Leukaemia

1993-2022

(ICD10 codes: C91-C95)

Northern Ireland Cancer Registry

Northern Ireland Cancer Registry, 2025

An official statistics publication

ABOUT THIS REPORT

Contents

This report includes information on incidence of leukaemia as recorded by the Northern Ireland Cancer Registry (NICR). Incidence data is available annually from 1993 to 2022, 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 2025. Leukaemia: 1993-2022. 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

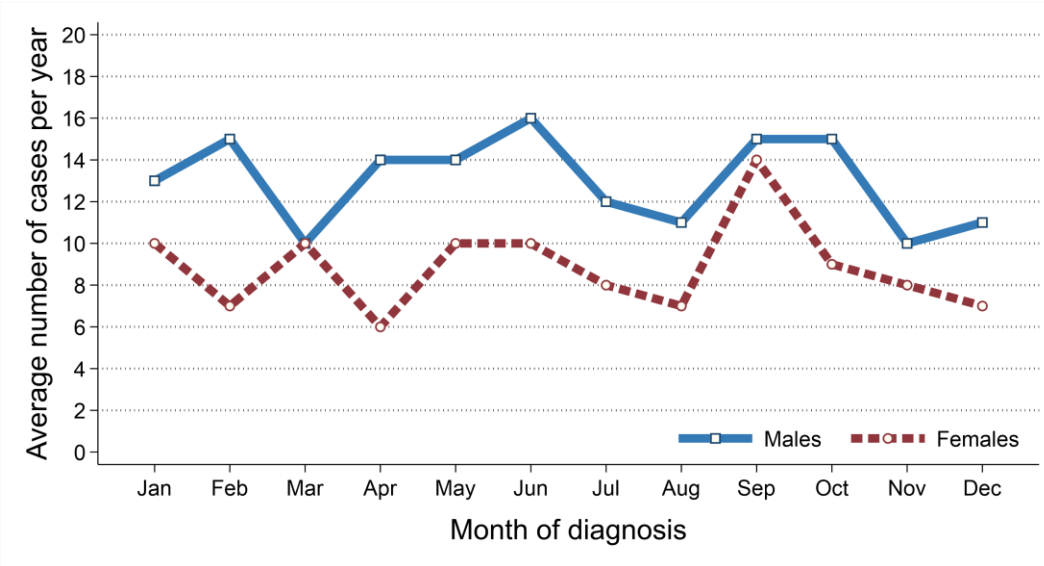
The Northern Ireland Cancer Registry (NICR) uses data provided by patients and collected by the health service as part of their care and support.

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

INCIDENCE

- There were 1,296 cases of leukaemia diagnosed during 2018-2022 in Northern Ireland. On average this was 259 cases per year.
- During this period 40.4% of leukaemia cases were among women (Male cases: 772, Female cases: 524). On average there were 154 male and 105 female cases of leukaemia per year.
- The most common diagnosis month during 2018-2022 was June among males with 16 cases per year and September among females with 14 cases per year.

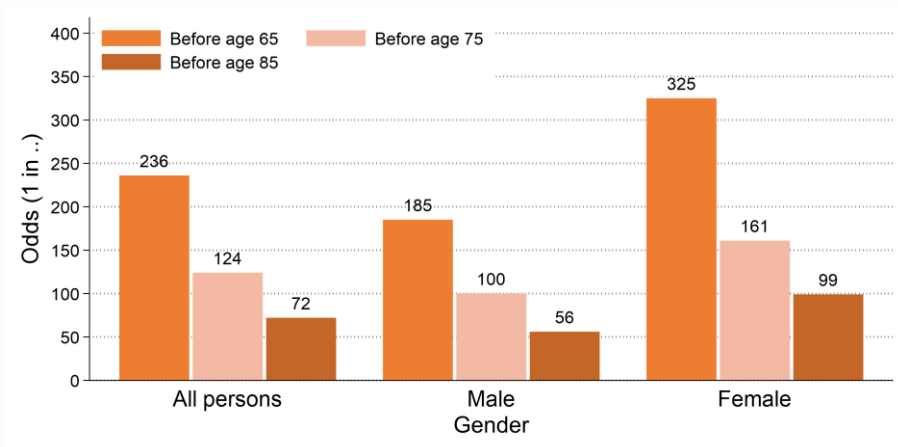
Figure 1: Average number of cases of leukaemia per year in 2018-2022 by month of diagnosis



Month of diagnosis	Average number of cases per year	
	Males	Females
January	13	10
February	15	7
March	10	10
April	14	6
May	14	10
June	16	10
July	12	8
August	11	7
September	15	14
October	15	9
November	10	8
December	11	7

- Leukaemia made up 2.9% of all male and 2.1% of all female cancer cases (excluding non-melanoma skin cancer).
- The leukaemia incidence rates for each gender were 16.5 cases per 100,000 males and 10.9 cases per 100,000 females.
- The odds of developing leukaemia before age 85 was 1 in 56 for men and 1 in 99 for women.

Figure 2: Odds of developing leukaemia in 2018-2022



INCIDENCE BY AGE

- The median age of patients diagnosed with leukaemia during 2018-2022 was 69 years (Males: 69, Females: 70).
- The risk of developing leukaemia varied by age, with 32.8% of men and 37.8% of women diagnosed with leukaemia aged 75 and over at diagnosis.
- In contrast, 23.9% of patients diagnosed with leukaemia were aged 0 to 54 at diagnosis.

