness area, 2011–12

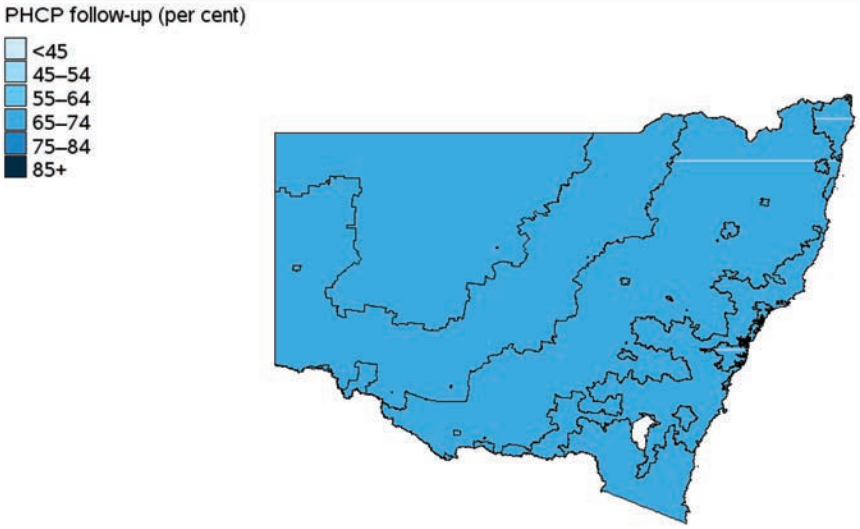
		Remoteness area						
		Major cities	**Inner regional**	**Outer regional**	**Remote**	**Very remote**	**Unknown**	**Total**
Males								
50 years	Number	1,102	373	177	22	3	15	1,692
	Per cent	57.0	62.7	61.4	n.p.	n.p.	n.p.	58.5
55 years	Number	1,306	471	224	28	10	27	2,065
	Per cent	58.8	61.9	61.0	n.p.	n.p.	n.p.	59.6
65 years	Number	2,011	776	416	39	16	34	3,292
	Per cent	63.2	65.3	67.3	n.p.	n.p.	n.p.	64.1
Total	*Number*	*4,419*	*1,620*	*817*	*89*	*29*	*76*	*7,049*
	Per cent	*60.2*	*63.7*	*64.2*	*55.8*[(a)]	*n.p.*	*60.3*[(a)]	*61.3*
Females								
50 years	Number	1,256	363	213	28	5	7	1,872
	Per cent	61.8	63.7	69.4	n.p.	n.p.	n.p.	63.0
55 years	Number	1,495	530	243	25	4	21	2,318
	Per cent	63.0	70.1	71.7	n.p.	n.p.	n.p.	65.3
65 years	Number	1,886	734	333	20	9	21	3,003
	Per cent	66.6	68.4	69.9	n.p.	n.p.	n.p.	67.3
Total	*Number*	*4,637*	*1,627*	*789*	*73*	*18*	*49*	*7,193*
	Per cent	*64.1*	*67.8*	*70.3*	*65.9*[(a)]	*n.p.*	*n.p.*	*65.5*
Persons								
50 years	Number	2,358	735	390	51	8	22	3,564
	Per cent	59.5	63.2	65.6	n.p.	n.p.	n.p.	60.8
55 years	Number	2,801	1,001	467	52	14	48	4,383
	Per cent	60.9	66.0	66.2	n.p.	n.p.	n.p.	62.5
65 years	Number	3,897	1,510	749	59	25	55	6,295
	Per cent	64.8	66.8	68.5	58.8[(a)]	n.p.	n.p.	65.6
Total	**Number**	**9,056**	**3,246**	**1,606**	**162**	**47**	**125**	**14,242**
	Per cent	**62.1**	**65.7**	**67.1**	**59.9**[(a)]	**n.p.**	**61.3**[(a)]	**63.4**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages equal the number of people having consulted a PHCP after a positive FOBT result as a proportion of the total number of people with positive FOBT results.
2. Reporting of PHCP follow-up is not mandatory; actual numbers of participant consultations may be underestimated.
3. The residential postcodes of participants were mapped to remoteness areas in the 2011 Australian Statistical Geographical Standard remoteness structure through a postal area correspondence. Those that could not be mapped were included in the 'Unknown' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

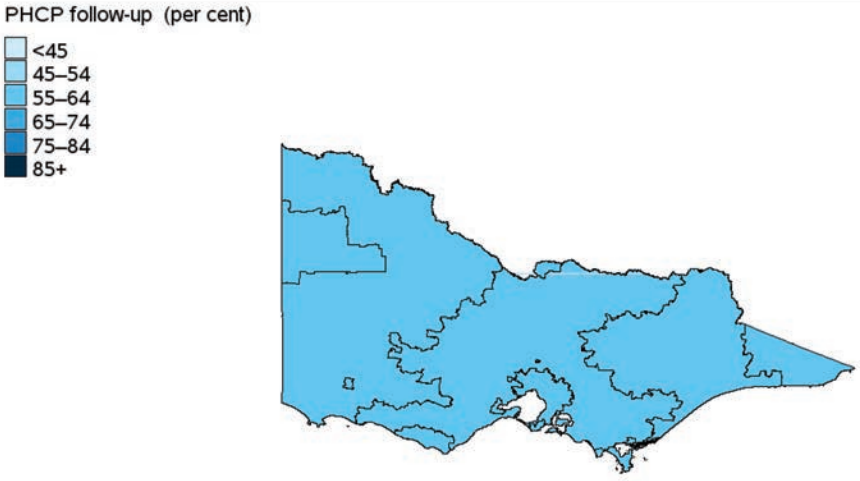


Notes

1. Rate per remoteness area is an average of PHCP follow-up reported across that remoteness area.
2. PHCP follow-up rates rounded to integers.
3. Differences in PHCP follow-up rates across remoteness areas may involve differences in assessment form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.2a: PHCP follow-up, by remoteness area, New South Wales, 2011–12

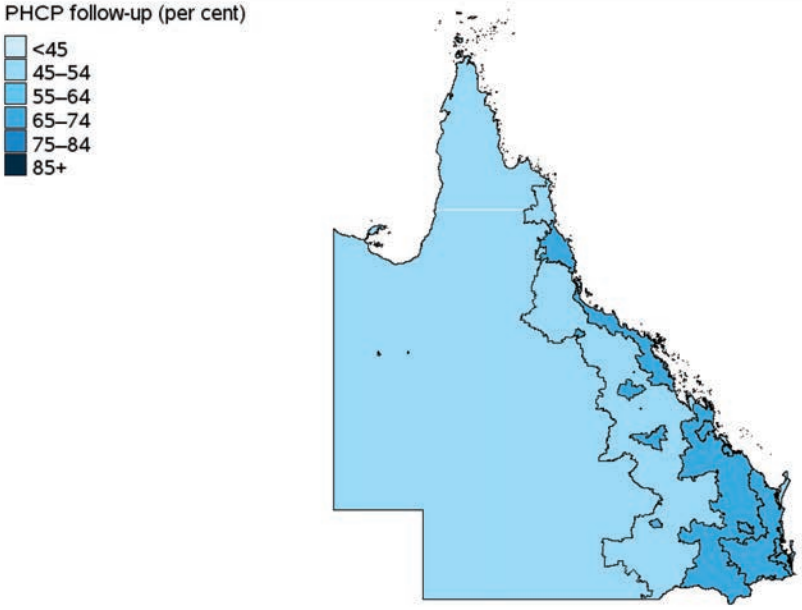


Notes

1. Rate per remoteness area is an average of PHCP follow-up reported across that remoteness area.
2. PHCP follow-up rates rounded to integers.
3. Differences in PHCP follow-up rates across remoteness areas may involve differences in assessment form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.2b: PHCP follow-up, by remoteness area, Victoria, 2011–12

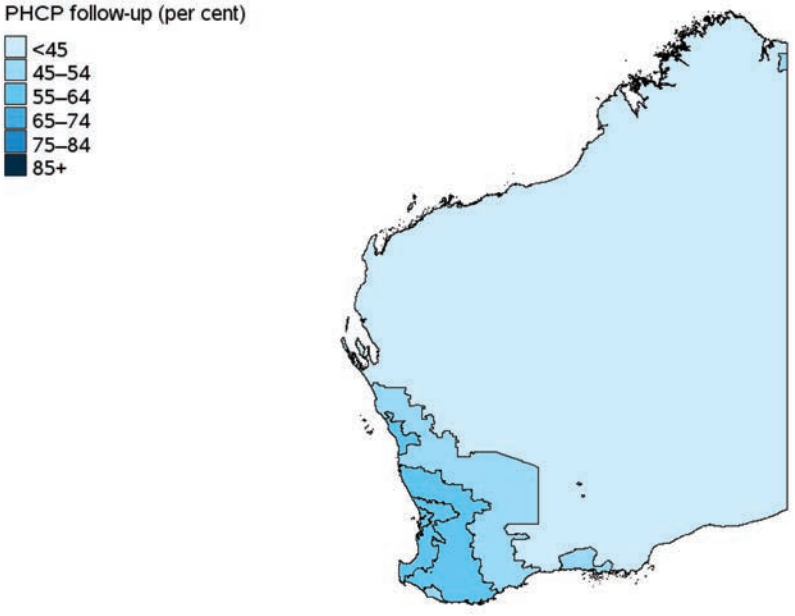


Notes

1. Rate per remoteness area is an average of PHCP follow-up reported across that remoteness area.
2. PHCP follow-up rates rounded to integers.
3. Differences in PHCP follow-up rates across remoteness areas may involve differences in assessment form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.2c: PHCP follow-up, by remoteness area, Queensland, 2011–12

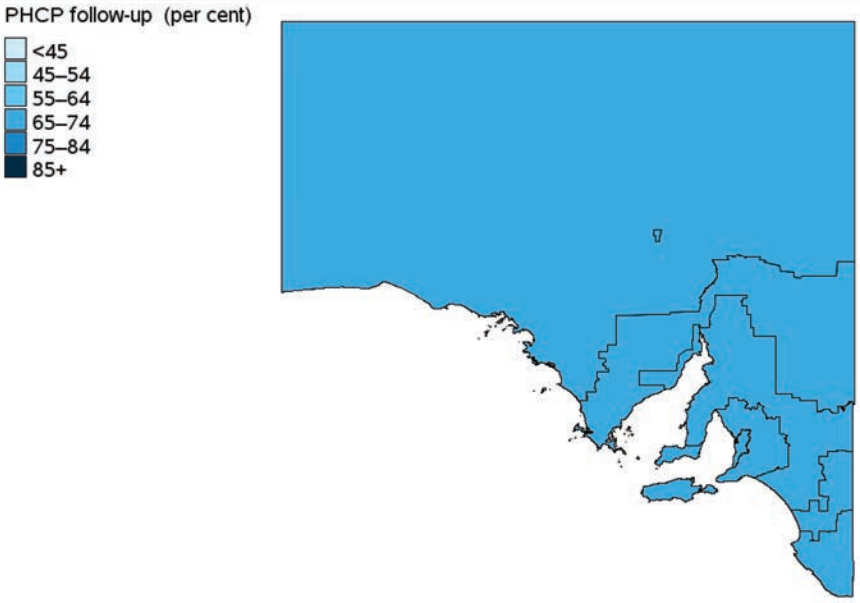


Notes

1. Rate per remoteness area is an average of PHCP follow-up reported across that remoteness area.
2. PHCP follow-up rates rounded to integers.
3. Differences in PHCP follow-up rates across remoteness areas may involve differences in assessment form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.2d: PHCP follow-up, by remoteness area, Western Australia, 2011–12

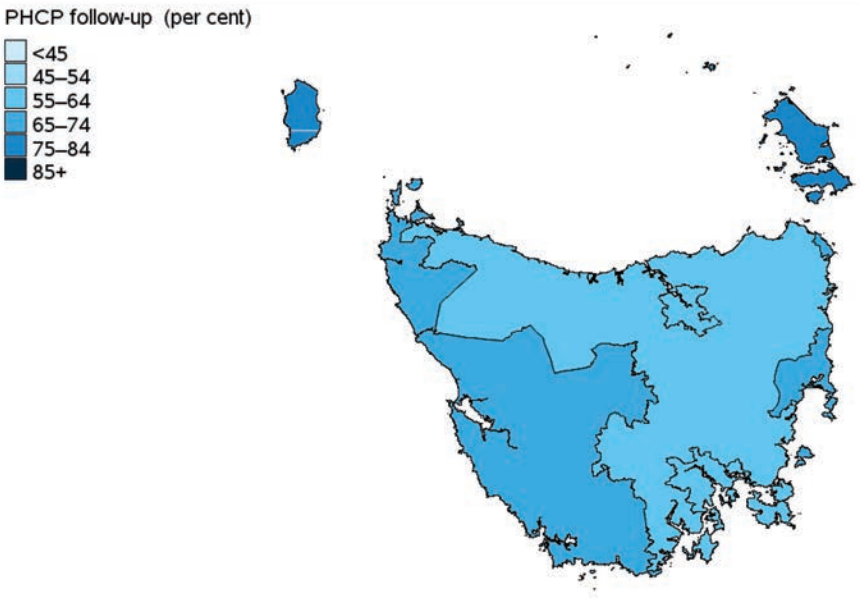


Notes

1. Rate per remoteness area is an average of PHCP follow-up reported across that remoteness area.
2. PHCP follow-up rates rounded to integers.
3. Differences in PHCP follow-up rates across remoteness areas may involve differences in assessment form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.2e: PHCP follow-up, by remoteness area, South Australia, 2011–12

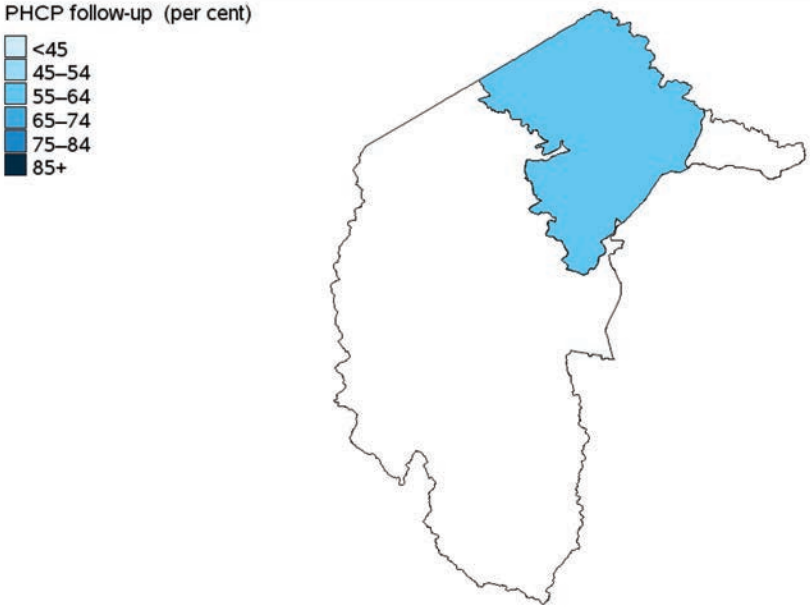


Notes

1. Rate per remoteness area is an average of PHCP follow-up reported across that remoteness area.
2. PHCP follow-up rates rounded to integers.
3. Differences in PHCP follow-up rates across remoteness areas may involve differences in assessment form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.2f: PHCP follow-up, by remoteness area, Tasmania, 2011–12

