Colon cancer

1993-2021

(ICD10 codes: C18)

Northern Ireland Cancer Registry, 2023

An official statistics publication

ABOUT THIS REPORT

Contents

This report includes information on incidence of colon 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

The information in this report (and any supplementary material) is available for reuse free of charge and without the need to contact NICR. However, we request that NICR is acknowledged as the source of any reused information. The following reference is recommended:

Northern Ireland Cancer Registry 2023. Colon 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
Phone: +44 (0)28 9097 6028   **e-mail:** nicr@qub.ac.uk

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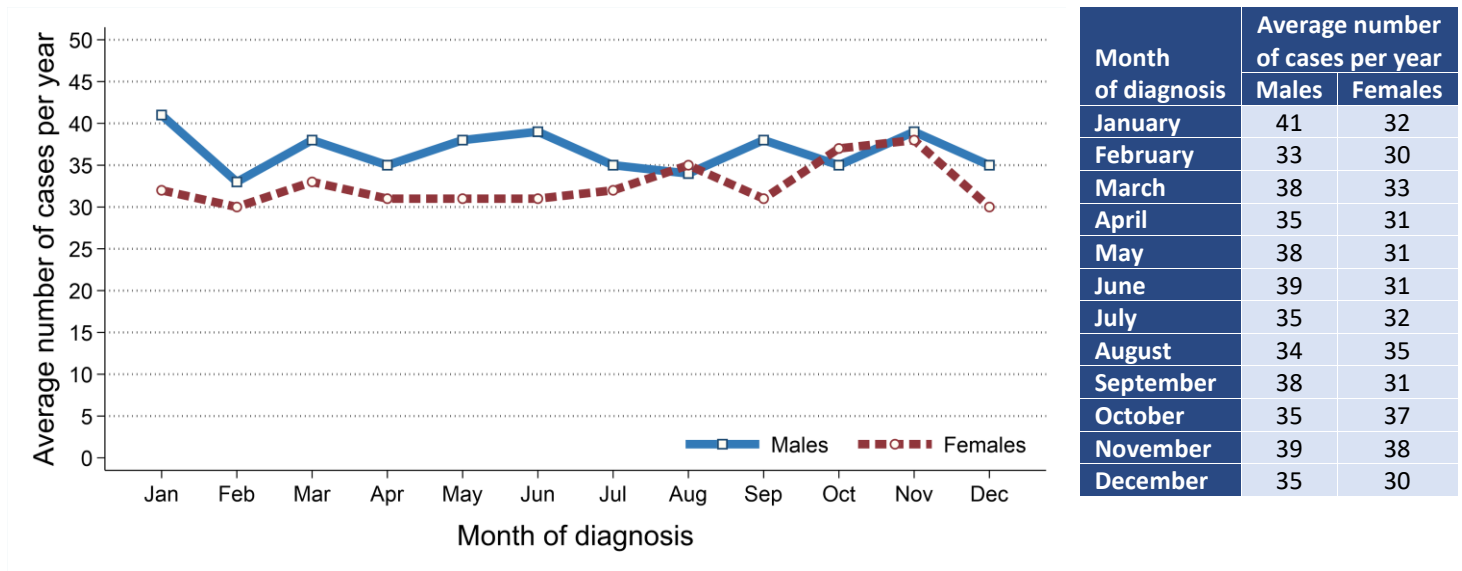
NICR is funded by the Public Health Agency and is based in Queen's University, Belfast.
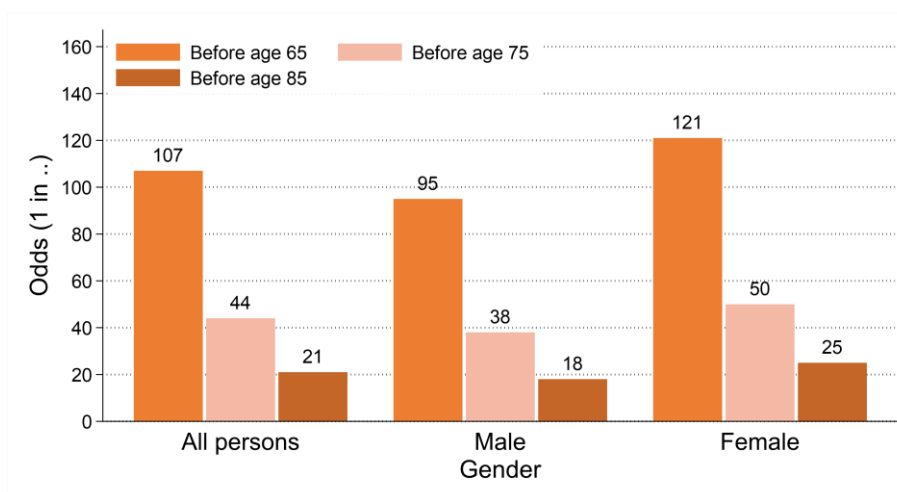
INCIDENCE

- There were 4,156 cases of colon cancer diagnosed during 2017-2021 in Northern Ireland. On average this was 831 cases per year.
- During this period 47.0% of colon cancer cases were among women (Male cases: 2,204, Female cases: 1,952). On average there were 441 male and 390 female cases of colon cancer per year.
- The most common diagnosis month during 2017-2021 was January among males with 41 cases per year and November among females with 38 cases per year.

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

Month of diagnosis	Average number of cases per year	
	Males	Females
January	41	32
February	33	30
March	38	33
April	35	31
May	38	31
June	39	31
July	35	32
August	34	35
September	38	31
October	35	37
November	39	38
December	35	30

- The colon cancer incidence rates for each gender were 47.4 cases per 100,000 males and 40.7 cases per 100,000 females.
- The odds of developing colon cancer before age 85 was 1 in 18 for men and 1 in 25 for women.

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

- The median age of patients diagnosed with colon cancer during 2017-2021 was 73 years (Males: 72, Females: 74).
- The risk of developing colon cancer varied by age, with 42.9% of men and 47.8% of women diagnosed with colon cancer aged 75 and over at diagnosis.
- In contrast, 8.7% of patients diagnosed with colon cancer were aged 0 to 54 at diagnosis.

