3. NON-MELANOMA SKIN CANCER

3.1. SUMMARY

Non-melanoma skin cancer (NMSC) was the most common cancer in Ireland, accounting for 27% of all malignant neoplasms (Table 3.1). The average number of new cases diagnosed each year was 3,777 in women and 4,294 in men. During 1995-2007, the number of new cases increased by approximately 3% per annum; since 2002 it has been increasing by around 6% in RoI.

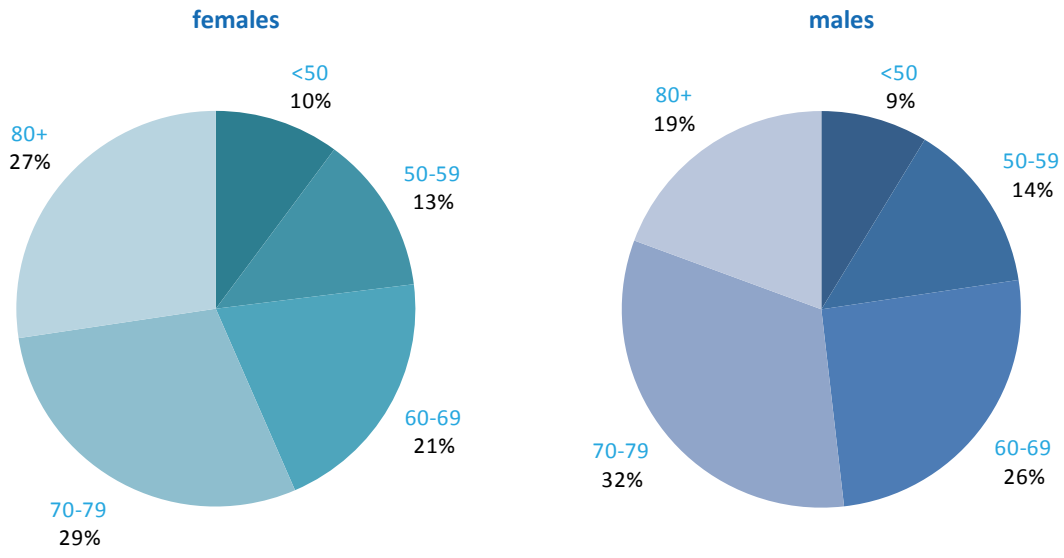
The risk of developing NMSC before the age of 75 was 1 in 12 for women and 1 in 8 for men and was slightly higher in RoI than in NI for both men and women. At the end of 2008, 11,629 women and 12,375 men aged under 65, and 30,748 women and 31,937 men aged 65 and over, were alive up to 15 years after their cancer diagnosis.

Table 3.1 Summary information for non-melanoma skin cancer in Ireland, 1995-2007

	Ireland		RoI		NI	
	females	males	females	males	females	males
% of all new cancer cases	27%	28%	28%	29%	24%	27%
average number of new cases per year	3777	4294	2666	3080	1111	1215
cumulative risk to age 74	8.6%	12.2%	9.3%	12.9%	7.1%	10.5%
15-year prevalence (1994-2008)	42377	44312	29736	31028	12641	13284

The incidence of NMSC increased with increasing age (Figure 3.1). The age distribution was similar for men and women and for RoI and NI. Only approximately 10% of cases occurred in those aged under 50 years and the largest number of cases for both sexes presented in the 70–79 age group.

Figure 3.1 Age distribution of non-melanoma skin cancer cases in Ireland, 1995-2007, by sex



3.2. INTERNATIONAL VARIATIONS IN INCIDENCE

No reliable data are available on international variations in non-melanoma skin cancer incidence.

3.3. RISK FACTORS

Table 3.2 Risk factors for non-melanoma skin cancer, by direction of association and strength of evidence

	Increases risk	Decreases risk
Convincing or probable	Sun exposure[1,2]	
	Skin colour[2]	
	Ability to tan[2]	
	Childhood freckling[2]	
	Presence of benign sun damage in the skin[2]	
	Sunbed/sunlamp use[3]	
	Immune suppression[4] and some immunosuppressive drugs[5]	
	Infection with human papilloma viruses (HPV)[6]	
	Human immunodeficiency virus, type 1 (HIV-1)[6]	
	Methoxsalen[5,7]	
	Arsenic and inorganic arsenic compounds[8]	
	Ionizing radiation[9]	
Possible	Statins[10]	

