

Lung cancer

Patients diagnosed 1993-2019
(ICD10: C33-C34)

Further information

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

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Acknowledgements

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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.



Incidence

During 2015-2019:

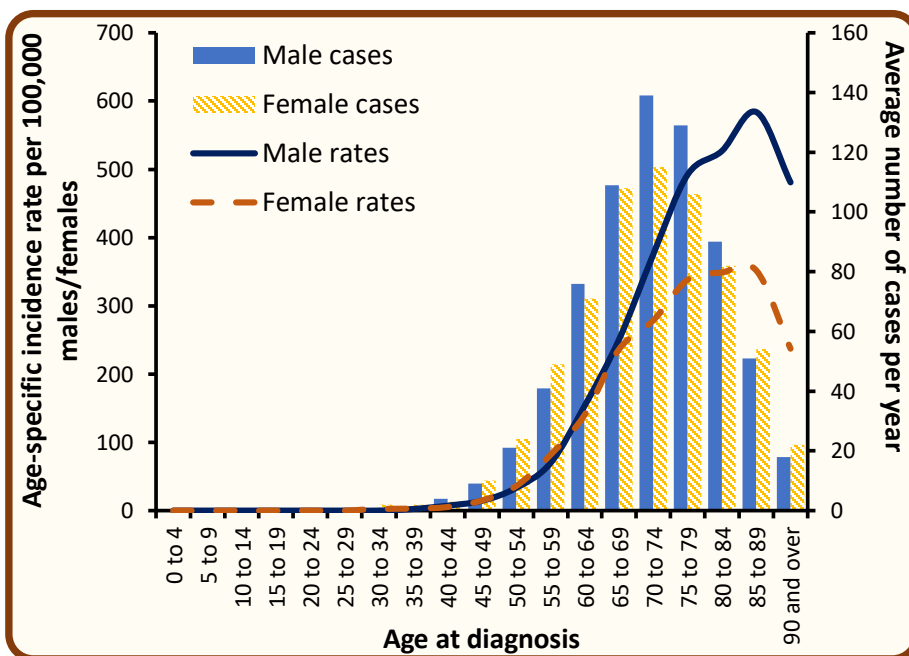
- There were 690 male and 649 female cases of lung cancer diagnosed each year.
- Lung cancer made up 13.9% of all male cancers (ex NMSC), and 13.2% of all female cancers (ex NMSC).
- The risk of lung cancer before the age of 75 was 1 in 22.5 for men and 1 in 25.5 for women, while before the age of 85 the risk was 1 in 10.9 for men and 1 in 14.0 for women.

Incidence by age at diagnosis - Lung cancer, Cases in 2015-2019

During 2015-2019:

- The median age at diagnosis was 73 for men and 72 for women.
- Cancer risk increased with age, with 41.7% of men and 40.7% of women aged 75 years or more at diagnosis.
- 5.8% of cases were diagnosed among those aged under 55.

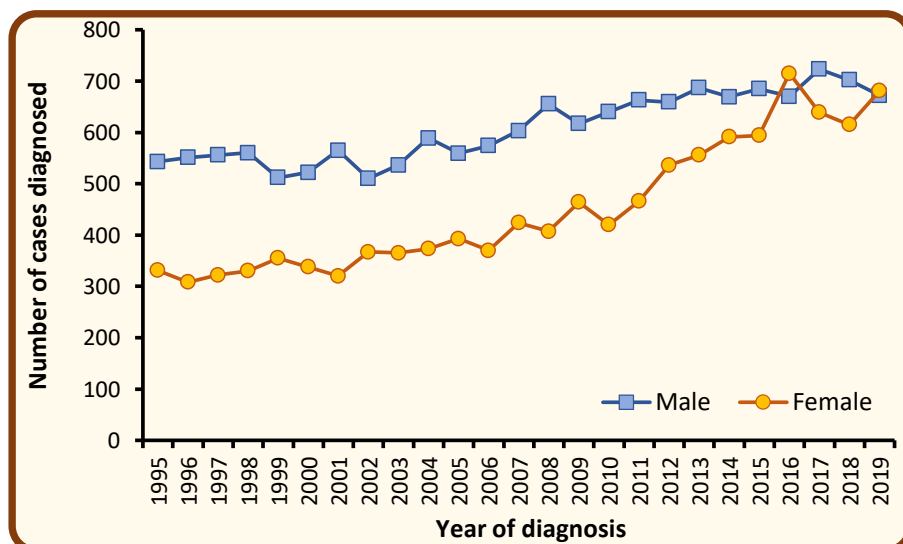
Age at diagnosis	Average cases per year		
	Male	Female	Both sexes
0 - 54	35	41	77
55 - 64	117	120	237
65 - 74	248	223	471
75 +	288	264	553
All ages	690	649	1,339



Incidence by year of diagnosis - Lung cancer, Cases in 1995-2019

- Among males the number of lung cancer increased by 3.9% from an annual average of 664 cases in 2010-2014 to 690 cases in 2015-2019.
- Among females the number of cases of lung cancer increased by 26.3% from an annual average of 514 cases in 2010-2014 to 649 cases in 2015-2019.