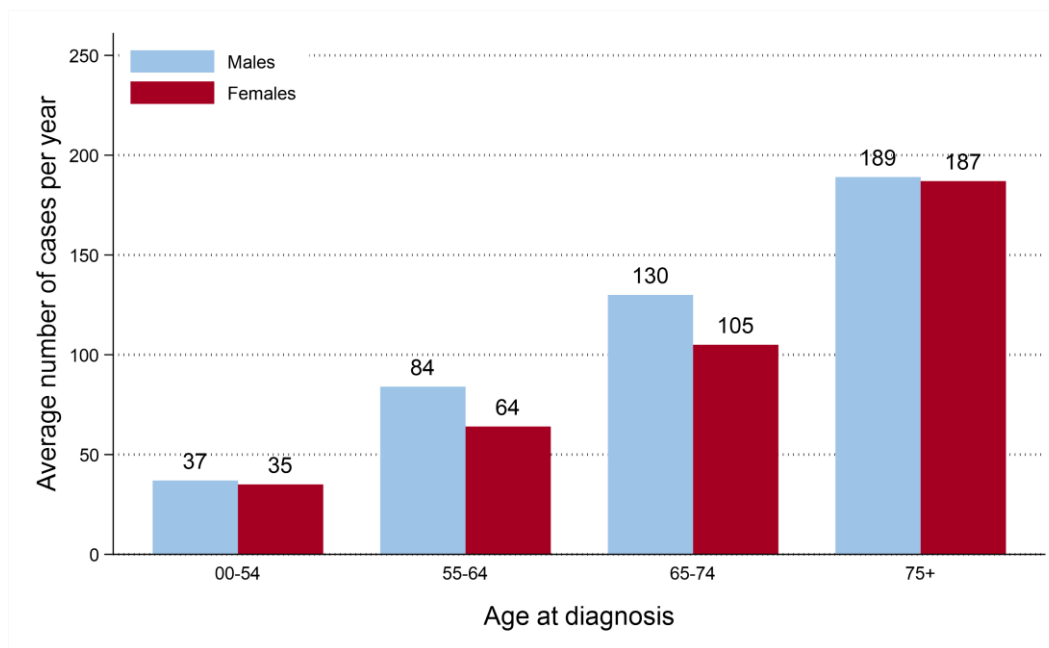*Figure 3: Average number of cases of colon cancer diagnosed per year in 2017-2021 by age at diagnosis*
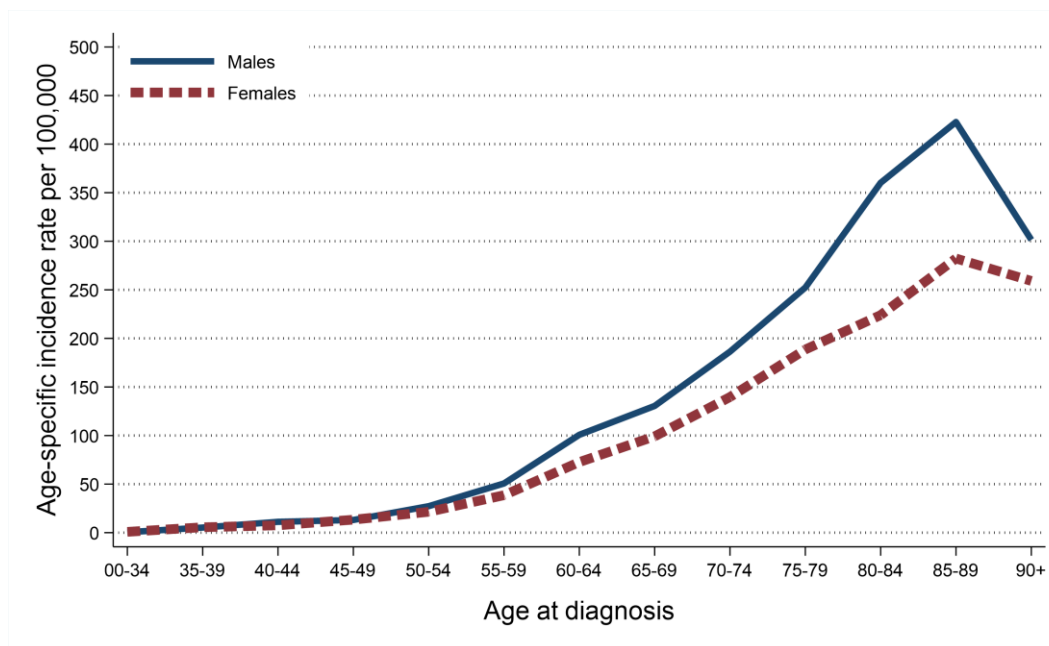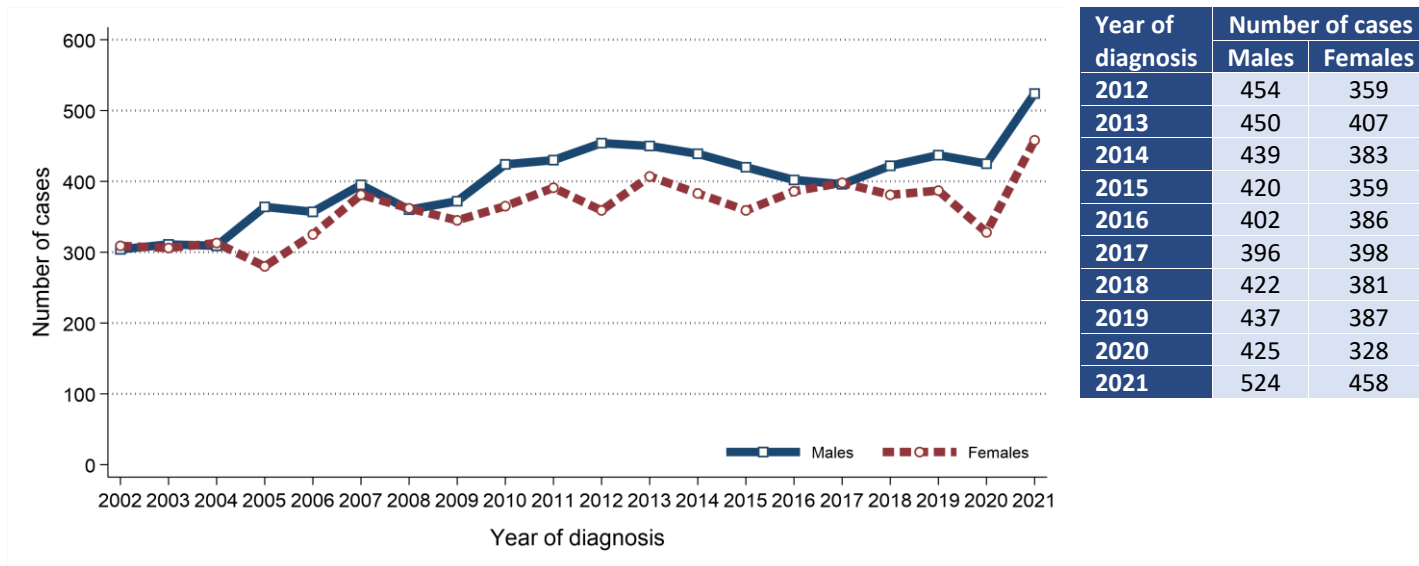

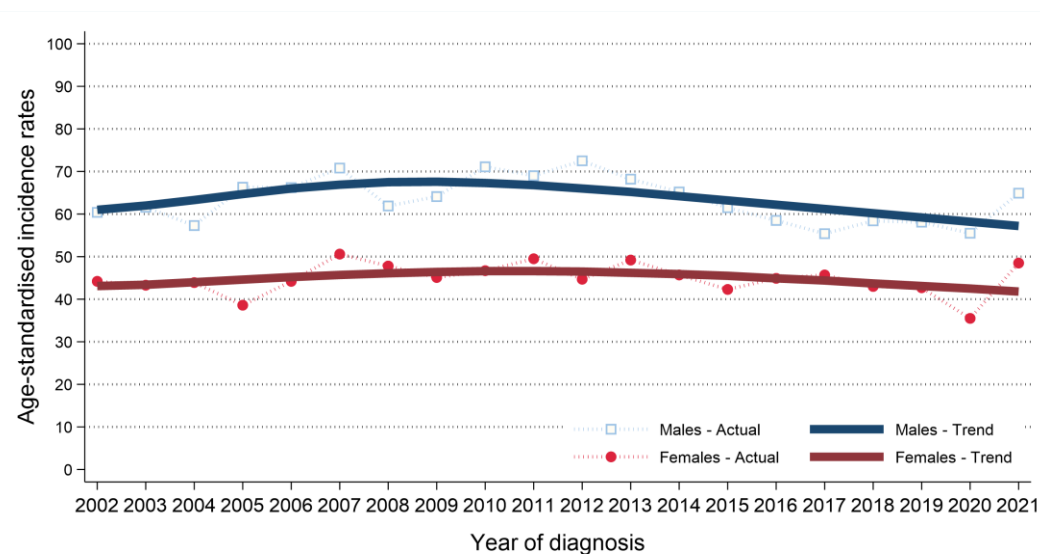*Figure 4: Age-specific incidence rates of colon cancer in 2017-2021*

INCIDENCE TRENDS

- The number of cases of colon cancer among males increased between 2012-2016 and 2017-2021 by 1.8% from 2,165 cases (433 cases per year) to 2,204 cases (441 cases per year).
- The number of cases of colon cancer among females increased between 2012-2016 and 2017-2021 by 3.1% from 1,894 cases (379 cases per year) to 1,952 cases (390 cases per year).

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

Year of diagnosis	Number of cases	
	Males	Females
2012	454	359
2013	450	407
2014	439	383
2015	420	359
2016	402	386
2017	396	398
2018	422	381
2019	437	387
2020	425	328
2021	524	458

- Male age-standardised colon cancer incidence rates decreased between 2012-2016 and 2017-2021 by 10.0% from 65.0 to 58.5 cases per 100,000 males. This change was statistically significant.
- Female age-standardised colon cancer incidence rates decreased between 2012-2016 and 2017-2021 by 5.3% from 45.4 to 43.0 cases per 100,000 females. This change was not statistically significant.

