Australian Government
Australian Institute of Health and Welfare

National Bowel Cancer Screening Program

Monitoring report 2012–2013

CANCER SERIES NO. 84

Australian Government
Australian Institute of Health and Welfare

Authoritative information and statistics to promote better health and wellbeing

CANCER SERIES NO.
Number 84

National Bowel Cancer Screening Program

Monitoring report

2012–13

Australian Institute of Health and Welfare
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Contents

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Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ACD	Australian Cancer Database
ACT	Australian Capital Territory
ARIA	Accessibility/Remoteness Index for Australia
ASR	age-standardised rate
DHS	Department of Human Services (formerly Medicare Australia)
DVA	Department of Veterans' Affairs
FOBT	Faecal occult blood test
ICD-10	International Statistical Classification of Diseases and Related Health Problems, tenth revision
IRSD	Index of Relative Socio-economic Disadvantage
mm	millimetres
NBCSP	National Bowel Cancer Screening Program
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
Tas	Tasmania
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 morbidity and mortality from bowel cancer by actively recruiting and screening the target population for early detection or prevention of the disease.

The NBCSP has been running since August 2006, and this report focuses on measures of program performance for people invited to screen from July 2012 to June 2013 (those turning 50, 55 or 65).

How many 2012–13 invitees participated in the NBCSP?

About 33.5% of the 964,000 people invited from July 2012 to June 2013 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 small decreases were evident in all 3 target age groups.

How many positive screening results were there?

About 23,500 participants (7.5%) 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) for referral to further investigative testing (colonoscopy). Seventy per cent of those with a positive screening result were recorded as having a colonoscopy at the time of this report.

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 (52 participants) or suspected (352 participants) cancer, while advanced adenomas were found in a further 728 participants (1 in 17 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.

2012–13 NBCSP data at a glance

Table 1 compares 2012–13 key performance measures for the NBCSP for the target ages of 50, 55 and 65 with those from the previous monitoring report (2011–12 invitees).

Table 1: Performance measures for the NBCSP, people aged 50, 55 and 65, 2011–12 and 2012–13

	2011–12[(a)]	2012–13
Performance measure	**Per cent**	
Participation rate	35.0	33.4
50 years	29.2	27.4
55 years	34.1	33.2
65 years	44.0	41.6
Faecal occult blood test (FOBT) positivity rate	7.0	7.5
Primary health-care practitioner (PHCP) follow-up rate	63.4	58.0
Colonoscopy follow-up rate	72.0	70.4
Colonoscopy outcomes		
Suspected/confirmed cancers	3.1	3.2
Advanced adenomas	6.7	5.7
Polyps awaiting histopathology	39.6	41.2
No abnormality	46.3	46.0

(a) 2011–12 data relate to those presented in the previous monitoring report for those eligible for invitation from 1 July 2011 to 30 June 2012 (AIHW 2013). See Table A6.1 in Appendix A for final data for those invited in 2011–12.

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 2012 to 30 June 2013. 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 Australian Institute of Health and Welfare (AIHW) webpage for *National Bowel Cancer Screening Program monitoring report: 2012–13 supplementary tables*.

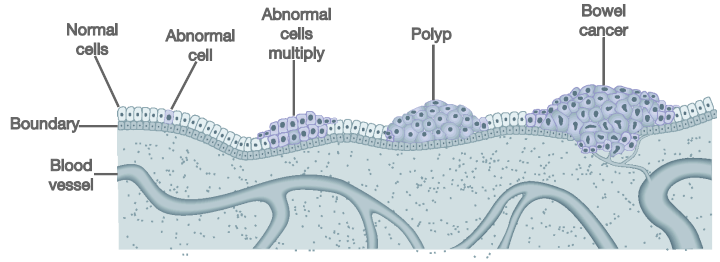
Overview of bowel cancer and bowel screening

What is bowel cancer?

Cancer is a group of several hundred diseases in which abnormal cells are not destroyed by normal processes within 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 (morbidity) or death from bowel cancer.

How common is bowel cancer?

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.

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 1.4 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).

In Australia, the incidence of bowel cancer has been increasing slightly each year since 1982 (the year national cancer data were first collected), with 14,860 new cases diagnosed in 2010. The risk of being diagnosed by the age of 85 was 1 in 10 for males and 1 in 15 for females in 2010, with the risk increasing sharply from the age of 45. Bowel cancer accounts for over 9% of all deaths from invasive cancers in Australia, with 3,980 deaths in 2012, making it the second most common cause of cancer-related death after lung cancer (ABS 2014; AIHW 2014).

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 2010 were 50 or older (see 'Chapter 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 clinicopathological stage (ACPS) classification system shown in Table S1.1 (ACN 2005).

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

Australian clinicopathological 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 et al. (2004) which used a comparable classification system. Similar rates have been shown in Australia (Morris et al. 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 precancerous 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: Selected international bowel cancer screening programs—tools and target populations

Country	Primary screening tool	Frequency	Start year	Target population (age in years)	Notes
Australia	FOBT	5-yearly, see notes	2006	50–65	People turning the target ages are sent an FOBT kit. As noted in Table S1.3, the NBCSP is being expanded from 2015 to implement a biennial screening interval for those aged 50–74 by 2020.
Canada	FOBT	Varies between provinces	See notes	50–74	Ten 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.
Finland[(a)]	FOBT	Biennial	2004	60–67	Currently in a RCT 'implementation' phase, with screening and control arms. The control group will be offered screening when the implementation phase is complete (once target ages 50–69).
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[(b)]	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[(c)]	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	
South Korea[(a)]	FOBT	Annual	2004	50 and over	
United States	FOBT, sigmoidoscopy and colonoscopy	See notes		50–75	While no national organised program exists, screening with FOBT (annual), sigmoidoscopy (5-yearly) and colonoscopy (10-yearly) depending on individual risk factors is promoted through guideline dissemination and media campaigns.

(a) Bulliard et al. (2014).

(b) National Cancer Screening Service (2013).

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

Source: Benson 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 *Clinical practice guidelines for the prevention, early detection and management of colorectal cancer*, approved by the National Health and Medical Research Council (ACN 2005), these people should be referred directly for 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 (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. About 150,000 kits are distributed annually across Australia (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. The committee 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 from November 2002 to 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 (Table S1.3). 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, Phase 2 was continued from July 2011. The program was expanded from July 2013 to also invite Australians turning 60. The rollout of biennial screening for those 50–74 will begin in 2015.

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, 70 and 74
3	1 July 2016		50, 55, 60, 64, 65, 70, 72 and 74
3	1 July 2017		50, 54, 55, 58, 60, 64, 68, 70, 72 and 74
3	1 July 2018		50, 54, 58, 60, 62, 64, 66, 68, 70, 72 and 74
3	1 July 2019		50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72 and 74

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

(b) Ongoing NBCSP funding began.

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

The goal of the NBCSP is to reduce the morbidity and mortality from bowel cancer by actively recruiting and screening the target population for early detection or prevention of the disease.

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 Program Register, currently maintained by the Department of Human Services (DHS, 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 (Grazzini et al. 2010; van Rossum et al. 2009), 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 NBCSP 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 2013a). 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 AIHW produces these NBCSP monitoring reports for the Australian Government Department of Health. These reports analyse data extracted from the NBCSP Register and provide an overview of screening participation and outcomes.

This current report presents statistics on the progression of eligible participants invited, from 1 July 2012 to 30 June 2013, through the screening pathway. It covers measures of participation, FOBT results, and follow-up investigations and outcomes. Analyses are presented by age, sex, state and territory, geographical 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 those registered as an Australian citizen or migrant in the Medicare enrolment file, or registered with a Department of Veterans' Affairs (DVA) gold card. Due to some variability between actual NBCSP invitation dates and invitee target-age birthdays, those who were the following ages when invited (from 1 January 2012 to 30 June 2013) were included in the target-age cohorts in this report:

- **50 year olds**: those aged 49–52 when invited
- **55 year olds**: those aged 54–57 when invited
- **65 year olds**: those aged 64–67 when invited

While all kits returned are analysed and processed by the NBCSP, 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 1,856 invitees excluded from the eligible population in 2012–13 (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 2013 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 FOBT 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 result who subsequently visited a PHCP is referred to as the primary health-care practitioner follow-up rate. PHCPs are classified by DHS 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 who subsequently had a colonoscopy is referred to as the colonoscopy follow-up rate.

Crude versus estimated rates

Due to inherent time lag 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 time lag in participation, this report includes data up to 6 months after the invitation period being reported.

However, for later stages in the NBCSP pathway, such as PHCP and colonoscopy follow-up, modelled rates based on the time it took each individual with a positive FOBT result to respond were also calculated. The modelled response rates were calculated using the Kaplan–Meier method and provide a rate that adjusts for time lag in those who were invited later in the reported period and may not have yet had sufficient time to have a follow-up colonoscopy, for example. This method can only minimise the effect of the time lag—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 NBCSP Register for the eligible population invited from 1 July 2012 to 30 June 2013, and includes participation and follow-up activity until 31 December 2013.

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 and/or other specialists, and are ultimately returned and stored in the NBCSP 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 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

Information on the Aboriginal or Torres Strait Islander status of invitees may have been populated in the NBCSP Register through other Medicare programs for which the invitee has provided this information; however, in practice, this information for invitees overall is considered low quality. Therefore, 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 FOBT for analysis. 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 an invitee's postcode 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 last 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

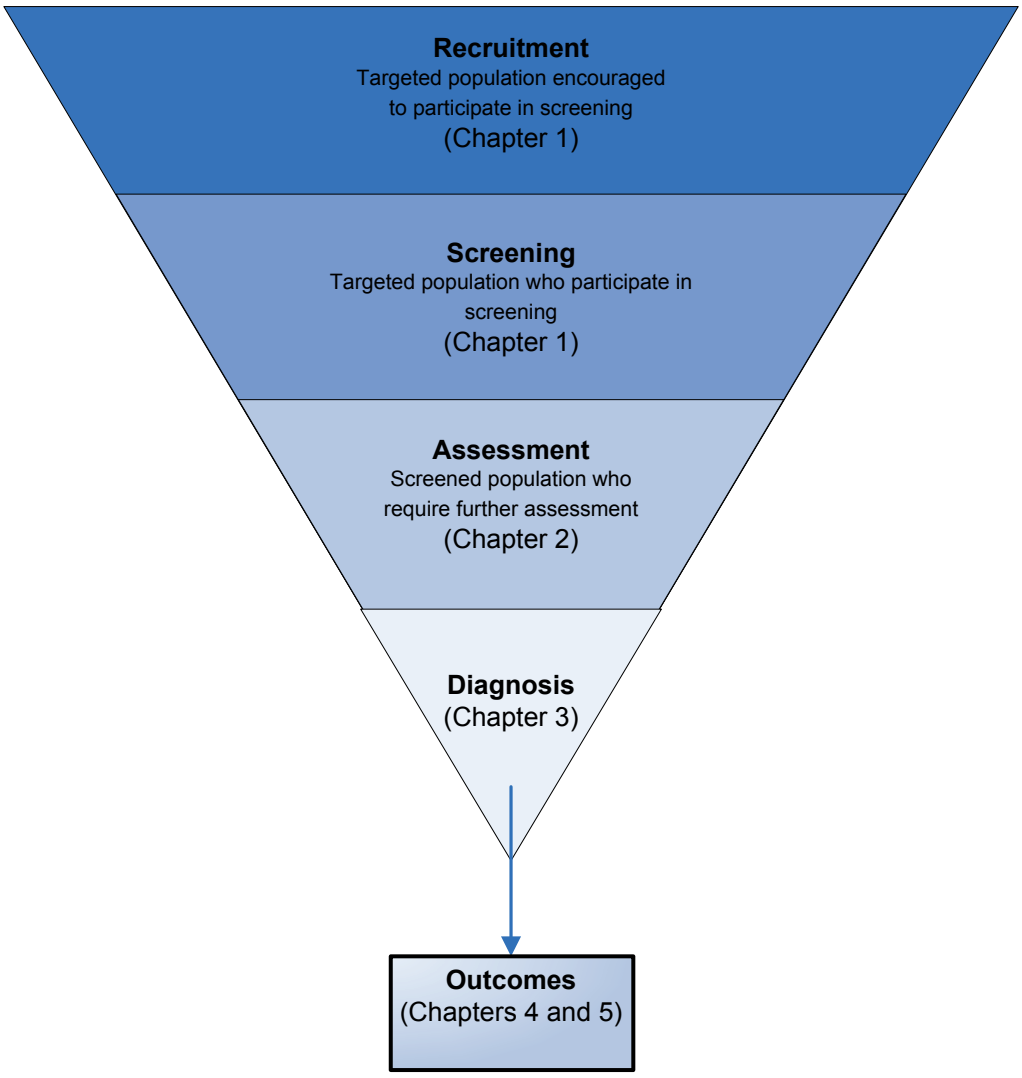
Theoretically, the denominator for the colonoscopy follow-up rate should be all positive FOBTs that were referred for colonoscopy by a PHCP. However, due to the time lag in visiting PHCPs and the low rate of PHCP assessment form return, this cannot be accurately estimated. Instead, the total number of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

As not all participants with a positive FOBT will be referred for a colonoscopy (for examples, 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 do not.

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 NBCSP performance measures shown in the following chapters relate. The 2 remaining chapters in this section ('Chapter 6 Incidence of bowel cancer', and 'Chapter 7 Mortality from bowel cancer') provide additional context about bowel cancer in Australia.



Source: APHDPCSS (2008).

Figure S2.1: The 5 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 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 Program 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 from 1 July 2012 to 30 June 2013, 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 (see Box 1.1) are presented to visually depict participation rates from time (in weeks) of invitation.

Key results

- Of the 963,518 eligible people invited into the NBCSP in 2012–13, 321,413 (33.4%) had participated by 31 December 2013.
- Kaplan–Meier curves showed that participation rates tended to plateau about 16 weeks after original invitation.
- Participation rates differed between the 3 target ages. The highest rate of participation was by people aged 65 (41.6%), followed by those aged 55 (33.2%). Those aged 50 had the lowest participation (27.4%).
- There was also a difference in participation between the sexes; the participation rate for women (35.7%) was higher than that for men (31.1%).
- Those people invited in *Remote* and (particularly) *Very Remote* regions had lower levels of participation than people invited from all other regions.
- People living in areas with the lowest socioeconomic status had the lowest level of participation.

Detailed analyses of 2012–13 invitee response

From 1 July 2012 to 30 June 2013, a total of 965,374 FOBT invitations were sent out (Table A1.1). Of these, 1,856 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 NBCSP 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 2012 was compared with invitations where the eligible birthday occurred in 2012. Based on this comparison, invitation coverage for the eligible population was considered to be complete (data not shown).

Of the 963,518 invitation kits issued to the eligible population, 321,413 people participated by returning a completed FOBT for analysis. This gave an overall Australia-wide crude participation rate of 33.4% (Table A1.2). A further 39,525 people did not return a kit but responded by opting off or suspending participation. This meant 360,938 people (37.5% of eligible invitations) responded in some form.

The 33.4% participation rate recorded in this report was lower than that reported in the previous monitoring report (35.0%), with all jurisdictions (except the Northern Territory), all ages, both sexes, and all remoteness and socioeconomic status areas recording a decrease. Reasons for these decreases are not known.

This report allowed a 6-month window between the period being reported and the cut-off for data analysis to allow sufficient time for almost all invitees who are likely to participate to do so. Previous monitoring reports have determined that 6 months is sufficient for crude participation rates to be valid (AIHW 2013). However, Kaplan–Meier estimates are provided in addition to visually show the response time between invitation and participation.

The effect of invitation reminders 8 weeks after the original invitation can 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.

Box 1.1: 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 reported were sent on the same date.

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. Northern Territory (24.8% crude participation), New South Wales (31.2%) and Queensland (32.2%) had lower participation rates than other jurisdictions (Table A1.2). For all other jurisdictions, participation rates were higher than the overall Australian rate. These jurisdictional participation results were in the same pattern as results in the previous annual monitoring report.

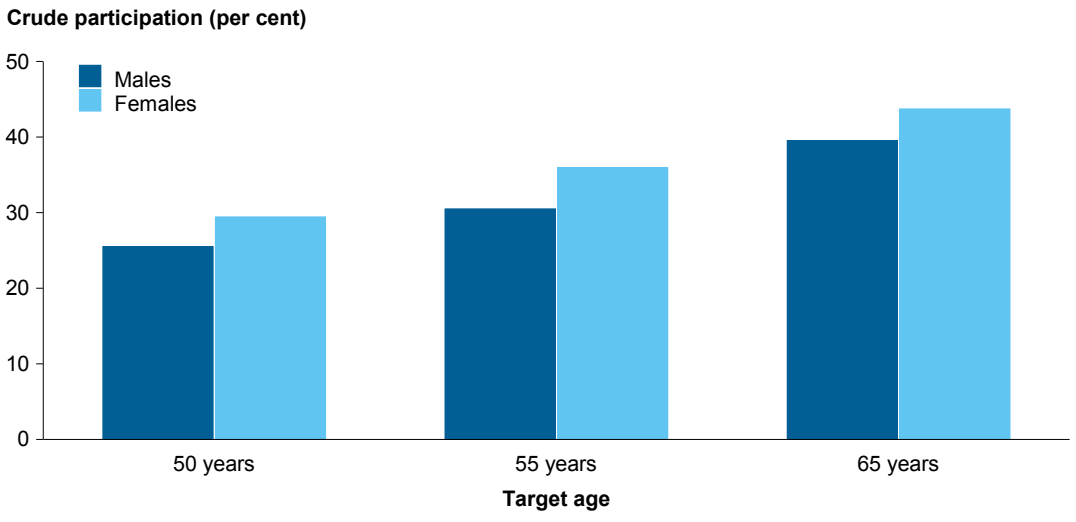
Reasons why invitees in particular jurisdictions participate more or less than the national average are unknown; however, further analysis of jurisdictional participation by socioeconomic status and remoteness areas showed that participation in New South Wales and Queensland was generally lower across all subgroups (including *Major cities*, and *Inner and outer regional* areas) than the other jurisdictions. There appears to be an overall trend towards lower participation from invitees in these jurisdictions, instead of smaller population subgroups affecting their overall participation rates. As New South Wales and Queensland are two of the larger jurisdictions, their rates have a greater effect on the Australian participation rate.

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 NBCSP monitoring reports.

Those aged 55 (33.2% participation) were 1.2 times more likely to have participated than those aged 50 (27.4%). Those aged 65 (41.6%) were 1.5 times more likely to have participated than 50 year olds (Table A1.2 and Figure A1.2).

Women were 1.1 times more likely than men to participate in bowel screening (35.7% for women compared with 31.1% for men) (Table A1.2 and Figure A1.3).



Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

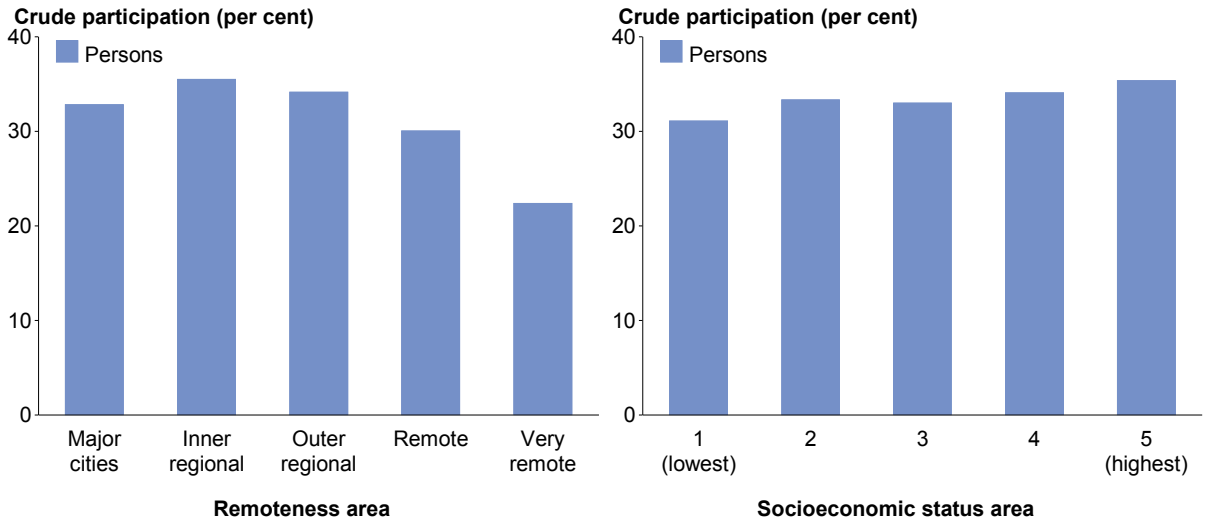
Figure 1.1: Crude participation, by age and sex, 2012–13

Participation by remoteness area and socioeconomic status area

While more than 65% of all participants came from *Major cities* (with a 32.8% crude participation rate), participation was higher in *Inner regional* (35.5%) and *Outer regional*

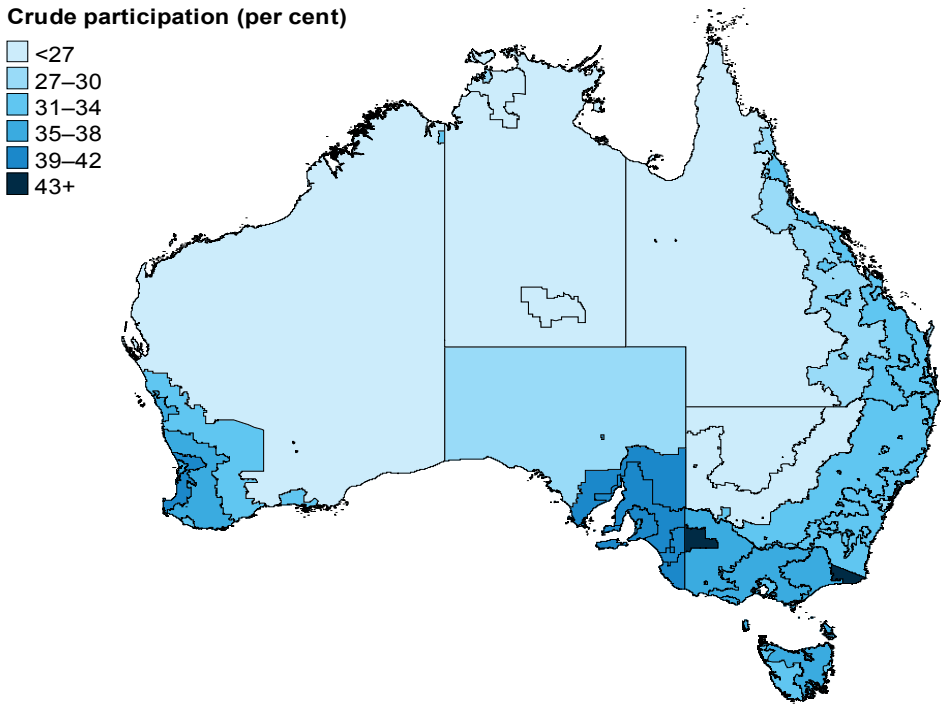
(34.1%) areas than all other geographical areas (Table A1.3 and Figure 1.2). Similar results were found for participation by remoteness area and jurisdiction, with participation higher in *Inner regional* and O*uter regional* areas and lower in *Remote* and *Very remote* areas (Figure 1.3). Jurisdiction-specific figures (figures A1.4a–A1.4h) are provided 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 A1.4 and Figure 1.2). Only the 2 highest socioeconomic status quintiles had average participation above the national average.



Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure 1.2: Crude participation, by remoteness area and by socioeconomic status area, 2012–13



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 2013.

Figure 1.3: Crude participation, by remoteness area, 2012–13

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 reliably known at the time of invitation; this information is only obtained once an invitee completes the relevant section of their participant details form when they participate. Therefore, it is not possible to accurately determine participation rates for these subgroups.

Instead, the proportion of participants who reported their status within these subgroups is shown, along with the corresponding population proportions derived from the 2011 Australian Bureau of Statistics (ABS) Census of Population and Housing (tables A1.5–A1.7). While these are not ideal comparisons, they do allow some understanding of people in these 3 subgroups, and if they are participating in the NBCSP in similar proportions to their levels within 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? If the proportion participating is below 1.5%, it may indicate under-participation by this population subgroup.

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 A1.5 and A1.7); this may affect comparisons shown below.

The proportion of participants who identified as Indigenous in the NBCSP was consistently lower across all age and sex groups than the comparable proportion who identified as Indigenous in the 2011 Census (Table A1.5). 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 NBCSP 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 A1.6). Therefore, no interpretation about participation rates by people who speak a language other than English at home should be made, though Table A1.6 is provided for completeness.

As the proportion of participants who identified as having a severe or profound activity limitation (4.8%) 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 A1.7).

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 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 Program 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 2013 for persons invited from 1 July 2012 to 30 June 2013.

Persons are counted only once in the reporting period, even if they completed more than 1 FOBT during this period. For participants who returned more than 1 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 321,413 participants who had completed an FOBT kit, 316,572 (98.5%) had done so correctly, allowing for analysis by the pathology laboratory. However, 154 were inconclusive when analysed and those participants were still to complete and return a replacement FOBT.
- Out of the 316,418 valid FOBT kits analysed, 23,671 returned a positive result, giving an overall positivity rate of 7.5%.
- The positivity rate for men (8.3%) was 1.2 times that for women (6.8%).
- The FOBT positivity rates for both sexes increased with older age, consistent with the known rise in polyp, adenoma and bowel cancer incidence rates with increasing age.
- Positivity rates increased with increasing geographical remoteness. Rates for participants in *Very remote* (9.1%), *Remote* (8.0%) and *Outer regional* (7.9%) areas were higher than those in *Inner regional* (7.6%) areas and *Major cities* (7.4%).
- Positivity rates were higher for participants living in areas with higher socioeconomic disadvantage—from 6.3% for participants living in areas with the least disadvantage to 8.6% for participants living in areas with the most disadvantage.
- Participants who self-identified as Aboriginal and Torres Strait Islander had a higher positivity rate (10.6%) than those who reported as non-Indigenous (7.4%) or those who did not state their Indigenous status (9.5%).
- The positivity rate of participants with a severe or profound activity limitation (11.8%) was higher than participants without those limitations (7.3%).

Background information

Each invitee in the NBCSP is initially sent 1 FOBT 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
- the kit having taken more than 14 days between the date of the first sample and analysis by the pathology laboratory.

Participants who return FOBTs that were incorrectly 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 1 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

From 1 July 2012 to 30 June 2013, 963,518 eligible people were invited to screen, and by 31 December 2013, 321,413 participants had returned at least 1 completed FOBT kit. Of these, 316,572 (98.5%) had a correctly completed FOBT kit tested by the pathology laboratory (Table A2.1); the remaining 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 2013, 4,841 participants had not returned a replacement kit, and 154 had returned kits with an inconclusive result. These were excluded from the positivity analyses.

Of the 316,418 valid FOBT kits analysed, 23,671 (7.5%) 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 (see 'Chapter 3 Follow-up of positive FOBT results', Section 2).

Faecal occult blood test outcomes by population subgroups

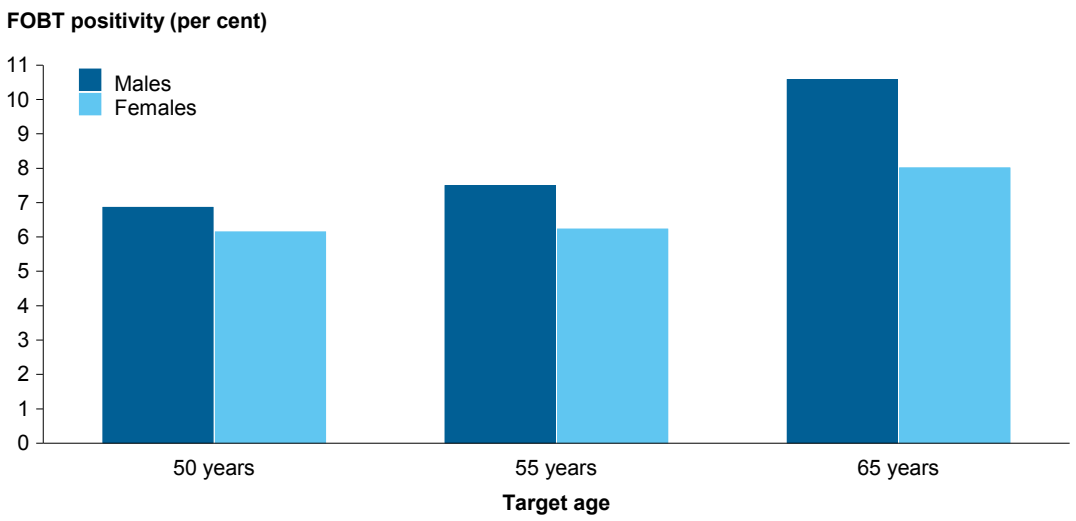
Faecal occult blood test outcomes by state and territory

The positivity rates for the Northern Territory (8.6%), South Australia (7.9%) and Victoria (7.6%) were higher than the overall Australian rate of 7.5% (Table A2.3).

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 (8.3%) was 1.2 times the rate for women (6.8%), indicating both age and sex affect the FOBT positivity rate (Table A2.2).