Figure 3: Average number of cases of leukaemia diagnosed per year in 2018-2022 by age at diagnosis

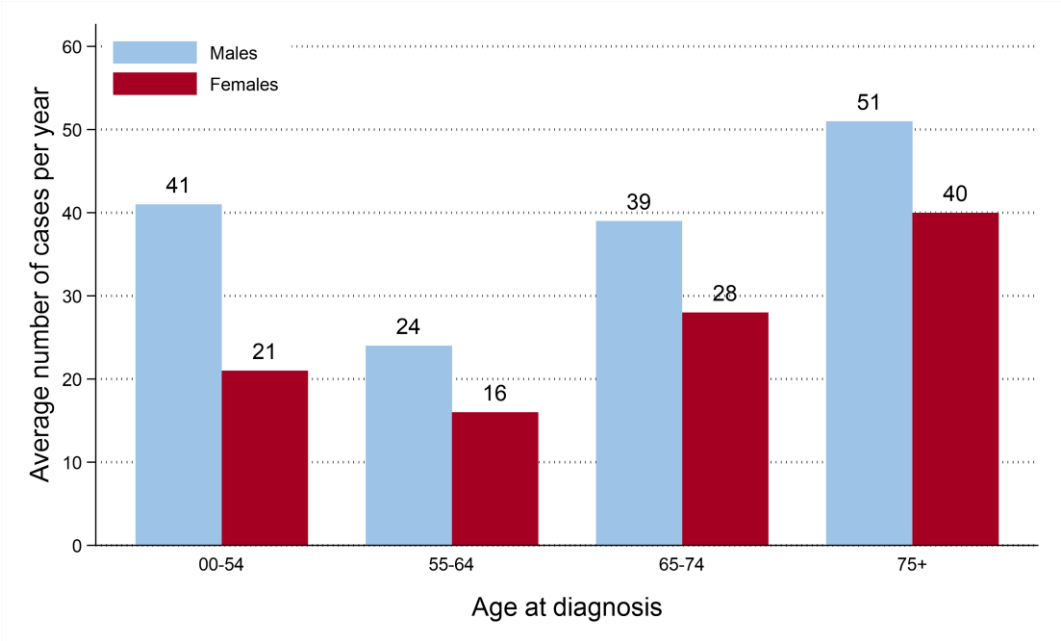
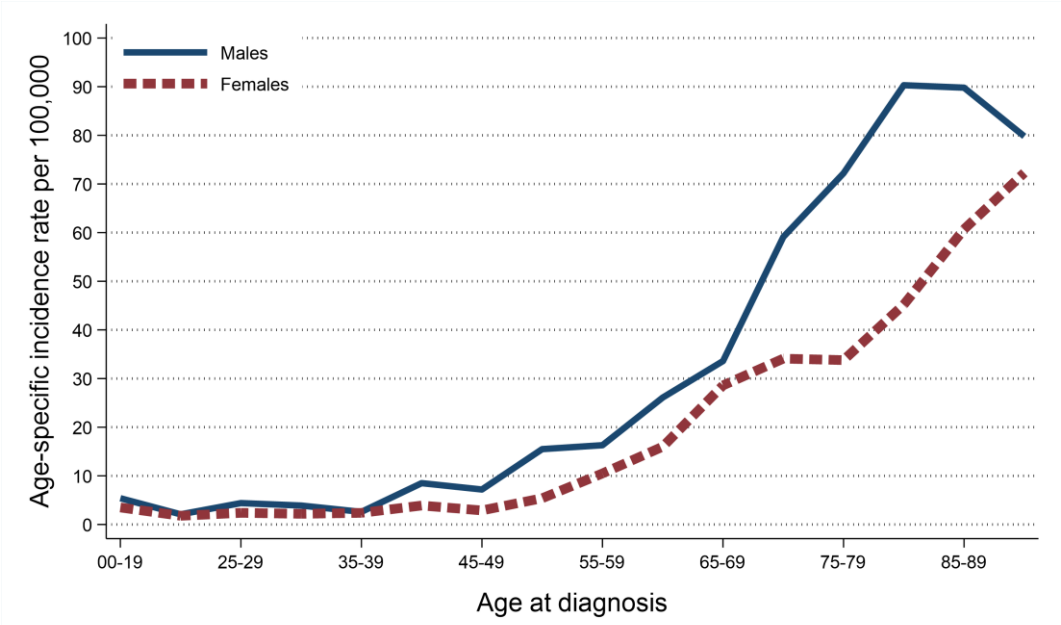


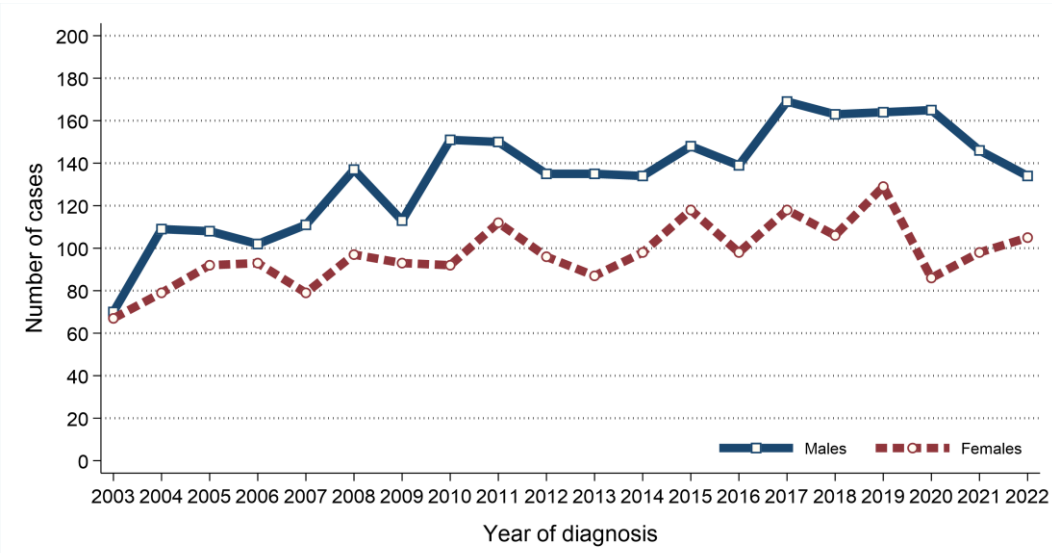
Figure 4: Age-specific incidence rates of leukaemia in 2018-2022



