National Cancer Registry Ireland

SKIN CANCER

CANCER TRENDS REPORT

2025

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Cancer trends No 40. Skin Cancer

Key Points

Malignancies of the skin are the most commonly diagnosed cancers in Ireland, with approximately 11,556 cases diagnosed annually in the period between 2018-2022, accounting for 34% of all invasive cancers.

Non melanoma skin cancers

Non melanoma skin cancers (NMSC) are the most common type of skin cancers in Ireland with over 10,000 cases diagnosed annually, 90% of all skin cancers. Fortunately, NMSC can usually be treated and mortality is generally low. Around three-quarters of NMSC are Basal Cell Carcinomas (BCC) with the remainder being Squamous Cell Carcinomas (SCC).

On average, the age-standardised incidence rate of BCC has increased significantly over the period 1994-2019, with an average annual percent change (AAPC) of 1.2% for females and 1.3% for males. The age-standardised incidence rates of SCC were stable or did not increase significantly over the entire period 1994-2019 for either males or females.

Age-standardised mortality for NMSC, while very low, has increased for males and females over time.

5-year net survival for BCC is 100%, while 5-year net survival for SCC is 97%.

Melanoma

Melanomas account for 11% (1,243) of skin cancers per year across 2018-2022.

On average, the age-standardised incidence rate of melanoma increased significantly over the period 1994-2019, with an AAPC of 2.5% for females and 4.4% for males.

The majority of melanomas are diagnosed early, with 87% of females and 81% of males being diagnosed at stage I or II.

Age-standardised mortality for melanoma increased significantly between 1994 and 2010 in males and between 1994 and 2014 in females. In recent years mortality rates have remained stable.

5-year net survival for melanoma is 93%, with higher survival seen in females than in males across all periods, age-groups and stage at diagnosis.

Introduction

Skin cancers are among the most common cancers diagnosed worldwide, with an estimated 1.5 million cases diagnosed globally in 2022 (1) and more than 1 in 5 people estimated to be diagnosed with skin cancer in their lifetime in Ireland (2). The highest rates of skin cancers occur in the areas of the world where a high proportion of the population is fair-skinned. Ultra violet radiation (UVR) is the most important risk factor for skin cancer, and fair-skinned people are more vulnerable to the effects of UVR (1,3–5). Other risk factors vary by type of skin cancer, but include immunosuppression (HIV infection, transplant recipients), high alcohol consumption, and previous malignancies (5).

There are three main types of skin cancer: Basal Cell Carcinoma (BCC), Squamous Cell Carcinoma (SCC) and cutaneous melanoma. BCC and SCC together are often referred to as non-melanoma skin cancer (NMSC). NMSC are more common than melanoma worldwide, comprising about 80% of the 1.5 million global skin cancer cases in 2022. The mortality rate from melanoma, however, is higher

than NMSC, with melanoma accounting for an estimated 46% of worldwide skin cancer deaths in 2022 (1).

For melanoma, intermittent/recreational UVR, particularly during childhood, appears to be the main risk factor, with long-term chronic sun exposure being the greatest risk factor for SCC, and both intermittent and chronic sun exposure increasing the risk of BCC (5).

The National Cancer Registry Ireland (NCRI) has collected data on both melanoma and NMSC since 1994. For melanoma, the standard NCRI data collection process applies. Each new primary diagnosis of melanoma is registered with medical records and checked for data, such as staging information and treatments received in the first year of diagnosis. Data on deaths are extracted from death certificates to allow calculation of survival time. For NMSC, due to the large number of cases and generally good outcomes, cancer registries need to balance the resources needed to collect data on these cancers with the utility of the data collected (6). The NCRI currently only registers the first occurrence of NMSC[1] of each histological type per person, and no treatment data are collected.

Methods

Data on the age, sex, and site of skin cancers (as defined in Appendix 1) diagnosed 1994-2022, and data on stage and treatment for cases diagnosed 2014-2020 were downloaded from the NCRI database.

European age-standardised incidence and mortality rates and age-specific rates for 2018-2022 were calculated using the 2013 European standard population (7) and Irish population data (8). Case counts reported for 2018-2022 are average counts for the 5 year period, unless specified otherwise. Differences in median age were tested using the non-parametric equalities of median test in STATA v18. Trends in incidence and mortality over time were analysed using joinpoint regression (9).

Data on the number, and age-group, of deaths with a cause of death of "C43 malignant melanoma of skin" and "C44 Other malignant neoplasms of skin" were downloaded from the CSO, for 2018 (10) and 2019-2022 (11). Age-standardised mortality rates for 2018-2022 were calculated using Irish population data (8) and a modified 2013 European standard population for age weighting.

Age standardised 5-year net survival for cases diagnosed 2014-2018 was calculated using the Pohar-Perme method in STATA v15 (12,13).

Incidence

An average of over 11,000 invasive skin cancers were diagnosed each year between 2018-2022, accounting for around one third (34%) of all invasive cancers in Ireland.

The majority of skin cancers (89%) were NMSC. NMSC is more common in males (5,750 per year, 56%) than females (4,513 per year, 44%). The majority of NMSC were BCC (7,545 cases per year, 74% of all NMSC) or SCC (2,672 cases per year, 26% of all NMSC). There were small numbers of other NMSC (14 cases of Merkel Cell Carcinoma (MCC) and 31 cases of other NMSC per year) and cutaneous sarcomas (51 cases per year) (Table 1).

There were 1,243 melanomas diagnosed per year, equally distributed between males (625 per year, 50%) and females (617 per year, 50%). Melanomas accounted for 11% of all skin cancers. Low cumulative sun damage melanoma (also called superficial spreading melanoma) was the most common subtype (50% of melanomas) (Table 1).

[1] Defined as SCC, BCC, Bowens, & atypical fibroxanthoma regardless of tumour behaviour /1, /2 & / 3.

Table 1. Annual average number and age-standardised incidence rate of melanoma and non-melanoma skin cancers in Ireland, 2018-2022						
	Female		Male		Total	
ICD-10 code (morphology code)	Average number cases/year* (%)	Age-standardised incidence/100,000 (95% CI)	Average number cases/year* (%)	Age-standardised incidence/100,000 (95% CI)	Average number cases/year* (%)	Age-standardised incidence/100,000 (95% CI)
C43 Melanoma	**617 (100%)**	**28 (27-29)**	**625 (100%)**	**33.3 (32.1-34.5)**	**1,243 (100%)**	**30.2 (29.4-30.9)**
Low cumulative sun damage melanoma (M-8743/3)	333 (54%)	14.6 (13.9-15.3)	284 (45%)	14.1 (13.3-14.8)	617 (50%)	14.2 (13.7-14.8)
Nodular melanoma (M-8721/3)	84 (14%)	4 (3.6-4.4)	105 (17%)	5.9 (5.4-6.4)	189 (15%)	4.9 (4.5-5.2)
Lentigo maligna melanoma (M-8742/3)	71 (11%)	3.5 (3.1-3.9)	91 (15%)	5.3 (4.8-5.8)	162 (13%)	4.3 (4-4.6)
Acral melanoma (M-8744/3)	14 (2%)	0.7 (0.5-0.8)	9 (1%)	0.5 (0.3-0.7)	23 (2%)	0.6 (0.5-0.7)
Other melanomas (all other morphology codes)	114 (19%)	5.2 (4.8-5.6)	136 (22%)	7.5 (6.9-8.1)	251 (20%)	6.2 (5.8-6.5)
C44 NMSC	**4,513 (100%)**	**214.8 (212-217.7)**	**5,750 (100%)**	**312.6 (308.9-316.4)**	**10,262 (100%)**	**259.8 (257.6-262.1)**
BCC (Basal cell carcinoma) (M-8090/3 - M-8110/3)	3,521 (78%)	165.1 (162.7-167.6)	4,024 (70%)	209.6 (206.7-212.6)	7545 (74%)	186 (184.1-187.9)
SCC (Squamous cell carcinoma) (M-8051/3-M-8086/3, M-8120/3-M-8131/30)	972 (22%)	48.7 (47.3-50.1)	1,701 (30%)	101.6 (99.3-103.8)	2672 (26%)	72.7 (71.4-73.9)
Merkel cell carcinoma (M-8247/3)	7 (0.2%)	0.4 (0.2-0.5)	7 (0.1%)	0.4 (0.3-0.5)	14 (0.1%)	0.4 (0.3-0.5)
Other NMSC (all other morphology codes)	13 (0.3%)	0.7 (0.5-0.8)	18 (0.3%)	1 (0.8-1.2)	31 (0.3%)	0.8 (0.7-1)
Cutaneous Sarcoma**	**13**	**0.6 (0.4-0.7)**	**38**	**2.3 (2-2.7)**	**51**	**1.3 (1.2-1.5)**
Total	**5,143**		**6,413**		**11,556**	

Data exclude multiple primary tumours. Full definitions are shown in Appendix 1.

