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# Thyroid cancer

1993-2021

(ICD10 codes: C73)

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**Northern Ireland Cancer Registry, 2024**

**An official statistics publication**

# ABOUT THIS REPORT

## Contents

This report includes information on incidence of thyroid 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](http://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](http://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 2024. Thyroid cancer: 1993-2021. Available at: [www.qub.ac.uk/research-centres/nicr](http://www.qub.ac.uk/research-centres/nicr)*

## Further information

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

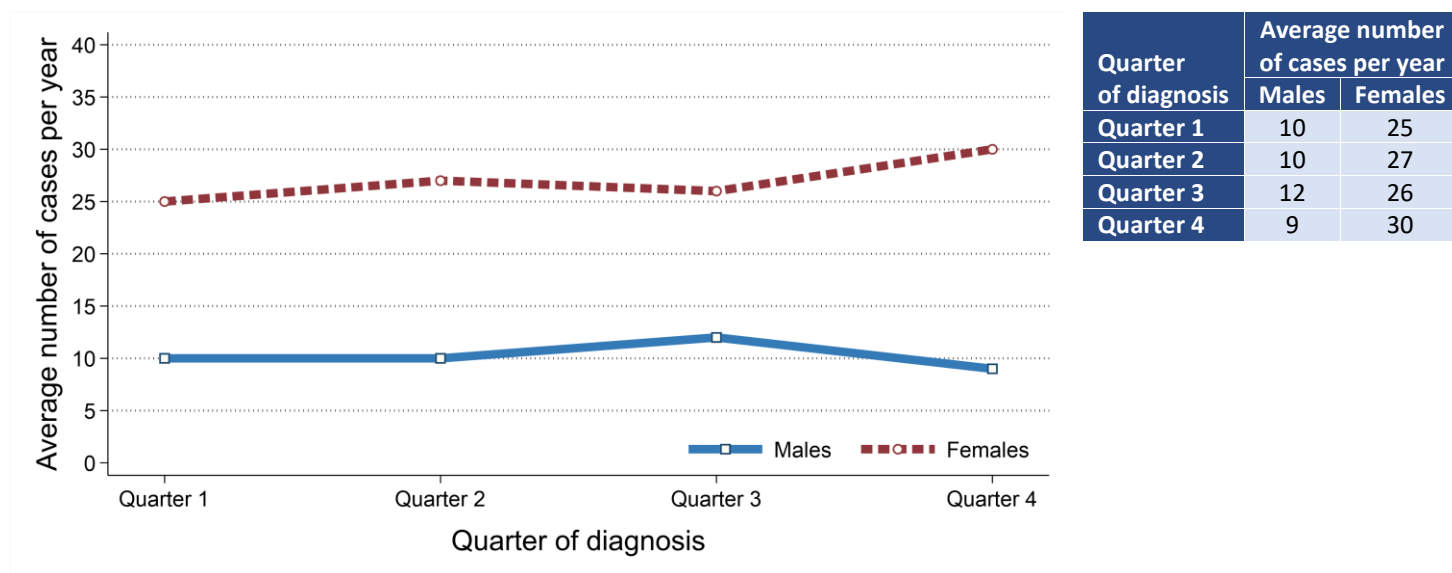
NICR is funded by the Public Health Agency and is based in Queen's University, Belfast.



## INCIDENCE

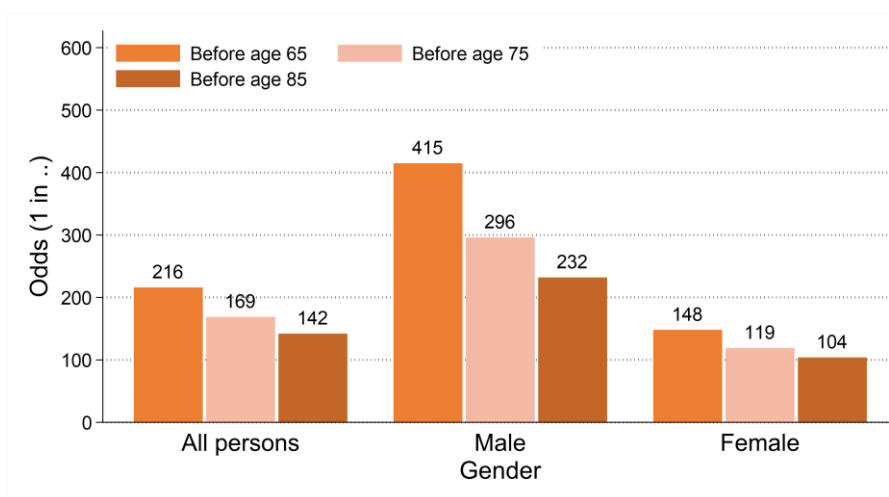
- There were 743 cases of thyroid cancer diagnosed during 2017-2021 in Northern Ireland. On average this was 149 cases per year.
- During this period 72.1% of thyroid cancer cases were among women (Male cases: 207, Female cases: 536). On average there were 41 male and 107 female cases of thyroid cancer per year.
- The most common diagnosis month during 2017-2021 was September among males with 5 cases per year and November and May among females with 12 cases per year.

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



- Thyroid cancer made up 0.8% of all male and 2.2% of all female cancer cases (excluding non-melanoma skin cancer).
- The thyroid cancer incidence rates for each gender were 4.5 cases per 100,000 males and 11.2 cases per 100,000 females.
- The odds of developing thyroid cancer before age 85 was 1 in 232 for men and 1 in 104 for women.

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



## INCIDENCE BY AGE

- The median age of patients diagnosed with thyroid cancer during 2017-2021 was 49 years (Males: 56, Females: 47).
- The risk of developing thyroid cancer varied by age, with 11.6% of men and 8.0% of women diagnosed with thyroid cancer aged 75 and over at diagnosis.
- In contrast, 60.2% of patients diagnosed with thyroid cancer were aged 0 to 54 at diagnosis.