INCIDENCE TRENDS

- The number of cases of leukaemia among males increased between 2013-2017 and 2018-2022 by 6.5% from 725 cases (145 cases per year) to 772 cases (154 cases per year).
- The number of cases of leukaemia among females increased between 2013-2017 and 2018-2022 by 1.0% from 519 cases (104 cases per year) to 524 cases (105 cases per year).

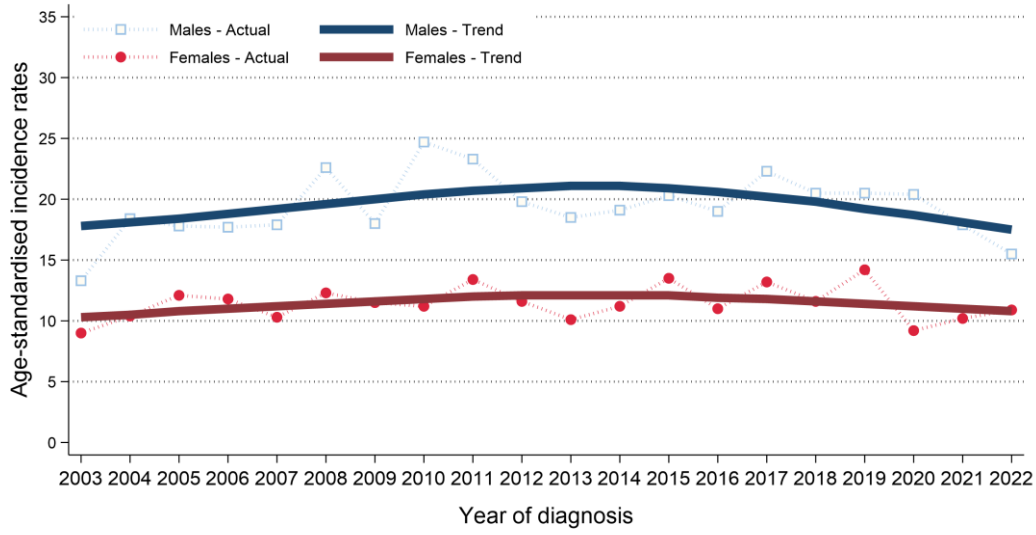
Figure 5: Trends in number of cases of leukaemia diagnosed from 2003 to 2022



Year of diagnosis	Number of cases	
	Males	Females
2013	135	87
2014	134	98
2015	148	118
2016	139	98
2017	169	118
2018	163	106
2019	164	129
2020	165	86
2021	146	98
2022	134	105

- Male age-standardised leukaemia incidence rates decreased between 2013-2017 and 2018-2022 by 5.0% from 19.9 to 18.9 cases per 100,000 males. This change was not statistically significant.
- Female age-standardised leukaemia incidence rates decreased between 2013-2017 and 2018-2022 by 5.1% from 11.8 to 11.2 cases per 100,000 females. This change was not statistically significant.

Figure 6: Trends in incidence rates of leukaemia from 2003 to 2022



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).

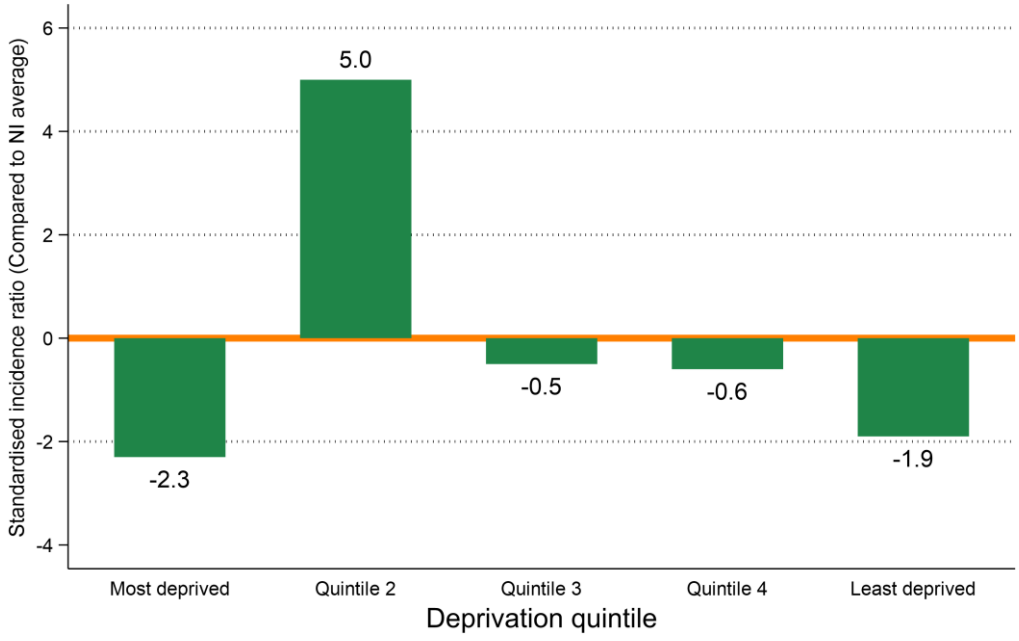
INCIDENCE BY DEPRIVATION

- The number of cases of leukaemia diagnosed during 2018-2022 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 1: Number of cases of leukaemia diagnosed in 2018-2022 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	**1,296**	**259**	**772**	**154**	**524**	**105**
	.	.	.	.	.	.
Most deprived	212	42	122	24	90	18
Quintile 2	273	55	169	34	104	21
Quintile 3	272	54	160	32	112	22
Quintile 4	273	55	166	33	107	21
Least deprived	266	53	155	31	111	22
Unknown	0	0	0	0	0	0

Figure 7: Standardised incidence ratio comparing deprivation quintile to Northern Ireland for leukaemia diagnosed in 2018-2022



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.