[1] International Agency for Research on Cancer, 1992; [2] Armstrong and Kricker, 2001; [3] Karagas et al., 2002; [4] Saladi and Persaud, 2005; [5] International Agency for Research on Cancer, 2011a; [6] International Agency for Research on Cancer, 2011b; [7] together with UV light; [8] Straif et al., 2009; [9] El Ghissassi et al., 2009; [10] Kuoppala et al., 2008

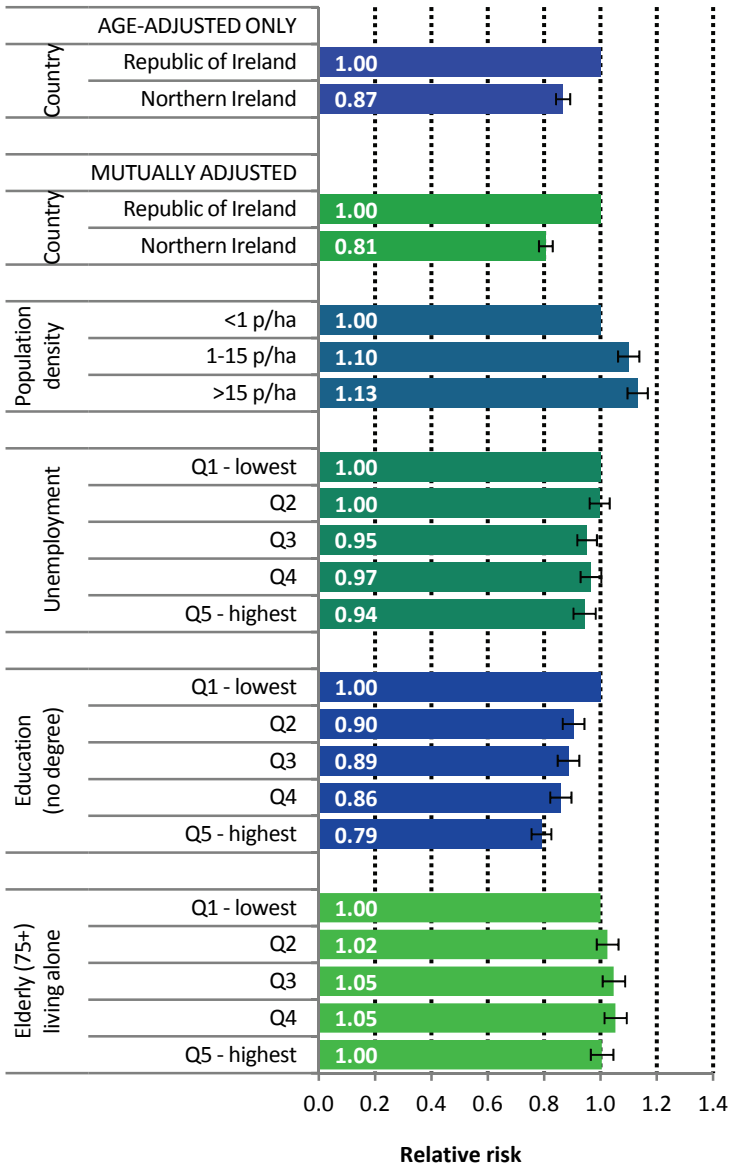
The two main types of non-melanoma skin cancer are squamous cell carcinoma (SCC) and basal cell carcinomas (BCC). Both types are caused by exposure to ultraviolet (UV) radiation present in sunlight. Occupational sunlight exposure has been mainly associated with SCC and recreational exposure with BCC. Individuals with a lighter skin colour, less ability to tan, and who had freckles as a child, are at increased risk, as are those with solar keratoses (benign sun damage to the skin). Independently of sun exposure, use of artificial tanning devices which emit UV radiation, such as sunbeds or sunlamps, has been associated with raised risk of BCC and, especially, SCC.

Individuals who are immune suppressed, such as organ transplant recipients or those with AIDS, have a greatly increased risk of developing NMSC. Positivity for the human immunodeficiency virus, type 1 (HIV-1) is a cause of NMSC. Some immunosuppressive drugs—including azathioprine and ciclosporin—which are used to prevent organ rejection following transplant, or to treat autoimmune diseases such as rheumatoid arthritis and Crohn's disease, are recognised to cause skin cancer. Risk of NMSC is also increased by exposure to the drug methoxsalen, which is used to treat some skin conditions, in combination with UV light. Residues of arsenic from agriculture, mining and industrial practices can end up in drinking water. Arsenic is carcinogenic (International Agency for Research on Cancer, 1987; International Agency for Research on Cancer, 2004a) and ingestion of arsenic and inorganic arsenic compounds causes NMSC. Low-dose ionizing radiation exposure (e.g. for benign skin conditions such as acne) increases risk of BCC.