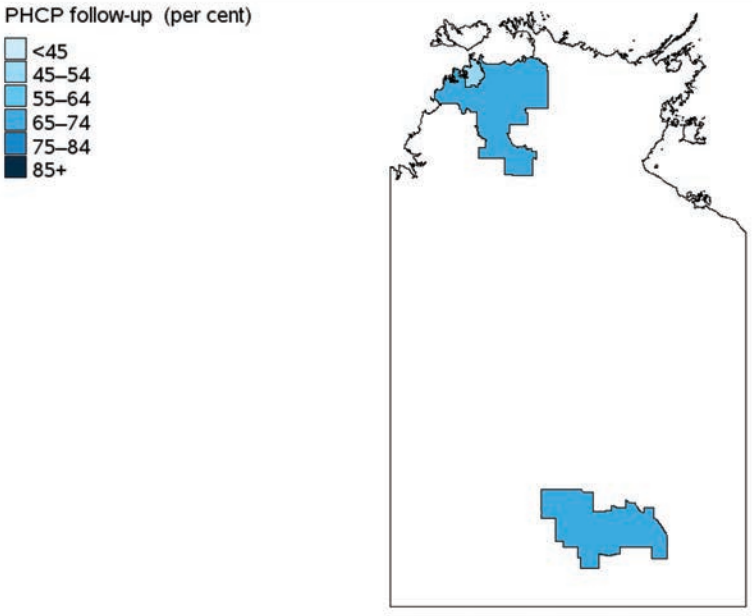


Notes

1. Remoteness areas shaded white contain data that are not publishable due to small numbers, confidentiality, or other concerns.
2. Rate per remoteness area is an average of PHCP follow-up reported across that remoteness area.
3. PHCP follow-up rates rounded to integers.
4. Differences in PHCP follow-up rates across remoteness areas may involve differences in assessment form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.2g: PHCP follow-up, by remoteness area, Australian Capital Territory, 2011–12



Notes

1. Remoteness areas shaded white contain data that are not publishable due to small numbers, confidentiality, or other concerns.
2. Rate per remoteness area is an average of PHCP follow-up reported across that remoteness area.
3. PHCP follow-up rates rounded to integers.
4. Differences in PHCP follow-up rates across remoteness areas may involve differences in assessment form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.2h: PHCP follow-up, by remoteness area, Northern Territory, 2011–12

Table A3.4: Crude follow-up by primary health care practitioners after a positive FOBT result, by socioeconomic status area, 2011–12

		Socioeconomic status area						
		1 (lowest)	2	3	4	5 (highest)	Unknown	Total
Males								
50 years	Number	361	358	332	313	313	15	1,692
	Per cent	60.0	60.7	59.2	56.3	56.2	n.p.	58.5
55 years	Number	427	477	377	383	373	28	2,065
	Per cent	59.9	61.9	58.5	58.3	59.2	n.p.	59.6
65 years	Number	712	768	646	568	563	35	3,292
	Per cent	63.4	65.2	64.0	62.8	65.3	n.p.	64.1
Total	*Number*	*1,500*	*1,603*	*1,355*	*1,264*	*1,249*	*78*	*7,049*
	Per cent	*61.5*	*63.1*	*61.2*	*59.7*	*61.0*	*58.2*[(a)]	*61.3*
Females								
50 years	Number	363	375	375	362	388	9	1,872
	Per cent	63.5	64.3	62.0	63.8	62.3	n.p.	63.0
55 years	Number	502	467	435	412	478	24	2,318
	Per cent	66.8	66.9	63.8	61.9	66.6	n.p.	65.3
65 years	Number	647	638	581	562	552	23	3,003
	Per cent	65.2	69.1	65.9	68.6	68.4	n.p.	67.3
Total	*Number*	*1,512*	*1,480*	*1,391*	*1,336*	*1,418*	*56*	*7,193*
	Per cent	*65.3*	*67.2*	*64.1*	*65.1*	*66.0*	*n.p.*	*65.5*
Persons								
50 years	Number	724	733	707	675	701	24	3,564
	Per cent	61.7	62.5	60.6	60.1	59.4	n.p.	60.8
55 years	Number	929	944	812	795	851	52	4,383
	Per cent	63.4	64.3	61.2	60.1	63.1	n.p.	62.5
65 years	Number	1,359	1,406	1,227	1,130	1,115	58	6,295
	Per cent	64.3	66.9	64.9	65.5	66.8	60.4[(a)]	65.6
Total	**Number**	**3,012**	**3,083**	**2,746**	**2,600**	**2,667**	**134**	**14,242**
	Per cent	**63.4**	**65.0**	**62.6**	**62.4**	**63.5**	**59.8**[(a)]	**63.4**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages equal the number of people having consulted a PHCP after a positive FOBT result as a proportion of the total number of people with positive FOBT results.
2. Reporting of PHCP follow-up is not mandatory; actual numbers of participant consultations may be underestimated.
3. A participant's socioeconomic status area was classified by mapping their residential postcode (through a postal area) to the ABS IRSD for 2011. Those that could not be mapped were included in the 'Unknown' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.5: Crude follow-up by primary health care practitioners after a positive FOBT result, by Aboriginal and Torres Strait Islander status, 2011–12

		Indigenous	Non-indigenous	Not stated	Total
Males					
50 years	Number	23	1,642	27	1,692
	Per cent	n.p.	60.2	19.6[(a)]	58.5
55 years	Number	27	2,001	37	2,065
	Per cent	n.p.	61.6	21.5[(a)]	59.6
65 years	Number	15	3,218	59	3,292
	Per cent	n.p.	65.9	25.4[(a)]	64.1
Total	*Number*	*65*	*6,861*	*123*	*7,049*
	Per cent	*n.p.*	*63.2*	*22.7*	*61.3*
Females					
50 years	Number	33	1,823	16	1,872
	Per cent	n.p.	64.0	n.p.	63.0
55 years	Number	22	2,270	26	2,318
	Per cent	n.p.	66.2	n.p.	65.3
65 years	Number	8	2,949	46	3,003
	Per cent	n.p.	68.4	34.1[(a)]	67.3
Total	*Number*	*63*	*7,042*	*88*	*7,193*
	Per cent	*n.p.*	*66.5*	*28.9*	*65.5*
Persons					
50 years	Number	56	3,465	43	3,564
	Per cent	n.p.	62.2	19.5[(a)]	60.8
55 years	Number	49	4,271	63	4,383
	Per cent	n.p.	63.9	24.4[(a)]	62.5
65 years	Number	23	6,167	105	6,295
	Per cent	n.p.	67.1	28.6	65.6
Total	**Number**	**128**	**13,903**	**211**	**14,242**
	Per cent	**69.9[(a)]**	**64.8**	**24.9**	**63.4**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages equal the number of people having consulted a PHCP after a positive FOBT result as a proportion of the total number of people with positive FOBT results.
2. Reporting of PHCP follow-up is not mandatory; actual numbers of participant consultations may be underestimated.
3. NBCSP Aboriginal and Torres Strait Islander status was reported by the participant on the returned participant details form. Participants who did not indicate Aboriginal and Torres Strait Islander status were included in the 'Not stated' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.6: Crude follow-up by primary health care practitioners after a positive FOBT result, by language spoken at home, 2011–12

		Language other than English	English	Total
Males				
50 years	Number	216	1,476	1,692
	Per cent	55.8	58.9	58.5
55 years	Number	288	1,777	2,065
	Per cent	60.3	59.5	59.6
65 years	Number	374	2,918	3,292
	Per cent	63.8	64.1	64.1
Total	*Number*	*878*	*6,171*	*7,049*
	Per cent	*60.5*	*61.5*	*61.3*
Females				
50 years	Number	276	1,596	1,872
	Per cent	59.9	63.6	63.0
55 years	Number	350	1,968	2,318
	Per cent	61.5	66.1	65.3
65 years	Number	313	2,690	3,003
	Per cent	62.7	67.9	67.3
Total	*Number*	*939*	*6,254*	*7,193*
	Per cent	*61.4*	*66.2*	*65.5*
Persons				
50 years	Number	492	3,072	3,564
	Per cent	58.0	61.3	60.8
55 years	Number	638	3,745	4,383
	Per cent	60.9	62.8	62.5
65 years	Number	687	5,608	6,295
	Per cent	63.3	65.9	65.6
Total	**Number**	**1,817**	**12,425**	**14,242**
	Per cent	**61.0**	**63.7**	**63.4**

Notes

1. Percentages equal the number of people having consulted a PHCP after a positive FOBT result as a proportion of the total number of people with positive FOBT results.
2. Reporting of PHCP follow-up is not mandatory; actual numbers of participant consultations may be underestimated.
3. NBCSP preferred language spoken at home was reported by the participant on the returned participant details form. Participants who did not indicate preferred language spoken at home were assumed to speak English.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.7: Crude follow-up by primary health care practitioners after a positive FOBT result, by disability status, 2011–12

		Severe or profound activity limitation	No severe or profound activity limitation	Not stated	Total
Males					
50 years	Number	127	1,538	27	1,692
	Per cent	67.9[(a)]	60.9	15.0[(a)]	58.5
55 years	Number	179	1,849	37	2,065
	Per cent	73.4[(a)]	61.4	17.6[(a)]	59.6
65 years	Number	342	2,882	68	3,292
	Per cent	64.2	66.7	23.9[(a)]	64.1
Total	*Number*	*648*	*6,269*	*132*	*7,049*
	Per cent	*67.2*	*63.6*	*19.6*	*61.3*
Females					
50 years	Number	141	1,704	27	1,872
	Per cent	61.8[(a)]	65.1	21.6[(a)]	63.0
55 years	Number	204	2,072	42	2,318
	Per cent	63.4	67.2	29.8[(a)]	65.3
65 years	Number	259	2,687	57	3,003
	Per cent	65.7	69.0	32.8[(a)]	67.3
Total	*Number*	*604*	*6,463*	*126*	*7,193*
	Per cent	*64.0*	*67.4*	*28.6*	*65.5*
Persons					
50 years	Number	268	3,242	54	3,564
	Per cent	64.6	63.0	17.7	60.8
55 years	Number	383	3,921	79	4,383
	Per cent	67.7	64.3	22.5	62.5
65 years	Number	601	5,569	125	6,295
	Per cent	64.8	67.8	27.2	65.6
Total	**Number**	**1,252**	**12,732**	**258**	**14,242**
	Per cent	**65.6**	**65.5**	**23.1**	**63.4**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages equal the number of people having consulted a PHCP after a positive FOBT result as a proportion of the total number of people with positive FOBT results.
2. Reporting of PHCP follow-up is not mandatory; actual numbers of participant consultations may be underestimated.
3. NBCSP disability status was reported by the participant on the participant details form. Participants who did not indicate disability status are included in the 'Not stated' column.
4. A 'profound' activity limitation indicates that a person always needs assistance with self-care, movement and/or communications activities. A 'severe' activity limitation indicates that a person sometimes needs assistance with these activities.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.8: Symptoms reported to primary health care practitioners after a positive FOBT result, 2011–12

		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	1,278	102	141	37	4	40	1,569
	Per cent	81.5	6.5	9.0	2.4	0.3[(a)]	2.5	
55 years	Number	1,582	106	152	30	17	34	1,897
	Per cent	83.4	5.6	8.0	1.6	0.9[(a)]	1.8	
65 years	Number	2,539	157	184	72	33	70	2,997
	Per cent	84.7	5.2	6.1	2.4	1.1	2.3	
Total	*Number*	*5,399*	*365*	*477*	*139*	*54*	*144*	*6,463*
	Per cent	*83.5*	*5.6*	*7.4*	*2.2*	*0.8*	*2.2*	
Females								
50 years	Number	1,402	91	105	69	41	84	1,734
	Per cent	80.9	5.2	6.1	4.0	2.4	4.8	
55 years	Number	1,709	121	177	93	35	90	2,150
	Per cent	79.5	5.6	8.2	4.3	1.6	4.2	
65 years	Number	2,291	138	140	94	39	110	2,742
	Per cent	83.6	5.0	5.1	3.4	1.4	4.0	
Total	*Number*	*5,402*	*350*	*422*	*256*	*115*	*284*	*6,626*
	Per cent	*81.5*	*5.3*	*6.4*	*3.9*	*1.7*	*4.3*	
Persons								
50 years	Number	2,680	193	246	106	45	124	3,303
	Per cent	81.1	5.8	7.4	3.2	1.4	3.8	
55 years	Number	3,291	227	329	123	52	124	4,047
	Per cent	81.3	5.6	8.1	3.0	1.3	3.1	
65 years	Number	4,830	295	324	166	72	180	5,739
	Per cent	84.2	5.1	5.6	2.9	1.3	3.1	
Total	**Number**	**10,801**	**715**	**899**	**395**	**169**	**428**	**13,089**
	Per cent	**82.5**	**5.5**	**6.9**	**3.0**	**1.3**	**3.3**	

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages equal the number of people reporting specific symptoms after a positive FOBT as a proportion of the total number of people who reported any symptoms.
2. Only participants who had a symptom status (including 'no symptoms') recorded in the assessment form question 2 were included in this analysis. There were 1,153 participants with missing data for this question excluded from the analysis.
3. Percentages can add to more than 100, as respondents may have reported more than one symptom.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.9: Referrals made by primary health care practitioners after a positive FOBT result and subsequent consultation, 2011–12

		Colonoscopy	Double contrast barium enema	Sigmoidoscopy	CT colonography	Other	No referral	All PHCP visits
Males								
50 years	Number	1,594	n.p.	0	n.p.	25	71	1,692
	Per cent	94.2	n.p.	0.0	n.p.	1.5	4.2	
55 years	Number	1,935	n.p.	0	n.p.	25	101	2,065
	Per cent	93.7	n.p.	0.0	n.p.	1.2	4.9	
65 years	Number	3,025	5	3	6	35	218	3,292
	Per cent	91.9	0.2[(a)]	0.1[(a)]	0.2[(a)]	1.1	6.6	
Total	*Number*	*6,554*	*8*	*3*	*9*	*85*	*390*	*7,049*
	Per cent	*93.0*	*0.1[(a)]*	*0.0[(a)]*	*0.1[(a)]*	*1.2*	*5.5*	
Females								
50 years	Number	1,727	n.p.	n.p.	3	53	86	1,872
	Per cent	92.3	n.p.	n.p.	0.2[(a)]	2.8	4.6	
55 years	Number	2,141	n.p.	3	3	46	124	2,318
	Per cent	92.4	n.p.	0.1[(a)]	0.1[(a)]	2.0	5.3	
65 years	Number	2,744	7	n.p.	5	50	196	3,003
	Per cent	91.4	0.2[(a)]	n.p.	0.2[(a)]	1.7	6.5	
Total	*Number*	*6,612*	*9*	*6*	*11*	*149*	*406*	*7,193*
	Per cent	*91.9*	*0.1[(a)]*	*0.1[(a)]*	*0.2[(a)]*	*2.1*	*5.6*	
Persons								
50 years	Number	3,321	n.p.	n.p.	4	78	157	3,564
	Per cent	93.2	n.p.	n.p.	0.1[(a)]	2.2	4.4	
55 years	Number	4,076	3	3	5	71	225	4,383
	Per cent	93.0	0.1[(a)]	0.1[(a)]	0.1[(a)]	1.6	5.1	
65 years	Number	5,769	12	4	11	85	414	6,295
	Per cent	91.6	0.2[(a)]	0.1[(a)]	0.2[(a)]	1.4	6.6	
Total	**Number**	**13,166**	**17**	**9**	**20**	**234**	**796**	**14,242**
	Per cent	**92.4**	**0.1[(a)]**	**0.1[(a)]**	**0.1**	**1.6**	**5.6**	

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages equal the number of people consulting a PHCP after 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 after a positive FOBT.
2. Referrals may sum to more than all follow-up PHCP visits, as more than one referral may be given to a person.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.10: Referrals for colonoscopy or other examination after a positive FOBT result, by geographic location, 2011–12

		Colonoscopy		Other		No referral		All PHCP visits
		Number	Per cent	Number	Per cent	Number	Per cent	Number
Major cities	Males	4,096	92.7	62	1.4	262	5.9	4,419
	Females	4,237	91.4	127	2.7	273	5.9	4,637
	Persons	*8,332*	*92.0*	*189*	*2.1*	*535*	*5.9*	*9,056*
Inner regional	Males	1,524	94.1	27	1.7	68	4.2	1,620
	Females	1,514	93.1	33	2.0	79	4.9	1,627
	Persons	*3,039*	*93.6*	*60*	*1.8*	*147*	*4.5*	*3,246*
Outer regional	Males	756	92.5	14	1.7[(a)]	46	5.6	817
	Females	728	92.3	12	1.5[(a)]	49	6.2	789
	Persons	*1,484*	*92.4*	*26*	*1.6*	*96*	*6.0*	*1,606*
Remote	Males	84	n.p.	0	n.p.	5	n.p.	89
	Females	70	n.p.	n.p.	n.p.	n.p.	n.p.	73
	Persons	*154*	*95.1[(a)]*	*n.p.*	*n.p.*	*6*	*3.7[(a)]*	*162*
Very remote	Males	26	n.p.	0	n.p.	3	n.p.	29
	Females	18	n.p.	0	n.p.	0	n.p.	18
	Persons	*44*	*n.p.*	*0*	*n.p.*	*3*	*n.p.*	*47*
Unknown	Males	68	n.p.	n.p.	n.p.	6	n.p.	76
	Females	45	n.p.	n.p.	n.p.	3	n.p.	49
	Persons	*113*	*90.4[(a)]*	*3*	*2.4[(a)]*	*9*	*7.2[(a)]*	*125*

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages equal the number of people consulting a PHCP after 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 after a positive FOBT.

