Colorectal cancer

1993-2021

(ICD10 codes: C18-C20)

Northern Ireland Cancer Registry, 2023

An official statistics publication

ABOUT THIS REPORT

Contents

This report includes information on incidence of colorectal cancer as recorded by the Northern Ireland Cancer Registry (NICR). Incidence data is available annually from 1993 to 2021, however in order to provide stable and robust figures the majority of information presented in this report is based upon the average number of cases diagnosed in the last five years.

Methodology

The methodology used in producing the statistics presented in this report, including details of data sources, classifications and coding are available in the accompanying methodology report available at: www.qub.ac.uk/research-centres/nicr/CancerInformation/official-statistics.

Official statistics

The incidence, prevalence and survival statistics in this publication are designated as official statistics signifying that they comply with the Code of Practice for Official Statistics. Further information on this code is available at code.statisticsauthority.gov.uk.

Cancer mortality data

The NI Statistics and Research Agency (NISRA) is the official statistics provider of cancer mortality data in Northern Ireland. However, for completeness, data on cancer mortality is also provided in this report. While analysis is conducted by NICR staff, the original data is provided courtesy of the General Register Office (NI) via the Department of Health.

Reuse of information

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Northern Ireland Cancer Registry 2023. Colorectal cancer: 1993-2021. Available at: www.qub.ac.uk/research-centres/nicr

Further information

Further information is available at: www.qub.ac.uk/research-centres/nicr

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Acknowledgements

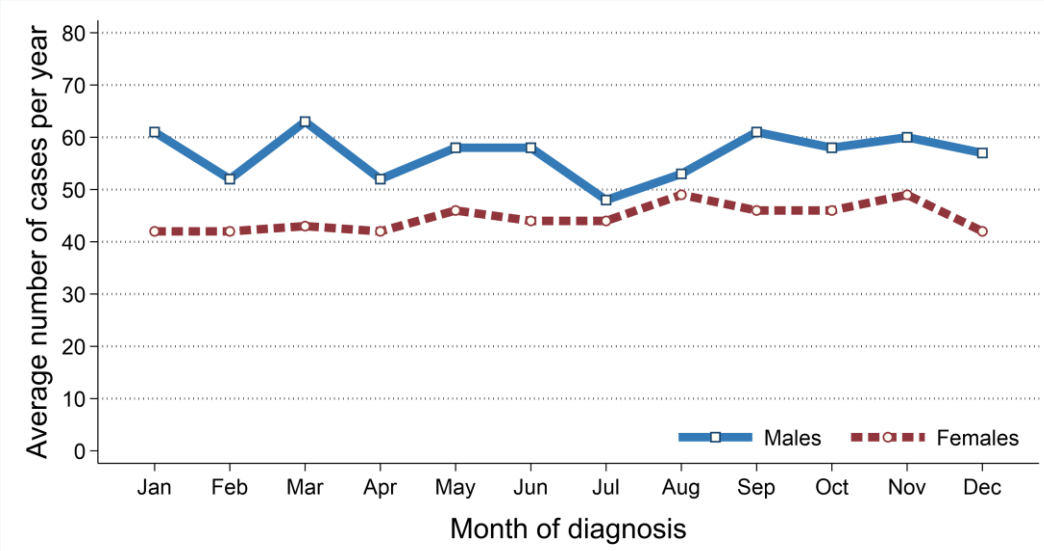
The Northern Ireland Cancer Registry (NICR) uses data provided by patients and collected by the health service as part of their care and support.

NICR is funded by the Public Health Agency and is based in Queen's University, Belfast.

INCIDENCE

- There were 6,081 cases of colorectal cancer diagnosed during 2017-2021 in Northern Ireland. On average this was 1,216 cases per year.
- During this period 43.9% of colorectal cancer cases were among women (Male cases: 3,409, Female cases: 2,672). On average there were 682 male and 534 female cases of colorectal cancer per year.
- The most common diagnosis month during 2017-2021 was March among males with 63 cases per year and November and August among females with 49 cases per year.

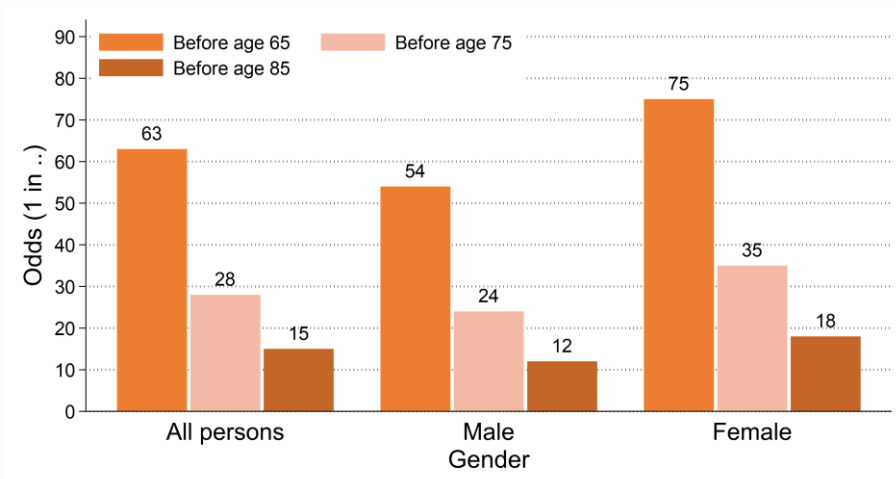
Figure 1: Average number of cases of colorectal cancer per year in 2017-2021 by month of diagnosis



Month of diagnosis	Average number of cases per year	
	Males	Females
January	61	42
February	52	42
March	63	43
April	52	42
May	58	46
June	58	44
July	48	44
August	53	49
September	61	46
October	58	46
November	60	49
December	57	42

- The colorectal cancer incidence rates for each gender were 73.3 cases per 100,000 males and 55.7 cases per 100,000 females.
- The odds of developing colorectal cancer before age 85 was 1 in 12 for men and 1 in 18 for women.

Figure 2: Odds of developing colorectal cancer in 2017-2021



INCIDENCE BY AGE

- The median age of patients diagnosed with colorectal cancer during 2017-2021 was 72 years (Males: 71, Females: 73).
- The risk of developing colorectal cancer varied by age, with 38.6% of men and 44.3% of women diagnosed with colorectal cancer aged 75 and over at diagnosis.
- In contrast, 10.9% of patients diagnosed with colorectal cancer were aged 0 to 54 at diagnosis.

Figure 3: Average number of cases of colorectal cancer diagnosed per year in 2017-2021 by age at diagnosis