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

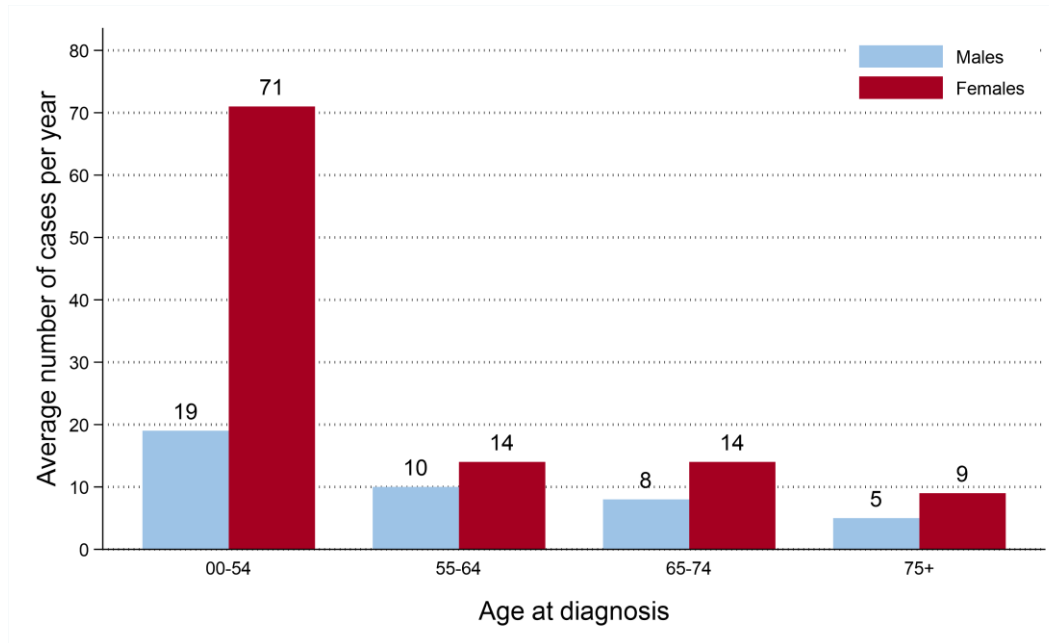
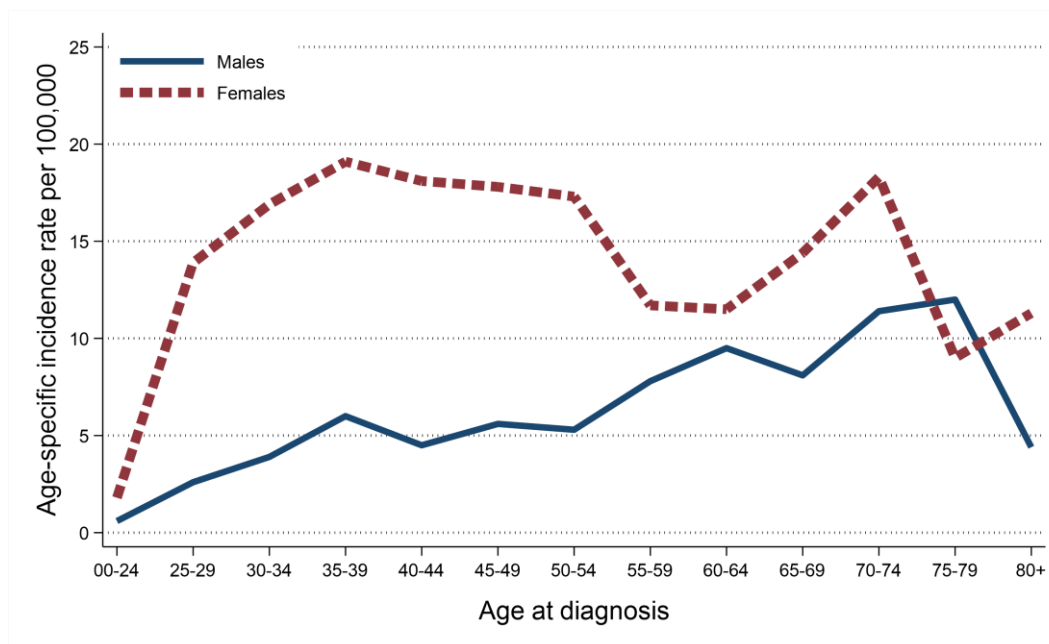


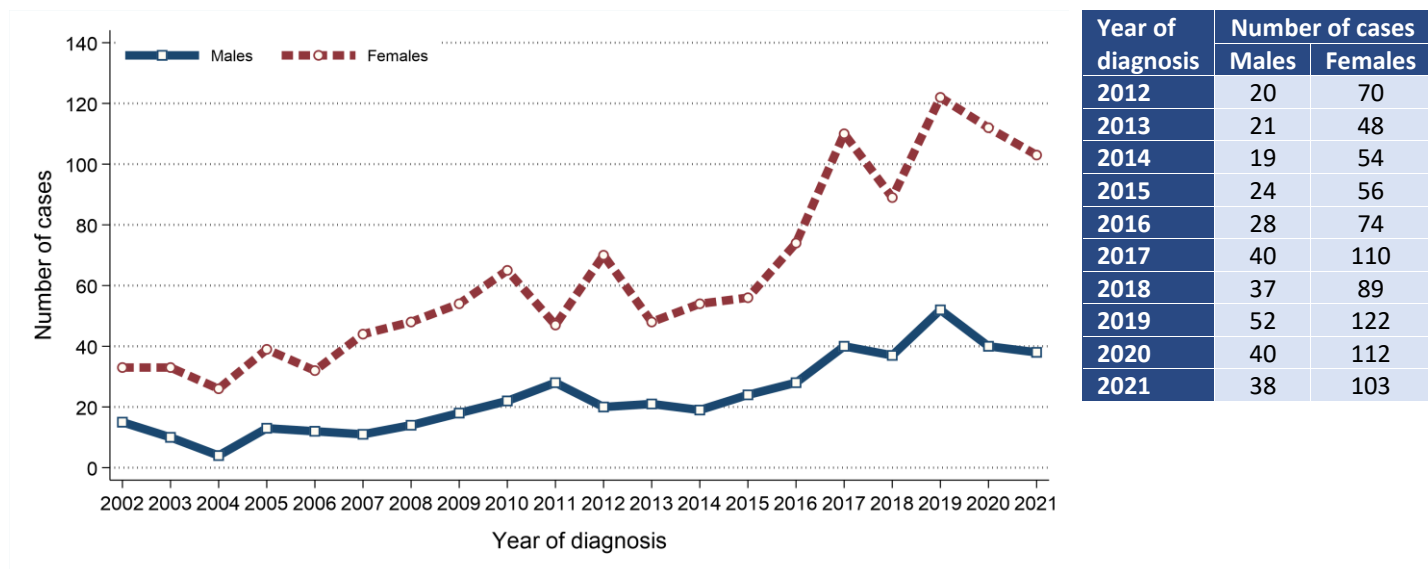
Figure 4: Age-specific incidence rates of thyroid cancer in 2017-2021