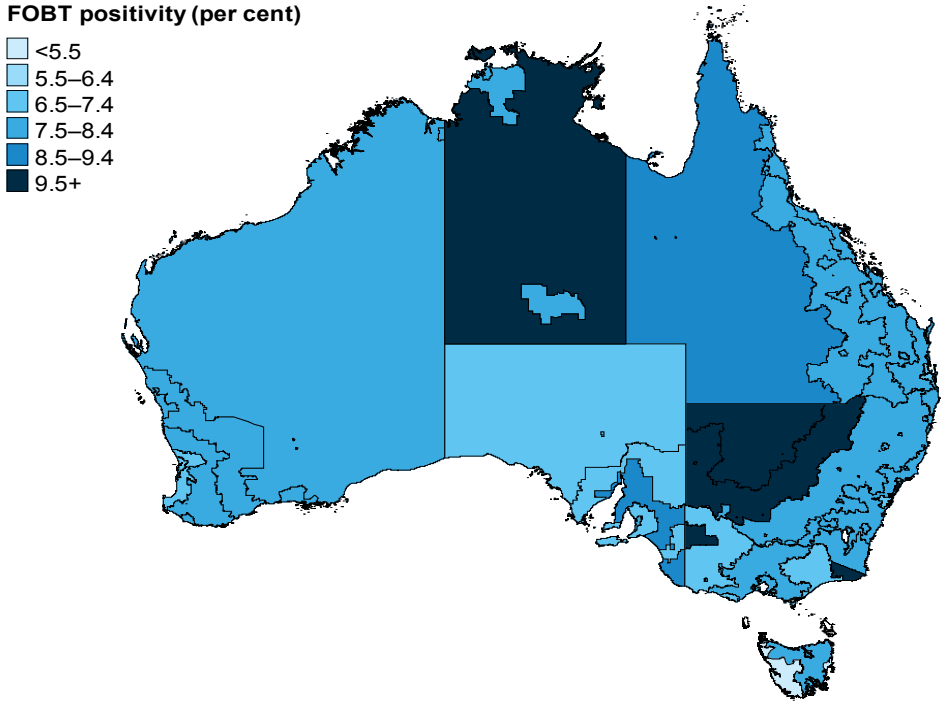
Source: National Bowel Cancer Screening Program Register as at 31 December 2013

Figure 2.1: FOBT positivity, by age and sex, 2012–13

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. *Outer regional, Remote* and *Very remote* areas had positivity rates 1.1, 1.1 and 1.2 times the positivity rate of *Major cities*, respectively. This was a similar result to previous reports. Positivity rates by remoteness area and jurisdiction are shown in Figure 2.2. Jurisdiction-specific figures (figures A2.1a–A2.1h) are provided 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 (8.6%) was 1.4 times that of participants living in areas with the highest socioeconomic status (6.3%). Socioeconomic status analyses for the participation measure (see 'Chapter 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 A1.4); yet those who do participate return a higher proportion of positive FOBT results (Table A2.5).



Notes

1. Remoteness areas left unshaded 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 1 decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure 2.2: FOBT positivity, by remoteness area, 2012–13

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 higher positivity rate (10.6%) than non-Indigenous participants (7.4%) (Table A2.6).

The positivity rate of those who spoke a language other than English at home (7.9%) was higher than participants who spoke English at home (7.4%) (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 higher positivity rate (11.8%) than people without such limitations (7.3%) (Table A2.8). Reasons for this difference are speculative, but may include a lower level of physical activity (Wolin et al. 2011), or comorbidities and medications that increase the likelihood of a positive FOBT screening result 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 who 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 Program 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 from 1 July 2012 to 30 June 2013. Persons are counted only once in the reporting period, even if they attended more than 1 follow-up consultation during this period. For participants who attended more than 1 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 time lag 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 'Chapter 4 Bowel abnormality detection', Section 2.

Key results

- Using Kaplan–Meier estimates, of the 23,671 participants who had a positive FOBT, 58.7% had a follow-up PHCP visit and 72.1% 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 regional* and *Outer regional* areas.
- Of the 13,721 participants who had reported a PHCP consultation, 82.5% reported experiencing no symptoms before their positive FOBT result and 91.7% were referred for a 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 screening tool to screen for microscopic blood loss from the bowel—a sign of potential bowel problems that require further investigation, including bowel cancer and adenomas. A procedure such as a 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 *Clinical practice 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 precancerous 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 23,671 participants invited who returned a positive FOBT result, 13,721 (58.0%) had a PHCP visit registered by 31 December 2013 (Table A3.1). Using Kaplan–Meier estimates to minimise any effect of time lag, an estimated 58.7% 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 recently improved over that recorded in earlier monitoring reports. Some of this improvement is due to the time increase between the invitation and final data cut-offs used in the last 3 reports, which allowed sufficient time for the majority of participants with a positive FOBT result to attend their PHCP, thus reducing the effect of time lag. This is apparent as the similar crude and Kaplan–Meier rates.

However, 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)
- 91.7% were referred for colonoscopy (Table A3.9)
- for those not referred for colonoscopy (1,142), the main reasons were having had a colonoscopy in the previous 18 months (47.9%), other medical condition(s) (29.9%) or the participant declining a colonoscopy (26.0%) (Table A3.11)
- of the 297 participants who declined colonoscopy (Table A3.11), 170 were not referred for any other assessment (data not shown).

As the invitation strategy at the time of this report sent invitations to all people who turned the target ages regardless of recent screening or surveillance—or current bowel cancer status—it is possible that some 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

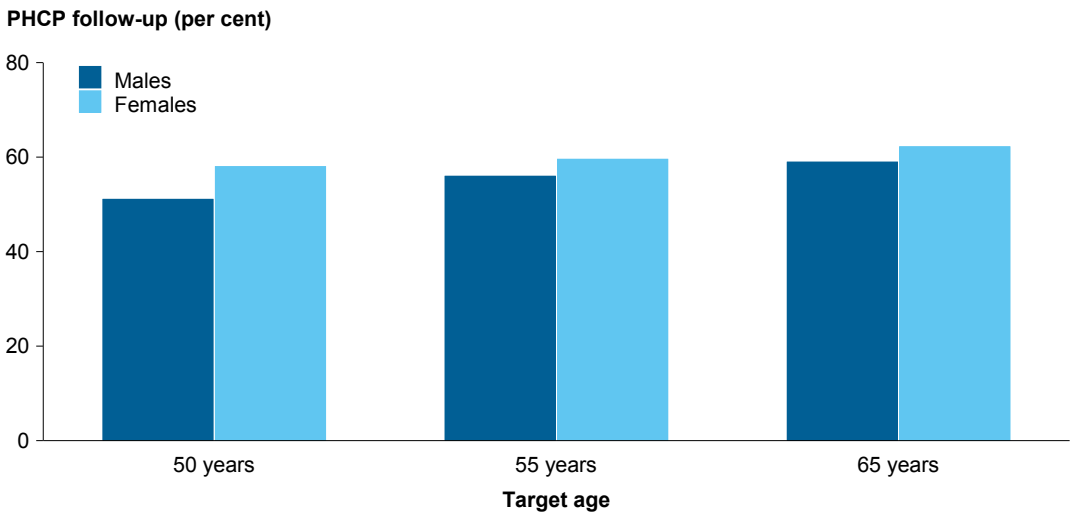
NBCSP implementation is the responsibility of each jurisdiction, and states and territories may have different follow-up policies and procedures. There were large differences recorded in PHCP follow-up between the jurisdictions, with the Northern Territory, Victoria and the Australian Capital Territory 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 Victoria, at least 40% of all people with a positive FOBT had recorded a follow-up with their PHCP within 4 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 older participants are more likely to follow up their positive result.

More women (60.1%) than men (56.0%) 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 (27.6%) declining colonoscopy than men (24.2%) (Table A3.11). Women also had a higher rate of non-colonoscopy follow-up procedures.



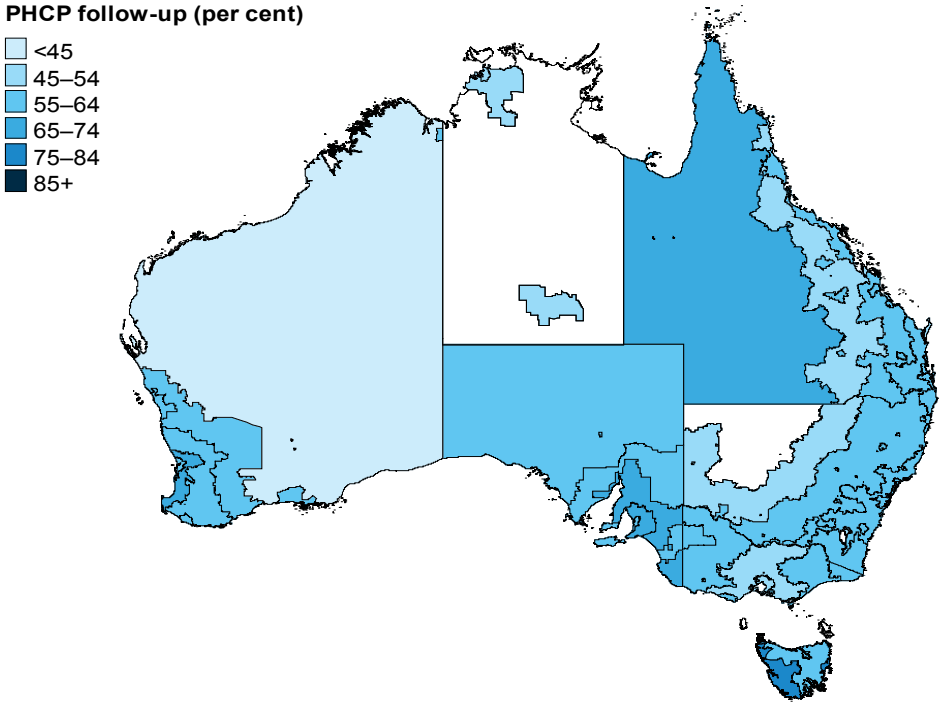
Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure 3.1: Primary health-care practitioner follow-up, by age and sex, 2012–13

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

Participants in *Inner regional* (60.0%) and *Outer regional* areas (59.9%) had the highest rates of PHCP consultations (Table A3.3). Participants in *Remote* and *Very remote* areas had the lowest rates of PHCP follow-up recorded. Follow-up to a PHCP varied by remoteness area and jurisdiction (Figure 3.2). 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 provided in Appendix A. Referral for colonoscopy was similar across remoteness areas (Table A3.10).

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



Notes

1. Remoteness areas left unshaded 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 2013.

Figure 3.2: Follow-up by primary health-care practitioners after a positive FOBT result, by remoteness area, 2012–13

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

All 3 population subgroups had low numbers of participants with returned assessment forms. Care must be taken when interpreting results in these tables.

There were no major differences in the rates of PHCP visits when comparing participants by Aboriginal and Torres Strait Islander status, language spoken at home or disability status (tables A3.5–A3.7, respectively).

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.

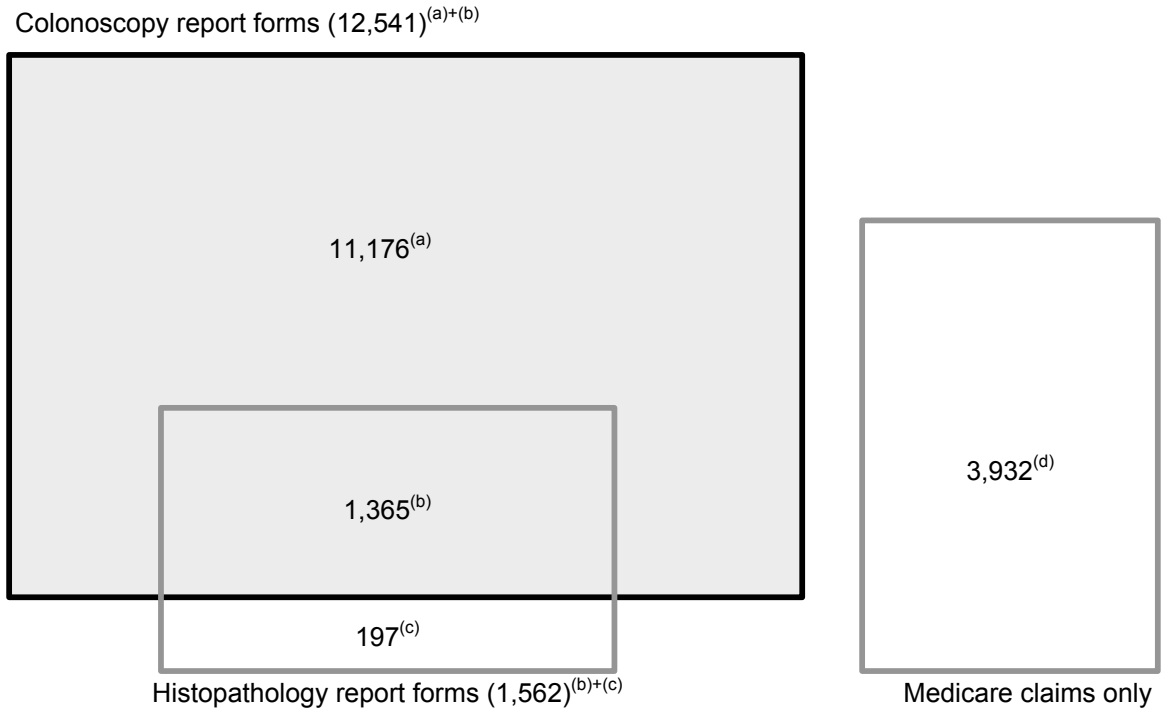
Following a positive FOBT result, PHCPs should refer a participant for colonoscopy, and the results should be returned to the NBCSP Register on a colonoscopy report form (Figure B.1,

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 health-care system (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 2013 were identified through 3 sources:

1. colonoscopy report forms (colonoscopy outcomes can be analysed using data on these forms)
2. additional histopathology report forms (from the subset of colonoscopies that, although not directly reported on a colonoscopy report form, must have sent samples to histopathology—which were reported on histopathology report forms)
3. claims for Medicare benefits for NBCSP-related private colonoscopies that were not reported through a colonoscopy report form (from the subset of NBCSP colonoscopies that were undertaken through the private healthcare system, as identified by DHS).

Figure 3.3 visually presents the number of colonoscopies counted, and from which source (or sources) they were identified. 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, 3,932 NBCSP-related colonoscopies were identified by a private colonoscopy Medicare claim only, and a further 197 were identified through a histopathology report form only. Details such as colonoscopic findings could not be obtained for these colonoscopies; however, they are still counted in the total number of colonoscopies performed as part of NBCSP follow-up activities. Even though using these 3 sources allows the count of NBCSP colonoscopies to be as complete as possible, further investigation has previously shown a number of additional colonoscopies are likely to be unaccounted for, so colonoscopy follow-up rates are underestimated.



People invited in 2012–13 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 2013.

Figure 3.3: Sources of colonoscopy follow-up data, 2012–13

2012–13 colonoscopy follow-up

Of the 23,671 positive FOBT results from participants invited, 16,670 had a colonoscopy registered by 31 December 2013, giving a crude colonoscopy follow-up rate of 70.4% (Table A3.12). Of these, 3,932 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 time lag 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 time lag on the follow-up rate, an analysis using Kaplan–Meier estimates was performed. The Kaplan–Meier analysis of colonoscopy follow-up estimated 72.1% of participants with a positive FOBT had a colonoscopy within 52 weeks of notification

of their positive result (Table A3.13 and Figure A3.3a). As these Kaplan–Meier rates were similar to the crude rate reported, the time lag waiting for a colonoscopy procedure was not a major factor in this report.

Colonoscopy follow-up by population subgroups

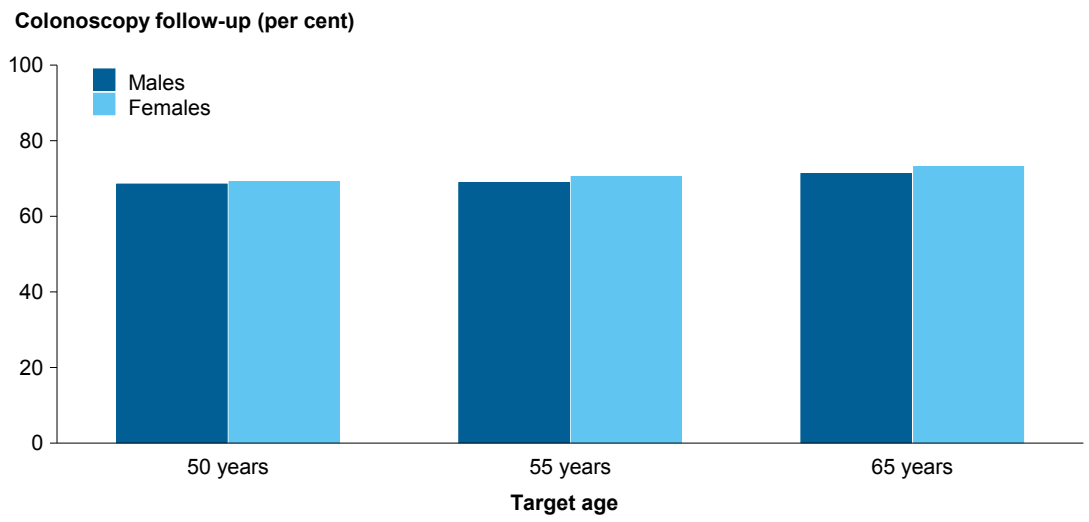
Colonoscopy follow-up by state and territory

There were differences in colonoscopy follow-up rates between states and territories (tables A3.12 and A3.13). Queensland (82.0%), Tasmania (77.3%) and South Australia (73.5%) 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 (tables A3.12 and A3.13 and figures A3.3b and A3.3c) may also be affected by NBCSP implementation procedures specific to each jurisdiction. 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 (72.1%) was higher than for those aged 50 and 55 (68.8% and 69.7%, respectively) (Figure 3.4 and Table A3.12).

The difference in crude colonoscopy follow-up between men and women was smaller (69.8% and 71.1%, respectively) (Table A3.12).



Source: National Bowel Cancer Screening Program Register as at 31 December 2013

Figure 3.4: Colonoscopy follow-up, by age and sex, 2012–13

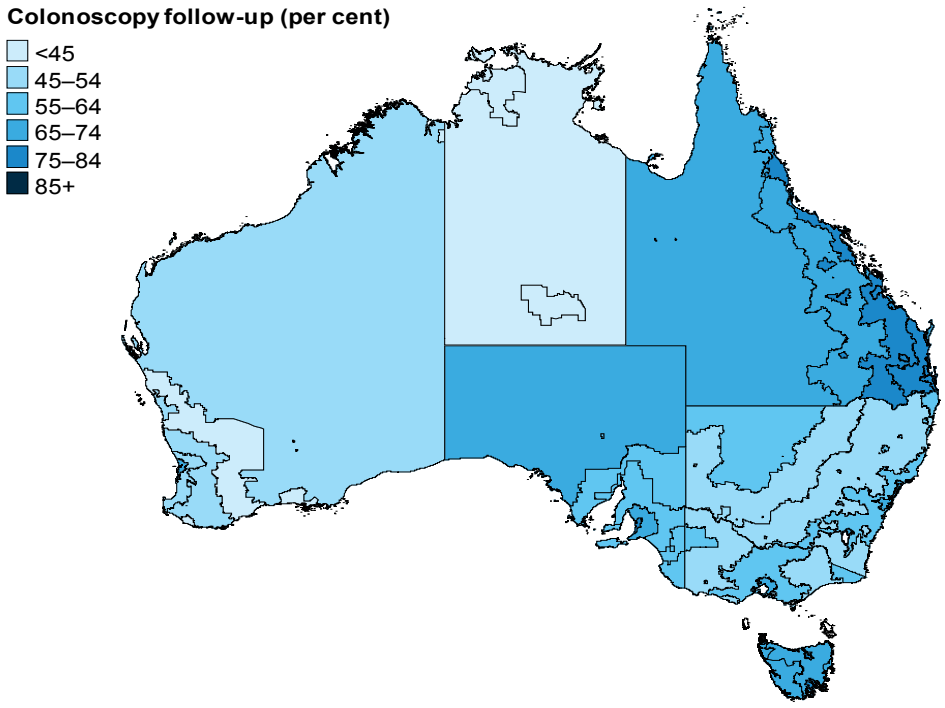
Colonoscopy follow-up by remoteness area and socioeconomic status area

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 (Table A3.3). As time lag 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 between regions.

Colonoscopy follow-up rates varied by remoteness area and jurisdiction (Figure 3.5). Queensland had a high percentage of colonoscopy follow-up for most remoteness areas.

However, these differences 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 provided 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 left unshaded 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 2013.

Figure 3.5: Colonoscopy follow-up after a positive FOBT result, by remoteness area, 2012–13

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

All 3 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 (58.7%) than non-Indigenous participants (71.4%), this difference should be interpreted with caution due to the low number of Aboriginal and Torres Strait Islander participants (121) who were recorded as having a colonoscopy (Table A3.16).

Participants who spoke English at home had a higher rate of colonoscopy follow-up (70.9%) than participants who spoke a language other than English (67.2%) (Table A3.17).

Participants with a severe or profound activity limitation had a lower rate of colonoscopy follow-up (61.5%) than participants without such limitations (72.6%) (Table A3.18). This is a different finding from the PHCP follow-up result, where participants with a severe or profound activity limitation had a similar rate of PHCP follow-up (60.2% versus 60.6%) (Table A3.7). Further analysis of referral and reason for non-referral data showed 12.1% of participants with a severe or profound activity limitation were not referred to colonoscopy, compared with 7.9% 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 colonoscopy procedure 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 NBCSP 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 time lag in processing of samples, or poor form return from pathology laboratories.

In recent years, several 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 number of missing histopathology report forms means the confirmed cancer numbers in 'Chapter 4 Bowel abnormality detection', Section 2 are likely to be under-reported, and by different degrees for different jurisdictions.

2012–13 histopathology follow-up

Data recorded on the 12,541 colonoscopy report forms returned indicated samples were sent to histopathology for 6,735 participants (53.7%, data not shown). However, as at 31 December 2013, only 1,562 histopathology report forms (23.2%) had been returned. Outcomes of these are discussed in 'Chapter 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 who 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 Program 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 2013 for persons invited from 1 July 2012 to 30 June 2013. Due to the time delay between notification of a positive FOBT result and progression to colonoscopy and histopathological confirmation of results, outcome data are 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 have taken place (due to the return of Medicare claim forms, see 'Chapter 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 1 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 23,671 participants with a positive FOBT, 12,738 (54%) had a valid colonoscopy or histopathology report form recorded (Figure 3.3). A further 5,074 (21%) had other recorded outcomes (Table A3.9). Recorded outcomes for 5,859 (25%) people with a positive FOBT were unknown as at 31 December 2013.
- There were 52 confirmed and 352 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 728 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 2013 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. From 2011, a new combined colonoscopy/histopathology form has been implemented, with the aim to improve the level of outcome data returned to the NBCSP 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 2013 there were still 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 included suspected cancers at colonoscopy where a biopsy sample was taken that was 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 3 risk levels—advanced, small and diminutive. These risk levels are described 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 reclassified 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

Three 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 analysing colonoscopy report forms. The second analysis (Figure 4.1 and tables A4.2 and A4.3) reports updated colonoscopy outcomes, when including histopathology results recorded as part of the colonoscopy procedures.

Bowel abnormality detection at colonoscopy

Of the 321,413 people invited into the NBCSP from 1 July 2012 to 30 June 2013 who returned FOBT kits, 23,671 were found to have blood in their samples (Figure 4.1), giving a positive

result that should be followed up by colonoscopy. However, only 12,541 (53.0%) of these had colonoscopy report form details recorded from which colonoscopy outcome data could be reported (Figure 3.3).

Results from the 12,541 colonoscopies with a completed colonoscopy report form showed there were 427 (3.4%) participants with a suspected cancer and 1,710 (13.6%) with 1 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 2012–13.

There were a further 5,004 (39.9%) participants with polyps less than or equal to 10 millimetres, and 3,035 (24.2%) other diagnoses such as diverticular disease 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 1,562 histopathology report forms—many of which updated the original 'suspected' colonoscopy diagnosis—the outcomes available for the 12,738 who had a colonoscopy or histopathology report form were:

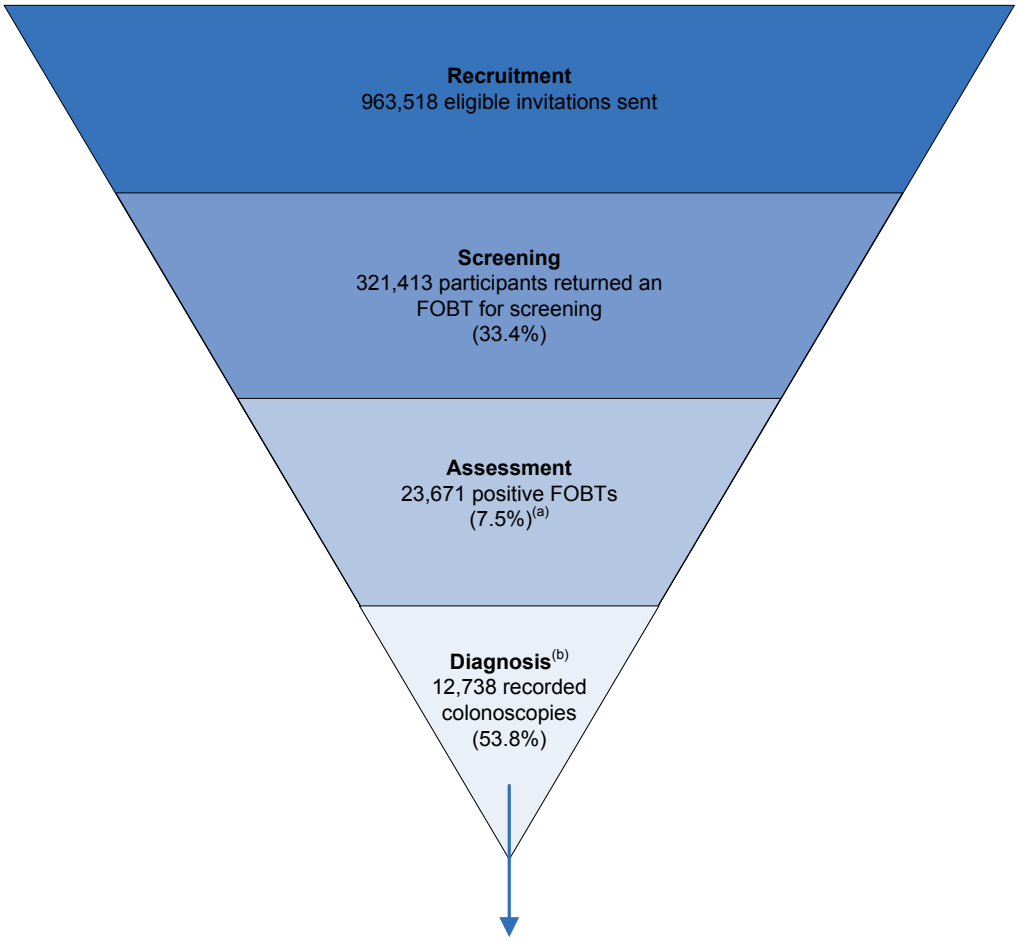
- 52 participants had bowel cancer detected and confirmed by histopathology
- 352 participants had suspected bowel cancers that were still awaiting histopathological diagnosis
- 1,231 participants had an adenoma diagnosed by histopathology
- 5,857 participants were found to have no abnormality (Table A4.2).

Results for another 5,246 participants awaiting histopathology outcomes for excised polyps were not available by 31 December 2013.

In summary, of the 23,671 people with a positive FOBT:

- 12,738 had diagnostic outcome information available (above)
- 3,932 had a colonoscopy that was identified only through a NBCSP-related Medicare claim and therefore had no diagnostic outcome data (Figure 3.3)
- 1,142 were not referred to colonoscopy (Table A3.9).

Therefore, there were 5,859 (24.8%) people remaining who had received a positive FOBT but had no follow-up information recorded.



Recorded colonoscopy outcomes

No cancer or adenoma	5,857	(46.0%)
Polyp awaiting histopathology	5,246	(41.2%)
Diminutive adenoma	303	(2.4%)
Small adenoma	200	(1.6%)
Advanced adenoma	728	(5.7%)
Suspected cancer	352	(2.8%)
Confirmed cancer	52	(0.4%)

(a) Based on the 316,418 participants who returned a valid FOBT.

(b) Additionally, 3,932 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 2013.

Figure 4.1: NBCSP participant outcomes, 2012–13

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; AIHW 2013).

Bowel abnormality detection by age and sex

Table A4.1 presents the recorded colonoscopy diagnoses for people invited into the NBCSP in 2012–13; these numbers do not take into account histopathology results that may have updated these diagnoses. Conversely, colonoscopist-suspected cancers shown in tables A4.2 and A4.3 include only those that have not been updated by histopathology to their final diagnosis; therefore, Table A4.1 and the later tables show different numbers of suspected cancers.

As would be expected from the known increase in bowel cancer incidence with age (see 'Chapter 6 Incidence of bowel cancer', Section 2), the incidence of abnormalities detected at colonoscopy increased with age; 1.9% of people aged 50 who had a colonoscopy returned a suspected or confirmed cancer outcome compared with 4.3% 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 2013a), 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 et al. 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 52 participants with confirmed cancers.

5 Adverse events

What is the adverse event rate within the NBCSP?

Definition: The proportion of eligible people invited from 1 July 2012 to 30 June 2013 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 Program 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 in 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 2013 for persons invited from 1 July 2012 to 30 June 2013. 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 1 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 2012–13, 48 out of 16,670 who underwent colonoscopy (about 1 in every 347 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 416 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 2 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 0.03% or lower. The incidence rate of perforation was 0.07–0.30%, and bleeding was found to have an incidence rate of 0.03–2.00% (NBCSP-QWG 2009).

Overall adverse events

Table A5.1 shows adverse events recorded up to 31 December 2013 for people invited to participate in the NBCSP from 1 July 2012 to 30 June 2013. Of participants with a positive FOBT, 16,670 were known to have had a colonoscopy, with 48 (0.3%) having an adverse outcome recorded (data not shown). 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 0.2%. Smaller 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 for 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 2010, though the 2010 incidence counts for New South Wales and the Australian Capital Territory are estimates, as their 2010 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 remove 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: 2012–13 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 2010 and mortality data from 1968 to 2011. It is available at <www.aihw.gov.au/acim-books>.

Key results

In 2010:

- 14,860 people were diagnosed with bowel cancer (8,258 males; 6,602 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 62 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 68 for males and 70 for females.