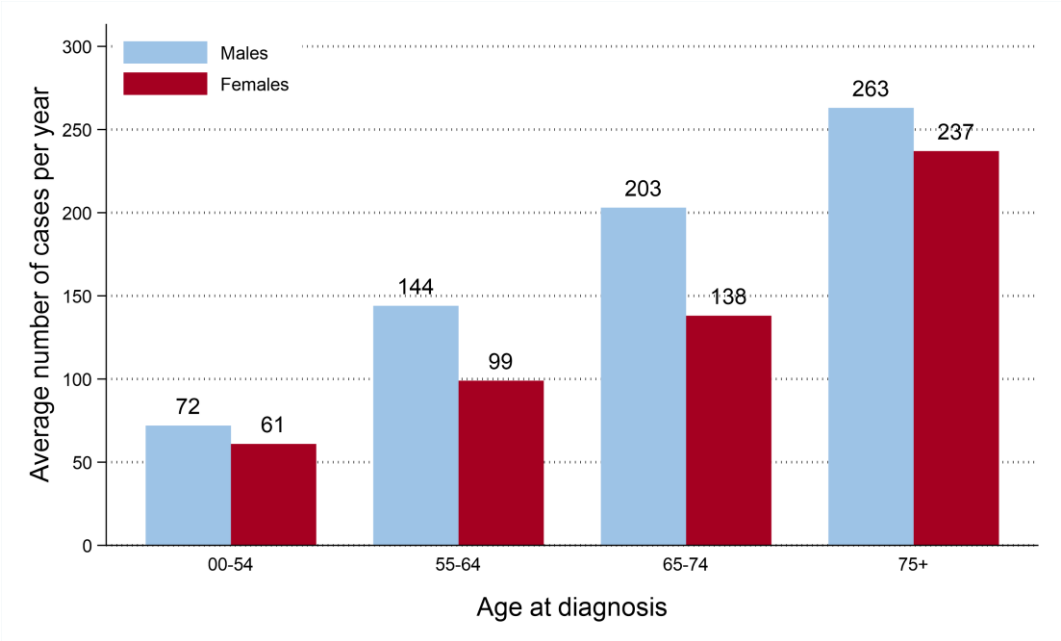
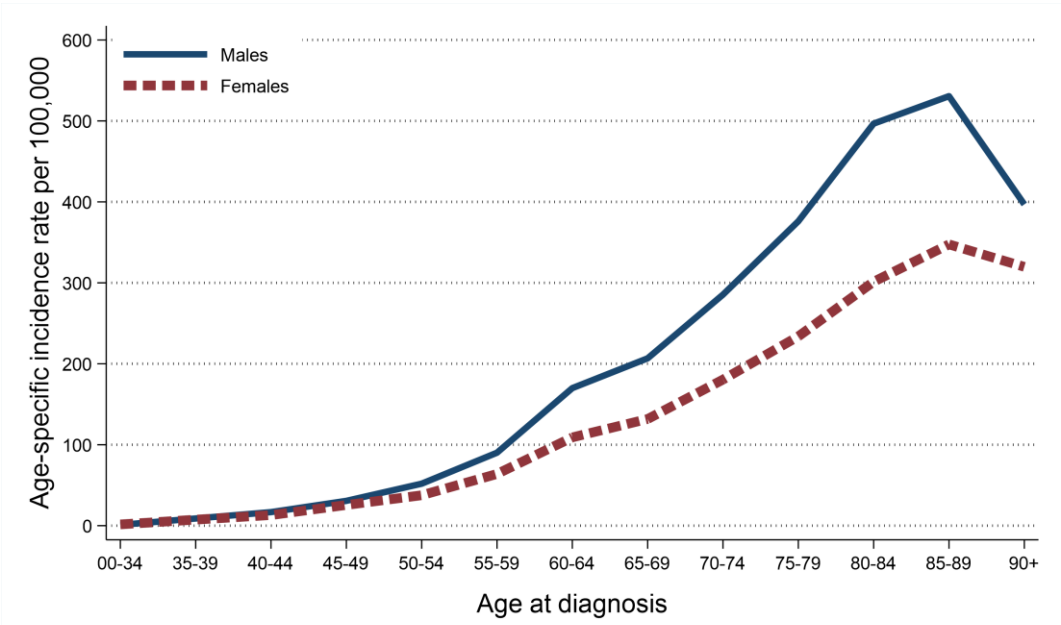


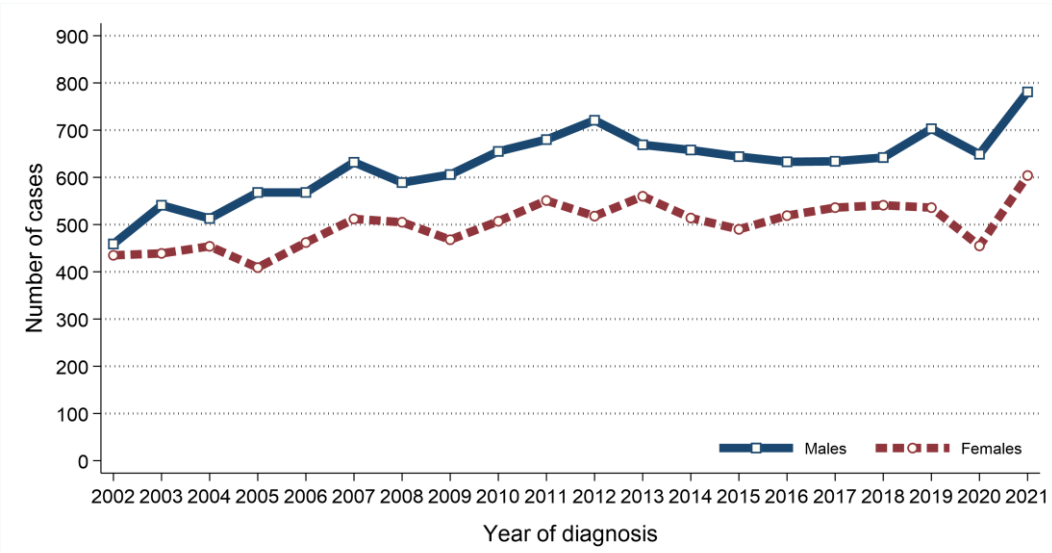
Figure 4: Age-specific incidence rates of colorectal cancer in 2017-2021



INCIDENCE TRENDS

- The number of cases of colorectal cancer among males increased between 2012-2016 and 2017-2021 by 2.5% from 3,325 cases (665 cases per year) to 3,409 cases (682 cases per year).
- The number of cases of colorectal cancer among females increased between 2012-2016 and 2017-2021 by 2.7% from 2,601 cases (520 cases per year) to 2,672 cases (534 cases per year).

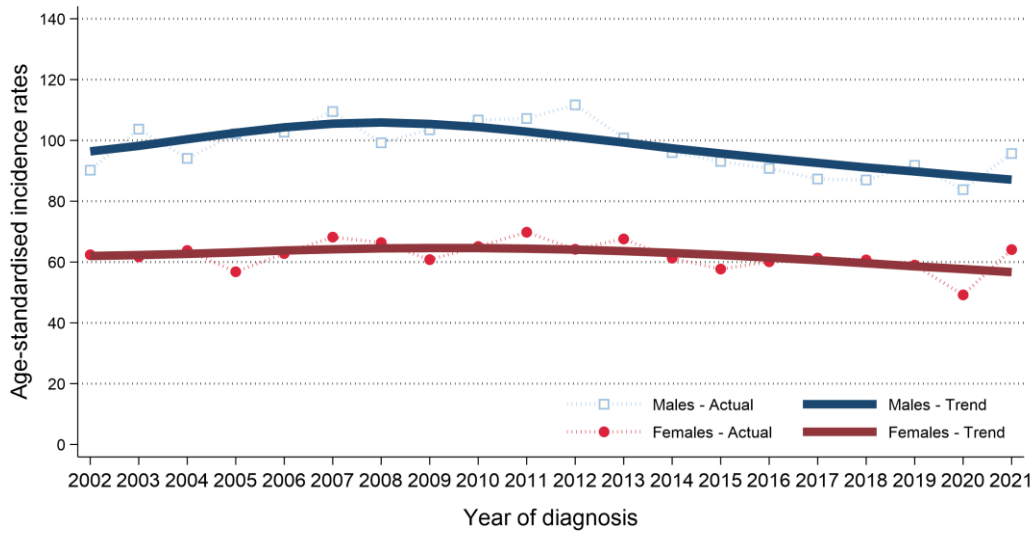
Figure 5: Trends in number of cases of colorectal cancer diagnosed from 2002 to 2021



Year of diagnosis	Number of cases	
	Males	Females
2012	721	518
2013	669	560
2014	658	514
2015	644	490
2016	633	519
2017	634	536
2018	642	541
2019	703	536
2020	649	455
2021	781	604

- Male age-standardised colorectal cancer incidence rates decreased between 2012-2016 and 2017-2021 by 9.3% from 98.2 to 89.1 cases per 100,000 males. This change was statistically significant.
- Female age-standardised colorectal cancer incidence rates decreased between 2012-2016 and 2017-2021 by 5.5% from 62.2 to 58.8 cases per 100,000 females. This change was not statistically significant.

Figure 6: Trends in incidence rates of colorectal cancer from 2002 to 2021



Age-standardised incidence rates illustrate the change in the number of cases within a population of a fixed size and age structure (2013 European Standard).

They thus represent changes other than those caused by population growth and/or ageing.

Trends can also be influenced by changes in how cancer is classified and coded. (e.g. the move from ICD-0-2 to ICD-0-3 in 2019).