Year of diagnosis	Male	Female	Both sexes
2010	640	420	1,060
2011	663	466	1,129
2012	659	536	1,195
2013	687	556	1,243
2014	669	591	1,260
2015	685	594	1,279
2016	670	715	1,385
2017	723	639	1,362
2018	702	615	1,317
2019	672	681	1,353

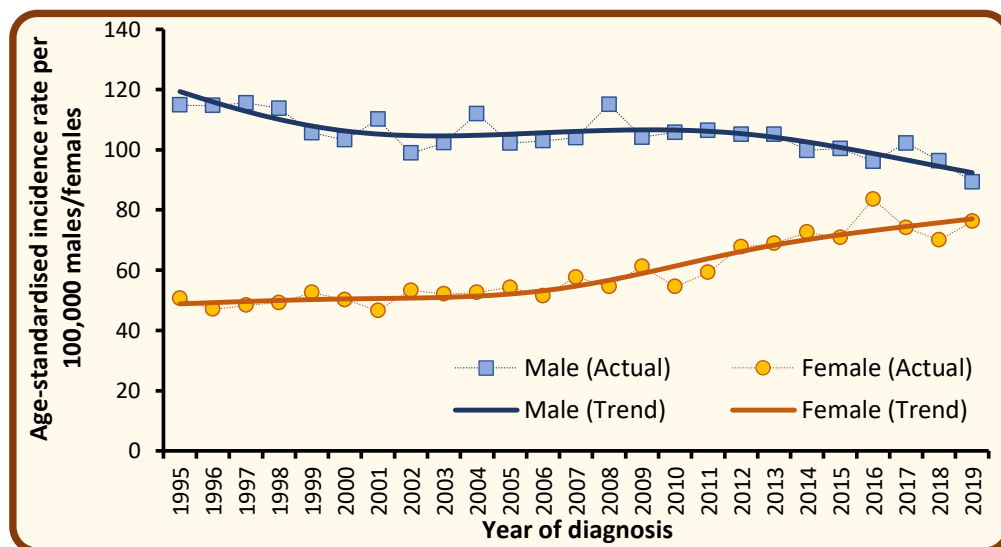


Note: Annual averages have been rounded to the nearest integer. Sums of numbers in table rows or columns may thus differ slightly from the given total.

NMSC: Non-melanoma skin cancer

Trends in age-standardised incidence rates - Lung cancer, Cases in 1995-2019

- Among males age-standardised incidence rates of lung cancer decreased by 7.2% from 104.3 per 100,000 person years in 2010-2014 to 96.8 cases per 100,000 persons years in 2015-2019. This difference was statistically significant.
- Among females age-standardised incidence rates of lung cancer increased by 15.6% from 64.8 per 100,000 person years in 2010-2014 to 74.9 cases per 100,000 persons years in 2015-2019. This difference was statistically significant.



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).

Trends in age-standardised incidence rates by age - Lung cancer, Cases in 1995-2019

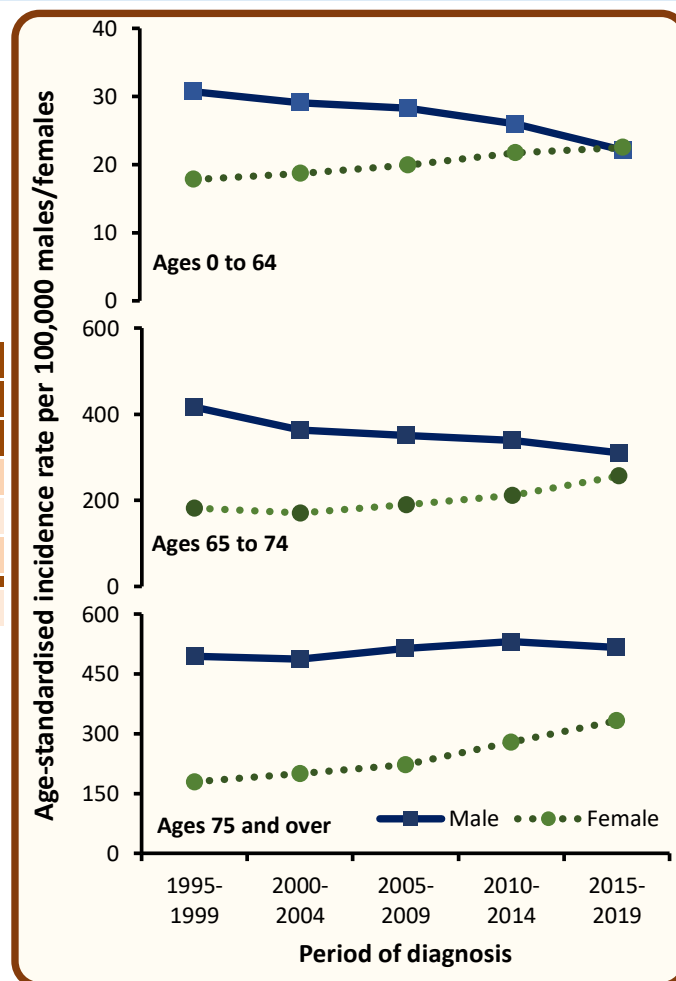
For the annual average number of cases diagnosed, between 2010-2014 and 2015-2019 there was:

- a decrease of 8.9% among males aged 0 to 64, an increase of 3.8% among males aged 65 to 74 and an increase of 12.9% among males aged 75 and over.
- an increase of 12.6% among females aged 0 to 64, an increase of 33.5% among females aged 65 to 74 and an increase of 29.9% among females aged 75 and over.