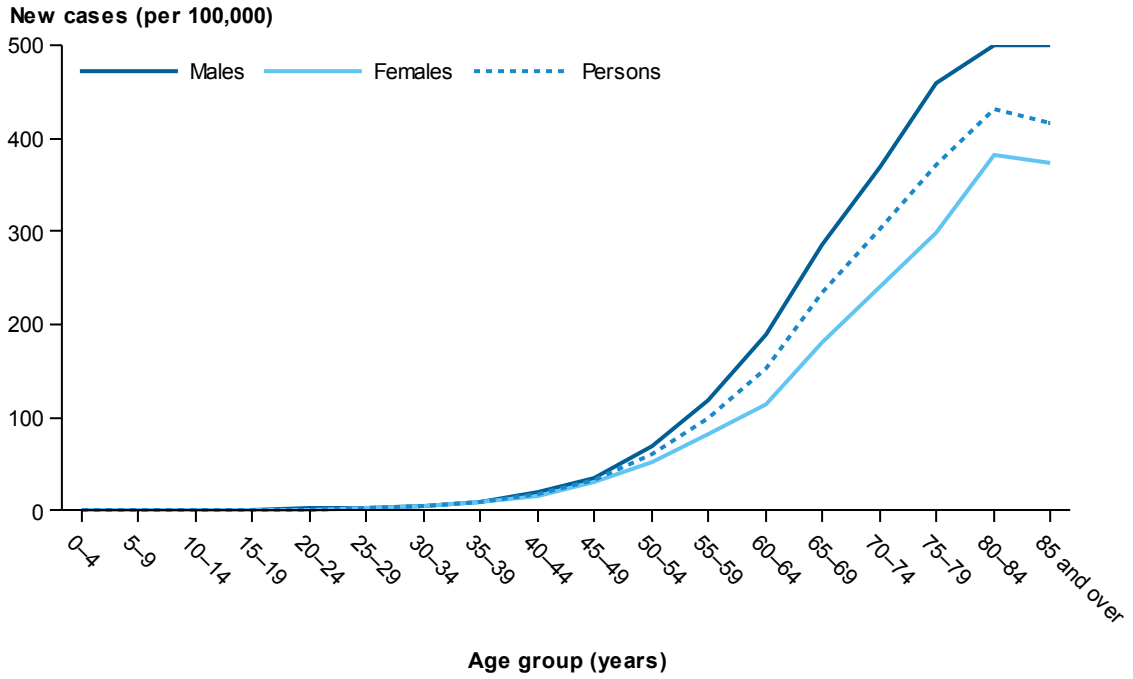
Detailed bowel cancer incidence analyses

Bowel cancer incidence by state and territory

The incidence of bowel cancer varied between jurisdictions in the period 2006 to 2010 (supplementary tables S1.3a–S1.4c). Tasmania (76 cases per 100,000 persons) and Queensland (65) had the highest age-standardised incidence rates, and the Northern Territory and Western Australia (each 57) had the lowest.

Bowel cancer incidence by age and sex

In 2010, and similar to previous years, newly diagnosed cases of bowel cancer were relatively rare in people under 45; however, the incidence rate increased sharply 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).

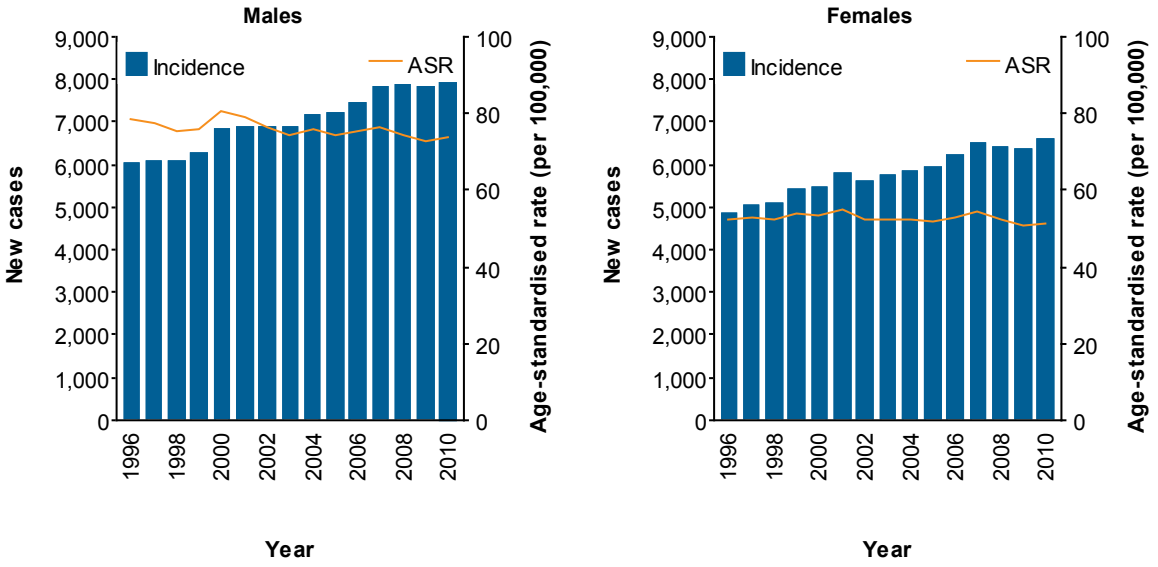


Source: AIHW Australian Cancer Database.

Figure 6.1: Age-specific incidence rates of bowel cancer, Australia, 2010

Trends

The number of new cases of bowel cancer for males increased between 1996 and 2010 by 37%, with incidence in females showing a similar increase (36%). While the age-standardised rates have decreased gradually between 1996 and 2010 for males (0.4% 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, 1996–2010

Analysis of NBCSP data shows 606 suspected cancers were detected within the NBCSP in 2010. 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 2010 show 214 of these were confirmed by NBCSP histopathology report form).

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 stratifications.

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 2011. The denominator is based on ABS estimated resident populations up to 2011. 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 against which to monitor future outcomes.

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 adenomas 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: 2012–13 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 2011:

- There were 3,999 deaths from bowel cancer in Australia (2,219 males; 1,780 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 59 for females and 1 in 46 overall.

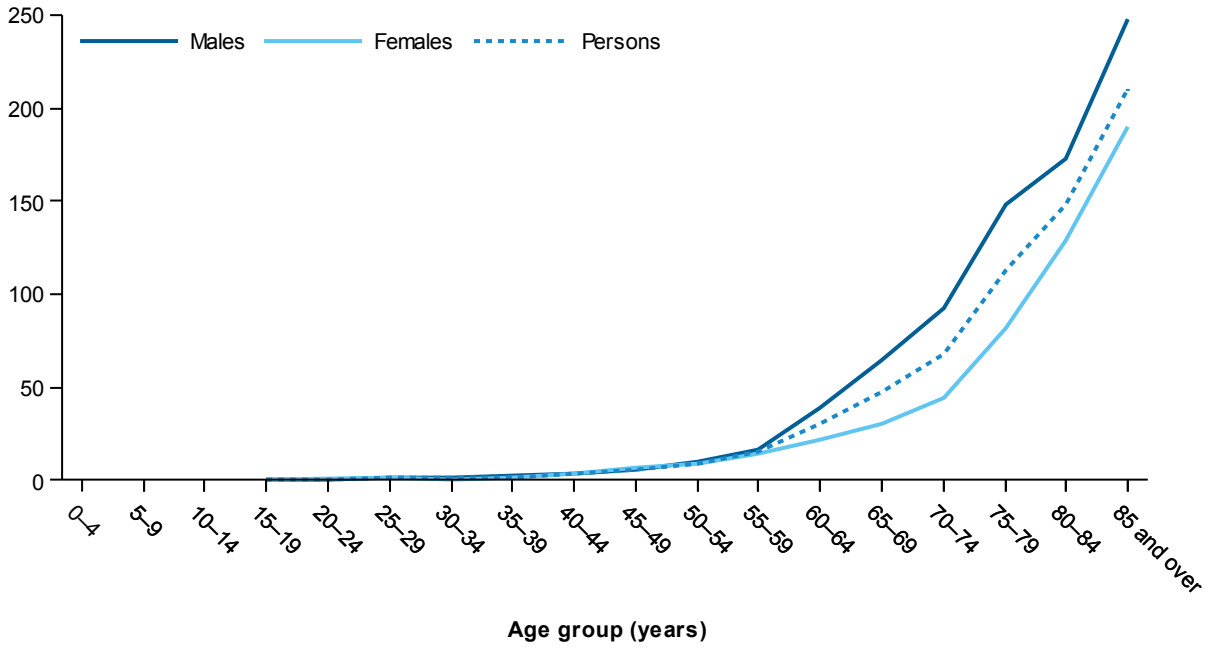
Detailed bowel cancer mortality analyses

Bowel cancer mortality by state and territory

In 2007–2011, Tasmania experienced the highest age-standardised rate of deaths from bowel cancer (21 deaths per 100,000 population) followed by the Northern Territory (19). Western Australia experienced the lowest age-standardised rate of 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 over (Figure 7.1). In 2011, the highest age-specific death rates were in the oldest age groups—people aged 80–84 (148 per 100,000 population) and 85 and over (210 per 100,000). There were 1,173 deaths in the 50–69 year age group, 29% of all bowel cancer deaths. This age group is currently targeted by the NBCSP; however, the outcomes of screening participation may also affect mortality rates in older ages.



Notes

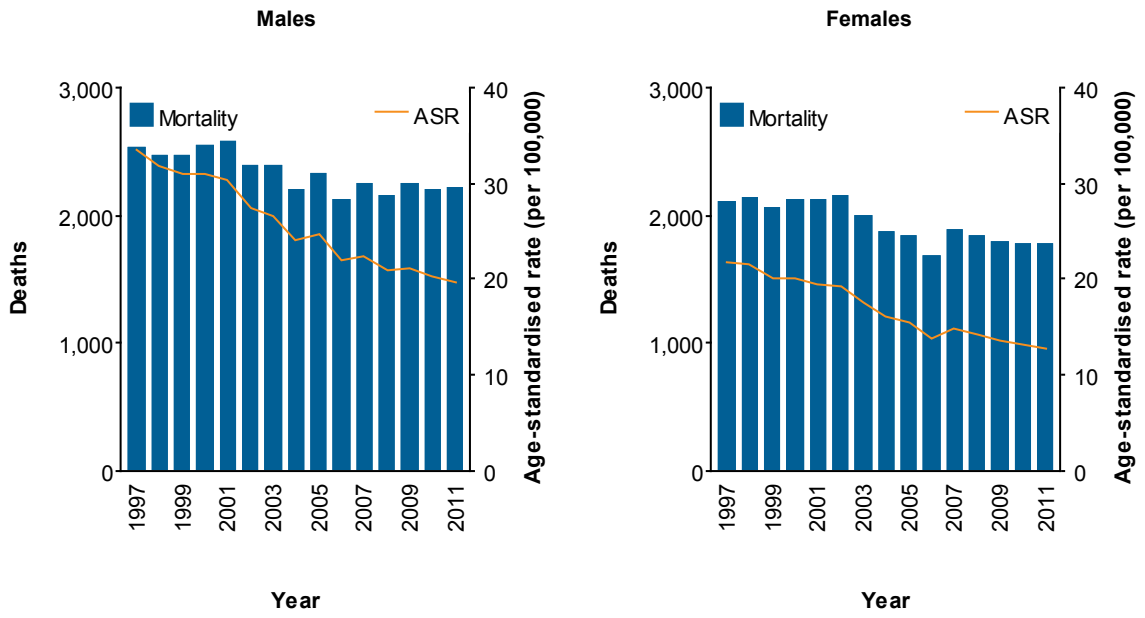
1. Rates age-standardised to the Australian 2001 population and are expressed per 100,000 population.
2. Deaths registered in 2011 are based on preliminary versions of cause of death data and are subject to further revision by the ABS.

Source: AIHW National Mortality Database.

Figure 7.1: Age-specific mortality rates for bowel cancer (ICD-10 C18–C20), Australia, 2011

Trends

Between 1997 and 2011, the age-standardised death rate from bowel cancer fell by an average of 2.7% per year for males, 2.8% per year for females, and 2.7% per year overall (Figure 7.2 and supplementary tables S3.1a–S3.2c). It is expected the NBCSP will, in time, continue to contribute to this decline in the death rate.



Notes

1. Rates age-standardised to the Australian 2001 population and are expressed per 100,000 population.
2. Deaths registered in 1997–2009 are based on the final version of cause of death data; deaths registered in 2010 and 2011 are based on revised and preliminary versions, respectively and are subject to further revision by the ABS.

Source: AIHW National Mortality Database.

Figure 7.2: Age-standardised mortality rates for bowel cancer, Australia, 1997–2011

Bowel cancer mortality by region

In 2007–2011, age-standardised deaths from bowel cancer were higher in *Inner regional* and *Outer regional* areas of Australia (each with 18 deaths per 100,000) (supplementary tables S3.5a–S3.6c). Age-standardised death rates were lowest in *Very remote* areas (13 deaths per 100,000).

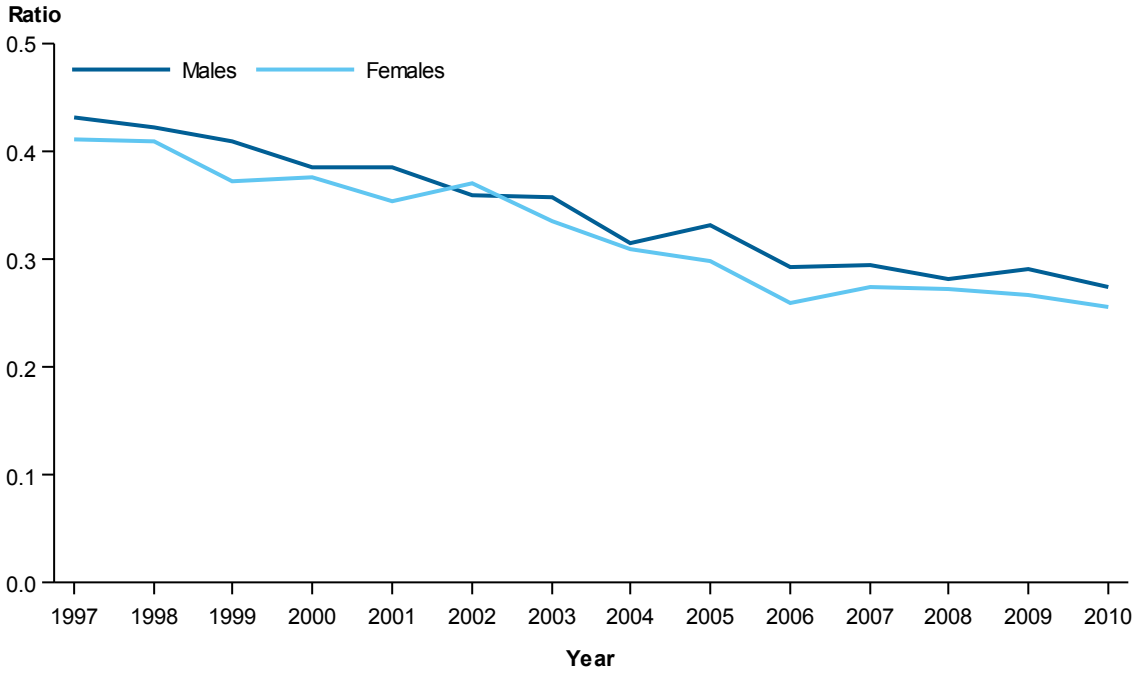
Bowel cancer mortality of Aboriginal and Torres Strait Islander peoples

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 2007–2011 in these jurisdictions, the age-standardised rate of deaths from bowel cancer was lower for Aboriginal and Torres Strait Islander people (13 deaths per 100,000) than for non-Indigenous people (16 deaths per 100,000) (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 precancerous 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. Deaths registered in 1997–2009 are based on the final version of cause of death data; deaths registered in 2010 are based on revised version and are subject to further revision by the ABS.

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

Figure 7.3: Trends in mortality-to-incidence ratios for bowel cancer, Australia, 1997–2010

Appendix A Additional data

A1 Participation tables and figures

Table A1.1: Screening invitation, by state and territory, 2012–13

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Invitations issued to the eligible population[(a)(b)]									
50 years	100,166	79,360	68,186	37,908	25,305	8,042	5,108	5,033	329,108
55 years	124,368	94,515	78,526	41,778	30,521	9,934	6,051	4,292	389,985
65 years	76,208	58,564	49,760	26,563	20,152	6,861	3,681	2,636	244,425
Total	**300,742**	**232,439**	**196,472**	**106,249**	**75,978**	**24,837**	**14,840**	**11,961**	**963,518**
Persons suspended[(c)]									
50 years	1,041	837	641	329	295	91	68	41	3,343
55 years	1,510	1,215	1,074	515	502	133	100	43	5,092
65 years	1,706	1,299	1,194	559	516	164	90	39	5,567
Total	*4,257*	*3,351*	*2,909*	*1,403*	*1,313*	*388*	*258*	*123*	*14,002*
Persons opting off[(d)]									
50 years	1,603	1,305	1,062	548	408	137	91	40	5,194
55 years	2,519	1,940	1,671	786	717	229	115	72	8,049
65 years	3,761	2,928	2,610	1,311	1,043	368	166	93	12,280
Total	*7,883*	*6,173*	*5,343*	*2,645*	*2,168*	*734*	*372*	*205*	*25,523*
Persons participating[(e)]									
50 years	25,687	22,738	17,562	11,374	7,873	2,391	1,553	1,083	90,261
55 years	38,597	32,326	24,975	15,254	11,353	3,662	2,249	1,063	129,479
65 years	29,670	23,951	20,716	11,854	9,732	3,244	1,682	824	101,673
Total	*93,954*	*79,015*	*63,253*	*38,482*	*28,958*	*9,297*	*5,484*	*2,970*	*321,413*
Total respondents[(f)]									
50 years	28,331	24,880	19,265	12,251	8,576	2,619	1,712	1,164	98,798
55 years	42,626	35,481	27,720	16,555	12,572	4,024	2,464	1,178	142,620
65 years	35,137	28,178	24,520	13,724	11,291	3,776	1,938	956	119,520
Total	**106,094**	**88,539**	**71,505**	**42,530**	**32,439**	**10,419**	**6,114**	**3,298**	**360,938**

(a) Invitations to screen were issued from 1 July 2012 to 30 June 2013 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 from 1 January 2012 to 30 June 2013. Some invitations were sent to non-target ages on request, or due to various pilot projects.

(b) There were 1,856 invitations sent to those not of the 3 target ages at the time of invitation, or to addresses overseas (making 965,374 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 a faecal occult blood test (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 2013.

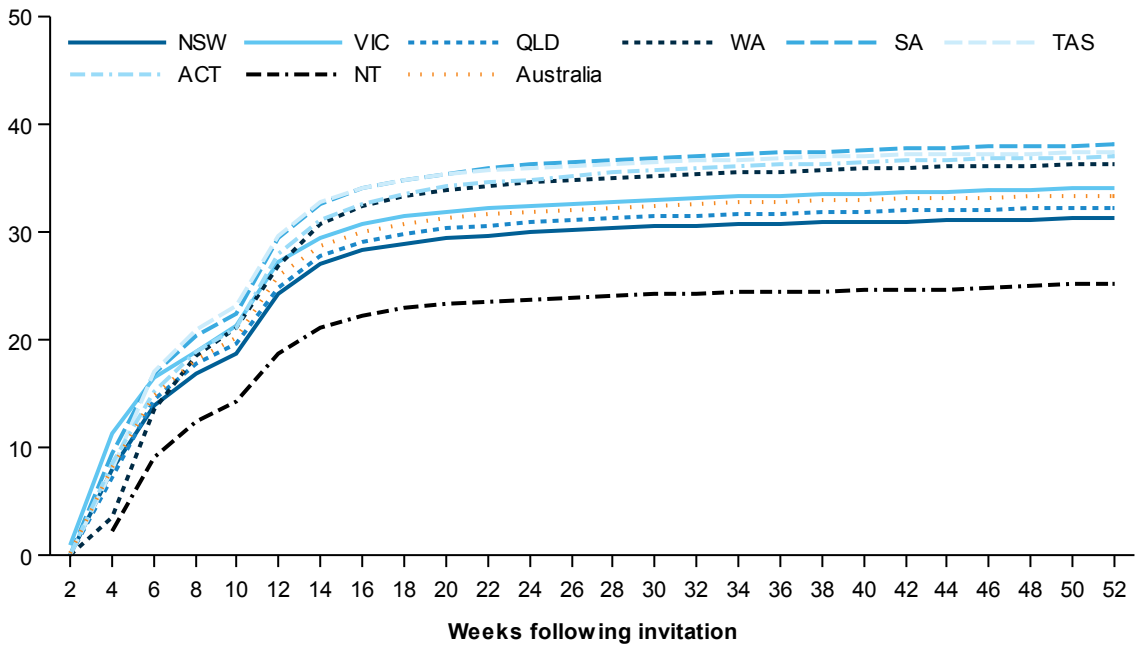
Table A1.2: Crude participation, by state and territory, 2012–13

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Number	12,166	10,479	8,240	5,411	3,701	1,044	755	528	42,324
	Per cent	24.0	26.3	24.0	28.1	29.1	26.2	29.3	20.1	25.5
55 years	Number	17,681	14,688	11,430	7,096	5,088	1,661	1,031	533	59,208
	Per cent	28.5	31.4	29.1	33.6	33.5	33.5	35.0	23.8	30.5
65 years	Number	14,170	11,228	9,904	5,802	4,541	1,569	791	449	48,454
	Per cent	36.9	39.0	39.2	42.8	45.9	45.3	43.8	29.8	39.5
Total	*Number*	*44,017*	*36,395*	*29,574*	*18,309*	*13,330*	*4,274*	*2,577*	*1,510*	*149,986*
	Per cent	*29.2*	*31.5*	*29.9*	*33.9*	*35.3*	*34.5*	*35.1*	*23.7*	*31.1*
Females										
50 years	Number	13,521	12,259	9,322	5,963	4,172	1,347	798	555	47,937
	Per cent	27.3	31.0	27.5	32.0	33.2	33.2	31.6	23.1	29.4
55 years	Number	20,916	17,638	13,545	8,158	6,265	2,001	1,218	530	70,271
	Per cent	33.5	37.0	34.5	39.5	40.8	40.2	39.2	25.8	35.9
65 years	Number	15,500	12,723	10,812	6,052	5,191	1,675	891	375	53,219
	Per cent	41.0	42.7	44.1	46.6	50.6	49.3	47.5	33.2	43.7
Total	*Number*	*49,937*	*42,620*	*33,679*	*20,173*	*15,628*	*5,023*	*2,907*	*1,460*	*171,427*
	Per cent	*33.3*	*36.4*	*34.5*	*38.6*	*40.9*	*40.4*	*38.7*	*26.1*	*35.7*
Persons										
50 years	Number	25,687	22,738	17,562	11,374	7,873	2,391	1,553	1,083	90,261
	Per cent	25.6	28.7	25.8	30.0	31.1	29.7	30.4	21.5	27.4
55 years	Number	38,597	32,326	24,975	15,254	11,353	3,662	2,249	1,063	129,479
	Per cent	31.0	34.2	31.8	36.5	37.2	36.9	37.2	24.8	33.2
65 years	Number	29,670	23,951	20,716	11,854	9,732	3,244	1,682	824	101,673
	Per cent	38.9	40.9	41.6	44.6	48.3	47.3	45.7	31.3	41.6
Total	**Number**	**93,954**	**79,015**	**63,253**	**38,482**	**28,958**	**9,297**	**5,484**	**2,970**	**321,413**
	Per cent	**31.2**	**34.0**	**32.2**	**36.2**	**38.1**	**37.4**	**37.0**	**24.8**	**33.4**

Notes

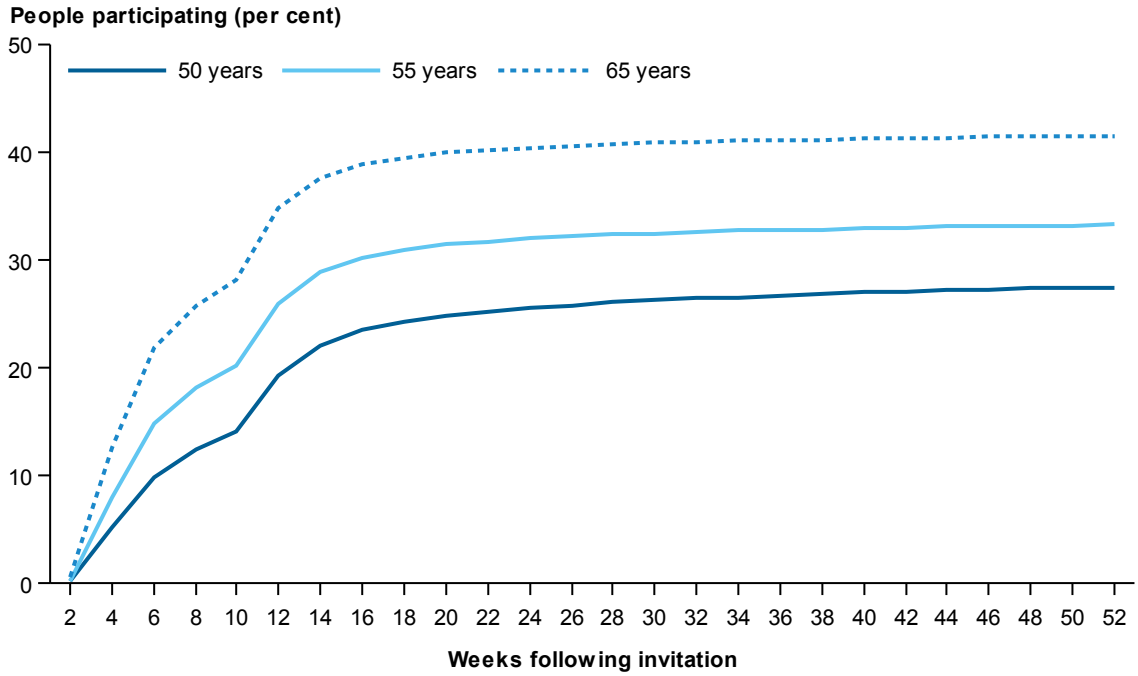
1. Participants in the program were defined as members of the eligible population who returned a completed FOBT kit, regardless of whether it was correctly completed.
2. Percentages equal people participating as a proportion of the total number of the eligible population who were invited to screen. This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

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.



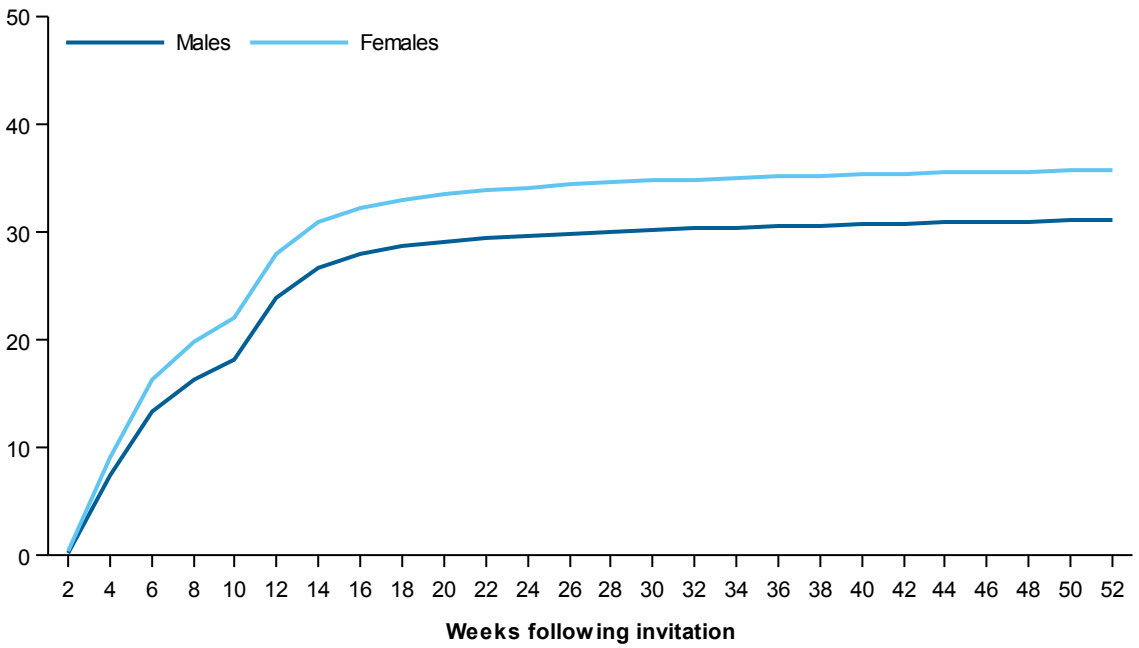
Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A1.1: Participation, by weeks since invitation using Kaplan–Meier estimates, by state and territory, 2012–13



Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A1.2: Participation, by weeks since invitation using Kaplan–Meier estimates, by age, 2012–13



Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A1.3: Participation, by weeks since invitation using Kaplan–Meier estimates, by sex, 2012–13

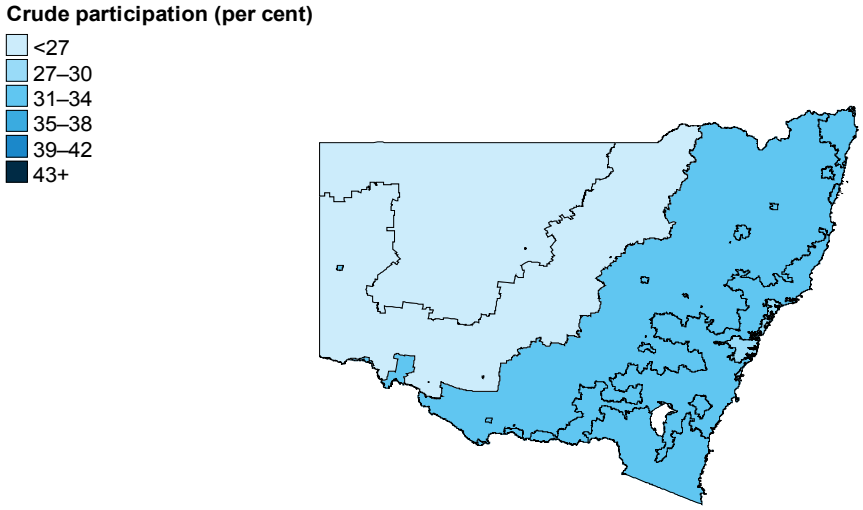
Table A1.3: Crude participation, by remoteness area, 2012–13

		Remoteness area						
		Major cities	**Inner regional**	**Outer regional**	**Remote**	**Very remote**	**Unknown**	**Total**
Males								
50 years	Number	28,929	7,841	4,259	558	217	519	42,324
	Per cent	25.9	25.4	24.7	21.9	16.9	24.8	25.5
55 years	Number	38,946	12,152	6,304	792	304	710	59,208
	Per cent	30.2	31.7	31.0	27.4	22.6	30.4	30.5
65 years	Number	30,178	11,217	5,572	607	228	653	48,454
	Per cent	38.5	42.6	40.7	36.0	28.1	36.2	39.5
Total	*Number*	*98,052*	*31,210*	*16,136*	*1,958*	*749*	*1,882*	*149,986*
	Per cent	*30.7*	*32.7*	*31.5*	*27.5*	*21.8*	*30.2*	*31.1*
Females								
50 years	Number	32,405	9,452	4,711	627	228	515	47,937
	Per cent	29.4	30.3	29.0	26.5	18.2	28.1	29.4
55 years	Number	46,485	14,782	7,132	874	287	711	70,271
	Per cent	35.2	38.2	37.5	34.8	23.6	34.4	35.9
65 years	Number	33,481	12,543	5,856	571	194	574	53,219
	Per cent	42.1	47.8	46.6	40.6	31.4	43.5	43.7
Total	*Number*	*112,371*	*36,777*	*17,698*	*2,071*	*709*	*1,800*	*171,427*
	Per cent	*34.9*	*38.3*	*37.0*	*33.0*	*23.0*	*34.5*	*35.7*
Persons								
50 years	Number	61,334	17,293	8,970	1,185	445	1,034	90,261
	Per cent	27.6	27.9	26.8	24.1	17.6	26.4	27.4
55 years	Number	85,431	26,934	13,436	1,666	591	1,421	129,479
	Per cent	32.7	35.0	34.1	30.9	23.1	32.3	33.2
65 years	Number	63,659	23,759	11,428	1,178	422	1,227	101,673
	Per cent	40.3	45.2	43.5	38.1	29.5	39.3	41.6
Total	**Number**	**210,424**	**67,987**	**33,834**	**4,029**	**1,458**	**3,682**	**321,413**
	Per cent	**32.8**	**35.5**	**34.1**	**30.0**	**22.3**	**32.2**	**33.4**

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 Geography Standard remoteness structure through a postal area correspondence. Those that could not be mapped were included in the 'Unknown' column.
3. Discrepancies may occur between totals and sums of the component items due to rounding—see 'Geographical classification', Appendix C.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

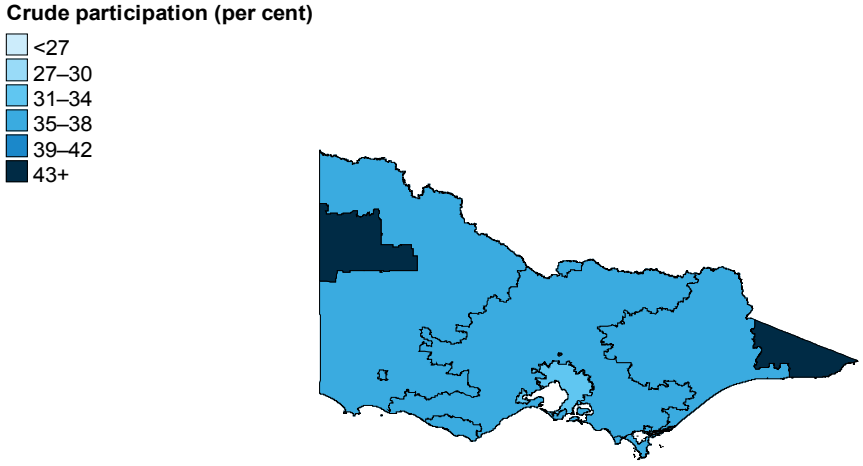


Notes

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 2013.