# INCIDENCE TRENDS

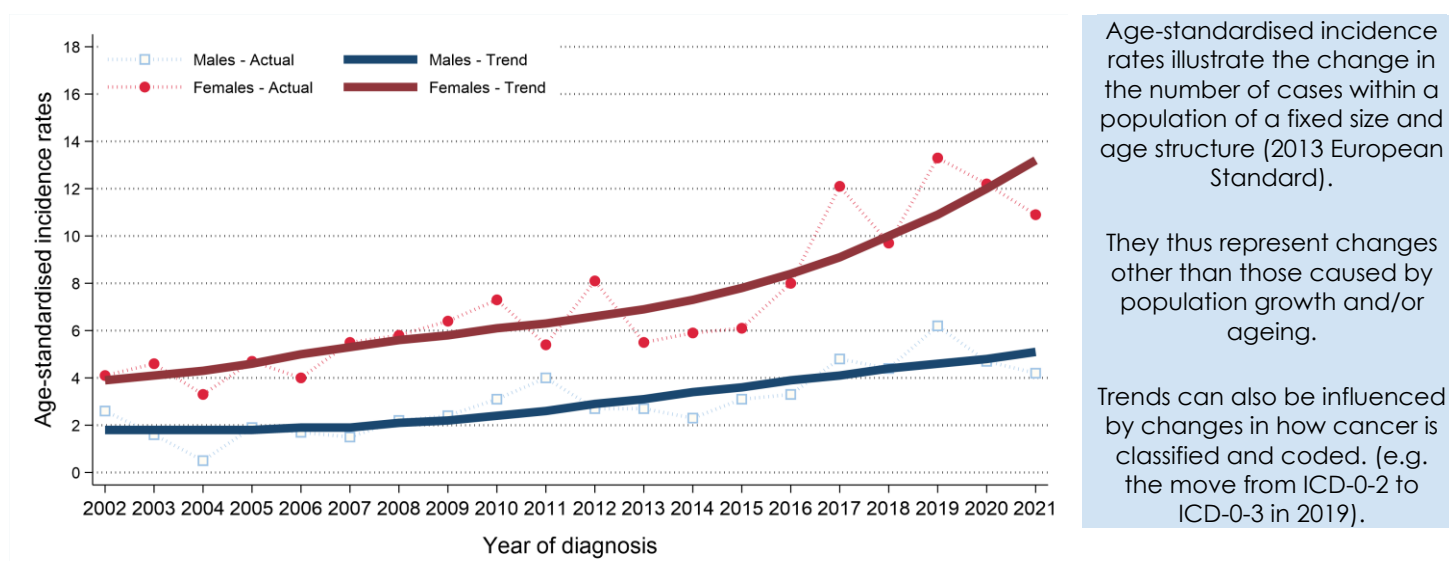
- The number of cases of thyroid cancer among males increased between 2012-2016 and 2017-2021 by 84.8% from 112 cases (22 cases per year) to 207 cases (41 cases per year).
- The number of cases of thyroid cancer among females increased between 2012-2016 and 2017-2021 by 77.5% from 302 cases (60 cases per year) to 536 cases (107 cases per year).

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



- Male age-standardised thyroid cancer incidence rates increased between 2012-2016 and 2017-2021 by 75.0% from 2.8 to 4.9 cases per 100,000 males. This change was statistically significant.
- Female age-standardised thyroid cancer incidence rates increased between 2012-2016 and 2017-2021 by 73.1% from 6.7 to 11.6 cases per 100,000 females. This change was statistically significant.

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



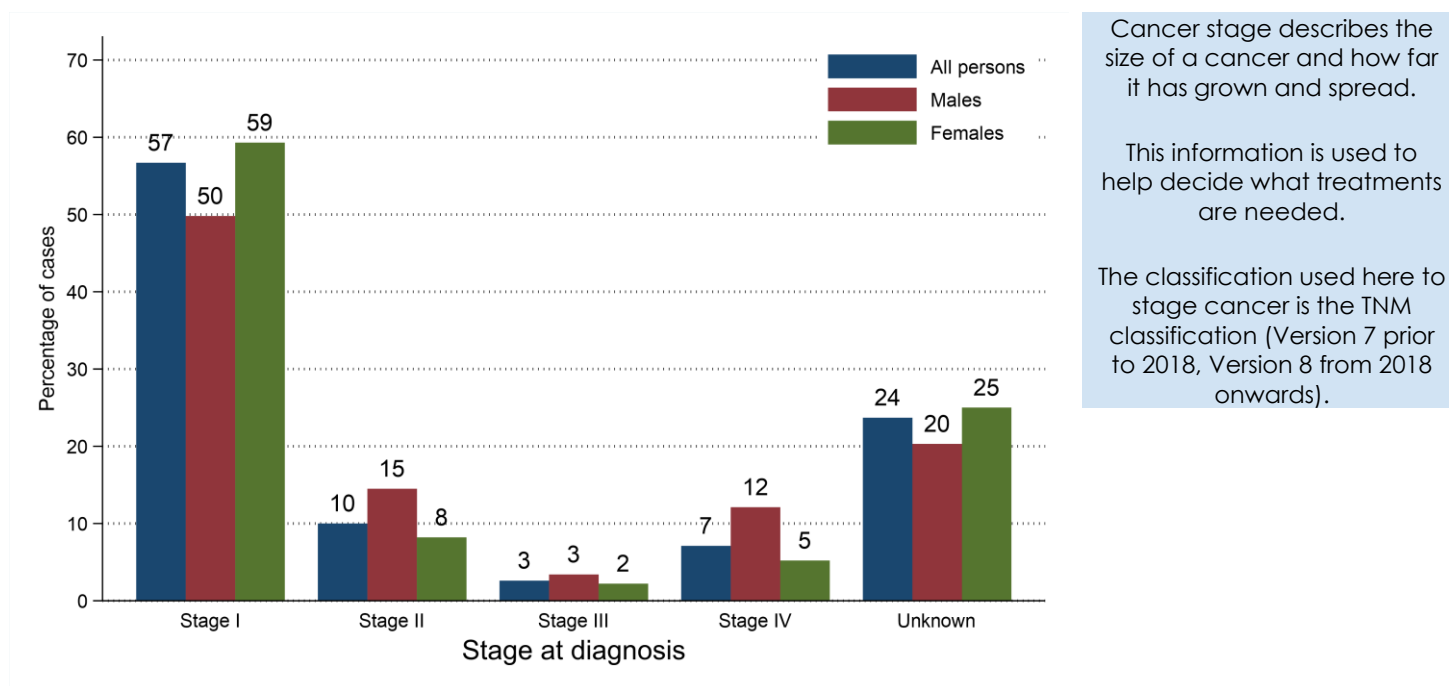
## INCIDENCE BY STAGE AT DIAGNOSIS

- During 2017-2021 76.3% of thyroid cancer cases had a stage assigned.
- 56.7% of thyroid cancer cases were diagnosed at Stage I. (74.3% of staged cases)
- 7.1% of thyroid cancer cases were diagnosed at Stage IV. (9.3% of staged cases)

*Table 1: Number of cases of thyroid 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	743	149	207	41	536	107
Stage I	421	84	103	21	318	64
Stage II	74	15	30	6	44	9
Stage III	19	4	7	1	12	2
Stage IV	53	11	25	5	28	6
Unknown	176	35	42	8	134	27

*Figure 7: Proportion of cases of thyroid cancer diagnosed in 2017-2021 by stage at diagnosis*