Age group	Average cases per year			
	2010-2014		2015-2019	
	Male	Female	Male	Female
0 to 64	168	143	153	161
65 to 74	239	167	248	223
75 and over	256	204	289	265
All ages	664	514	690	649

For age-standardised incidence rates, between 2010-2014 and 2015-2019 there was:

- a decrease of 15.0% among males aged 0 to 64, no significant change among males aged 65 to 74 and no significant change among males aged 75 and over.
- no significant change among females aged 0 to 64, an increase of 21.2% among females aged 65 to 74 and an increase of 19.1% among females aged 75 and over.



Incidence by deprivation quintile - Lung cancer, Cases in 2015-2019

The annual number of cases during 2015-2019 varied in each deprivation quintile due to variations in population size and age.

After accounting for these factors, incidence rates:

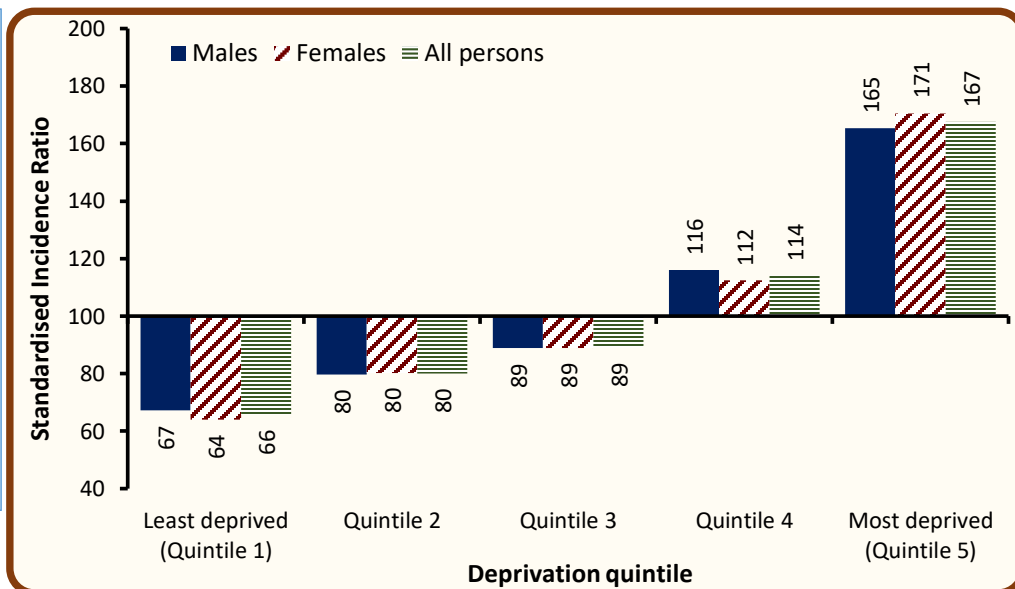
- in the most socio-economically deprived areas were 67.5% higher than the NI average.
- in the least socio-economically deprived areas were 34.3% lower than the NI average.

Deprivation quintile	Average cases per year		
	Male	Female	Both sexes
Least deprived (Quintile 1)	99	90	189
Quintile 2	117	109	226
Quintile 3	131	120	251
Quintile 4	160	147	306
Most deprived (Quintile 5)	183	184	367
Northern Ireland	690	649	1,339

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

A value above 100 means that incidence rates in that deprivation quintile are greater than the Northern Ireland average.

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



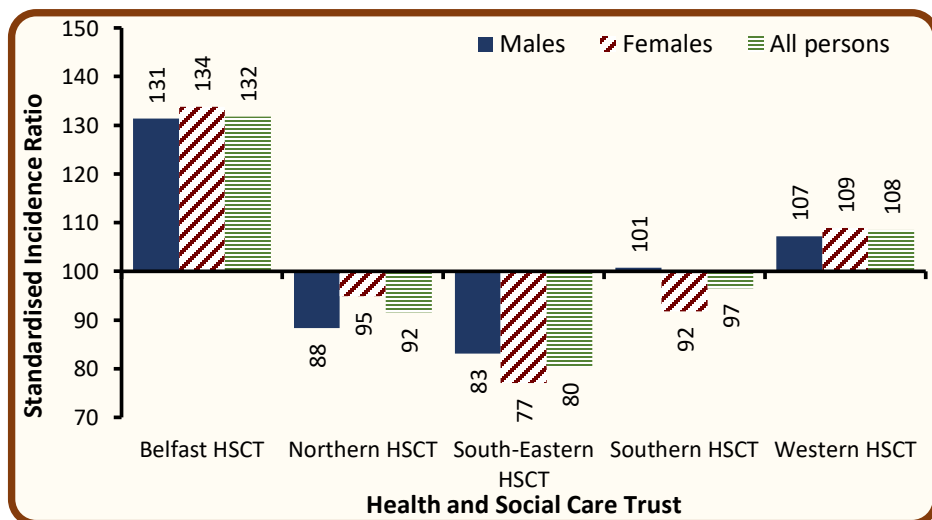
Incidence by Health and Social Care Trust (HSCT) - Lung cancer, Cases in 2015-2019

The annual number of cases during 2015-2019 varied in each HSCT due to variations in population size and age.

After accounting for these factors, incidence rates:

- in Belfast HSCT were significantly higher than the NI average.
- in Northern HSCT were significantly lower than the NI average.
- in South-Eastern HSCT were significantly lower than the NI average.
- in Southern HSCT did not vary significantly from the NI average.
- in Western HSCT were significantly higher than the NI average.