INCIDENCE TRENDS BY AGE

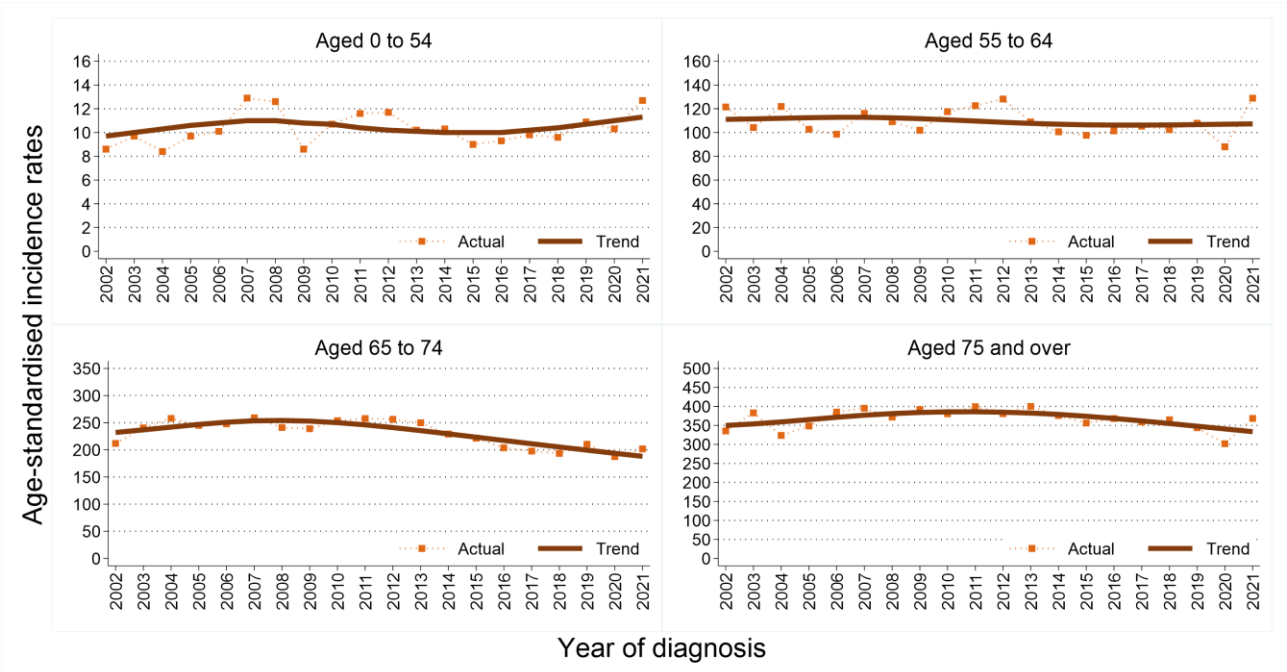
- Between 2012-2016 and 2017-2021 the number of cases of colorectal cancer among
  - Persons aged 0 to 54 increased by 3.8% among males and increased by 8.2% among females.
  - Persons aged 55 to 64 increased by 10.9% among males and increased by 14.8% among females.
  - Persons aged 65 to 74 decreased by 8.5% among males and decreased by 3.4% among females.
  - Persons aged 75 and over increased by 7.7% among males and increased by 0.7% among females.

Table 1: Average number of cases per year of colorectal cancer by period of diagnosis in 2012-2021

Age at diagnosis	All persons		Male		Female	
	2012-2016	2017-2021	2012-2016	2017-2021	2012-2016	2017-2021
All ages	**1,185**	**1,216**	**665**	**682**	**520**	**534**
	.	.	.	.	.	.
0 to 54	125	133	69	72	56	61
55 to 64	216	243	130	144	86	99
65 to 74	364	340	222	203	142	138
75 and over	479	500	244	263	235	237

- Between 2012-2016 and 2017-2021 age-standardised incidence rates of colorectal cancer among
  - Persons aged 0 to 54 did not change significantly among males or females.
  - Persons aged 55 to 64 did not change significantly among males or females.
  - Persons aged 65 to 74 decreased by 17.4% among males and did not change significantly among females.
  - Persons aged 75 and over did not change significantly among males or females.

Figure 7: Trends in incidence rates of colorectal cancer from 2002 to 2021 by age group



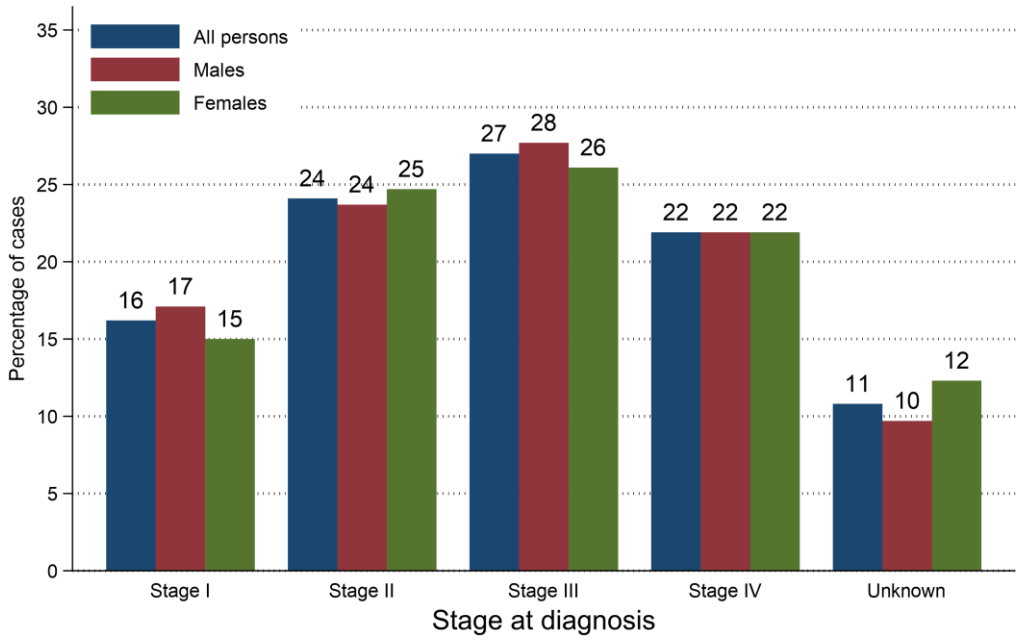
INCIDENCE BY STAGE AT DIAGNOSIS

- During 2017-2021 89.2% of colorectal cancer cases had a stage assigned.
- 16.2% of colorectal cancer cases were diagnosed at Stage I. (18.1% of staged cases)
- 21.9% of colorectal cancer cases were diagnosed at Stage IV. (24.5% of staged cases)

Table 2: Number of cases of colorectal cancer diagnosed in 2017-2021 by stage at diagnosis

Stage at diagnosis	All persons		Male		Female	
	Total cases in period	Average cases per year	Total cases in period	Average cases per year	Total cases in period	Average cases per year
All stages	**6,081**	**1,216**	**3,409**	**682**	**2,672**	**534**
	.	.	.	.	.	.
Stage I	984	197	582	116	402	80
Stage II	1,468	294	809	162	659	132
Stage III	1,641	328	943	189	698	140
Stage IV	1,330	266	745	149	585	117
Unknown	658	132	330	66	328	66

Figure 8: Proportion of cases of colorectal cancer diagnosed in 2017-2021 by stage at diagnosis



Cancer stage describes the size of a cancer and how far it has grown and spread.

This information is used to help decide what treatments are needed.

The classification used here to stage cancer is the TNM classification (Version 7 prior to 2018, Version 8 from 2018 onwards).