2. The residential postcodes of participants were mapped to remoteness areas in the 2011 Australian Statistical Geographical Standard remoteness structure through a postal area correspondence. Those that could not be mapped were included in the 'Unknown' row.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.11: Reason for non-referrals for colonoscopy by primary health care practitioners, 2011–12

		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	n.p.	n.p.	40	27	7	36	98
	Per cent	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	
55 years	Number	n.p.	n.p.	60	34	9	40	130
	Per cent	n.p.	n.p.	46.2[(a)]	26.2[(a)]	6.9[(a)]	30.8[(a)]	
65 years	Number	7	11	121	66	20	83	267
	Per cent	2.6[(a)]	4.1[(a)]	45.3[(a)]	24.7[(a)]	7.5[(a)]	31.1[(a)]	
Total	*Number*	*10*	*14*	*221*	*127*	*36*	*159*	*495*
	Per cent	*2.0[(a)]*	*2.8[(a)]*	*44.6*	*25.7*	*7.3*	*32.1*	
Females								
50 years	Number	n.p.	n.p.	53	47	4	49	145
	Per cent	n.p.	n.p.	36.6[(a)]	32.4[(a)]	2.8[(a)]	33.8[(a)]	
55 years	Number	n.p.	n.p.	84	59	5	38	177
	Per cent	n.p.	n.p.	47.5[(a)]	33.3[(a)]	2.8[(a)]	21.5[(a)]	
65 years	Number	n.p.	7	126	73	15	64	259
	Per cent	n.p.	2.7[(a)]	48.6[(a)]	28.2[(a)]	5.8[(a)]	24.7[(a)]	
Total	*Number*	*n.p.*	*8*	*263*	*179*	*24*	*151*	*581*
	Per cent	*n.p.*	*1.4[(a)]*	*45.3*	*30.8*	*4.1*	*26.0*	
Persons								
50 years	Number	n.p.	n.p.	93	74	11	85	243
	Per cent	n.p.	n.p.	38.3[(a)]	30.5[(a)]	4.5[(a)]	35.0[(a)]	
55 years	Number	n.p.	n.p.	144	93	14	78	307
	Per cent	n.p.	n.p.	46.9	30.3	4.6[(a)]	25.4	
65 years	Number	8	18	247	139	35	147	526
	Per cent	1.5[(a)]	3.4[(a)]	47.0	26.4	6.7	27.9	
Total	**Number**	**12**	**22**	**484**	**306**	**60**	**310**	**1,076**
	Per cent	**1.1[(a)]**	**2.0**	**45.0**	**28.4**	**5.6**	**28.8**	

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages equal the number of consultations for each reason (after 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 colonoscopy.
2. A participant may have multiple reasons for non-referral for colonoscopy indicated.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.12: Crude colonoscopy follow-up after a positive FOBT result, by state and territory, 2011–12

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Number	533	529	435	179	181	54	39	10	1,960
	Per cent	60.1	70.8	78.9	61.7[(a)]	68.6[(a)]	n.p.	n.p.	n.p.	67.7
55 years	Number	704	629	554	262	216	78	29	10	2,482
	Per cent	64.8	70.4	82.6	75.9	74.5[(a)]	71.6[(a)]	n.p.	n.p.	71.7
65 years	Number	1,112	863	829	378	380	123	64	9	3,758
	Per cent	67.8	72.6	83.3	67.7	78.7	75.5[(a)]	n.p.	n.p.	73.2
Total	*Number*	*2,349*	*2,021*	*1,818*	*819*	*777*	*255*	*132*	*29*	*8,200*
	Per cent	*65.0*	*71.4*	*82.0*	*68.7*	*74.9*	*74.3*	*71.7[(a)]*	*n.p.*	*71.3*
Females										
50 years	Number	594	561	511	194	161	63	38	4	2,126
	Per cent	64.8	70.8	84.9	68.1[(a)]	73.5[(a)]	n.p.	n.p.	n.p.	71.6
55 years	Number	718	664	526	271	255	83	35	7	2,559
	Per cent	65.3	71.4	82.4	71.1	80.2	83.0[(a)]	n.p.	n.p.	72.1
65 years	Number	991	799	713	291	343	110	51	7	3,305
	Per cent	69.4	71.8	83.6	70.6	80.7	74.8[(a)]	n.p.	n.p.	74.1
Total	*Number*	*2,303*	*2,024*	*1,750*	*756*	*759*	*256*	*124*	*18*	*7,990*
	Per cent	*66.9*	*71.4*	*83.6*	*70.1*	*78.9*	*76.6*	*69.3[(a)]*	*n.p.*	*72.8*
Persons										
50 years	Number	1,127	1,090	946	373	342	117	77	14	4,086
	Per cent	62.5	70.8	82.0	64.9	70.8	74.1[(a)]	70.6[(a)]	n.p.	69.7
55 years	Number	1,422	1,293	1,080	533	471	161	64	17	5,041
	Per cent	65.1	70.9	82.5	73.4	77.5	77.0[(a)]	60.4[(a)]	n.p.	71.9
65 years	Number	2,103	1,662	1,542	669	723	233	115	16	7,063
	Per cent	68.6	72.2	83.4	69.0	79.6	75.2	77.7[(a)]	n.p.	73.6
Total	**Number**	**4,652**	**4,045**	**3,568**	**1,575**	**1,536**	**511**	**256**	**47**	**16,190**
	Per cent	**65.9**	**71.4**	**82.8**	**69.4**	**76.8**	**75.5**	**70.5[(a)]**	**35.9[(a)]**	**72.0**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded after 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 colonoscopy report forms, histopathology report forms 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 have had a colonoscopy. Additionally, reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

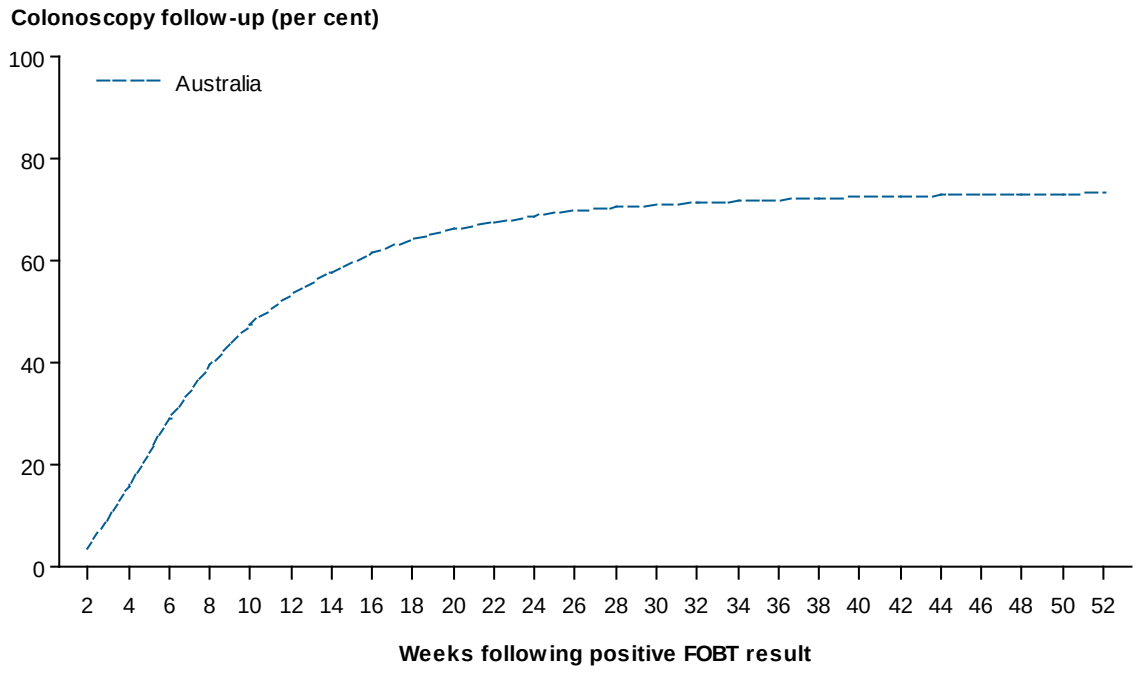
Table A3.13: Kaplan-Meier documented colonoscopy follow-up per 100 people with positive FOBTs at 26 and 52 weeks since positive FOBT, by state and territory, 2011–12

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
26 weeks									
Colonoscopy follow-up (per cent)	63.3	69.8	80.8	66.4	74.3	70.3	70.0	37.1	69.7
95% confidence interval	62.2–64.5	68.6–71.0	79.5–82.0	64.4–68.3	72.4–76.3	66.8–73.8	65.3–74.8	28.4–45.8	69.1–70.3
52 weeks									
Colonoscopy follow-up (per cent)	67.4	71.7	85.2	70.5	77.8	75.5[(a)]	71.7	38.6	73.2
95% confidence interval	66.3–68.6	71.4–72.9	84.0–86.3	69.4–72.5	76.8–79.7	75.5–76.6	70.5–76.5	35.9–47.6	72.6–73.8

(a) The crude rate was substituted as the estimated Kaplan-Meier rate was lower than the actual crude rate.

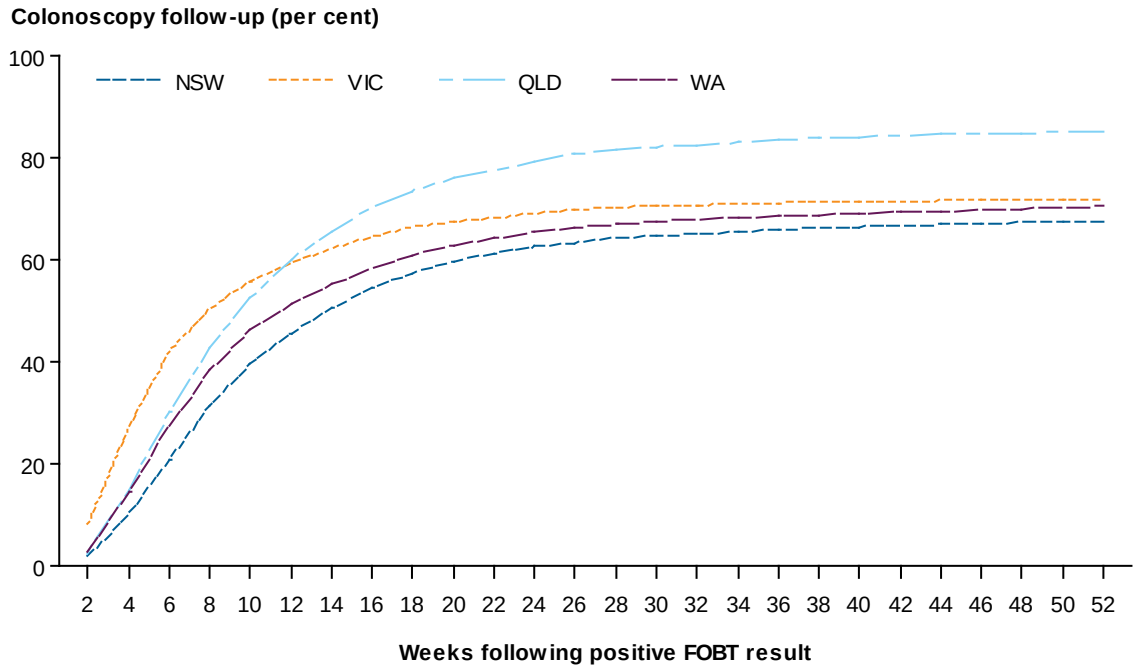
Note: Colonoscopy follow-up rates equal the estimated Kaplan-Meier follow-up rate of people who have had a colonoscopy as a proportion of the total number of people with positive FOBT results, including people who suspended or opted off the program.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.



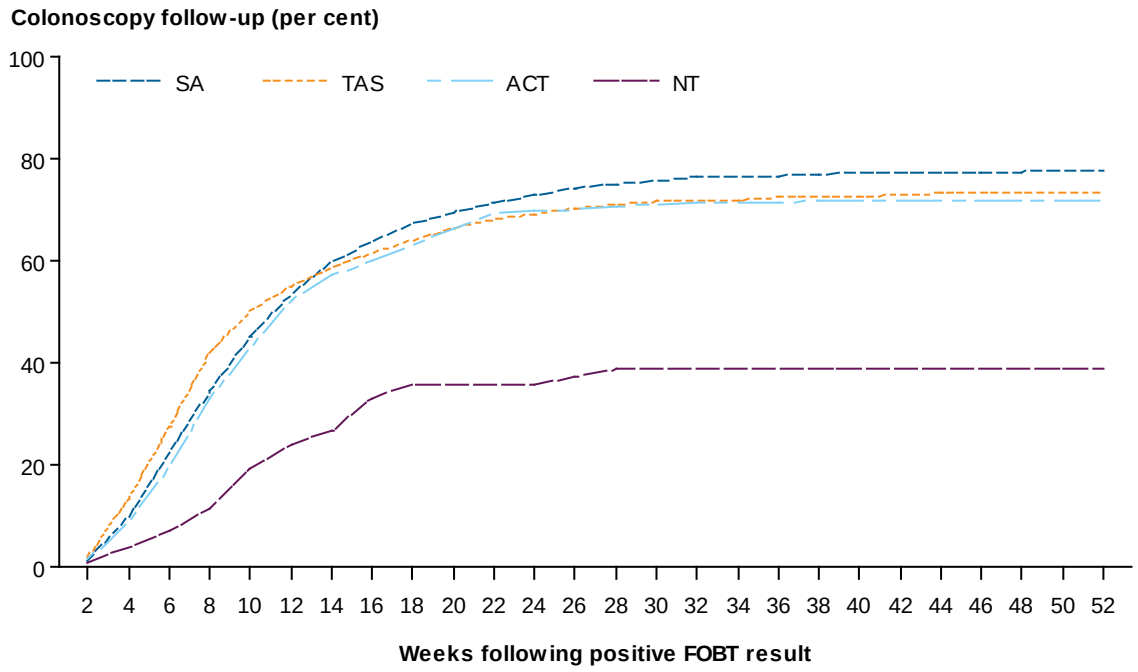
Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.3a: Colonoscopy follow-up after a positive FOBT using Kaplan-Meier estimates, Australia, 2011–12



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.3b: Colonoscopy follow-up after a positive FOBT using Kaplan-Meier estimates, New South Wales, Victoria, Queensland and Western Australia, 2011–12



Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.3c: Colonoscopy follow-up after a positive FOBT using Kaplan-Meier estimates, South Australia, Tasmania, Australian Capital Territory and Northern Territory, 2011–12