Figure 6: Trends in incidence rates of colon 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).
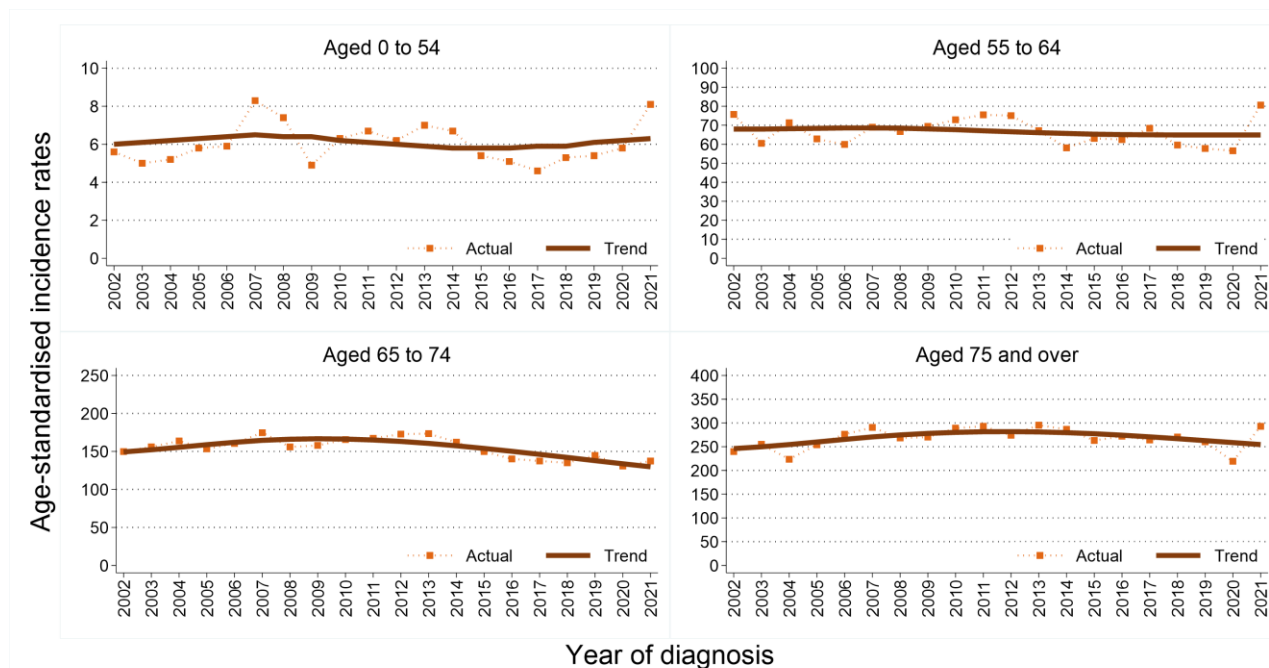
INCIDENCE TRENDS BY AGE

- Between 2012-2016 and 2017-2021 the number of cases of colon cancer among
  - Persons aged 0 to 54 decreased by 10.5% among males and increased by 2.9% among females.
  - Persons aged 55 to 64 increased by 14.8% among males and increased by 8.9% among females.
  - Persons aged 65 to 74 decreased by 10.1% among males and decreased by 0.2% among females.
  - Persons aged 75 and over increased by 9.2% among males and increased by 3.1% among females.

Table 1: Average number of cases per year of colon 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	812	831	433	441	379	390
	.	.	.	.	.	.
0 to 54	76	72	42	37	34	35
55 to 64	131	147	73	84	58	64
65 to 74	250	236	145	130	105	105
75 and over	354	376	173	189	181	187

- Between 2012-2016 and 2017-2021 age-standardised incidence rates of colon 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 18.7% 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 colon cancer from 2002 to 2021 by age group
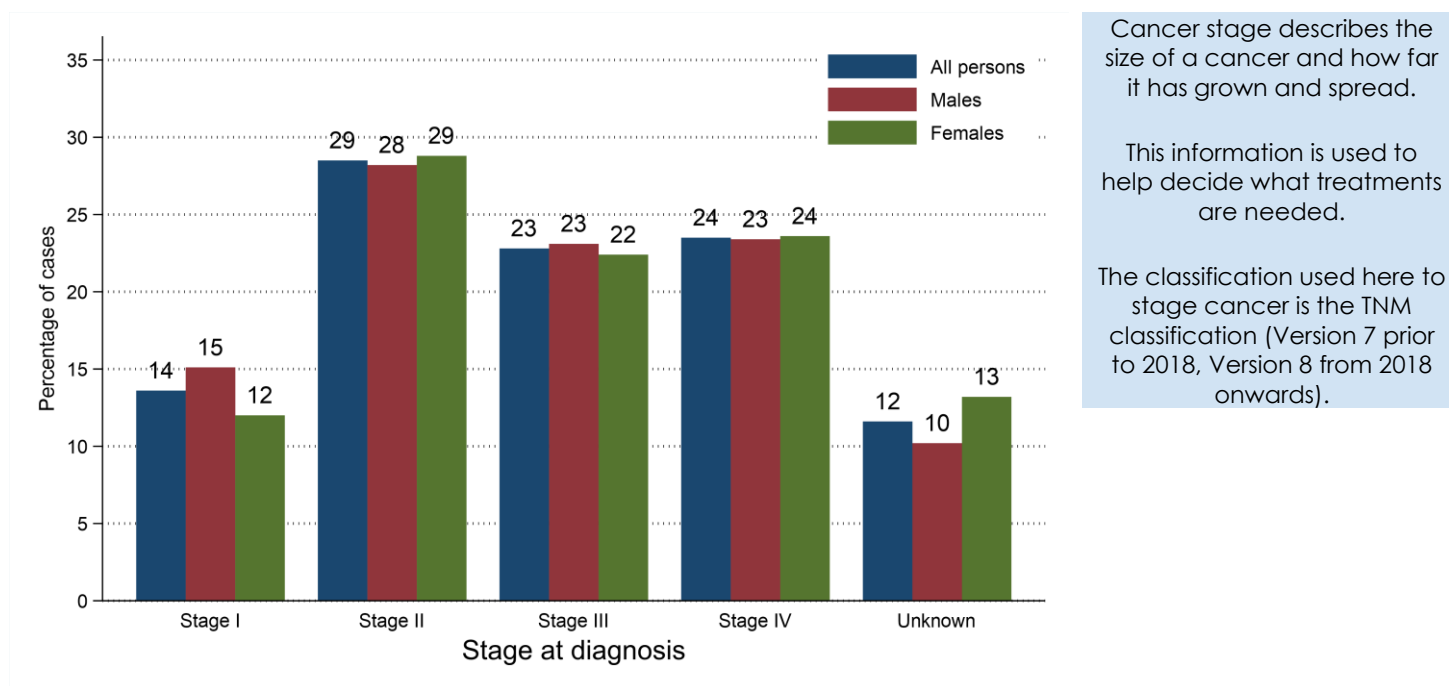
INCIDENCE BY STAGE AT DIAGNOSIS

- During 2017-2021 88.4% of colon cancer cases had a stage assigned.