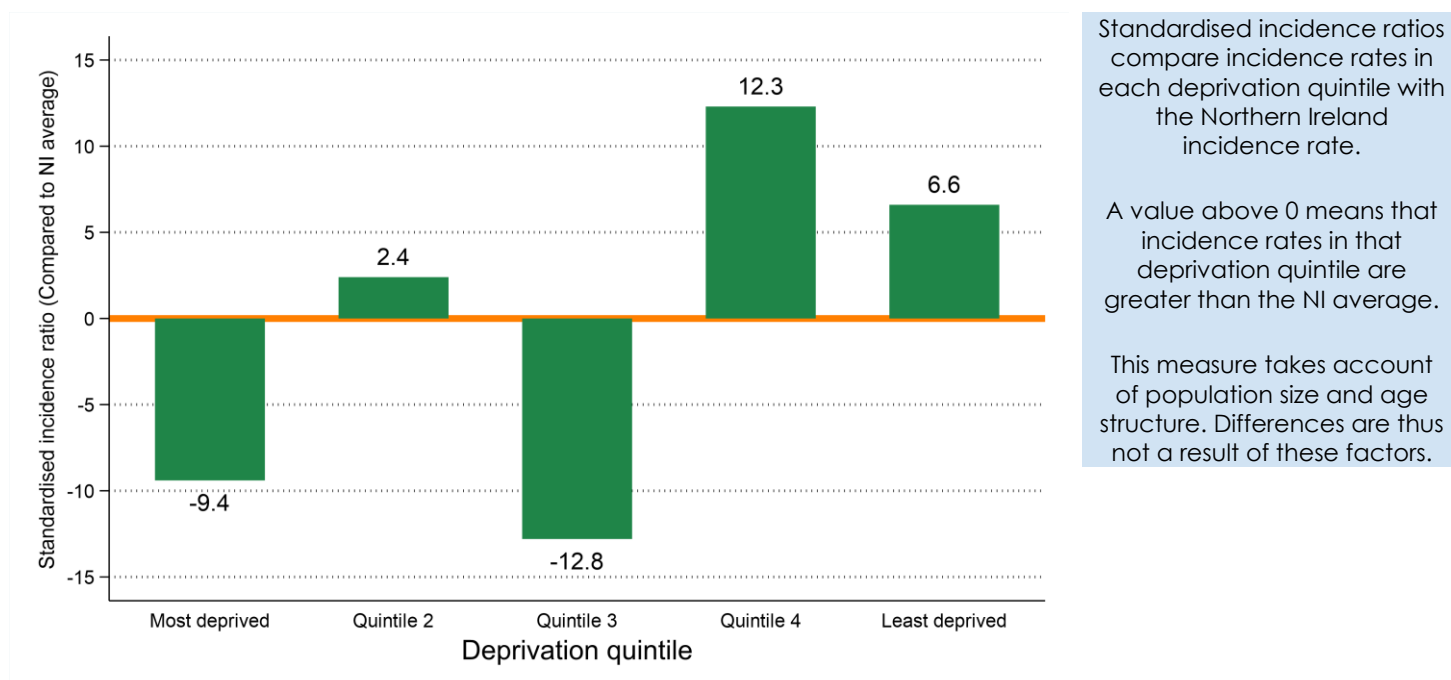
# INCIDENCE BY DEPRIVATION

- The number of cases of thyroid 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 2: Number of cases of thyroid 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	743	149	207	41	536	107
Most deprived	121	24	29	6	92	18
Quintile 2	154	31	46	9	108	22
Quintile 3	136	27	43	9	93	19
Quintile 4	176	35	46	9	130	26
Least deprived	156	31	43	9	113	23
Unknown	0	0	0	0	0	0

Figure 8: Standardised incidence ratio comparing deprivation quintile to Northern Ireland for thyroid cancer diagnosed in 2017-2021



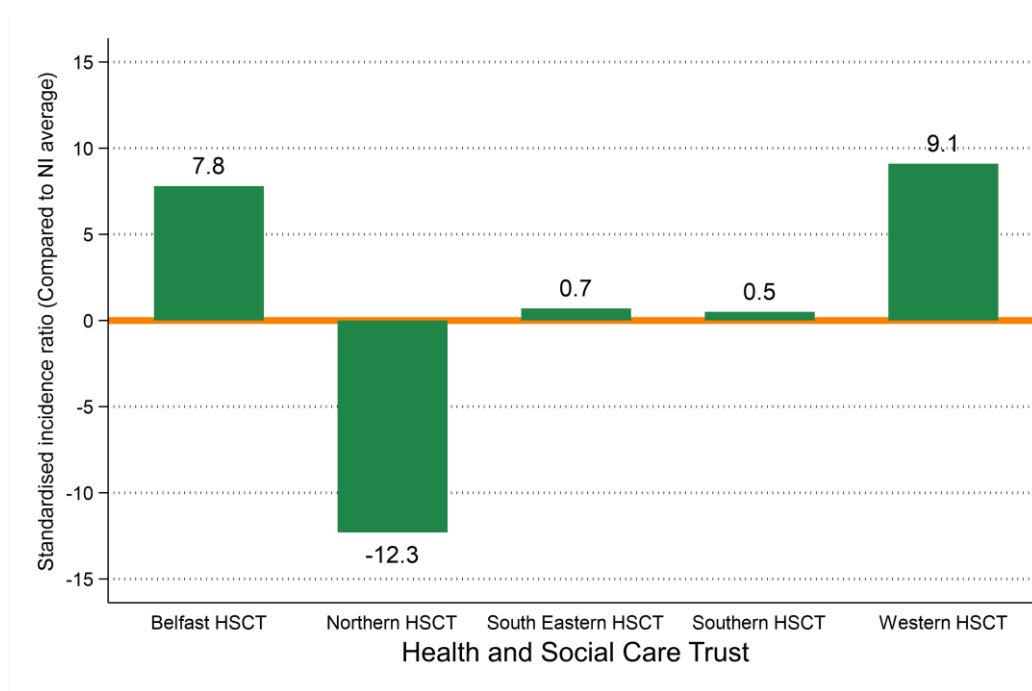
## INCIDENCE BY HEALTH AND SOCIAL CARE TRUST

- The number of cases of thyroid 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 3: Number of cases of thyroid 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	743	149	207	41	536	107
Belfast HSCT	151	30	41	8	110	22
Northern HSCT	167	33	59	12	108	22
South Eastern HSCT	147	29	36	7	111	22
Southern HSCT	149	30	41	8	108	22
Western HSCT	129	26	30	6	99	20
Unknown	0	0	0	0	0	0

*Figure 9: Standardised incidence ratio comparing Health and Social Care Trust to Northern Ireland for thyroid cancer diagnosed in 2017-2021*