*Numbers may not add up to totals due to rounding of annual averages.

**Cutaneous sarcoma was defined as morphology codes (all behaviour 3) 8680-8714, 8800-8921, 8930-8936, 8990-8992, 9040-9045, 9120-9125, 9130-9138, 9141-9252, 9370-9373, 9540-9582 in combination with topography code C44

Trends over time

Due to the impact of the COVID pandemic, trends in incidence have been modelled based on incidence data for 1994 to 2019 only. The purpose of analysing trends in incidence, using joinpoint regression, is to identify if the underlying incidence rates are likely to have changed over time. In 2020, and to a lesser extent 2021, the number of cases of many cancers diagnosed was lower than expected due to the impact of the pandemic. This is thought to be due to a combination of delayed diagnoses caused by disruptions to health services and/or changes in health seeking behaviour, and excess mortality, particularly in older age groups. Therefore, years from 2020 onwards are considered anomalous years and were excluded from all trend analyses presented in this report, however, the observed numbers of cases are presented for completeness.

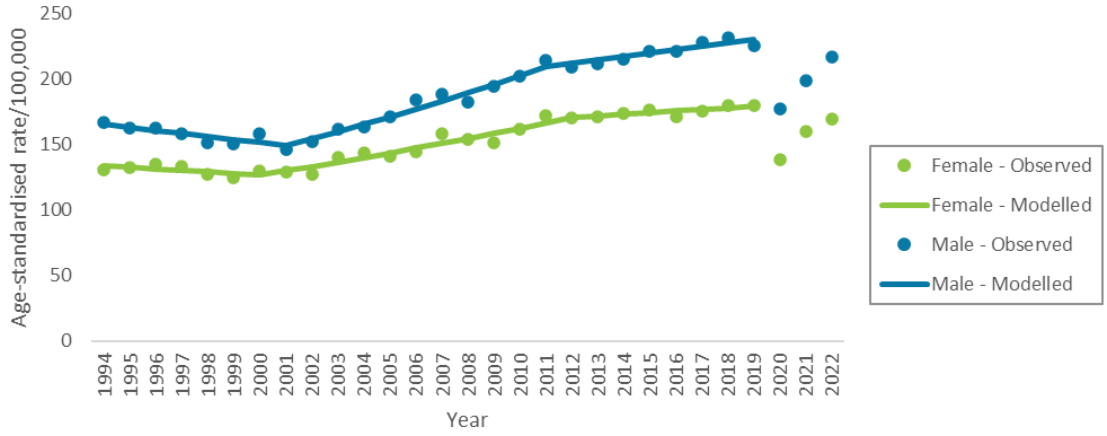
NMSC

The age-standardised incidence rate of BCC increased significantly in both males and females, the average annual percent change (AAPC) being +1.2% for females and +1.3% for males over the entire period 1994-2019. In males, the annual percent change (APC) showed a significant increasing trend between 2001-2011, of +3.4% per year, after which the rate continued to increase significantly at +1.2% per year. There was a similar pattern seen in female age-standardised incidence rates, which increased between 2000 and 2012 at +2.5% per year after which the rates increased marginally (but not significantly) at +0.7%. Estimates of the shortfall in cases of NMSC have not been published, however, a noticeable decrease in the recorded incidence of BCC can be seen for both males and females from 2020 compared to the preceding years, Figure 1.

Over the entire period 1994-2019 the AAPCs for SCC in males (-0.5%) and females (-0.2%) were stable or declined marginally and non-significantly. There was a significant decreasing trend in male age-standardised incidence rates between 1994-2002, with an APC of -3.7%, followed by a significant increasing trend between 2002 and 2014 (APC +2.3%) and a marginal and non-significant decreasing trend during 2014-2019 (APC, -2.1%). A similar pattern can be seen in females, with a significant increasing trend in the incidence of SCC between 2002 and 2013 of +2.3% annually, the trend then reversed and decreased significantly by -2.4% per year, between 2013 and 2019 (Figure 1).

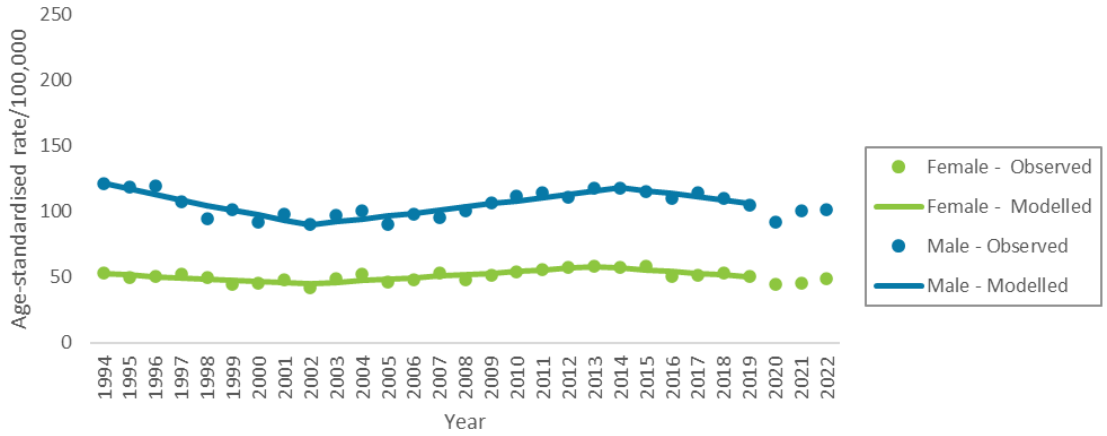
Figure 1. Observed age-standardised rates (1994-2022) and modelled trends (1994-2019) of BCC and SCC by sex

BCC



Sex	Years	APC (95% CI)	trend	Sex	Years	APC (95% CI)	trend
Females	1994-2000	-0.9 (-2.4, 0.7)	↔	Males	1994-2001	-1.4 (-2.5, -0.4)	↓
	2000-2012	2.5 (2, 3.1)	↑		2001-2011	3.4 (2.8, 4.1)	↑
	2012-2019	0.7 (-0.2, 1.6)	↔		2011-2019	1.2 (0.6, 1.7)	↑

