2 Faecal occult blood test outcomes

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

Fast facts

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

The National Bowel Cancer Screening Program faecal occult blood test process

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

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

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

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

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

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

Overall faecal occult blood test outcomes

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

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

Faecal occult blood test outcomes by population subgroups

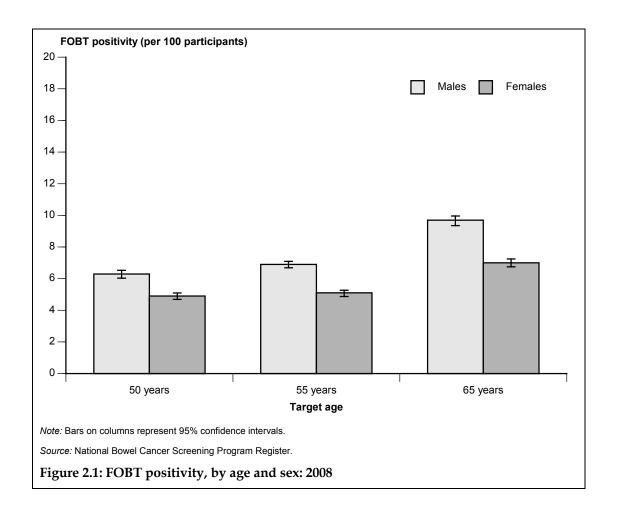
Faecal occult blood test outcomes by state and territory

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

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

Faecal occult blood test outcomes by age and sex

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



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

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

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

Faecal occult blood test outcomes by region and socioeconomic status

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

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

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

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

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

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

Faecal occult blood test tables

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

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

^{1.} Percentages equal the number of participants with FOBT results in each category in terms of 'positive', 'negative' and 'inconclusive' as a proportion of the total number of participants with correctly completed FOBTs.

^{2.} For participants who returned more than one FOBT kit, a positive result was selected over any other result, and a negative result was selected over an inconclusive result.

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

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

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

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

	2006		200)7	200	2008	
	Per cent	95% CI	Per cent	95% CI	Per cent	95% CI	
Males							
50 years					6.3	6.0-6.5	
55 years	6.6	6.0-7.1	7.9	7.7–8.1	6.9	6.7–7.1	
65 years	9.0	8.3–9.7	11.0	10.7–11.3	9.7	9.4–10.0	
Total	7.7	7.2-8.1	9.3	9.1–9.5	7.7	7.6–7.9	
Females							
50 years					4.9	4.7–5.1	
55 years	4.8	4.3-5.2	5.7	5.6-5.9	5.1	4.9–5.3	
65 years	6.1	5.5-6.6	7.8	7.6–8.1	7.0	6.8–7.3	
Total	5.3	5.0-5.7	6.6	6.5-6.7	5.7	5.6-5.8	
Persons							
50 years					5.5	5.4-5.7	
55 years	5.6	5.2-5.9	6.7	6.6–6.8	5.9	5.8–6.1	
65 years	7.5	7.0–7.9	9.4	9.2–9.5	8.3	8.1–8.5	
Total	6.4	6.1-6.7	7.8	7.7-8.0	6.6	6.5-6.7	

^{1.} People aged 50 years were invited to screen from 1 July 2008.

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

Faecal occult blood test positivity rates by population subgroups

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

	_	y . y								
		NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males										
50 years	Positive results	572	467	354	198	177	39	17	17	1,841
	Per cent	6.1	6.7	6.2	5.9	6.8	6.2	3.9	6.7	6.3
55 years	Positive results	828	631	758	373	380	121	36	22	3,149
	Per cent	6.8	6.6	6.9	6.8	8.0	7.7	5.1	7.7	6.9
65 years	Positive results	1,119	751	866	439	412	147	40	25	3,799
	Per cent	10.1	9.6	9.1	9.8	10.2	11.1	7.5	13.1	9.7
Total	Positive results	2,519	1,849	1,978	1,010	969	307	93	64	8,789
	Per cent	7.7	7.6	7.5	7.6	8.5	8.7	5.5	8.8	7.7
	95% CI	7.4–8.0	7.3–7.9	7.2–7.9	7.1–8.0	8.0-9.0	7.8–9.6	4.4-6.6	6.7–10.9	7.6–7.9
Females										
50 years	Positive results	540	451	314	193	150	43	32	16	1,739
	Per cent	4.8	5.4	4.6	4.7	4.8	5.3	5.3	5.7	4.9
55 years	Positive results	757	627	675	344	305	116	42	16	2,882
	Per cent	5.0	5.2	5.0	5.3	5.1	5.9	4.8	6.0	5.
65 years	Positive results	920	623	688	305	311	127	45	7	3,026
	Per cent	7.4	7.1	6.7	6.4	6.9	9.1	7.7	5.3	7.0
Total	Positive results	2,217	1,701	1,677	842	766	286	119	39	7,64
	Per cent	5.7	5.8	5.5	5.5	5.6	6.8	5.8	5.7	5.7
	95% CI	5.5-6.0	5.5–6.1	5.2-5.7	5.1–5.8	5.2-6.0	6.1-7.6	4.8-6.8	4.0-7.5	5.6–5.8
Persons										
50 years	Positive results	1,112	918	668	391	327	82	49	33	3,580
	Per cent	5.4	6.0	5.3	5.2	5.7	5.7	4.7	6.2	5.5
55 years	Positive results	1,585	1,258	1,433	717	685	237	78	38	6,03
	Per cent	5.8	5.8	5.9	6.0	6.4	6.7	4.9	6.9	5.9
65 years	Positive results	2,039	1,374	1,554	744	723	274	85	32	6,825
	Per cent	8.7	8.3	7.8	8.1	8.4	10.1	7.6	9.9	8.3
Total	Positive results	4,736	3,550	3,655	1,852	1,735	593	212	103	16,436
	Per cent	6.6	6.6	6.4	6.4	6.9	7.7	5.7	7.3	6.6
	95% CI	6.5-6.8	6.4-6.8	6.2-6.6	6.2-6.7	6.6-7.2	7.1-8.3	4.9-6.4	6.0-8.7	6.5–6.7

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

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

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

There were 3 positive FOBT results and 119 valid FOBT results with postcodes that did not correspond with the ABS Australian Standard Geographical Classification for 2006 by postal area. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.

^{2.} Because some postcodes cross regional boundaries, totals may not add up due to rounding.

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

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

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

There were 174 positive FOBT results and 2,727 valid FOBT results with postcodes that did not correspond with the ABS Socio-Economic Index for Areas classifications for 2006 by postal area. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.

^{2.} Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.

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

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

^{1.} Aboriginal and Torres Strait Islander status was defined by the participant on the Participant Details form.

^{2.} There were 5,911 positive FOBT results and 90,000 valid FOBT results where Aboriginal and Torres Strait Islander status was not stated. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.

^{3.} Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.

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

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

Participants were assumed to speak English at home unless otherwise indicated. See Appendix B for a detailed explanation of language spoken at home.

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

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

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

^{1.} Disability status is reported by the participant on the Participant Details form.

There were 850 positive FOBT results and 15,594 valid FOBT results where disability status was not stated. These were regarded as missing data and excluded from this table. Hence, the totals in this table may be less than the national totals.

^{3.} A 'profound' disability status indicates that a person always needs assistance with self-care, movement and/or communications activities. A 'severe' disability status indicates that a person sometimes needs assistance with these activities.

^{4.} Rates equal the number of participants with positive FOBT results as a percentage of the total number of participants with valid results. A valid result was either positive or negative; inconclusive results were excluded.