

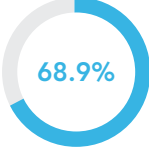
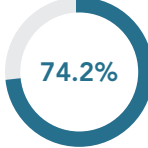
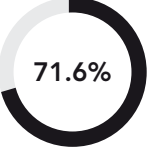
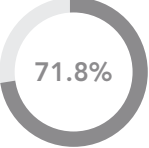



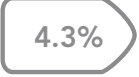


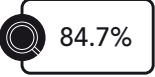


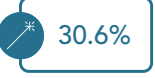


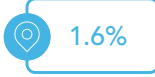

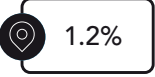



national monitoring of the colorectal cancer screening programme in the Netherlands 2020



			2020 total	2019 total
target population	1,083,648	1,113,364	2,197,012	2,225,068
invited	916,370	943,824	1,860,194	2,192,937
participated	631,189	700,685	1,331,874	1,573,662
participation rate				
referral rate				
colonoscopy participation				
positive predictive value CRC and/or AAD				
detection rate CRC and/or AAD				

most important results 2020

The participation rate in the colorectal cancer screening was **71.6%** in 2020. In total, more than **1.3 million** people participated.

Of these 1.3 million participants, **4.3%** had an unfavourable FIT result. This corresponds to more than **56,000** participants who were referred for a colonoscopy.

84.7% of these referred participants underwent a colonoscopy.

2,319 colorectal cancers and **13,999** advanced adenomas were detected. That is a total of **34.0%** of the participants who underwent a colonoscopy after an unfavourable FIT result. Of all participants who underwent a FIT, **1.2%** had colorectal cancer or an advanced adenoma.

The incidence and mortality rates of colorectal cancer further decreased in 2020.

COVID-19 pandemic

Due to the COVID-19 pandemic, the Dutch screening programme for colorectal cancer was halted between March 16, 2020 and May 10, 2020. During this period, no new invitations were sent and people who already received an invitation were asked to participate at a later time. As a result, less people participated in the Dutch colorectal cancer screening programme in 2020. Despite this temporary halt and the continuous pressure on healthcare, 85% of the target population was invited to participate in the Dutch colorectal cancer screening programme.

introduction

The Dutch colorectal cancer screening programme can prevent colorectal cancer by detecting and removing advanced adenomas (large polyps). In addition, colorectal cancer might be detected at an early stage (stage I and II), resulting in a better prognosis. The colorectal cancer screening programme is coordinated by the National Institute for Public Health and the Environment (RIVM).

The RIVM commissioned the Netherlands Comprehensive Cancer Organisation (IKNL) to carry out an annual national monitoring of the colorectal cancer screening programme. Monitoring ensures the quality of the colorectal cancer screening programme

and identifies bottlenecks. Monitoring is conducted using data from ScreenIT, the national information system for the colorectal cancer screening programme. In addition, complications of the colonoscopy are gathered from the Dutch Registration of Complications in Endoscopy (DRCE) (reference date 30 June 2021), information on colorectal cancer mortality from Statistics Netherlands (CBS) and information on the incidence of colorectal cancer from the Netherlands Cancer Registry (NCR).

The current monitoring report presents the results of the individuals who were invited for the nationwide colorectal screening programme in 2020.

terminology

• **advanced adenomen (AAD)** = large polyps • **colonoscopy** = endoscopic examination of the large bowel • **CRC** = colorectal cancer • **detection rate** = proportion of participants in whom colorectal cancer and/or advanced adenoma is detected of all participants • **faecal immunochemical test (FIT)** = primary test used in the colorectal cancer screening programme to detect blood in the stool • **interval cancers** = colorectal cancer diagnosed after a favourable FIT result before the invitation to the next screening round • **non-participants** = invited individuals who actively opt out of screening • **non-responders** = invited individuals who did not respond • **participation rate** = proportion of individuals that participated in the colorectal cancer screening programme after receiving an invitation in the reporting year • **positive predictive value (PPV)** = proportion of participants

with colorectal cancer and/or advanced adenomas of the total number of participants who underwent a colonoscopy • **re-attendance** = proportion of participants in the current screening round of those who also participated in the previous round • **referral rate** = proportion of participants with an unfavourable FIT result of the total number of participants • **sensitivity** = proportion of participants with a screen-detected colorectal cancer of all participants detected with colorectal cancer (screen-detected cancers and interval cancers) • **specificity** = proportion of participants with a true favourable FIT result of all participants in whom no colorectal cancer is detected before the next screening round (true favourable and false unfavourable results) • **subsequent rounds** = second, third and fourth round together