- 13.6% of colon cancer cases were diagnosed at Stage I. (15.4% of staged cases)

- 23.5% of colon cancer cases were diagnosed at Stage IV. (26.6% of staged cases)

Table 2: Number of cases of colon 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	**4,156**	**831**	**2,204**	**441**	**1,952**	**390**
	.	.	.	.	.	.
Stage I	566	113	332	66	234	47
Stage II	1,185	237	622	124	563	113
Stage III	947	189	510	102	437	87
Stage IV	976	195	515	103	461	92
Unknown	482	96	225	45	257	51

Figure 8: Proportion of cases of colon 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).
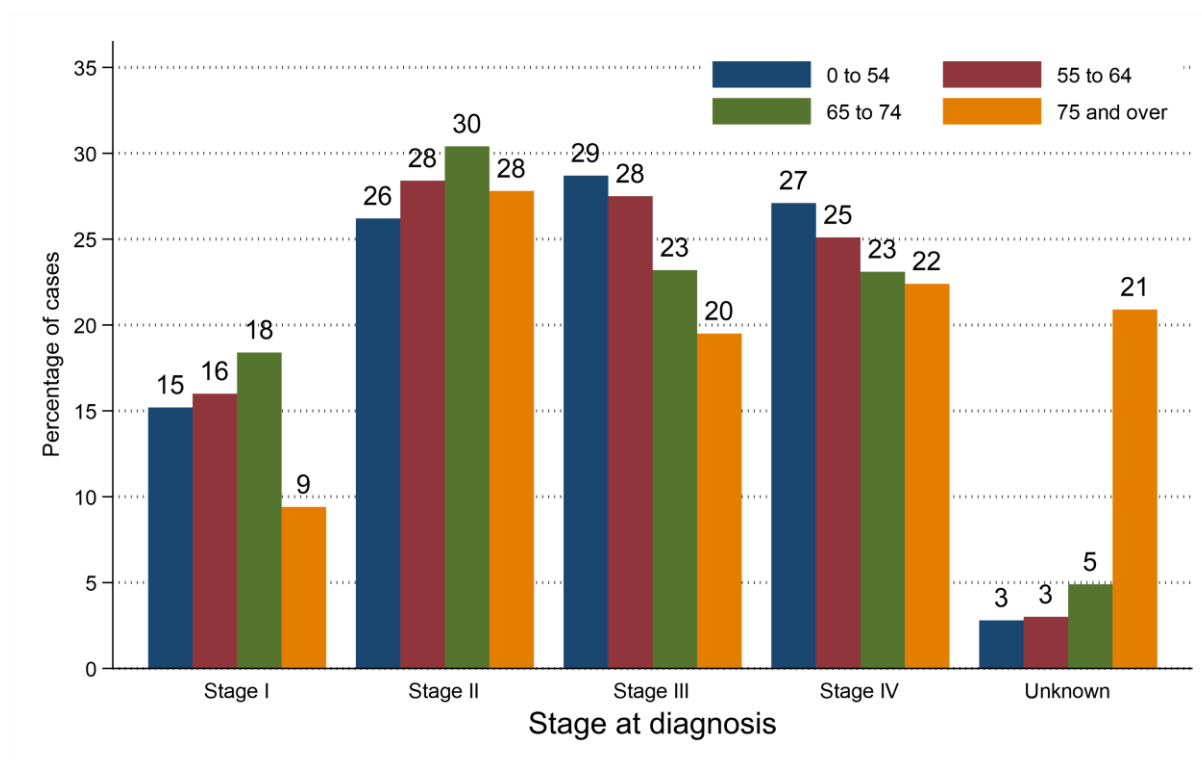
INCIDENCE BY STAGE AND AGE AT DIAGNOSIS

- During 2017-2021 79.1% of colon cancer cases among those aged 75 and over had a stage assigned compared to 97.2% of those aged 0 to 54.

- 9.4% of colon cancer cases among those aged 75 and over were diagnosed at Stage I (11.8% of staged cases) compared to 15.2% of those aged 0 to 54 (15.6% of staged cases).

- 22.4% of colon cancer cases among those aged 75 and over were diagnosed at Stage IV (28.3% of staged cases) compared to 27.1% of those aged 0 to 54 (27.8% of staged cases).

Table 3: Average number of cases of colon 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	**831**	**72**	**147**	**236**	**376**
	.	.	.	.	.
Stage I	113	11	24	43	35
Stage II	237	19	42	72	105
Stage III	189	21	41	55	73
Stage IV	195	20	37	54	84
Unknown	96	2	4	12	78

Figure 9: Proportion of cases of colon cancer diagnosed in 2017-2021 by stage and age at diagnosis
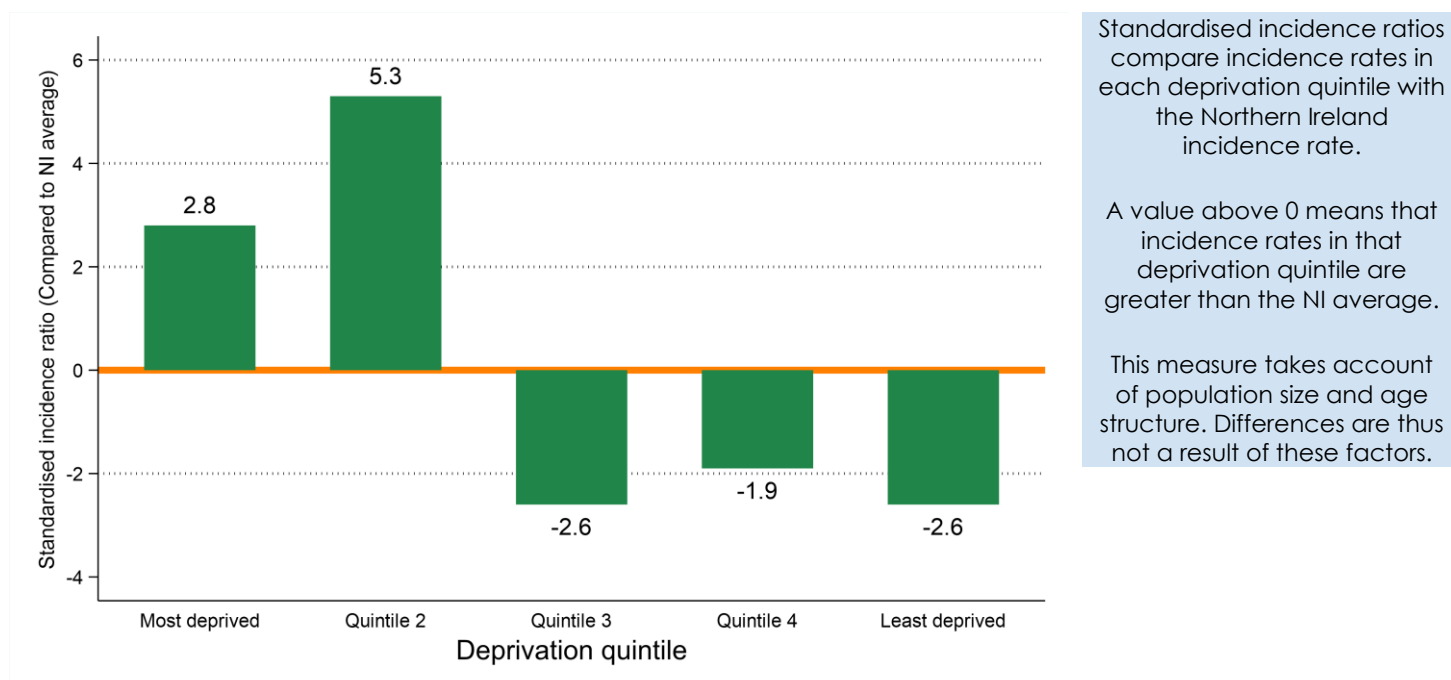
INCIDENCE BY DEPRIVATION

- The number of cases of colon 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 colon 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	**4,156**	**831**	**2,204**	**441**	**1,952**	**390**
	.	.	.	.	.	.
Most deprived	693	139	370	74	323	65
Quintile 2	875	175	462	92	413	83
Quintile 3	852	170	468	94	384	77
Quintile 4	865	173	457	91	408	82
Least deprived	871	174	447	89	424	85
Unknown	0	0	0	0	0	0