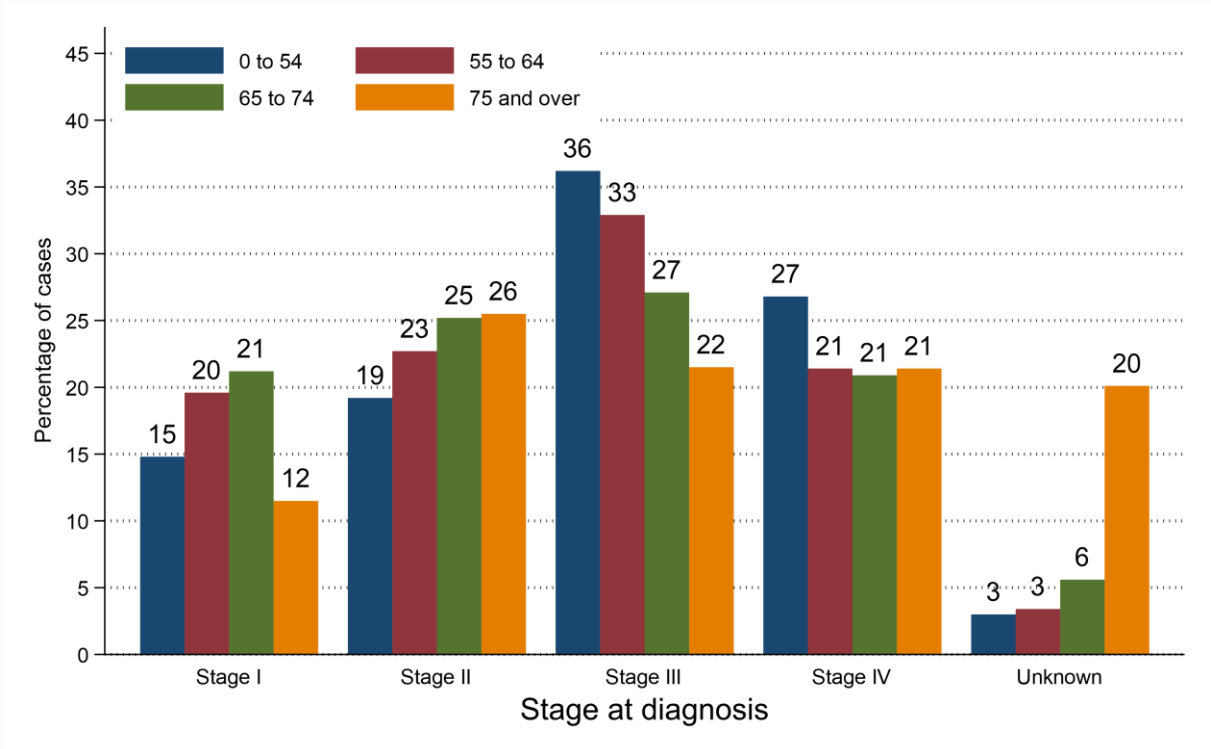
INCIDENCE BY STAGE AND AGE AT DIAGNOSIS

- During 2017-2021 79.9% of colorectal cancer cases among those aged 75 and over had a stage assigned compared to 97.0% of those aged 0 to 54.
- 11.5% of colorectal cancer cases among those aged 75 and over were diagnosed at Stage I (14.4% of staged cases) compared to 14.8% of those aged 0 to 54 (15.2% of staged cases).
- 21.4% of colorectal cancer cases among those aged 75 and over were diagnosed at Stage IV (26.8% of staged cases) compared to 26.8% of those aged 0 to 54 (27.7% of staged cases).

Table 3: Average number of cases of colorectal cancer diagnosed per year in 2017-2021 by stage and age at diagnosis

Stage at diagnosis	Age at diagnosis				
	All ages	0 to 54	55 to 64	65 to 74	75 and over
All stages	**1,216**	**133**	**243**	**340**	**500**
	.	.	.	.	.
Stage I	197	20	48	72	58
Stage II	294	25	55	86	127
Stage III	328	48	80	92	108
Stage IV	266	36	52	71	107
Unknown	132	4	8	19	100

Figure 9: Proportion of cases of colorectal cancer diagnosed in 2017-2021 by stage and age at diagnosis



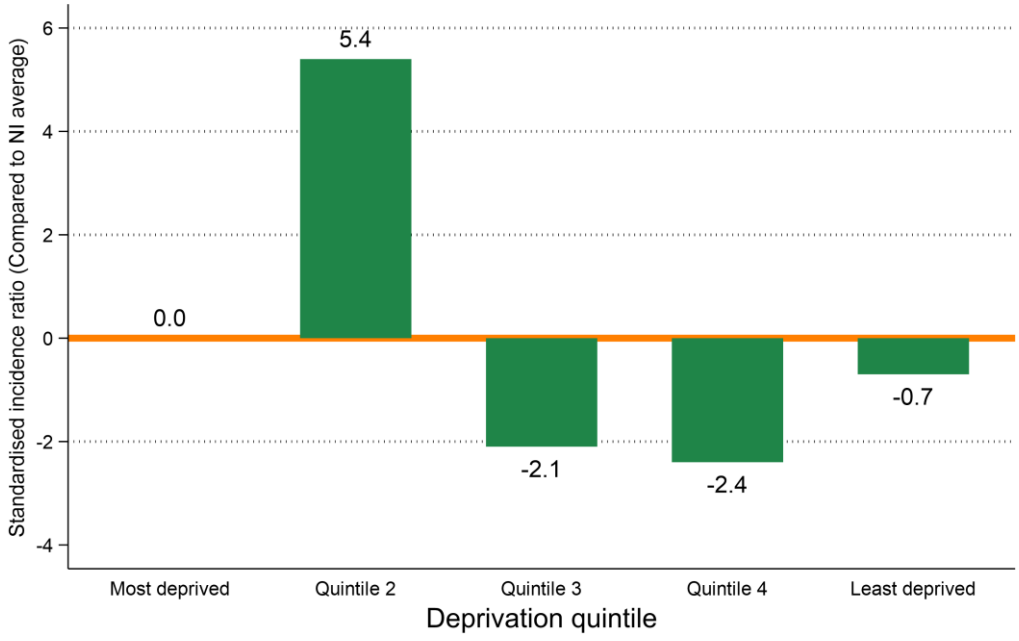
INCIDENCE BY DEPRIVATION

- The number of cases of colorectal cancer diagnosed during 2017-2021 varied in each deprivation quintile due to variations in population size and age.
- After accounting for these factors, incidence rates:
  - in the most socio-economically deprived areas did not vary significantly from the NI average.
  - in the least socio-economically deprived areas did not vary significantly from the NI average.

Table 4: Number of cases of colorectal cancer diagnosed in 2017-2021 by deprivation quintile

Deprivation quintile	All persons		Male		Female	
	Total cases in period	Average cases per year	Total cases in period	Average cases per year	Total cases in period	Average cases per year
Northern Ireland	**6,081**	**1,216**	**3,409**	**682**	**2,672**	**534**
	.	.	.	.	.	.
Most deprived	992	198	576	115	416	83
Quintile 2	1,282	256	724	145	558	112
Quintile 3	1,253	251	706	141	547	109
Quintile 4	1,261	252	700	140	561	112
Least deprived	1,293	259	703	141	590	118
Unknown	0	0	0	0	0	0

Figure 10: Standardised incidence ratio comparing deprivation quintile to Northern Ireland for colorectal cancer diagnosed in 2017-2021



Standardised incidence ratios compare incidence rates in each deprivation quintile with the Northern Ireland incidence rate.

A value above 0 means that incidence rates in that deprivation quintile are greater than the NI average.

This measure takes account of population size and age structure. Differences are thus not a result of these factors.

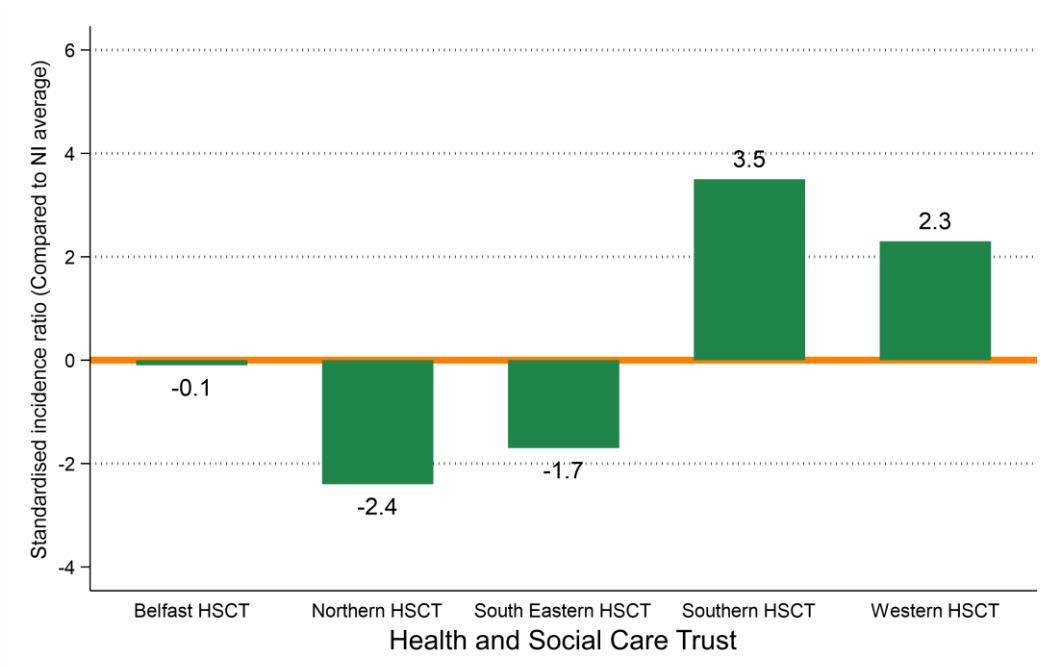
INCIDENCE BY HEALTH AND SOCIAL CARE TRUST

- The number of cases of colorectal cancer diagnosed during 2017-2021 varied in each Health and Social Care Trust due to variations in population size and age.
- After accounting for these factors, incidence rates:
  - in Belfast HSCT did not vary significantly from the NI average.
  - in Northern HSCT did not vary significantly from the NI average.
  - in South Eastern HSCT did not vary significantly from the NI average.
  - in Southern HSCT did not vary significantly from the NI average.
  - in Western HSCT did not vary significantly from the NI average.