Health and Social Care Trust	Average cases per year		
	Male	Female	Both sexes
Belfast HSCT	158	164	322
Northern HSCT	164	164	328
South-Eastern HSCT	122	106	228
Southern HSCT	129	109	238
Western HSCT	117	106	224
Northern Ireland	690	649	1,339



Standardised incidence ratios compare incidence rates in each HSC Trust with the Northern Ireland incidence rate. A value above 100 means that incidence rates in that HSC Trust 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.

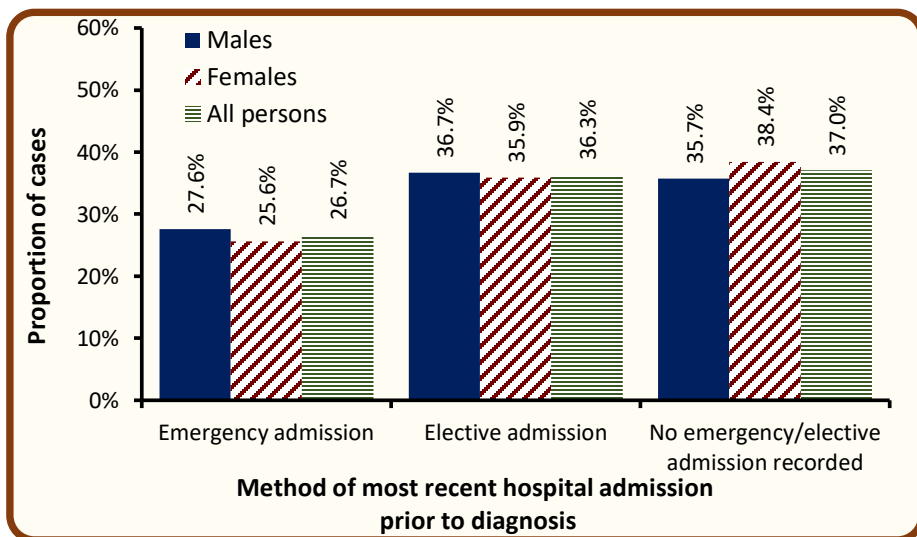
Data for Local Government Districts and Parliamentary Constituencies are available at www.qub.ac.uk/research-centres/nicr

Incidence by method of most recent admission to hospital - Lung cancer, Cases in 2015-2019

During 2015-2019:

- 26.7% of cases had an emergency admission to hospital recorded up to 30 days prior to cancer diagnosis.
- 27.6% of male cases had an emergency admission up to 30 days prior to diagnosis, compared to 25.6% of female cases.
- In 37.0% of diagnosed cases there was no record of a hospital inpatient admission up to 30 days prior to the diagnosis.

Method of admission	Average cases per year		
	Male	Female	Both sexes
Emergency admission	191	166	357
Elective admission	253	233	486
No emergency/elective admission recorded	247	249	496
Total	690	649	1,339



Admission method refers to the most recent hospital inpatient admission that a patient had prior to cancer diagnosis, regardless of reason for the admission.

Admissions are considered up to a maximum of 30 days prior to diagnosis. Admissions up to two days post diagnosis are also considered to allow for a reasonable margin or error in data recording.

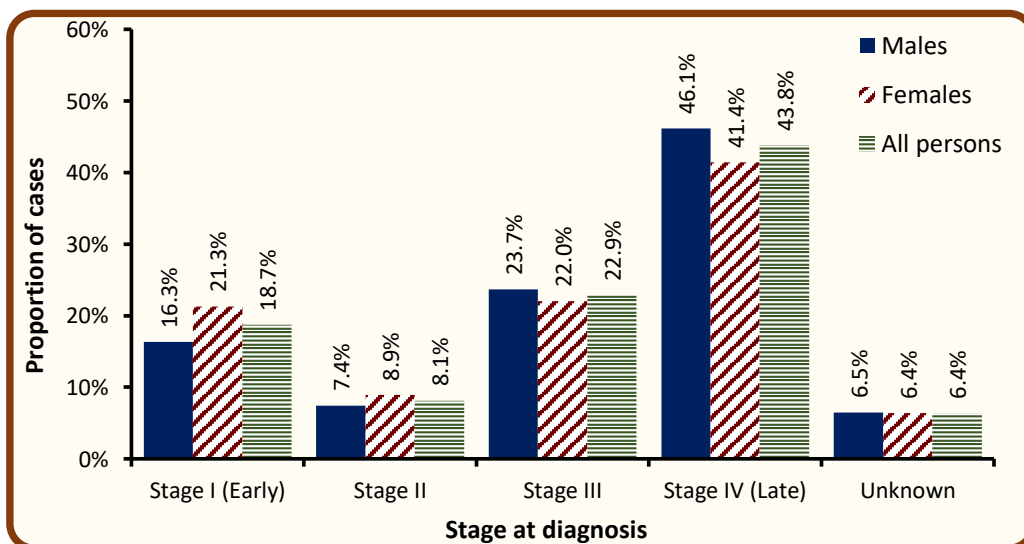
The majority of patients with no inpatient admission recorded prior to diagnosis are likely to have been diagnosed via an outpatient route.

Incidence by stage at diagnosis - Lung cancer, Cases in 2015-2019

During 2015-2019:

- 93.6% of cases diagnosed had a stage assigned.
- 18.7% of cases were diagnosed at stage I. (20.0% of staged cases)
- 43.8% of cases were diagnosed at stage IV. (46.8% of staged cases)
- Among cases which were staged, 49.3% of male cases were diagnosed at stage IV, compared to 44.2% of female cases.