flowchart
total screening process in 2020

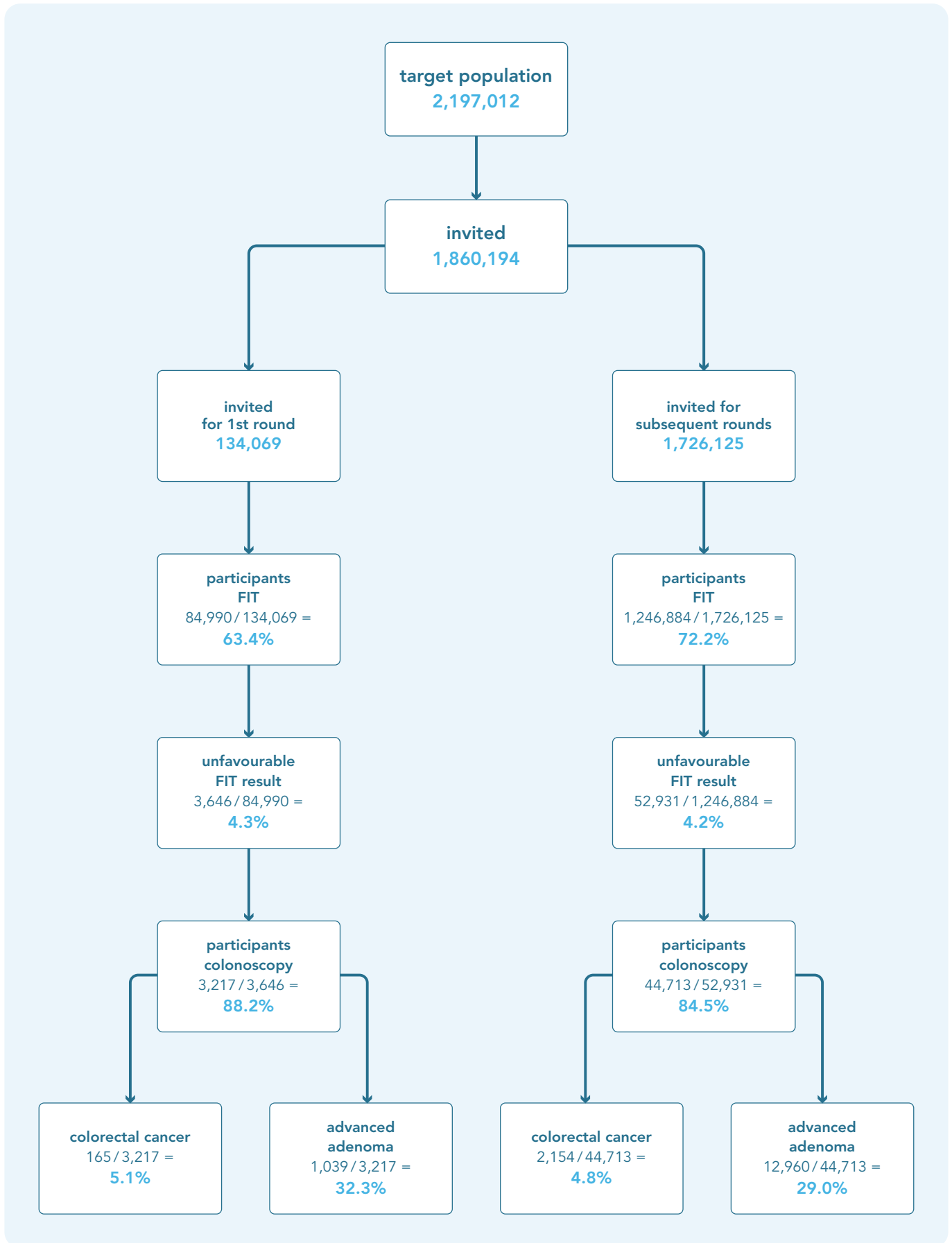
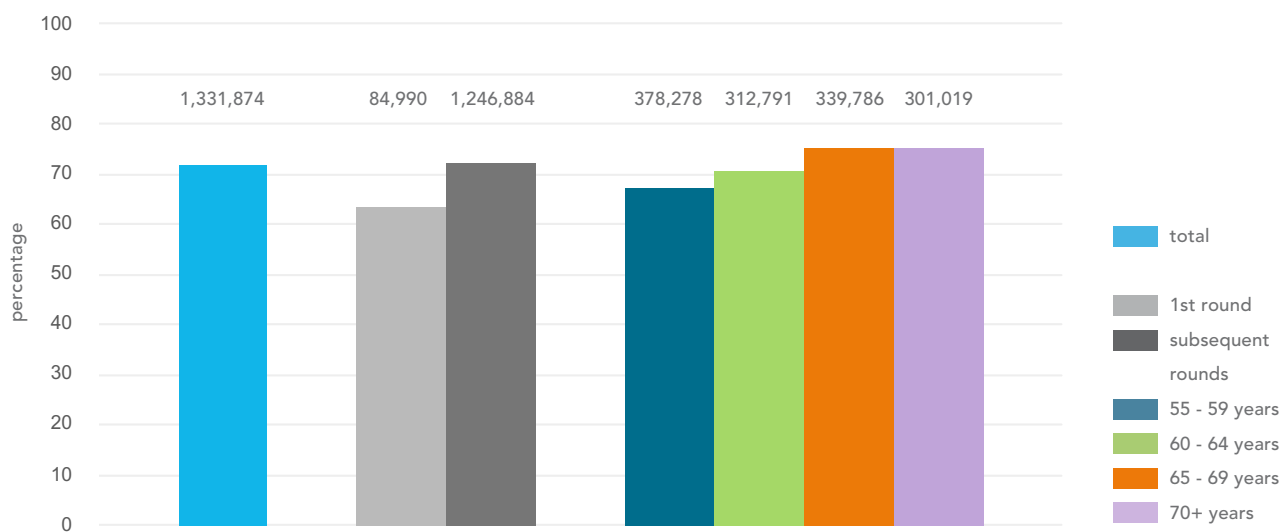