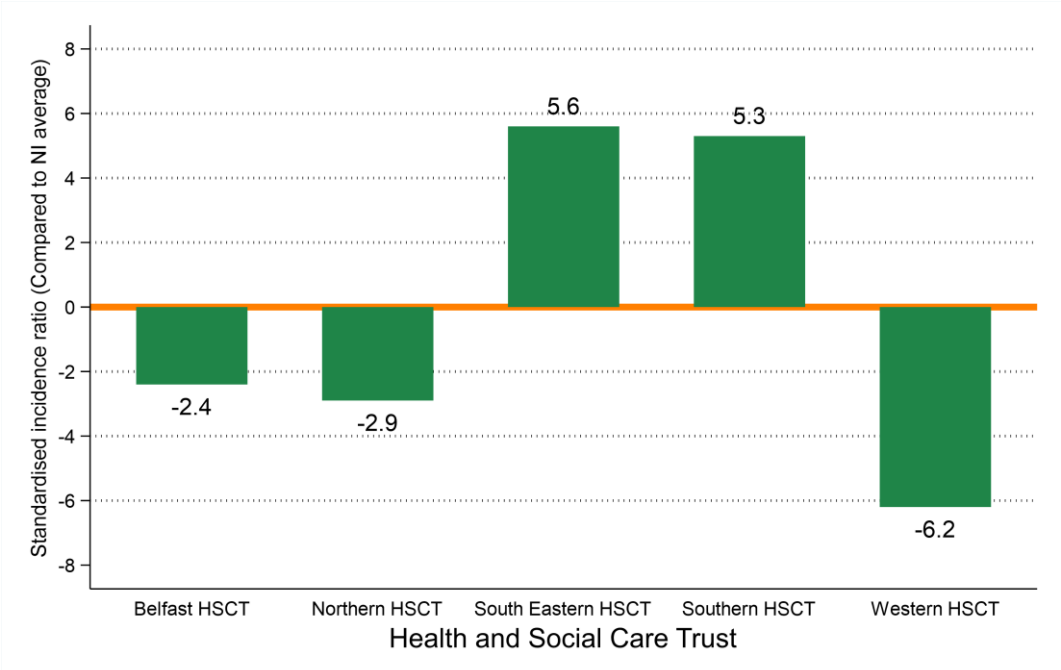
INCIDENCE BY HEALTH AND SOCIAL CARE TRUST

- The number of cases of leukaemia diagnosed during 2018-2022 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 2: Number of cases of leukaemia diagnosed in 2018-2022 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	**1,296**	**259**	**772**	**154**	**524**	**105**
	.	.	.	.	.	.
Belfast HSCT	228	46	125	25	103	21
Northern HSCT	331	66	193	39	138	28
South Eastern HSCT	285	57	171	34	114	23
Southern HSCT	262	52	160	32	102	20
Western HSCT	190	38	123	25	67	13
Unknown	0	0	0	0	0	0

Figure 8: Standardised incidence ratio comparing Health and Social Care Trust to Northern Ireland for leukaemia diagnosed in 2018-2022