Figure 10: Standardised incidence ratio comparing deprivation quintile to Northern Ireland for colon 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.
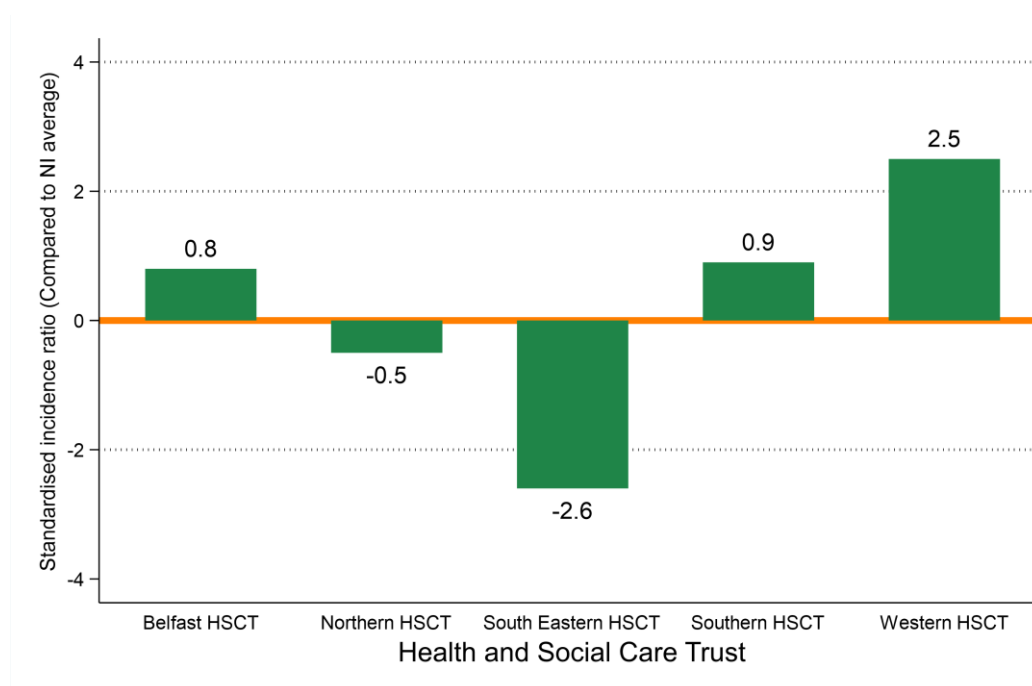
INCIDENCE BY HEALTH AND SOCIAL CARE TRUST

- The number of cases of colon 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 colon 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	**4,156**	**831**	**2,204**	**441**	**1,952**	**390**
	.	.	.	.	.	.
Belfast HSCT	761	152	392	78	369	74
Northern HSCT	1,103	221	576	115	527	105
South Eastern HSCT	858	172	452	90	406	81
Southern HSCT	778	156	413	83	365	73
Western HSCT	656	131	371	74	285	57
Unknown	0	0	0	0	0	0

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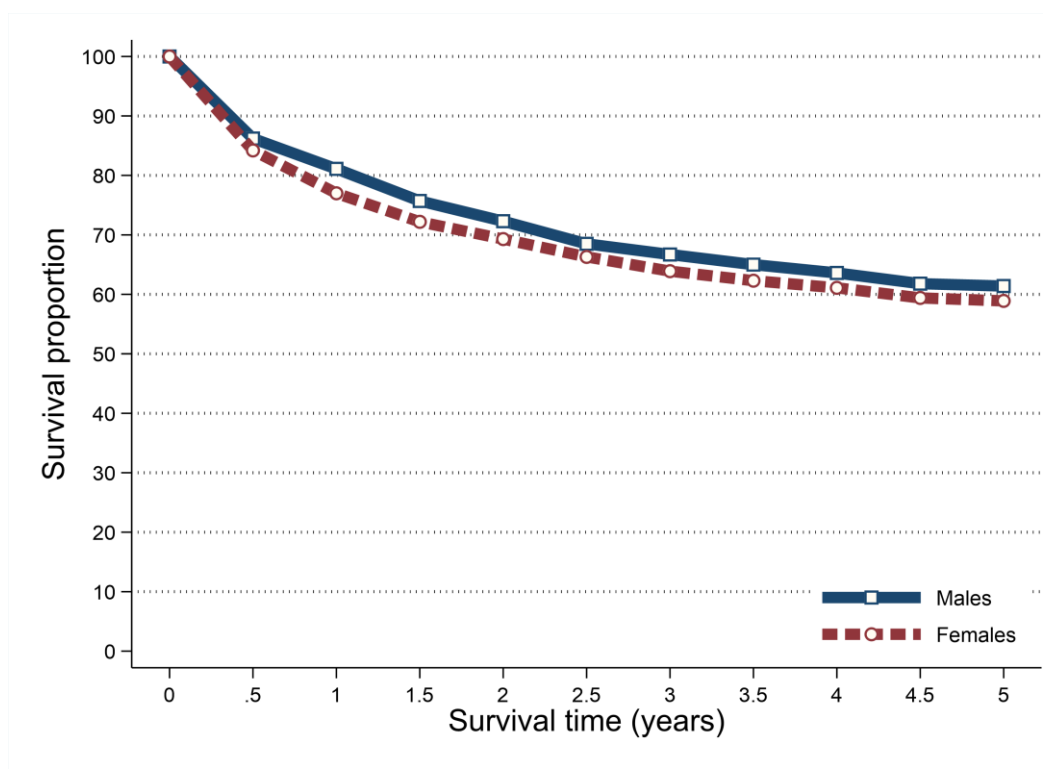
SURVIVAL

- 74.3% of patients were alive one year and 49.0% were alive five years from a colon cancer diagnosis in 2012-2016. (observed survival)

- Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 79.2% one year and 60.3% five years from a colon cancer diagnosis in 2012-2016.

- Five-year survival (ASNS) for colon cancer patients diagnosed in 2012-2016 was 61.4% among men and 58.9% among women.

Table 6: Survival from colon 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	81.7%	85.3%	83.3%	86.2%	79.8%	84.2%
One year	74.3%	79.2%	76.7%	81.1%	71.6%	77.0%
Two years	64.0%	70.9%	65.9%	72.3%	61.7%	69.3%
Five years	49.0%	60.3%	50.1%	61.4%	47.6%	58.9%

Figure 12: Age-standardised net survival from colon 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.
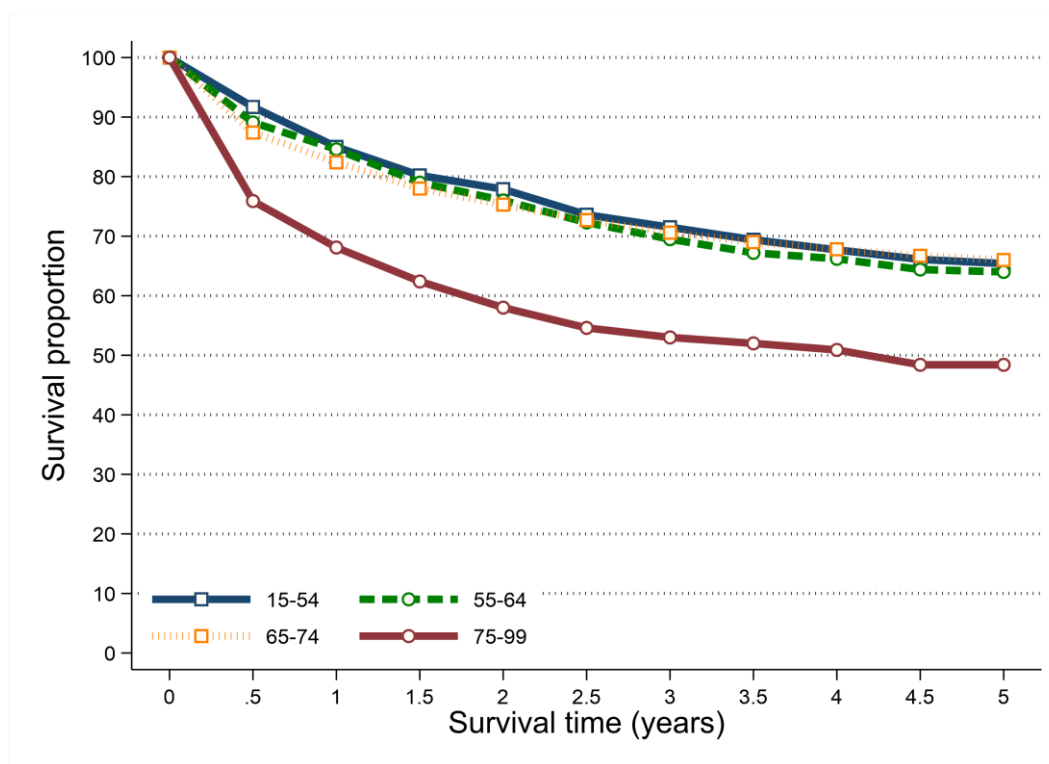
SURVIVAL BY AGE

- Survival from colon 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 66.0% among patients aged 65 to 74 at diagnosis to 48.4% among those aged 75 to 99.
- Five-year net survival for colon cancer patients aged 75 to 99 at diagnosis in 2012-2016 was 48.5% among men compared to 48.3% among women.