Table A3.14: Crude colonoscopy follow-up after a positive FOBT result, by remoteness area, 2011–12

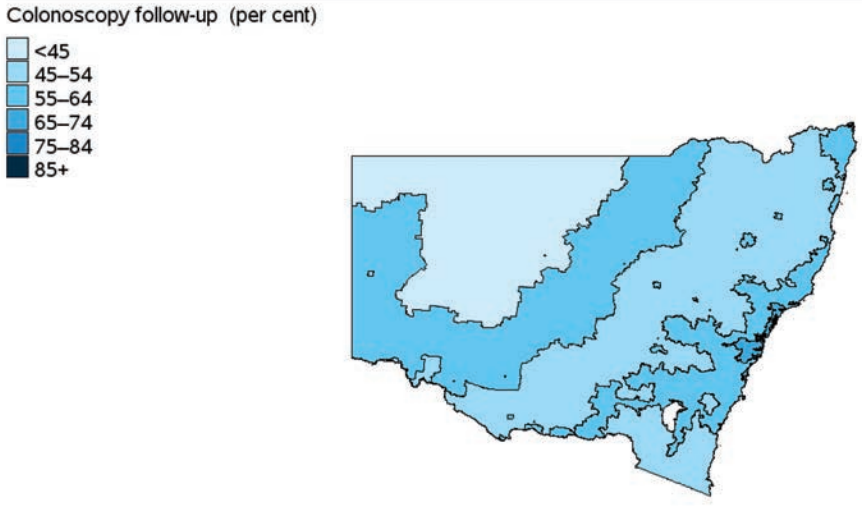
		Remoteness area						
		Major cities	Inner regional	Outer regional	Remote	Very remote	Unknown	Total
Males								
50 years	Number	1,358	387	171	22	5	18	1,960
	Per cent	70.3	65.0	59.2	n.p.	n.p.	n.p.	67.7
55 years	Number	1,662	507	246	32	11	25	2,482
	Per cent	74.8	66.7	67.0	n.p.	n.p.	n.p.	71.7
65 years	Number	2,438	833	399	37	18	33	3,758
	Per cent	76.6	70.1	64.7	n.p.	n.p.	n.p.	73.2
Total	*Number*	*5,457*	*1,727*	*815*	*92*	*33*	*76*	*8,200*
	Per cent	*74.4*	*67.9*	*64.1*	*57.9*[(a)]	*n.p.*	*60.3*[(a)]	*71.3*
Females								
50 years	Number	1,500	382	208	25	4	7	2,126
	Per cent	73.8	67.0	68.0	n.p.	n.p.	n.p.	71.6
55 years	Number	1,766	521	220	24	8	20	2,559
	Per cent	74.4	69.0	64.9	n.p.	n.p.	n.p.	72.1
65 years	Number	2,184	769	304	21	7	20	3,305
	Per cent	77.1	71.7	63.7	n.p.	n.p.	n.p.	74.1
Total	*Number*	*5,450*	*1,672*	*731*	*70*	*20*	*47*	*7,990*
	Per cent	*75.3*	*69.7*	*65.1*	*63.1*[(a)]	*n.p.*	*n.p.*	*72.8*
Persons								
50 years	Number	2,857	769	378	47	9	25	4,086
	Per cent	72.1	66.1	63.5	n.p.	n.p.	n.p.	69.7
55 years	Number	3,428	1,028	465	56	19	45	5,041
	Per cent	74.6	67.9	65.9	n.p.	n.p.	n.p.	71.9
65 years	Number	4,622	1,602	703	58	25	53	7,063
	Per cent	76.9	70.9	64.3	58.0[(a)]	n.p.	n.p.	73.6
Total	**Number**	**10,907**	**3,399**	**1,546**	**162**	**53**	**123**	**16,190**
	Per cent	**74.8**	**68.8**	**64.6**	**60.0**[(a)]	**n.p.**	**60.3**[(a)]	**72.0**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded after a positive FOBT as a proportion of the total number of people with positive FOBT results.
2. Reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
3. The residential postcodes of participants were mapped to remoteness areas in the 2011 Australian Statistical Geographical Standard remoteness structure through a postal area correspondence. Those that could not be mapped were included in the 'Unknown' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

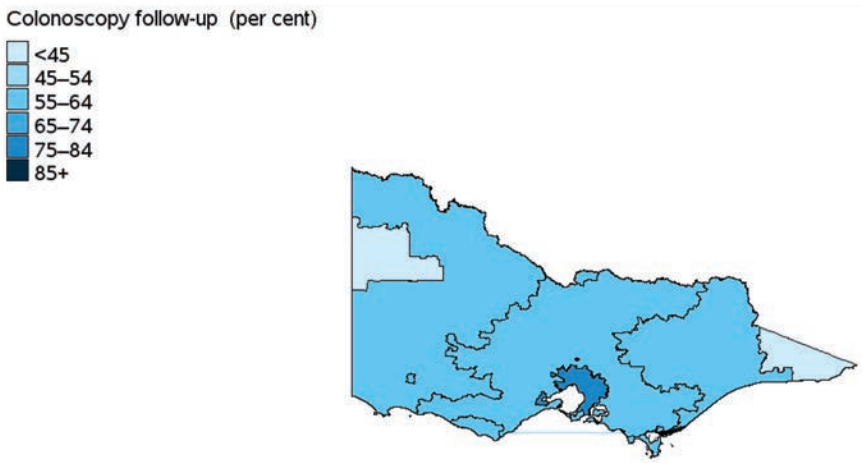


Notes

1. Rate per remoteness area is an average of colonoscopy follow-up reported across that remoteness area.
2. Colonoscopy follow-up rates rounded to integers.
3. Differences in colonoscopy follow-up rates across remoteness areas may involve differences in form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.4a: Colonoscopy follow-up, by remoteness area, New South Wales, 2011–12

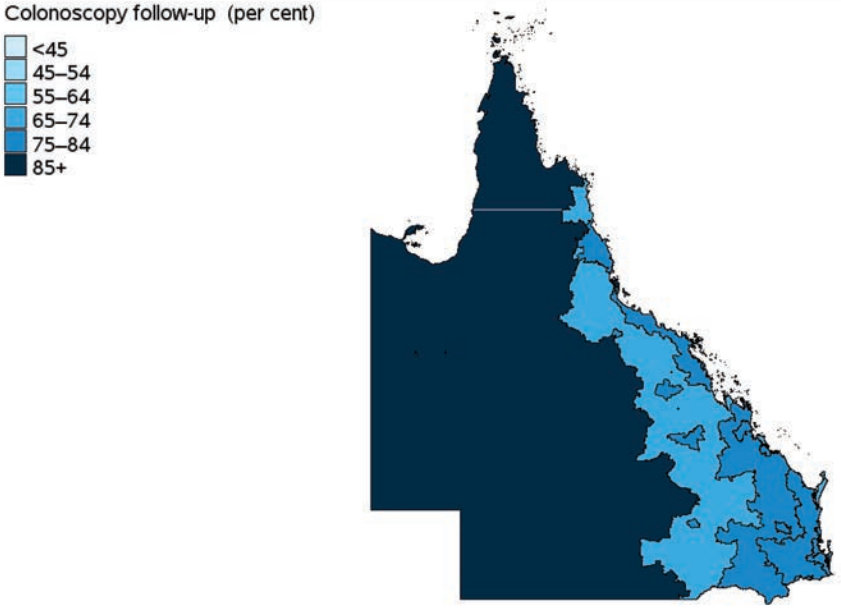


Notes

1. Rate per remoteness area is an average of colonoscopy follow-up reported across that remoteness area.
2. Colonoscopy follow-up rates rounded to integers.
3. Differences in colonoscopy follow-up rates across remoteness areas may involve differences in form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.4b: Colonoscopy follow-up, by remoteness area, Victoria, 2011–12

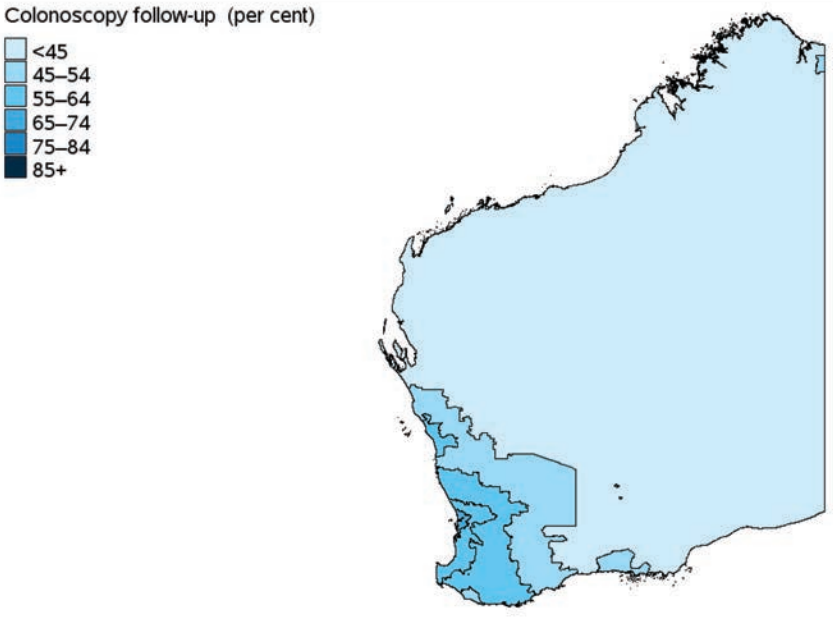


Notes

1. Rate per remoteness area is an average of colonoscopy follow-up reported across that remoteness area.
2. Colonoscopy follow-up rates rounded to integers.
3. Differences in colonoscopy follow-up rates across remoteness areas may involve differences in form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.4c: Colonoscopy follow-up, by remoteness area, Queensland, 2011–12

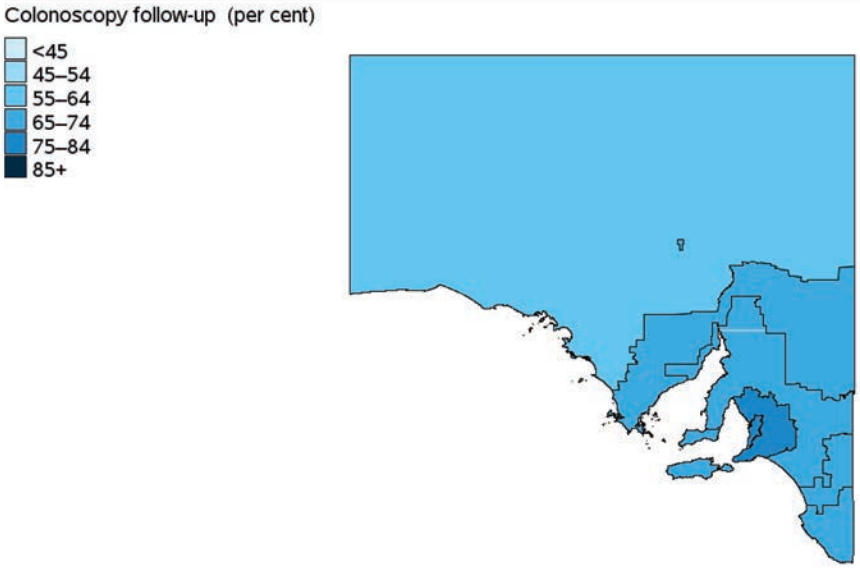


Notes

1. Rate per remoteness area is an average of colonoscopy follow-up reported across that remoteness area.
2. Colonoscopy follow-up rates rounded to integers.
3. Differences in colonoscopy follow-up rates across remoteness areas may involve differences in form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.4d: Colonoscopy follow-up, by remoteness area, Western Australia, 2011–12

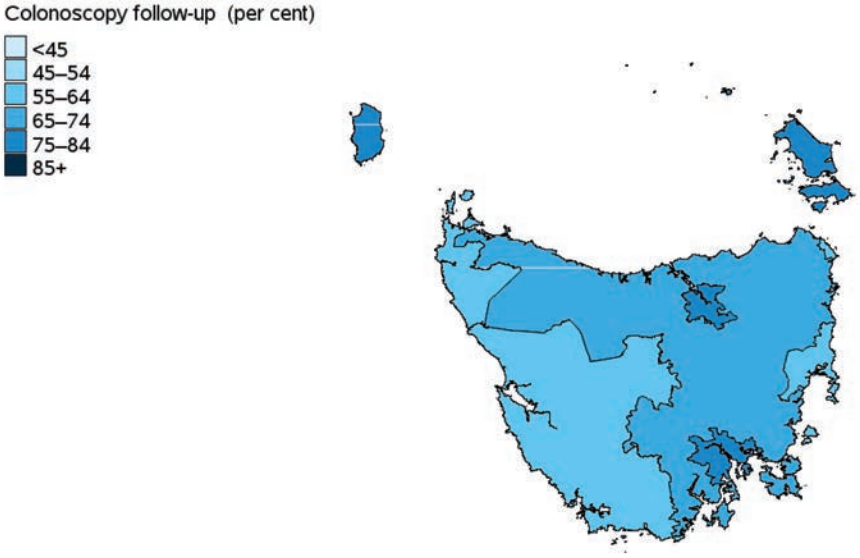


Notes

1. Rate per remoteness area is an average of colonoscopy follow-up reported across that remoteness area.
2. Colonoscopy follow-up rates rounded to integers.
3. Differences in colonoscopy follow-up rates across remoteness areas may involve differences in form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.4e: Colonoscopy follow-up, by remoteness area, South Australia, 2011–12

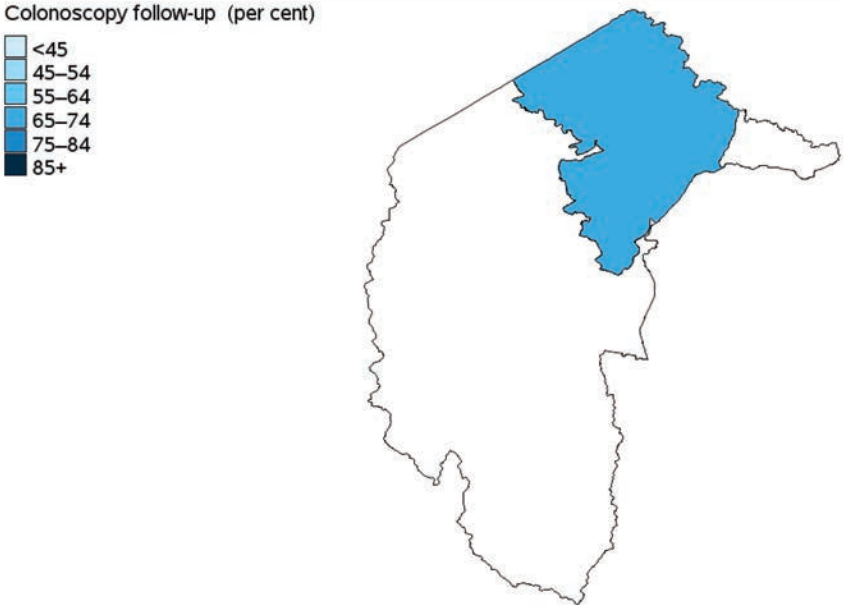


Notes

1. Rate per remoteness area is an average of colonoscopy follow-up reported across that remoteness area.
2. Colonoscopy follow-up rates rounded to integers.
3. Differences in colonoscopy follow-up rates across remoteness areas may involve differences in form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.4f: Colonoscopy follow-up, by remoteness area, Tasmania, 2011–12