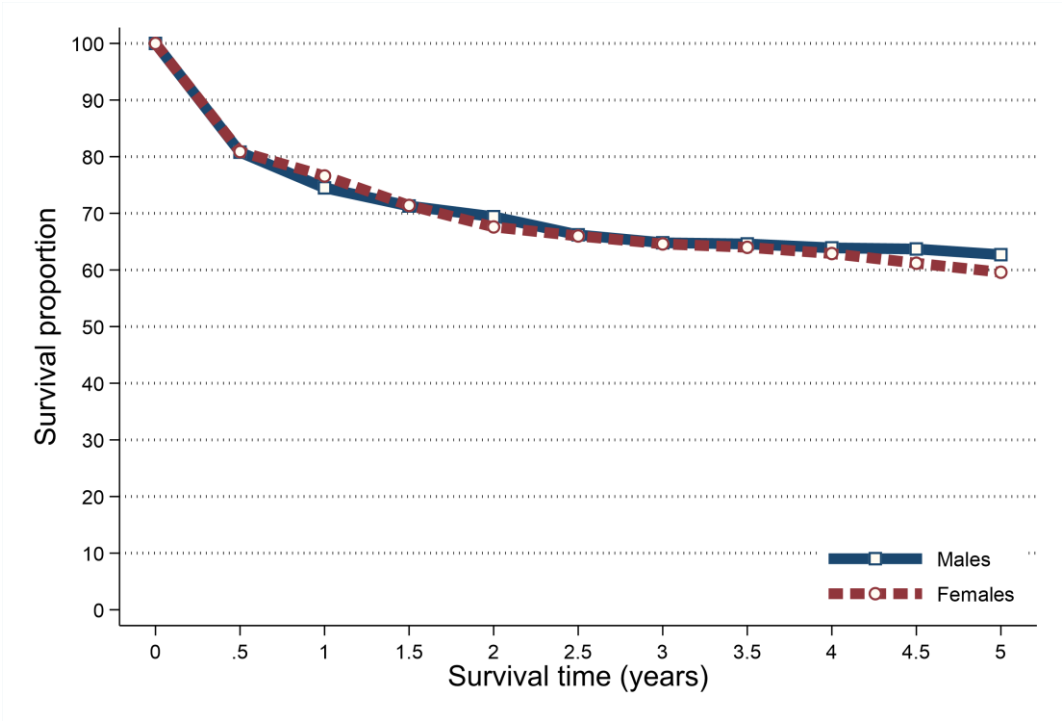
SURVIVAL

- 70.9% of patients were alive one year and 51.5% were alive five years from a leukaemia diagnosis in 2013-2017. (observed survival)
- Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 75.3% one year and 61.4% five years from a leukaemia diagnosis in 2013-2017.
- Five-year survival (ASNS) for leukaemia patients diagnosed in 2013-2017 was 62.7% among men and 59.6% among women.

Table 3: Survival from leukaemia for patients diagnosed in 2013-2017

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	77.3%	80.8%	78.4%	80.8%	75.8%	80.9%
One year	70.9%	75.3%	71.2%	74.5%	70.3%	76.6%
Two years	62.7%	68.7%	64.6%	69.4%	60.0%	67.6%
Five years	51.5%	61.4%	53.7%	62.7%	48.3%	59.6%

Figure 9: Age-standardised net survival from leukaemia for patients diagnosed in 2013-2017



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.

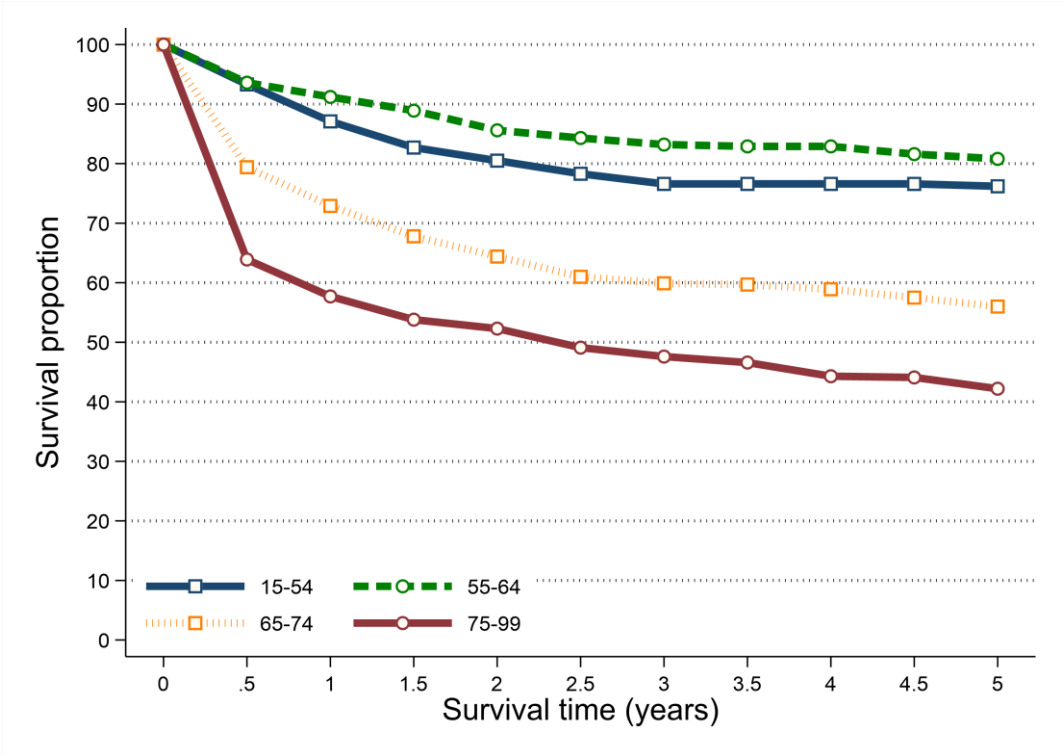
SURVIVAL BY AGE

- Survival from leukaemia among patients diagnosed during 2013-2017 was related to age with better five-year survival among younger age groups.
- Five-year net survival ranged from 80.8% among patients aged 55 to 64 at diagnosis to 42.2% among those aged 75 to 99.

Table 4: Net survival from leukaemia for patients diagnosed in 2013-2017 by age at diagnosis

Age group	All persons	
	One-year	Five-years
15 to 54	87.1%	76.2%
55 to 64	91.2%	80.8%
65 to 74	72.9%	56.0%
75 to 99	57.7%	42.2%

Figure 10: Net survival from leukaemia for patients diagnosed in 2013-2017 by age at diagnosis