Human papilloma viruses (HPV) infect mucosal and cutaneous epithelia. Infection with particular HPV types (genus-beta types and specifically HPV5 and HPV8) may be causally related to NMSC (International Agency for Research on Cancer, 2011b). People who use statins may have an increased risk of NMSC (although the possibility that the association could be due to different levels of contact with health services among users and non-users of statins cannot be discounted).

3.4. SMALL GEOGRAPHIC AREA CHARACTERISTICS AND CANCER RISK

Figure 3.2 Adjusted relative risks (with 95% confidence intervals) of non-melanoma skin cancer by socio-economic characteristics of geographic area of residence: males



MALES

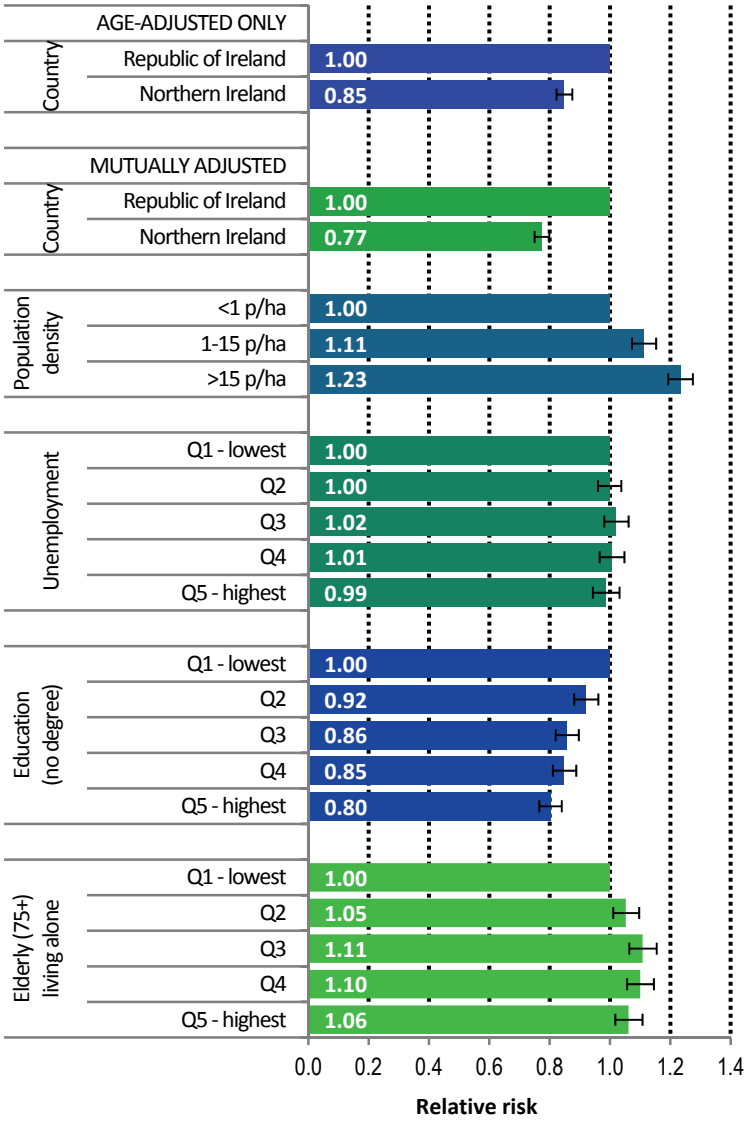
In NI the risk of NMSC was 13% lower than in RoI. This difference increased to 19% when population density and area-based socio-economic factors were taken into account (Figure 3.2).

The most densely populated areas had a significantly higher risk of NMSC among men than the least densely populated areas (RR=1.13, 95%CI=1.10-1.17).

The relationship to unemployment, however, was the reverse of that for population density, with men resident in areas of highest unemployment having a reduced risk of NMSC. This relationship was even stronger with lower educational attainment; men resident in areas with a high proportion of residents not educated to degree level had a 21% lower risk of NMSC than men resident in areas with a high proportion of residents who were educated to degree level.

Men resident in areas with 30.7-42.5% of elderly people living alone (3rd and 4th quintiles) had a higher risk of NMSC.

