

Chapter 14

Melanoma of skin

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Summary

- In the UK and Ireland in the 1990s, melanoma of the skin accounted for 1 in 50 diagnosed cases of cancer and 1 in 100 deaths from cancer.
- Incidence was higher than average in the south of England, in Scotland and Ireland, and in Northern Ireland in females, and below average in London, the midlands, Wales, and most of northern England.
- There was less geographic variation in mortality; rates were relatively high in southern England and low across most of the midlands and north of England.
- In contrast to incidence, mortality was relatively low in Scotland, Northern Ireland and Ireland – possibly related to health education campaigns leading to earlier detection.
- Incidence rates were consistently higher in females than in males, but mortality rates were consistently higher in males than in females.
- The areas with higher incidence tended to be the more affluent ones.
- The greatest risk factor for melanoma of the skin is exposure to ultraviolet radiation, mainly from the sun. The relationship between high incidence and affluence is likely to be related to excessive sun exposure on holidays abroad.

Incidence and mortality

In the 1990s there were 2,400 newly registered cases of melanoma each year in males, in whom it was the thirteenth most common cancer, and 3,500 cases in females, in whom it was the eleventh most common. Melanoma accounted for about 2 per cent of all newly diagnosed cases per year (1.8 per cent in males, 2.6 in females). Unlike most other malignancies, melanoma was more common in females than males. The age-standardised incidence rates were 7.7 and 9.7 per 100,000 in males and females, respectively. The ratio of the rates in males to females was around 0.8:1. Melanoma affects younger people more than most cancers, with about 40 per cent of cases in people under 50, although incidence rates were highest above age 75.

In the 1990s, there were around 800 deaths in each sex (one per cent of all cancer deaths) from melanoma of the skin each year in the UK and Ireland. It ranked fourteenth as a cause of cancer death in males, and sixteenth in females. Despite the higher number of cases in females there were almost the same numbers of deaths in males and females, reflecting the poorer average survival for males with this cancer (see below). The age-standardised mortality rate was 2.5 per 100,000 in males and 2.0 per 100,000 in females. Mortality rates were highest in the oldest age group (85 and over).

Incidence and mortality trends

Melanoma of the skin was a very rare disease in the 1960s, but a long-term increase in incidence and mortality has occurred in most white populations across the world over several decades.¹ In England and Wales, both males and females showed a three- to four-fold increase in age-standardised incidence rates between the early 1970s and early 1990s, with large increases seen across most age groups.² Mortality rates increased fairly steadily in England and Wales from the 1950s onwards, before stabilising in females (but not males) in the late 1980s.² Marked increases in incidence since the 1960s, with less marked increases in mortality, have been seen in Scotland.^{3,4} Melanoma of the skin was formerly the most rapidly increasing cancer in the USA, where older men carry the highest risk (to a greater extent than in the UK). The most recent trends in incidence show the biggest rise in older age groups,^{5,6} in the UK.² Early detection has had an impact on the changes described in the USA as evidenced by a higher rate of increase in localised compared with regional or metastasised melanomas. There were however, increased incidence rates for all stages in males, but only for localised disease in females.⁶ Pathological evidence supports the suggestion that increasing incidence rates reflect real change rather than improved diagnosis and ascertainment. The increase was most rapid in the 1970s, when there was little awareness of melanoma, and education to enhance early detection only started in the USA in 1985 at a national level.⁷ Similar educational measures in England and Wales in the late 1980s appeared to bring forward diagnosis somewhat, producing a short-term increase in melanoma incidence,^{2,8} but a longer-term increase was already underway.

Survival

Relative survival for melanoma patients diagnosed in England and Wales during 1996-99 was about 77 per cent after five years for males and 87 per cent for females.⁹ Survival for patients diagnosed in Scotland,¹⁰ Ireland,¹¹ and Northern Ireland¹² during the 1990s was very similar. Worse survival in men than women has been noted in most datasets from European countries in the EUROCARE-3 project.¹³ Melanoma in

men presents more often on the trunk,¹⁴⁻¹⁶ where it has a poorer prognosis than melanoma generally.^{17,18} Men have been shown to be less knowledgeable than women about appropriate prevention measures, to respond less well to health education, and to present with the disease at later stages.¹⁹

Geographical patterns in incidence

On a country or regional scale within the UK, the highest incidence rates for melanoma in both males and females occurred in South West England (44 and 42 per cent higher, respectively, than the UK and Ireland average) (Figure 14.1). Ireland also had a markedly high rate for females (37 per cent above average), more so than for males (21 per cent above average). Incidence rates were also particularly high for females in Northern Ireland, Scotland, and South East England (24, 23 and 13 per cent above average, respectively) and males in Scotland and South East England (25 and 17 per cent above average). Incidence rates were markedly below average in Wales; Northern and Yorkshire; Trent; West Midlands; and London for both males and females. At a country and regional scale, there was a strong correlation between male and female incidence rates.

Variability in the incidence of melanoma was generally higher between the health authorities within a country or region than between the countries and regions themselves (Figure 14.3 and Map 14.1). For both males and females, notably high rates (more than 50 per cent above the UK and Ireland average) were recorded in Borders; Dumfries and Galloway; Cornwall and Isles of Scilly; Dorset; and Southampton and South West Hampshire. Similarly high rates were recorded for females in the Southern health authorities in Ireland and Northern Ireland; in Somerset; and North and East Devon; and for males in Isle of Wight, Portsmouth and South East Hampshire; and South and West Devon (Table B14.1). The rank order of health authorities within regions or countries was similar for males and females, and the maps showed many similarities between the sexes.