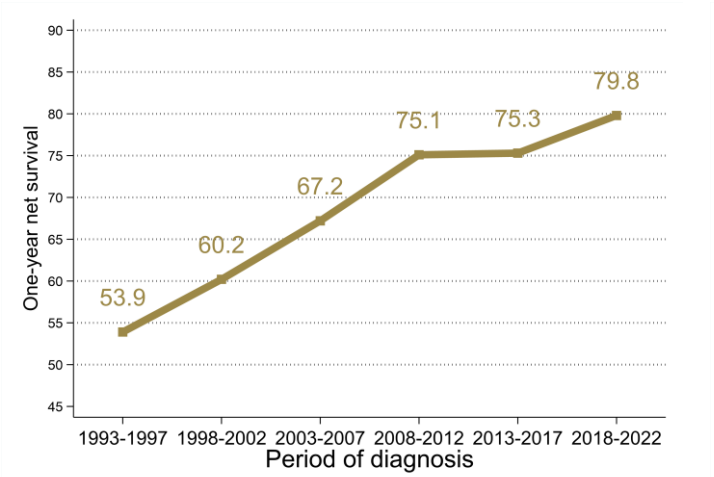


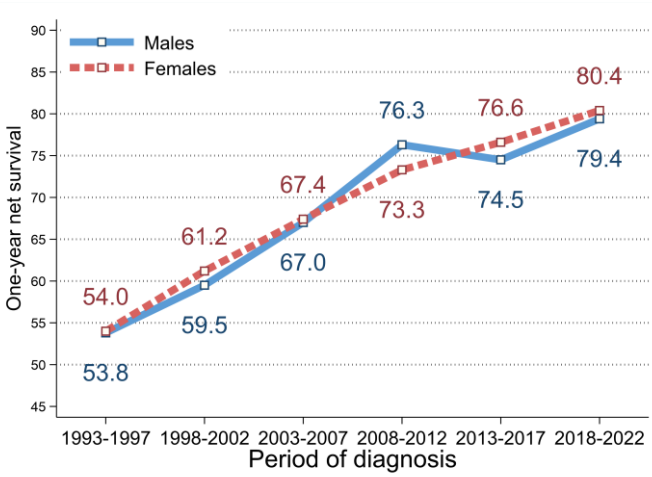
SURVIVAL TRENDS

ONE-YEAR NET SURVIVAL

- Between 2013-2017 and 2018-2022 there was no significant change in one-year survival (ASNS) from leukaemia.
- Compared to 1993-1997 one-year survival (ASNS) from leukaemia in 2018-2022 increased significantly from 53.9% to 79.8%. This increase was significant for males (53.8% to 79.4%) and females (54.0% to 80.4%).

Figure 11: Trends in one-year age-standardised net survival from leukaemia in 1993-2022

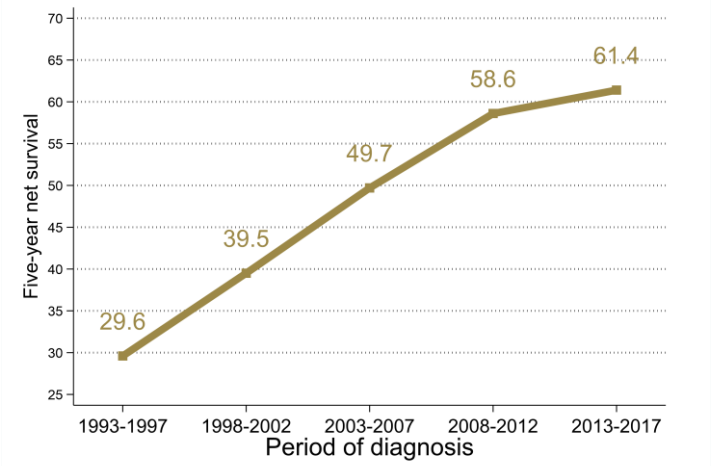


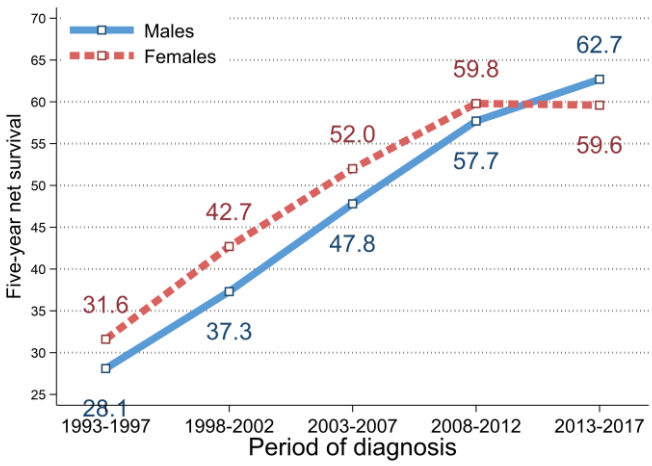


FIVE-YEAR NET SURVIVAL

- Between 2008-2012 and 2013-2017 there was no significant change in five-year survival (ASNS) from leukaemia.
- Compared to 1993-1997 five-year survival (ASNS) from leukaemia in 2013-2017 increased significantly from 29.6% to 61.4%. This increase was significant for males (28.1% to 62.7%) and females (31.6% to 59.6%).

Figure 12: Trends in five-year age-standardised net survival from leukaemia in 1993-2017





PREVALENCE

- At the end of 2022, there were 2,140 people (Males: 1,250; Females: 890) living with leukaemia who had been diagnosed with the disease during 1998-2022.
- Of these 9.2% had been diagnosed in the previous year (one-year prevalence) and 67.4% in the previous 10 years (ten-year prevalence).
- 29.7% of leukaemia survivors were aged 75 and over at the end of 2022.