Stage at diagnosis	Average cases per year		
	Male	Female	Both sexes
Stage I (Early)	113	138	251
Stage II	51	58	109
Stage III	164	143	306
Stage IV (Late)	318	269	587
Unknown	45	41	86
All stages	690	649	1,339



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.

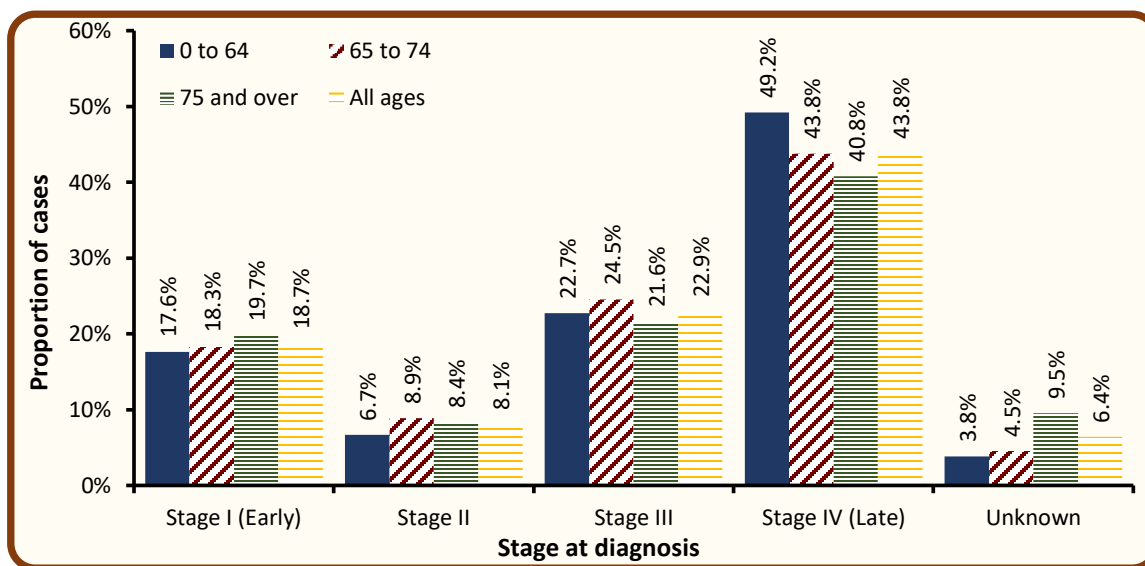
The classification used here to stage cancer is the TNM classification (Version 7 prior to 2018, Version 8 from 2018 onwards).

Incidence by age and stage at diagnosis - Lung cancer, Cases in 2015-2019

During 2015-2019:

- 9.5% of cases among those aged 75 and over did not have a stage assigned at diagnosis, compared to 3.8% of cases among those aged 0 to 64.
- Among cases which were staged, 45.1% of cases among those aged 75 and over were diagnosed at stage IV, compared to 51.2% of cases among those aged 0 to 64.

Stage at diagnosis	Average cases per year			
	0 to 64	65 to 74	75 and over	All ages
Stage I (Early)	55	86	109	251
Stage II	21	42	46	109
Stage III	71	116	119	306
Stage IV (Late)	155	206	226	587
Unknown	12	21	53	86
All stages	315	471	553	1,339



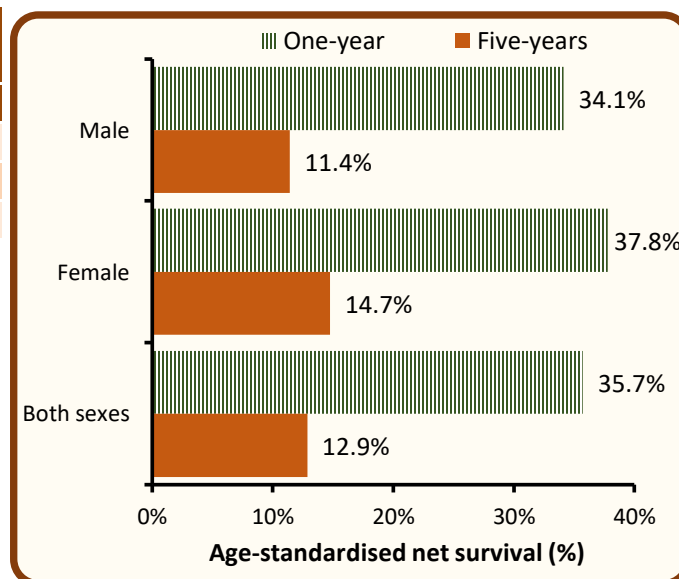
Survival

- 32.5% of patients were alive one year and 9.5% were alive five years from a lung cancer diagnosis in 2010-2014. (observed survival)
- Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 35.7% one year and 12.9% five years from a lung cancer diagnosis in 2010-2014.
- Five-year survival (ASNS) for lung cancer patients diagnosed in 2010-2014 was 11.4% among men and 14.7% among women.