Table 5: Number of cases of colorectal cancer diagnosed in 2017-2021 by Health and Social Care Trust

Health and Social Care Trust	All persons		Male		Female	
	Total cases in period	Average cases per year	Total cases in period	Average cases per year	Total cases in period	Average cases per year
Northern Ireland	**6,081**	**1,216**	**3,409**	**682**	**2,672**	**534**
	.	.	.	.	.	.
Belfast HSCT	1,100	220	608	122	492	98
Northern HSCT	1,581	316	867	173	714	143
South Eastern HSCT	1,263	253	687	137	576	115
Southern HSCT	1,174	235	674	135	500	100
Western HSCT	963	193	573	115	390	78
Unknown	0	0	0	0	0	0

Figure 11: Standardised incidence ratio comparing Health and Social Care Trust to Northern Ireland for colorectal cancer diagnosed in 2017-2021



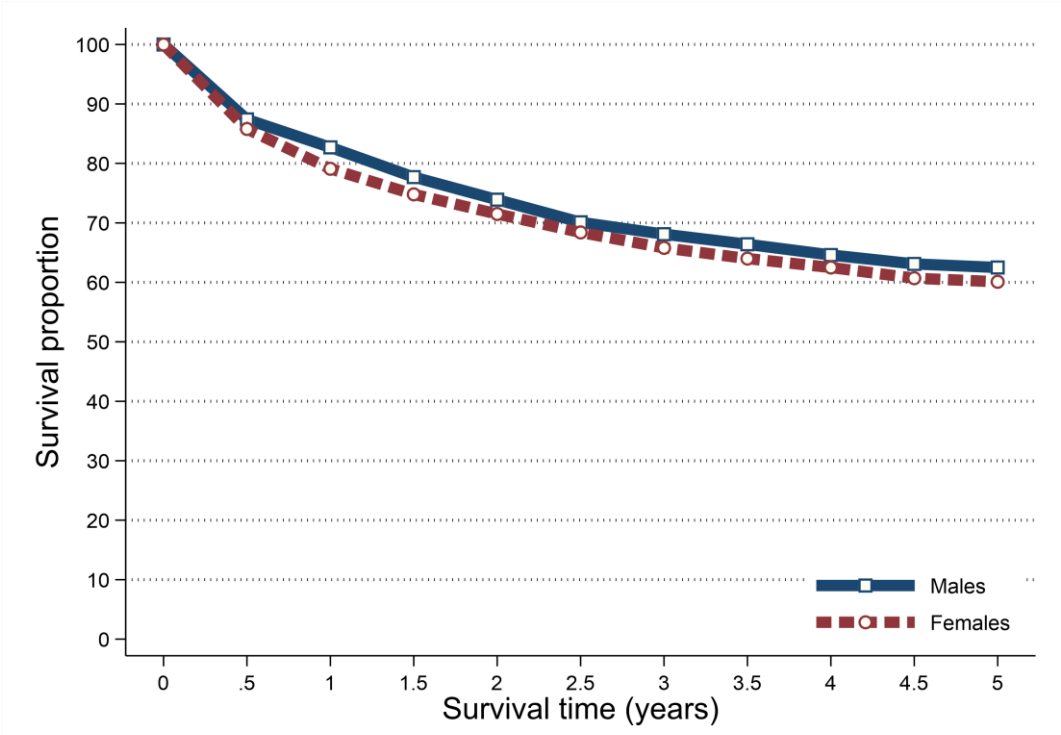
SURVIVAL

- 76.7% of patients were alive one year and 50.7% were alive five years from a colorectal cancer diagnosis in 2012-2016. (observed survival)
- Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 81.1% one year and 61.6% five years from a colorectal cancer diagnosis in 2012-2016.
- Five-year survival (ASNS) for colorectal cancer patients diagnosed in 2012-2016 was 62.5% among men and 60.1% among women.

Table 6: Survival from colorectal cancer for patients diagnosed in 2012-2016

Time since diagnosis	All persons		Male		Female	
	Observed survival	Age-standardised net survival	Observed survival	Age-standardised net survival	Observed survival	Age-standardised net survival
6 months	83.6%	86.6%	85.0%	87.4%	81.7%	85.8%
One year	76.7%	81.1%	79.0%	82.7%	73.8%	79.1%
Two years	66.6%	72.9%	68.2%	73.9%	64.4%	71.5%
Five years	50.7%	61.6%	52.2%	62.5%	48.9%	60.1%

Figure 12: Age-standardised net survival from colorectal cancer for patients diagnosed in 2012-2016



Observed survival examines the time between diagnosis and death from any cause, however, due to the inclusion of non-cancer deaths it may not fully reflect how changes in cancer care impact survival from cancer.

Age-standardised net survival provides an estimate of patient survival which has been adjusted to take account of deaths unrelated to cancer. It is more widely used to assess the impact of changes in cancer care on patient survival.

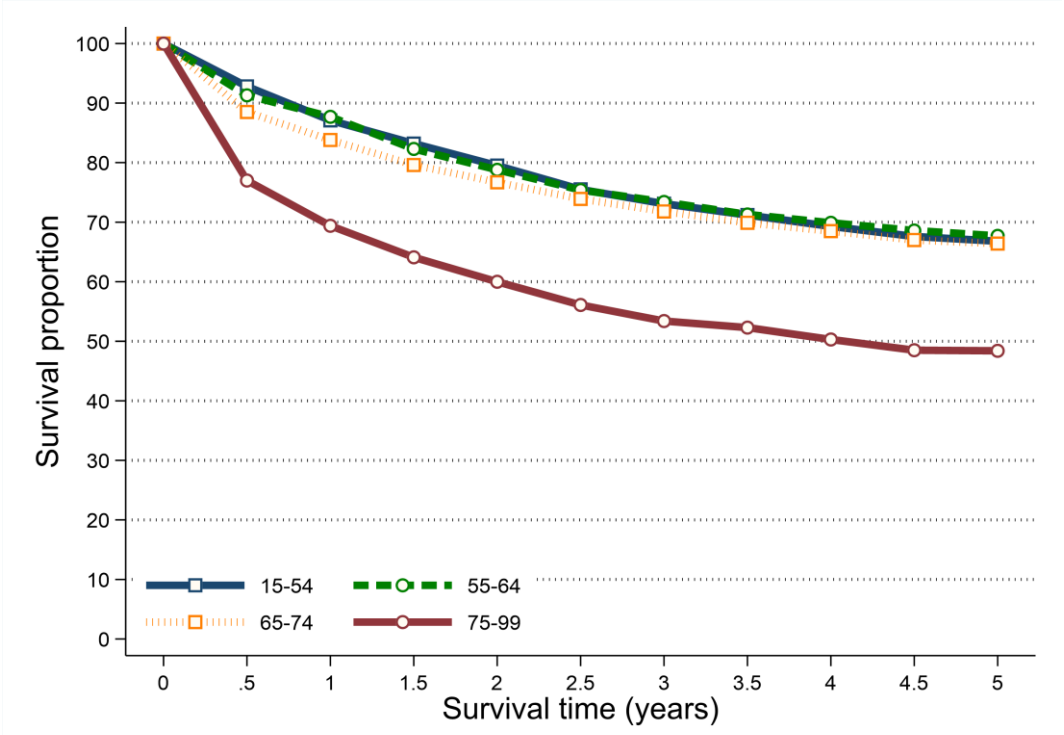
SURVIVAL BY AGE

- Survival from colorectal cancer among patients diagnosed during 2012-2016 was related to age with better five-year survival among younger age groups.
- Five-year net survival ranged from 67.7% among patients aged 55 to 64 at diagnosis to 48.4% among those aged 75 to 99.
- Five-year net survival for colorectal cancer patients aged 75 to 99 at diagnosis in 2012-2016 was 49.3% among men compared to 47.4% among women.