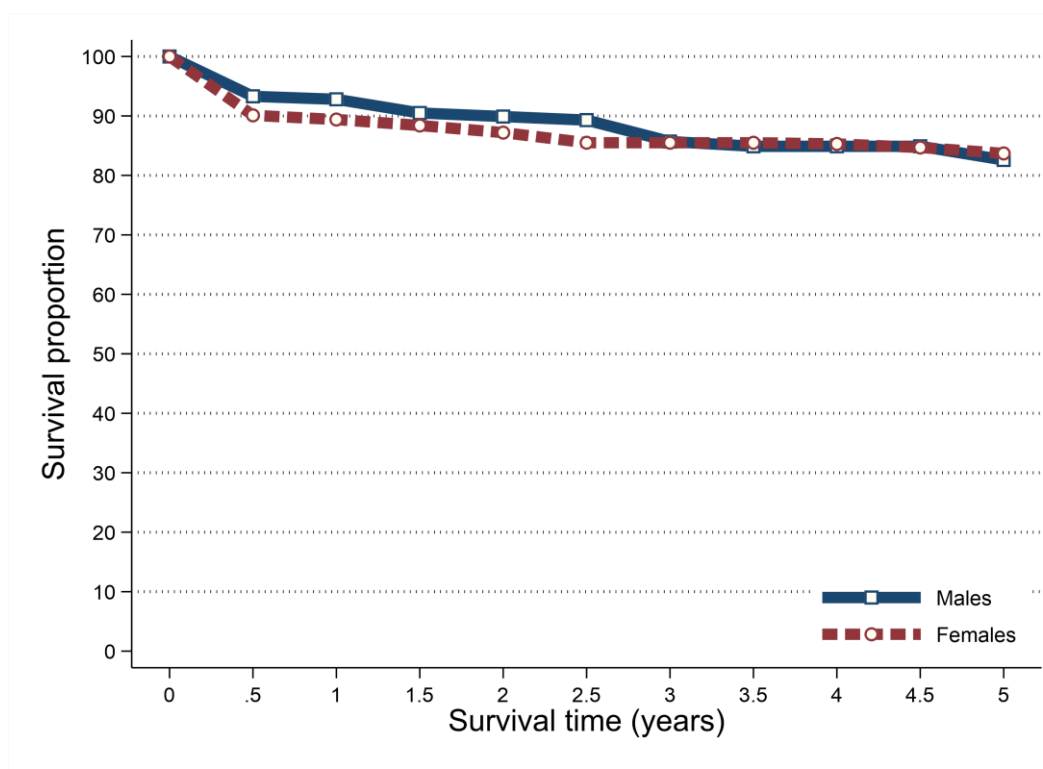
## SURVIVAL

- 92.0% of patients were alive one year and 85.0% were alive five years from a thyroid cancer diagnosis in 2012-2016. (observed survival)
- Age-standardised net survival (ASNS), which removes the effect of deaths from causes unrelated to cancer, was 90.3% one year and 83.3% five years from a thyroid cancer diagnosis in 2012-2016.
- Five-year survival (ASNS) for thyroid cancer patients diagnosed in 2012-2016 was 82.6% among men and 83.7% among women.

*Table 4: Survival from thyroid 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	92.8%	90.9%	93.5%	93.3%	92.5%	90.1%
One year	92.0%	90.3%	92.5%	92.8%	91.8%	89.4%
Two years	89.5%	87.8%	88.7%	89.9%	89.8%	87.2%
Five years	85.0%	83.3%	82.1%	82.6%	86.0%	83.7%

*Figure 10: Age-standardised net survival from thyroid 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.

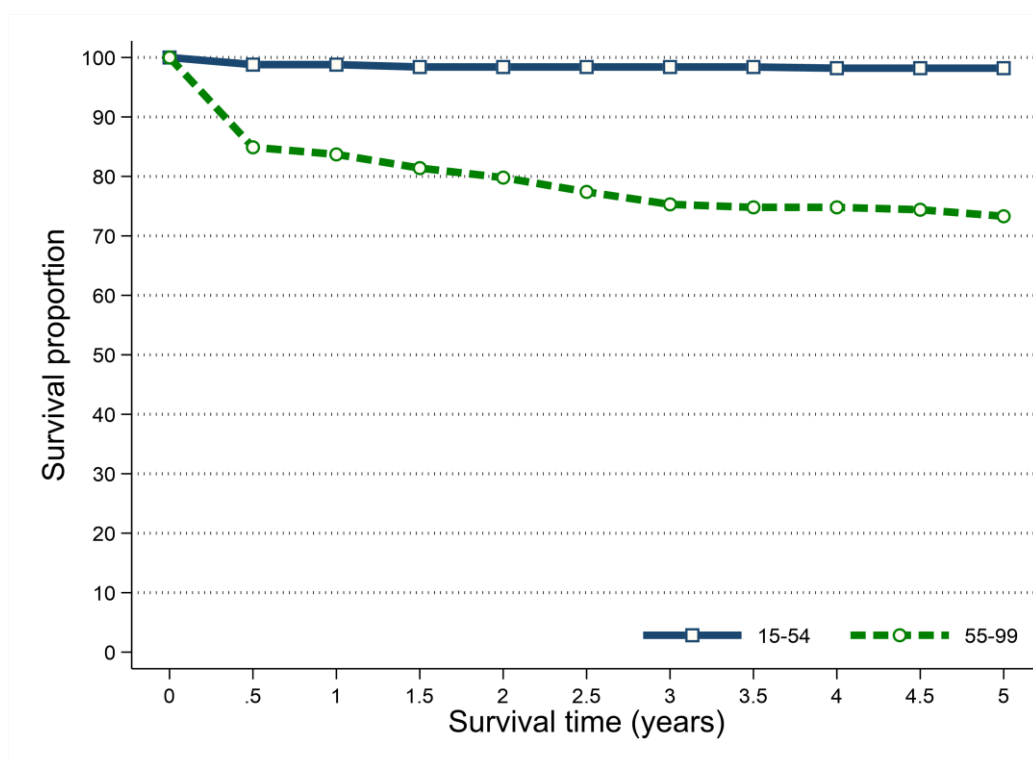
## SURVIVAL BY AGE

- Survival from thyroid 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 98.2% among patients aged 15 to 54 at diagnosis to 73.3% among those aged 55 to 99.

*Table 5: Net survival from thyroid cancer for patients diagnosed in 2012-2016 by age at diagnosis*

Age group	All persons	
	One-year	Five-years
15 to 54	98.8%	98.2%
55 to 99	83.7%	73.3%

*Figure 11: Net survival from thyroid cancer for patients diagnosed in 2012-2016 by age at diagnosis*

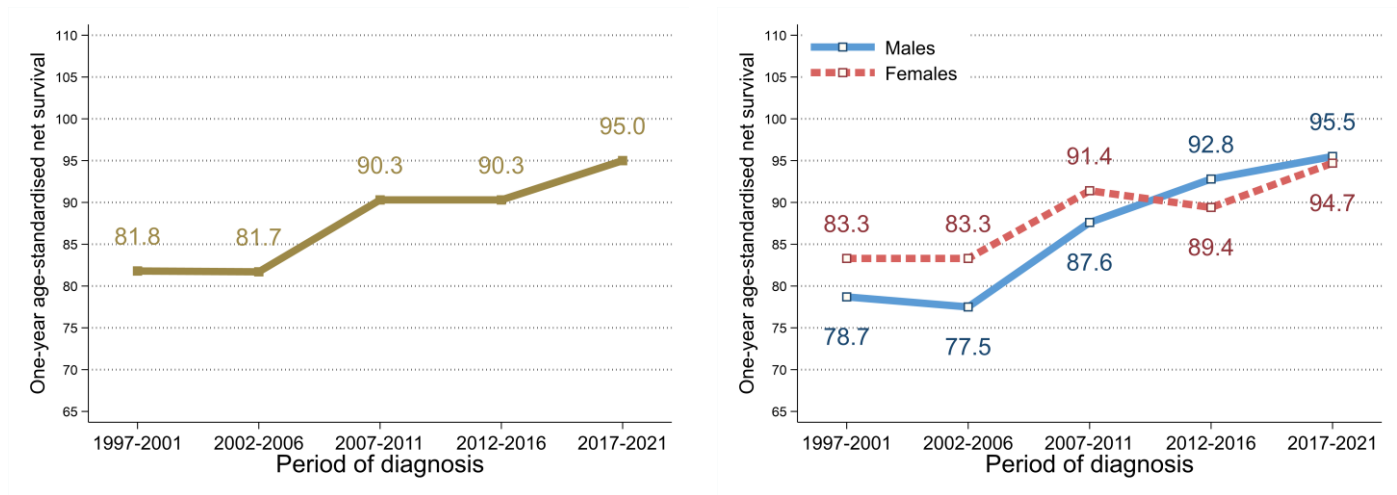


# SURVIVAL TRENDS

## ONE-YEAR NET SURVIVAL

- Between 2012-2016 and 2017-2021 there was no significant change in one-year survival (ASNS) from thyroid cancer.
- Compared to 1997-2001 one-year survival (ASNS) from thyroid cancer in 2017-2021 increased significantly from 81.8% to 95.0%. This increase was significant for males (78.7% to 95.5%) and females (83.3% to 94.7%).