SCC

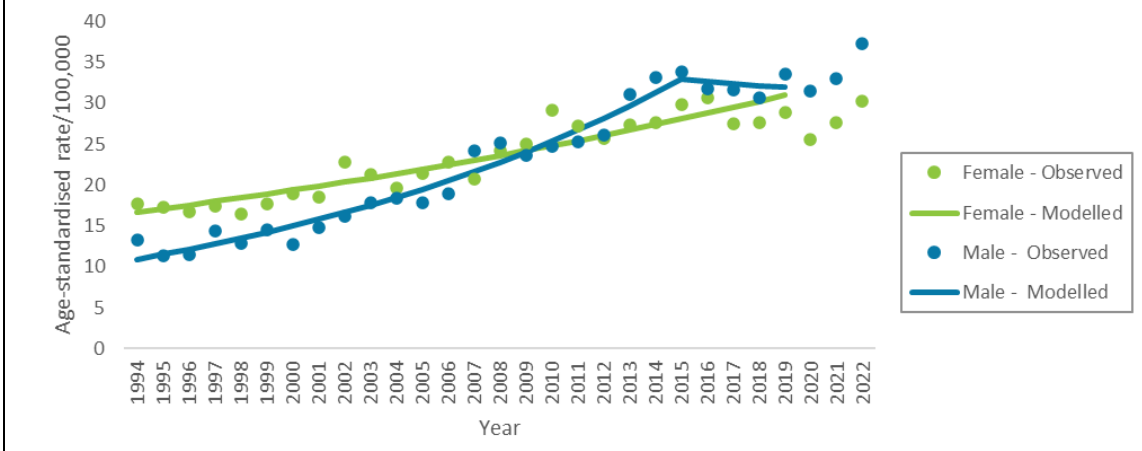


Sex	Years	APC (95% CI)	trend	Sex	Years	APC (95% CI)	trend
Females	1994-2002	-1.9 (-3.6, 0)	↓	Males	1994-2002	-3.7 (-5.2, -2.2)	↓
	2002-2013	2.3 (1.2, 3.5)	↑		2002-2014	2.3 (1.5, 3.2)	↑
	2013-2019	-2.4 (-4.5, -0.2)	↓		2014-2019	-2.1 (-4.4, 0.1)	↔

Melanoma

Over the entire period 1994-2019 the AAPC for melanoma increased significantly at +4.4% in males and +2.5% in females. Age standardised incidence rates of melanoma in males increased significantly between 1994 and 2015, at +5.4% per year, after which the trend was stable up to 2019. Female age-standardised incidence rates also increased significantly, by +2.5% per year, over the whole range from 1994 to 2019 (Figure 2). The observed number of melanomas in males in 2020 and 2021 fell within the expected range, while the number of cases in females was 9% lower than expected in 2020 and 13% lower than expected in 2021, based on analysis presented in the NCRI annual statistical reports for 2022 and 2023 (14,15). By 2022, the number of cases of melanoma in both males and females were within the expected range (2).

Figure 2. Observed age-standardised rates (1994-2022) and modelled trends (1994-2019) of melanoma, by sex



Sex	Years	APC (95% CI)	trend	Sex	Years	APC (95% CI)	trend
Females	1994-2019	2.5 (2.1, 2.9)	↑	Males	1994-2015	5.4 (4.7, 6)	↑
					2015-2019	-0.8 (-5.4, 4.1)	↔

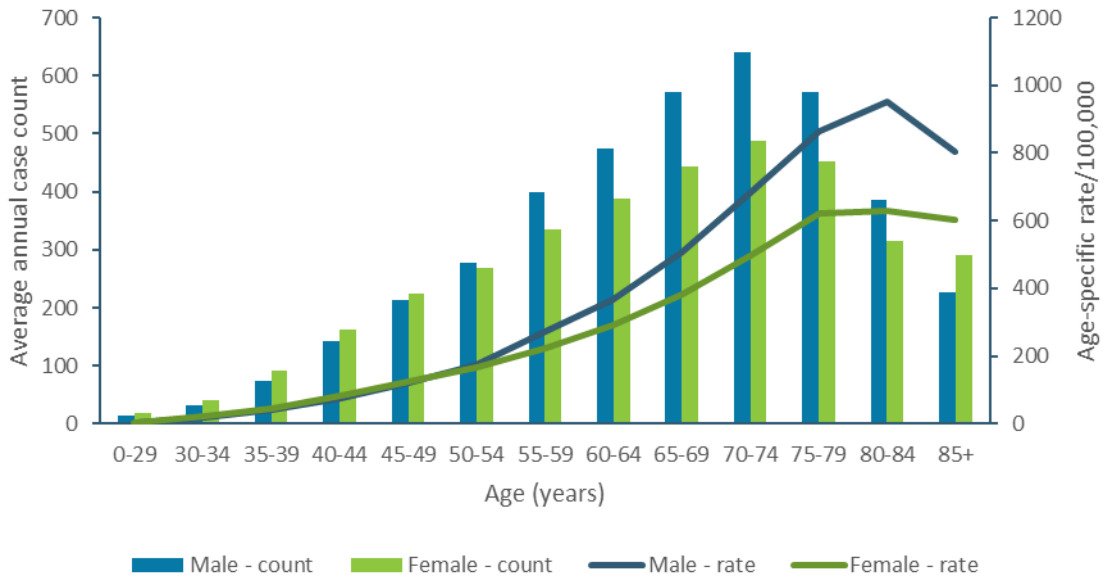
Age breakdown/age specific rates

Similar to many cancers, skin cancers are more common in older age, however, differences can be seen in the age-distribution of cases by sex and type of cancer (BCC, SCC and Melanoma) in Figure 3 and Figure 4.

The median age of diagnosis for BCC was 68 years. SCC had an older age-profile, with a median age of diagnosis of 76 years. The age-specific rate of BCC peaked in the 80-84 year age group for both males and females, while the age-specific incidence rates of SCC was highest in the 85+ year age group for both sexes (Figure 3).

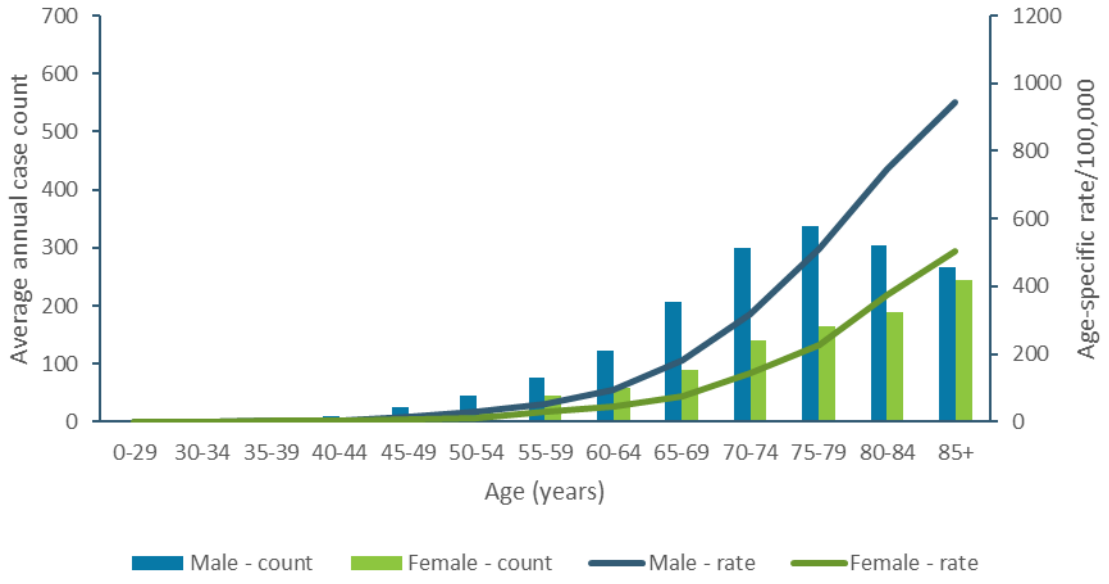
Figure 3. Average annual case counts and age-specific incidence rates of BCC and SCC 2018-2022

BCC



Median age: Males 68 years, Females 67 years (P=0.002)