Table 7: Net survival from colorectal cancer for patients diagnosed in 2012-2016 by age at diagnosis

Age group	All persons		Male		Female	
	One-year	Five-years	One-year	Five-years	One-year	Five-years
15 to 54	87.1%	66.8%	86.0%	65.7%	88.4%	68.1%
55 to 64	87.7%	67.7%	89.2%	69.3%	85.5%	65.3%
65 to 74	83.8%	66.4%	86.0%	68.3%	80.3%	63.5%
75 to 99	69.4%	48.4%	72.0%	49.3%	66.7%	47.4%

Figure 13: Net survival from colorectal cancer for patients diagnosed in 2012-2016 by age at diagnosis

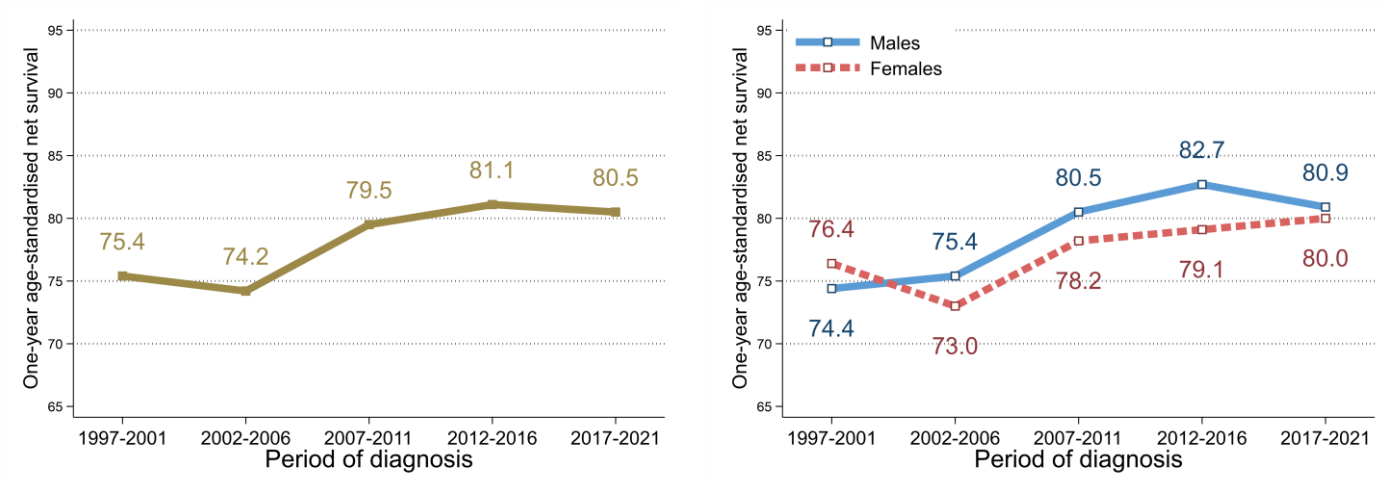


SURVIVAL TRENDS

ONE-YEAR NET SURVIVAL

- Between 2012-2016 and 2017-2021 there was no significant change in one-year survival (ASNS) from colorectal cancer.
- Compared to 1997-2001 one-year survival (ASNS) from colorectal cancer in 2017-2021 increased significantly from 75.4% to 80.5%. This increase was significant for males (74.4% to 80.9%) but not females.

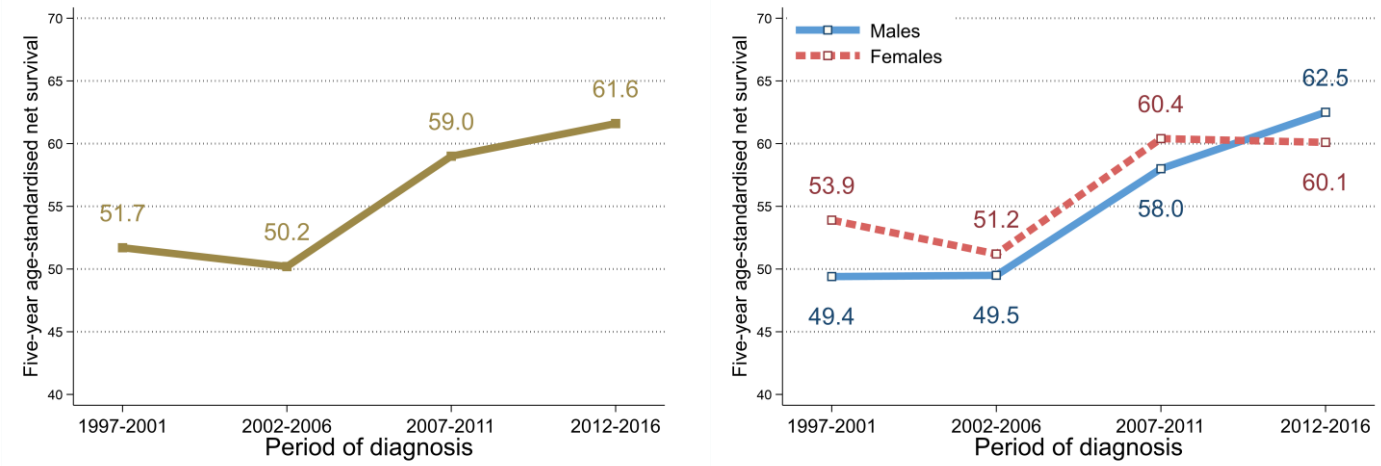
Figure 14: Trends in one-year age-standardised net survival from colorectal cancer in 1997-2021



FIVE-YEAR NET SURVIVAL

- Between 2007-2011 and 2012-2016 there was no significant change in five-year survival (ASNS) from colorectal cancer.
- Compared to 1997-2001 five-year survival (ASNS) from colorectal cancer in 2012-2016 increased significantly from 51.7% to 61.6%. This increase was significant for males (49.4% to 62.5%) and females (53.9% to 60.1%).

Figure 15: Trends in five-year age-standardised net survival from colorectal cancer in 1997-2016



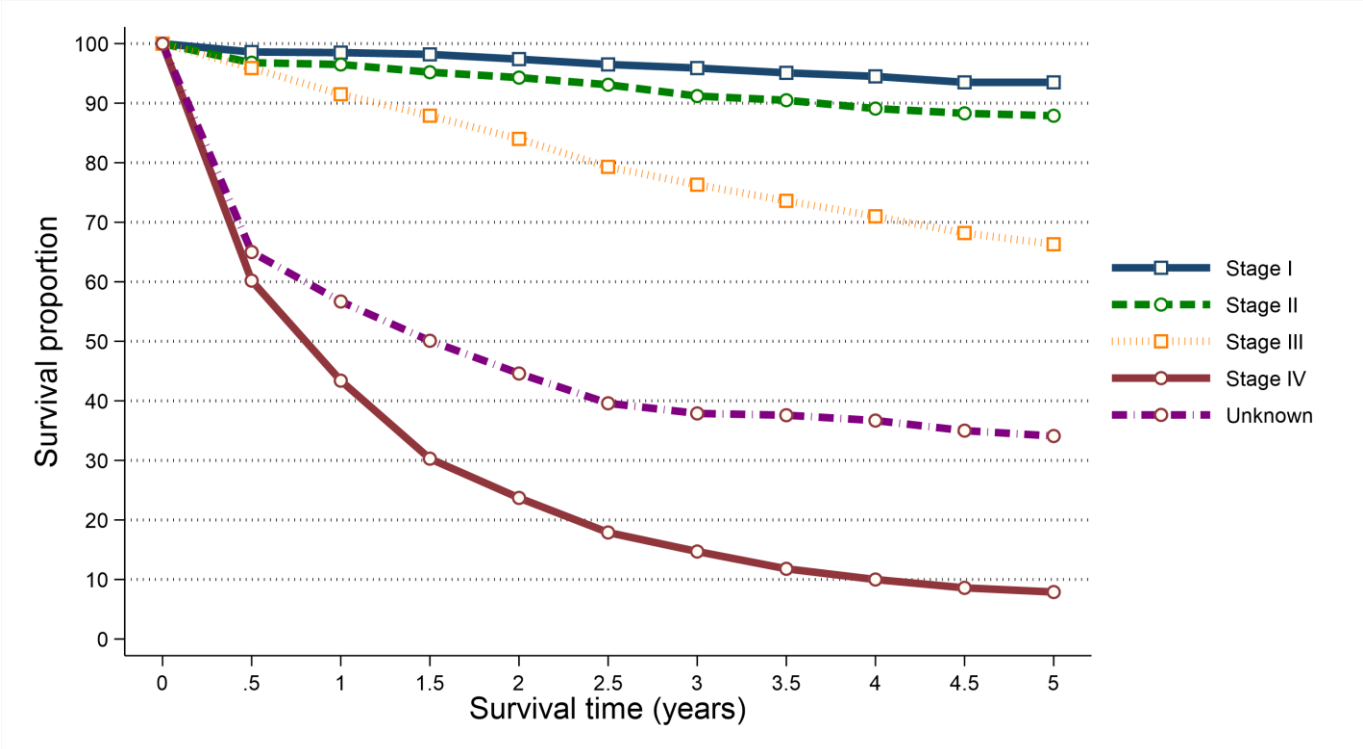
SURVIVAL BY STAGE

- Survival from colorectal cancer among patients diagnosed during 2012-2016 was strongly related to stage with better five-year survival among those diagnosed at earlier stages.
- Five-year survival (ASNS) ranged from 93.5% among patients diagnosed at Stage I to 7.9% among those diagnosed at Stage IV.
- Five-year survival (ASNS) for colorectal cancer patients diagnosed at Stage IV in 2012-2016 was 7.9% among men compared to 8.0% among women.