Variations in ascertainment between registries may partly account for regional variations in recorded melanoma incidence and the similarity between geographic patterns for males and females. For example, it was previously reported that up to 23 per cent of melanoma cases were not registered in the Northern and Yorkshire region, but it is not known if this under-registration has been consistent over time.²⁰ Relatively high incidence, compared with mortality, in Ireland, Northern Ireland, and Scotland, and to a lesser extent in South West and North West England, may suggest more complete registration in these populations, while data for Wales, and London may

indicate some under-registration. Alternatively, earlier detection in some regions may have boosted incidence rates (in addition to reducing mortality).

Geographical patterns in mortality

At the country and regional level (Figure 14.2), there was far less geographic variation for mortality than for incidence, especially for females. Mortality rates in both males and females were markedly above average in South East and South West England, and notably lower than average in the midlands and north of England, and in both Northern Ireland and Ireland. At the health authority level, variation in mortality appeared fairly substantial (Figure 14.4 and Map 14.2) although due to the small numbers of deaths involved (fewer than 20 annually in most health authorities) many of the rates were not significantly different from the average. Compared to those for incidence (Map 14.1), the maps for mortality showed a much clearer north-south divide across England, with the highest mortality rates near the south and south west coasts, and lower rates in the midlands and north of the country (Map 14.2).

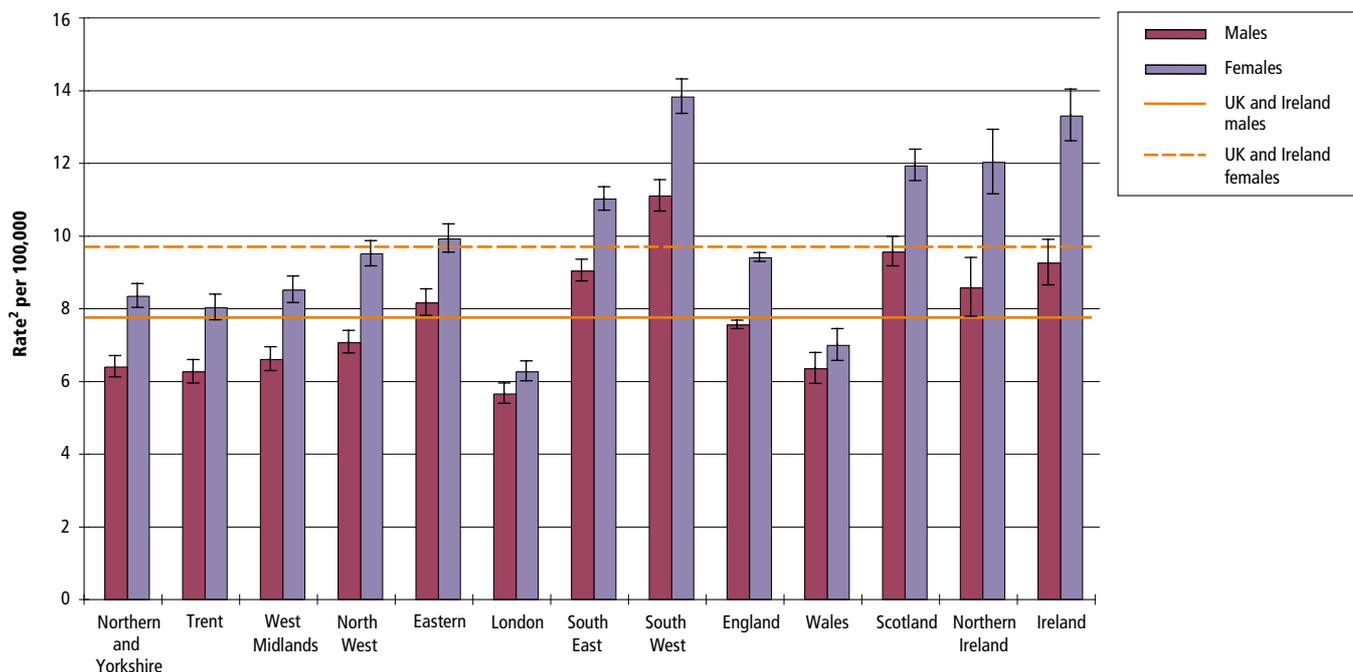
In general, there was a low level of correlation between mortality and incidence rates at the national or regional level, although it was somewhat higher among English regions (Table 14.1). Within most countries or regions, there was again only moderate similarity between the health authority rankings for mortality and incidence rates. Incidence data are probably more susceptible to geographic variations in ascertainment, and are also likely to be influenced by variations in early detection. The latter, as well as potentially inflating the incidence data in some populations, will also tend to reduce mortality rates, further exaggerating disparities between mortality and incidence.

Nevertheless, mortality-to-incidence ratios also reflect survival, and were higher in males (overall average 0.32) than females (0.20), which is consistent with the worse survival of males with melanoma. The ratios were highest, possibly reflecting worse survival, in Wales, and London. The lower mortality and higher incidence in females in Scotland, and Northern Ireland, and perhaps some other regions, possibly reflects health promotion campaigns from the late 1980s onwards.²¹ However, an evaluation of the Cancer Research Campaign publicity drive aimed at early detection of melanoma in one Scottish and six English regions in the late 1980s, did not find any significant reduction in mortality associated with the intervention.²² The similarly low mortality-to-incidence ratio seen in Ireland does not seem to be explained by early detection.