figure 1 participation rate FIT

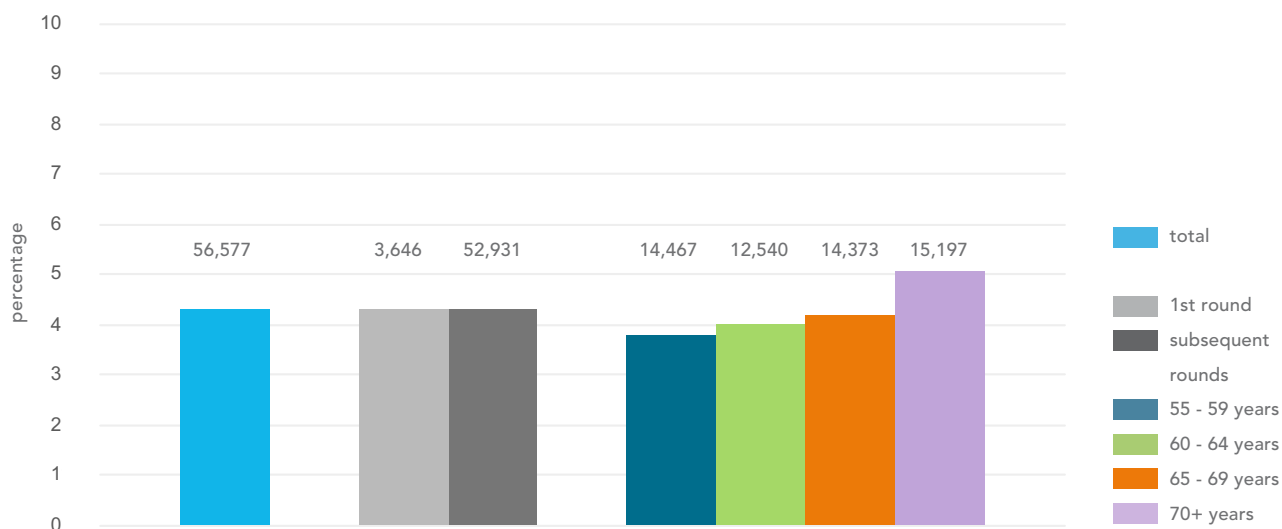
in 2020, by screening round and age group