Table 8: Age-standardised net survival from colorectal cancer for patients diagnosed in 2012-2016 by stage at diagnosis

Stage at diagnosis	All persons		Male		Female	
	One-year	Five-years	One-year	Five-years	One-year	Five-years
Stage I	98.5%	93.5%	97.9%	92.5%	99.3%	94.9%
Stage II	96.5%	87.9%	96.4%	87.5%	96.8%	88.2%
Stage III	91.5%	66.3%	92.4%	67.5%	90.4%	64.4%
Stage IV	43.4%	7.9%	46.4%	7.9%	39.6%	8.0%
Unknown	56.7%	34.1%	63.5%	35.6%	49.0%	33.0%

Figure 16: Age-standardised net survival from colorectal cancer for patients diagnosed in 2012-2016 by stage at diagnosis



PREVALENCE

- At the end of 2021, there were 9,234 people (Males: 5,076; Females: 4,158) living with colorectal cancer who had been diagnosed with the disease during 1997-2021.
- Of these 12.0% had been diagnosed in the previous year (one-year prevalence) and 68.5% in the previous 10 years (ten-year prevalence).
- 48.9% of colorectal cancer survivors were aged 75 and over at the end of 2021.

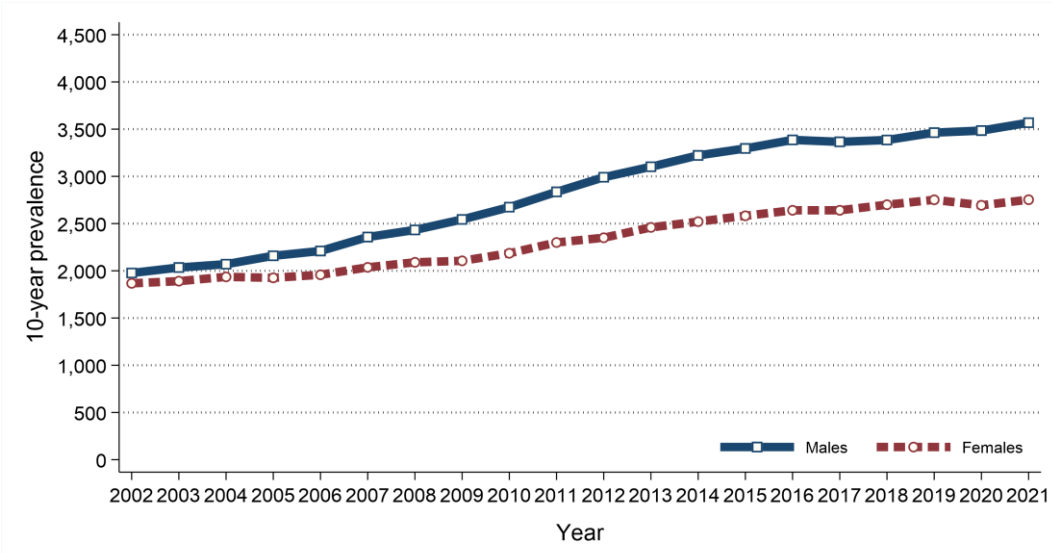
Table 9: 25-year prevalence of colorectal cancer by age at end of 2021

Gender	Age at end of 2021	25-year prevalence	Time since diagnosis			
			0 to 1 year	1 to 5 years	5 to 10 years	10 to 25 years
All persons	All ages	9,234	1,107	2,770	2,444	2,913
	0 to 74	4,721	694	1,662	1,238	1,127
	75 and over	4,513	413	1,108	1,206	1,786
Male	All ages	5,076	635	1,549	1,384	1,508
	0 to 74	2,676	410	965	719	582
	75 and over	2,400	225	584	665	926
Female	All ages	4,158	472	1,221	1,060	1,405
	0 to 74	2,045	284	697	519	545
	75 and over	2,113	188	524	541	860

PREVALENCE TRENDS

- 10-year prevalence of colorectal cancer among males increased between 2016 and 2021 by 5.4% from 3,386 survivors to 3,568 survivors.
- 10-year prevalence of colorectal cancer among females increased between 2016 and 2021 by 4.2% from 2,641 survivors to 2,753 survivors.

Figure 17: Trends in 10-year prevalence of colorectal cancer in 2002-2021



Year	10-year prevalence	
	Males	Females
2012	2,991	2,350
2013	3,102	2,460
2014	3,222	2,521
2015	3,296	2,583
2016	3,386	2,641
2017	3,366	2,641
2018	3,385	2,700
2019	3,463	2,752
2020	3,485	2,694
2021	3,568	2,753

MORTALITY

- There were 2,273 deaths from colorectal cancer during 2017-2021 in Northern Ireland. On average this was 455 deaths per year.
- During this period 45.4% of colorectal cancer deaths were among women (Male deaths: 1,241, Female deaths: 1,032). On average there were 248 male and 206 female deaths from colorectal cancer per year.
- Colorectal cancer deaths made up 10.5% of all male cancer deaths and 9.6% of all female cancer deaths.
- The median age of patients who died from colorectal cancer during 2017-2021 was 77 years (Males: 75, Females: 79).
- The risk of dying from colorectal cancer varied by age, with 53.3% of men and 61.3% of women who died from colorectal cancer aged 75 and over at death.
- In contrast, 7.0% of patients who died from colorectal cancer were aged 0 to 54 at death.

Figure 18: Average number of deaths from colorectal cancer per year in 2017-2021 by age at death

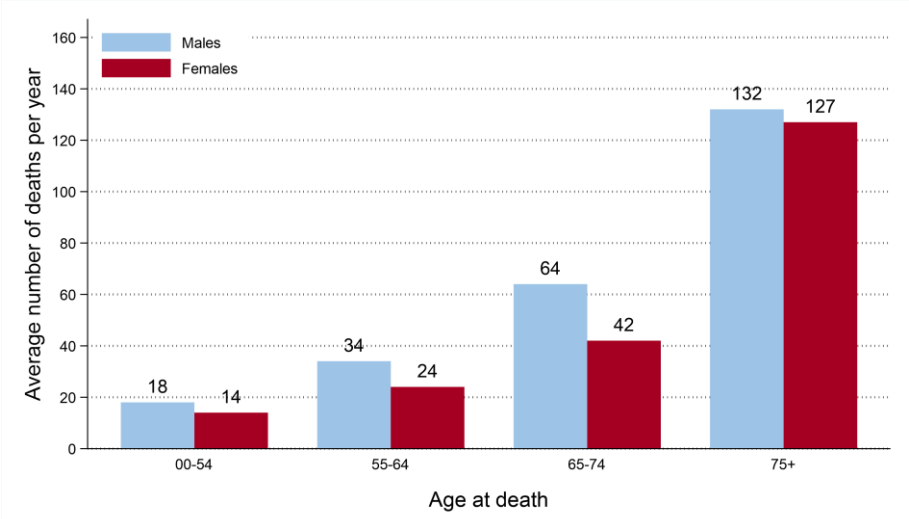
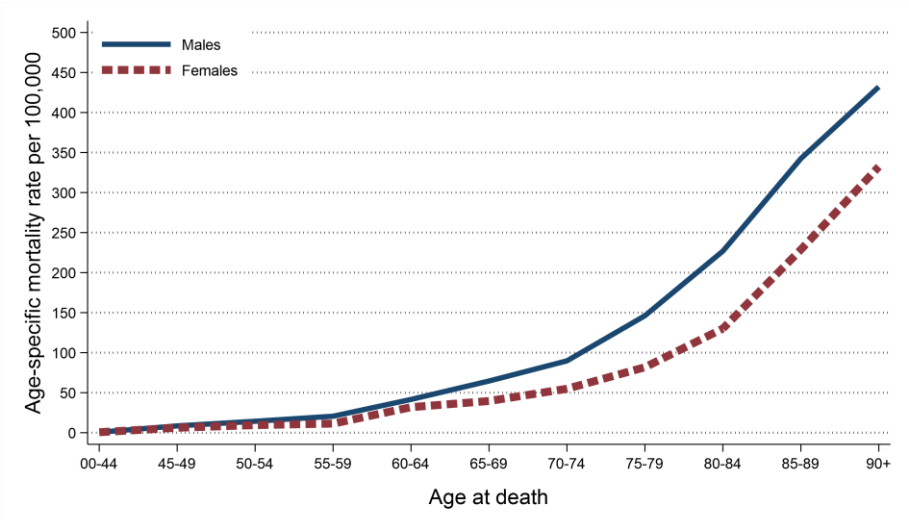