Figure 3.3 Adjusted relative risks (with 95% confidence intervals) of non-melanoma skin cancer by socio-economic characteristics of geographic area of residence: females



FEMALES

As with men, the risk of NMSC varies with country, with NI having a 23% lower risk of NMSC, compared to RoI, once age, population density and socio-economic factors were adjusted for (Figure 3.3).

The relationship to population density was stronger for women than men (RR=1.23, 95%CI=1.19-1.27), however unlike men, there was no relationship between female NMSC and unemployment.

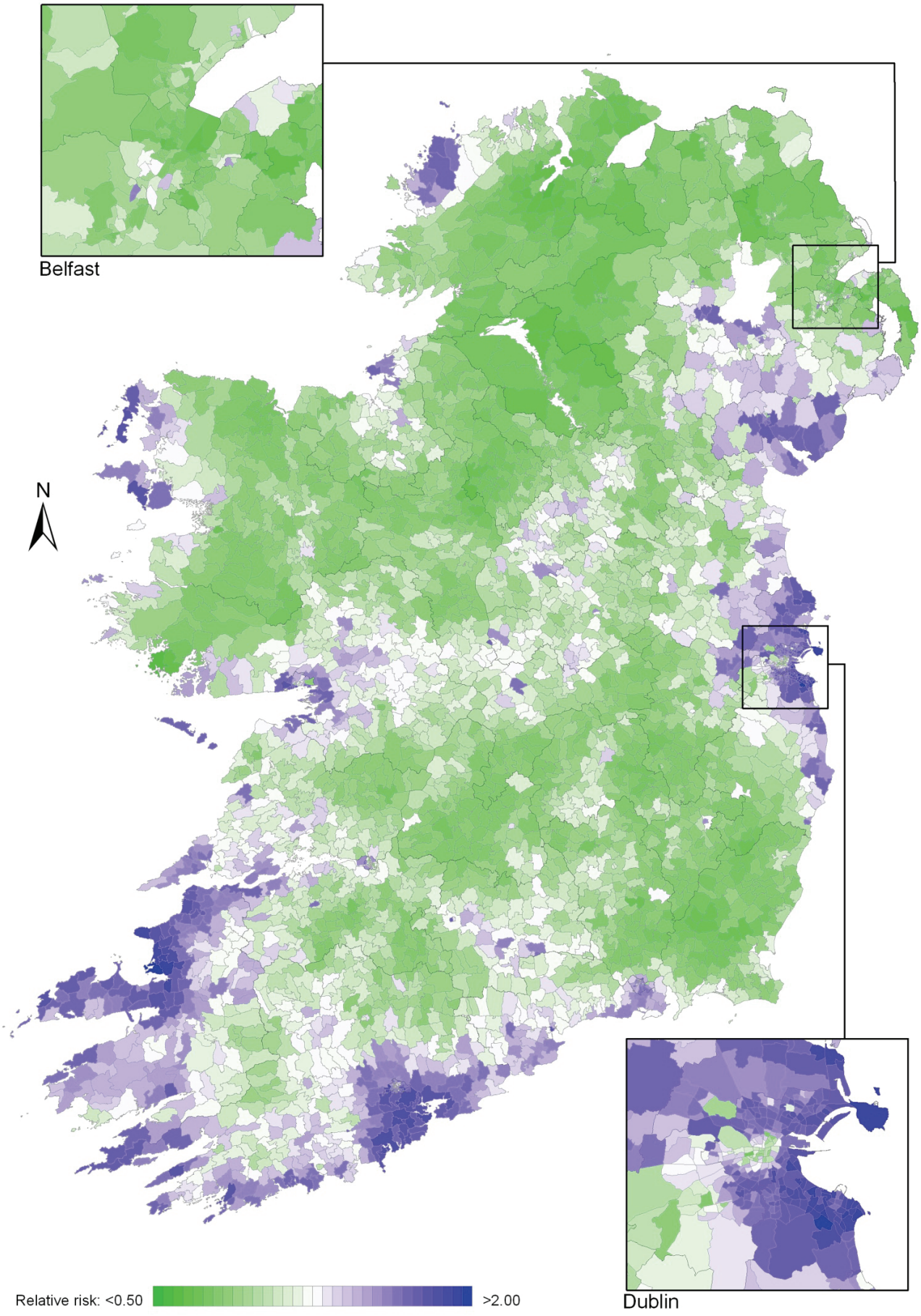
Women living in areas of poorer educational attainment had a reduced risk of NMSC, while those living in areas with high levels of elderly living alone had an increased risk.