(continued on page 160)

Figure 14.1

Melanoma of skin: incidence by sex, country, and region of England UK and Ireland 1991-99¹

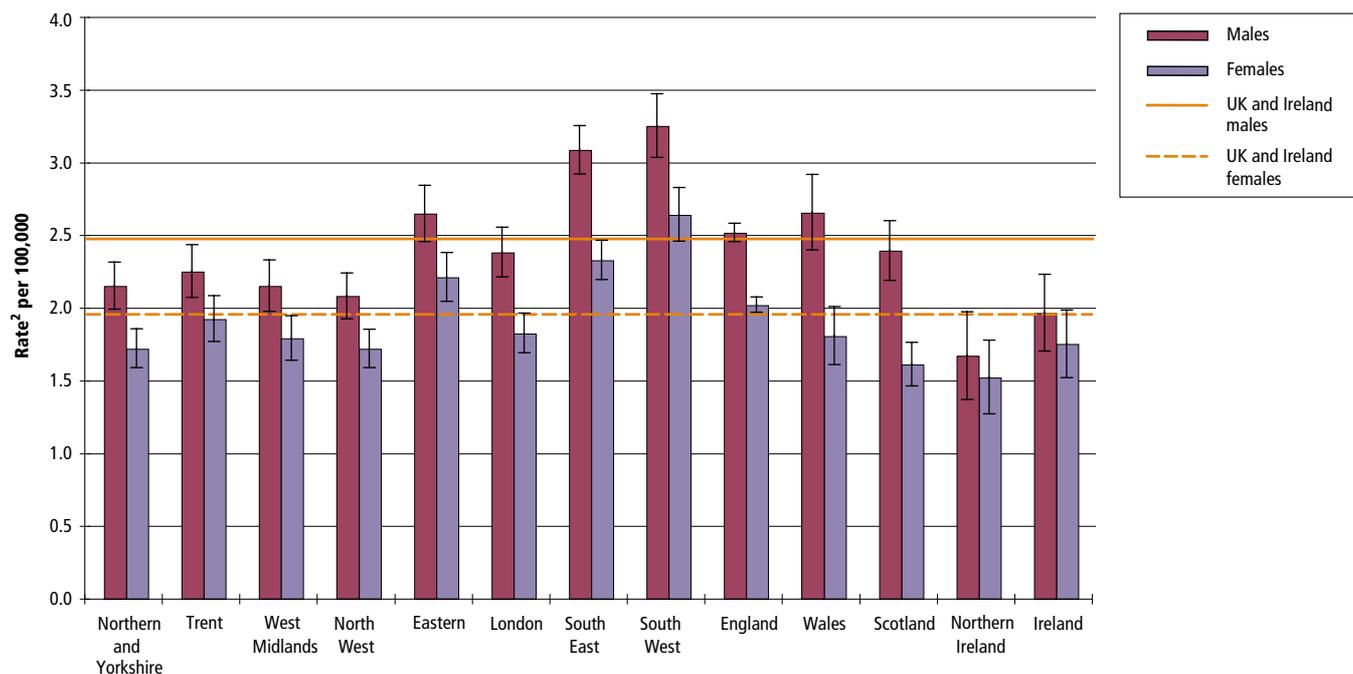


1 Northern Ireland 1993-99, Ireland 1994-99

2 Age standardised using the European standard population, with 95% confidence interval

Figure 14.2

Melanoma of skin: mortality by sex, country, and region of England UK and Ireland 1991-2000¹