Figure A1.4a: Crude participation, by remoteness area, New South Wales, 2012–13

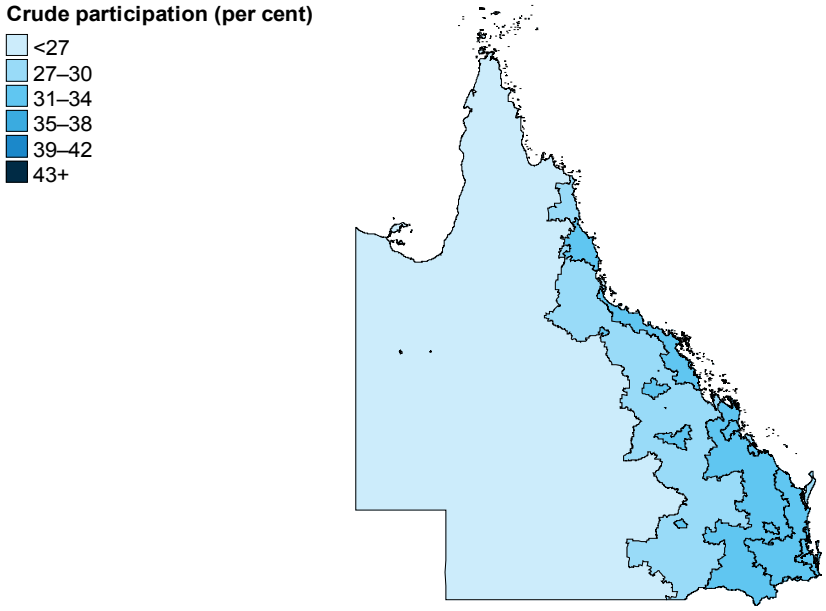


Notes

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 2013.

Figure A1.4b: Crude participation, by remoteness area, Victoria, 2012–13

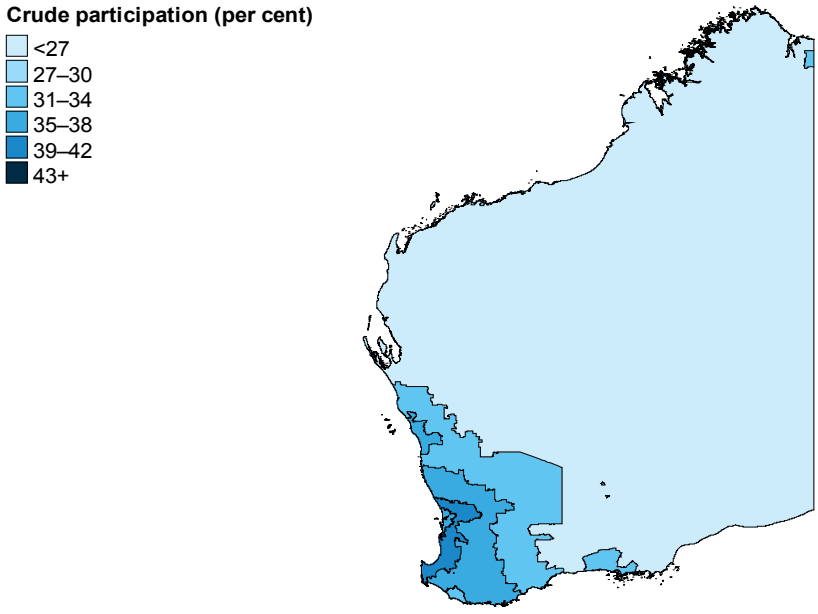


Notes

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 2013.

Figure A1.4c: Crude participation, by remoteness area, Queensland, 2012–13

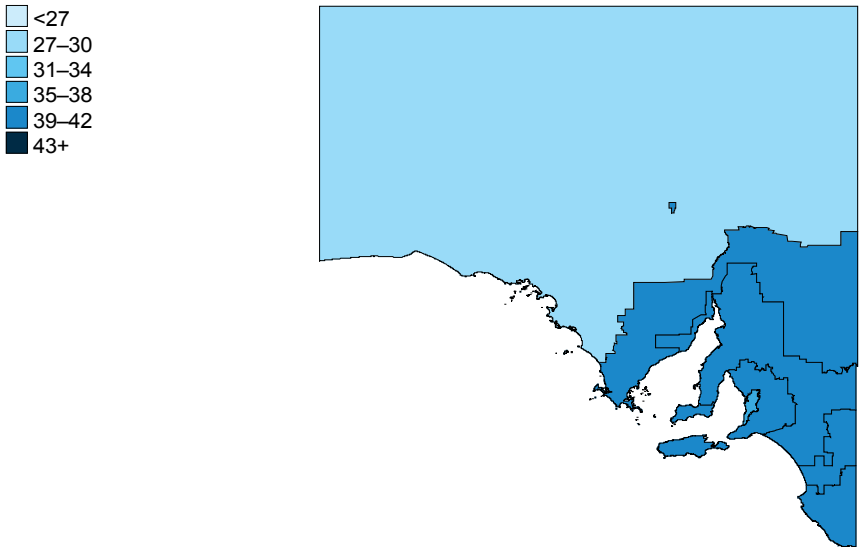


Notes

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 2013.

Figure A1.4d: Crude participation, by remoteness area, Western Australia, 2012–13

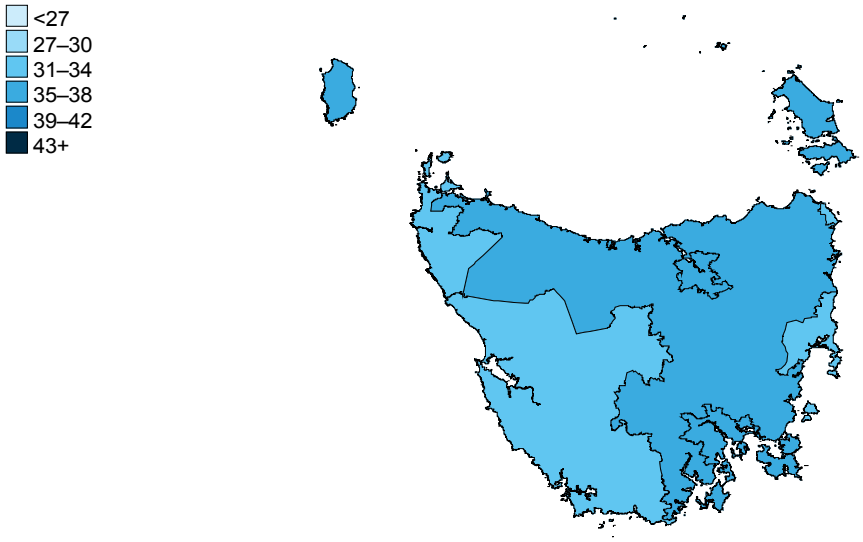


Notes

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 2013.

Figure A1.4e: Crude participation, by remoteness area, South Australia, 2012–13

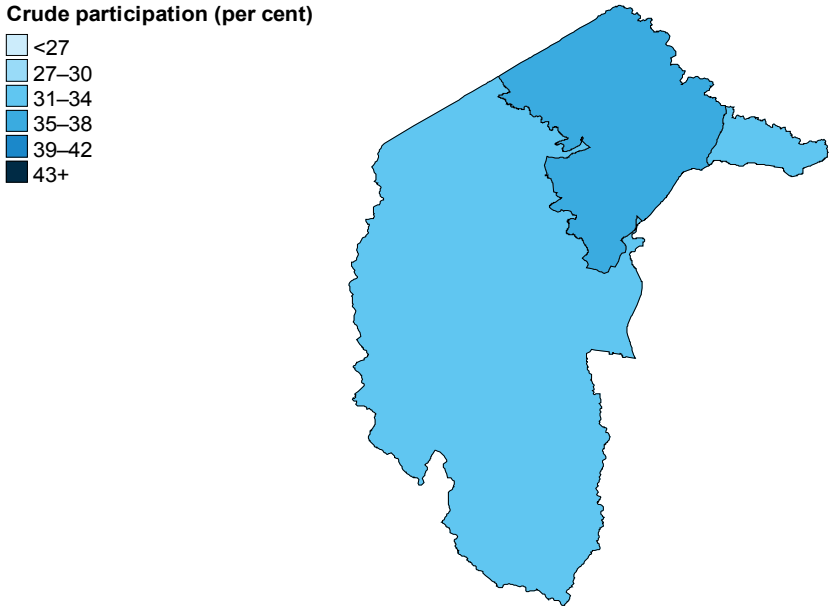


Notes

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 2013.

Figure A1.4f: Crude participation, by remoteness area, Tasmania, 2012–13

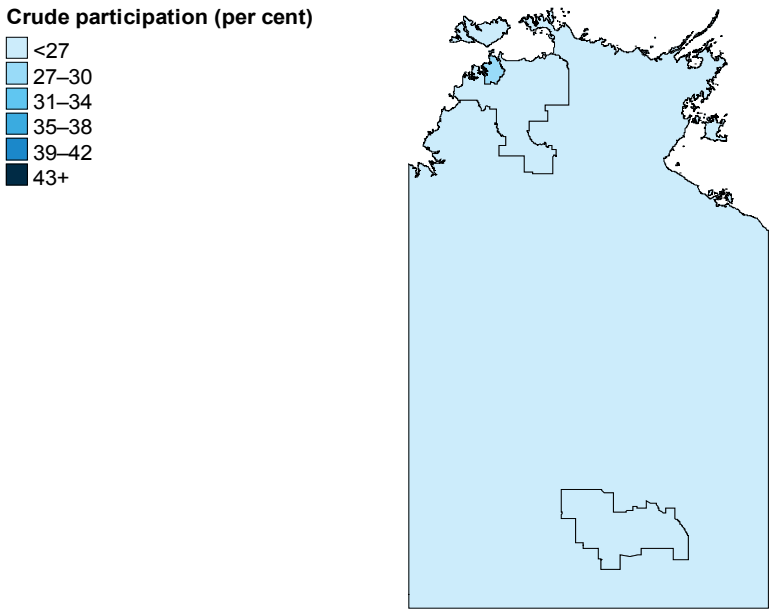


Notes

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 2013.

Figure A1.4g: Crude participation, by remoteness area, Australian Capital Territory, 2012–13



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 2013.

Figure A1.4h: Crude participation, by remoteness area, Northern Territory, 2012–13

Table A1.4: Crude participation, by socioeconomic status area, 2012–13

		Socioeconomic status area						
		1 (lowest)	2	3	4	5 (highest)	Unknown	Total
Males								
50 years	Number	7,286	7,932	8,288	8,952	9,235	631	42,324
	Per cent	22.9	24.3	25.2	26.7	28.3	25.2	25.5
55 years	Number	10,791	11,802	11,567	11,764	12,407	877	59,208
	Per cent	28.3	30.2	30.3	31.1	32.4	31.3	30.5
65 years	Number	9,189	10,417	9,341	9,096	9,620	791	48,454
	Per cent	37.4	40.6	39.4	39.9	40.5	37.2	39.5
Total	*Number*	*27,266*	*30,151*	*29,196*	*29,812*	*31,262*	*2,299*	*149,986*
	Per cent	*28.8*	*30.9*	*30.8*	*31.7*	*33.1*	*31.0*	*31.1*
Females								
50 years	Number	7,945	9,230	9,240	10,048	10,843	631	47,937
	Per cent	26.4	28.6	28.8	30.5	32.4	28.3	29.4
55 years	Number	12,485	13,911	13,678	14,218	15,120	859	70,271
	Per cent	33.4	35.7	35.4	37.0	38.0	35.3	35.9
65 years	Number	10,255	11,333	10,285	10,052	10,566	728	53,219
	Per cent	41.9	44.8	43.2	44.4	44.0	44.9	43.7
Total	*Number*	*30,685*	*34,474*	*33,203*	*34,318*	*36,529*	*2,218*	*171,427*
	Per cent	*33.4*	*35.7*	*35.2*	*36.5*	*37.6*	*35.3*	*35.7*
Persons								
50 years	Number	15,231	17,162	17,528	19,000	20,078	1,262	90,261
	Per cent	24.6	26.4	27.0	28.6	30.4	26.7	27.4
55 years	Number	23,276	25,713	25,245	25,982	27,527	1,736	129,479
	Per cent	30.8	33.0	32.9	34.0	35.3	33.2	33.2
65 years	Number	19,444	21,750	19,626	19,148	20,186	1,519	101,673
	Per cent	39.7	42.7	41.3	42.1	42.3	40.6	41.6
Total	**Number**	**57,951**	**64,625**	**62,399**	**64,130**	**67,791**	**4,517**	**321,413**
	Per cent	**31.1**	**33.3**	**33.0**	**34.1**	**35.3**	**33.0**	**33.4**

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 Australian Bureau of Statistics (ABS) Index of Relative Socio-economic Disadvantage (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 2013.

Table A1.5: Proportion of participants who indicated Aboriginal and Torres Strait Islander status, 2012–13

	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	301	0.7	40,172	94.9	1,851	4.4	42,324	1.7	93.1	5.2
55 years	429	0.7	56,802	95.9	1,977	3.3	59,208	1.5	93.4	5.1
65 years	236	0.5	46,346	95.6	1,872	3.9	48,454	1.0	94.2	4.9
Total	*966*	*0.6*	*143,320*	*95.6*	*5,700*	*3.8*	*149,986*	*1.5*	*93.5*	*5.1*
Females										
50 years	351	0.7	46,106	96.2	1,480	3.1	47,937	1.9	94.2	3.9
55 years	462	0.7	68,162	97.0	1,647	2.3	70,271	1.6	94.5	4.0
65 years	239	0.4	51,383	96.6	1,597	3.0	53,219	1.1	94.7	4.2
Total	*1,052*	*0.6*	*165,651*	*96.6*	*4,724*	*2.8*	*171,427*	*1.6*	*94.4*	*4.0*
Persons										
50 years	652	0.7	86,278	95.6	3,331	3.7	90,261	1.8	93.7	4.5
55 years	891	0.7	124,964	96.5	3,624	2.8	129,479	1.5	93.9	4.5
65 years	475	0.5	97,729	96.1	3,469	3.4	101,673	1.0	94.4	4.5
Total	**2,018**	**0.6**	**308,971**	**96.1**	**10,424**	**3.2**	**321,413**	**1.5**	**93.9**	**4.5**

Notes

1. National Bowel Cancer Screening Program (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 2013.

Table A1.6: Proportion of participants who indicated preferred language spoken at home, 2012–13

	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	5,799	13.7	36,525	86.3	42,324	16.4	78.3	5.3
55 years	7,952	13.4	51,256	86.6	59,208	15.8	79.1	5.1
65 years	5,182	10.7	43,272	89.3	48,454	14.5	80.8	4.7
Total	*18,933*	*12.6*	*131,053*	*87.4*	*149,986*	*15.7*	*79.2*	*5.1*
Females								
50 years	6,959	14.5	40,978	85.5	47,937	17.4	78.9	3.7
55 years	10,044	14.3	60,227	85.7	70,271	17.6	78.6	3.8
65 years	5,749	10.8	47,470	89.2	53,219	15.5	80.6	3.9
Total	*22,752*	*13.3*	*148,675*	*86.7*	*171,427*	*17.0*	*79.2*	*3.8*
Persons								
50 years	12,758	14.1	77,503	85.9	90,261	16.9	78.6	4.5
55 years	17,996	13.9	111,483	86.1	129,479	16.7	78.8	4.4
65 years	10,931	10.8	90,742	89.2	101,673	15.0	80.7	4.3
Total	**41,685**	**13.0**	**279,728**	**87.0**	**321,413**	**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 2013.

Table A1.7: Proportion of participants who indicated disability status, 2012–13

	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	1,526	3.6	36,948	87.3	3,850	9.1	42,324	3.1	91.0	5.9
55 years	2,319	3.9	52,013	87.8	4,876	8.2	59,208	3.9	90.5	5.6
65 years	3,197	6.6	41,410	85.5	3,847	7.9	48,454	8.1	86.7	5.2
Total	*7,042*	*4.7*	*130,371*	*86.9*	*12,573*	*8.4*	*149,986*	*4.7*	*89.7*	*5.6*
Females										
50 years	2,066	4.3	42,449	88.6	3,422	7.1	47,937	3.3	92.4	4.3
55 years	3,367	4.8	62,272	88.6	4,632	6.6	70,271	4.3	91.4	4.3
65 years	2,949	5.5	46,774	87.9	3,496	6.6	53,219	6.2	89.5	4.4
Total	*8,382*	*4.9*	*151,495*	*88.4*	*11,550*	*6.7*	*171,427*	*4.4*	*91.3*	*4.3*
Persons										
50 years	3,592	4.0	79,397	88.0	7,272	8.1	90,261	3.2	91.7	5.1
55 years	5,686	4.4	114,285	88.3	9,508	7.3	129,479	4.1	91.0	4.9
65 years	6,146	6.0	88,184	86.7	7,343	7.2	101,673	7.1	88.1	4.8
Total	**15,424**	**4.8**	**281,866**	**87.7**	**24,123**	**7.5**	**321,413**	**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 2013.

A2 Faecal occult blood test outcome tables

Table A2.1: FOBT results for correctly completed kits, by age and sex, 2012–13

	FOBT positive		FOBT negative		FOBT inconclusive		Total
	Number	Per cent	Number	Per cent	Number	Per cent	Number
Males							
50 years	2,852	6.9	38,720	93.1	22	0.1	41,594
55 years	4,369	7.5	53,940	92.5	32	0.1	58,341
65 years	5,051	10.6	42,687	89.4	15	—	47,753
Total	*12,272*	*8.3*	*135,347*	*91.6*	*69*	—	*147,688*
Females							
50 years	2,891	6.1	44,216	93.8	39	0.1	47,146
55 years	4,309	6.2	64,956	93.7	34	—	69,299
65 years	4,199	8.0	48,228	92.0	12	—	52,439
Total	*11,399*	*6.7*	*157,400*	*93.2*	*85*	*0.1*	*168,884*
Persons							
50 years	5,743	6.5	82,936	93.5	61	0.1	88,740
55 years	8,678	6.8	118,896	93.1	66	0.1	127,640
65 years	9,250	9.2	90,915	90.7	27	—	100,192
Total	**23,671**	**7.5**	**292,747**	**92.5**	**154**	**—**	**316,572**

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 1 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 2013.

Table A2.2: FOBT positivity rates, by age and sex, 2012–13

	Positive tests (number)	Valid results (number)	Positivity rate (per cent)
Males			
50 years	2,852	41,572	6.9
55 years	4,369	58,309	7.5
65 years	5,051	47,738	10.6
Total	*12,272*	*147,619*	*8.3*
Females			
50 years	2,891	47,107	6.1
55 years	4,309	69,265	6.2
65 years	4,199	52,427	8.0
Total	*11,399*	*168,799*	*6.8*
Persons			
50 years	5,743	88,679	6.5
55 years	8,678	127,574	6.8
65 years	9,250	100,165	9.2
Total	**23,671**	**316,418**	**7.5**

Note: Positivity rate 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 2013.

Table A2.3: FOBT positivity rates, by state and territory, 2012–13

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Positive tests	832	689	585	339	251	63	50	43	2,852
	Positivity rate	7.0	6.7	7.2	6.4	6.9	6.1	6.7	8.4	6.9
55 years	Positive tests	1,257	1,126	815	529	415	126	61	40	4,369
	Positivity rate	7.2	7.8	7.2	7.6	8.3	7.7	6.0	7.7	7.5
65 years	Positive tests	1,462	1,155	1,042	594	478	180	78	62	5,051
	Positivity rate	10.5	10.4	10.7	10.4	10.7	11.6	10.0	14.2	10.6
Total	*Positive tests*	*3,551*	*2,970*	*2,442*	*1,462*	*1,144*	*369*	*189*	*145*	*12,272*
	Positivity rate	*8.2*	*8.3*	*8.4*	*8.2*	*8.7*	*8.8*	*7.4*	*9.9*	*8.3*
Females										
50 years	Positive tests	804	771	567	344	255	72	42	36	2,891
	Positivity rate	6.1	6.4	6.2	5.9	6.2	5.4	5.4	6.7	6.1
55 years	Positive tests	1,312	1,128	783	458	411	109	73	35	4,309
	Positivity rate	6.4	6.5	5.9	5.7	6.6	5.5	6.0	6.7	6.2
65 years	Positive tests	1,238	1,033	793	457	438	136	72	32	4,199
	Positivity rate	8.1	8.2	7.4	7.7	8.5	8.2	8.2	8.7	8.0
Total	*Positive tests*	*3,354*	*2,932*	*2,143*	*1,259*	*1,104*	*317*	*187*	*103*	*11,399*
	Positivity rate	*6.8*	*7.0*	*6.5*	*6.4*	*7.2*	*6.4*	*6.5*	*7.2*	*6.8*
Persons										
50 years	Positive tests	1,636	1,460	1,152	683	506	135	92	79	5,743
	Positivity rate	6.5	6.5	6.7	6.2	6.5	5.7	6.0	7.5	6.5
55 years	Positive tests	2,569	2,254	1,598	987	826	235	134	75	8,678
	Positivity rate	6.8	7.1	6.5	6.6	7.4	6.5	6.0	7.2	6.8
65 years	Positive tests	2,700	2,188	1,835	1,051	916	316	150	94	9,250
	Positivity rate	9.2	9.3	9.0	9.0	9.5	9.9	9.0	11.7	9.2
Total	**Positive tests**	**6,905**	**5,902**	**4,585**	**2,721**	**2,248**	**686**	**376**	**248**	**23,671**
	Positivity rate	**7.5**	**7.6**	**7.4**	**7.2**	**7.9**	**7.5**	**6.9**	**8.6**	**7.5**

Notes

1. Positive tests equal the number of FOBTs that returned a positive result.
2. Positivity rate 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 2013.

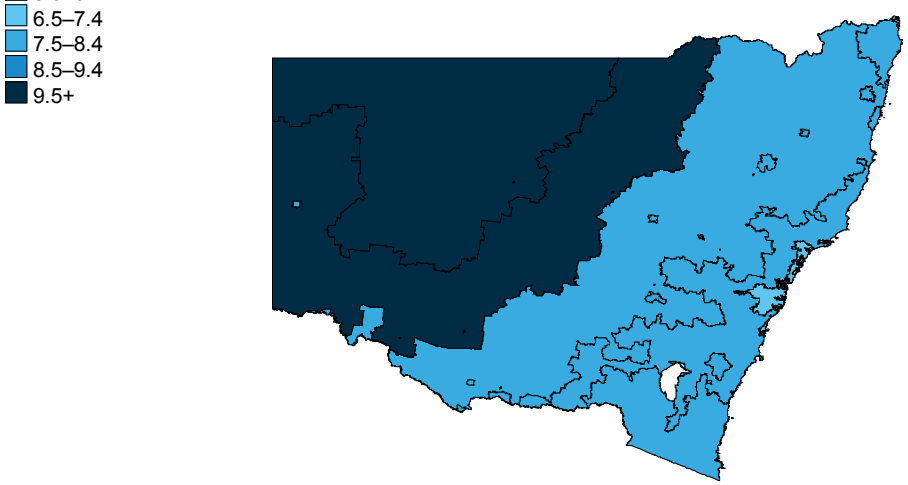
Table A2.4: FOBT positivity rates, by geographical region, 2012–13

		Remoteness area						
		Major cities	**Inner regional**	**Outer regional**	**Remote**	**Very remote**	**Unknown**	**Total**
Males								
50 years	Positive tests	1,922	520	308	48	18	35	2,852
	Positivity rate	6.8	6.7	7.4	8.9	8.9	6.9	6.9
55 years	Positive tests	2,806	922	506	56	25	53	4,369
	Positivity rate	7.3	7.7	8.2	7.2	8.8	7.6	7.5
65 years	Positive tests	3,088	1,150	628	80	31	73	5,051
	Positivity rate	10.4	10.4	11.4	13.5	14.1	11.4	10.6
Total	*Positive tests*	*7,817*	*2,592*	*1,443*	*184*	*75*	*161*	*12,272*
	Positivity rate	*8.1*	*8.4*	*9.1*	*9.6*	*10.4*	*8.7*	*8.3*
Females								
50 years	Positive tests	1,990	540	283	33	18	26	2,891
	Positivity rate	6.3	5.8	6.1	5.5	8.4	5.2	6.1
55 years	Positive tests	2,811	924	454	57	20	43	4,309
	Positivity rate	6.1	6.3	6.5	6.7	7.0	6.1	6.2
65 years	Positive tests	2,618	1,009	464	42	16	50	4,199
	Positivity rate	7.9	8.1	8.0	7.6	8.3	8.8	8.0
Total	*Positive tests*	*7,419*	*2,473*	*1,201*	*133*	*54*	*119*	*11,399*
	Positivity rate	*6.7*	*6.8*	*6.9*	*6.6*	*7.8*	*6.7*	*6.8*
Persons								
50 years	Positive tests	3,912	1,060	591	81	37	61	5,743
	Positivity rate	6.5	6.2	6.7	7.1	8.6	6.0	6.5
55 years	Positive tests	5,618	1,846	961	113	45	96	8,678
	Positivity rate	6.7	6.9	7.3	6.9	7.9	6.9	6.8
65 years	Positive tests	5,706	2,160	1,092	122	47	123	9,250
	Positivity rate	9.1	9.2	9.7	10.6	11.4	10.2	9.2
Total	**Positive tests**	**15,236**	**5,065**	**2,644**	**317**	**128**	**280**	**23,671**
	Positivity rate	**7.4**	**7.6**	**7.9**	**8.0**	**9.1**	**7.7**	**7.5**

Notes

1. Positive tests equal the number of FOBTs that returned a positive result.
2. Positivity rate 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.
3. The residential postcodes of participants were mapped to remoteness areas in the 2011 Australian Statistical Geography Standard remoteness structure through a postal area correspondence. Those that could not be mapped were included in the 'Unknown' column.
4. Discrepancies may occur between totals and sums of the component items due to rounding—see 'Geographical classification', Appendix C.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

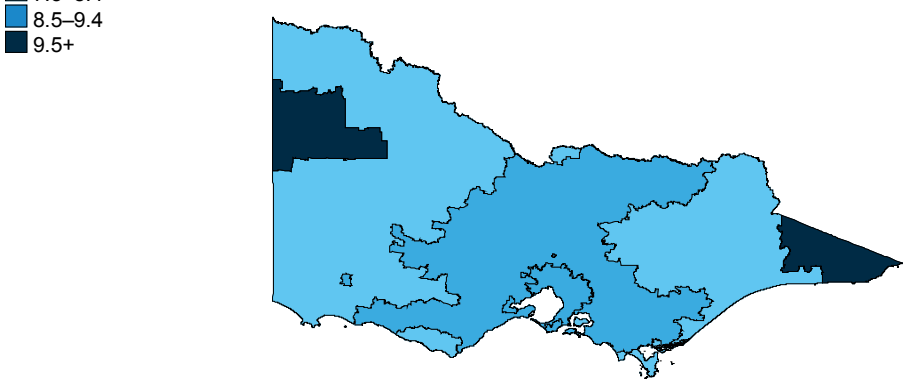


Notes

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

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A2.1a: FOBT positivity, by remoteness area, New South Wales, 2012–13