Gender	Observed survival		Age-standardised net survival	
	One-year	Five-years	One-year	Five-years
Male	30.9%	8.0%	34.1%	11.4%
Female	34.7%	11.4%	37.8%	14.7%
Both sexes	32.5%	9.5%	35.7%	12.9%

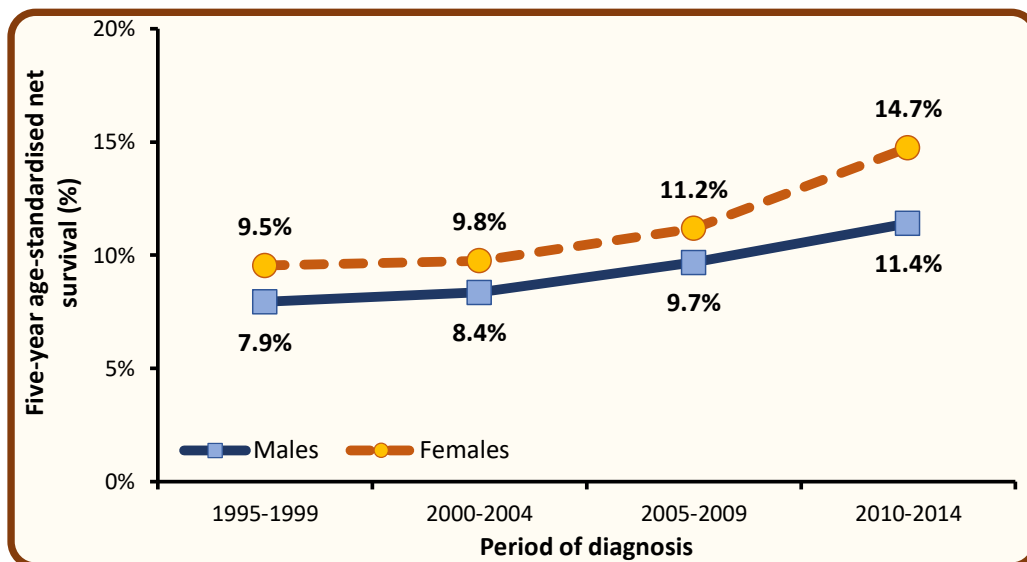
Observed survival is the proportion of patients still alive one/five years after diagnosis. However, in this measure patients may have died from causes unrelated to their cancer.

Age-standardised net survival is the proportion of patients who would survive if the patient could not die from causes unrelated to their cancer. This measure is more typically used in studies of cancer survival.



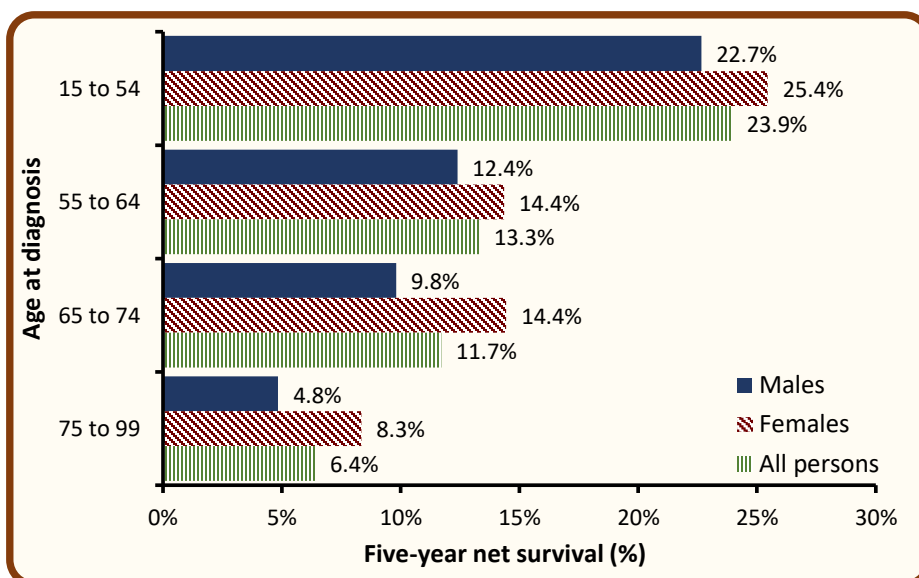
Trends in survival - Lung cancer, Patients diagnosed in 1995-2014

- Among men five-year survival (ASNS) from lung cancer increased from 7.9% in 1995-1999 to 11.4% in 2010-2014. This difference was not statistically significant.
- Among women five-year survival (ASNS) from lung cancer increased from 9.5% in 1995-1999 to 14.7% in 2010-2014. This difference was statistically significant.



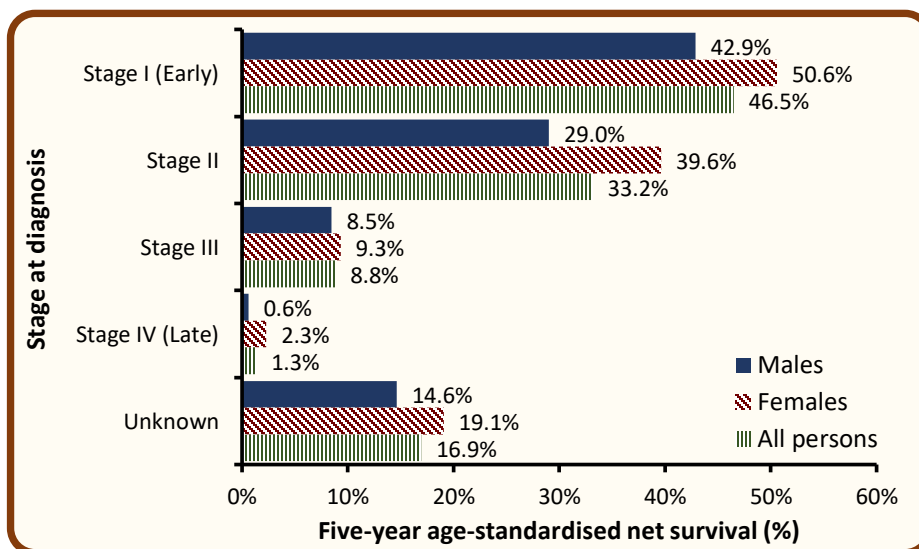
Survival by age at diagnosis - Lung cancer, Patients diagnosed in 2010-2014