Table 7: Net survival from colon 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	85.0%	65.4%	85.4%	66.0%	84.6%	64.6%
55 to 64	84.6%	64.0%	86.3%	65.6%	82.4%	62.0%
65 to 74	82.4%	66.0%	85.2%	67.8%	78.5%	63.5%
75 to 99	68.1%	48.4%	70.1%	48.5%	66.1%	48.3%

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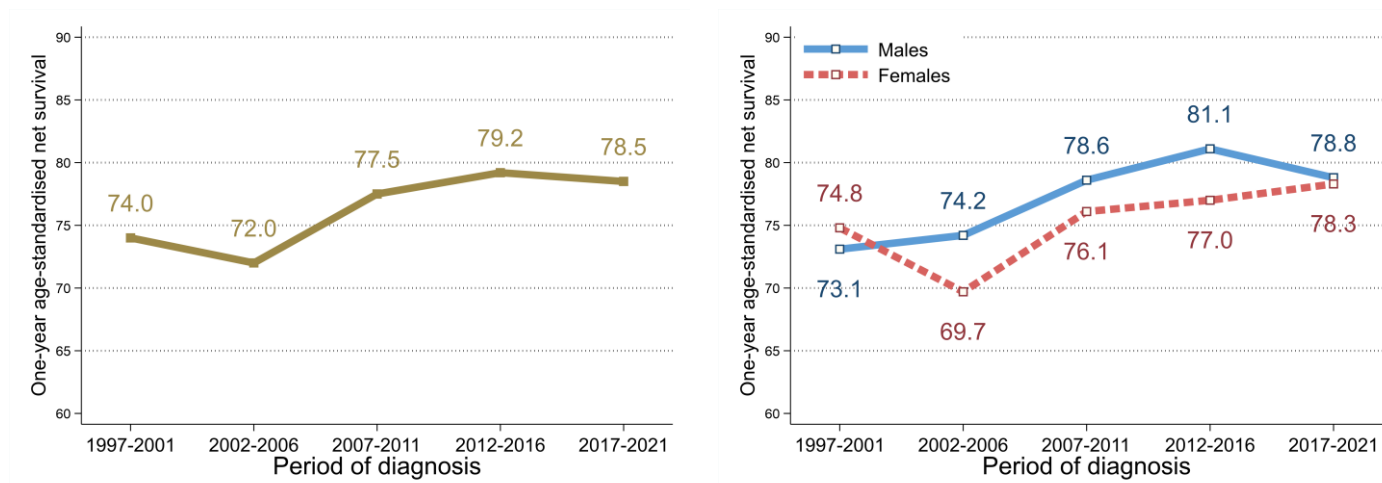
SURVIVAL TRENDS

ONE-YEAR NET SURVIVAL

- Between 2012-2016 and 2017-2021 there was no significant change in one-year survival (ASNS) from colon cancer.

- Compared to 1997-2001 one-year survival (ASNS) from colon cancer in 2017-2021 increased significantly from 74.0% to 78.5%. This increase was significant for males (73.1% to 78.8%) but not females.
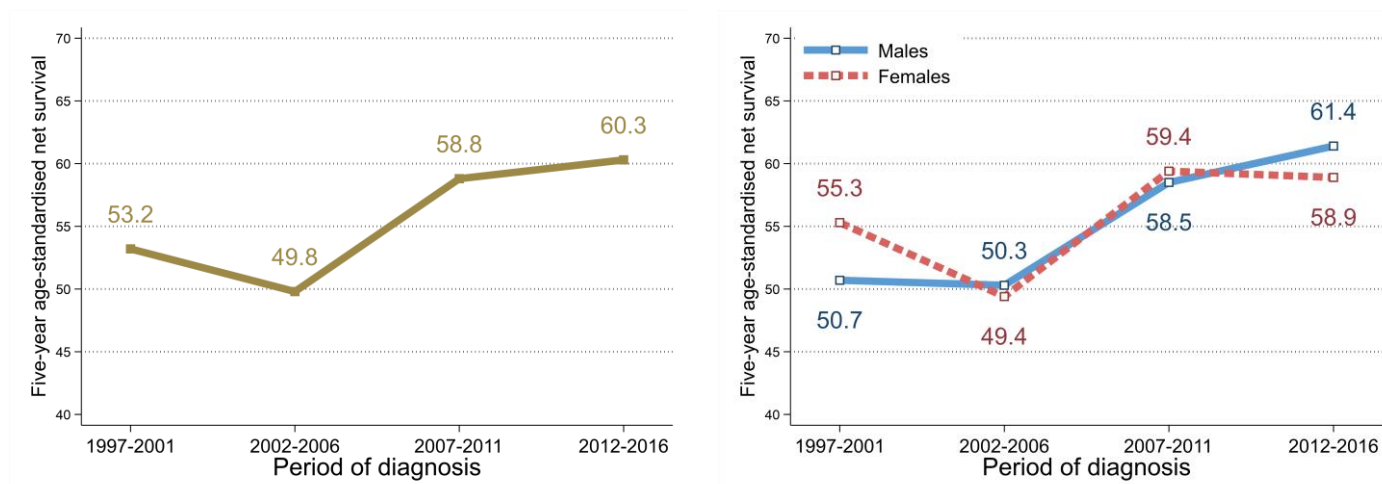
Figure 14: Trends in one-year age-standardised net survival from colon cancer in 1997-2021

FIVE-YEAR NET SURVIVAL

- Between 2007-2011 and 2012-2016 there was no significant change in five-year survival (ASNS) from colon cancer.

- Compared to 1997-2001 five-year survival (ASNS) from colon cancer in 2012-2016 increased significantly from 53.2% to 60.3%. This increase was significant for males (50.7% to 61.4%) but not females.