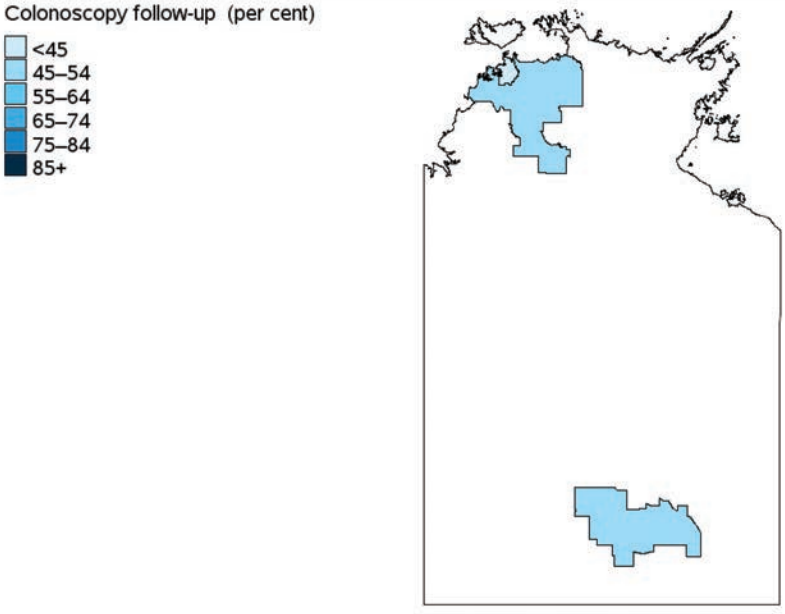


Notes

1. Remoteness areas shaded white contain data that are not publishable due to small numbers, confidentiality, or other concerns.
2. Rate per remoteness area is an average of colonoscopy follow-up reported across that remoteness area.
3. Colonoscopy follow-up rates rounded to integers.
4. Differences in colonoscopy follow-up rates across remoteness areas may involve differences in form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.4g: Colonoscopy follow-up, by remoteness area, Australian Capital Territory, 2011–12



Notes

1. Remoteness areas shaded white contain data that are not publishable due to small numbers, confidentiality, or other concerns.
2. Rate per remoteness area is an average of colonoscopy follow-up reported across that remoteness area.
3. Colonoscopy follow-up rates rounded to integers.
4. Differences in colonoscopy follow-up rates across remoteness areas may involve differences in form return only.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A3.4h: Colonoscopy follow-up, by remoteness area, Northern Territory, 2011–12

Table A3.15: Crude colonoscopy follow-up after a positive FOBT result, by socioeconomic status area, 2011–12

		Socioeconomic status area						
		1 (lowest)	2	3	4	5 (highest)	Unknown	Total
Males								
50 years	Number	355	369	399	403	415	19	1,960
	Per cent	59.0	62.5	71.1	72.5	74.5	n.p.	67.7
55 years	Number	465	530	467	491	502	27	2,482
	Per cent	65.2	68.7	72.5	74.7	79.7	n.p.	71.7
65 years	Number	737	831	758	698	698	36	3,758
	Per cent	65.6	70.5	75.0	77.1	81.0	n.p.	73.2
Total	*Number*	*1,557*	*1,730*	*1,624*	*1,592*	*1,615*	*82*	*8,200*
	Per cent	*63.9*	*68.1*	*73.3*	*75.2*	*78.8*	*61.2*[(a)]	*71.3*
Females								
50 years	Number	366	406	442	420	481	11	2,126
	Per cent	64.0	69.6	73.1	74.1	77.2	n.p.	71.6
55 years	Number	498	480	491	518	549	23	2,559
	Per cent	66.2	68.8	72.0	77.8	76.5	n.p.	72.1
65 years	Number	690	646	663	634	648	24	3,305
	Per cent	69.6	70.0	75.2	77.4	80.3	n.p.	74.1
Total	*Number*	*1,554*	*1,532*	*1,596*	*1,572*	*1,678*	*58*	*7,990*
	Per cent	*67.1*	*69.5*	*73.6*	*76.6*	*78.1*	*n.p.*	*72.8*
Persons								
50 years	Number	721	775	841	823	896	30	4,086
	Per cent	61.4	66.1	72.1	73.3	75.9	n.p.	69.7
55 years	Number	963	1,010	958	1,009	1,051	50	5,041
	Per cent	65.7	68.8	72.2	76.3	78.0	n.p.	71.9
65 years	Number	1,427	1,477	1,421	1,332	1,346	60	7,063
	Per cent	67.5	70.3	75.1	77.3	80.6	62.5[(a)]	73.6
Total	**Number**	**3,111**	**3,262**	**3,220**	**3,164**	**3,293**	**140**	**16,190**
	Per cent	**65.4**	**68.8**	**73.4**	**75.9**	**78.5**	**62.5**[(a)]	**72.0**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded after a positive FOBT as a proportion of the total number of people with positive FOBT results.
2. Reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
3. A participant's socioeconomic status area was classified by mapping their residential postcode (through a postal area) to the ABS IRSD for 2011. Those that could not be mapped were included in the 'Unknown' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.16: Crude colonoscopy follow-up after a positive FOBT result, by Aboriginal and Torres Strait Islander status, 2011–12

		Indigenous	Non-indigenous	Not stated	Total
Males					
50 years	Number	14	1,883	63	1,960
	Per cent	n.p.	69.1	45.7[(a)]	67.7
55 years	Number	26	2,362	94	2,482
	Per cent	n.p.	72.7	54.7[(a)]	71.7
65 years	Number	12	3,610	136	3,758
	Per cent	n.p.	74.0	58.6[(a)]	73.2
Total	*Number*	*52*	*7,855*	*293*	*8,200*
	Per cent	*n.p.*	*72.4*	*54.1*	*71.3*
Females					
50 years	Number	26	2,062	38	2,126
	Per cent	n.p.	72.4	n.p.	71.6
55 years	Number	22	2,492	45	2,559
	Per cent	n.p.	72.7	n.p.	72.1
65 years	Number	11	3,219	75	3,305
	Per cent	n.p.	74.7	55.6[(a)]	74.1
Total	*Number*	*59*	*7,773*	*158*	*7,990*
	Per cent	*n.p.*	*73.4*	*52.0*	*72.8*
Persons					
50 years	Number	40	3,945	101	4,086
	Per cent	n.p.	70.8	45.7[(a)]	69.7
55 years	Number	48	4,854	139	5,041
	Per cent	n.p.	72.7	53.9[(a)]	71.9
65 years	Number	23	6,829	211	7,063
	Per cent	n.p.	74.3	57.5	73.6
Total	**Number**	**111**	**15,628**	**451**	**16,190**
	Per cent	**60.7[(a)]**	**72.9**	**53.3**	**72.0**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded after a positive FOBT as a proportion of the total number of people with positive FOBT results.
2. Reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
3. NBCSP Aboriginal and Torres Strait Islander status was reported by the participant on the returned participant details form. Participants who did not indicate Aboriginal and Torres Strait Islander status were included in the 'Not stated' column.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.17: Crude colonoscopy follow-up after a positive FOBT result, by language spoken at home, 2011–12

		Language other than English	English	Total
Males				
50 years	Number	242	1,718	1,960
	Per cent	62.5	68.6	67.7
55 years	Number	328	2,154	2,482
	Per cent	68.6	72.1	71.7
65 years	Number	412	3,346	3,758
	Per cent	70.3	73.5	73.2
Total	*Number*	*982*	*7,218*	*8,200*
	Per cent	*67.7*	*71.9*	*71.3*
Females				
50 years	Number	309	1,817	2,126
	Per cent	67.0	72.4	71.6
55 years	Number	373	2,186	2,559
	Per cent	65.6	73.4	72.1
65 years	Number	356	2,949	3,305
	Per cent	71.3	74.4	74.1
Total	*Number*	*1,038*	*6,952*	*7,990*
	Per cent	*67.9*	*73.6*	*72.8*
Persons				
50 years	Number	551	3,535	4,086
	Per cent	65.0	70.5	69.7
55 years	Number	701	4,340	5,041
	Per cent	67.0	72.8	71.9
65 years	Number	768	6,295	7,063
	Per cent	70.8	74.0	73.6
Total	**Number**	**2,020**	**14,170**	**16,190**
	Per cent	**67.8**	**72.7**	**72.0**

Notes

1. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded after a positive FOBT as a proportion of the total number of people with positive FOBT results.
2. Reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
3. NBCSP preferred language spoken at home was reported by the participant on the returned participant details form. Participants who did not indicate preferred language spoken at home were assumed to speak English.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A3.18: Documented colonoscopy follow-up after a positive FOBT result, by disability status, 2011–12

		Severe or profound activity limitation	No severe or profound activity limitation	Not stated	Total
Males					
50 years	Number	86	1,793	81	1,960
	Per cent	46.0[(a)]	71.0	45.0[(a)]	67.7
55 years	Number	143	2,224	115	2,482
	Per cent	58.6[(a)]	73.9	54.8[(a)]	71.7
65 years	Number	336	3,269	153	3,758
	Per cent	63.0	75.7	53.7[(a)]	73.2
Total	*Number*	*565*	*7,286*	*349*	*8,200*
	Per cent	*58.6*	*73.9*	*51.7*	*71.3*
Females					
50 years	Number	151[(a)]	1,919	56	2,126
	Per cent	66.2	73.3	44.8[(a)]	71.6
55 years	Number	198	2,291	70	2,559
	Per cent	61.5	74.3	49.6[(a)]	72.1
65 years	Number	246	2,966	93	3,305
	Per cent	62.4	76.2	53.4[(a)]	74.1
Total	*Number*	*595*	*7,176*	*219*	*7,990*
	Per cent	*63.0*	*74.8*	*49.8*	*72.8*
Persons					
50 years	Number	237	3,712	137	4,086
	Per cent	57.1	72.2	44.9	69.7
55 years	Number	341	4,515	185	5,041
	Per cent	60.2	74.1	52.7	71.9
65 years	Number	582	6,235	246	7,063
	Per cent	62.8	75.9	53.6	73.6
Total	**Number**	**1,160**	**14,462**	**568**	**16,190**
	Per cent	**60.8**	**74.4**	**50.9**	**72.0**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

1. Percentages of colonoscopies performed equal the number of people who have had a colonoscopy recorded after a positive FOBT as a proportion of the total number of people with positive FOBT results.
2. Reporting of colonoscopy follow-up is not mandatory. Therefore, actual numbers of participant colonoscopies may be underestimated.
3. NBCSP disability status was reported by the participant on the participant details form. Participants who did not indicate disability status are included in the 'Not stated' column.
4. A 'profound' activity limitation indicates that a person always needs assistance with self-care, movement and/or communications activities. A 'severe' activity limitation indicates that a person sometimes needs assistance with these activities.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

A4 Bowel abnormality detection tables

Table A4.1: Colonoscopic outcomes (excludes histopathology), 2011–12

		Colonoscopy outcome						
		Suspected cancer	Polyp(s) > 10mm	Polyp(s) <= 10mm	Other diagnoses[(a)]	No abnormality	Outcome not specified	All colonoscopy report forms
Males								
50 years	Number	37	243	618	309	268	0	1,475
	Per cent	2.5	16.5	41.9	20.9	18.2	0.0	
55 years	Number	72	317	865	407	290	n.p.	1,952
	Per cent	3.7	16.2	44.3	20.9	14.9	n.p.	
65 years	Number	146	513	1,419	564	305	5	2,952
	Per cent	4.9	17.4	48.1	19.1	10.3	0.2[(b)]	
Total	*Number*	*255*	*1,073*	*2,902*	*1,280*	*863*	*6*	*6,379*
	Per cent	*4.0*	*16.8*	*45.5*	*20.1*	*13.5*	*0.1[(b)]*	
Females								
50 years	Number	28	139	507	474	503	3	1,654
	Per cent	1.7	8.4	30.7	28.7	30.4	0.2[(b)]	
55 years	Number	57	184	664	558	535	5	2,003
	Per cent	2.8	9.2	33.2	27.9	26.7	0.2[(b)]	
65 years	Number	87	309	944	766	486	3	2,595
	Per cent	3.4	11.9	36.4	29.5	18.7	0.1[(b)]	
Total	*Number*	*172*	*632*	*2,115*	*1,798*	*1,524*	*11*	*6,252*
	Per cent	*2.8*	*10.1*	*33.8*	*28.8*	*24.4*	*0.2[(b)]*	
Persons								
50 years	Number	65	382	1,125	783	771	3	3,129
	Per cent	2.1	12.2	36.0	25.0	24.6	0.1[(b)]	
55 years	Number	129	501	1,529	965	825	6	3,955
	Per cent	3.3	12.7	38.7	24.4	20.9	0.2[(b)]	
65 years	Number	233	822	2,363	1,330	791	8	5,547
	Per cent	4.2	14.8	42.6	24.0	14.3	0.1[(b)]	
Total	**Number**	**427**	**1,705**	**5,017**	**3,078**	**2,387**	**17**	**12,631**
	Per	**3.4**	**13.5**	**39.7**	**24.4**	**18.9**	**0.1**	

(a) Other diagnoses include haemorrhoids, diverticular disease and inflammatory bowel disease.

(b) Based on numerator < 20 or denominator < 300; interpret with caution.

Note: Only colonoscopies with an associated colonoscopy report form were included in this analysis; colonoscopies identified from histopathology report forms or Medicare claims only were not included.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A4.2: Overall diagnostic outcomes (including histopathology), by state and territory, 2011–12

State		Invitations issued[(a)]	Number screened[(b)]	Total positive FOBT	FOBT positive							
					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	313,831	102,915	7,057	3,402	1,593	1,470	52	40	121	105	21
	Per cent					46.8	43.2	1.5	1.2	3.6	3.1	0.6
Vic	Number	229,376	82,815	5,664	3,297	1,716	1,307	41	37	110	80	6
	Per cent					52.0	39.6	1.2	1.1	3.3	2.4	0.2[(i)]
Qld	Number	182,918	61,971	4,310	3,101	1,242	1,121	140	91	418	64	25
	Per cent					40.1	36.1	4.5	2.9	13.5	2.1	0.8
WA	Number	90,103	33,837	2,271	1,014	365	541	22	6	41	32	7
	Per cent					36.0	53.4	2.2	0.6[(i)]	4.0	3.2	0.7[(i)]
SA	Number	68,817	27,178	1,999	1,327	667	450	33	40	103	31	3
	Per cent					50.3	33.9	2.5	3.0	7.8	2.3	0.2[(i)]
Tas	Number	22,773	9,169	677	450	239	98	9	26	58	15	5
	Per cent					53.1	21.8	2.0[(i)]	5.8	12.9	3.3[(i)]	1.1[(i)]
ACT	Number	15,481	5,916	363	202	95	82	12	0	4	8	n.p.
	Per cent					47.0	40.6	5.9[(i)]	0.0	2.0[(i)]	4.0[(i)]	n.p.
NT	Number	6,134	1,475	131	40	23	14	0	0	n.p.	n.p.	0
	Per cent					57.5	35.0[(i)]	0.0	0.0	n.p.	n.p.	0.0
Australia	**Number**	**929,433**	**325,276**	**22,472**	**12,833**	**5,940**	**5,083**	**309**	**240**	**857**	**336**	**68**
	Per cent					**46.3**	**39.6**	**2.4**	**1.9**	**6.7**	**2.6**	**0.5**

(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-adenomatous 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.
(i) Based on numerator < 20 or denominator < 300; interpret with caution.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Table A4.3: Overall diagnostic outcomes (including histopathology), by age and sex, 2011–12

					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	176,722	47,949	2,893	1,503	629	642	39	28	129	28	8
	Per cent					41.8	42.7	2.6	1.9	8.6	1.9	0.5[i]
55 years	Number	157,788	48,566	3,464	1,987	772	905	51	40	153	54	12
	Per cent					38.9	45.5	2.6	2.0	7.7	2.7	0.6[i]
65 years	Number	131,096	54,911	5,136	3,005	993	1,469	72	75	256	115	25
	Per cent					33.0	48.9	2.4	2.5	8.5	3.8	0.8
Total	*Number*	*465,606*	*151,426*	*11,493*	*6,495*	*2,394*	*3,016*	*162*	*143*	*538*	*197*	*45*
	Per cent					*36.9*	*46.4*	*2.5*	*2.2*	*8.3*	*3.0*	*0.7*
Females												
50 years	Number	176,161	55,006	2,970	1,671	1,041	476	29	22	75	23	5
	Per cent					62.3	28.5	1.7	1.3	4.5	1.4	0.3[i]
55 years	Number	158,322	59,170	3,548	2,031	1,150	651	52	29	98	46	5
	Per cent					56.6	32.1	2.6	1.4	4.8	2.3	0.2[i]
65 years	Number	129,344	59,674	4,461	2,636	1,355	940	66	46	146	70	13
	Per cent					51.4	35.7	2.5	1.7	5.5	2.7	0.5[i]
Total	*Number*	*463,827*	*173,850*	*10,979*	*6,338*	*3,546*	*2,067*	*147*	*97*	*319*	*139*	*23*
	Per cent					*55.9*	*32.6*	*2.3*	*1.5*	*5.0*	*2.2*	*0.4*

(continued)

Table A4.3 (continued): Overall diagnostic outcomes (including histopathology), by age and sex, 2011–12

					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	352,883	102,955	5,863	3,174	1,670	1,118	68	50	204	51	13
	Per cent					52.6	35.2	2.1	1.6	6.4	1.6	0.4[(i)]
55 years	Number	316,110	107,736	7,012	4,018	1,922	1,556	103	69	251	100	17
	Per cent					47.8	38.7	2.6	1.7	6.2	2.5	0.4[(i)]
65 years	Number	260,440	114,585	9,597	5,641	2,348	2,409	138	121	402	185	38
	Per cent					41.6	42.7	2.4	2.1	7.1	3.3	0.7
Total	**Number**	**929,433**	**325,276**	**22,472**	**12,833**	**5,940**	**5,083**	**309**	**240**	**857**	**336**	**68**
	Per cent					**46.3**	**39.6**	**2.4**	**1.9**	**6.7**	**2.6**	**0.5**

(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-adenomatous 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.