- Survival from lung cancer among patients diagnosed in 2010-2014 was related to age with better five-year survival among younger age groups.
- Five-year net survival ranged from 23.9% among patients aged 15 to 54 at diagnosis to 6.4% among those aged 75 and over.
- Five-year net survival among patients aged 75 and over was 4.8% for men and 8.3% for women.



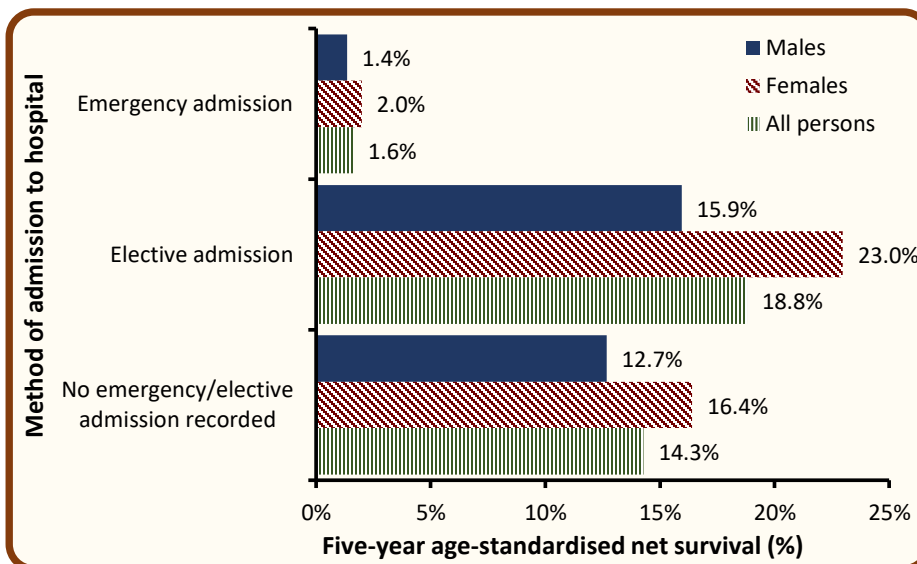
Survival by stage at diagnosis - Lung cancer, Patients diagnosed in 2010-2014

- Stage at diagnosis is one of the most important factors in lung cancer survival with five-year survival decreasing as stage increases.
- Five-year survival (ASNS) ranged from 46.5% for early stage (stage I) disease to 1.3% for late stage (stage IV) disease.
- Five-year survival (ASNS) for unstaged cancer was 16.9%.
- Five-year survival (ASNS) for stage IV cancer was 0.6% for men, compared to 2.3% for women.



Survival by method of most recent admission to hospital - Lung cancer, Patients diagnosed in 2010-2014

- Five-year survival (ASNS) among patients who had an emergency admission to hospital within 30 days prior to their cancer diagnosis was 1.6% compared to 18.8% among those with elective admissions and 14.3% among those who had no hospital admissions recorded within 30 days prior to diagnosis.
- Five-year survival (ASNS) among patients who had an emergency admission to hospital within 30 days prior to their cancer diagnosis was 1.4% for men, compared to 2.0% for women.



Prevalence

- At the end of 2019, there were 2,602 people (Males: 1,243; Females: 1,359) living with lung cancer who had been diagnosed with the disease during 1995-2019.
- Of these, 47.8% were male, 39.3% were aged 75 and over, and 29.9% had been diagnosed in the previous year.

25-year prevalence refers to the number of cancer survivors who were alive at the end of 2019, and had been diagnosed with their cancer in the previous 25 years (i.e. 1995-2019).

Time since diagnosis	25-year prevalence								
	Aged 0-74			Aged 75+			All ages		
	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes
0-1 year	227	261	488	137	153	290	364	414	778
1-5 years	311	359	670	194	213	407	505	572	1,077
5-10 years	118	134	252	80	86	166	198	220	418
10-25 years	93	77	170	83	76	159	176	153	329
0-25 years	749	831	1,580	494	528	1,022	1,243	1,359	2,602

Trends in 10-year prevalence - Lung cancer, Patients alive at end of each year from 2010-2019

- Among males the number of survivors from lung cancer who had been diagnosed within the previous ten years (10-year prevalence) increased by 19.1% from 896 survivors in 2014 to 1,067 survivors in 2019.
- Among females the number of survivors from lung cancer who had been diagnosed within the previous ten years (10-year prevalence) increased by 46.9% from 821 survivors in 2014 to 1,206 survivors in 2019.

Year	10-year prevalence		
	Male	Female	Both sexes
2010	757	591	1,348
2011	797	634	1,431
2012	827	682	1,509
2013	863	761	1,624
2014	896	821	1,717
2015	919	891	1,810
2016	942	980	1,922
2017	1,000	1,073	2,073
2018	1,035	1,112	2,147
2019	1,067	1,206	2,273

Mortality

- During 2015-2019 there were 556 male and 478 female deaths from lung cancer each year.
- Lung cancer made up 23.9% of all male, and 22.8% of all female cancer deaths (ex NMSC).