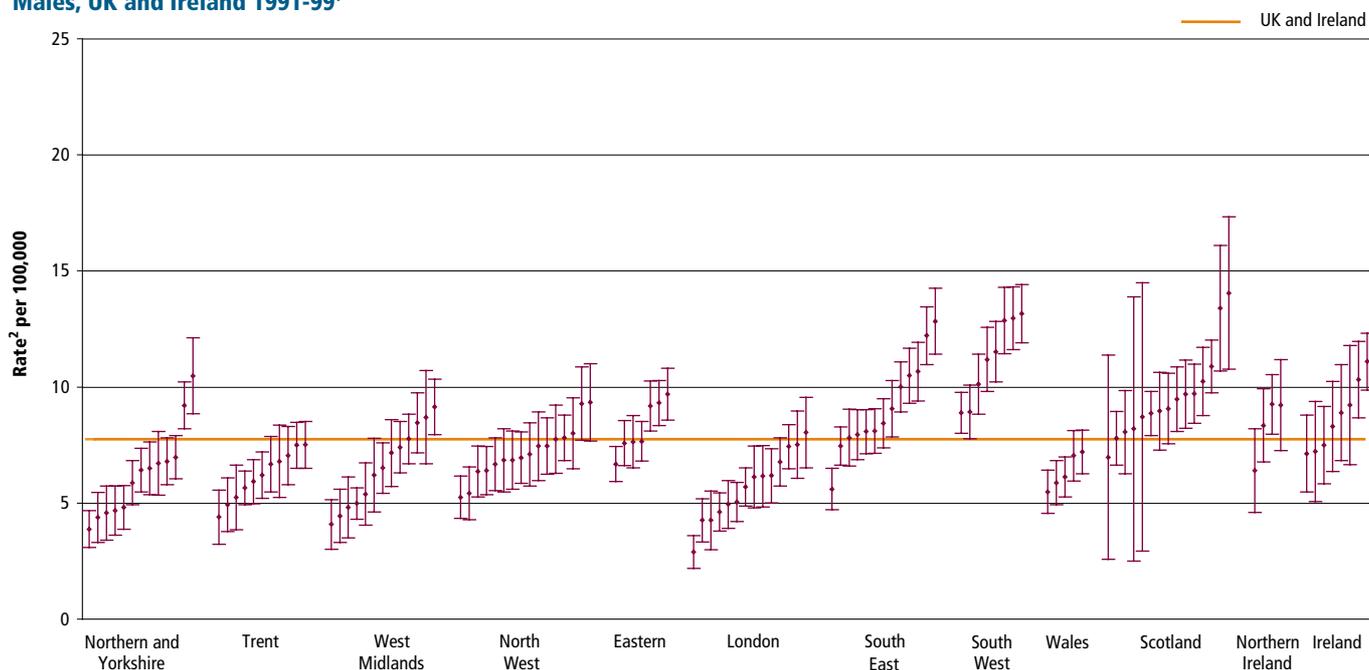


1 Scotland 1991-99, Ireland 1994-2000

2 Age standardised using the European standard population, with 95% confidence interval

Figure 14.3a

**Melanoma of skin: incidence by health authority within country, and region of England
Males, UK and Ireland 1991-99¹**

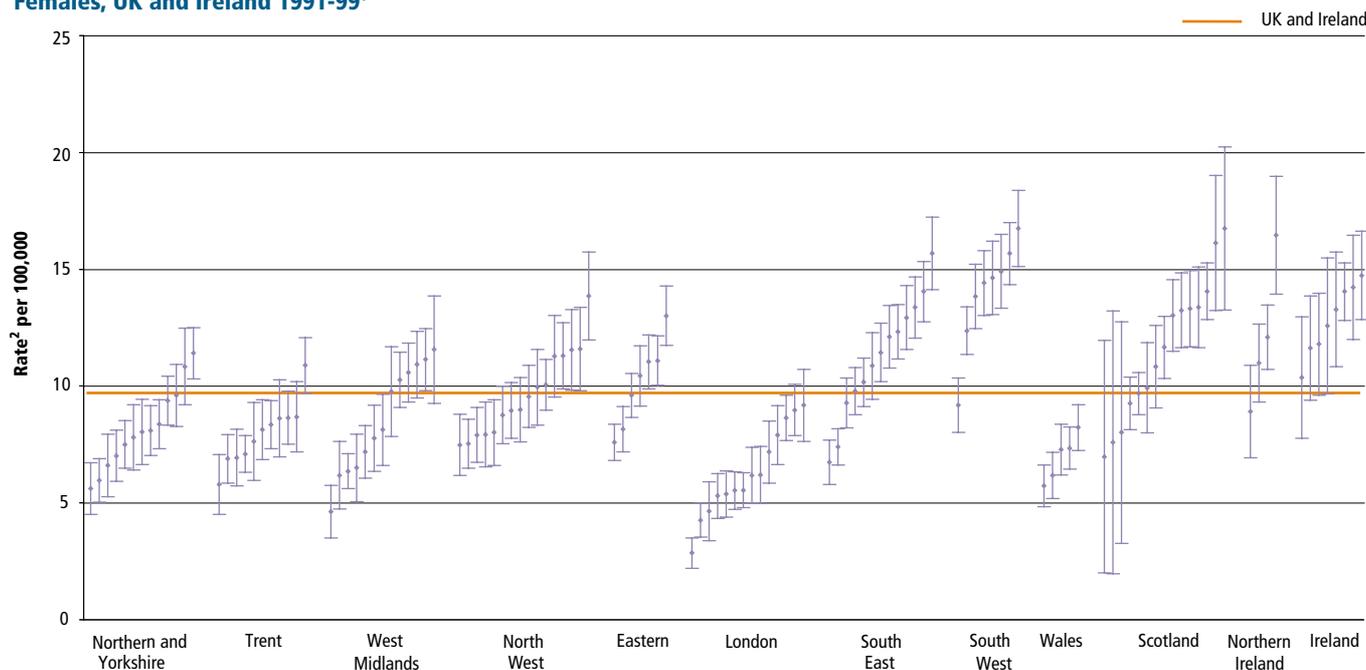


1 Northern Ireland 1993-99, Ireland 1994-99

2 Age standardised using the European standard population, with 95% confidence interval

Figure 14.3b

**Melanoma of skin: incidence by health authority within country, and region of England
Females, UK and Ireland 1991-99¹**

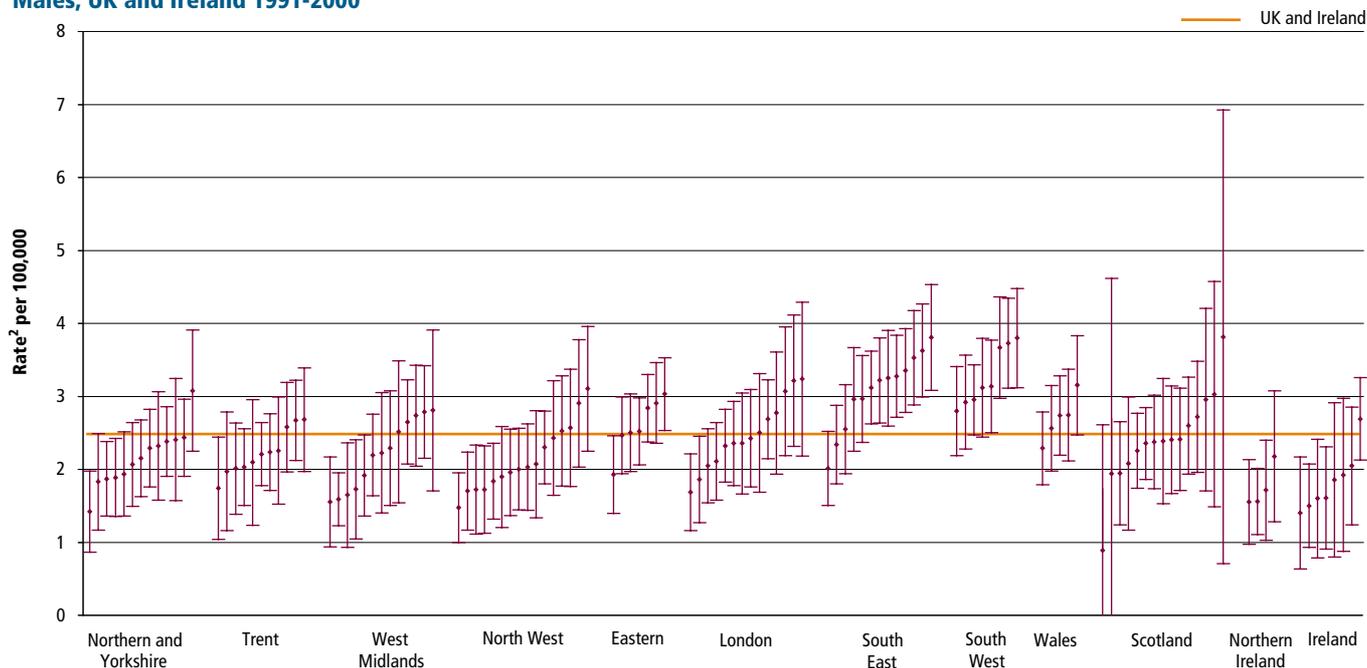


1 Northern Ireland 1993-99, Ireland 1994-99

2 Age standardised using the European standard population, with 95% confidence interval

Figure 14.4a

Melanoma of skin: mortality by health authority within country, and region of England
Males, UK and Ireland 1991-2000¹