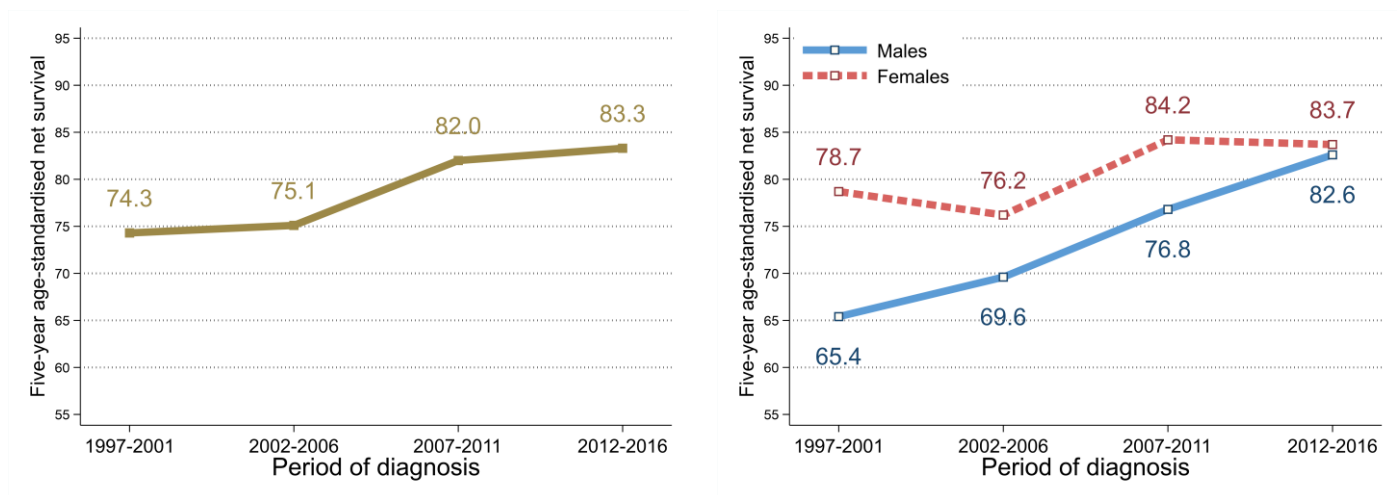
Figure 12: Trends in one-year age-standardised net survival from thyroid cancer in 1997-2021



## FIVE-YEAR NET SURVIVAL

- Between 2007-2011 and 2012-2016 there was no significant change in five-year survival (ASNS) from thyroid cancer.
- Compared to 1997-2001 five-year survival (ASNS) from thyroid cancer in 2012-2016 did not change significantly.

Figure 13: Trends in five-year age-standardised net survival from thyroid cancer in 1997-2016



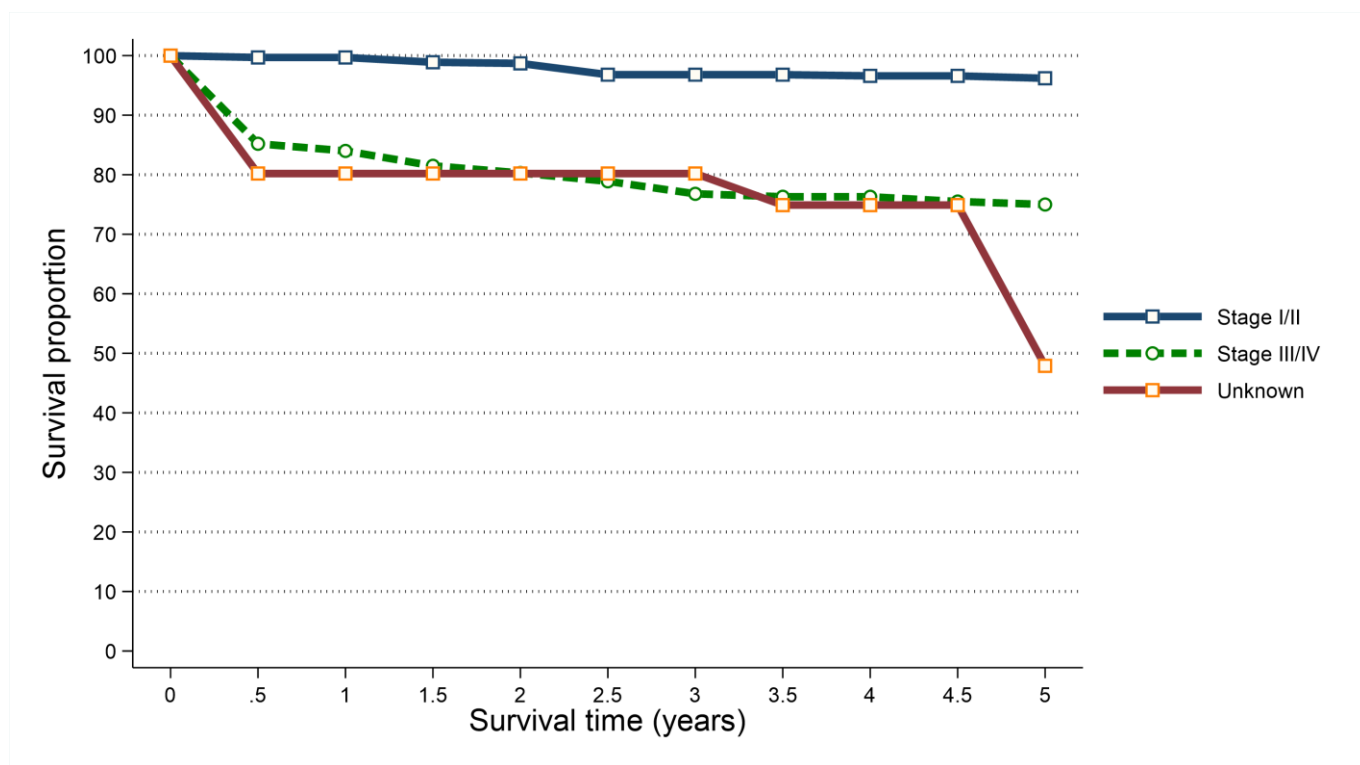
## SURVIVAL BY STAGE

- Survival from thyroid 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 96.2% among patients diagnosed at Stage I/II to 47.9% among those without a stage assigned.