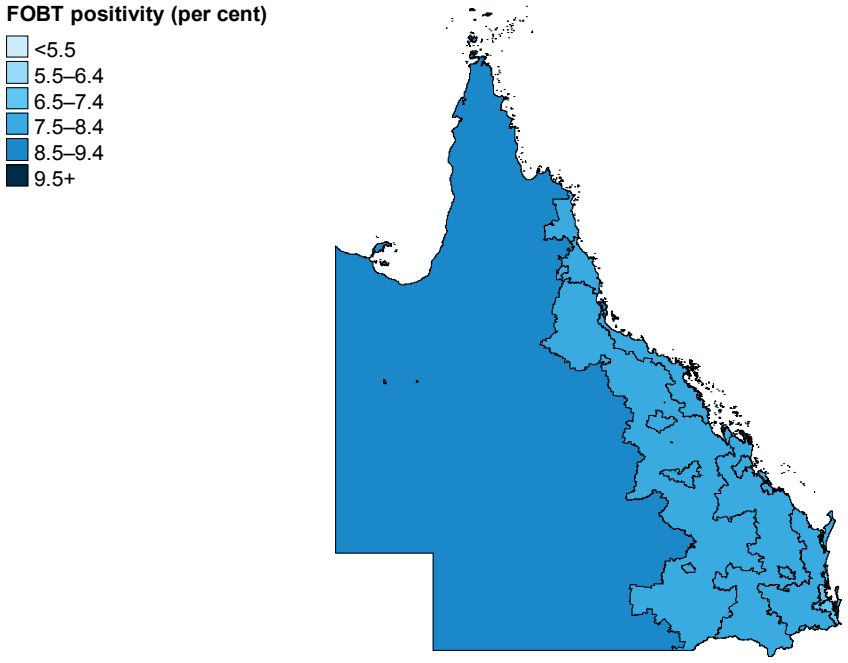


Notes

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

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A2.1b: FOBT positivity, by remoteness area, Victoria, 2012–13

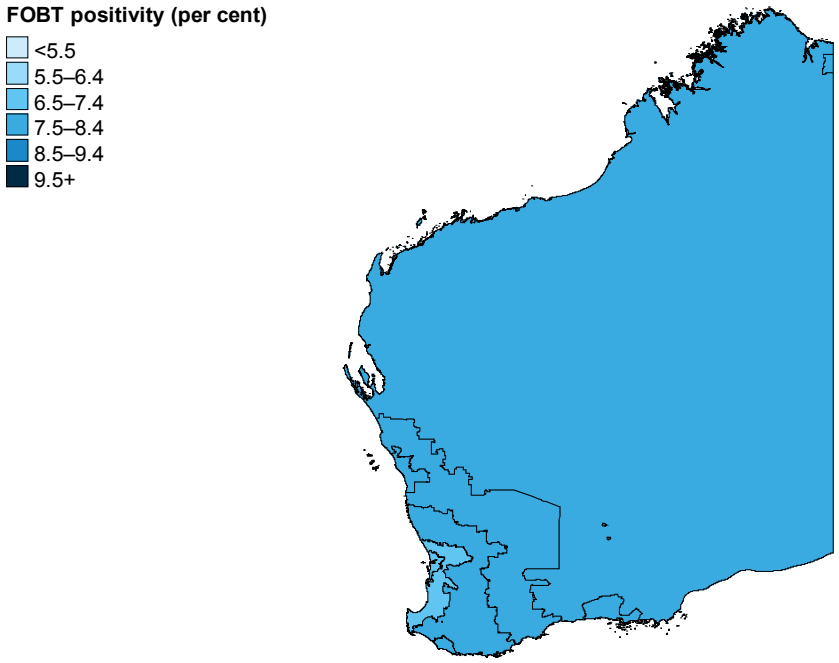


Notes

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

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A2.1c: FOBT positivity, by remoteness area, Queensland, 2012–13

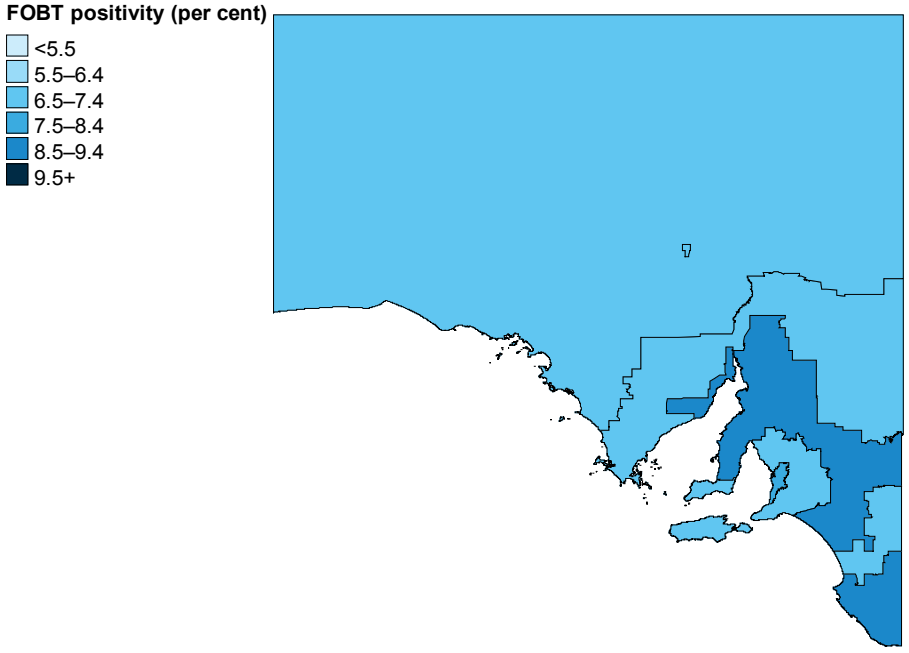


Notes

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

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A2.1d: FOBT positivity, by remoteness area, Western Australia, 2012–13

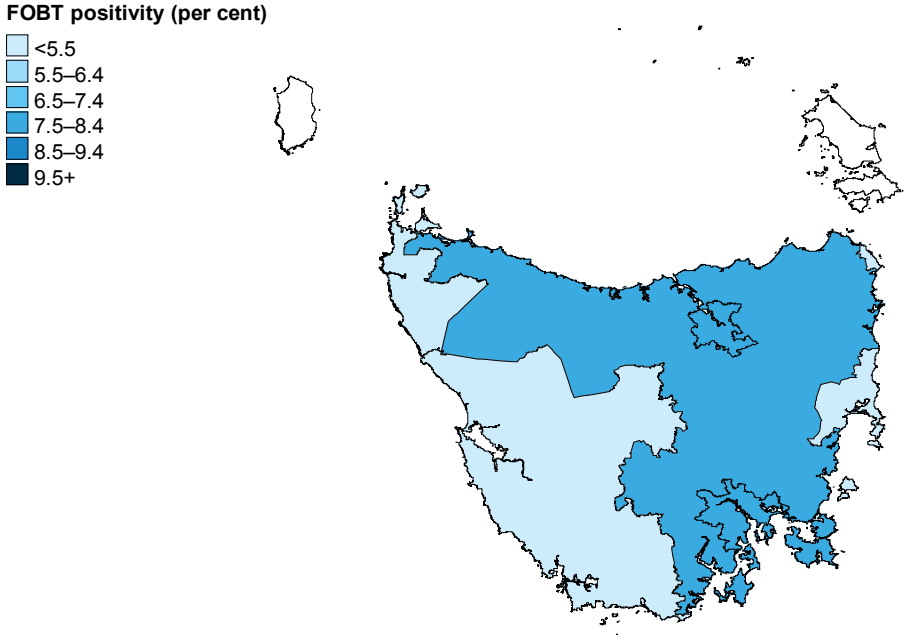


Notes

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

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A2.1e: FOBT positivity, by remoteness area, South Australia, 2012–13

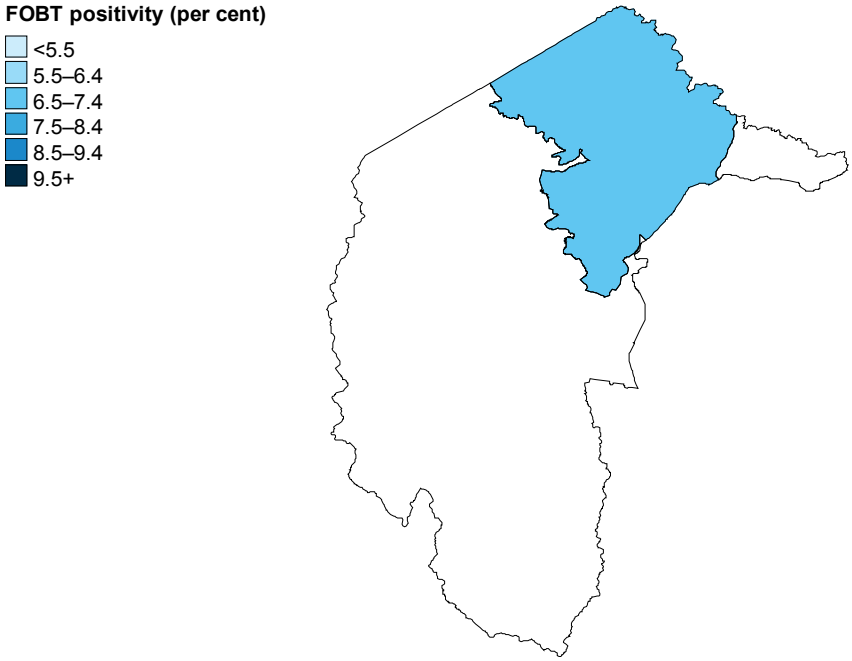


Notes

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

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A2.1f: FOBT positivity, by remoteness area, Tasmania, 2012–13

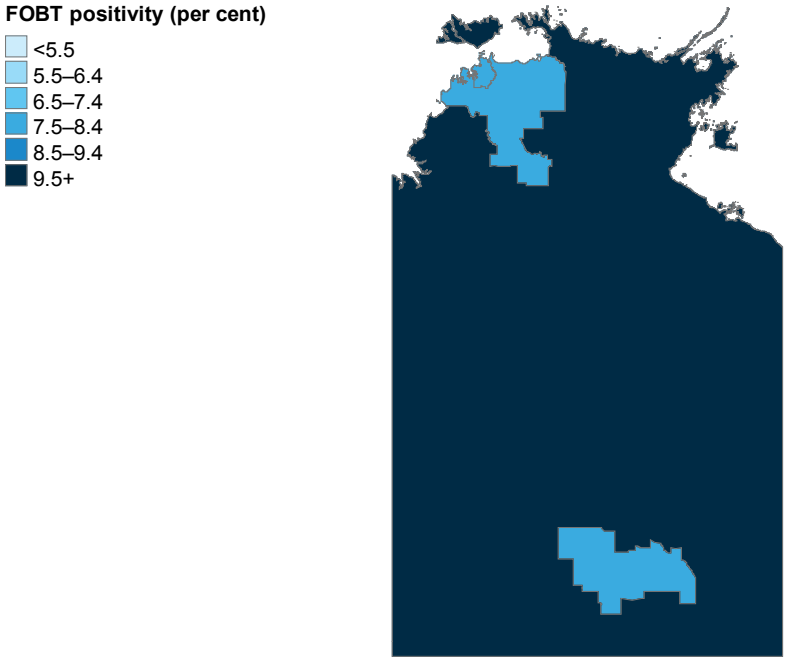


Notes

1. Remoteness areas left unshaded 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 1 decimal place.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A2.1g: FOBT positivity, by remoteness area, Australian Capital Territory, 2012–13



Notes

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

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A2.1h: FOBT positivity, by remoteness area, Northern Territory, 2012–13

Table A2.5: FOBT positivity rates, by socioeconomic status area, 2012–13

		Socioeconomic status area						
		1 (lowest)	2	3	4	5 (highest)	Unknown	Total
Males								
50 years	Positive tests	559	572	556	578	546	41	2,852
	Positivity rate	7.9	7.4	6.8	6.6	6.0	6.7	6.9
55 years	Positive tests	916	919	912	814	746	62	4,369
	Positivity rate	8.6	7.9	8.0	7.0	6.1	7.2	7.5
65 years	Positive tests	1,102	1,181	1,001	870	813	84	5,051
	Positivity rate	12.2	11.5	10.9	9.7	8.6	10.8	10.6
Total	*Positive tests*	*2,577*	*2,672*	*2,469*	*2,262*	*2,105*	*187*	*12,272*
	Positivity rate	*9.6*	*9.0*	*8.6*	*7.7*	*6.8*	*8.3*	*8.3*
Females								
50 years	Positive tests	540	581	561	573	604	32	2,891
	Positivity rate	6.9	6.4	6.2	5.8	5.7	5.2	6.1
55 years	Positive tests	869	909	828	847	805	51	4,309
	Positivity rate	7.1	6.6	6.1	6.0	5.4	6.0	6.2
65 years	Positive tests	928	913	807	758	731	62	4,199
	Positivity rate	9.2	8.2	8.0	7.6	7.0	8.7	8.0
Total	*Positive tests*	*2,337*	*2,403*	*2,196*	*2,178*	*2,140*	*145*	*11,399*
	Positivity rate	*7.8*	*7.1*	*6.7*	*6.4*	*5.9*	*6.7*	*6.8*
Persons								
50 years	Positive tests	1,099	1,153	1,117	1,151	1,150	73	5,743
	Positivity rate	7.4	6.8	6.5	6.2	5.8	6.0	6.5
55 years	Positive tests	1,785	1,828	1,740	1,661	1,551	113	8,678
	Positivity rate	7.8	7.2	7.0	6.5	5.7	6.6	6.8
65 years	Positive tests	2,030	2,094	1,808	1,628	1,544	146	9,250
	Positivity rate	10.6	9.8	9.3	8.6	7.8	9.8	9.2
Total	**Positive tests**	**4,914**	**5,075**	**4,665**	**4,440**	**4,245**	**332**	**23,671**
	Positivity rate	**8.6**	**8.0**	**7.6**	**7.0**	**6.3**	**7.5**	**7.5**

Notes

1. Positive tests equal the number of FOBTs that returned a positive result.
2. Positivity rate 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.
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 2013.

Table A2.6: FOBT positivity rates, by Aboriginal and Torres Strait Islander status, 2012–13

		Indigenous	Non-Indigenous	Not stated	Total
Males					
50 years	Positive tests	22	2,673	157	2,852
	Positivity rate	7.5	6.8	8.9	6.9
55 years	Positive tests	57	4,135	177	4,369
	Positivity rate	14.0	7.4	9.4	7.5
65 years	Positive tests	32	4,795	224	5,051
	Positivity rate	13.9	10.5	12.6	10.6
Total	*Positive tests*	*111*	*11,603*	*558*	*12,272*
	Positivity rate	*11.9*	*8.2*	*10.3*	*8.3*
Females					
50 years	Positive tests	23	2,762	106	2,891
	Positivity rate	6.8	6.1	7.5	6.1
55 years	Positive tests	43	4,150	116	4,309
	Positivity rate	9.6	6.2	7.4	6.2
65 years	Positive tests	29	4,012	158	4,199
	Positivity rate	12.5	7.9	10.6	8.0
Total	*Positive tests*	*95*	*10,924*	*380*	*11,399*
	Positivity rate	*9.3*	*6.7*	*8.5*	*6.8*
Persons					
50 years	Positive tests	45	5,435	263	5,743
	Positivity rate	7.2	6.4	8.3	6.5
55 years	Positive tests	100	8,285	293	8,678
	Positivity rate	11.7	6.7	8.5	6.8
65 years	Positive tests	61	8,807	382	9,250
	Positivity rate	13.2	9.1	11.7	9.2
Total	**Positive tests**	**206**	**22,527**	**938**	**23,671**
	Positivity rate	**10.6**	**7.4**	**9.5**	**7.5**

Notes

1. Positive tests equal the number of FOBTs that returned a positive result.
2. Positivity rate 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.
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 2013.

Table A2.7: FOBT positivity rates, by language spoken at home, 2012–13

		Language other than English	English	Total
Males				
50 years	Positive tests	421	2,431	2,852
	Positivity rate	7.4	6.8	6.9
55 years	Positive tests	630	3,739	4,369
	Positivity rate	8.0	7.4	7.5
65 years	Positive tests	569	4,482	5,051
	Positivity rate	11.2	10.5	10.6
Total	*Positive tests*	*1,620*	*10,652*	*12,272*
	Positivity rate	*8.7*	*8.3*	*8.3*
Females				
50 years	Positive tests	470	2,421	2,891
	Positivity rate	6.9	6.0	6.1
55 years	Positive tests	674	3,635	4,309
	Positivity rate	6.8	6.1	6.2
65 years	Positive tests	484	3,715	4,199
	Positivity rate	8.6	7.9	8.0
Total	*Positive tests*	*1,628*	*9,771*	*11,399*
	Positivity rate	*7.3*	*6.7*	*6.8*
Persons				
50 years	Positive tests	891	4,852	5,743
	Positivity rate	7.1	6.4	6.5
55 years	Positive tests	1,304	7,374	8,678
	Positivity rate	7.4	6.7	6.8
65 years	Positive tests	1,053	8,197	9,250
	Positivity rate	9.9	9.2	9.2
Total	**Positive tests**	**3,248**	**20,423**	**23,671**
	Positivity rate	**7.9**	**7.4**	**7.5**

Notes

1. Positive tests equal the number of FOBTs that returned a positive result.
2. Positivity rate 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.
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 2013.

Table A2.8: FOBT positivity rates, by disability status, 2012–13

		Severe or profound activity limitation	No severe or profound activity limitation	Not stated	Total
Males					
50 years	Positive tests	161	2,444	247	2,852
	Positivity rate	10.9	6.7	6.7	6.9
55 years	Positive tests	283	3,729	357	4,369
	Positivity rate	12.5	7.3	7.6	7.5
65 years	Positive tests	490	4,201	360	5,051
	Positivity rate	15.6	10.3	9.7	10.6
Total	*Positive tests*	*934*	*10,374*	*964*	*12,272*
	Positivity rate	*13.6*	*8.1*	*7.9*	*8.3*
Females					
50 years	Positive tests	198	2,494	199	2,891
	Positivity rate	9.8	6.0	6.1	6.1
55 years	Positive tests	299	3,739	271	4,309
	Positivity rate	9.1	6.1	6.0	6.2
65 years	Positive tests	345	3,589	265	4,199
	Positivity rate	12.1	7.8	7.9	8.0
Total	*Positive tests*	*842*	*9,822*	*735*	*11,399*
	Positivity rate	*10.3*	*6.6*	*6.6*	*6.8*
Persons					
50 years	Positive tests	359	4,938	446	5,743
	Positivity rate	10.3	6.3	6.4	6.5
55 years	Positive tests	582	7,468	628	8,678
	Positivity rate	10.5	6.6	6.8	6.8
65 years	Positive tests	835	7,790	625	9,250
	Positivity rate	14.0	8.9	8.8	9.2
Total	**Positive tests**	**1,776**	**20,196**	**1,699**	**23,671**
	Positivity rate	**11.8**	**7.3**	**7.3**	**7.5**

Notes

1. Positive tests equal the number of FOBTs that returned a positive result.
2. Positivity rate 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.
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 2013.

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

Table A3.1: Crude PHCP follow-up after a positive FOBT result, by state and territory, 2012–13

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Number	435	311	329	185	128	39	18	10	1,455
	Per cent	52.3	45.1	56.2	54.6	51.0	61.9	n.p.	n.p.	51.0
55 years	Number	748	546	452	309	257	72	40	18	2,442
	Per cent	59.5	48.5	55.5	58.4	61.9	57.1	n.p.	n.p.	55.9
65 years	Number	884	622	639	359	294	106	43	27	2,974
	Per cent	60.5	53.9	61.3	60.4	61.5	58.9	n.p.	n.p.	58.9
Total	*Number*	*2,067*	*1,479*	*1,420*	*853*	*679*	*217*	*101*	*55*	*6,871*
	Per cent	*58.2*	*49.8*	*58.1*	*58.3*	*59.4*	*58.8*	*53.4*	*37.9*	*56.0*
Females										
50 years	Number	473	398	353	208	160	42	23	18	1,675
	Per cent	58.8	51.6	62.3	60.5	62.7	n.p.	n.p.	n.p.	57.9
55 years	Number	826	581	484	301	257	66	33	17	2,565
	Per cent	63.0	51.5	61.8	65.7	62.5	60.6	n.p.	n.p.	59.5
65 years	Number	785	563	528	288	303	84	40	19	2,610
	Per cent	63.4	54.5	66.6	63.0	69.2	61.8	n.p.	n.p.	62.2
Total	*Number*	*2,084*	*1,542*	*1,365*	*797*	*720*	*192*	*96*	*54*	*6,850*
	Per cent	*62.1*	*52.6*	*63.7*	*63.3*	*65.2*	*60.6*	*51.3*	*52.4*	*60.1*
Persons										
50 years	Number	908	709	682	393	288	81	41	28	3,130
	Per cent	55.5	48.6	59.2	57.5	56.9	60.0	n.p.	n.p.	54.5
55 years	Number	1,574	1,127	936	610	514	138	73	35	5,007
	Per cent	61.3	50.0	58.6	61.8	62.2	58.7	54.5	n.p.	57.7
65 years	Number	1,669	1,185	1,167	647	597	190	83	46	5,584
	Per cent	61.8	54.2	63.6	61.6	65.2	60.1	55.3	n.p.	60.4
Total	**Number**	**4,151**	**3,021**	**2,785**	**1,650**	**1,399**	**409**	**197**	**109**	**13,721**
	Per cent	**60.1**	**51.2**	**60.7**	**60.6**	**62.2**	**59.6**	**52.4**	**44.0**	**58.0**

Notes

1. Percentages equal the number of people having consulted a primary health-care practitioner (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.

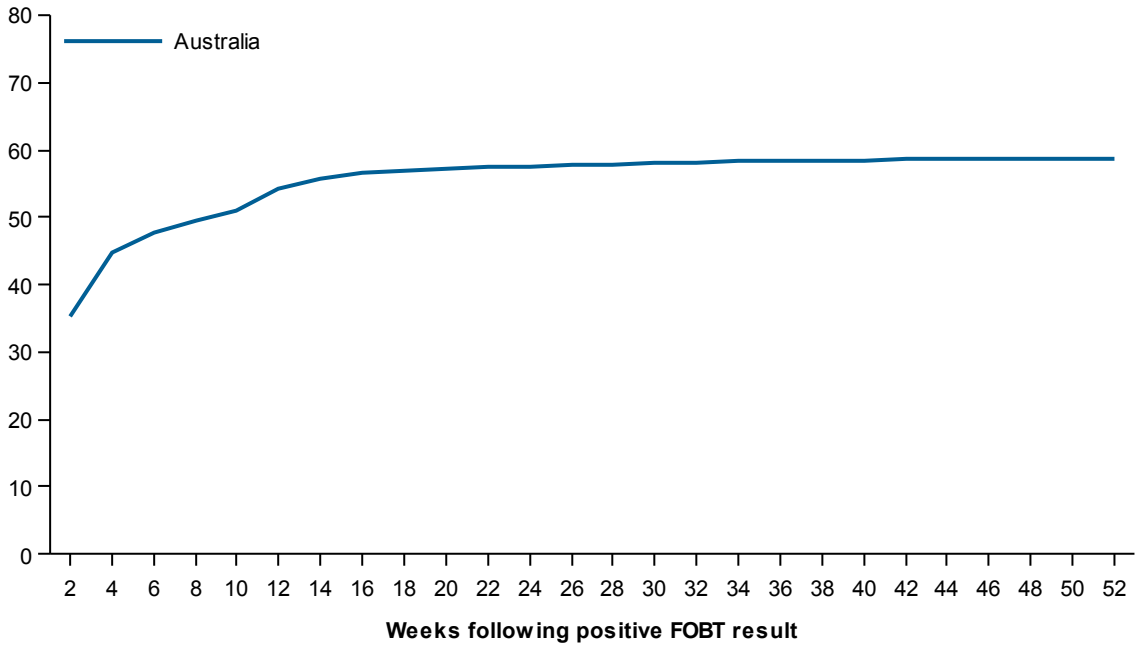
Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Table A3.2: Kaplan–Meier PHCP follow-up at 26 and 52 weeks after a positive FOBT, by state and territory, 2012–13

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
26 weeks									
PHCP follow-up (per cent)	59.5	51.1	60.7	60.5	61.7	59.2	51.3	44.5	57.7
95% confidence interval	58.3–60.7	49.8–52.4	59.2–62.1	58.6–62.3	59.7–63.7	55.5–62.9	46.2–56.4	38.2–50.8	57.0–58.3
52 weeks									
PHCP follow-up (per cent)	61.0	52.0	61.1	61.5	62.7	60.1	53.2	45.3	58.7
95% confidence interval	59.8–62.2	50.7–53.3	59.7–62.6	59.6–63.3	60.6–64.7	56.4–63.8	48.1–58.4	38.9–51.6	58.0–59.3

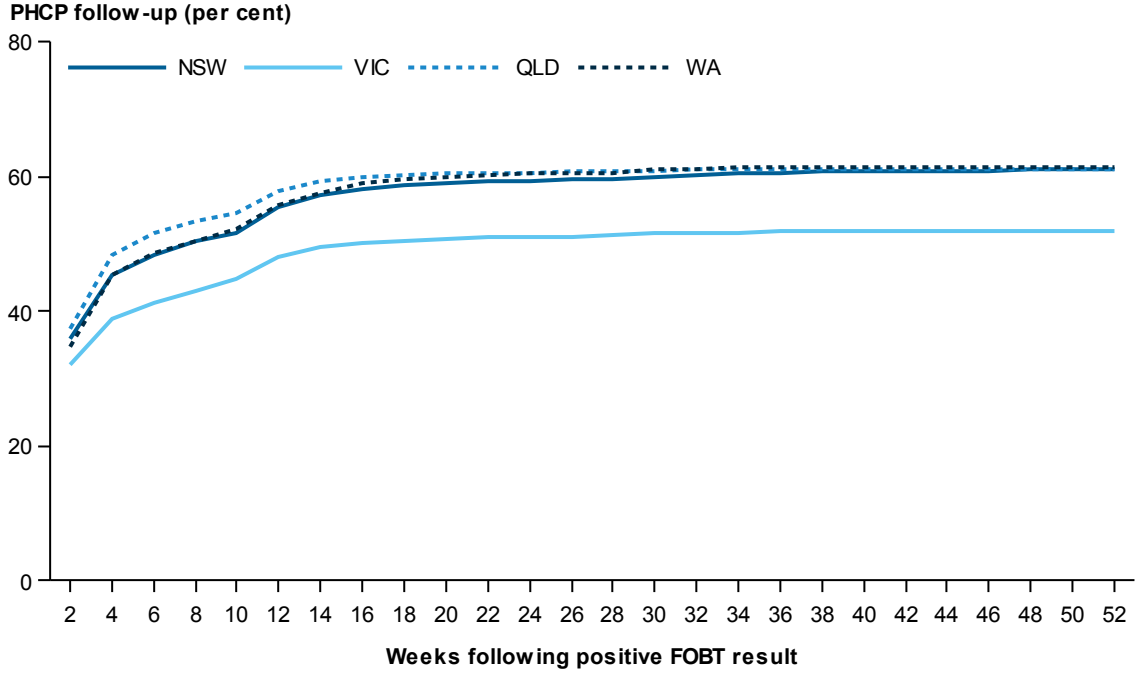
Note: PHCP follow-up rates equal the estimated Kaplan–Meier follow-up rate of people who consulted a PHCP as a proportion of the total number of people with positive FOBT results.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.