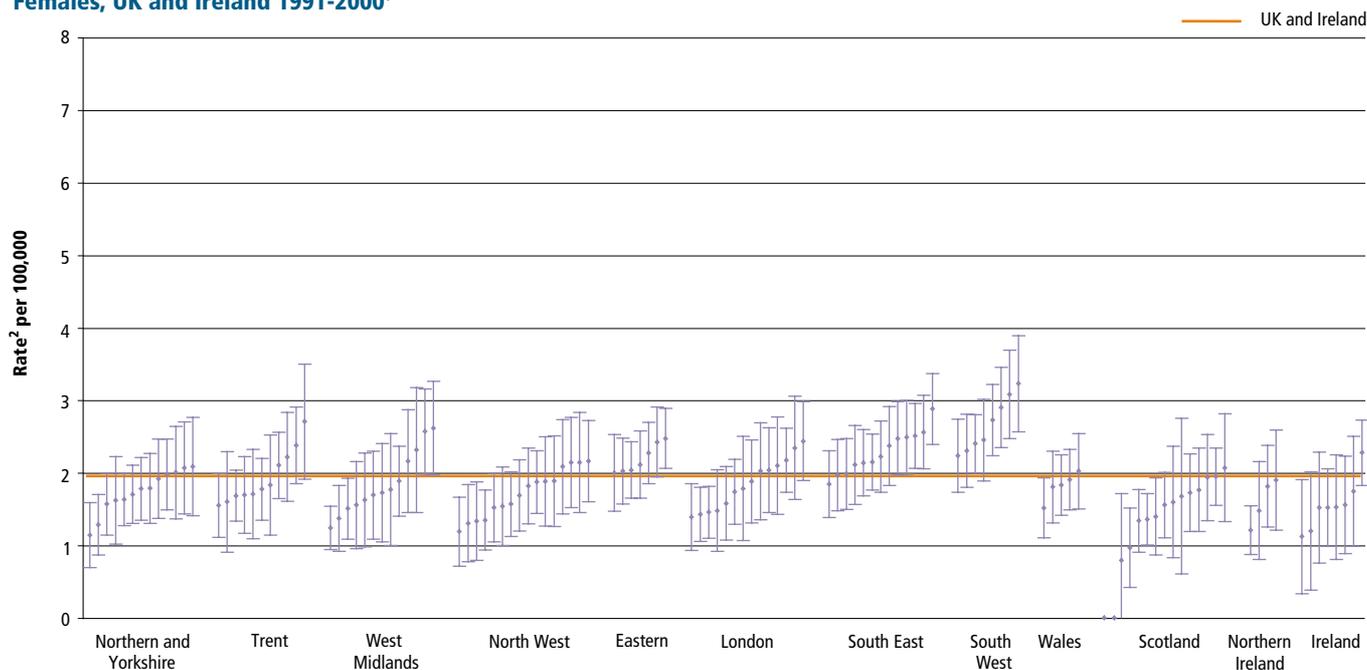


1 Scotland 1991-99, Ireland 1994-2000

2 Age standardised using the European standard population, with 95% confidence interval

Figure 14.4b

Melanoma of skin: mortality by health authority within country, and region of England
Females, UK and Ireland 1991-2000¹