3.5. MAPPING AND GEOGRAPHICAL VARIATION

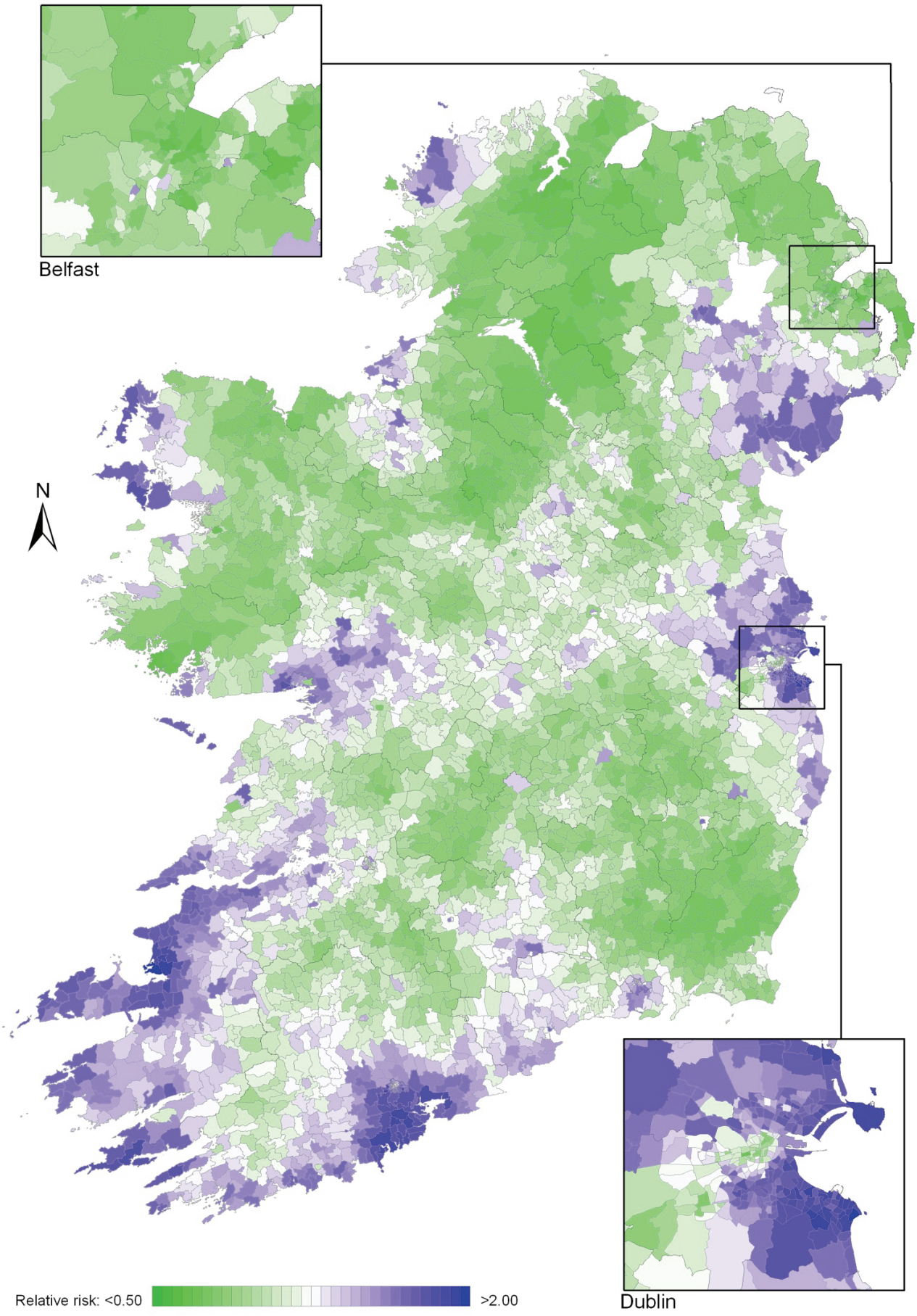
Non-melanoma skin cancer had a strong geographical pattern, which was similar for men and women (Maps 3.1-3.3).

Regions of high relative risk were mainly seen in coastal areas, particularly along the east coast from Down to Wicklow, the south and west coasts from Waterford to Mayo and in Sligo (men) and Donegal. Areas of higher relative risk were also seen around the cities of Dublin, Waterford, Cork, Limerick and Galway.

Map 3.1 Non-melanoma skin cancer, smoothed relative risks: both sexes



Map 3.2 Non melanoma skin cancer, smoothed relative risks: males



Map 3.3 Non melanoma skin cancer, smoothed relative risks: females