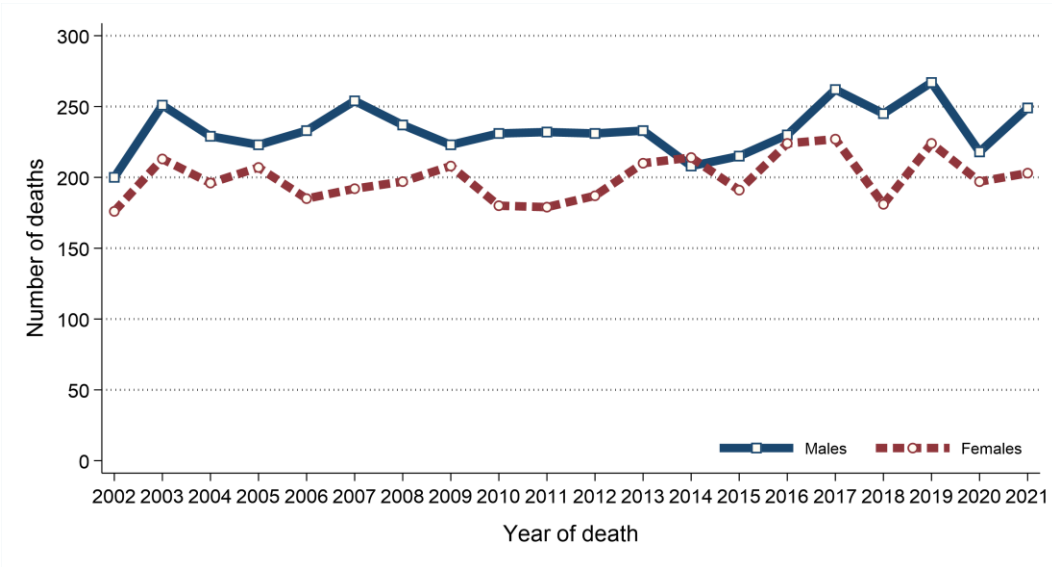
Figure 19: Age-specific mortality rates of colorectal cancer in 2017-2021



MORTALITY TRENDS

- The number of deaths from colorectal cancer among males increased between 2012-2016 and 2017-2021 by 11.1% from 1,117 deaths (223 deaths per year) to 1,241 deaths (248 deaths per year).
- The number of deaths from colorectal cancer among females increased between 2012-2016 and 2017-2021 by 0.6% from 1,026 deaths (205 deaths per year) to 1,032 deaths (206 deaths per year).

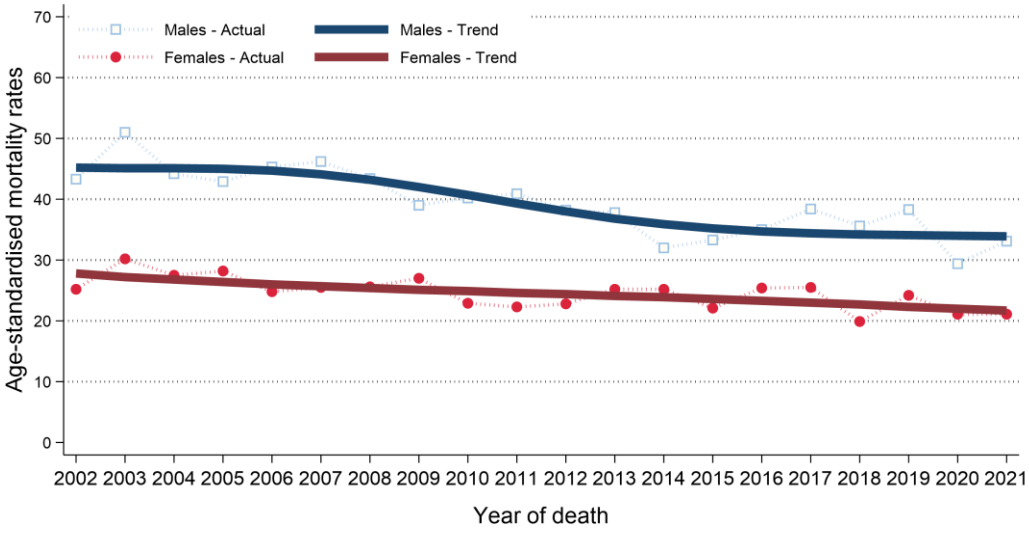
Figure 20: Trends in the number of deaths from colorectal cancer from 2002 to 2021



Year of death	Number of deaths	
	Males	Females
2012	231	187
2013	233	210
2014	208	214
2015	215	191
2016	230	224
2017	262	227
2018	245	181
2019	267	224
2020	218	197
2021	249	203

- Male age-standardised colorectal cancer mortality rates decreased between 2012-2016 and 2017-2021 by 0.9% from 35.2 to 34.9 deaths per 100,000 males. This change was not statistically significant.
- Female age-standardised colorectal cancer mortality rates decreased between 2012-2016 and 2017-2021 by 7.9% from 24.2 to 22.3 deaths per 100,000 females. This change was not statistically significant.

Figure 21: Trends in mortality rates of colorectal cancer from 2002 to 2021



Age-standardised mortality rates illustrate the change in the number of deaths within a population of a fixed size and age structure (2013 European Standard).

They thus represent changes other than those caused by population growth and/or ageing.

Trends can also be influenced by changes in how cancer is classified and coded.

BACKGROUND NOTES

Cancer classification: Classification of tumour sites is carried out using ICD10 codes. For a listing and explanation of ICD10 codes see: World Health Organisation at http://apps.who.int/classifications/icd10/browse/2010/en#/II

Population data: Population data for Northern Ireland, and smaller geographic areas, are extracted from the NI mid-year population estimates available from the NI Statistics and Research Agency (available at www.nisra.gov.uk).

Geographic areas: Geographic areas are assigned based on a patient's postcode of usual residence at diagnosis using the Jan 2023 Central Postcode Directory (CPD) produced by the NI Statistics and Research Agency (available at www.nisra.gov.uk).

Deprivation quintiles: Super output areas (SOA) are assigned to each patient based on their postcode of usual residence at diagnosis. Using the SOA each patient is assigned a socio-economic deprivation quintile based on the 2017 Multiple Deprivation Measure. The 2017 Multiple Deprivation Measure is available from the NI Statistics and Research Agency (available at www.nisra.gov.uk).

Crude incidence/mortality rate: The number of cases/deaths per 100,000 person years in the population. Person years are the sum of the population over the number of years included.

Age-standardised incidence/mortality rates per 100,000 person years are estimates of the incidence/mortality rate if that population had a standard age structure. Throughout this report the 2013 European Standard Population has been used. Standardising to a common Standard Population allows comparisons of incidence/mortality rates to be made between different time periods and geographic areas while removing the effects of population change and ageing.

Standardised Incidence/Mortality Ratio (SIR/SMR) is the ratio of the number of cases/deaths observed in a population to the expected number of cases/deaths, based upon the age-specific rates in a reference population. This statistic is often used to compare incidence/mortality rates for geographic areas (e.g. Trusts) to the national incidence/mortality rates (i.e. Northern Ireland). An SIR/SMR of 100 indicates there is no difference between the geographic area and the national average.

Confidence intervals measure the precision of a statistic (e.g. colorectal cancer incidence rate). Typically, when numbers are low, precision is poorer and confidence intervals will be wider. As a general rule, when comparing statistics (e.g. colorectal cancer incidence rate in year 2012 vs year 2013), if the confidence interval around one statistic overlaps with the interval around another, it is unlikely that there is any real difference between the two. If there is no overlap, the difference is considered to be statistically significant.

Lifetime risk is estimated as the cumulative risk of getting cancer up to age 75/85, calculated directly from the age-specific incidence rates. The odds of developing the disease before age 75/85 is the inverse of the cumulative risk.

Prevalence is the number of cancer patients who are alive in the population on a specific date (31st December 2021 in this report). Since data from the NI Cancer Registry are only available since 1993, prevalence only refers to a fixed term (10 and 25 years in this report). There may be members of the population living with a diagnosis of cancer for more than 25 years.

Patient survival is evaluated using two measures. Observed survival examines the time between diagnosis and death from any cause. It thus represents what cancer patients experience, however, due to the inclusion of non-cancer deaths (e.g. heart disease), it may not reflect how changes in cancer care impact survival from cancer. Thus age-standardised net survival is also examined. This measure provides an estimate of patient survival which has been adjusted to take account of deaths unrelated to cancer. It also assumes a standard age distribution thereby removing the impact of changes in the age distribution of cancer patients on changes in survival over time. While this measure is hypothetical, as it assumes patients can only die from cancer related factors, it is a better indicator of the impact of changes in cancer care on patient survival.