- In all screening rounds the participation rate was higher among women compared to men. The participation rate for men was respectively 58.5% for the first round and 69.7% for the subsequent rounds. For women, these percentages were respectively 68.5% and 74.7%.
- The participation rate was highest in the age groups 65 – 69 years and 70+ years. This percentage was 75.0% for both age groups.
- In the first screening round, mostly individuals within the age group 55 – 59 years were invited. The participation rate of this age group was lower in the first screening round compared to the subsequent screening rounds, respectively 63.9% versus 68.2%.
- Among the invited individuals, a total of 53,166 (2.9%) individuals opted out (non-participant).
- Of those that had participated in a previous round, 1,160,989 (91.4%) individuals participated again in a subsequent round in 2020.

figure 2 referral rate

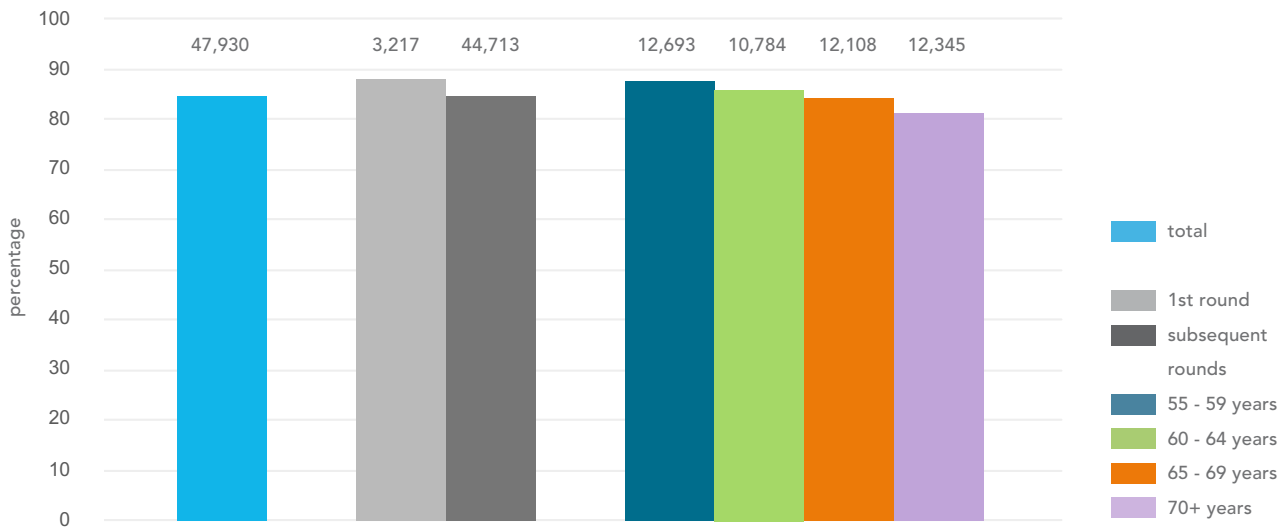
in 2020, by screening round and age group



- A total of 32,102 men were referred for colonoscopy. The referral rate was respectively 5.3% and 5.1% in the first and subsequent rounds. Among women, a total of 24,475 were referred for colonoscopy. The referral rate was respectively 3.4% and 3.5% in the first and subsequent rounds.
- The referral rate increased with increasing age, from 3.8% in the age group 55 – 59 years to 5.1% in the age group 70+ years.

figure 3 colonoscopy participation

in 2020, by screening round and age group



- In total, 84.7% of the individuals with an unfavourable FIT result underwent a colonoscopy. Colonoscopy participation decreased with increasing age.
- 954 participants did not attend the colonoscopy intake without signing out, and 2,326 participants were advised during the intake not to undergo a colonoscopy (e.g. due to advanced age or comorbidity).
- Colonoscopy participation was similar for men and women, respectively 84.9% versus 84.4%.
- Of all individuals with an unfavourable FIT result who had an intake interview and received advice for a colonoscopy, the colonoscopy actually took place in 98.5%.