*Table 6: Age-standardised net survival from thyroid cancer for patients diagnosed in 2012-2016 by stage at diagnosis*

Stage at diagnosis	All persons	
	One-year	Five-years
Stage I/II	99.7%	96.2%
Stage III/IV	84.0%	75.0%
Unknown	80.2%	47.9%

*Figure 14: Age-standardised net survival from thyroid cancer for patients diagnosed in 2012-2016 by stage at diagnosis*



## PREVALENCE

- At the end of 2021, there were 1,482 people (Males: 360; Females: 1,122) living with thyroid cancer who had been diagnosed with the disease during 1997-2021.
- Of these 9.2% had been diagnosed in the previous year (one-year prevalence) and 67.7% in the previous 10 years (ten-year prevalence).
- 48.8% of thyroid cancer survivors were aged 55 and over at the end of 2021.

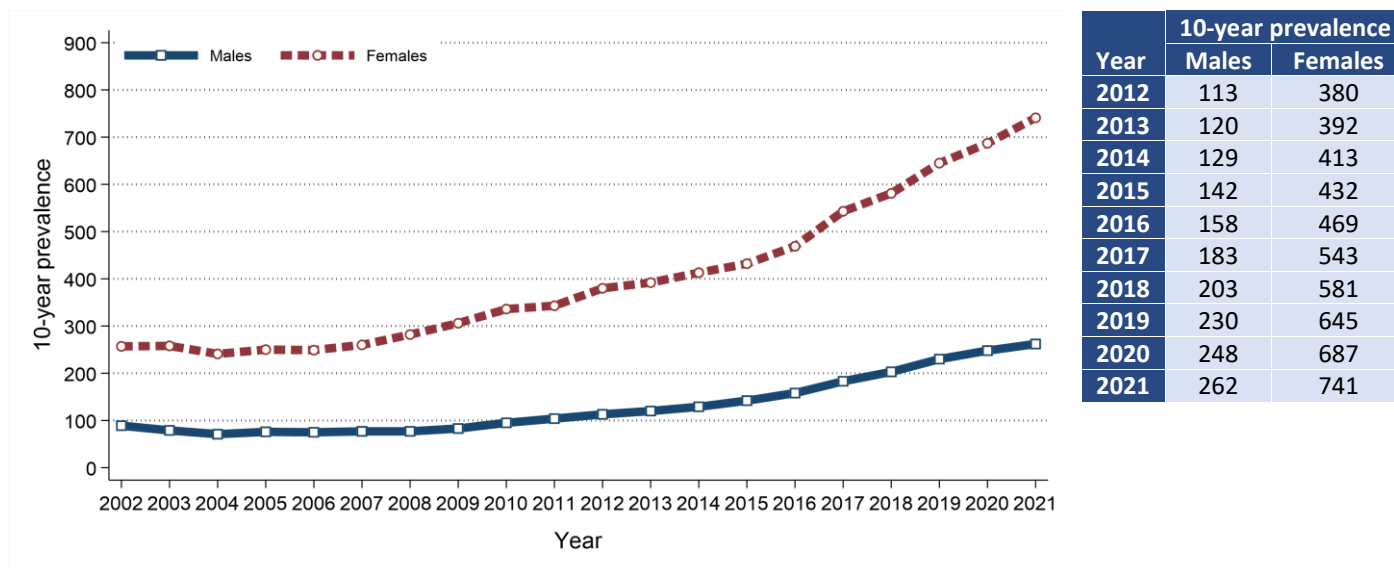
Table 7: 25-year prevalence of thyroid cancer by age at end of 2021

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	1,482	137	541	325	479
	0 to 54	759	86	312	179	182
	55 and over	723	51	229	146	297
Male	All ages	360	36	144	82	98
	0 to 54	146	17	64	34	31
	55 and over	214	19	80	48	67
Female	All ages	1,122	101	397	243	381
	0 to 54	613	69	248	145	151
	55 and over	509	32	149	98	230

## PREVALENCE TRENDS

- 10-year prevalence of thyroid cancer among males increased between 2016 and 2021 by 65.8% from 158 survivors to 262 survivors.
- 10-year prevalence of thyroid cancer among females increased between 2016 and 2021 by 58.0% from 469 survivors to 741 survivors.

Figure 15: Trends in 10-year prevalence of thyroid cancer in 2002-2021



## MORTALITY

- There were 56 deaths from thyroid cancer during 2017-2021 in Northern Ireland. On average this was 11 deaths per year.
- During this period 48.2% of thyroid cancer deaths were among women (Male deaths: 29, Female deaths: 27). On average there were 6 male and 5 female deaths from thyroid cancer per year.
- Thyroid cancer deaths made up 0.2% of all male cancer deaths and 0.3% of all female cancer deaths.
- The median age of patients who died from thyroid cancer during 2017-2021 was 78 years (Males: 78, Females: 75).
- The risk of dying from thyroid cancer varied by age, with 32.1% of those who died from thyroid cancer aged 85 and over at death.
- In contrast, 14.3% of patients who died from thyroid cancer were aged 0 to 64 at death.

Figure 16: Average number of deaths from thyroid cancer per year in 2017-2021 by age at death

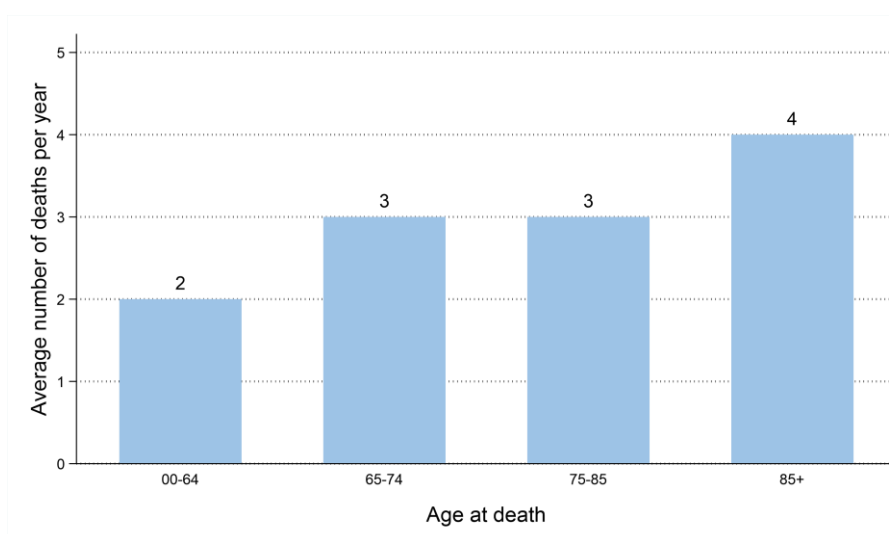
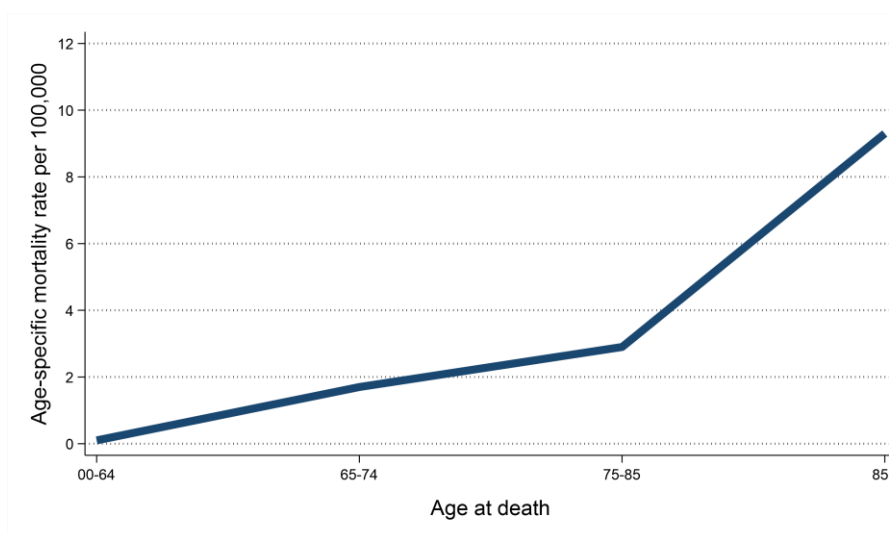