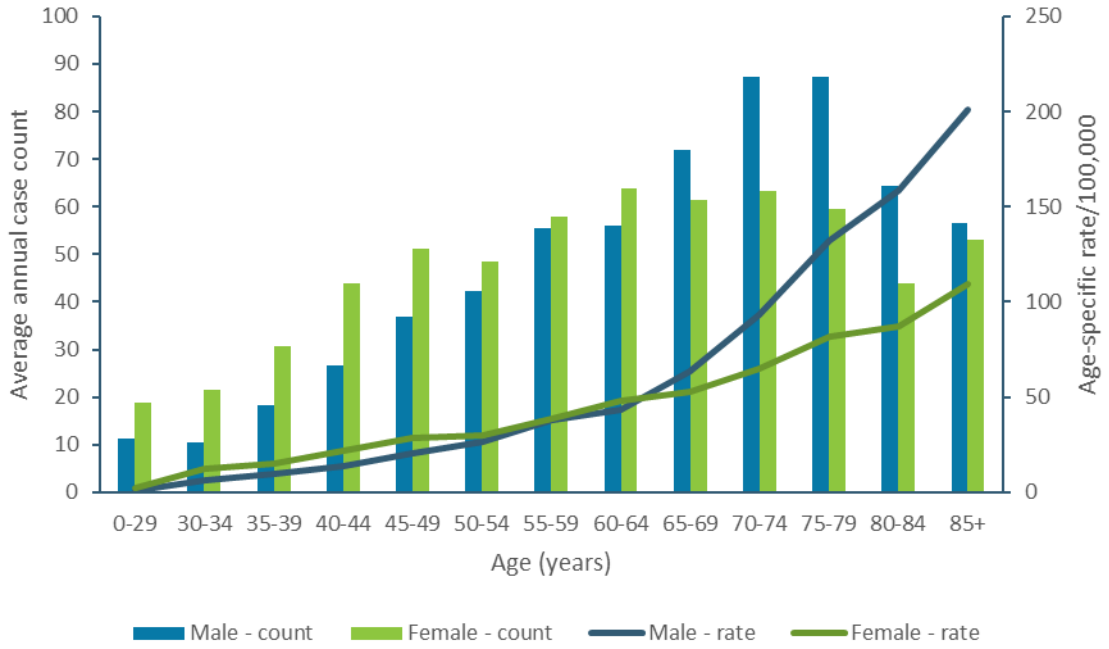
SCC



Median age: Males 75 years,Females 78 years ($p < 0.001$)

Melanoma had the youngest age profile, Figure 4, with 22% of cases being under 50 years of age at diagnosis with a median age at diagnosis of 65 years. Females were significantly younger at diagnosis than males (median age female 62 years vs males 68 years, p<0.001). The age-specific rate of melanoma was highest in the 85+ year age group for both sexes.

Figure 4. Average annual case count and age-specific incidence rate of Melanoma 2018-2022



Median age: Males 68 years, Females 62 years (p<0.001)

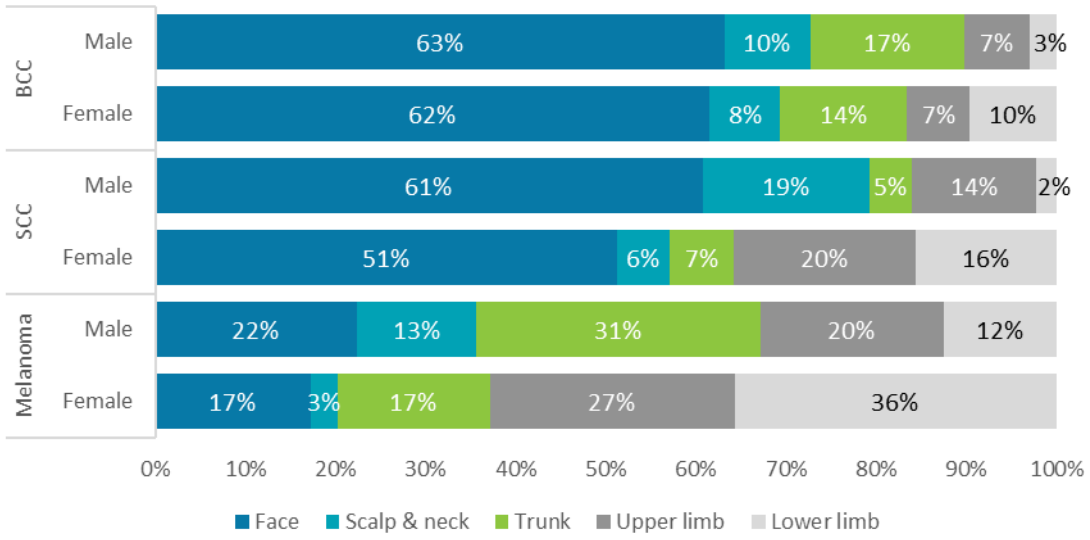
Body site

The location of the tumour was recorded for 29% of BCC, 33% of SCC and 94% of melanomas diagnosed 2018-2022. The distribution of tumours by body site (where known) is shown in Figure 5.

BCC and SCC in both males and females were most commonly found on the face, the area of the body experiencing most UV exposure.

The most frequent sites for melanoma were the trunk (31%) followed by the face (22%) in males and the lower limbs (36%) followed by upper limbs (27%) in females.

Figure 5. Distribution of Melanoma (n=5,853), BCC (n=10,808) and SCC (n=4,447) by body site (where known) 2018-2022



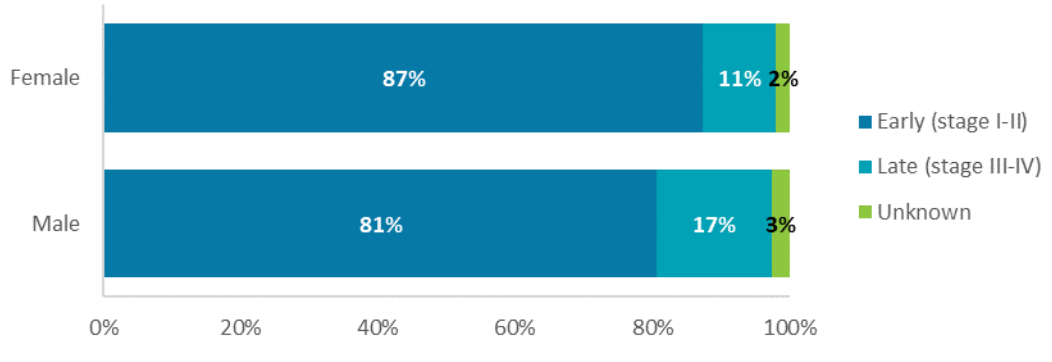
Information on site was known for 29% of BCC, 33% of SCC and 94% of melanoma tumours

Stage

Stage data are coded using the TNM classification system. From 1994-2013, TNM 5th edition was used (16), from 2014 onwards, tumours have been coded using the TNM 7th edition (17). There are a number of differences in the definitions and staging rules between the two editions[2], with the result that stage data for 1994-2013 is not directly comparable to 2014-2020.

In the period 2014-2020, the majority of melanoma patients, 87% of females and 81% of males, were diagnosed at an early stage (Figure 6). These percentages are considerably higher than the proportions of early stage in previous periods (18), but it is not possible to distinguish how much of this increase is due to changes in the definitions used, improvements in the quality/availability of stage data or real improvements in the timeliness of diagnosis.

Figure 6. Melanoma TNM stage distribution (early vs late) 2014-2020 (TNM 7th edition)

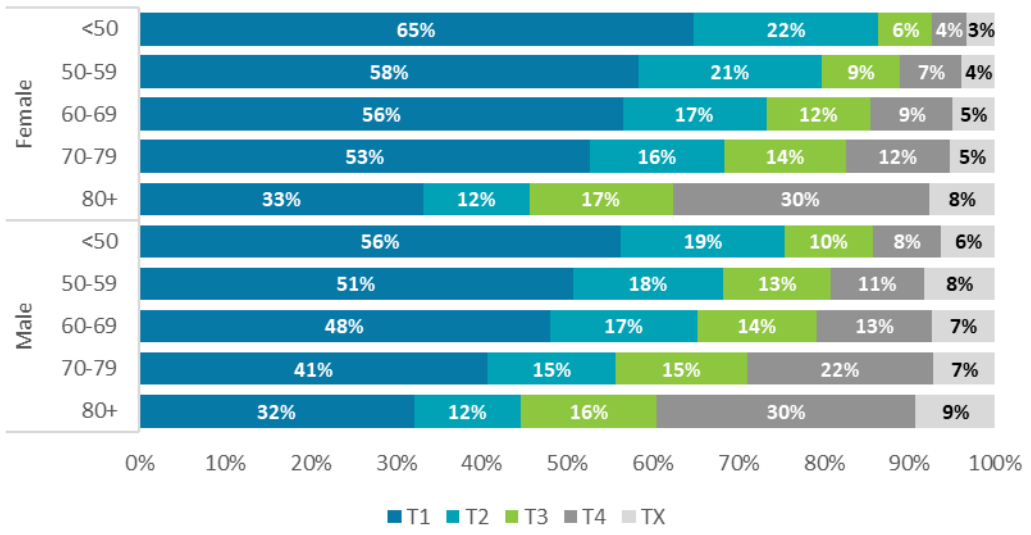


[2] E.g. In TNM 5th edition (1994-2013) late stage includes any tumour where thickness is ≥4mm, or where the cancer has spread to subcutaneous tissue or the lymph nodes or distant organs. In TNM 7th edition (2014-2018) late stage includes only cancers that have spread to subcutaneous tissue or the lymph nodes or distant organs.