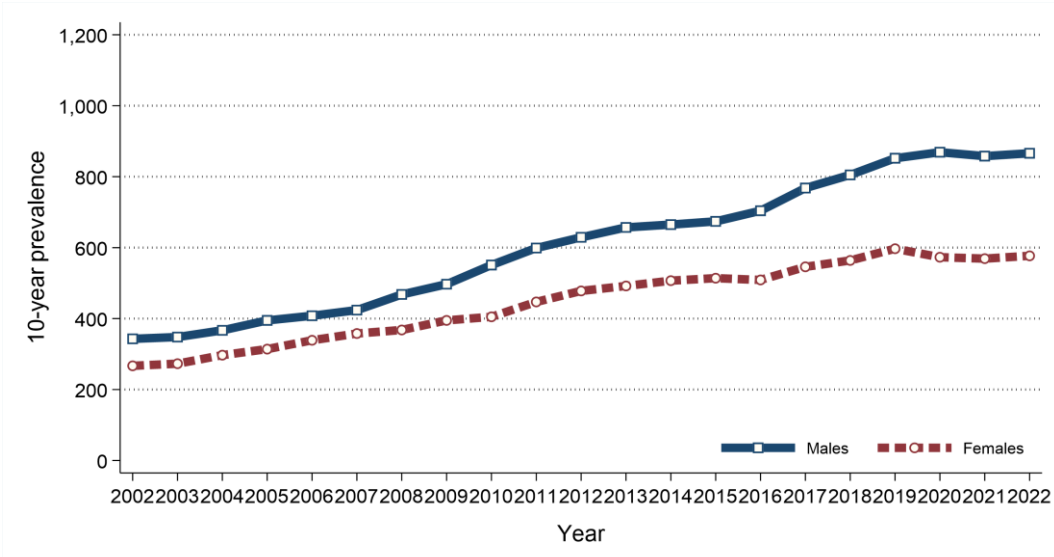
Table 5: 25-year prevalence of leukaemia by age at end of 2022

Gender	Age at end of 2022	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	2,140	196	670	577	697
	0 to 74	1,504	141	465	405	493
	75 and over	636	55	205	172	204
Male	All ages	1,250	116	406	344	384
	0 to 74	909	84	291	259	275
	75 and over	341	32	115	85	109
Female	All ages	890	80	264	233	313
	0 to 74	595	57	174	146	218
	75 and over	295	23	90	87	95

PREVALENCE TRENDS

- 10-year prevalence of leukaemia among males increased between 2017 and 2022 by 12.8% from 768 survivors to 866 survivors.
- 10-year prevalence of leukaemia among females increased between 2017 and 2022 by 5.7% from 546 survivors to 577 survivors.

Figure 13: Trends in 10-year prevalence of leukaemia in 2002-2022



Year	10-year prevalence	
	Males	Females
2013	657	492
2014	665	507
2015	674	514
2016	704	509
2017	768	546
2018	805	564
2019	852	597
2020	869	573
2021	858	569
2022	866	577

MORTALITY

- There were 546 deaths from leukaemia during 2018-2022 in Northern Ireland. On average this was 109 deaths per year.
- During this period 44.0% of leukaemia deaths were among women (Male deaths: 306, Female deaths: 240). On average there were 61 male and 48 female deaths from leukaemia per year.
- Leukaemia deaths made up 2.6% of all male and 2.2% of all female cancer deaths.
- The median age of patients who died from leukaemia during 2018-2022 was 78 years (Males: 77, Females: 79).
- The risk of dying from leukaemia varied by age, with 55.2% of men and 61.3% of women who died from leukaemia aged 75 and over at death.
- In contrast, 7.7% of patients who died from leukaemia were aged 0 to 54 at death.

Figure 14: Average number of deaths from leukaemia per year in 2018-2022 by age at death

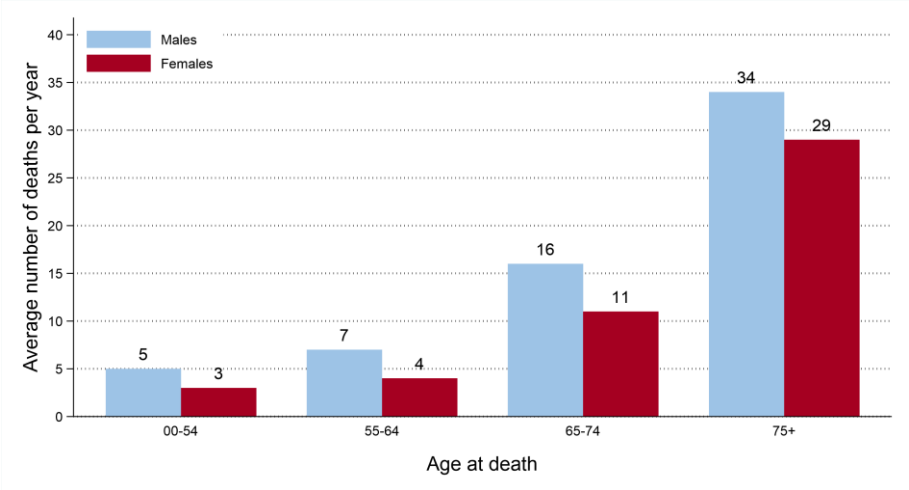
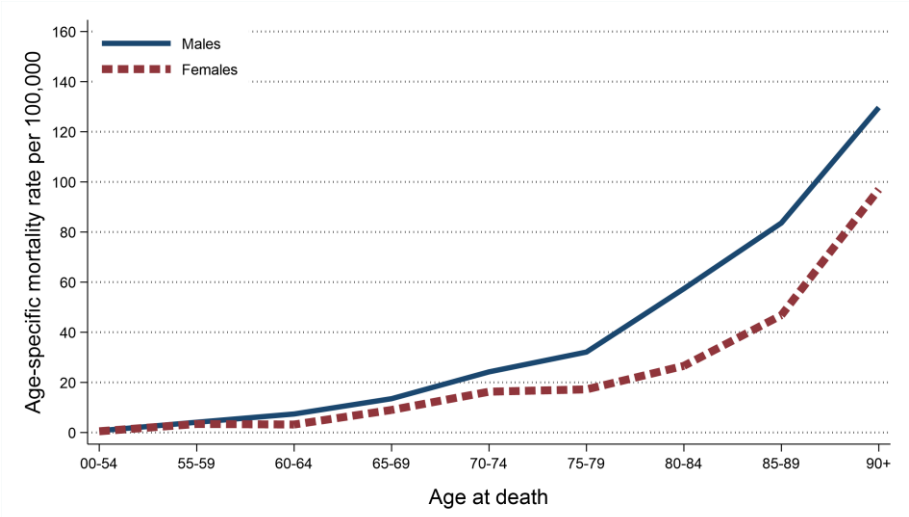