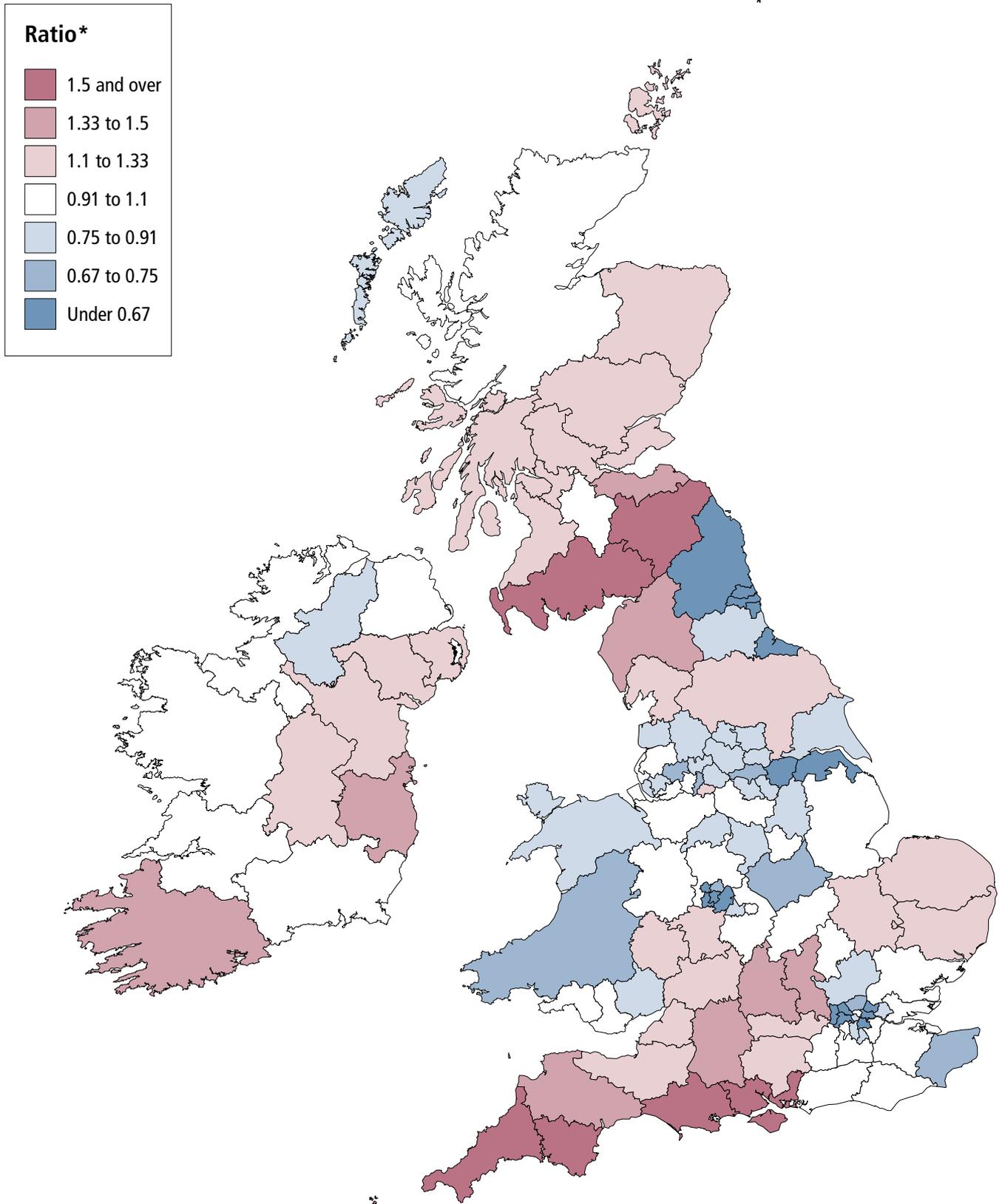


1 Scotland 1991-99, Ireland 1994-2000

2 Age standardised using the European standard population, with 95% confidence interval

Map 14.1a

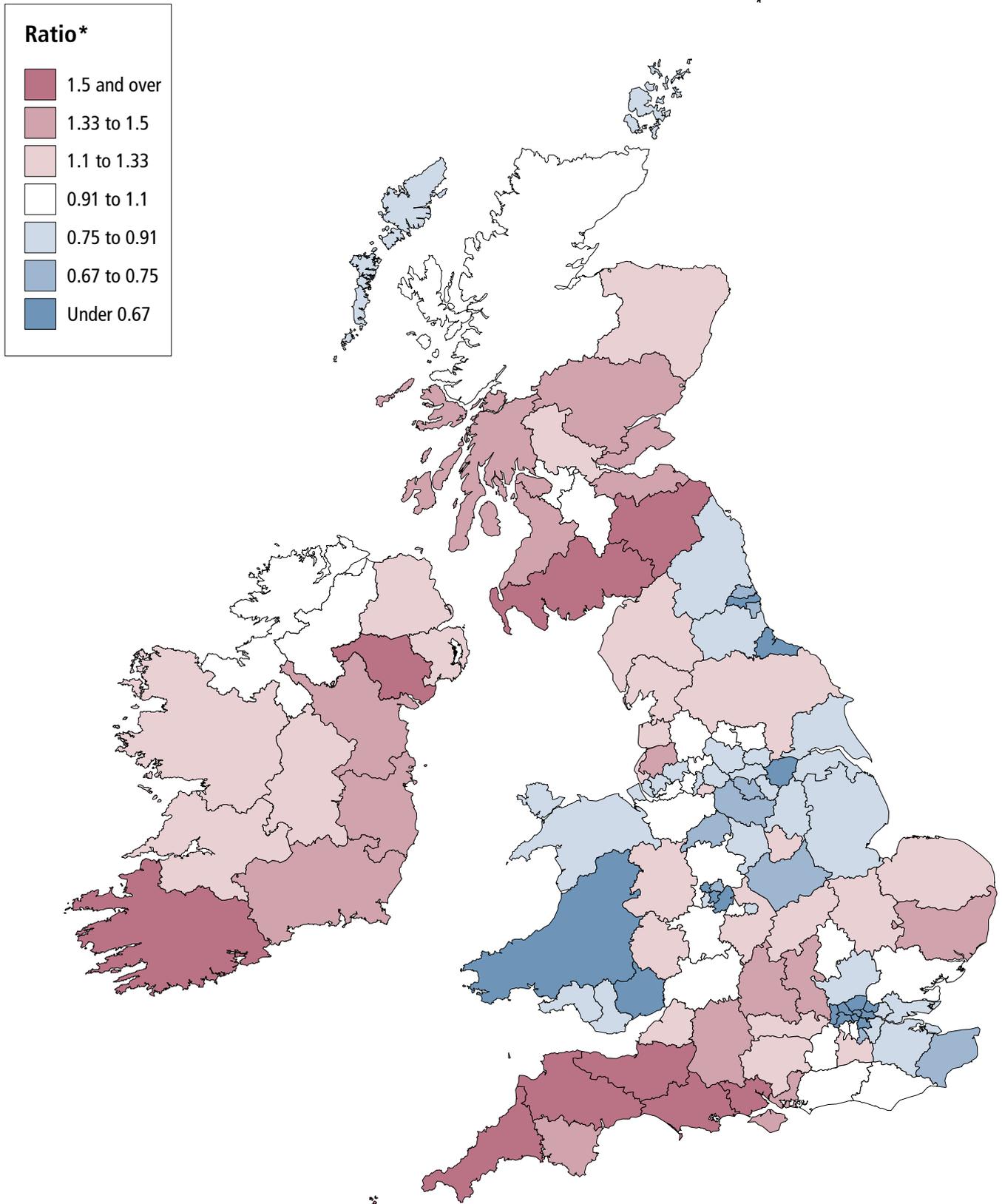
Melanoma of skin: incidence* by health authority
Males, UK and Ireland 1991-99