The “T” component of the TNM staging system gives an indication of the size (thickness) of the tumour. The size of melanoma at diagnosis increases with age (Figure 7). In every age group, females had greater proportions of T1 tumours than males. Unlike tumour thickness, there is no obvious trend in the proportion diagnosed at late stage by increasing age.

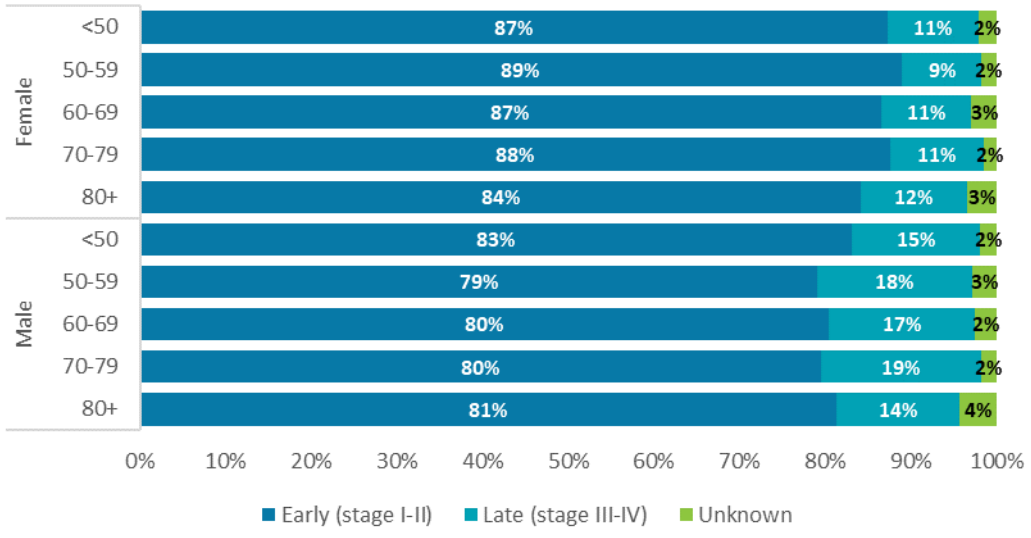
Figure 7. Melanoma T-value and stage distribution by age group and sex, 2014-2020.

A. T value



T1 ≤1mm; T2 >1 to 2mm; T3 >2 to 4mm; T4 >4mm; TX unknown (17).

B. Stage



Treatment

The majority of melanomas diagnosed between 2014-2020 received surgery (95.7%), a small minority received radiotherapy (3.5%) and/or systemic therapy (6%). The type of treatment(s) received varied by stage at diagnosis and melanoma subtype (Table 2).

Table 2. Proportion of melanoma treated by surgery, radiotherapy or systemic therapy within 1 year of diagnosis, by stage and subtype, 2014-2020

		% surgery	% radiotherapy	% Systemic therapy	% >1 treatment modality
Stage	I	99.5%	0.2%	0.2%	0.3%
	II	99.2%	2.2%	1.8%	3.9%
	III	94.2%	11.3%	31.3%	35.2%
	IV	54.4%	34.4%	52.3%	41.8%
	Unknown	53.0%	9.4%	10.6%	6.6%
Subtype	Low cumulative sun damage melanoma	99.7%	0.9%	2.5%	3.0%
	Nodular melanoma	99.3%	4.4%	10.2%	12.6%
	Lentigo maligna melanoma	98.1%	1.3%	0.7%	1.5%
	Acral melanoma	98.7%	2.6%	9.7%	11.7%
	Other melanomas	84.3%	9.1%	12.9%	11.1%
Total		**95.7%**	**3.5%**	**6.0%**	**6.3%**

Mortality

Between 2018 and 2022 inclusive there were on average 171 deaths per year attributable to "C43 malignant melanoma of skin" and 102 deaths attributable to "C44 other malignant neoplasms of skin" (i.e. NMSC) (Table 3). Skin cancers accounted for approximately 3% of all deaths from malignant neoplasms 2018-2022 (10,11).

The number of deaths and age-standardised mortality rates of both melanoma and NMSC were higher in men than women (Table 3) and number of deaths increased with age (Figure 8).

There was a steady and significant increasing trend in the age-standardised mortality rate from melanoma in females from 1994-2014 (APC +2.7%), after which the APC decreased non-significantly. Males also experienced a significant increasing trend between 1994 and 2010 (APC +6.6%), following which mortality rates stabilised between 2010-2019 (Figure 9).

There were significant increasing trends in the mortality rates from NMSC for both males and females between 1994 and 2019 (females APC +3.0%, males APC +2.3%) (Figure 9).

Table 3. Average annual number of deaths 2018-2022 and age-standardised mortality rate

		Female	**Male**
C43 Melanoma	Average number deaths/year	65	106
	Age standardised mortality/100,000	3.1	6.1
C44 NMSC	Average number deaths/year	31	70
	Age standardised mortality/100,000	1.5	5.0

Figure 8. Average annual number of deaths by age group, C43 melanoma and C44 NMSC, 2018-2022

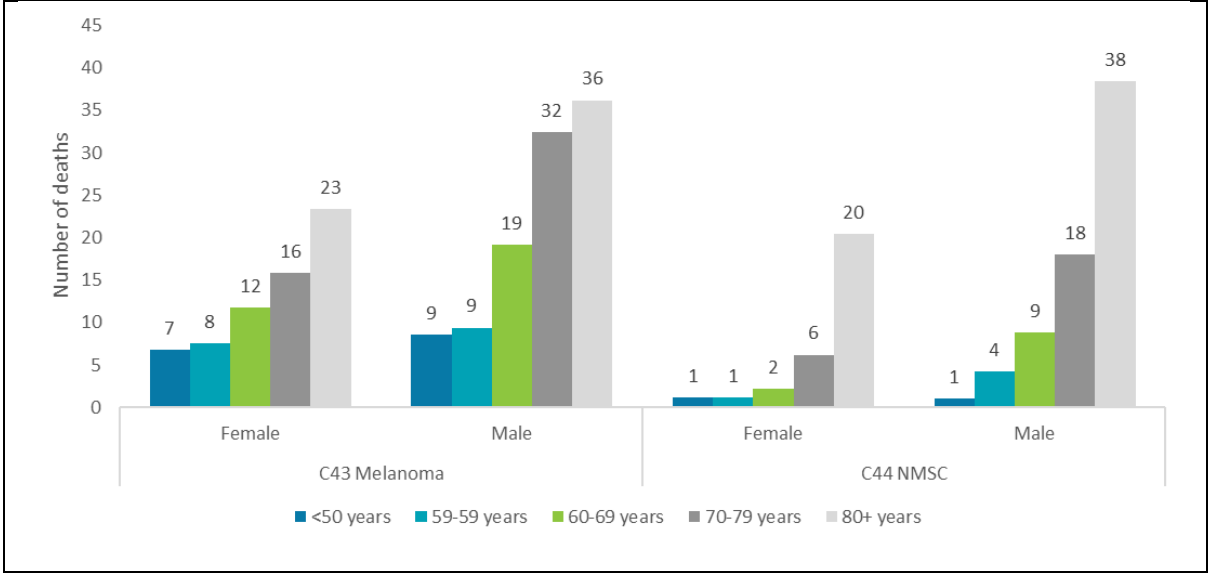
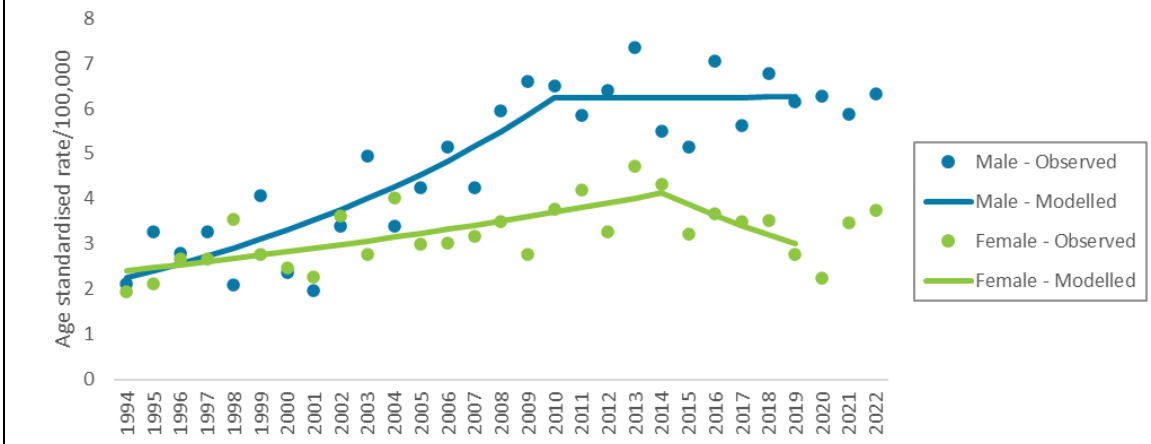