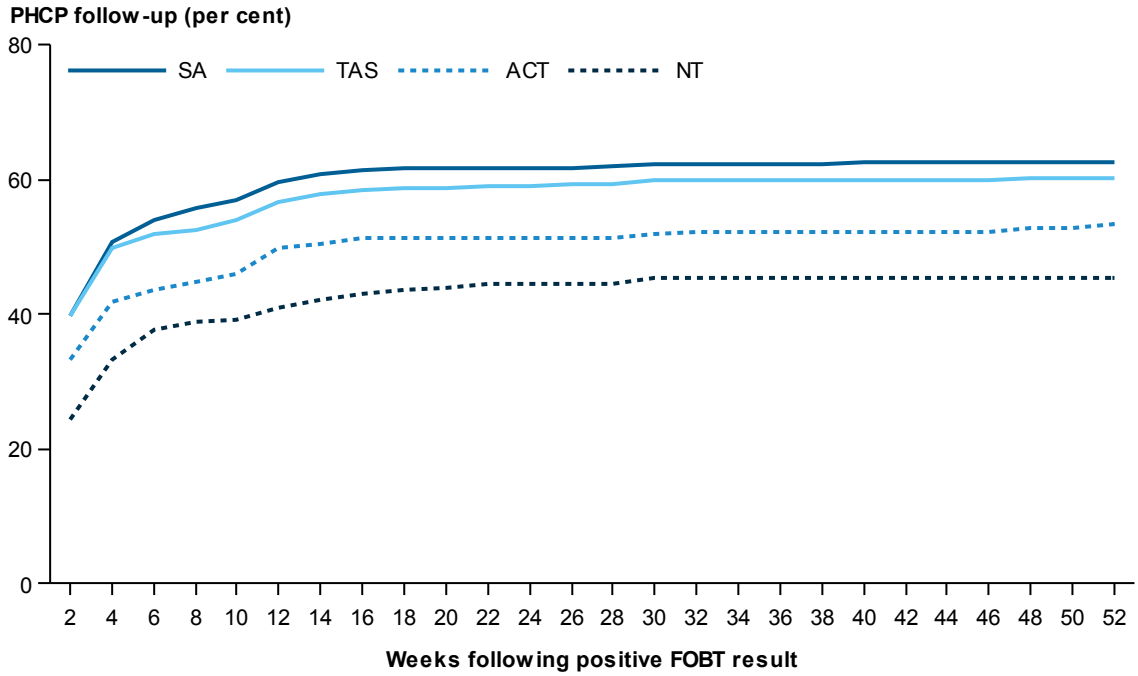
Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A3.1a: PHCP follow-up rate after positive FOBT using Kaplan–Meier estimates, Australia, 2012–13



Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A3.1b: PHCP follow-up rate after positive FOBT using Kaplan–Meier estimates, New South Wales, Victoria, Queensland and Western Australia, 2012–13



Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A3.1c: PHCP follow-up rate after positive FOBT using Kaplan–Meier estimates, South Australia, Tasmania, Australian Capital Territory and Northern Territory, 2012–13

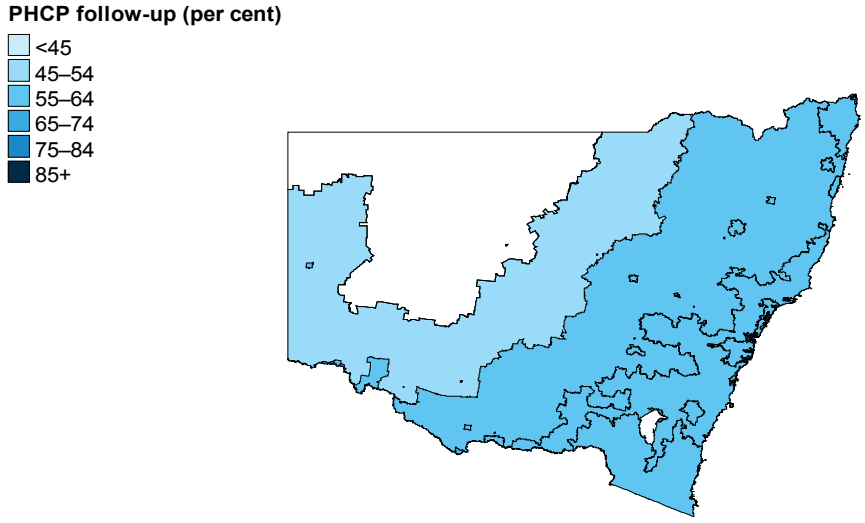
Table A3.3: Crude PHCP follow-up after a positive FOBT result, by remoteness area, 2012–13

		Remoteness area						
		Major cities	**Inner regional**	**Outer regional**	**Remote**	**Very remote**	**Unknown**	**Total**
Males								
50 years	Number	974	280	146	27	11	17	1,455
	Per cent	50.7	53.9	47.3	n.p.	n.p.	n.p.	51.0
55 years	Number	1,546	540	291	23	10	32	2,442
	Per cent	55.1	58.5	57.5	n.p.	n.p.	n.p.	55.9
65 years	Number	1,800	682	384	49	18	42	2,974
	Per cent	58.3	59.3	61.0	n.p.	n.p.	n.p.	58.9
Total	*Number*	*4,320*	*1,502*	*821*	*99*	*38*	*91*	*6,871*
	Per cent	*55.3*	*57.9*	*56.9*	*53.9*	*n.p.*	*56.5*	*56.0*
Females								
50 years	Number	1,132	320	184	17	7	15	1,675
	Per cent	56.9	59.3	65.1	n.p.	n.p.	n.p.	57.9
55 years	Number	1,635	581	281	32	9	27	2,565
	Per cent	58.2	62.9	61.9	n.p.	n.p.	n.p.	59.5
65 years	Number	1,611	635	298	25	10	31	2,610
	Per cent	61.6	62.9	64.2	n.p.	n.p.	n.p.	62.2
Total	*Number*	*4,379*	*1,536*	*763*	*74*	*26*	*73*	*6,850*
	Per cent	*59.0*	*62.1*	*63.5*	*55.4*	*n.p.*	*61.3*	*60.1*
Persons								
50 years	Number	2,106	601	330	44	17	32	3,130
	Per cent	53.8	56.7	55.8	n.p.	n.p.	n.p.	54.5
55 years	Number	3,181	1,120	572	55	19	59	5,007
	Per cent	56.6	60.7	59.6	48.4	n.p.	n.p.	57.7
65 years	Number	3,411	1,317	681	75	27	73	5,584
	Per cent	59.8	61.0	62.4	60.9	n.p.	59.3	60.4
Total	**Number**	**8,699**	**3,038**	**1,584**	**173**	**64**	**164**	**13,721**
	Per cent	**57.1**	**60.0**	**59.9**	**54.6**	**49.5**	**58.6**	**58.0**

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 Geography Standard remoteness structure through a postal area correspondence. Those that could not be mapped were included in the 'Unknown' column.
4. Discrepancies may occur between totals and sums of the component items due to rounding—see 'Geographical classification', Appendix C.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

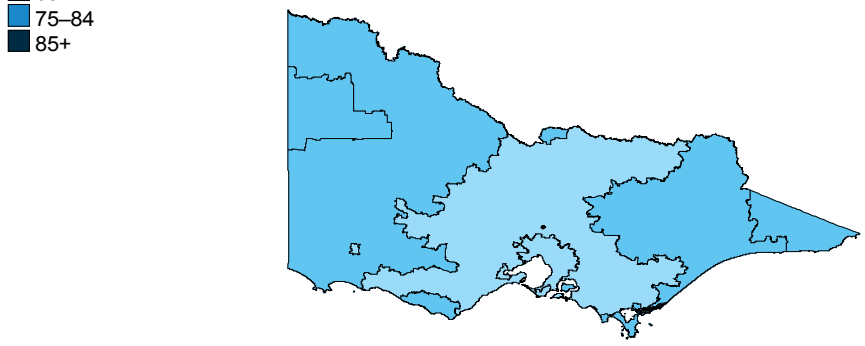


Notes

1. Remoteness areas left unshaded 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 2013.

Figure A3.2a: PHCP follow-up, by remoteness area, New South Wales, 2012–13

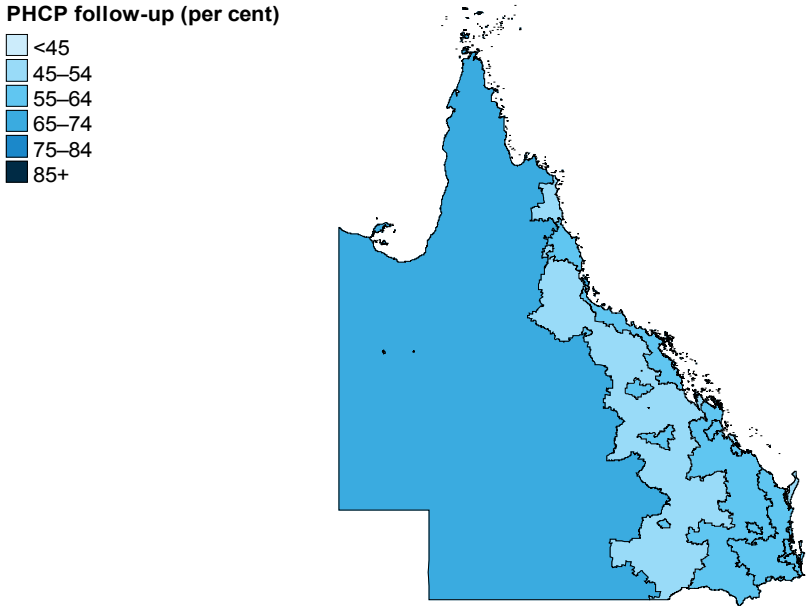


Notes

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 2013.

Figure A3.2b: PHCP follow-up, by remoteness area, Victoria, 2012–13

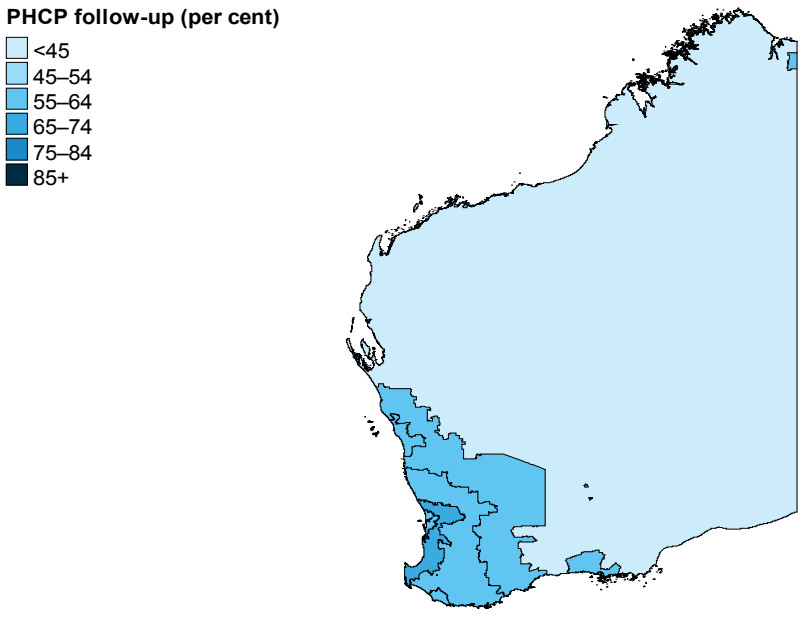


Notes

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 2013.

Figure A3.2c: PHCP follow-up, by remoteness area, Queensland, 2012–13

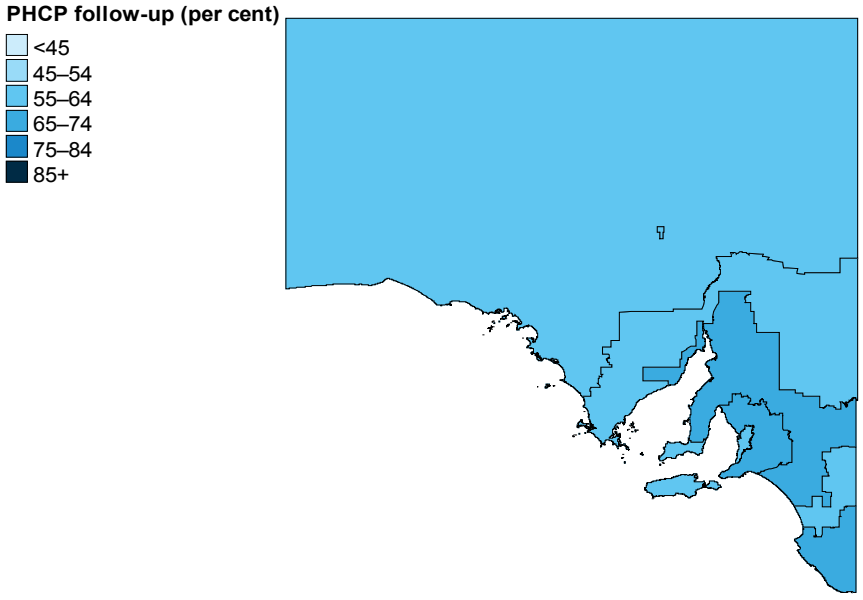


Notes

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 2013.

Figure A3.2d: PHCP follow-up, by remoteness area, Western Australia, 2012–13

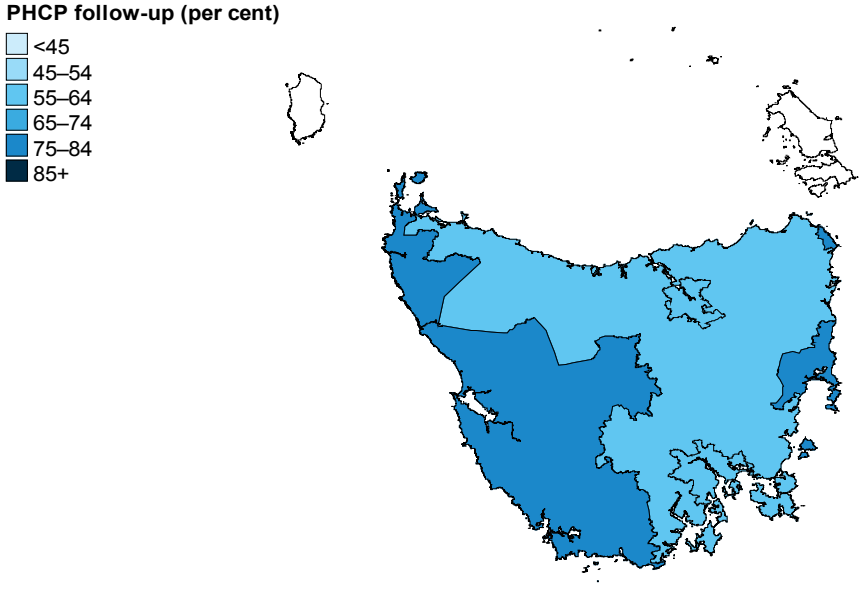


Notes

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 2013.

Figure A3.2e: PHCP follow-up, by remoteness area, South Australia, 2012–13

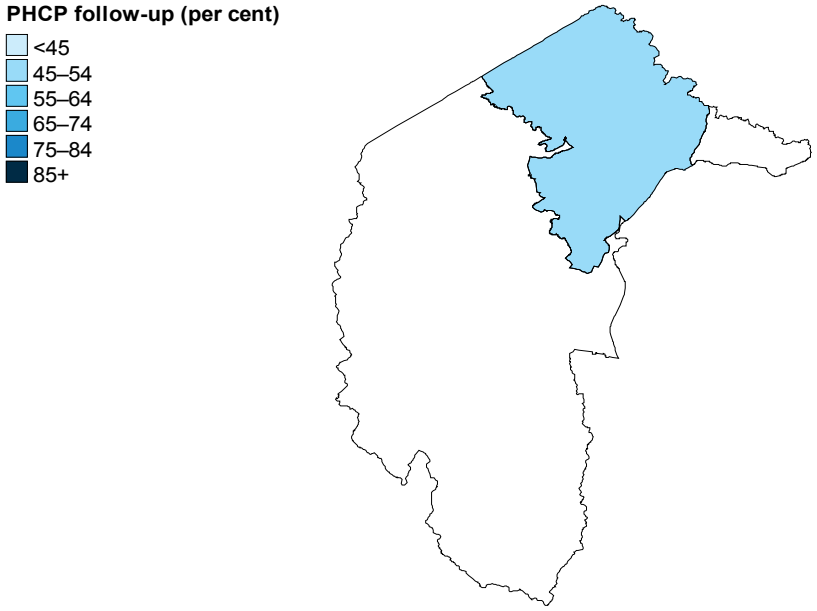


Notes

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 2013.

Figure A3.2f: PHCP follow-up, by remoteness area, Tasmania, 2012–13

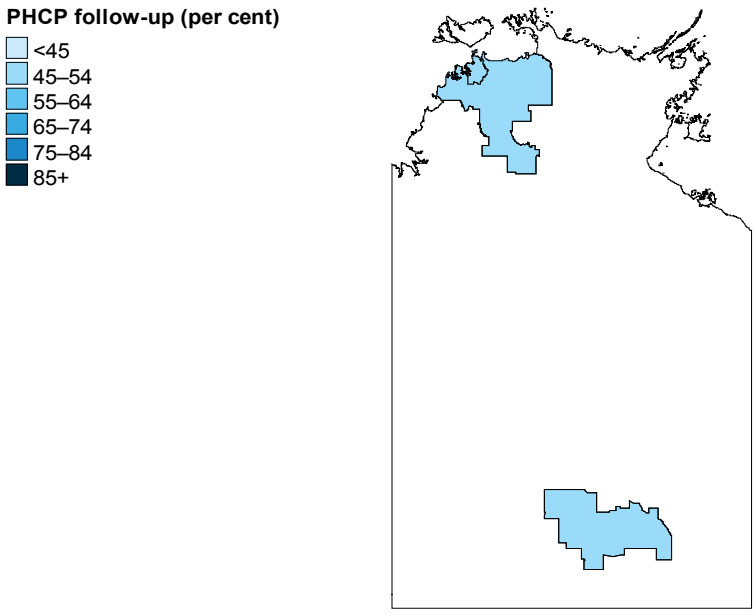


Notes

1. Remoteness areas left unshaded 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 2013.

Figure A3.2g: PHCP follow-up, by remoteness area, Australian Capital Territory, 2012–13



Notes

1. Remoteness areas left unshaded 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 2013.

Figure A3.2h: PHCP follow-up, by remoteness area, Northern Territory, 2012–13

Table A3.4: Crude PHCP follow-up after a positive FOBT result, by socioeconomic status area, 2012–13

		Socioeconomic status area						
		1 (lowest)	2	3	4	5 (highest)	Unknown	Total
Males								
50 years	Number	299	298	285	293	258	22	1,455
	Per cent	53.5	52.1	51.3	50.7	47.3	n.p.	51.0
55 years	Number	508	514	517	445	420	38	2,442
	Per cent	55.5	55.9	56.7	54.7	56.3	n.p.	55.9
65 years	Number	653	690	594	512	477	48	2,974
	Per cent	59.3	58.4	59.3	58.9	58.7	n.p.	58.9
Total	*Number*	*1,460*	*1,502*	*1,396*	*1,250*	*1,155*	*108*	*6,871*
	Per cent	*56.7*	*56.2*	*56.5*	*55.3*	*54.9*	*57.8*	*56.0*
Females								
50 years	Number	306	329	312	336	373	19	1,675
	Per cent	56.7	56.6	55.6	58.6	61.8	n.p.	57.9
55 years	Number	514	568	496	490	465	32	2,565
	Per cent	59.1	62.5	59.9	57.9	57.8	n.p.	59.5
65 years	Number	580	575	492	465	462	36	2,610
	Per cent	62.5	63.0	61.0	61.3	63.2	n.p.	62.2
Total	*Number*	*1,400*	*1,472*	*1,300*	*1,291*	*1,300*	*87*	*6,850*
	Per cent	*59.9*	*61.3*	*59.2*	*59.3*	*60.7*	*60.0*	*60.1*
Persons								
50 years	Number	605	627	597	629	631	41	3,130
	Per cent	55.1	54.4	53.4	54.6	54.9	n.p.	54.5
55 years	Number	1,022	1,082	1,013	935	885	70	5,007
	Per cent	57.3	59.2	58.2	56.3	57.1	61.9	57.7
65 years	Number	1,233	1,265	1,086	977	939	84	5,584
	Per cent	60.7	60.4	60.1	60.0	60.8	57.5	60.4
Total	**Number**	**2,860**	**2,974**	**2,696**	**2,541**	**2,455**	**195**	**13,721**
	Per cent	**58.2**	**58.6**	**57.8**	**57.2**	**57.8**	**58.7**	**58.0**

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 2013.

Table A3.5: Crude PHCP follow-up after a positive FOBT result, by Aboriginal and Torres Strait Islander status, 2012–13

		Indigenous	Non-indigenous	Not stated	Total
Males					
50 years	Number	12	1,414	29	1,455
	Per cent	n.p.	52.9	18.5	51.0
55 years	Number	33	2,384	25	2,442
	Per cent	n.p.	57.7	14.1	55.9
65 years	Number	18	2,912	44	2,974
	Per cent	n.p.	60.7	19.6	58.9
Total	*Number*	*63*	*6,710*	*98*	*6,871*
	Per cent	*56.8*	*57.8*	*17.6*	*56.0*
Females					
50 years	Number	17	1,635	23	1,675
	Per cent	n.p.	59.2	21.7	57.9
55 years	Number	21	2,516	28	2,565
	Per cent	n.p.	60.6	24.1	59.5
65 years	Number	15	2,539	56	2,610
	Per cent	n.p.	63.3	35.4	62.2
Total	*Number*	*53*	*6,690*	*107*	*6,850*
	Per cent	*n.p.*	*61.2*	*28.2*	*60.1*
Persons					
50 years	Number	29	3,049	52	3,130
	Per cent	n.p.	56.1	19.8	54.5
55 years	Number	54	4,900	53	5,007
	Per cent	54.0	59.1	18.1	57.7
65 years	Number	33	5,451	100	5,584
	Per cent	n.p.	61.9	26.2	60.4
Total	**Number**	**116**	**13,400**	**205**	**13,721**
	Per cent	**56.3**	**59.5**	**21.9**	**58.0**

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 2013.

Table A3.6: Crude PHCP follow-up after a positive FOBT result, by language spoken at home, 2012–13

		Language other than English	English	Total
Males				
50 years	Number	209	1,246	1,455
	Per cent	49.6	51.3	51.0
55 years	Number	354	2,088	2,442
	Per cent	56.2	55.8	55.9
65 years	Number	346	2,628	2,974
	Per cent	60.8	58.6	58.9
Total	*Number*	*909*	*5,962*	*6,871*
	Per cent	*56.1*	*56.0*	*56.0*
Females				
50 years	Number	269	1,406	1,675
	Per cent	57.2	58.1	57.9
55 years	Number	380	2,185	2,565
	Per cent	56.4	60.1	59.5
65 years	Number	268	2,342	2,610
	Per cent	55.4	63.0	62.2
Total	*Number*	*917*	*5,933*	*6,850*
	Per cent	*56.3*	*60.7*	*60.1*
Persons				
50 years	Number	478	2,652	3,130
	Per cent	53.6	54.7	54.5
55 years	Number	734	4,273	5,007
	Per cent	56.3	57.9	57.7
65 years	Number	614	4,970	5,584
	Per cent	58.3	60.6	60.4
Total	**Number**	**1,826**	**11,895**	**13,721**
	Per cent	**56.2**	**58.2**	**58.0**

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 2013.

Table A3.7: Crude PHCP follow-up after a positive FOBT result, by disability status, 2012–13

		Severe or profound activity limitation	No severe or profound activity limitation	Not stated	Total
Males					
50 years	Number	94	1,318	43	1,455
	Per cent	58.4	53.9	17.4	51.0
55 years	Number	181	2,174	87	2,442
	Per cent	64.0	58.3	24.4	55.9
65 years	Number	314	2,587	73	2,974
	Per cent	64.1	61.6	20.3	58.9
Total	*Number*	*589*	*6,079*	*203*	*6,871*
	Per cent	*63.1*	*58.6*	*21.1*	*56.0*
Females					
50 years	Number	107	1,517	51	1,675
	Per cent	54.0	60.8	25.6	57.9
55 years	Number	175	2,309	81	2,565
	Per cent	58.5	61.8	29.9	59.5
65 years	Number	198	2,325	87	2,610
	Per cent	57.4	64.8	32.8	62.2
Total	*Number*	*480*	*6,151*	*219*	*6,850*
	Per cent	*57.0*	*62.6*	*29.8*	*60.1*
Persons					
50 years	Number	201	2,835	94	3,130
	Per cent	56.0	57.4	21.1	54.5
55 years	Number	356	4,483	168	5,007
	Per cent	61.2	60.0	26.8	57.7
65 years	Number	512	4,912	160	5,584
	Per cent	61.3	63.1	25.6	60.4
Total	**Number**	**1,069**	**12,230**	**422**	**13,721**
	Per cent	**60.2**	**60.6**	**24.8**	**58.0**

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 2013.

Table A3.8: Symptoms reported to PHCPs after a positive FOBT result, 2012–13

		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	1,088	91	107	34	6	24	1,329
	Per cent	81.9	6.8	8.1	2.6	0.5	1.8	
55 years	Number	1,835	144	168	60	11	55	2,225
	Per cent	82.5	6.5	7.6	2.7	0.5	2.5	
65 years	Number	2,295	148	171	72	22	58	2,728
	Per cent	84.1	5.4	6.3	2.6	0.8	2.1	
Total	*Number*	*5,218*	*383*	*446*	*166*	*39*	*137*	*6,282*
	Per cent	*83.1*	*6.1*	*7.1*	*2.6*	*0.6*	*2.2*	
Females								
50 years	Number	1,259	69	99	72	29	65	1,546
	Per cent	81.4	4.5	6.4	4.7	1.9	4.2	
55 years	Number	1,931	129	151	97	31	96	2,361
	Per cent	81.8	5.5	6.4	4.1	1.3	4.1	
65 years	Number	1,990	112	118	103	37	112	2,408
	Per cent	82.6	4.7	4.9	4.3	1.5	4.7	
Total	*Number*	*5,180*	*310*	*368*	*272*	*97*	*273*	*6,315*
	Per cent	*82.0*	*4.9*	*5.8*	*4.3*	*1.5*	*4.3*	
Persons								
50 years	Number	2,347	160	206	106	35	89	2,875
	Per cent	81.6	5.6	7.2	3.7	1.2	3.1	
55 years	Number	3,766	273	319	157	42	151	4,586
	Per cent	82.1	6.0	7.0	3.4	0.9	3.3	
65 years	Number	4,285	260	289	175	59	170	5,136
	Per cent	83.4	5.1	5.6	3.4	1.1	3.3	
Total	**Number**	**10,398**	**693**	**814**	**438**	**136**	**410**	**12,597**
	Per cent	**82.5**	**5.5**	**6.5**	**3.5**	**1.1**	**3.3**	

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 1,124 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 1 symptom.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Table A3.9: Referrals made by PHCPs after a positive FOBT result and subsequent consultation, 2012–13

		Colonoscopy	Double contrast barium enema	Sigmoidoscopy	CT colonography	Other	No referral	All PHCP visits
Males								
50 years	Number	1,356	—	—	2	29	68	1,455
	Per cent	93.2	—	—	0.1	2.0	4.7	
55 years	Number	2,278	2	2	3	34	123	2,442
	Per cent	93.3	0.1	0.1	0.1	1.4	5.0	
65 years	Number	2,703	3	3	8	58	199	2,974
	Per cent	90.9	0.1	0.1	0.3	2.0	6.7	
Total	*Number*	*6,337*	*5*	*5*	*13*	*121*	*390*	*6,871*
	Per cent	*92.2*	*0.1*	*0.1*	*0.2*	*1.8*	*5.7*	
Females								
50 years	Number	1,525	2	—	3	61	84	1,675
	Per cent	91.0	0.1	—	0.2	3.6	5.0	
55 years	Number	2,343	3	1	2	63	153	2,565
	Per cent	91.3	0.1	—	0.1	2.5	6.0	
65 years	Number	2,374	4	2	5	46	179	2,610
	Per cent	91.0	0.2	0.1	0.2	1.8	6.9	
Total	*Number*	*6,242*	*9*	*3*	*10*	*170*	*416*	*6,850*
	Per cent	*91.1*	*0.1*	—	*0.1*	*2.5*	*6.1*	
Persons								
50 years	Number	2,881	2	—	5	90	152	3,130
	Per cent	92.0	0.1	—	0.2	2.9	4.9	
55 years	Number	4,621	5	3	5	97	276	5,007
	Per cent	92.3	0.1	0.1	0.1	1.9	5.5	
65 years	Number	5,077	7	5	13	104	378	5,584
	Per cent	90.9	0.1	0.1	0.2	1.9	6.8	
Total	**Number**	**12,579**	**14**	**8**	**23**	**291**	**806**	**13,721**
	Per cent	**91.7**	**0.1**	**0.1**	**0.2**	**2.1**	**5.9**	

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 1 referral may be given to a person.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Table A3.10: PHCP referrals for colonoscopy or other examination after a positive FOBT result, by geographical location, 2012–13

		Colonoscopy		Other		No referral		All PHCP visits
		Number	Per cent	Number	Per cent	Number	Per cent	Number
Major cities	Males	3,983	92.2	87	2.0	250	5.8	4,320
	Females	4,007	91.5	114	2.6	258	5.9	4,379
	Persons	*7,990*	*91.8*	*201*	*2.3*	*508*	*5.8*	*8,699*
Inner regional	Males	1,374	91.5	37	2.4	91	6.1	1,502
	Females	1,409	91.7	42	2.7	86	5.6	1,536
	Persons	*2,783*	*91.6*	*78*	*2.6*	*177*	*5.8*	*3,038*
Outer regional	Males	767	93.5	13	1.6	40	4.9	821
	Females	677	88.7	29	3.9	56	7.4	763
	Persons	*1,444*	*91.2*	*43*	*2.7*	*97*	*6.1*	*1,584*
Remote	Males	91	n.p.	3	n.p.	4	n.p.	99
	Females	66	n.p.	2	n.p.	6	n.p.	74
	Persons	*158*	*91.1*	*5*	*3.1*	*10*	*5.8*	*173*
Very remote	Males	36	n.p.	1	n.p.	0	n.p.	38
	Females	21	n.p.	1	n.p.	3	n.p.	26
	Persons	*58*	*n.p.*	*2*	*n.p.*	*3*	*n.p.*	*64*
Unknown	Males	85	n.p.	2	n.p.	4	n.p.	91
	Females	62	n.p.	4	n.p.	7	n.p.	73
	Persons	*147*	*89.6*	*6*	*3.7*	*11*	*6.7*	*164*

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 Geography Standard remoteness structure through a postal area correspondence. Those that could not be mapped were included in the 'Unknown' row.
3. Discrepancies may occur between totals and sums of the component items due to rounding—see 'Geographical classification', Appendix C.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Table A3.11: Reason for non-referrals for colonoscopy by PHCPs, 2012–13

		Bowel cancer previously diagnosed	Limited life expectancy	Recent colonoscopy (<18 months)	Patient declines colonoscopy	Significant comorbidity	Other medical condition(s)	All non-referred participants
Males								
50 years	Number	0	1	37	30	4	35	99
	Per cent	—	n.p.	n.p.	n.p.	n.p.	n.p.	
55 years	Number	2	1	85	32	10	48	164
	Per cent	1.2	0.6	51.8	19.5	6.1	29.3	
65 years	Number	0	5	132	67	15	84	271
	Per cent	—	1.8	48.7	24.7	5.5	31.0	
Total	*Number*	*2*	*7*	*254*	*129*	*29*	*167*	*534*
	Per cent	*0.4*	*1.3*	*47.6*	*24.2*	*5.4*	*31.3*	
Females								
50 years	Number	1	1	62	51	2	49	150
	Per cent	0.7	0.7	41.3	34.0	1.3	32.7	
55 years	Number	2	3	105	65	7	61	222
	Per cent	0.9	1.4	47.3	29.3	3.2	27.5	
65 years	Number	6	4	126	52	22	65	236
	Per cent	2.5	1.7	53.4	22.0	9.3	27.5	
Total	*Number*	*9*	*8*	*293*	*168*	*31*	*175*	*608*
	Per cent	*1.5*	*1.3*	*48.2*	*27.6*	*5.1*	*28.8*	
Persons								
50 years	Number	1	2	99	81	6	84	249
	Per cent	0.4	0.8	39.8	32.5	2.4	33.7	
55 years	Number	4	4	190	97	17	109	386
	Per cent	1.0	1.0	49.2	25.1	4.4	28.2	
65 years	Number	6	9	258	119	37	149	507
	Per cent	1.2	1.8	50.9	23.5	7.3	29.4	
Total	**Number**	**11**	**15**	**547**	**297**	**60**	**342**	**1,142**
	Per cent	**1.0**	**1.3**	**47.9**	**26.0**	**5.3**	**29.9**	

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 2013.