(i) Based on numerator < 20 or denominator < 300; interpret with caution.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

A5 Adverse event tables

Table A5.1: Adverse outcomes after investigation of positive FOBT by colonoscopy, 2011–12

			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	8,200	28	n.p.	n.p.	4	0	3	9	35	n.p.
	Per cent		0.3	n.p.	n.p.	0.0[(a)]	0.0	0.0[(a)]	0.1[(a)]	0.4	n.p.
Females	Number	7,990	15	n.p.	3	0	0	4	8	23	0
	Per cent		0.2	n.p.	0.0[(a)]	0.0	0.0	0.1[(a)]	0.1[(a)]	0.3	0.0
Persons	**Number**	**16,190**	**43**	**n.p.**	**5**	**4**	**0**	**7**	**17**	**58**	**n.p.**
	Per cent		**0.3**	**n.p.**	**0.0[(a)]**	**0.0[(a)]**	**0.0**	**0.0[(a)]**	**0.1[(a)]**	**0.4**	**n.p.**

(a) Based on numerator < 20 or denominator < 300; interpret with caution.

Notes

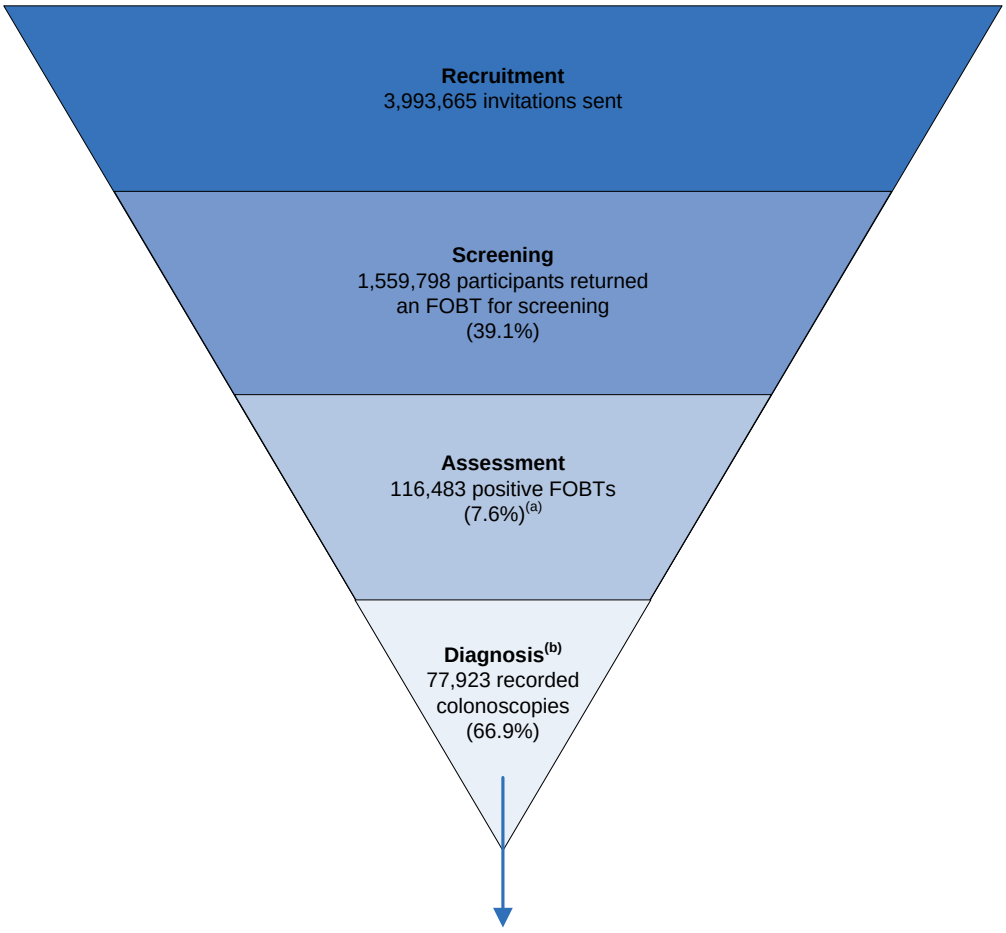
1. All participants known to have had a colonoscopy are included, including those only recorded through Medicare claim or histopathology data.
2. A colonoscopy may have more than one adverse event.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

A6 Additional NBCSP outcome data

Overall outcomes (August 2006–June 2012)

Overall data on invitees, and their progression through the pathway, have been applied to the *Population based screening framework* (APHDPCSS 2008) stages (Figure A6.1).



Recorded colonoscopy outcomes

No cancer or adenoma	37,366	(48.0%)
Polyp awaiting histopathology	25,407	(32.6%)
Diminutive adenoma	2,821	(3.6%)
Small adenoma	1,940	(2.5%)
Advanced adenoma	7,728	(9.9%)
Suspected cancer	1,982	(2.5%)
Confirmed cancer	697	(0.9%)

(a) Based on the 1,538,747 participants who returned a valid FOBT.

(b) 13,099 participants underwent colonoscopic diagnostic assessment as identified through a Medicare claim. However, these were not included as there were no associated outcome data available for analysis.

Notes

1. Invitees aged 50, 55 and 65 were included; other aged invitees (for example, pilot invitees from phase 1) were excluded.
2. Adenoma classifications are described in Appendix B.
3. Figure is not to scale.

Source: National Bowel Cancer Screening Program Register as at 31 December 2012.

Figure A6.1: Overall NBCSP outcomes for all invitees aged 50, 55 and 65, August 2006 – June 2012

There are no formal performance indicators for the NBCSP; however, the current overall screening rate of 39.1% is lower than the 45.4% rate achieved in the pilot program (DoHA 2005). The overall crude colonoscopy follow-up (diagnosis) rate of 66.9% is higher than that achieved in the pilot program (55.0%).

Since the inception of the NBCSP about 6 years ago, 2,697 participants have been found with suspected or confirmed cancers and 7,728 more have been diagnosed with advanced adenomas. Additionally, 4,761 participants have been diagnosed with earlier-stage adenomas.

While the NBCSP only follows participants up to the point of definite diagnosis, and outcomes of 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.

Lastly, 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.

Updated outcomes for 2008–11 invitees

The previous monitoring report, *National Bowel Cancer Screening Program monitoring report: phase 2, July 2008–June 2011* (AIHW 2012b), presented national statistics on key program activity, performance and outcome indicators for people invited between 1 July 2008 and 30 June 2011. It used outcome data for those invitees up until 21 July 2011, and those results are shown in the summary comparison table at the start of this report.

For many participants from that cohort who were invited late in the period, limited follow-up data were available at the time that report was published. The latest program data, to 31 December 2012, provide an extra 18 months of participation and documented follow-up outcomes for this cohort. Table A6.1 provides a comparison of the initial and updated statistics for these people invited between July 2008 and June 2011.

The changes reflected in the final column show slight increases in participation rates, as well as increases in outcome data related to additional follow-up form return. It is important to note, however, that while the values in this table are based on a larger amount of outcome data and may be considered final, follow-up information remains incomplete due either to participants failing to follow up a positive screening test, or follow-up outcome forms—particularly those relating to histopathology—never being returned to the NBCSP Register.

Table A6.1: Initially reported and final performance measure outcomes, people aged 50, 55 and 65, 2008–11

Performance measure	Initial[(a)]	Final[(b)]
Participation rate	38.4%	39.0%
50 years	33.9%	34.5%
55 years	38.6%	39.1%
65 years	46.7%	47.2%
FOBT positivity rate	7.8%	7.8%
PHCP follow-up rate	53.5%	56.4%
Colonoscopy follow-up rate	71.4%	79.5%
Colonoscopy outcomes		
Suspected/confirmed cancers	3.0%	2.9%
Advanced adenomas	8.9%	10.1%
Polyps awaiting histopathology	34.9%	31.5%
No abnormality	48.4%	49.0%

(a) Initial values relate to those known for the 2008–11 invitees using data as reported in the previous monitoring report (AIHW 2012b).

(b) Final values relate to those known for the 2008–11 invitees using data as at 31 December 2012.

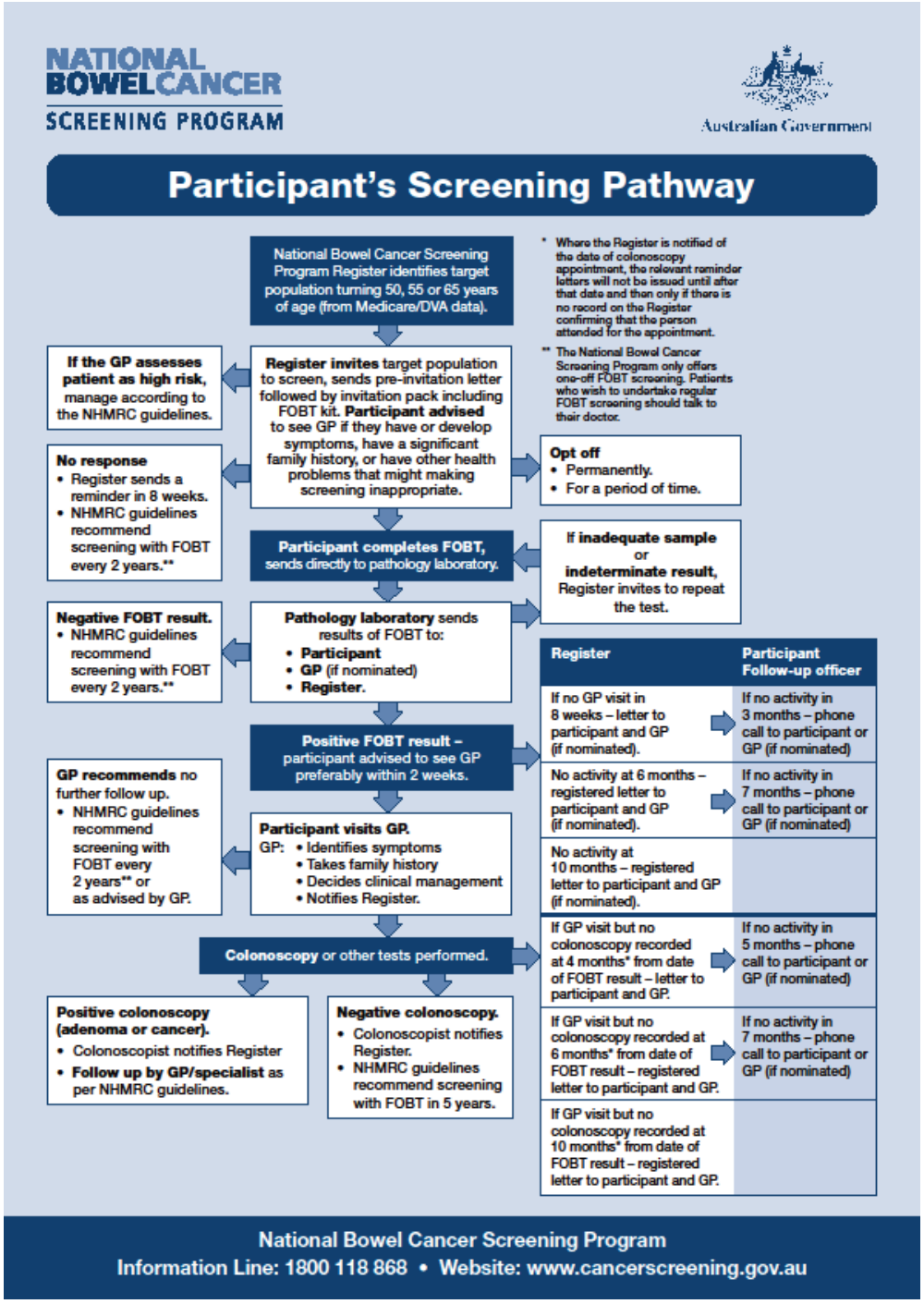
Notes

1. Participation is the percentage of eligible invitees who returned a completed FOBT kit, regardless of whether they later suspended their participation or opted off.
2. FOBT positivity equals the percentage of valid FOBT results that were positive, with valid results being either positive or negative; inconclusive results were excluded.
3. PHCP follow-up rate equals the percentage of people with a positive FOBT result who then consulted a PHCP and had an assessment form returned to the Register.
4. Colonoscopy follow-up rate equals the percentage of people with a positive FOBT result who then had a colonoscopy recorded on the Register.
5. Colonoscopy outcomes relate to the most accurate outcome data available for recorded colonoscopies.

Source: National Bowel Cancer Screening Program Register.