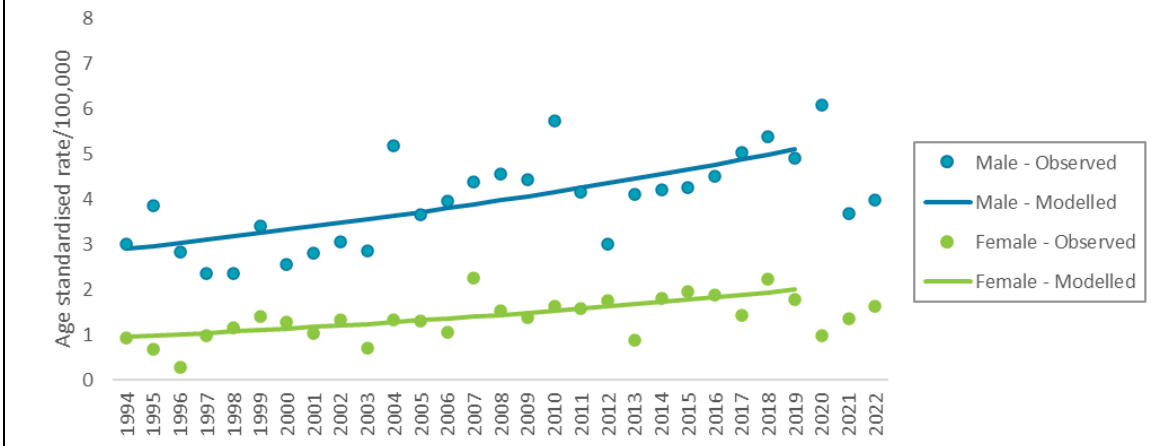
Figure 9. Age-standardised mortality rate for C43 melanoma and C44 NMSC, 1994-2022

C43 melanoma



sex	years	APC (95% CI)	trend	sex	years	APC (95% CI)	trend
Females	1994-2014	2.7 (1.4, 4.1)	↑	Males	1994-2010	6.6 (4.0, 9.2)	↑
	2014-2019	-6.1 (-14.4, 3.0)	↔		2010-2019	0.0 (-3.8, 4.0)	↔

C44 NMSC



sex	years	APC (95% CI)	trend	sex	years	APC (95% CI)	trend
Females	1994-2019	3 (1.6, 4.5)	↑	Males	1994-2019	2.3 (1.3, 3.3)	↑

Survival

Five-year net survival is a commonly quoted measure used by population-based cancer registries which allows comparisons across different time periods and countries (19). Net survival is the expected survival in the hypothetical situation in which cancer is the only possible cause of death i.e., adjusted for other causes of death using a lifetable for the population of interest (13,20). It is based on observed survival of cancer patients scaled against the expected survival of persons of the same age and sex in the general population.

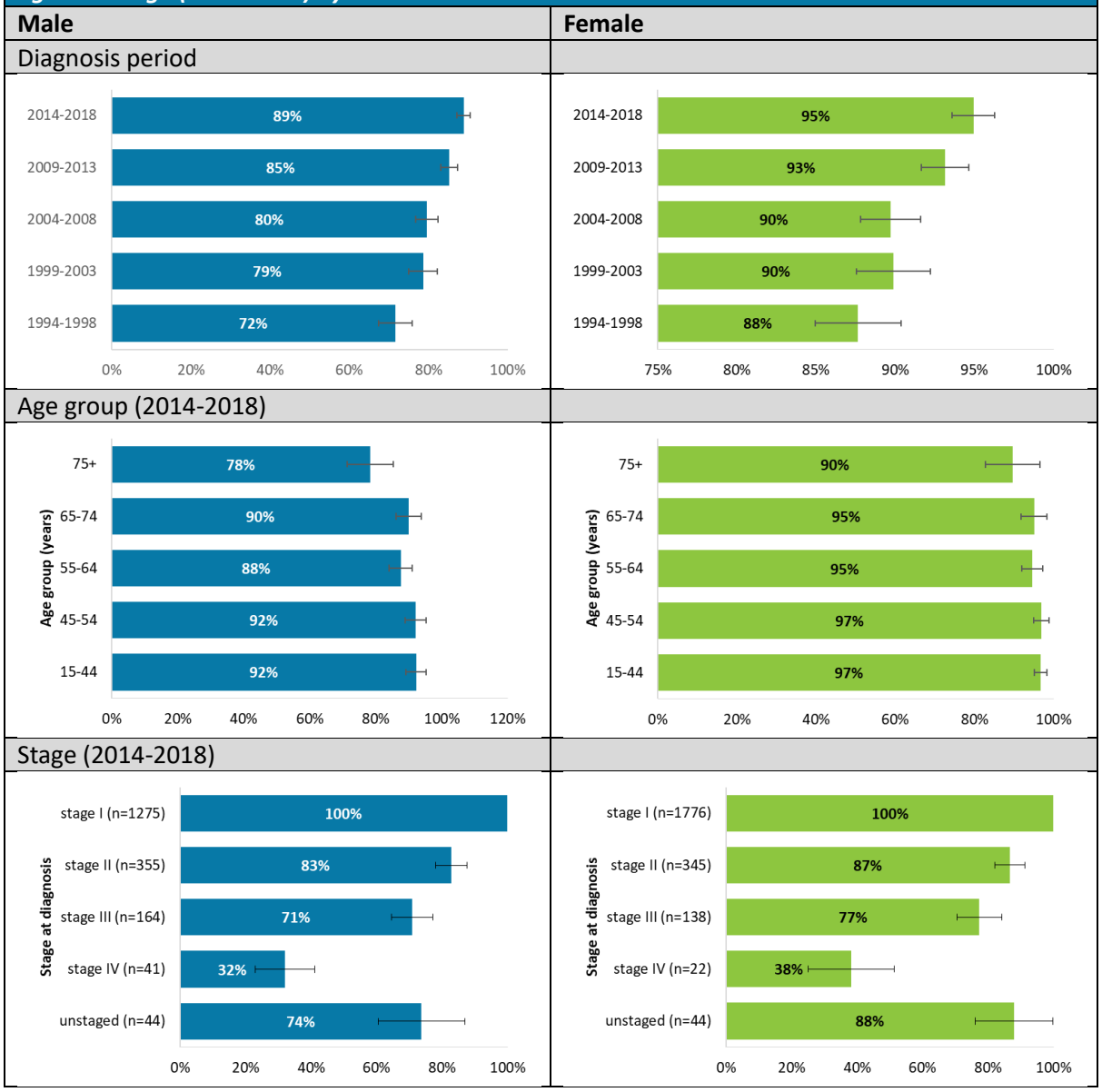
NMSC has very high survival, with 5-year net survival for BCC estimated to be 100% for all periods, i.e., survival for this cancer subset across this time period is no different than the general population matched for age, sex and calendar period (Table 4). Survival for SCC is slightly lower, with 5-year net survival of 97% in 2014-2018.