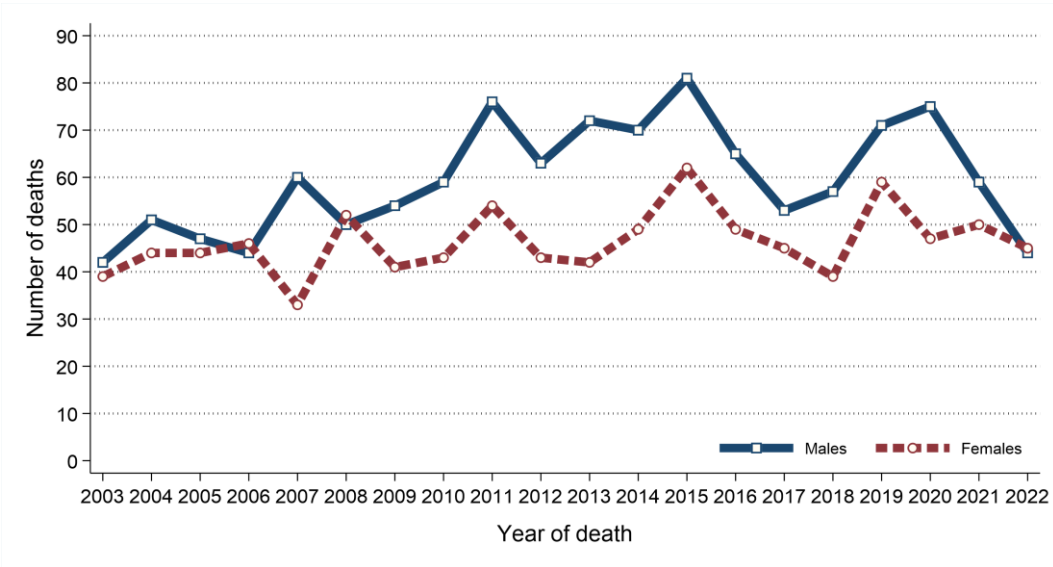
Figure 15: Age-specific mortality rates of leukaemia in 2018-2022



MORTALITY TRENDS

- The number of deaths from leukaemia among males decreased between 2013-2017 and 2018-2022 by 10.3% from 341 deaths (68 deaths per year) to 306 deaths (61 deaths per year).
- The number of deaths from leukaemia among females decreased between 2013-2017 and 2018-2022 by 2.8% from 247 deaths (49 deaths per year) to 240 deaths (48 deaths per year).

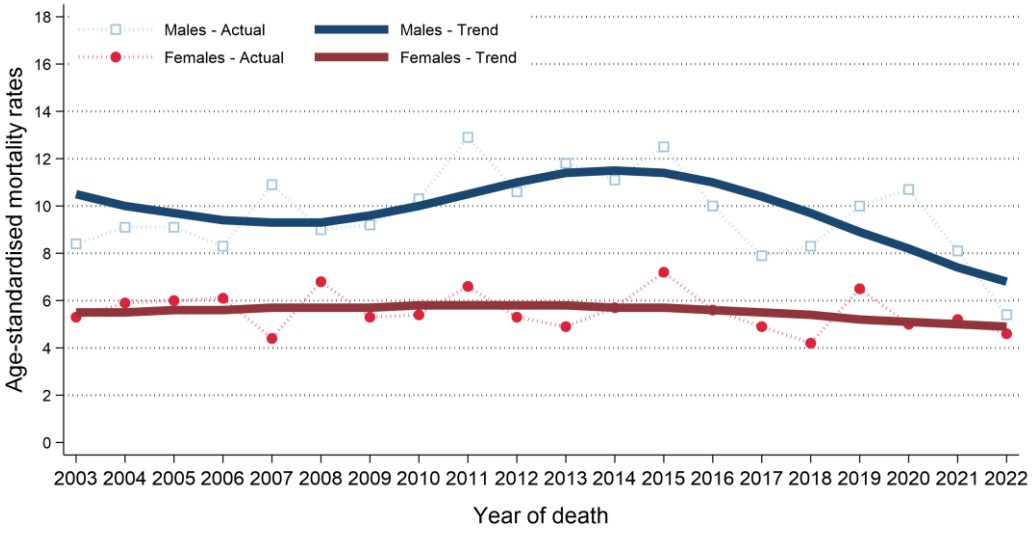
Figure 16: Trends in the number of deaths from leukaemia from 2003 to 2022



Year of death	Number of deaths	
	Males	Females
2013	72	42
2014	70	49
2015	81	62
2016	65	49
2017	53	45
2018	57	39
2019	71	59
2020	75	47
2021	59	50
2022	44	45

- Male age-standardised leukaemia mortality rates decreased between 2013-2017 and 2018-2022 by 19.8% from 10.6 to 8.5 deaths per 100,000 males. This change was not statistically significant.
- Female age-standardised leukaemia mortality rates decreased between 2013-2017 and 2018-2022 by 8.9% from 5.6 to 5.1 deaths per 100,000 females. This change was not statistically significant.

Figure 17: Trends in mortality rates of leukaemia from 2003 to 2022



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 Jul 2024 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. leukaemia 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. leukaemia 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 2022 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.