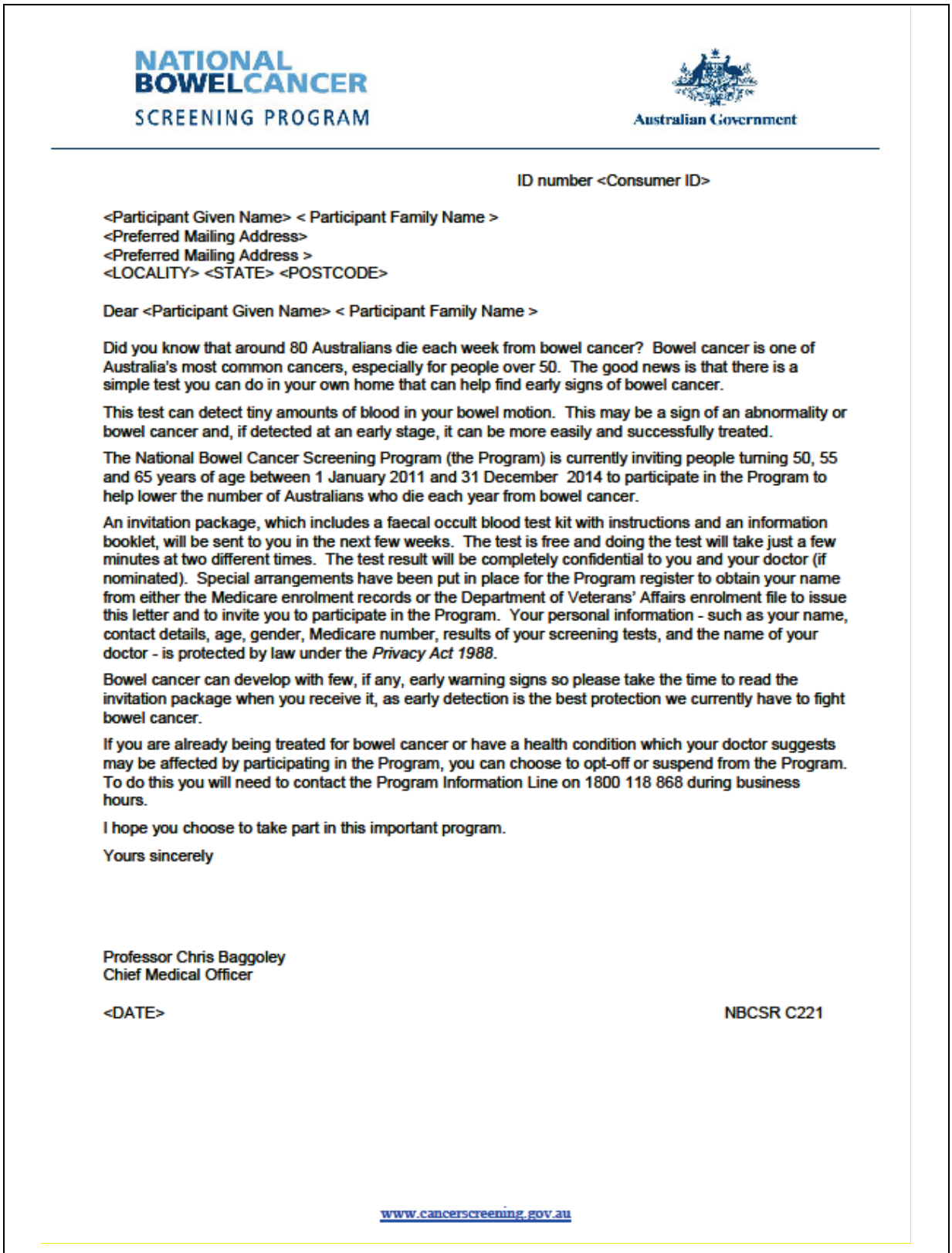
Appendix B NBCSP information

NBCSP resources



Source: DoHA 2013.

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



NATIONAL BOWELCANCER SCREENING PROGRAM

Australian Government

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 National Bowel Cancer Screening Program (the Program) is currently inviting people turning 50, 55 and 65 years of age between 1 January 2011 and 31 December 2014 to participate in the Program to help lower the number of Australians who die each year from bowel cancer.

An invitation package, which includes a faecal occult blood 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 your doctor (if nominated). Special arrangements have been put in place for the Program register to obtain your name from either the Medicare enrolment records or the Department of Veterans' 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 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. To do this you will need to contact the Program Information Line on 1800 118 868 during business hours.

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

Yours sincerely

Professor Chris Baggoley
Chief Medical Officer

<DATE> NBCSR C221

www.cancerscreening.gov.au

Source: DoHA 2013.

Figure B.2: The current NBCSP 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
1	7 August 2006	30 June 2008	55 and 65
2	1 July 2008	30 June 2011[(a)]	50, 55 and 65
2[(b)]	1 July 2011	30 June 2013	50, 55 and 65
3	1 July 2013	ongoing	50, 55, 60 and 65
3	1 July 2015		50, 55, 60, 65 and 70
3	1 July 2017		Phasing in of biennial screening (50–74) commences

(a) Eligible birthdates, and thus invitations, ended on 31 December 2010.

(b) Ongoing NBCSP funding commenced.

Note: The eligible population for all Phase 2 and 3 start dates incorporates those turning the target ages from 1 January of that year, onwards.

Eligible population

The eligible population invited includes those in the target population, as defined above, who were registered as an Australian citizen or migrant in the Medicare enrolment file, or are registered with a Department of Veterans' Affairs gold card. Invitees who were outside the target ages or had a current address outside Australia were excluded from this report. People who chose to opt off or suspend participation were included in the eligible population.

Polyps

Colorectal polyps are small growths of colon tissue that protrude into the colonic or rectal lumen. They are usually asymptomatic, but sometimes cause visible 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. 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 fewer) 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 were derived from information reported by colonoscopists and histopathologists, and were classified from highest risk (advanced) to lowest risk (diminutive), as listed below. Where a person had multiple adenomas, they were classified according to the adenoma having the highest risk.

Advanced adenoma

If any of the indicators of higher risk were present, the adenoma was 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 is subject to certain problems with accuracy. Where colonoscopy and pathology reports differ in their recording of size, the larger size was 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, or with no size recorded.

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 June 2001 standard population; Estimated resident populations, ABS; 2011 Census of Population and Housing, ABS
Incidence (ICD-10 C18–20)	Australian Cancer Database (ACD), AIHW
Mortality (ICD-9 153, 154.0–154.1, ICD-10 C18–20)	National Mortality Database (NMD), AIHW

National Bowel Cancer Screening Program Register data

This report uses NBCSP Register data to presents statistics on the progression of eligible participants through the screening pathway, for those invited into the NBCSP between 1 July 2011 and 30 June 2012. It covers measures of participation, FOBT results, and 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.

Data Quality Statement: National Bowel Cancer Screening Program screening data: July 2011–June 2012

Summary of key issues

- The NBCSP is a joint program of the Australian Government Department of Health and Ageing and state and territory governments. The NBCSP is monitored annually by the Australian Institute of Health and Welfare (AIHW). Results are compiled and reported at the national level by the AIHW in an annual NBCSP monitoring report.
- NBCSP data depend on the return of data forms from participants, general practitioners, colonoscopists and pathologists to the NBCSP register. The register is maintained by the Department of Human Services (formerly Medicare Australia). Data from the register are provided to the AIHW six-monthly as de-identified unit record data.
- Analysis of remoteness and socioeconomic status are based on postcode of residential address of NBCSP invitees at the time of screening. Correspondences for these disaggregations may be unavoidably older than the year(s) of screening data being reported, potentially leading to inaccuracies.
- Aboriginal and Torres Strait Islander, language and disability status are self-reported by participating individuals.

- Exclusion of people screened outside the NBCSP will result in an underestimation of population screening rates in the target ages.
- Data return for later stages in the NBCSP screening pathway (GP, colonoscopy and pathology follow-up, as required) is not mandatory. Further, not all people who received a positive (abnormal) screening result may have had time to complete follow-up steps at the time of reporting. These factors may result in under-reporting of outcome data.
- Data may be suppressed for confidentiality and reliability reasons (for example, if the denominator is less than 100, the numerator is less than 5, or the rate could not be sensibly estimated).

Description

The NBCSP is a joint program of the Australian Government Department of Health and Ageing and state and territory governments. The NBCSP started in 2006 and uses national invitation and screening analysis processes. A 'usual care' model is then used for follow-up functions for those with a positive (abnormal) screening result; that is, these people are encouraged to see their doctor to discuss the test result and seek further diagnostic testing (such as colonoscopy) as required. Data from these follow-up functions are returned to the national NBCSP register via non-mandatory form return.

Currently, people that are registered as Australian citizens or migrants in the Medicare enrolment file, or are registered with a Department of Veterans' Affairs gold card receive a screening invitation at, or around, their fiftieth, fifty-fifth and sixty-fifth birthdays. From July 2013 the program will also include people aged 60, and from July 2015 those aged 70. The program will be further expanded in 2017–18 with a phased roll out of biennial screening for those aged 50–74.

NBCSP data depend on the return of data forms from participants, general practitioners, colonoscopists and pathologists to the NBCSP register. The register is maintained by the Department of Human Services (formerly Medicare Australia). Data from the register are provided to the AIHW six-monthly as de-identified unit record data.

The NBCSP is monitored annually by the AIHW. Results are compiled and reported at the national level by the AIHW in an annual NBCSP monitoring report.

Institutional environment

The AIHW is a major national agency set up by the Australian Government under the Australian Institute of Health and Welfare Act 1987 to provide reliable, regular and relevant information and statistics on Australia's health and welfare. It is an independent statutory authority established in 1987, governed by a management Board, and accountable to the Australian Parliament through the Health and Ageing portfolio.

The AIHW aims to improve the health and wellbeing of Australians through better health and welfare information and statistics. It collects and reports information on a wide range of topics and issues, ranging from health and welfare expenditure, hospitals, disease and injury, and mental health, to ageing, homelessness, disability and child protection.

The Institute also plays a role in developing and maintaining national metadata standards. This work contributes to improving the quality and consistency of national health and welfare statistics. The Institute works closely with governments and non-government organisations to achieve greater adherence to these standards in administrative data collections to promote national consistency and comparability of data and reporting.

The *Australian Institute of Health and Welfare Act 1987*, in conjunction with compliance to the *Privacy Act 1988* (Cth), ensures that the data collections managed by the AIHW are kept securely and under the strictest conditions with respect to privacy and confidentiality.

For further information see the AIHW website <www.aihw.gov.au>.

The AIHW has been receiving NBCSP screening data since 2006.

Relevance

NBCSP screening data are highly relevant for monitoring trends and outcomes from NBCSP screening participation. It is important to note that additional bowel cancer screening is undertaken outside of the NBCSP. Data on people screened outside the program are not routinely collected; therefore, the level of underestimation of overall bowel cancer screening in Australia is unknown.

Socioeconomic status Index of Relative Socio-economic Disadvantage (IRSD) rankings are calculated by postal area (POA) using a population-based method at the Australia-wide level. These ranked socioeconomic status POAs are then allocated to their relevant jurisdiction, meaning quintiles should contain similar socioeconomic groups across jurisdictions.

Timeliness

The data discussed in this data quality statement are for the period July 2011–June 2012.

A snapshot of all NBCSP activity is made available to the AIHW regularly at six-monthly intervals for analysis. However, as there is a time lag between issuing invitations and confirmed diagnosis of bowel cancer, the monitoring reports are based on outcomes of a cohort of people sent invitations in a given period—this is usually cut off about 6 months before the date of the data supply to allow for sufficient follow-up data for analysis.

Therefore, the NBCSP data held at the AIHW at any given time is about 6 months behind the current date.

Accuracy

Self-reporting of Aboriginal and Torres Strait Islander, language spoken at home and disability status within the program means these data are dependent on accurate, and complete, information.

IRSD rankings are measured only at the time of the Census and are not available for about 18 months from the census date. Consequently, socioeconomic status for a geographic area may be up to 6 years out of date and not an accurate representation of the status of residents at the time the data are analysed.

An Australian Bureau of Statistics POA to remoteness correspondence and a POA to socioeconomic status correspondence are used to allocate persons screened to remoteness and socioeconomic status areas based on their postcode of residence. POAs are defined to match Australia Post postcodes as closely as possible, but for various reasons, they do not match identically. Socioeconomic status is calculated using a population-based method at the Australia-wide level.

The remoteness (and socioeconomic status) to POA correspondences are based on postal areas, boundaries and classifications as at the year of the last Australian Census, which may have been up to 5 years earlier, and boundaries, socioeconomic status and remoteness regions may have changed over time, creating inaccuracies. New postal areas defined since

the previous census will not have valid remoteness or socioeconomic status correspondence data available as they will not match the old postal areas.

NBCSP outcome data are via non-mandatory form return from GP visits, colonoscopy, histopathology, adverse events and surgical resection. The level of form return is unknown; therefore, there is an unknown amount of missing outcome data. This needs to be taken into consideration when reviewing NBCSP outcome analyses.

The data used in NBCSP monitoring reports allow for 6 months of follow-up time post-invitation. However, this may not be enough time for all people who had a positive screening result to have completed the screening pathway and had outcomes returned to the Register. This may also result in some under-reporting of outcome data.

Some data cells have been suppressed for confidentiality and reliability reasons (for example, if the denominator is less than 100, the numerator is less than 5, or the rate could not be sensibly estimated).

Coherence

NBCSP screening data are reported and published annually by the AIHW. Changes in reporting practices over time are clearly noted throughout the monitoring reports. In future, the addition of extra screening ages and biennial rescreening are expected to affect results in most areas of the screening pathway.

Interpretability

While the concept of participation in the NBCSP is easy to interpret, the NBCSP screening pathway and other concepts and statistical calculations are more complex and may be confusing to some users. All concepts are explained within the body of the reports presenting these data, along with footnotes to provide further details and caveats. The appendices provide additional detail on the data sources and classifications, and on the statistical methods used.

Accessibility

The NBCSP annual monitoring reports, and any supplementary data, are available via the AIHW website where they can be downloaded free of charge. Users can request data not available online or in reports via the Cancer and Screening Unit of the AIHW on 02 6244 1000 or via email to <screening@aihw.gov.au>. Requests that take longer than half an hour to compile are charged for on a cost-recovery basis. General enquiries about AIHW publications can be made to the Communications, Media and Marketing Unit on 02 6244 1032 or via email to <info@aihw.gov.au>.

General enquiries about AIHW publications can be made to the Communications, Media and Marketing Unit on 02 6244 1032 or via email to <info@aihw.gov.au>.

This Data Quality Statement can be found on AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/517164>.

Incidence data

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

The Data Quality Statement for the ACD 2009 can be found on the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/500417>.

Incidence of bowel cancer in this report was for 1995 to 2009, the latest year for which national incidence data are available. Note that 2009 data for NSW and the ACT were not available for inclusion in the 2009 version of the ACD. Therefore, the 2009 incidence data for NSW and the ACT were estimated by the AIHW in consultation with the NSW and ACT cancer registries. The estimates were combined with the actual data supplied by other state and territory cancer registries to the 2009 national cancer data set.

Mortality data

The National Mortality Database (NMD) contains information on the cause of death supplied by the medical practitioner certifying the death or by a coroner from 1964 to 2010. Registration of deaths is the responsibility of the state and territory registrars of births, deaths and marriages. These data are then collated and coded by the ABS. The mortality data used in this report were provided by the registries of births, deaths and marriages, the ABS and the National Coroners Information System. These data are maintained at the AIHW in the NMD.

The Data Quality Statement for NMD data can be found on the ABS website at <http://www.abs.gov.au/Ausstats/abs@.nsf/0/D4A300EE1E04AA43CA2576E800156A24?OpenDocument>.

Mortality data in this report were for 1996 to 2010. During this time, changes have been made to the coding and processing of mortality data. These changes affect the comparability of the data over time. Cause of death before 1997 was coded manually to the ninth version of ICD (ICD-9) and deaths from 1997 onwards were coded automatically to ICD-10.

In the NMD, both the year of occurrence of the death and the year in which the death was registered are provided. For this report, mortality data are shown based on the year of death, except for the most recent year (namely, 2010) where the number of people whose death was registered is used. This is because there is a consistent annual lag in the registration of deaths and a small proportion are not registered until the following year.

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, 5 jurisdictions (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only) have been assessed by the ABS and the AIHW as having adequate identification for analysis.

Queensland mortality data by Aboriginal and Torres Strait Islander status have been adjusted for late registrations in 2010. More information is available in *Causes of death 2010* (ABS cat. no. 3303.0) (ABS 2012a).

Data for Aboriginal and Torres Strait Islander deaths, state and territory and geographic location have been combined for the 5 years from 2006–2010 due to the small number of deaths from bowel cancer in each year.

Population data

The ABS estimated (mid-year) resident population data were used to calculate incidence and mortality rates in this report. These data were sourced from *ABS Australian demographic statistics* (cat. no. 3101.0) (ABS 2012b) as at 18 December 2012.

Classifications

Geographic classification

The ability to access and provide a wide range of services is influenced by the distance between clients and providers, be it for the clients to travel to the service providers or for the providers to travel to deliver services close to a person's home. The geographical location of areas is therefore an important concept in planning and analysing the provision of services.