Survival for melanoma is slightly lower but has improved substantially over time. In 1994-1998, 5-year net survival was approximately 82% but this increased to 92% during the period 2014-2018 (Table 4). Women tend to have higher survival than men, across all age groups and diagnostic periods (Figure 10). The most important factor that influenced survival is stage at diagnosis, with those diagnosed at stage IV having a 5-year net survival of 32-38% compared to 100% of those diagnosed at stage I (Figure 10).

Table 4. 5-year age-standardised net survival (95% Confidence Intervals) for melanoma, BCC and SCC by diagnosis cohort 1994-2018

	Melanoma 5-year net survival (95% CI)	BCC 5-year net survival (95% CI)	SCC 5-year net survival (95% CI)
1994-1998	81.7% (79.3%-84.1%)	100% (99.7%-100%)	95.7% (94.7%-96.5%)
1999-2003	85.5% (83.5%-87.5%)	100% (99.7%-100%)	96.3% (95.3%-97.2%)
2004-2008	85.1% (83.5%-86.8%)	100% (99.7%-100%)	95.4% (92.1%-97.3%)
2009-2013	89.7% (88.5%-91.0%)	100% (99.7%-100%)	96.8% (94.5%-98.2%)
2014-2018	92.1% (91.0%-93.1%)	100% (99.7%-100%)	97.1% (96.3%-97.8%)

Figure 10. 5-year net survival for Melanoma, by diagnosis period and sex; 5-year net survival by age and stage (2014-2018) by sex

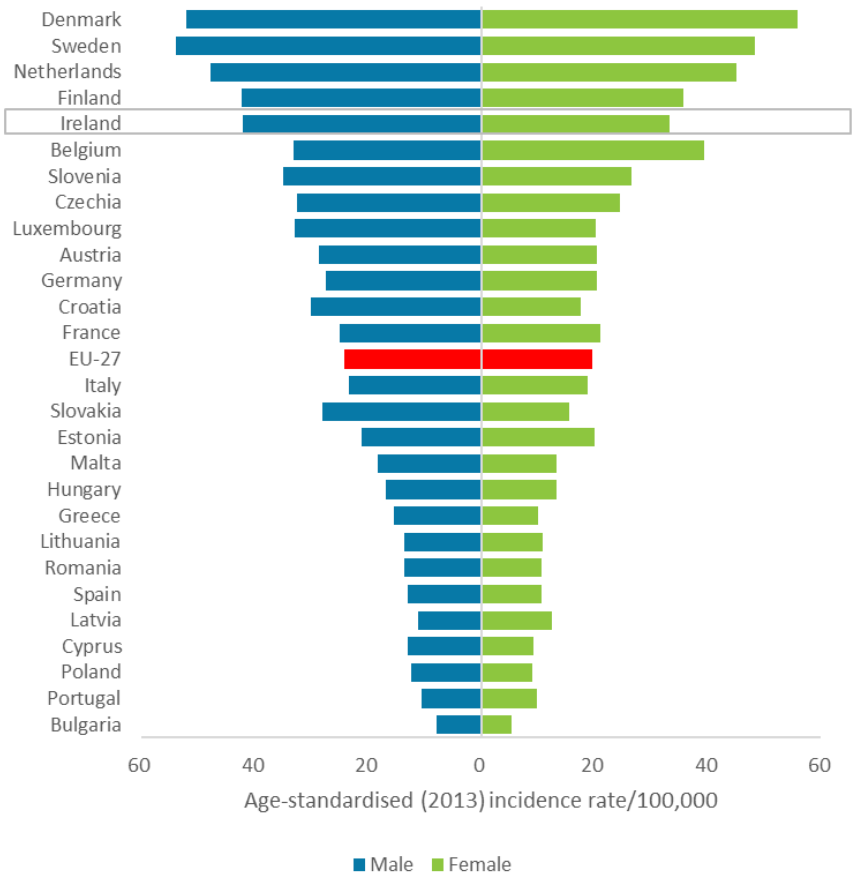


International comparisons: melanoma

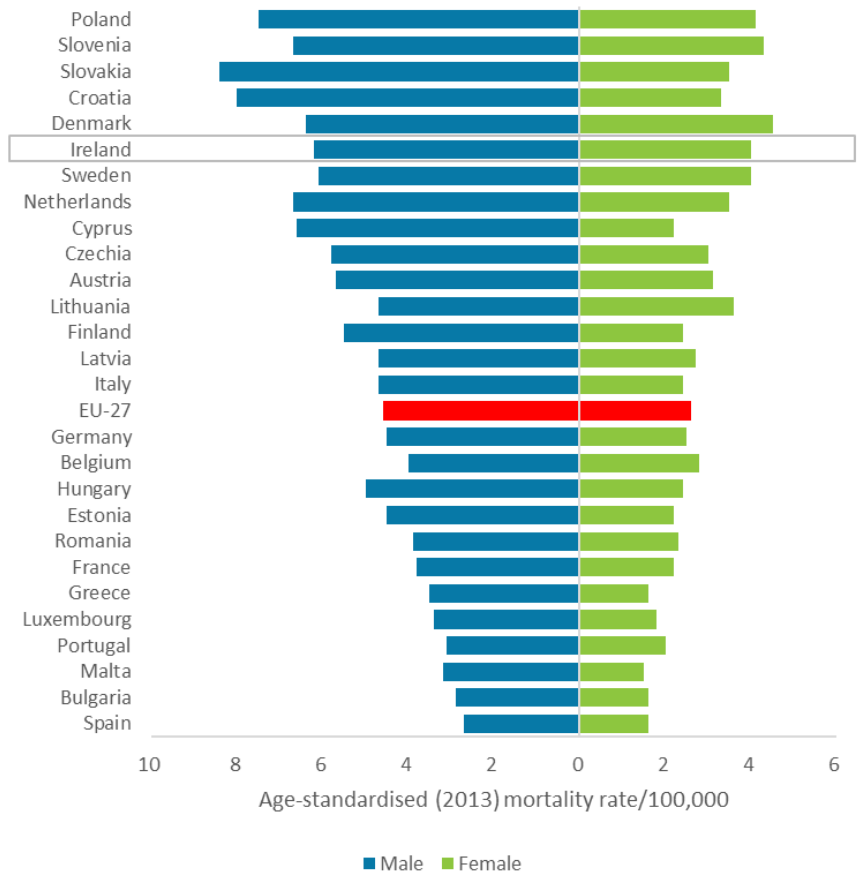
Comparisons with European data are only possible for melanoma as many countries do not routinely collect data on NMSC. The European Cancer Information System (ECIS) publishes cancer incidence and mortality data for EU countries (https://ecis.jrc.ec.europa.eu/index.php). The ECIS estimated that in 2022 Ireland had the 5th highest incidence of melanoma for males and 6th highest incidence for females of the 27 EU member states (Figure 11-A). Ireland was ranked 8th highest mortality for males and 4th highest mortality females (Figure 11-B).