Deaths by age at death - Lung cancer, Deaths in 2015-2019

- The median age at death during 2015-2019 was 74 for men and 73 for women.
- Risk of death from lung cancer was strongly related to patient age, with 46.9% of men and 45.2% of women aged 75 years or more at time of death.
- 5.0% of lung cancer deaths occurred among those aged under 55.

Age at death	Average deaths per year		
	Male	Female	Both sexes
0 - 54	26	25	52
54 - 64	89	77	166
65 - 74	181	159	340
75 +	261	216	477
All ages	556	478	1,034

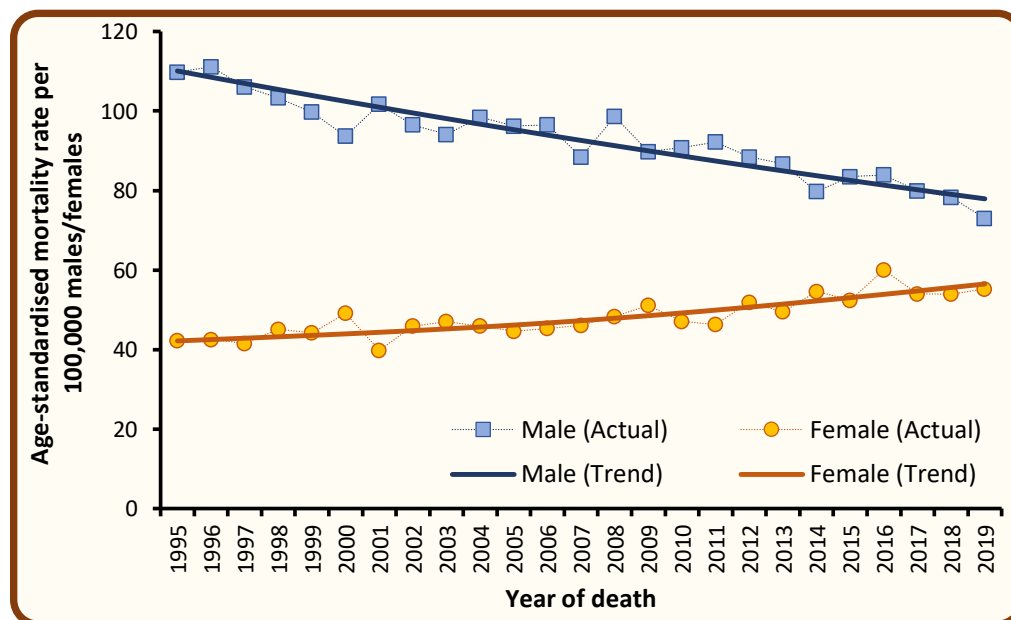
Deaths by year of death - Lung cancer, Deaths in 2010-2019

- Among males the number of deaths from lung cancer increased by 1.8% from an annual average of 546 deaths in 2010-2014 to 556 deaths in 2015-2019.
- Among females the number of deaths from lung cancer increased by 20.1% from an annual average of 398 deaths in 2010-2014 to 478 deaths in 2015-2019.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Male	541	559	543	559	527	556	572	558	557	536
Female	365	363	416	398	449	439	512	469	476	495
Both sexes	906	922	959	957	976	995	1,084	1,027	1,033	1,031

Trends in age-standardised mortality rates - Lung cancer, Deaths in 1995-2019

- Among males age-standardised mortality rates from lung cancer decreased by 8.9% between 2010-2014 and 2015-2019 from 87.4 to 79.6 deaths per 100,000 persons years. This difference was statistically significant.
- Among females age-standardised mortality rates from lung cancer increased by 10.4% between 2010-2014 and 2015-2019 from 49.9 to 55.1 deaths per 100,000 persons years. This difference was statistically significant.



Mortality data are provided by the Northern Ireland General Registrar Office via the Department of Health.

Counts of the number of deaths are based upon the year that death occurred, and upon the primary cause of death only.

Age-standardised mortality rates remove changes over time caused by population growth and/or ageing.

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 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 are assigned based on a patient's postcode of usual residence at diagnosis using the Jan 2021 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).

A **crude incidence/mortality rate** is 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.

An **age-standardised incidence/mortality rate** per 100,000 person years is an estimate 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.

A **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 are a measure of the precision of a statistic (e.g. lung 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. cervical 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 2019 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.

Observed survival refers to the proportion of patients who survive a specified amount of time from their date of diagnosis. Observed survival considers death from any cause and is not adjusted for the age of the patient. Cause of death may be unrelated to the cancer the patient has been diagnosed with.

Net Survival is an estimate of survival where the effect on survival of background population mortality rates has been removed. It represents the [theoretical] survival of cancer patients if they could only die from cancer-related causes. Age-standardised net survival estimates are the estimates that would occur if that population of cancer patients had a standard population age structure. The age groups and weights used here are those used by international studies such as EUROCARE, an international study group that compares cancer survival among European countries. However, due to the small number of patients in NI, the first two age categories in the standard population are combined.

Mortality: Information relating to cancer mortality is sourced from the General Registrar Office (GRONI) via the Department of Health (NI). Results are based upon the date on which death occurs, and may thus differ slightly than those produced by the Northern Ireland Statistics and Research Agency (NISRA), which produces deaths data based upon the date on which the death is registered with GRONI.