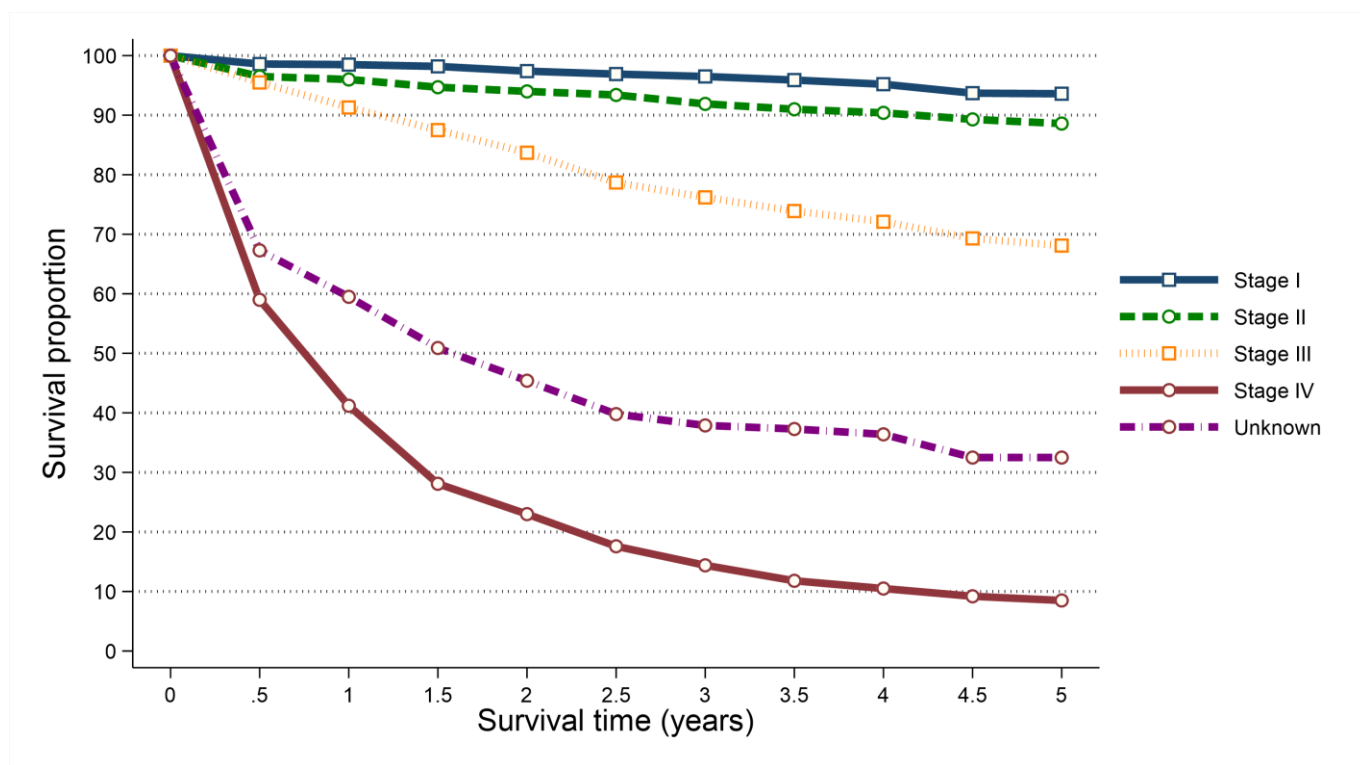*Figure 15: Trends in five-year age-standardised net survival from colon cancer in 1997-2016*

SURVIVAL BY STAGE

- Survival from colon 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 93.6% among patients diagnosed at Stage I to 8.5% among those diagnosed at Stage IV.
- Five-year survival (ASNS) for colon cancer patients diagnosed at Stage IV in 2012-2016 was 8.2% among men compared to 8.9% among women.

Table 8: Age-standardised net survival from colon 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%	93.6%	98.0%	92.5%	99.4%	95.1%
Stage II	96.0%	88.6%	96.0%	89.0%	96.1%	88.0%
Stage III	91.3%	68.1%	92.5%	69.5%	89.9%	66.5%
Stage IV	41.2%	8.5%	44.3%	8.2%	37.5%	8.9%
Unknown	59.5%	32.5%	67.9%	38.4%	48.9%	25.0%

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

PREVALENCE

- At the end of 2021, there were 6,082 people (Males: 3,154; Females: 2,928) living with colon cancer who had been diagnosed with the disease during 1997-2021.
- Of these 12.5% had been diagnosed in the previous year (one-year prevalence) and 68.8% in the previous 10 years (ten-year prevalence).
- 52.8% of colon cancer survivors were aged 75 and over at the end of 2021.
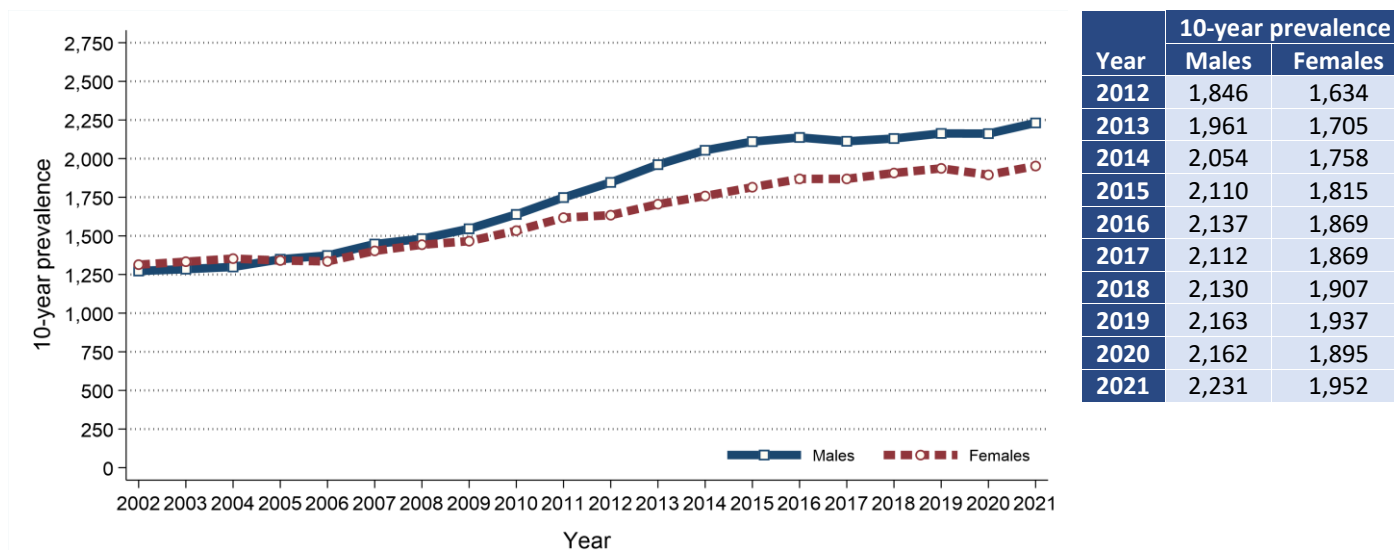
Table 9: 25-year prevalence of colon cancer by age at end of 2021

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	6,082	761	1,785	1,637	1,899
	0 to 74	2,873	444	989	758	682
	75 and over	3,209	317	796	879	1,217
Male	All ages	3,154	414	941	876	923
	0 to 74	1,552	244	547	424	337
	75 and over	1,602	170	394	452	586
Female	All ages	2,928	347	844	761	976
	0 to 74	1,321	200	442	334	345
	75 and over	1,607	147	402	427	631

PREVALENCE TRENDS

- 10-year prevalence of colon cancer among males increased between 2016 and 2021 by 4.4% from 2,137 survivors to 2,231 survivors.
- 10-year prevalence of colon cancer among females increased between 2016 and 2021 by 4.4% from 1,869 survivors to 1,952 survivors.

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

Year	10-year prevalence	
	Males	Females
2012	1,846	1,634
2013	1,961	1,705
2014	2,054	1,758
2015	2,110	1,815
2016	2,137	1,869
2017	2,112	1,869
2018	2,130	1,907
2019	2,163	1,937
2020	2,162	1,895
2021	2,231	1,952

MORTALITY

- There were 1,169 deaths from colon cancer during 2017-2021 in Northern Ireland. On average this was 234 deaths per year.
- During this period 49.3% of colon cancer deaths were among women (Male deaths: 593, Female deaths: 576). On average there were 119 male and 115 female deaths from colon cancer per year.
- Colon cancer deaths made up 5.0% of all male cancer deaths and 5.4% of all female cancer deaths.
- The median age of patients who died from colon cancer during 2017-2021 was 79 years (Males: 77, Females: 81).
- The risk of dying from colon cancer varied by age, with 58.7% of men and 67.9% of women who died from colon cancer aged 75 and over at death.
- In contrast, 4.4% of patients who died from colon cancer were aged 0 to 54 at death.