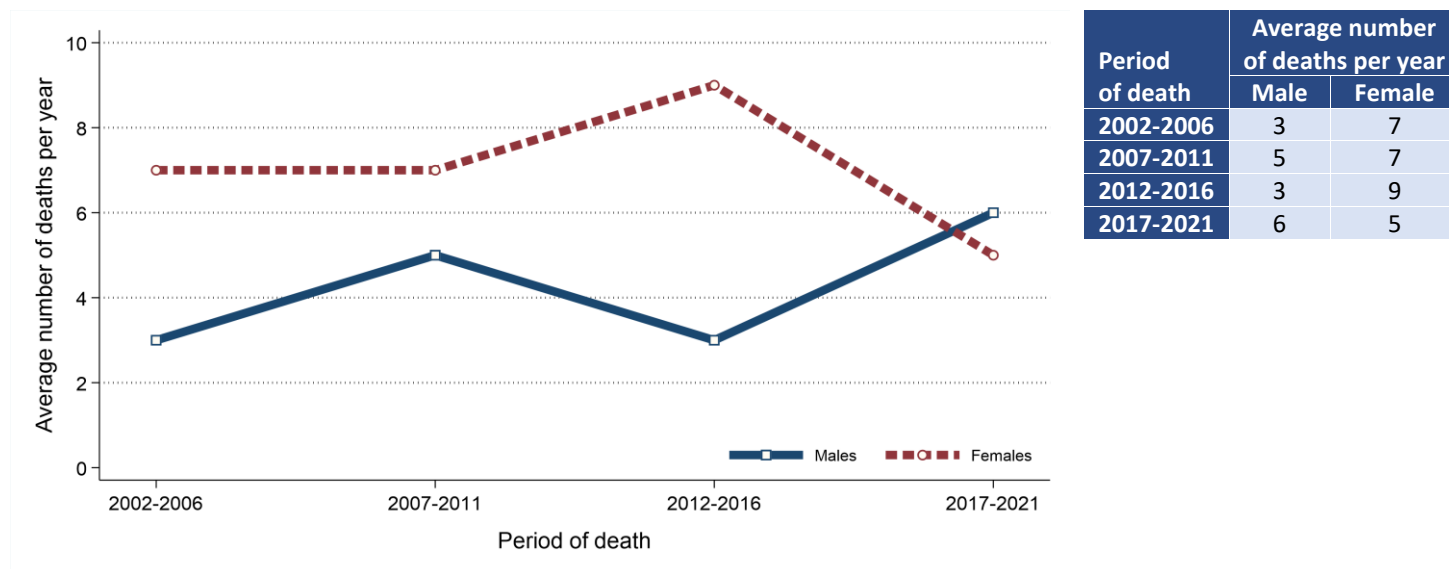
Figure 17: Age-specific mortality rates of thyroid cancer in 2017-2021



## MORTALITY TRENDS

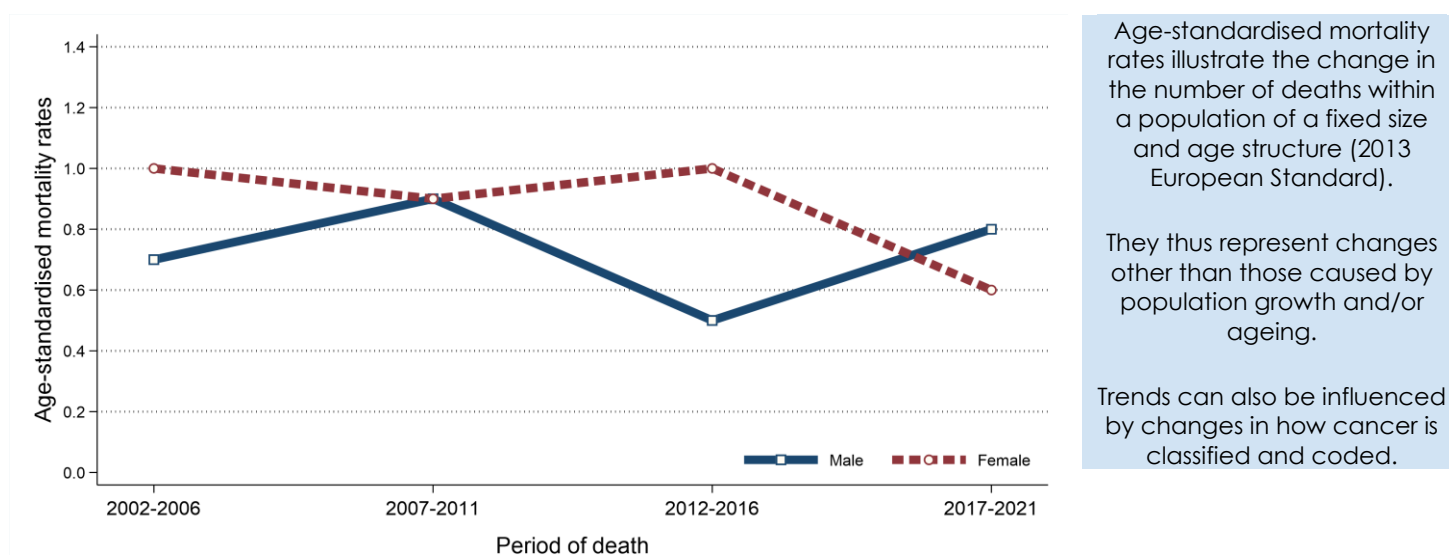
- The number of deaths from thyroid cancer among males increased between 2012-2016 and 2017-2021 by 70.6% from 17 deaths (3 deaths per year) to 29 deaths (6 deaths per year).
- The number of deaths from thyroid cancer among females decreased between 2012-2016 and 2017-2021 by 37.2% from 43 deaths (9 deaths per year) to 27 deaths (5 deaths per year).

Figure 18: Trends in average number of deaths per year from thyroid cancer from 2002 to 2021



- Male age-standardised thyroid cancer mortality rates increased between 2012-2016 and 2017-2021 by 60.0% from 0.5 to 0.8 deaths per 100,000 males. This change was not statistically significant.
- Female age-standardised thyroid cancer mortality rates decreased between 2012-2016 and 2017-2021 by 40.0% from 1.0 to 0.6 deaths per 100,000 females. This change was not statistically significant.

Figure 19: Trends in mortality rates of thyroid cancer from 2002 to 2021



## 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](http://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](http://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](http://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. thyroid 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. thyroid 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.