Geographic location was classified according to the ABS Australian Statistical Geography Standard (ASGS) 2011 Remoteness Structure, which groups geographic areas into six categories. These categories, called Remoteness Areas, are based on ASGS Statistical Area level 1 units 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.2; the sixth, *Migratory* area, is not used in this publication. The category *Major cities* includes Australia's capital cities, with the exceptions of Hobart and Darwin, which are classified as *Inner regional*. Further information is available on the ABS website at <http://www.abs.gov.au/websitedbs/D3310114.nsf/home/geography>.

Table C.2: 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

Residential address postcodes of participants were mapped to 2011 ASGS 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 69.3% *Very remote*, 15.9% *Remote* and 14.8% *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. Participants whose postcode was not available in the remoteness correspondence were included in an 'Unknown' column in the relevant tables.

Socioeconomic classification

A person's health, and their ability to access and provide a wide range of services, is also influenced by the relative socioeconomic advantage and disadvantage of the area in which they live.

Socioeconomic classifications were based on the 2011 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 on this index means an area has more low-income families, people with little training and high unemployment, and may be considered disadvantaged relative to other areas with higher scores. However, such an area is also likely to contain some people who are relatively advantaged. When area-level indexes are used as proxy measures of individual level socioeconomic advantage and disadvantage, many people are likely to be misclassified. 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 this report, socioeconomic status of a participant's area of residence was classified using the participant's residential postcode according to the IRSD for 2011. Socioeconomic status (based on IRSD rankings) were calculated with a postal area (POA) correspondence (previously called a concordance) using a population-based method at the Australia-wide level. 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. Participants whose postcode was not available in the socioeconomic status correspondence were included in an 'Unknown' column in the relevant tables. Caution should always be taken when analysing the results of data that have been converted using correspondences, and the potential limitations of the data taken into account.

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 the lag time 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

Confidence intervals are 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.

This report uses data that are based on administrative datasets that contain 'complete counts', not sample survey data. While confidence intervals could be used to describe variability that is due to non-sample errors in the data, practically it is not easy to do so accurately. Therefore, as the size of this error is difficult to determine, and instead of providing confidence intervals that could be misleading, the AIHW instead recommends caution be exercised when interpreting small differences between rates. This is especially true where counts are small, and rates based on small counts will be noted (see 'Small counts' below).

In this report, 95% confidence intervals are only used in Section 2, chapters 1 and 3 to determine if a statistically significant difference exists between compared Kaplan-Meier estimates. Where the confidence intervals do not overlap, the difference between values is greater than that which could be explained by chance and is regarded as statistically significant.

Kaplan-Meier estimates of participation and follow-up

Kaplan-Meier estimates are statistical methods that calculate 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 (by returning a completed FOBT kit), recording the time (in weeks) it took them to do so. This allows the calculation of an overall response rate over time from the date of invitation, calculated as if all invitations sent throughout a particular period were sent on the same date. Such Kaplan-Meier estimates represent valid estimates of the true FOBT participation. The Bowel Cancer Screening Pilot Program used Kaplan-Meier estimates of participation, attendance and follow-up. 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 gives a result only 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 at 52 weeks for participation, and PHCP and colonoscopy follow-up. 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. Therefore, the Kaplan-Meier estimates cannot be applied.

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 identifying as group members to allow the calculation of reliable estimates.

Small counts

The following small cell size rules were applied in this report.

In all tables, numerators of 1 and 2 as well as their rates were suppressed. Rates based on denominators less than 100 (regardless of numerator) were also suppressed. Suppressed values are marked with n.p.

Additionally, rates based on numerators fewer than 20 or denominators fewer than 300 were noted, to ensure they are interpreted with caution.

Jurisdictional bowel cancer incidence data

Further to the above small cell size rules, tables specifically showing bowel cancer incidence by state and territory had numbers fewer than 5 (and rates based on these) suppressed, with the exception of the Northern Territory incidence data, where counts (and rates based on) fewer than 10 cases were suppressed.

Glossary

age standardisation: 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, then the disease rates that would have occurred with that structure are calculated and compared (AIHW 2012a).

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 whose common feature is that some of the body's cells become defective, begin to multiply out of control, can invade and damage the area around them, and can also spread to other parts of the body to cause further damage (AIHW 2012a).

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 detecting abnormal growths.

eligible population: For this report monitoring people invited in 2011–12, Australians registered as Australian citizens or migrants in the Medicare enrolment file, or are registered with a Department of Veterans' Affairs gold card who turned 50, 55 and 65 between 1 January 2011 and 30 June 2012, even if they had opted off or suspended their participation in the program.

epithelium: The tissue lining the outer layer of the body, the digestive tract, and other hollow organs and structures.

false negative: A screening test result that incorrectly indicates a person does not have a marker for condition being tested when they do have the condition. Not all screening tests are completely accurate, so false positive results cannot be discounted. Further, with an FOBT test for bowel cancer, if a polyp, adenoma or cancer is not bleeding at the time of the test, it may be missed by the screening test.

false positive: A screening test result that incorrectly indicates a person has the condition being tested when they do not have the condition. As FOBT tests detect blood in stool (which

may be caused by a number of conditions), a false positive finding regarding bowel cancer may still detect other non-bowel cancer conditions, or pre-cancerous polyps or adenomas.

FOBT: Faecal occult blood test. A test used to detect tiny traces of blood in a person's faeces that may be a sign of bowel cancer. The immunochemical FOBT is a central part of Australia's National Bowel Cancer Screening Program

Pathologists categorise completed NBCSP FOBTs 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 than 2 weeks apart, or a kit that has taken more than 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 (of an illness or event, and so on) occurring during a given period. Compare with prevalence (AIHW 2012a).

Indigenous: A person of Aboriginal and/or Torres Strait Islander descent who identifies as Aboriginal and/or Torres Strait Islander and is accepted as such by the community with which he or she is associated (AIHW 2012a).

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 adaptive immune system cells and through which lymph filters. These nodes 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: Death. For this publication specifically, see *Cancer death*.

neoplasm: An abnormal ('neo', new) growth of tissue. Can be benign (not a cancer) or malignant (a cancer). Same as tumour (AIHW 2012a).

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 screen 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.

prevalence: The number or proportion (of cases, instances, and so forth) in a population at a given time. Compare with incidence (AIHW 2012a).

primary health care practitioner (PHCP): Classified by DoHS as a general practitioner or other primary health care provider. This may include remote health clinics or 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.

prognosis: The likely outcome of an illness.

Program: The National Bowel Cancer Screening Program.

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 DoHS.

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. Screening tests are not diagnostic (for example, see *false positive*, *false negative* and *positive predictive value*); therefore, people who receive a positive screening result require further assessment and diagnosis to determine whether or not they have the disease or risk marker being screened for.

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 considered 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: See Table B.1.

tumour: See *neoplasm*.

underlying cause of death: The condition, disease or injury initiating the sequence of events leading directly to death, that is, the primary, or main cause (AIHW 2012a).

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

References

ABS (Australian Bureau of Statistics) 2009. Experimental estimates and projections, Aboriginal and Torres Strait Islander Australians, 1991 to 2021. ABS cat. no. 3238.0. Canberra: ABS.

ABS 2012a. Causes of death, Australia, 2010. ABS cat. no. 3303.0. Canberra: ABS. Viewed 10 March 2013, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/F941C630073EA7A8CA257B2E000D80F0?opendocument>.

ABS 2012b. Australian demographic statistics, June 2012. ABS cat. no. 3101.0. Canberra: ABS. Viewed 10 March 2013, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/33970B13F1DF7F56CA257B3B00117AA2?opendocument>.

ACN (Australian Cancer Network) Colorectal Cancer Guidelines Revision Committee 2005. Clinical practice guidelines for the prevention, early detection and management of colorectal cancer. Sydney: Cancer Council Australia and Australian Cancer Network.

Ahnen DJ & Macrae FA 2008. Approach to the patient with colonic polyps. Waltham: UpToDate Inc. Viewed 10 April 2009, <http://www.uptodate.com/contents/approach-to-the-patient-with-colonic-polyps>.

AHTAC (Australian Health Technology Advisory Committee) 1997. Colorectal cancer screening. Canberra: Publications Production Unit, Department of Health and Family Services.

AIHW (Australian Institute of Health and Welfare) 2009. National Bowel Cancer Screening Program: annual monitoring report 2009. Cat. no. CAN 45. Canberra: AIHW.

AIHW 2010. National Bowel Cancer Screening Program: annual monitoring report 2009 data supplement 2010. Cat. no. CAN 53. Canberra: AIHW.

AIHW 2012a. Australia's health 2012. Australia's health no. 13. Cat. no. AUS 156. Canberra: AIHW.

AIHW 2012b. National Bowel Cancer Screening Program monitoring report: phase 2, July 2008–June 2011. Cancer series no. 65. CAN 61. Canberra: AIHW.

AIHW & AACR (Australasian Association of Cancer Registries) 2012. Cancer in Australia: an overview, 2012. Cancer series no. 74. Cat. no. CAN 70. Canberra: AIHW.

APHDPCSS (Australian Population Health Development Principal Committee Screening Subcommittee) 2008. Population based screening framework. Canberra: Commonwealth of Australia.

Benson V S, Atkin WS, Green J et al. 2012. Toward standardizing and reporting colorectal cancer screening indicators on an international level: the International Colorectal Cancer Screening Network. International Journal of Cancer: 130–2,961–2,973.

Cancer Council Victoria 2013. Understanding Bowel Cancer. A guide for people with cancer, their families and friends. Melbourne: Cancer Council Victoria. Viewed 15 April 2013, <http://www.cancervic.org.au/downloads/booklets/bowel-cancer.pdf>.

Cappell MS 2005. The pathophysiology, clinical presentation, and diagnosis of colon cancer and adenomatous polyps. Medical Clinics of North America 89(1):1-42.

DoHA (Department of Health and Ageing) 2005. The Australian Bowel Cancer Screening Pilot Program and beyond: final evaluation report. Screening monograph no. 6/2005. Canberra: DoHA.

DoHA 2008. Bowel Cancer Screening Program: screening with a faecal occult blood test (FOBT). Canberra: DoHA. Viewed 29 April 2009, <http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/fobt>.

DoHA 2013. Bowel Cancer Screening Resources: consumer resources. Canberra: DoHA. Viewed 29 March 2013, <http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/resources-menu?OpenDocument&CATEGORY=3Consumer+Resources-1>.

DoHA & AIHW 2008. National Bowel Cancer Screening Program monitoring report 2008. Cancer series no. 40. Cat. no. CAN 40. Canberra: AIHW.

Grazzini G, Ventura L, Zappa M, Ciatto S, Confortini M, Rapi S, Rubeca T, Visioli CB & Halloran SP 2010. Influence of seasonal variations in ambient temperatures on performance of immunochemical faecal occult blood test for colorectal cancer screening: observational study from the Florence district. Gut 59(11):1511-1515.

Gregory T, Wilson C, Duncan A, Turnbull D, Cole S & Young G 2011. Demographic, social cognitive and social ecological predictors of intention and participation in screening for colorectal cancer. BMC Public Health 11(1):38.

Jemal A, Bray F, Center MM, Ferlay J, Ward E & Forman D 2011. Global cancer statistics, 2008. CA: A Cancer Journal for Clinicians 61:69–90.

Morris M, Lacopetta B & Platell C 2007. Comparing survival outcomes for patients with colorectal cancer treated in public and private hospitals. Medical Journal of Australia 186(6):296–300.

NBCSP–QWG (National Bowel Cancer Screening Program–Quality Working Group) 2008. Proposals from the Quality Working Group for the National Bowel Cancer Screening Program draft report. Canberra: DoHA. Viewed 1 April 2009, <http://www.health.gov.au/internet/screening/publishing.nsf/Content/D64721320298052FCA2574EB007F7524/$File/draft-qwg.pdf>.

National Cancer Screening Service 2013. NCSS update – BowelScreen – The National Bowel Screening Program. Dublin: National Cancer Screening Service. Viewed 7 March 2013 <http://www.cancerscreening.ie/news/news.php?idx=200>.

New Zealand Ministry of Health 2013. Bowel cancer programme. Wellington: Ministry of Health. Viewed 7 March 2013 <http://www.health.govt.nz/our-work/diseases-and-conditions/cancer-programme/bowel-cancer-programme>.

O'Connell JB, Maggard MA & Ko CY 2004. Colon cancer survival rates with the new American joint committee on cancer sixth edition staging. Journal of the National Cancer Institute 96(19):1420–1425.

Stryker SJ, Wolff BG, Culp CE, Libbe SD, Ilstrup DM & MacCarty RL 1987. Natural history of untreated colonic polyps. Gastroenterology 93(5):1009–1013.

van Rossum LG, van Rijn AF, van Oijen MG, Fockens P, Laheij RJ, Verbeek AL, Jansen JB & Dekker E 2009. False negative fecal occult blood tests due to delayed sample return in colorectal cancer screening. International Journal of Cancer 125(4):746–750.

WCRF/AICR (World Cancer Research Fund/American Institute for Cancer Research) 2011. Continuous Update Project Interim Report Summary. Food, Nutrition, Physical Activity, and the Prevention of Colorectal Cancer. Viewed 15 August 2011, <http://www.wcrf.org/PDFs/Colorectal-cancer-report-summary-2011.pdf>.

Weitz J, Koch M, Debus J, Hohler T, Galle PR & Buchler MW 2005. Colorectal cancer. Lancet 365:153-165.

Winawer SJ, Fletcher RH, Miller L, Godlee F, Stolar MH, Mulrow CD, Woolf SH, Glick SN, Ganiats TG, Bond JH, Rosen L, Zapka JG, Olsen SJ, Giardiello FM, Sisk JE, Van Antwerp R, Brown-Davis C, Marciniak DA & Mayer RJ 1997. Colorectal cancer screening: clinical guidelines and rationale. Gastroenterology 112(2):594-642.

Winawer SJ, Zauber AG, Ho MN, O'Brien MJ, Gottlieb LS, Sternberg SS, Waye JD, Schapiro M, Bond JH, Panish JF, Ackroyd F, Shike M, Kurtz RC, Hornsby-Lewis L, Gerdes H, Stewart ET, et al. 1993. Prevention of colorectal cancer by colonoscopic polypectomy. The National Polyp Study Workgroup. New England Journal of Medicine 329(27):1977-1981.

Wolin KY, Yan Y & Colditz GA 2011. Physical activity and risk of colon adenoma: a meta-analysis. British Journal of Cancer 104(5):882-885.

List of tables

List of figures

List of boxes

Related publications

This report, *National Bowel Cancer Screening Program Monitoring report: July 2011–June 2012* is part of a series. Earlier editions and any published subsequently can be downloaded for free from the AIHW website <www.aihw.gov.au/publications>. The website also includes information on ordering printed copies.

For those requiring further detail, additional Internet-only data tables are available at the AIHW *National Bowel Cancer Screening Program Monitoring report: July 2011–June 2012 supplementary tables* webpage. This can also be downloaded for free from the AIHW website <www.aihw.gov.au/publications>.

The following AIHW publications relating to cancer and cancer screening may also be of interest:

- AIHW 2013. Cervical screening in Australia 2010–2011. Cancer series no. 76. Cat. no. CAN 72. Canberra: AIHW.
- AIHW 2012. BreastScreen Australia monitoring report 2009–2010. Cancer series no. 72. Cat. no. CAN 68. Canberra: AIHW.
- AIHW & AACR (Australasian Association of Cancer Registries) 2012. Cancer in Australia: an overview, 2012. Cancer series no. 74. Cat. no. CAN 70. Canberra: AIHW

This report presents statistics on the National Bowel Cancer Screening Program for Australians invited to take part between July 2011 and June 2012. Just over 320,000 people were screened in that time, with about 22,500 found to require further assessment.

One out of every 15 assessments recorded detected an advanced adenoma (pre-cancerous lesion), and a bowel cancer was detected in 1 out of every 32 assessments.