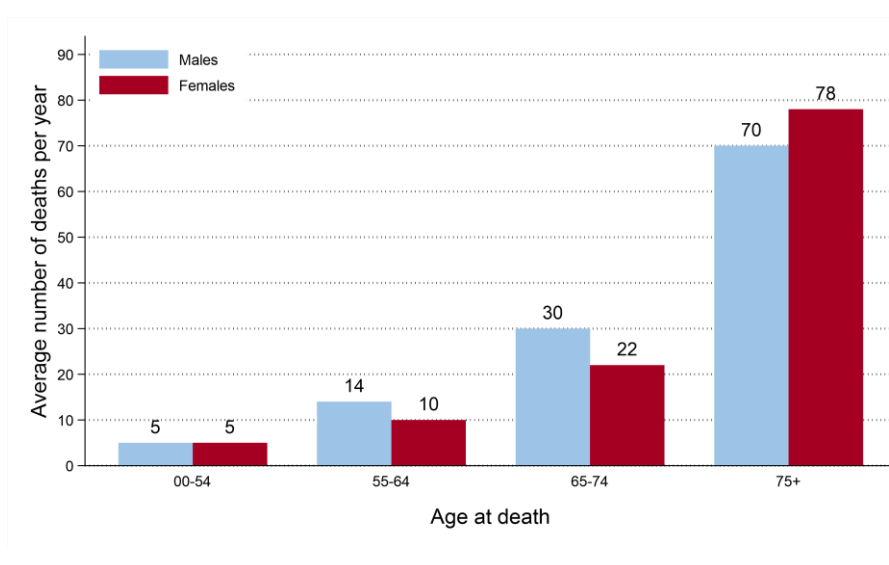*Figure 18: Average number of deaths from colon cancer per year in 2017-2021 by age at death*
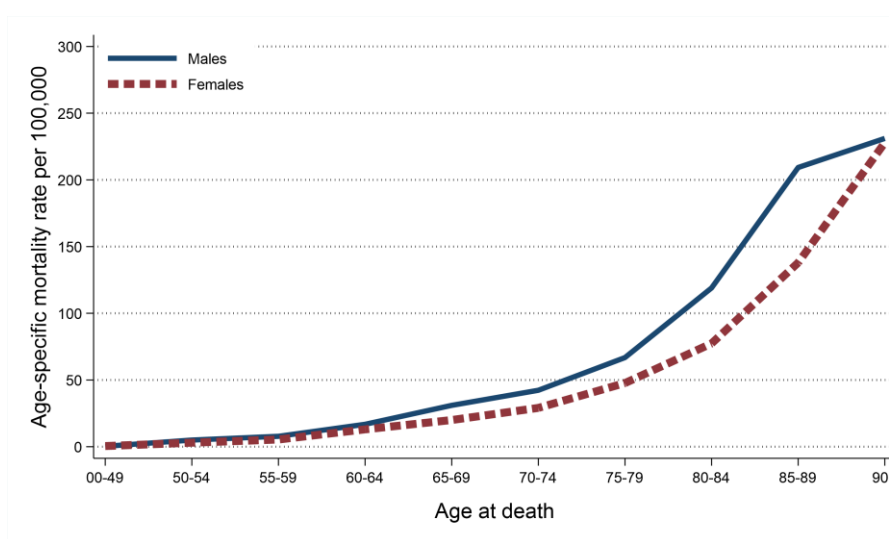

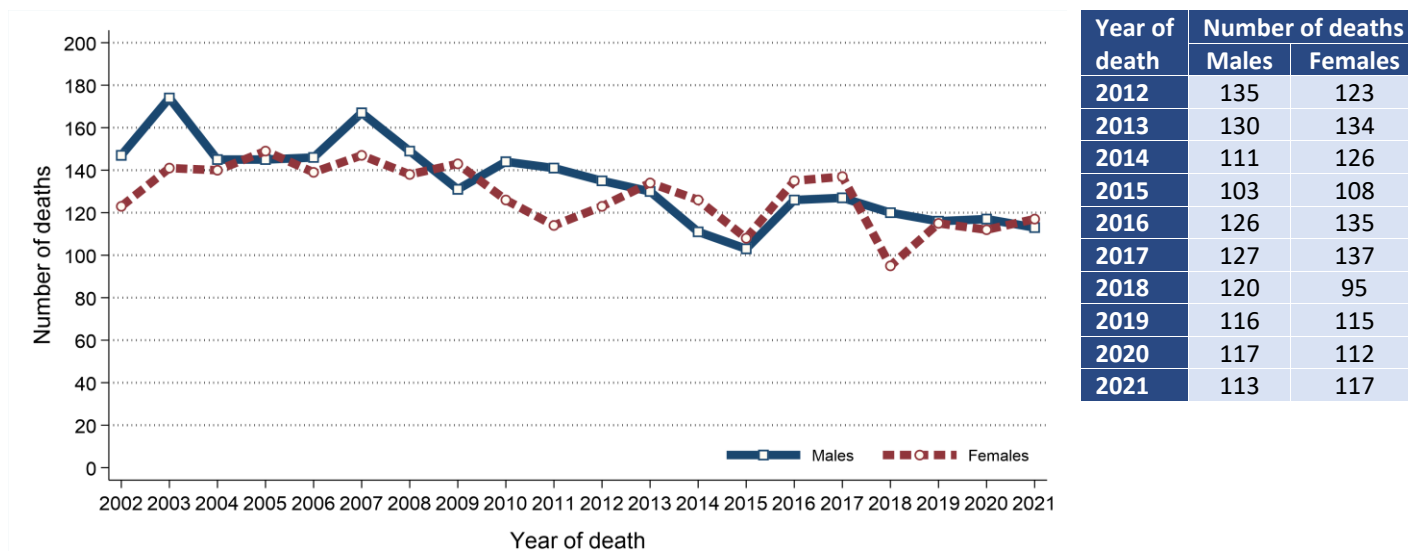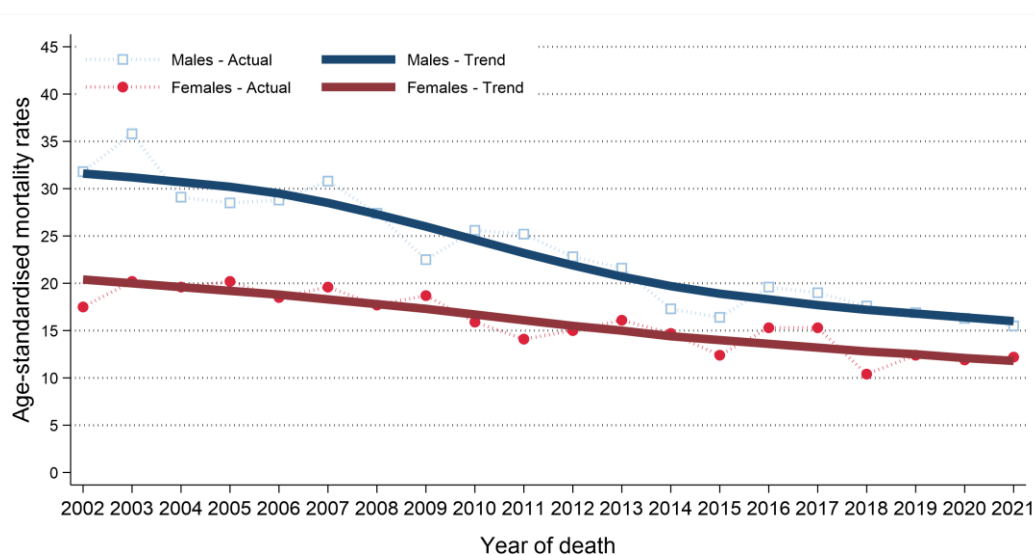*Figure 19: Age-specific mortality rates of colon cancer in 2017-2021*

MORTALITY TRENDS

- The number of deaths from colon cancer among males decreased between 2012-2016 and 2017-2021 by 2.0% from 605 deaths (121 deaths per year) to 593 deaths (119 deaths per year).
- The number of deaths from colon cancer among females decreased between 2012-2016 and 2017-2021 by 8.0% from 626 deaths (125 deaths per year) to 576 deaths (115 deaths per year).

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

Year of death	Number of deaths	
	Males	**Females**
2012	135	123
2013	130	134
2014	111	126
2015	103	108
2016	126	135
2017	127	137
2018	120	95
2019	116	115
2020	117	112
2021	113	117

- Male age-standardised colon cancer mortality rates decreased between 2012-2016 and 2017-2021 by 12.8% from 19.5 to 17.0 deaths per 100,000 males. This change was not statistically significant.
- Female age-standardised colon cancer mortality rates decreased between 2012-2016 and 2017-2021 by 15.6% from 14.7 to 12.4 deaths per 100,000 females. This change was statistically significant.

Figure 21: Trends in mortality rates of colon 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. colon 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. colon 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.