PART 2 outcomes and detection

figure 4 positive predictive value

in 2020, by screening round and age group

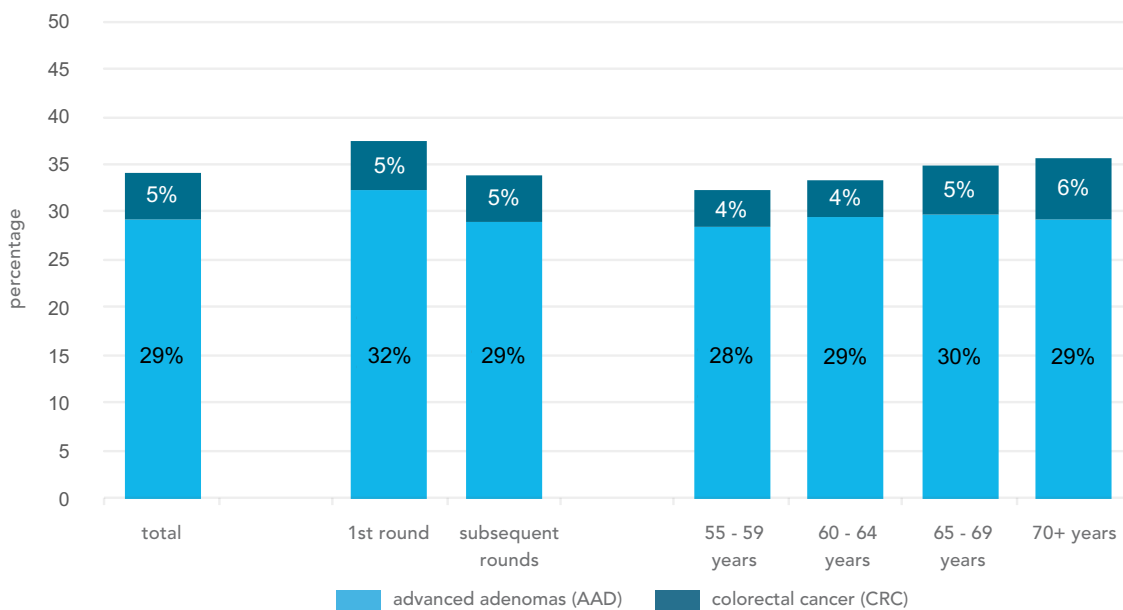


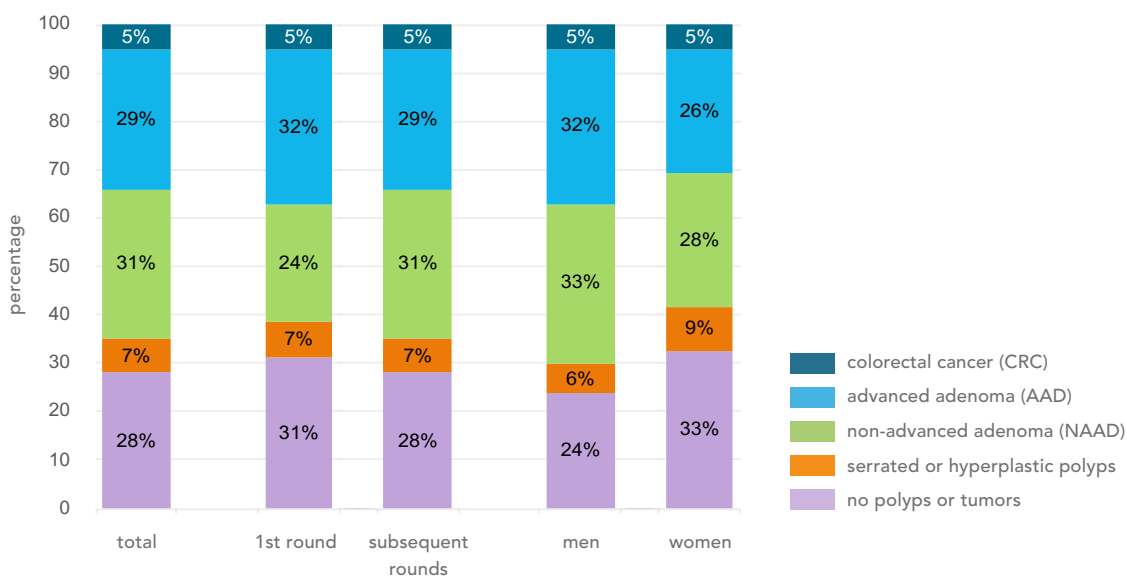
table 1 number of detected advanced adenomas and colorectal cancers in 2020

	advanced adenomas	colorectal cancer
total	13,999	2,319
1st round	1,039	165
subsequent rounds	12,960	2,154
55 - 59 years	3,598	504
60 - 64 years	3,173	426
65 - 69 years	3,605	607
70+ years	3,623	782