Figure 11. Estimated age-standardised (2013) melanoma incidence and mortality by sex, 2022

A. Incidence



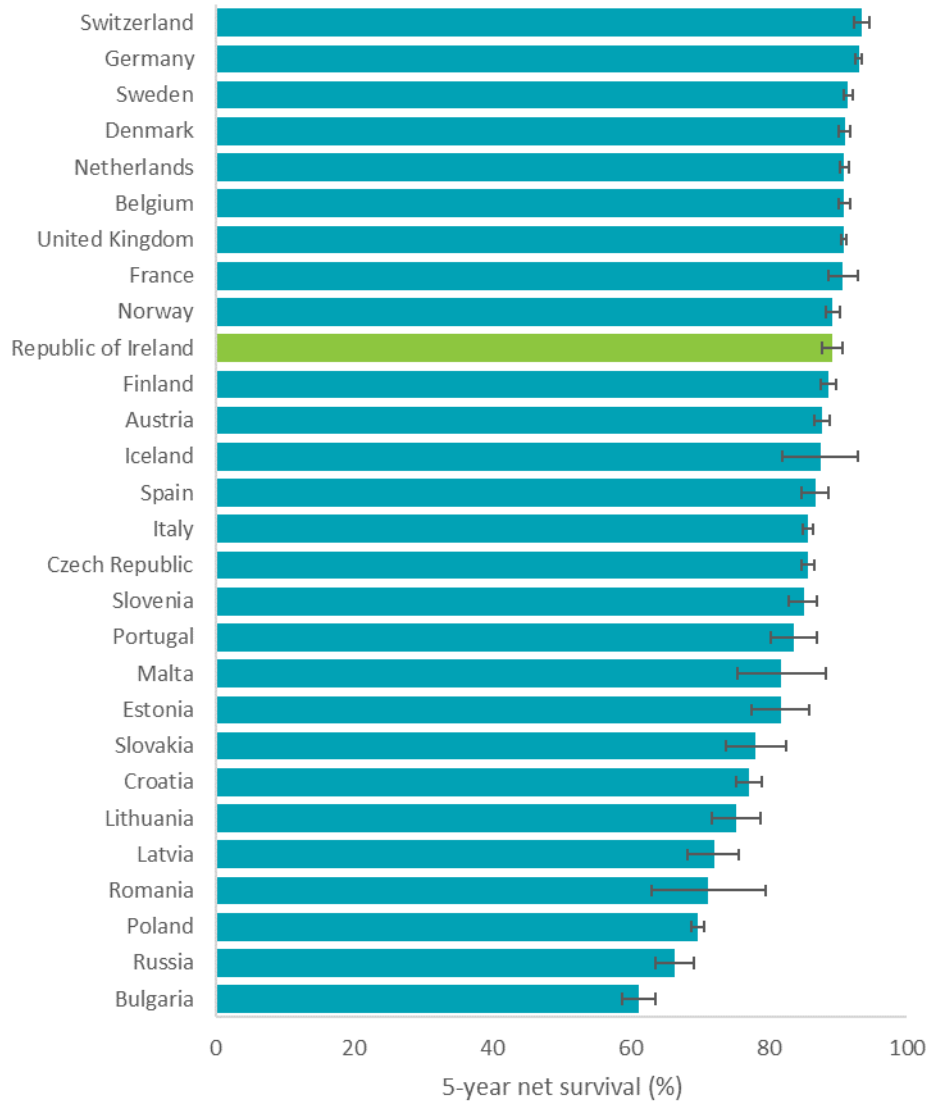
B. Mortality



Source: ECIS, https://ecis.jrc.ec.europa.eu/en, accessed 12/08/2024

Survival estimates for melanoma in Ireland are comparable with other European countries. In CONCORD-3, a large international study which calculated survival for which published 5-year net survival estimates for cancers diagnosed 2010-2014 across 322 cancer registries (71 countries), Ireland ranked 10th for survival of the European countries included (Figure 12) (21).

Figure 12. Melanoma 5-year net survival 2010-2014, CONCORD-3 (data extracted from (21))



Discussion

Skin cancers are the most common type of cancer in Ireland, accounting for one third of all invasive cancers diagnosed each year (2). It is estimated that Ireland had the 9th highest rate of melanoma and the 5th highest rate of NMSC in the world in 2022 (1). The relatively high rates of skin cancers in Ireland is unsurprising given that the majority of the population in Ireland have fair skin types which are considered particularly vulnerable to UV damage (22).

In general incidence of skin cancers have increased since 1994, with trends differing by type of skin cancer and sex. The incidence of melanoma increased significantly, by 2.5% per year between 1994

and 2019 in females, while in males there was a higher increase, of 5.4% per year, between 1994 and 2015, after which rates stabilised (Figure 2Figure 2. Observed age-standardised rates (1994-2022) and modelled trends (1994-2019) of melanoma, by sex). The trend in incidence of BCC was stable in females between 2012 and 2019 but has increased significantly in males since 2001 (Figure 1). While for SCC there has been a significant decreasing trend in females between 2013 and 2019, but a stable rate in males between 2014 and 2019 (Figure 1). Possible reasons for these changes in incidence over time could include demographic changes in the population (e.g. due ageing and migration), changes in diagnostic tests and practices as well as changes in risk factors (e.g. UV radiation, immunosuppression and previous malignancies).

The mortality rate from melanoma increased significantly from 1994 to 2010 for males and 2014 for females, after which the mortality rates stabilised (Figure 9). Mortality data are not available for subtype of NMSC but overall mortality for "C44 malignant neoplasm of other skin" increased significantly in both males and females from 1994 to 2019 (Figure 9). While the increases in mortality described may be a consequence of preceding increases in incidence, it is also possible that they are due to improvements in the cause(s) of death recorded/coded on death certificates over time.

Age-standardised 5-year net survival following a diagnosis of melanoma improved from 82% in those diagnosed 1994-1998 to 92% in the most recent period. However, disparities in survival exist by sex with females showing higher survival across all periods, age-groups and stage at diagnosis (Figure 10). These differences may be due to a greater level of awareness of skin cancer risks in women, across all age groups a higher proportion of females were diagnosed with smaller (T1) tumours than males (Figure 7).

Recognising the increasing burden of skin cancer in Ireland and given that the majority of skin cancers are potentially preventable, the National Cancer Strategy 2017-2026 recommended a National Skin Cancer Prevention Plan should be developed by the Department of Health (23). The first National Skin Cancer Prevention Plan was published in 2019 (24). A review of the implementation of the plan, published in 2023 concluded that the plan "provided an important focus to increase awareness and adoption of skin cancer preventative behaviours and help move towards the ultimate aim of reversing the rising incidence of skin cancer in Ireland" (25). An updated National Skin Cancer Prevention Plan 2023-2026 was published in 2023 which aims to build on the work of the previous plan, with further work targeting specific subgroups who are at high risk such as children, adolescents and young people; outdoor workers; sports, recreation and tourism; and sunbed users (22).

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Appendix 1. Morphological categorisations

Category	Subcategory	ICD10 site	Behaviour	Morphology (Topography) ICD-O3
Melanoma	Low cumulative sun damage melanoma	C43	3	8743
	Nodular melanoma	C43	3	8721
	Lentigo maligna melanoma	C43	3	8742
	Acral melanoma	C43	3	8744
	Other melanomas	C43	3	Any other
Non Melanoma Skin Cancer (NMSC)	BCC (Basal cell carcinoma)	C44	3	8090-8110 [3]
	SCC (Squamous cell carcinoma)	C44	3	8051-8086, 8120-8131[4]
	Merkel cell carcinoma	C44	3	8247
	Other NMSC	C44	3	Any other
Cutaneous Sarcoma		Any	3	8680-8714, 8800-8921, 8930-8936, 8990-8992, 9040-9045, 9120-9125, 9130-9138, 9141-9252, 9370-9373, 9540-9582[5] AND Topography C44

[3] Morphology codes for basal cell carcinomas specified in Table 25 of ICD-O3 (26).
[4] Morphology codes for squamous and transitional cell carcinomas specified in Table 25 of ICD-O3 (26).
[5] Morphology codes for sarcomas and soft tissue tumours specified in Table 25 of ICD-O3 (26).