*Ratio of directly age-standardised rate in health authority to UK and Ireland average

Map 14.1b

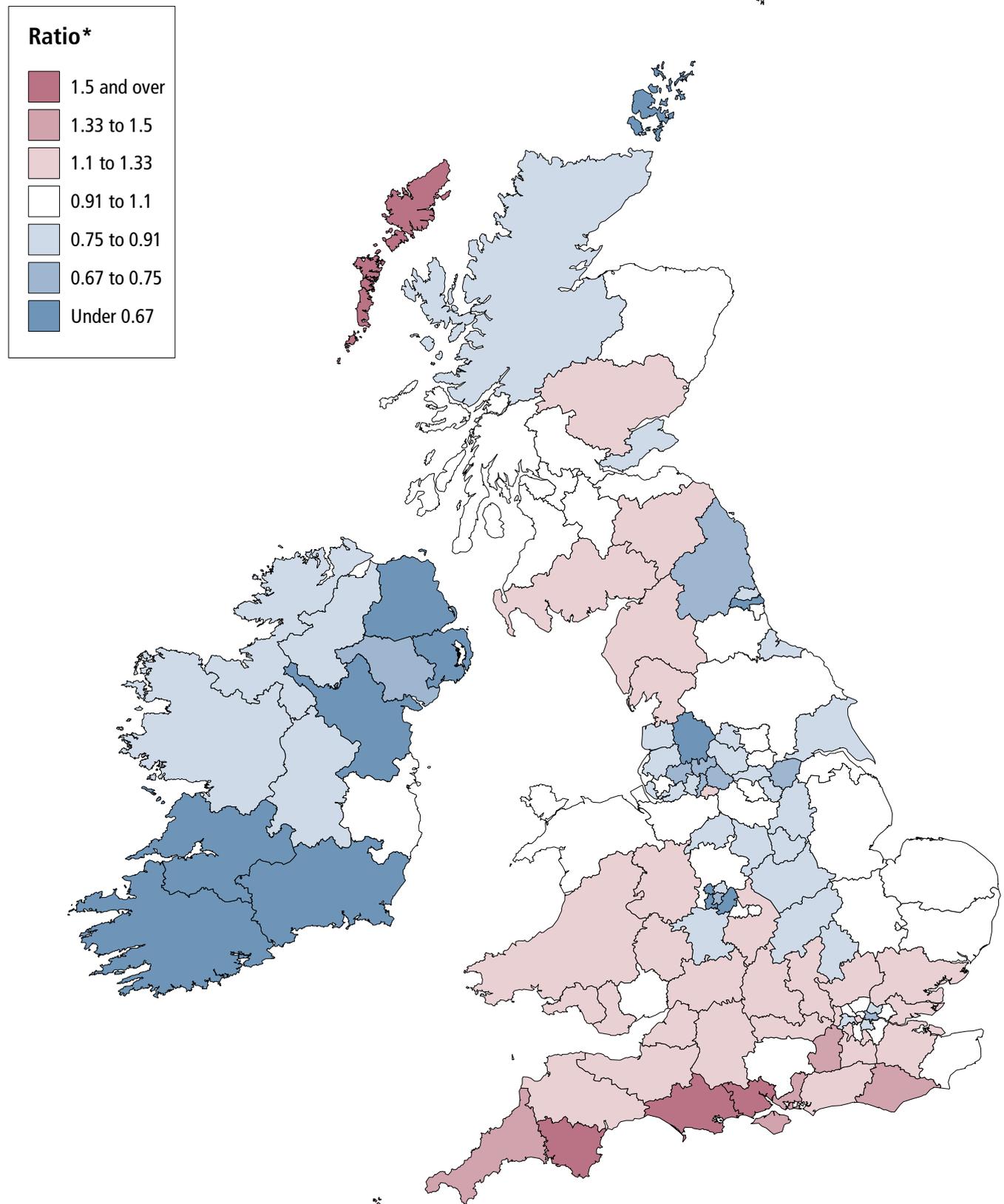
Melanoma of skin: incidence* by health authority
Females, UK and Ireland 1991-99



*Ratio of directly age-standardised rate in health authority to UK and Ireland average