- In the total group, the positive predictive value was higher in the first invitation round than in the subsequent rounds.
- The positive predictive value for colorectal cancer was highest among the age groups of 65 – 69 years and 70+ years. These percentages were respectively 5% and 6%.
- The positive predictive value for advanced adenomas was higher in men (32%) than in women (26%). The positive predictive value for colorectal cancer was similar for men and women, namely 5%.

figure 5 colonoscopy findings

in 2020, by screening round and gender



- In 2020, colorectal cancer was detected in 2,319 (5%) individuals with an unfavourable FIT result who underwent a colonoscopy. In 13,999 (29%) of these individuals an advanced adenoma was found. This concerned 1,322 (5%) colorectal cancers and 8,670 (32%) advanced adenomas among the male participants and 997 (5%) colorectal cancers and 5,329 (26%) advanced adenomas among the female participants.
- During colonoscopy in the first round, colorectal cancer was detected in 165 (5%) participants and advanced adenoma was detected in 1,039 (32%) participants. Compared to the first screening round, the percentage advanced adenoma was lower (29%) and the percentage colorectal cancer remained stable in the subsequent rounds.
- The proportion of individuals with non-advanced adenomas was lower in the first round (24%) compared to the subsequent rounds (31%). The proportion of individuals with no polyps or tumours was higher in the first round compared to the subsequent rounds.

table 2 detection rate

in 2020, by age group

	advanced adenomas		colorectal cancer	
	number	detection rate	number	detection rate
55 - 59 years	3,598	0.95%	504	0.13%
60 - 64 years	3,173	1.01%	426	0.14%
65 - 69 years	3,605	1.06%	607	0.18%
70+ years	3,623	1.20%	782	0.26%
total	13,999	1.05%	2,319	0.17%

- Advanced adenoma was found in 13,999 participants and colorectal cancer was found in 2,319 participants. This corresponds to a detection rate of 1.22% in 2020.
- The detection rate increased with increasing age, from 0.95% for the age group 55 – 59 years to 1.20% for the age group 70+ years for advanced adenomas and from 0.13% for the age group 55 – 59 years to 0.26% for the age group 70+ years for colorectal cancer.

table 3 complications within 30 days after colonoscopy

in 2020, by type and severity of the complications (data source: complication registration (DCRE))

	mild		moderate		severe		fatal	
	number	percentage *	number	percentage *	number	percentage *	number	percentage *
perforation	12	0.027%	10	0.023%	8	0.018%	0	0.000%
bleeding	88	0.200%	91	0.207%	3	0.007%	0	0.000%
other	31	0.070%	4	0.009%	4	0.009%	0	0.000%
unknown	9	0.020%	3	0.007%	2	0.005%	1	0.002%
total	140	0.318%	108	0.245%	17	0.039%	1	0.002%

* The proportions of complications are based on the total number of performed colonoscopies in 2020. In total, 44,036 colonoscopies were performed in 2020. An individual may have undergone more than one colonoscopy.

- In total, the following complications were registered in 2020: 140 (0.318%) individuals with a mild complication (i.e. hospitalization < 4 days), 108 (0.245%) individuals with a moderate complication (i.e. hospitalization 4-10 days) and 17 (0.039%) individuals with a severe complication (i.e. hospitalization > 10 days).
- In 2020, one individual with a fatal complication was reported.
- Compared to 2019, the complication rates slightly increased.

table 4 interval cancers

by year

	2015	2016	2017
number of interval cancers after a favourable FIT result	866	1,009	1,341
proportion of interval cancers after favourable FIT result	0.11%	0.10%	0.10%
sensitivity	84.4%	81.9%	78.9%
specificity	94.2%	94.8%	95.3%

- The proportion interval cancers in individuals with a favourable FIT result in 2017 was similar to previous years.
- The sensitivity slightly decreased and the specificity slightly increased over the years.