Table A3.12: Crude colonoscopy follow-up after a positive FOBT result, by state and territory, 2012–13

		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Number	553	452	480	201	172	43	36	15	1,952
	Per cent	66.5	65.6	82.1	59.3	68.5	n.p.	n.p.	n.p.	68.4
55 years	Number	820	749	651	334	291	104	42	19	3,010
	Per cent	65.2	66.5	79.9	63.1	70.1	82.5	n.p.	n.p.	68.9
65 years	Number	957	805	868	395	366	134	54	20	3,599
	Per cent	65.5	69.7	83.3	66.5	76.6	74.4	n.p.	n.p.	71.3
Total	*Number*	*2,330*	*2,006*	*1,999*	*930*	*829*	*281*	*132*	*54*	*8,561*
	Per cent	*65.6*	*67.5*	*81.9*	*63.6*	*72.5*	*76.2*	*69.8*	*37.2*	*69.8*
Females										
50 years	Number	530	510	458	227	182	52	26	14	1,999
	Per cent	65.9	66.1	80.8	66.0	71.4	n.p.	n.p.	n.p.	69.1
55 years	Number	849	790	635	304	307	86	50	18	3,039
	Per cent	64.7	70.0	81.1	66.4	74.7	78.9	n.p.	n.p.	70.5
65 years	Number	844	730	668	312	334	111	55	17	3,071
	Per cent	68.2	70.7	84.2	68.3	76.3	81.6	n.p.	n.p.	73.1
Total	*Number*	*2,223*	*2,030*	*1,761*	*843*	*823*	*249*	*131*	*49*	*8,109*
	Per cent	*66.3*	*69.2*	*82.2*	*67.0*	*74.5*	*78.5*	*70.1*	*47.6*	*71.1*
Persons										
50 years	Number	1,083	962	938	428	354	95	62	29	3,951
	Per cent	66.2	65.9	81.4	62.7	70.0	70.4	n.p.	n.p.	68.8
55 years	Number	1,669	1,539	1,286	638	598	190	92	37	6,049
	Per cent	65.0	68.3	80.5	64.6	72.4	80.9	68.7	n.p.	69.7
65 years	Number	1,801	1,535	1,536	707	700	245	109	37	6,670
	Per cent	66.7	70.2	83.7	67.3	76.4	77.5	72.7	n.p.	72.1
Total	**Number**	**4,553**	**4,036**	**3,760**	**1,773**	**1,652**	**530**	**263**	**103**	**16,670**
	Per cent	**65.9**	**68.4**	**82.0**	**65.2**	**73.5**	**77.3**	**69.9**	**41.5**	**70.4**

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 2013.

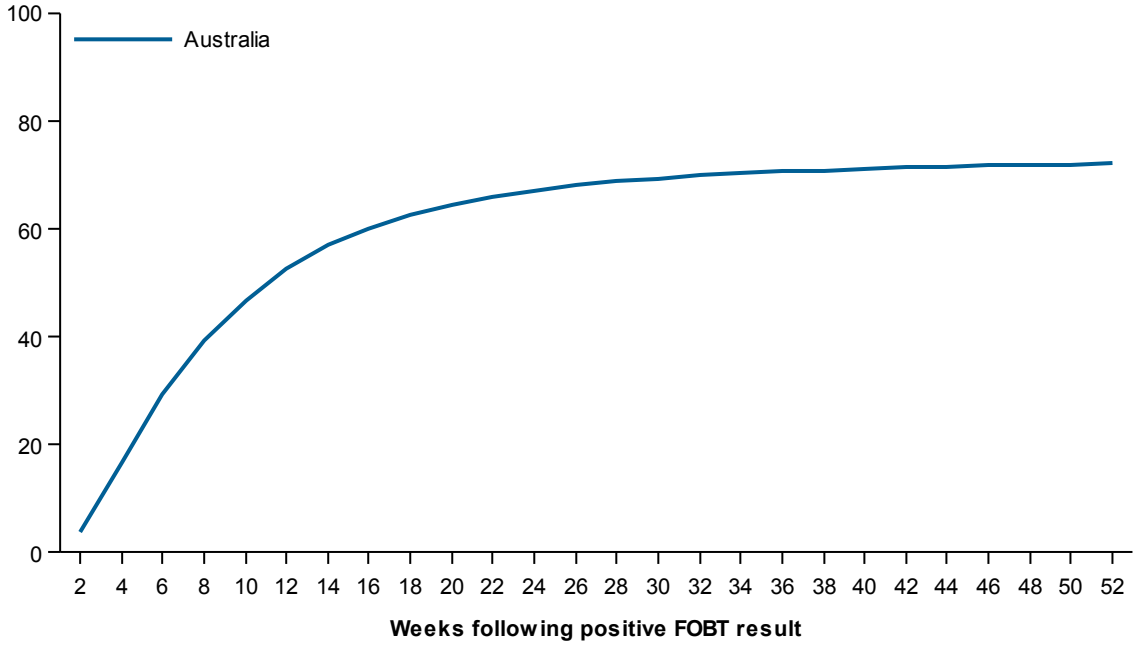
Table A3.13: Kaplan–Meier estimated colonoscopy follow-up per 100 people with positive FOBTs at 26 and 52 weeks since positive FOBT, by state and territory, 2012–13

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
26 weeks									
Colonoscopy follow-up (per cent)	63.7	66.3	79.6	62.7	69.7	73.6	69.4	40.6	68.0
95% confidence interval	62.6–64.9	65.0–67.5	78.4–80.8	60.9–64.6	67.8–71.6	70.2–76.9	64.6–74.2	34.2–46.9	67.4–68.6
52 weeks									
Colonoscopy follow-up (per cent)	68.2	69.0	84.3	66.3	75.4	77.3[(a)]	72.1	46.0	72.1
95% confidence interval	67.1–69.4	67.8–70.2	83.2–85.5	64.4–68.2	73.5–77.3	73.8–80.4	67.3–76.9	38.6–53.3	71.5–72.7

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

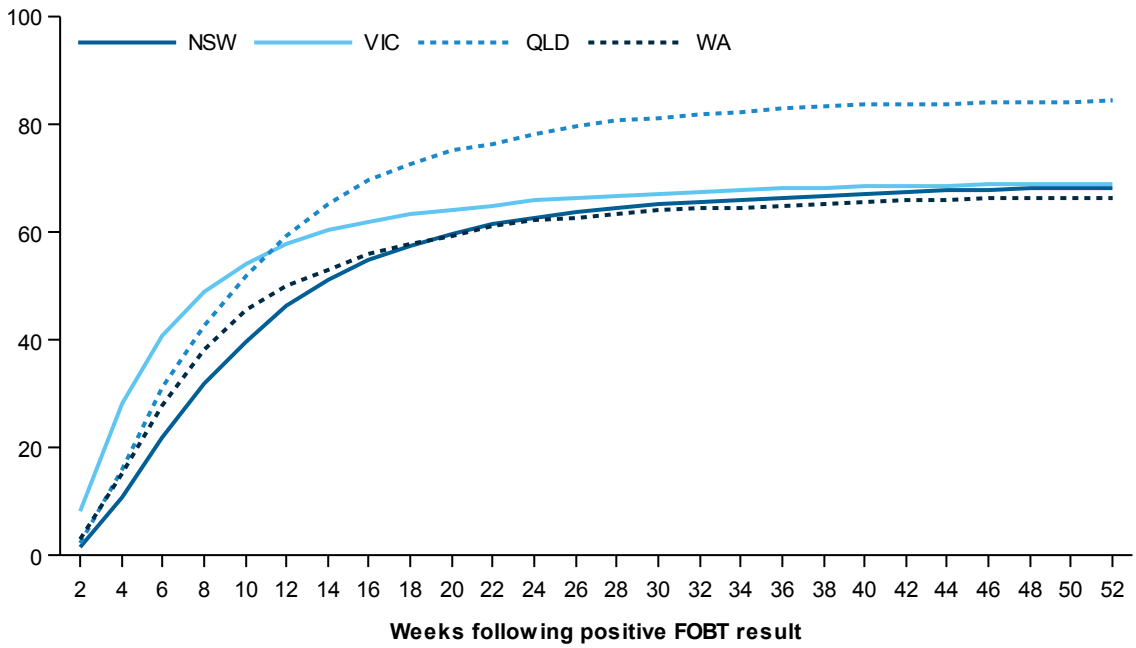
Note: Colonoscopy follow-up rates equal the estimated Kaplan–Meier follow-up rate of people who have had a colonoscopy as a proportion of the total number of people with positive FOBT results, including people who suspended or opted off the program.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.



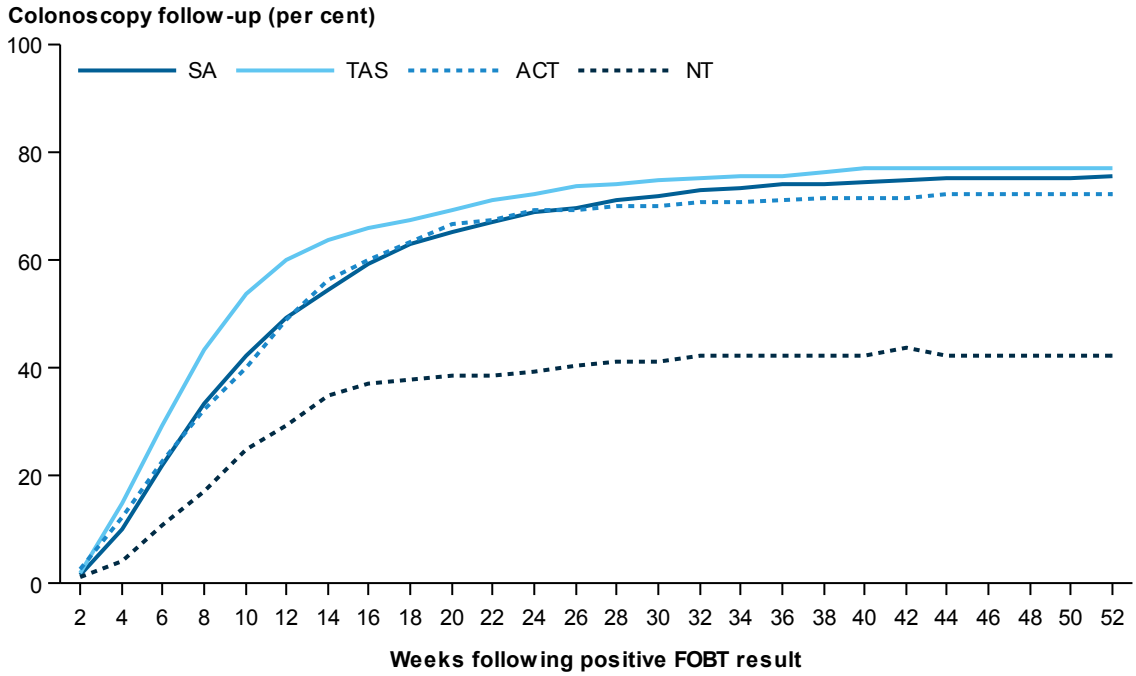
Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A3.3a: Colonoscopy follow-up after a positive FOBT using Kaplan–Meier estimates, Australia, 2012–13



Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A3.3b: Colonoscopy follow-up after a positive FOBT using Kaplan–Meier estimates, New South Wales, Victoria, Queensland and Western Australia, 2012–13



Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Figure A3.3c: Colonoscopy follow-up after a positive FOBT using Kaplan–Meier estimates, South Australia, Tasmania, Australian Capital Territory and Northern Territory, 2012–13

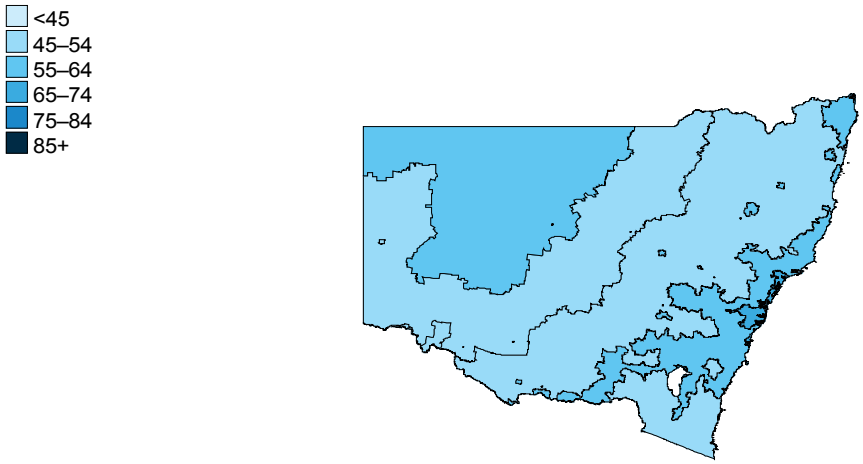
Table A3.14: Crude colonoscopy follow-up after a positive FOBT result, by remoteness area, 2012–13

		Remoteness area						
		Major cities	Inner regional	Outer regional	Remote	Very remote	Unknown	Total
Males								
50 years	Number	1,381	325	190	23	7	26	1,952
	Per cent	71.8	62.5	61.7	n.p.	n.p.	n.p.	68.4
55 years	Number	2,019	592	317	30	16	35	3,010
	Per cent	72.0	64.2	62.6	n.p.	n.p.	n.p.	68.9
65 years	Number	2,280	812	401	47	20	39	3,599
	Per cent	73.8	70.5	63.9	n.p.	n.p.	n.p.	71.3
Total	*Number*	*5,680*	*1,729*	*909*	*100*	*43*	*100*	*8,561*
	Per cent	*72.7*	*66.7*	*63.0*	*54.6*	*n.p.*	*62.1*	*69.8*
Females								
50 years	Number	1,429	352	170	20	12	16	1,999
	Per cent	71.8	65.2	60.0	n.p.	n.p.	n.p.	69.1
55 years	Number	2,067	631	269	36	14	23	3,039
	Per cent	73.5	68.3	59.1	n.p.	n.p.	n.p.	70.5
65 years	Number	2,020	681	306	24	10	30	3,071
	Per cent	77.2	67.4	66.1	n.p.	n.p.	n.p.	73.1
Total	*Number*	*5,516*	*1,664*	*745*	*80*	*35*	*69*	*8,109*
	Per cent	*74.4*	*67.3*	*62.0*	*59.8*	*n.p.*	*58.0*	*71.1*
Persons								
50 years	Number	2,810	677	360	42	19	42	3,951
	Per cent	71.8	63.9	60.9	n.p.	n.p.	n.p.	68.8
55 years	Number	4,086	1,223	586	66	29	58	6,049
	Per cent	72.7	66.3	61.0	58.7	n.p.	n.p.	69.7
65 years	Number	4,300	1,492	708	71	30	69	6,670
	Per cent	75.4	69.1	64.8	58.0	n.p.	56.1	72.1
Total	**Number**	**11,196**	**3,393**	**1,654**	**180**	**79**	**169**	**16,670**
	Per cent	**73.5**	**67.0**	**62.5**	**56.7**	**61.2**	**60.4**	**70.4**

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 Geography Standard remoteness structure through a postal area correspondence. Those that could not be mapped were included in the 'Unknown' column.
4. Discrepancies may occur between totals and sums of the component items due to rounding—see 'Geographical classification', Appendix C.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

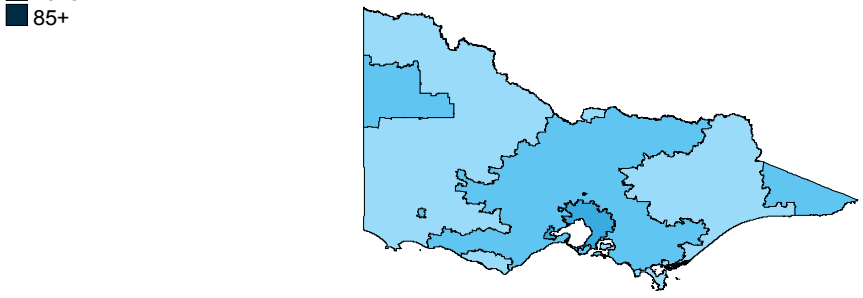


Notes

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 2013.

Figure A3.4a: Colonoscopy follow-up, by remoteness area, New South Wales, 2012–13

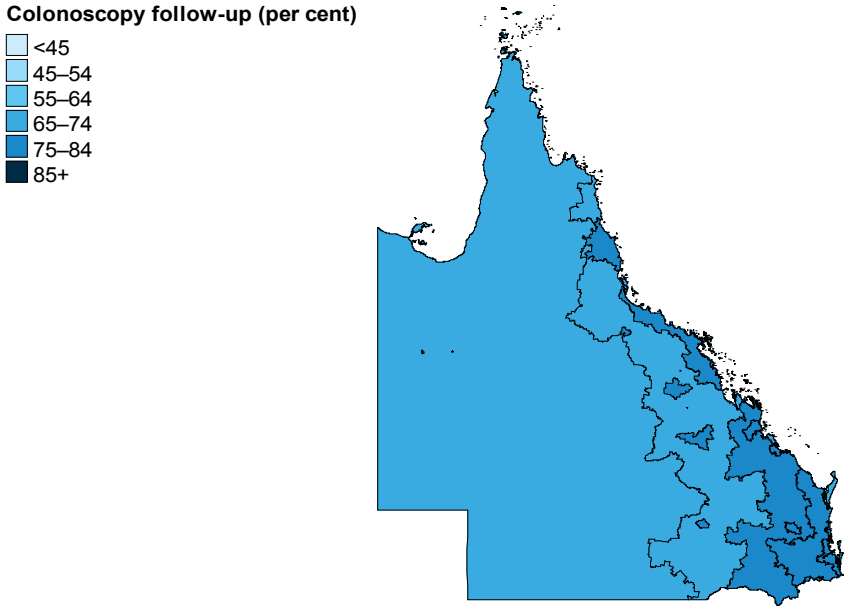


Notes

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 2013.

Figure A3.4b: Colonoscopy follow-up, by remoteness area, Victoria, 2012–13

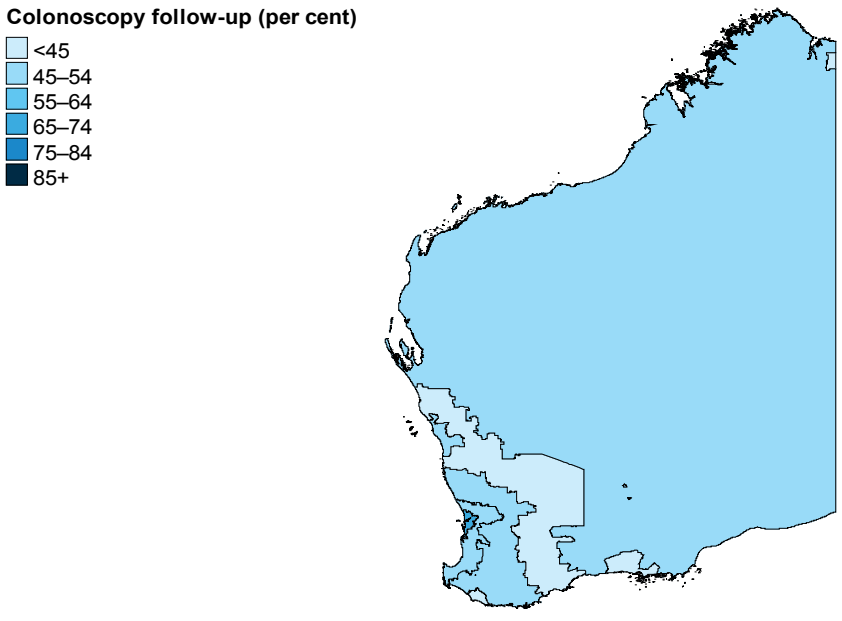


Notes

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 2013.

Figure A3.4c: Colonoscopy follow-up, by remoteness area, Queensland, 2012–13

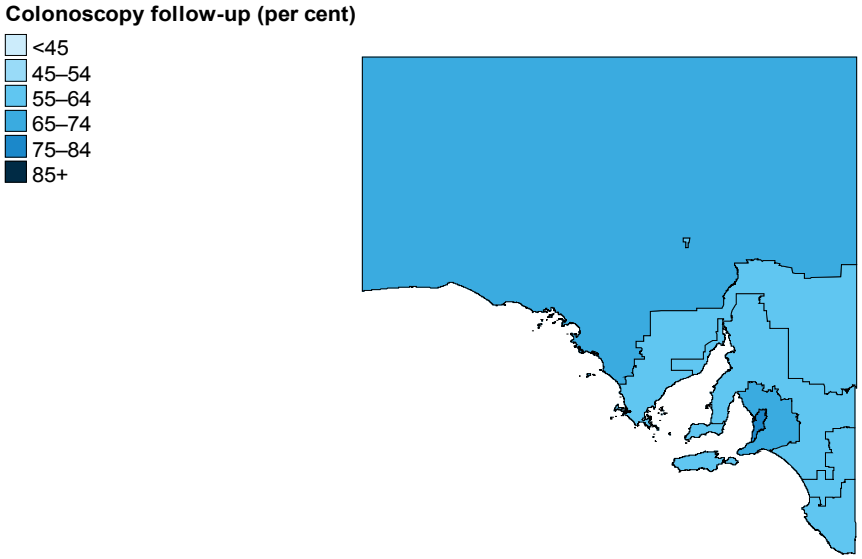


Notes

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 2013.

Figure A3.4d: Colonoscopy follow-up, by remoteness area, Western Australia, 2012–13

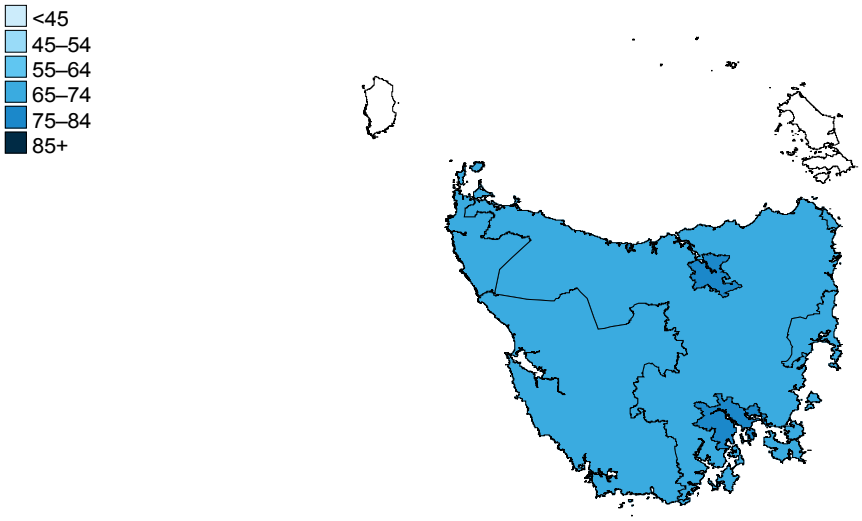


Notes

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 2013.

Figure A3.4e: Colonoscopy follow-up, by remoteness area, South Australia, 2012–13

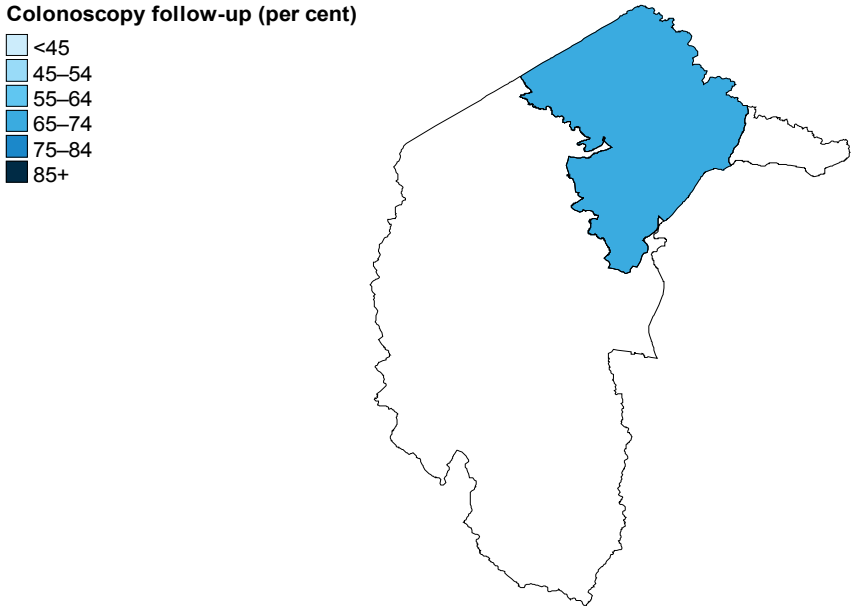


Notes

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 2013.

Figure A3.4f: Colonoscopy follow-up, by remoteness area, Tasmania, 2012–13

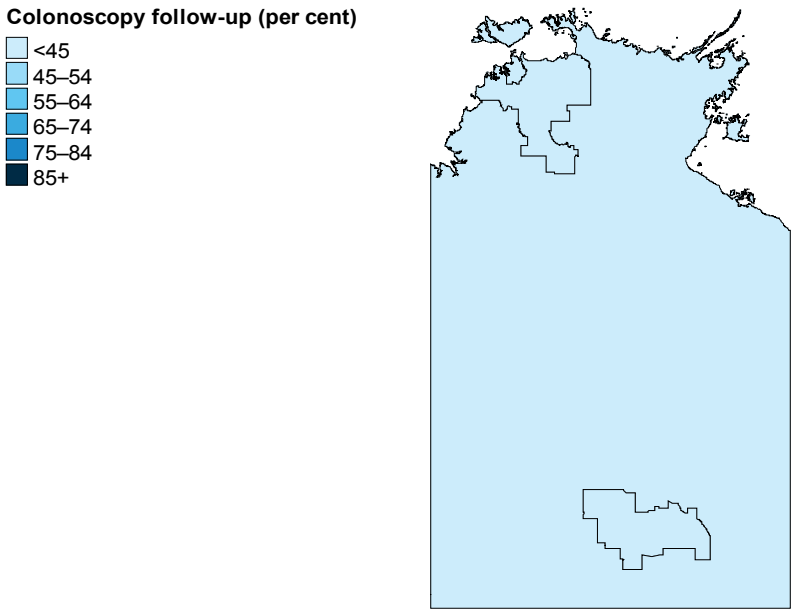


Notes

1. Remoteness areas left unshaded 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 2013.

Figure A3.4g: Colonoscopy follow-up, by remoteness area, Australian Capital Territory, 2012–13



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 2013.

Figure A3.4h: Colonoscopy follow-up, by remoteness area, Northern Territory, 2012–13

Table A3.15: Crude colonoscopy follow-up after a positive FOBT result, by socioeconomic status area, 2012–13

		Socioeconomic status area						
		1 (lowest)	2	3	4	5 (highest)	Unknown	Total
Males								
50 years	Number	370	359	372	423	397	31	1,952
	Per cent	66.2	62.8	66.9	73.2	72.7	n.p.	68.4
55 years	Number	587	567	661	579	578	38	3,010
	Per cent	64.1	61.7	72.5	71.1	77.5	n.p.	68.9
65 years	Number	733	817	744	624	636	45	3,599
	Per cent	66.5	69.2	74.3	71.7	78.2	n.p.	71.3
Total	*Number*	*1,690*	*1,743*	*1,777*	*1,626*	*1,611*	*114*	*8,561*
	Per cent	*65.6*	*65.2*	*72.0*	*71.9*	*76.5*	*61.0*	*69.8*
Females								
50 years	Number	339	373	388	424	455	20	1,999
	Per cent	62.8	64.2	69.2	74.0	75.3	n.p.	69.1
55 years	Number	575	617	580	639	602	26	3,039
	Per cent	66.2	67.9	70.0	75.4	74.8	n.p.	70.5
65 years	Number	628	636	595	581	596	35	3,071
	Per cent	67.7	69.7	73.7	76.6	81.5	n.p.	73.1
Total	*Number*	*1,542*	*1,626*	*1,563*	*1,644*	*1,653*	*81*	*8,109*
	Per cent	*66.0*	*67.7*	*71.2*	*75.5*	*77.2*	*55.9*	*71.1*
Persons								
50 years	Number	709	732	760	847	852	51	3,951
	Per cent	64.5	63.5	68.0	73.6	74.1	n.p.	68.8
55 years	Number	1,162	1,184	1,241	1,218	1,180	64	6,049
	Per cent	65.1	64.8	71.3	73.3	76.1	56.6	69.7
65 years	Number	1,361	1,453	1,339	1,205	1,232	80	6,670
	Per cent	67.0	69.4	74.1	74.0	79.8	54.8	72.1
Total	**Number**	**3,232**	**3,369**	**3,340**	**3,270**	**3,264**	**195**	**16,670**
	Per cent	**65.8**	**66.4**	**71.6**	**73.6**	**76.9**	**58.7**	**70.4**

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 2013.

Table A3.16: Crude colonoscopy follow-up after a positive FOBT result, by Aboriginal and Torres Strait Islander status, 2012–13

		Indigenous	Non-indigenous	Not stated	Total
Males					
50 years	Number	11	1,862	79	1,952
	Per cent	n.p.	69.7	50.3	68.4
55 years	Number	28	2,904	78	3,010
	Per cent	n.p.	70.2	44.1	68.9
65 years	Number	20	3,458	121	3,599
	Per cent	n.p.	72.1	54.0	71.3
Total	*Number*	*59*	*8,224*	*278*	*8,561*
	Per cent	*53.2*	*70.9*	*49.8*	*69.8*
Females					
50 years	Number	11	1,947	41	1,999
	Per cent	n.p.	70.5	38.7	69.1
55 years	Number	30	2,950	59	3,039
	Per cent	n.p.	71.1	50.9	70.5
65 years	Number	21	2,954	96	3,071
	Per cent	n.p.	73.6	60.8	73.1
Total	*Number*	*62*	*7,851*	*196*	*8,109*
	Per cent	*n.p.*	*71.9*	*51.6*	*71.1*
Persons					
50 years	Number	22	3,809	120	3,951
	Per cent	n.p.	70.1	45.6	68.8
55 years	Number	58	5,854	137	6,049
	Per cent	58.0	70.7	46.8	69.7
65 years	Number	41	6,412	217	6,670
	Per cent	n.p.	72.8	56.8	72.1
Total	**Number**	**121**	**16,075**	**474**	**16,670**
	Per cent	**58.7**	**71.4**	**50.5**	**70.4**

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 2013.