Map 14.2a

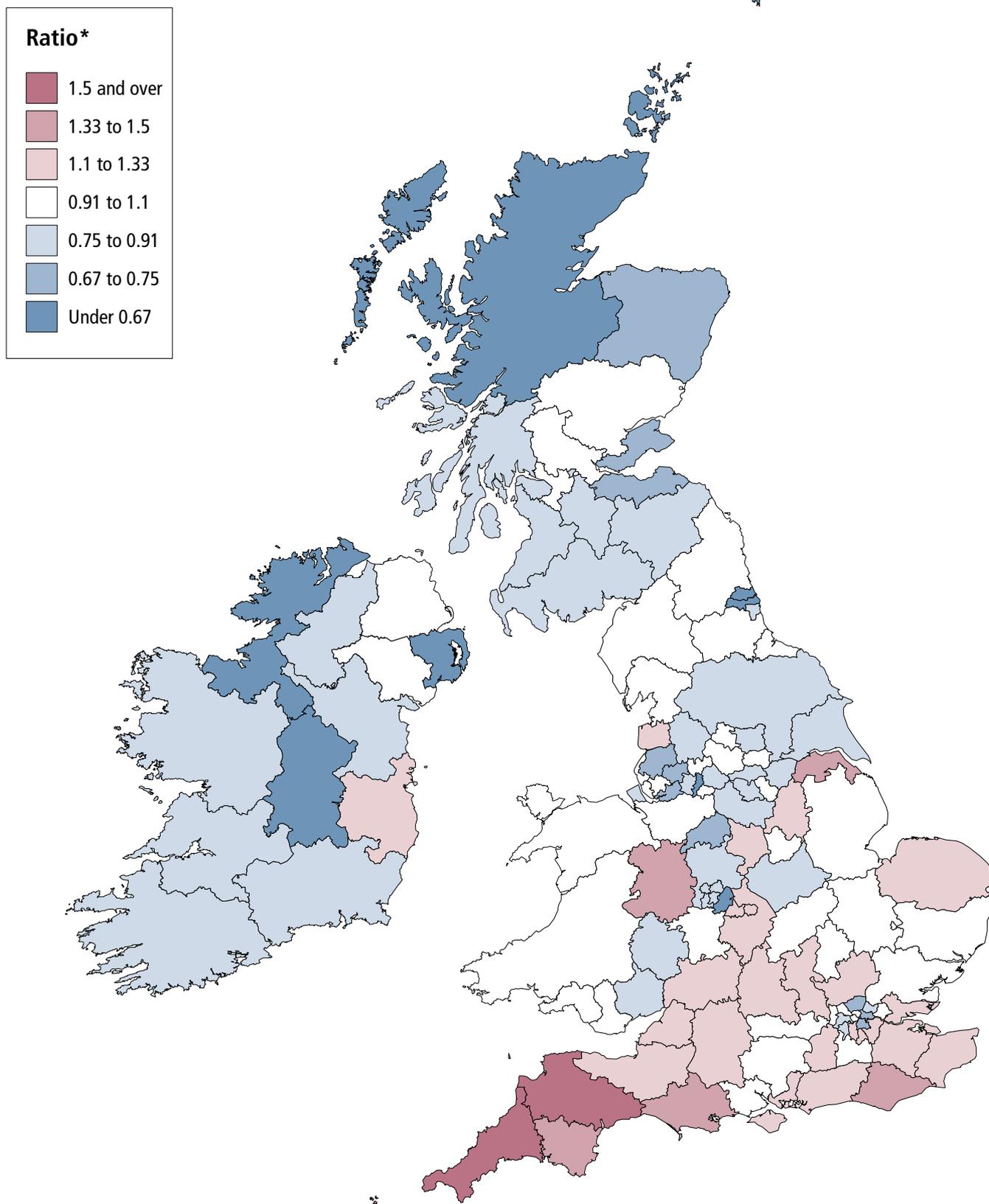
Melanoma of skin: mortality* by health authority
Males, UK and Ireland 1991-2000



*Ratio of directly age-standardised rate in health authority to UK and Ireland average

Map 14.2b

Melanoma of skin: mortality* by health authority
Females, UK and Ireland 1991-2000



*Ratio of directly age-standardised rate in health authority to UK and Ireland average

Nevertheless, EUROCARE-3 showed substantial differences in survival among European countries for melanoma and noted that countries with the highest incidence rates also had the highest survival rates, whereas in those countries where incidence was low, survival rates were relatively low. It was speculated that this might be due to higher awareness of melanoma risk in high-incidence areas, resulting in earlier detection and better survival.¹³

Risk factors and aetiology

Light skin type, large number of naevi, atypical naevi, family history of skin cancer and excessive sun exposure (mainly in childhood) are the major risk factors for melanoma of the skin.²³ Melanoma arises from the malignant transformation of melanocytes (skin cells that produce the pigment melanin, which determines skin colour). Ultraviolet radiation can promote the proliferation capacity of melanocytes.²⁴ Most melanomas are thought to be caused by intermittent rather than chronic exposure to ultraviolet radiation, especially during childhood, although exposure in adulthood certainly also plays a part,^{25,26} with melanomas in older people more strongly related to chronic sun exposure.²⁷ Variation in recreational or holiday exposure to ultraviolet radiation almost certainly contributes strongly to the increased melanoma risk seen in higher socio-economic groups (see below).

When melanoma is detected at an early stage it is curable, but once advanced it is difficult to treat. Limiting exposure to ultraviolet radiation reduces the risk of melanoma and other skin cancers. As the main environmental source of ultraviolet radiation is sun exposure, the European Code Against Cancer advises Europeans to 'reduce their total lifetime exposure, and in particular to avoid extremes of sun exposure and sunburn'. Simple measures such as avoiding the sun between 11am and 3pm, seeking shade, wearing close-weave heavy cotton clothing, and using sunscreen, as well as avoiding the use of sun beds, are recommended.²⁸

Socio-economic deprivation

In England and Wales, there is a strong inverse relationship between the incidence of melanoma and social deprivation, measured using the Carstairs Index.² In 1988-93, incidence in the most affluent groups was about three times that in the most deprived populations. A similar gradient was seen in Scotland.³ Variation in mortality with affluence was much less marked than for incidence, but mortality rates in England and Wales were, nevertheless, about 50 per cent higher in the most affluent compared with the most deprived populations.² The less marked influence of affluence on mortality rates is consistent with higher survival rates in melanoma patients from

more affluent backgrounds,^{29,30} partly, but not wholly, reflecting earlier detection.³¹ The maps show some correlation between areas with low incidence of melanoma and areas with high levels of deprivation (see Appendix F). Notably, for both sexes, there were pockets of low melanoma incidence and high levels of deprivation in London; around Wolverhampton and Birmingham; Doncaster; Tees; and Gateshead and South Tyneside (Map 14.1).

It is not clear to what extent (if any) the variations in incidence or mortality in some parts of the UK reflect different proportions of high-risk, fair-skinned people and/or low-risk ethnic minorities. More detailed analysis is needed to quantify the role of such factors, along with variation in risk behaviour (sun exposure), ascertainment, and distribution of stage at diagnosis or other measures of early detection, in explaining the geographic patterns seen in the incidence and mortality of melanoma.

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