table 5 indicators 2020 compared to previous years

	2014	2015	2016	2017	2018	2019	2020
target population							
target population	864,507	1,305,661	1,542,629	2,039,974	2,208,547	2,225,068	2,197,012
number of invited individuals	740,805	1,170,590	1,455,271	1,939,857	2,186,023	2,192,937	1,860,194
coverage rate invitations	85.7%	89.7%	94.3%	95.1%	99.0%	98.6%	84.7%
response FIT							
non-participants	9.6%	8.8%	8.2%	7.2%	5.5%	3.7%	2.9%
non-respondents	18.7%	18.2%	18.5%	19.8%	21.6%	24.5%	25.5%
participation FIT							
participation rate total	71.7%	73.0%	73.3%	73.0%	72.9%	71.8%	71.6%
participation rate initial invitations	62.5%	63.3%	62.9%	62.0%	60.7%	59.9%	60.7%
participation rate reminder	9.2%	9.7%	10.3%	11.0%	12.3%	11.8%	10.9%
re-attendance		91.7%	93.5%	93.3%	93.2%	92.0%	91.4%
average age participants (in years)							
1st round	68.0	66.1	64.8	63.3	60.3	56.2	55.3
2nd round			67.1	67.1	65.3	63.4	59.6
3rd round					69.1	69.1	67.2
4th round							71.2
colonoscopy							
colonoscopy participation after unfavourable FIT result	81.1%	82.4%	83.7%	84.2%	83.4%	86.1%	84.7%
travel distance and time intervals							
travel distance to colonoscopy intake < 40 km	96.4%	90.3%	97.0%	98.5%	98.1%	99.8%	99.5%
waiting time colonoscopy intake < 15 working days	59.9%	37.5%	64.9%	76.2%	73.6%	94.6%	86.8%
waiting time colonoscopy (after intake) < 15 working days	88.2%	78.4%	81.0%	83.2%	84.7%	80.1%	77.4%

- The target population in 2020 comprised almost 2.2 million individuals, of which more than 1.8 million individuals received an invitation. This results in a participation rate of 85%. Due to the temporarily halt of the Dutch colorectal cancer screening programme, the number of individuals that received an invitation and the coverage rate of the invitations is lower compared to previous years.
- In 2020, 631,189 men and 700,685 women participated in the colorectal cancer screening programme. The participation rate slightly decreased compared to previous years. This is among others because the target population is younger and the participation rate is lower for younger individuals.
- The participation rate after a reminder was 10.9% in 2020. This participation rate is lower compared to previous years.
- The average age of participants was higher in subsequent rounds in 2020 than expected with a bi-annual invitation. This is a consequence of the phased introduction of the screening programme.
- Compared to 2019 colonoscopy participation decreased in 2020, but increased compared to the years before 2019.
- Both waiting time for a colonoscopy intake and waiting time for a colonoscopy became longer in 2020 compared to previous years. This is likely due to the COVID-19 pandemic.

table 6 test characteristics compared to previous years

by year and screening round

	2014	2015	2016	2017	2018	2019	2020
referral rate							
1st round	8.3%	6.8%	6.5%	6.0%	4.9%	4.2%	4.3%
2nd round			4.9%	4.8%	4.2%	4.2%	4.0%
3rd round					4.2%	4.4%	4.4%
4th round							4.6%
all rounds	8.3%	6.8%	6.0%	5.4%	4.5%	4.3%	4.3%
detection rate CRC							
1st round	0.6%	0.5%	0.4%	0.4%	0.3%	0.2%	0.2%
2nd round			0.2%	0.2%	0.2%	0.2%	0.1%
3rd round					0.2%	0.2%	0.2%
4th round							0.2%
all rounds	0.6%	0.5%	0.4%	0.3%	0.2%	0.2%	0.2%
detection rate CRC and/or AAD							
1st round	3.5%	3.0%	2.7%	2.5%	1.9%	1.5%	1.4%
2nd round			1.6%	1.6%	1.3%	1.3%	1.1%
3rd round					1.3%	1.3%	1.3%
4th round							1.3%
all rounds	3.5%	3.0%	2.4%	2.0%	1.6%	1.4%	1.2%
PPV CRC							
1st round	8.9%	8.8%	8.2%	8.0%	7.0%	4.8%	5.1%
2nd round			6.6%	6.1%	5.5%	5.3%	3.8%
3rd round					6.5%	5.8%	5.3%
4th round							5.8%
all rounds	8.9%	8.8%	7.8%	7.1%	6.4%	5.4%	4.8%
PPV CRC and/or AAD							
1st round	55.5%	57.5%	53.2%	50.9%	46.3%	40.2%	37.4%
2nd round			42.4%	41.2%	37.7%	36.0%	32.5%
3rd round					38.2%	35.7%	34.2%
4th round							35.5%
all rounds	55.5%	57.5%	50.6%	46.4%	41.8%	36.8%	34.0%