Table A3.17: Crude colonoscopy follow-up after a positive FOBT result, by language spoken at home, 2012–13

		Language other than English	English	Total
Males				
50 years	Number	291	1,661	1,952
	Per cent	69.1	68.3	68.4
55 years	Number	420	2,590	3,010
	Per cent	66.7	69.3	68.9
65 years	Number	371	3,228	3,599
	Per cent	65.2	72.0	71.3
Total	*Number*	*1,082*	*7,479*	*8,561*
	Per cent	*66.8*	*70.2*	*69.8*
Females				
50 years	Number	308	1,691	1,999
	Per cent	65.5	69.8	69.1
55 years	Number	448	2,591	3,039
	Per cent	66.5	71.3	70.5
65 years	Number	344	2,727	3,071
	Per cent	71.1	73.4	73.1
Total	*Number*	*1,100*	*7,009*	*8,109*
	Per cent	*67.6*	*71.7*	*71.1*
Persons				
50 years	Number	599	3,352	3,951
	Per cent	67.2	69.1	68.8
55 years	Number	868	5,181	6,049
	Per cent	66.6	70.3	69.7
65 years	Number	715	5,955	6,670
	Per cent	67.9	72.6	72.1
Total	**Number**	**2,182**	**14,488**	**16,670**
	Per cent	**67.2**	**70.9**	**70.4**

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 2013.

Table A3.18: Crude colonoscopy follow-up after a positive FOBT result, by disability status, 2012–13

		Severe or profound activity limitation	No severe or profound activity limitation	Not stated	Total
Males					
50 years	Number	97	1,729	126	1,952
	Per cent	60.2	70.7	51.0	68.4
55 years	Number	161	2,667	182	3,010
	Per cent	56.9	71.5	51.0	68.9
65 years	Number	311	3,076	212	3,599
	Per cent	63.5	73.2	58.9	71.3
Total	*Number*	*569*	*7,472*	*520*	*8,561*
	Per cent	*60.9*	*72.0*	*53.9*	*69.8*
Females					
50 years	Number	129	1,773	97	1,999
	Per cent	65.2	71.1	48.7	69.1
55 years	Number	186	2,704	149	3,039
	Per cent	62.2	72.3	55.0	70.5
65 years	Number	209	2,710	152	3,071
	Per cent	60.6	75.5	57.4	73.1
Total	*Number*	*524*	*7,187*	*398*	*8,109*
	Per cent	*62.2*	*73.2*	*54.1*	*71.1*
Persons					
50 years	Number	226	3,502	223	3,951
	Per cent	63.0	70.9	50.0	68.8
55 years	Number	347	5,371	331	6,049
	Per cent	59.6	71.9	52.7	69.7
65 years	Number	520	5,786	364	6,670
	Per cent	62.3	74.3	58.2	72.1
Total	**Number**	**1,093**	**14,659**	**918**	**16,670**
	Per cent	**61.5**	**72.6**	**54.0**	**70.4**

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 2013.

A4 Bowel abnormality detection tables

Table A4.1: Colonoscopy outcomes (excludes histopathology), 2012–13

		Colonoscopy outcome						
		Suspected cancer	Polyp(s) >10 mm	Polyp(s) ≤10 mm	Other diagnoses[(a)]	No abnormality	Outcome not specified	All colonoscopy report forms
Males								
50 years	Number	41	235	634	294	263	1	1,468
	Per cent	2.8	16.0	43.2	20.0	17.9	0.1	
55 years	Number	77	391	978	477	329	2	2,254
	Per cent	3.4	17.3	43.4	21.2	14.6	0.1	
65 years	Number	146	498	1,265	528	299	2	2,738
	Per cent	5.3	18.2	46.2	19.3	10.9	0.1	
Total	*Number*	*264*	*1,124*	*2,877*	*1,299*	*891*	*5*	*6,460*
	Per cent	*4.1*	*17.4*	*44.5*	*20.1*	*13.8*	*0.1*	
Females								
50 years	Number	20	127	449	424	437	3	1,460
	Per cent	1.4	8.7	30.8	29.0	29.9	0.2	
55 years	Number	57	192	764	648	591	6	2,258
	Per cent	2.5	8.5	33.8	28.7	26.2	0.3	
65 years	Number	86	267	914	664	428	4	2,363
	Per cent	3.6	11.3	38.7	28.1	18.1	0.2	
Total	*Number*	*163*	*586*	*2,127*	*1,736*	*1,456*	*13*	*6,081*
	Per cent	*2.7*	*9.6*	*35.0*	*28.5*	*23.9*	*0.2*	
Persons								
50 years	Number	61	362	1,083	718	700	4	2,928
	Per cent	2.1	12.4	37.0	24.5	23.9	0.1	
55 years	Number	134	583	1,742	1,125	920	8	4,512
	Per cent	3.0	12.9	38.6	24.9	20.4	0.2	
65 years	Number	232	765	2,179	1,192	727	6	5,101
	Per cent	4.5	15.0	42.7	23.4	14.3	0.1	
Total	**Number**	**427**	**1,710**	**5,004**	**3,035**	**2,347**	**18**	**12,541**
	Per cent	**3.4**	**13.6**	**39.9**	**24.2**	**18.7**	**0.1**	

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

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 2013.

Table A4.2: Overall diagnostic outcomes (including histopathology), by state and territory, 2012–13

State/ territory		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	300,742	93,954	6,905	3,190	1,515	1,489	28	9	42	97	10
	Per cent					47.5	46.7	0.9	0.3	1.3	3.0	0.3
Vic	Number	232,439	79,015	5,902	3,114	1,635	1,248	30	27	90	77	7
	Per cent					52.5	40.1	1.0	0.9	2.9	2.5	0.2
Qld	Number	196,472	63,253	4,585	3,199	1,292	1,140	128	114	417	90	18
	Per cent					40.4	35.6	4.0	3.6	13.0	2.8	0.6
WA	Number	106,249	38,482	2,721	1,151	404	621	56	—	45	23	2
	Per cent					35.1	54.0	4.9	—	3.9	2.0	0.2
SA	Number	75,978	28,958	2,248	1,340	659	516	22	25	77	37	4
	Per cent					49.2	38.5	1.6	1.9	5.7	2.8	0.3
Tas	Number	24,837	9,297	686	461	242	120	12	25	40	15	7
	Per cent					52.5	26.0	2.6	5.4	8.7	3.3	1.5
ACT	Number	14,840	5,484	376	204	83	70	26	—	15	6	4
	Per cent					40.7	34.3	12.7	—	7.4	2.9	2.0
NT	Number	11,961	2,970	248	79	27	42	1	—	2	7	—
	Per cent					34.2	53.2	1.3	—	2.5	8.9	—
Australia	**Number**	**963,518**	**321,413**	**23,671**	**12,738**	**5,857**	**5,246**	**303**	**200**	**728**	**352**	**52**
	Per cent					**46.0**	**41.2**	**2.4**	**1.6**	**5.7**	**2.8**	**0.4**

(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.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

Table A4.3: Overall diagnostic outcomes (including histopathology), by age and sex, 2012–13

					FOBT positive							
		Invitations issued[a]	Number screened[b]	Total positive FOBT	Colonoscopy recorded[c]	No cancer or adenoma[d]	Polyps awaiting histopathology[e]	Confirmed diminutive adenoma[f]	Confirmed small adenoma[f]	Confirmed advanced adenoma[f]	Suspected cancer[g]	Confirmed cancer[h]
Males												
50 years	Number	165,963	42,324	2,852	1,489	603	681	41	24	105	29	6
	Per cent					40.5	45.7	2.8	1.6	7.1	1.9	0.4
55 years	Number	194,412	59,208	4,369	2,293	888	1,073	54	39	166	60	13
	Per cent					38.7	46.8	2.4	1.7	7.2	2.6	0.6
65 years	Number	122,632	48,454	5,051	2,786	947	1,378	78	50	196	122	15
	Per cent					34.0	49.5	2.8	1.8	7.0	4.4	0.5
Total	*Number*	*483,007*	*149,986*	*12,272*	*6,568*	*2,438*	*3,132*	*173*	*113*	*467*	*211*	*34*
	Per cent					*37.1*	*47.7*	*2.6*	*1.7*	*7.1*	*3.2*	*0.5*
Females												
50 years	Number	163,145	47,937	2,891	1,484	915	448	23	19	56	20	3
	Per cent					61.7	30.2	1.5	1.3	3.8	1.3	0.2
55 years	Number	195,573	70,271	4,309	2,286	1,311	760	46	25	91	48	5
	Per cent					57.3	33.2	2.0	1.1	4.0	2.1	0.2
65 years	Number	121,793	53,219	4,199	2,400	1,193	906	61	43	114	73	10
	Per cent					49.7	37.8	2.5	1.8	4.8	3.0	0.4
Total	*Number*	*480,511*	*171,427*	*11,399*	*6,170*	*3,419*	*2,114*	*130*	*87*	*261*	*141*	*18*
	Per cent					*55.4*	*34.3*	*2.1*	*1.4*	*4.2*	*2.3*	*0.3*

(continued)

Table A4.3 (continued): Overall diagnostic outcomes (including histopathology), by age and sex, 2012–13

					FOBT positive							
		Invitations issued[(a)]	Number screened[(b)]	Total positive FOBT	Colonoscopy recorded[(c)]	No cancer or adenoma[(d)]	Polyps awaiting histopathology[(e)]	Confirmed diminutive adenoma[(f)]	Confirmed small adenoma[(f)]	Confirmed advanced adenoma[(f)]	Suspected cancer[(g)]	Confirmed cancer[(h)]
Persons												
50 years	Number	329,108	90,261	5,743	2,973	1,518	1,129	64	43	161	49	9
	Per cent					51.1	38.0	2.2	1.4	5.4	1.6	0.3
55 years	Number	389,985	129,479	8,678	4,579	2,199	1,833	100	64	257	108	18
	Per cent					48.0	40.0	2.2	1.4	5.6	2.4	0.4
65 years	Number	244,425	101,673	9,250	5,186	2,140	2,284	139	93	310	195	25
	Per cent					41.3	44.0	2.7	1.8	6.0	3.8	0.5
Total	**Number**	**963,518**	**321,413**	**23,671**	**12,738**	**5,857**	**5,246**	**303**	**200**	**728**	**352**	**52**
	Per cent					**46.0**	**41.2**	**2.4**	**1.6**	**5.7**	**2.8**	**0.4**

(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.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

A5 Adverse event tables

Table A5.1: Adverse outcomes after investigation of positive FOBT by colonoscopy, 2012–13

			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	8,561	22	—	2	4	—	7	14	28	—
	Per cent		0.3	—	—	—	—	0.1	0.2	0.3	—
Females	Number	8,109	5	1	2	2	—	5	7	12	4
	Per cent		0.1	—	—	—	—	0.1	0.1	0.1	—
Persons	**Number**	**16,670**	**27**	**1**	**4**	**6**	**—**	**12**	**21**	**40**	**4**
	Per cent		**0.2**	**—**	**—**	**—**	**—**	**0.1**	**0.1**	**0.2**	**—**

Notes

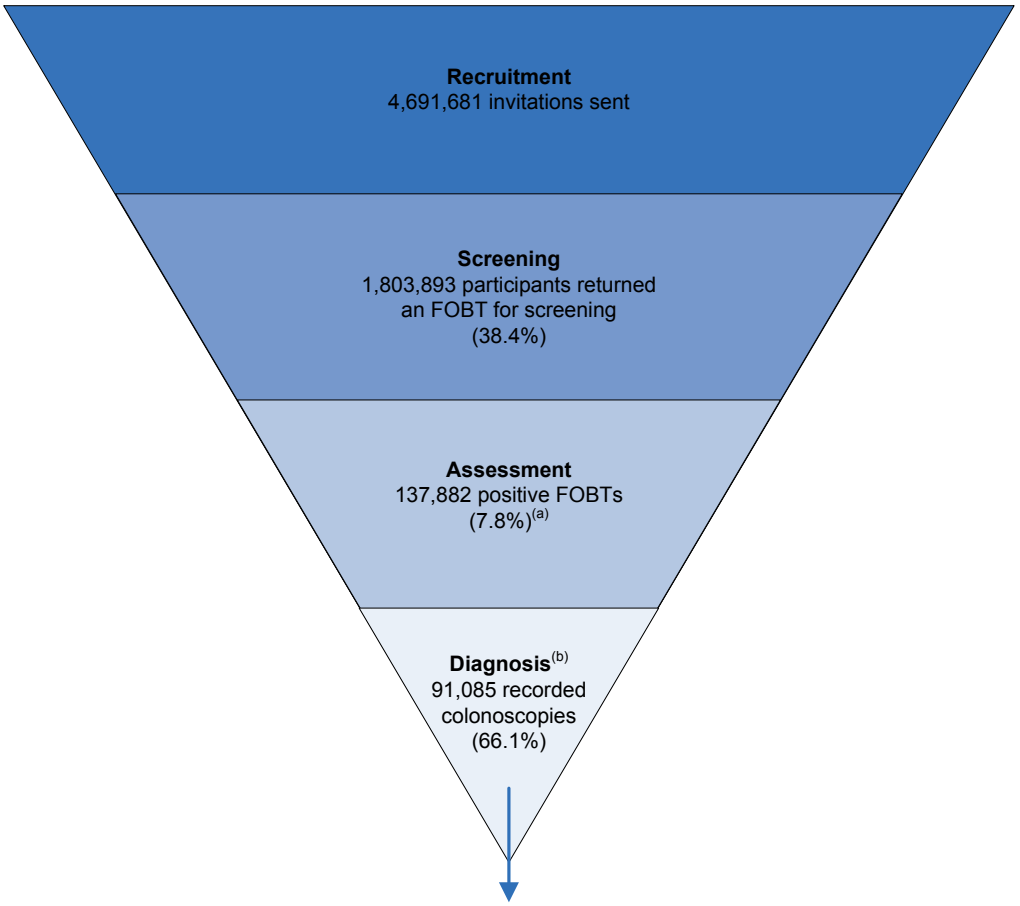
1. All participants known to have had a colonoscopy are included, including those only recorded through Medicare claim or histopathology data.
2. A colonoscopy may have more than 1 adverse event.

Source: National Bowel Cancer Screening Program Register as at 31 December 2013.

A6 Additional NBCSP outcome data

Overall outcomes (August 2006–June 2013)

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	43,056	(47.3%)
Polyp awaiting histopathology	29,341	(32.2%)
Diminutive adenoma	3,967	(4.4%)
Small adenoma	2,156	(2.4%)
Advanced adenoma	9,429	(10.4%)
Suspected cancer	2,234	(2.5%)
Confirmed cancer	902	(1.0%)

(a) Based on the 1,778,526 participants who returned a valid FOBT.

(b) Additionally, 16,320 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 2013.

Figure A6.1: Overall NBCSP outcomes for all invitees aged 50, 55 and 65, August 2006 – June 2013

The current overall screening rate of 38.4% is lower than the 45.4% rate achieved in the pilot program, while the overall crude colonoscopy follow-up (diagnosis) rate of 66.1% is higher than that achieved in the pilot program (55.0%) (DoHA 2005).

Since the inception of the NBCSP in 2006, 3,136 participants have been found with suspected or confirmed cancers and 9,429 more have been diagnosed with advanced adenomas. Additionally, 6,123 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, 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 2011–12 invitees

The previous monitoring report, *National Bowel Cancer Screening Program monitoring report: July 2011–June 2012* (AIHW 2013), presented national statistics on key program activity, performance and outcome indicators for people invited from 1 July 2011 to 30 June 2012. The report used outcome data up until 31 December 2012, and those results are shown in the comparison table provided after the summary of this report (Table 1).

For many participants invited late in the period reported, limited follow-up data were available. The latest program data, to 31 December 2013, provide an extra 12 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 from 1 July 2011 to 30 June 2012.

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 outcome 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 to an unknown number of 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, 2011–12

Performance measure	Initial (per cent)[a]	Final (per cent)[b]
Participation rate	35.0	35.8
50 years	29.2	30.0
55 years	34.1	34.8
65 years	44.0	44.8
FOBT positivity rate	7.0	7.0
PHCP follow-up rate	63.4	64.5
Colonoscopy follow-up rate	72.0	77.4
Colonoscopy outcomes		
Suspected/confirmed cancers	3.1	3.2
Advanced adenomas	6.7	7.9
Polyps awaiting histopathology	39.6	36.2
No abnormality	46.3	47.1

(a) Initial values relate to those known for the 2011–12 invitees using data as reported in the previous monitoring report (AIHW 2013).

(b) Final values relate to those known for the 2011–12 invitees using data as at 31 December 2013.

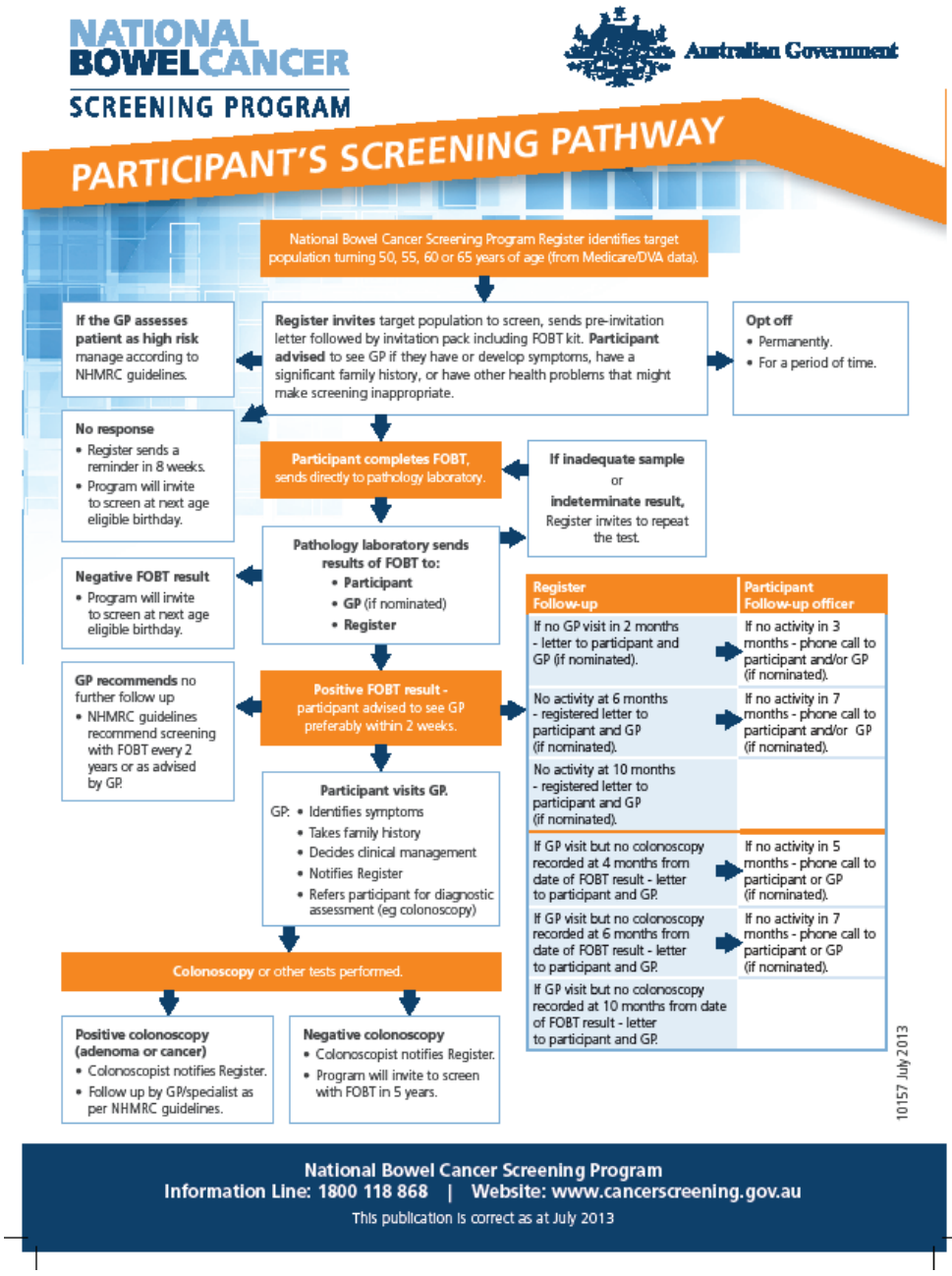
Notes

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 NBCSP Register.
4. Colonoscopy follow-up rate equals the percentage of people with a positive FOBT result who then had a colonoscopy recorded in 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 National Bowel Cancer Screening Program (NBCSP) information

NBCSP resources



Source: DoHA (2013b).

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

NBCSP 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, 70 and 74
3	1 July 2016		50, 55, 60, 64, 65, 70, 72 and 74
3	1 July 2017		50, 54, 55, 58, 60, 64, 68, 70, 72 and 74
3	1 July 2018		50, 54, 58, 60, 62, 64, 66, 68, 70, 72 and 74
3	1 July 2019		50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72 and 74

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

(b) Ongoing NBCSP funding began.

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

Eligible population

The eligible population invited included those in the target population, as defined above, who were registered as an Australian citizen or migrant in the Medicare enrolment file, or were 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 2 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 (adenocarcinomas) 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—3 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, Australian Bureau of Statistics (ABS); 2011 Census of Population and Housing, ABS
Incidence (ICD-10 C18–20)	Australian Cancer Database (ACD), Australian Institute of Health and Welfare (AIHW)
Mortality (ICD-9 153, 154.0–154.1, ICD-10 C18–20)	National Mortality Database (NMD), AIHW

National Bowel Cancer Screening Program (NBCSP) 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 from 1 July 2012 to 30 June 2013. It covers measures of participation, faecal occult blood test (FOBT) results, and follow-up investigations and outcomes. Analyses are presented by age, sex, state and territory, geographical region, socioeconomic status, Aboriginal and Torres Strait Islander status, language spoken at home and disability status.

Data Quality Statement: NBCSP screening data: 2012–13

Summary of key issues

- The NBCSP is managed by the Australian Government Department of Health in partnership with 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 6-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, or the rate could not be sensibly estimated).

Description

The NBCSP is managed by the Australian Government Department of Health in partnership with 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 50th, 55th and 65th birthdays. From July 2013 the program will also include people aged 60, and from July 2015, it will be expanded to implement a biennial screening interval for those aged 50–74 by 2020.

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 6-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 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 AIHW 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 AIHW 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* (Cwlth), 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 2012 – June 2013.

A snapshot of all NBCSP activity is made available to the AIHW regularly at 6-month 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 Australian Census of Population and Housing and are not available for about 18 months from the census date. Consequently, socioeconomic status for a geographical 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, colonoscopies, 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 NBCSP 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, 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 appendixes 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/569056>.

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 2010 can be found on the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/565218>.

Incidence of bowel cancer in this report was for 1996 to 2010, the latest year for which national incidence data are available. Note that 2010 data for New South Wales (NSW) and the Australian Capital Territory (ACT) were not available for inclusion in the 2010 version of the ACD. Therefore, the 2010 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 form the 2010 national cancer data set.

Mortality data

Deaths data are provided to the AIHW by the Registrars of Births, Deaths and Marriages and the National Coronial Information System and coded by the ABS. The data are maintained by the AIHW in the National Mortality Database (NMD).

The NMD contains information on the cause of death supplied by the medical practitioner certifying the death or by a coroner from 1964 to 2011.

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 1997 to 2011. Causes of death 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, 2011) 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, the ABS and AIHW assessed the adequacy of identification for analysis and:

- Western Australia, South Australia and the Northern Territory were found to have had adequate identification from 1991 onwards,
- Queensland was added as having adequate identification from 1998 onwards, and
- New South Wales was also deemed as having adequate identification from 2001 onwards (meaning five jurisdictions can be reported from 2001 onwards).

Data for Aboriginal and Torres Strait Islander deaths, state and territory and geographical location have been combined for the 5 years from 2007–2011 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* (ABS cat. no. 3101.0) (ABS 2013) as at 20 June 2013.

Classifications

Geographical 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.

Geographical location was classified according to the ABS Australian Statistical Geography Standard (ASGS) 2011 Remoteness Structure, which groups geographical areas into 6 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 6 Remoteness Areas are listed in Table C.2; the sixth, *Migratory*, 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 of the Australian Statistical Geography Standard 2011

Region	Collection districts (CDs) 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 offshore, 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 Socio-economic Disadvantage (IRSD). Geographical 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. Geographical 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 and territory must also take account of differences in the distribution of age and sex between the states and territories. 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 2012–13 who return a completed faecal occult blood test (FOBT) kit by 31 December 2013. The crude colonoscopy follow-up is the proportion of people invited in 2012–13 with a positive FOBT result who proceeded to colonoscopy by 31 December 2013.

The crude proportions will generally underestimate the true proportions of the population who participated in the National Bowel Cancer Screening Program (NBCSP). This is because at any point in time there are members of the population who are eligible to proceed to the next point on the screening pathway, but who have not yet had time to do so. For example, a person who has just received an invitation to screen may intend to participate in screening but may not have had time to do so. They will be counted in the denominator of the crude participation but not in the numerator. Similarly, there is a time lag between when a person with a positive FOBT result is referred for a 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 3 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.

The results of age standardisation depend directly on the constant population chosen. Care must be taken when comparing the reported age-standardised rates between countries because different constant populations may have been used in each case.

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 data sets 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 'Chapter 3 Follow-up of positive FOBT results', Section 2 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 26 weeks and 52 weeks for participation, and PHCP and colonoscopy follow-up.

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 jurisdiction. 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.

Confidentiality and reliability of data

The AIHW operates under a strict privacy regime which has its basis in section 29 of the *Australian Institute of Health and Welfare Act 1987* (AIHW Act) and the *Privacy Act 1988* (Privacy Act).

Section 29 of the AIHW Act requires that confidentiality of data relating to persons (living and deceased) and organisations be maintained. The Privacy Act governs confidentiality of information about living individuals.

As well as the protection offered by AIHW Act and the Privacy Act, personal information held by the AIHW is covered by a range of other Commonwealth, state and territory legislation.

The AIHW is committed to reporting that maximises the value of information released for users while being statistically reliable and meeting legislative requirements described above.

To ensure the confidentiality of its data, the AIHW has a range of policies, protocols and processes in place—the AIHW Policy on reporting to manage confidentiality and reliability (AIHW Confidentiality Policy) is one important example, as it deals with how data should be reported to ensure confidentiality.

AIHW Confidentiality Policy, a summary

The AIHW Confidentiality Policy contains 7 guidelines to assist those working with data to apply it to their outputs.

Guideline 1

It is AIHW policy that if the data being considered have already been released publicly at the granularity AIHW intends to release, further confidentialisation is not required.

Guideline 2

Cells in tables where the value of the cell is the same as a row/column/wafer total (that is, all other cells in the row, column or wafer are zero) generally lead to disclosure of an additional attribute. It is AIHW policy that these cells need to be confidentialised unless the

attribute that would be disclosed is deemed to be non-sensitive in the context of the data being published.

Guideline 3

It is AIHW policy that data on organisations must be confidentialised if 1 organisation contributes more than 85% of the total, or 2 organisations more than 90%, unless the attribute that would be disclosed is deemed to be non-sensitive in the context of the data being published or the organisation(s) have given consent to release.

Guideline 4

It is AIHW policy that guidelines 2 and 3 need to be applied so as to ensure that attribute confidentiality is maintained within tables and across tables within the same release. That is, when assessing whether a cell needs to be confidentialised, consideration needs to be given to whether there are other cells in that table, or other tables in the release, which may require consequential confidentialisation.

Guideline 5

Rates, averages and other statistics based on denominators of less than 100 are usually not reliable and it is AIHW policy that they should generally not be reported.

Guideline 6

It is AIHW policy that if data suppliers or clients require additional suppression rules be applied to an AIHW release in order to manage confidentiality or reliability, then these should be applied. Where such additional rules are applied they should be described in the release, and it should be noted that this approach is required by the data supplier.

Guideline 7

It is AIHW policy that, if a client wishes to be provided with data output (for example, tables) at a more detailed level than any of the above guidelines would allow, then they may apply to be provided output against which some or all of the above guidelines are not applied. Provision of this more detailed output would be subject to the client signing a confidentiality undertaking and agreeing that any publication of information (including in online data cubes) based on output released to them will comply with this policy.

Jurisdictional bowel cancer incidence data

Further to the AIHW Confidentiality Policy guideline 6, tables specifically showing bowel cancer incidence by state and territory had numbers fewer than 5 suppressed. The Australian Capital Territory and Northern Territory incidence data also had rates based on fewer than 5 cases suppressed. Suppressed values are marked with n.p.

Mortality data

Further to the AIHW confidentiality policy guideline 6, tables specifically showing bowel cancer mortality counts of 1 or 2 had these values, and rates based on them, suppressed. Suppressed values are marked with n.p.

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: A 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 2012–13, 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 from 1 January 2012 to 30 June 2013, 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 the condition being tested when they do have the condition. Not all screening tests are completely accurate, so false negative 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 precancerous 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 (NBCSP).

Pathologists categorise completed NBCSP FOBTs into 1 of 3 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 into 1 of 3 groups:

1. positive (blood is detected in at least 1 of 2 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.

International Statistical Classification of Diseases and Related Health Problems: The World Health Organization's internationally accepted classification of death and disease. The tenth revision (ICD-10) is currently in use.

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

lymph node: A 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 the Department of Human Services (DHS) 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.

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.

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.

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 (in Appendix B).

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.

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Related publications

This report, *National Bowel Cancer Screening Program monitoring report: 2012–13* is part of a series. Earlier editions and any published subsequently can be downloaded for free from the Australian Institute of Health and Welfare (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: 2012–13 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 & AACR (Australasian Association of Cancer Registries) 2012. Cancer in Australia: an overview, 2012. Cancer series no. 74. Cat. no. CAN 70. Canberra: AIHW.
- AIHW 2013. BreastScreen Australia monitoring report 2010–2011. Cancer series no. 77. Cat. no. CAN 74. Canberra: AIHW.
- AIHW 2014. Cervical screening in Australia 2011–2012. Cancer series no.82. Cat. no. CAN 79. Canberra: AIHW.

This report presents statistics on the National Bowel Cancer Screening Program for Australians invited to take part from July 2012 to June 2013. Just over 320,000 of those invited chose to screen, with about 23,500 found to require further assessment.

One out of every 17 assessments detected an advanced adenoma (precancerous lesion), and a bowel cancer was detected in 1 out of every 32 assessments.