- The referral rate, detection rate and positive predictive value decreased over time. This is a consequence of the decreasing average age of the participants over the years. Less abnormalities are found in younger participants compared to older participants. The fact that the proportion of participants in the subsequent rounds, in whom less abnormalities are detected, increased over the years, also plays a role in the results of all rounds together.
- The referral rate, detection rate and positive predictive

value decreased in the second round compared with the first round. Less abnormalities are found in the second round since those were already detected in the first round. It is noticeable that the percentages increased again in the third and fourth round. A possible explanation for this result can be the differences in age between the subsequent rounds, since the average age of the individuals in the third and fourth round was higher due to the phased introduction of the screening programme.

figure 6 incidence and mortality

by year (data source: Netherlands Cancer Registry (NCR) (incidence) and Statistics Netherlands (CBS) (mortality))

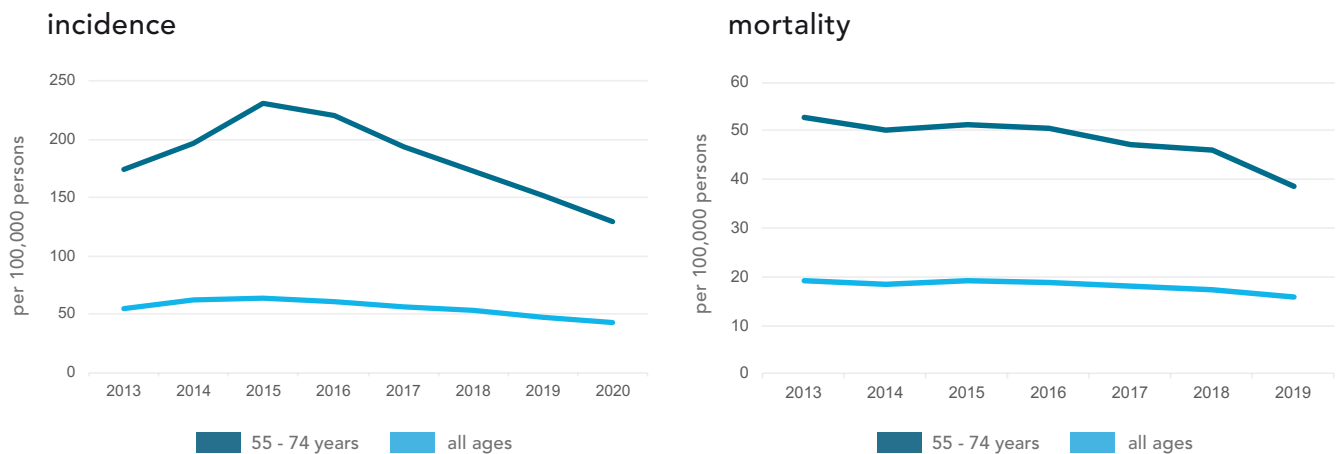


table 7 incidence and mortality

by year (data source: Netherlands Cancer Registry (NCR) (incidence) and Statistics Netherlands (CBS) (mortality))

	2013	2014	2015	2016	2017	2018	2019	2020
incidence rate colorectal cancer / 100,000 (ESR)								
55 - 74 years	174.4	196.9	231.2	220.2	193.3	172.2	152.6	130.3
all ages	54.8	62.0	64.5	61.6	56.4	53.9	48.1	43.5
mortality rate colorectal cancer / 100,000 (ESR)								
55 - 74 years	52.9	50.2	51.2	50.5	47.1	45.9	38.7	*
all ages	19.3	18.6	19.1	18.8	17.9	17.5	16.0	*

ESR = European standardized rate, standardized for the European standard population.

The rates of 2020 are preliminary and therefore in italic.

* Not yet available.

• The incidence of colorectal cancer in the Netherlands decreased since 2016 and is since 2018 lower than the incidence in 2013, before the introduction of the Dutch colorectal cancer screening programme. This trend is seen in the total population as well as in the group of individuals within the screening age. The incidence of the total

population was 43.5 per 100,000 individuals in 2020. Due to the COVID-19 pandemic, there were less colorectal cancer diagnoses in 2020.

• Colorectal cancer mortality has decreased slightly over the years. The mortality rate for 2020 was not yet available.

This monitor is available on: www.iknl.nl/en/screening

and on: www.rivm.nl/en/national-monitoring-of-colorectal-cancer-screening-programme

Disclaimer: the information in this monitor has been carefully compiled. The results of previous years have been updated with recent data. Therefore, these may differ from previously reported results.