

BRAIN AND NERVOUS SYSTEM CANCER



This document provides statistical information about non-malignant (blue table) and malignant (red table) brain and central nervous system (CNS) cancers in Northern Ireland.

NUMBER OF CASES PER YEAR (2010-2014)			NUMBER OF DEATHS PER YEAR (2010-2014)		
Male	Female	Both sexes	Male	Female	Both sexes
93	140	234	13	11	24
FIVE-YEAR SURVIVAL (2005-2009)			22-YEAR PREVALENCE (2014)		
Male	Female	Both sexes	Male	Female	Both sexes
84.0%	89.1%	87.0%	1,184	1,697	2,881

NUMBER OF CASES PER YEAR (2010-2014)			NUMBER OF DEATHS PER YEAR (2010-2014)		
Male	Female	Both sexes	Male	Female	Both sexes
84	56	140	68	43	111
FIVE-YEAR SURVIVAL (2005-2009)			22-YEAR PREVALENCE (2014)		
Male	Female	Both sexes	Male	Female	Both sexes
23.7%	24.6%	24.2%	310	260	570

INCIDENCE

A total of 918 males and 1,330 females were diagnosed with non-malignant brain tumours between 2005 and 2014. This compares with a total of 819 males and 542 females who were diagnosed with malignant brain tumours in the same time period. The probability of developing a non-malignant brain tumour before the age of 75 are 1 in 138 for a male and 1 in 105 for a female whilst the probability of developing a malignant brain tumour before the age of 75 are 1 in 139 for a male and 1 in 232 for a female. Brain cancer of any variety is therefore *rare* in the general population.

Incidence trends

Table 1: Incidence of non-malignant brain and CNS cancer by sex and year of diagnosis: 2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Male	52	73	66	89	87	85	76	55	82	79
Female	78	82	113	137	117	122	112	109	135	113
Both sexes	130	155	179	226	204	207	188	164	217	192

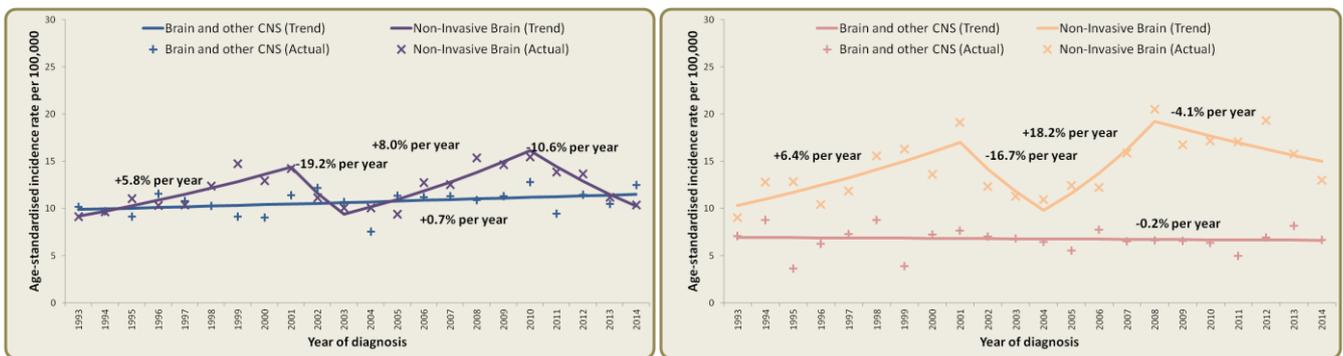
Table 2: Incidence of malignant brain and CNS cancer by sex and year of diagnosis: 2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Male	78	81	83	77	80	91	72	82	80	95
Female	44	60	53	52	54	52	42	58	70	57
Both sexes	122	141	136	129	134	143	114	140	150	152

Non-malignant cancer of the brain and nervous system is more common in females than males but the trend is reversed for malignant brain tumours with males more commonly affected. The reasons for such differences are complex and still poorly understood but it is possible that variations in hormone levels account for the higher rate of non-malignant brain tumours such as meningioma in women. Non-malignant cancers of the brain are more common than malignant ones in both genders.

After accounting for the increasing number of older people in the NI population, incidence of invasive brain cancer has remained stable in men and women; however, there have been changes in the incidence of non-invasive brain cancer in both genders during the previous twenty-two year period (Figure 1).

Figure 1: Male (left) and female (right) 20-year trend in both types of brain cancer incidence rates: 1993-2014



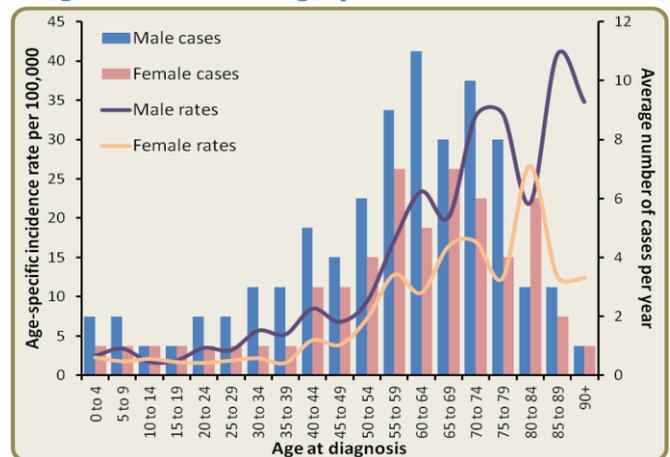
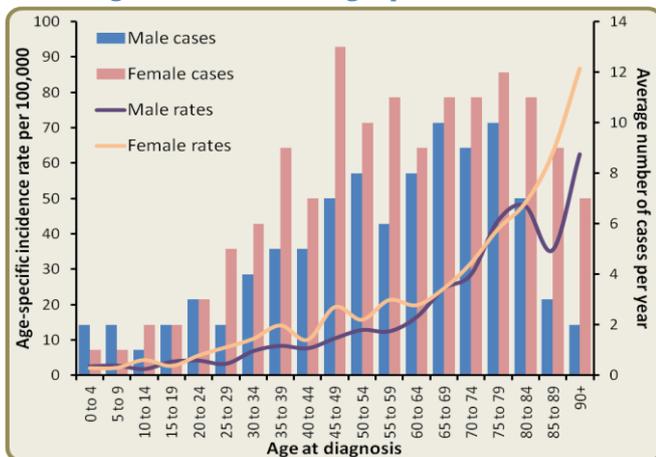
Incidence and age

Incidence of both types of brain cancer increases with age. Female incidence rates are consistently higher than male incidence rates for non-malignant brain and central nervous system cancer at all ages with peak incidence rates for both genders seen in the later years of life. Male incidence rates are consistently higher than female incidence rates for malignant cancer of the brain and nervous system between the ages of 35 and 79. Thereafter, a greater number of women are diagnosed due to differences in life expectancy between genders. Data is visually represented below (non-malignant incidence by age and sex on left and malignant incidence by age and sex on right).

Figure 2: Incidence of brain and CNS cancer by age, sex, and type: 2010-2014:

Non-malignant brain cancer graph

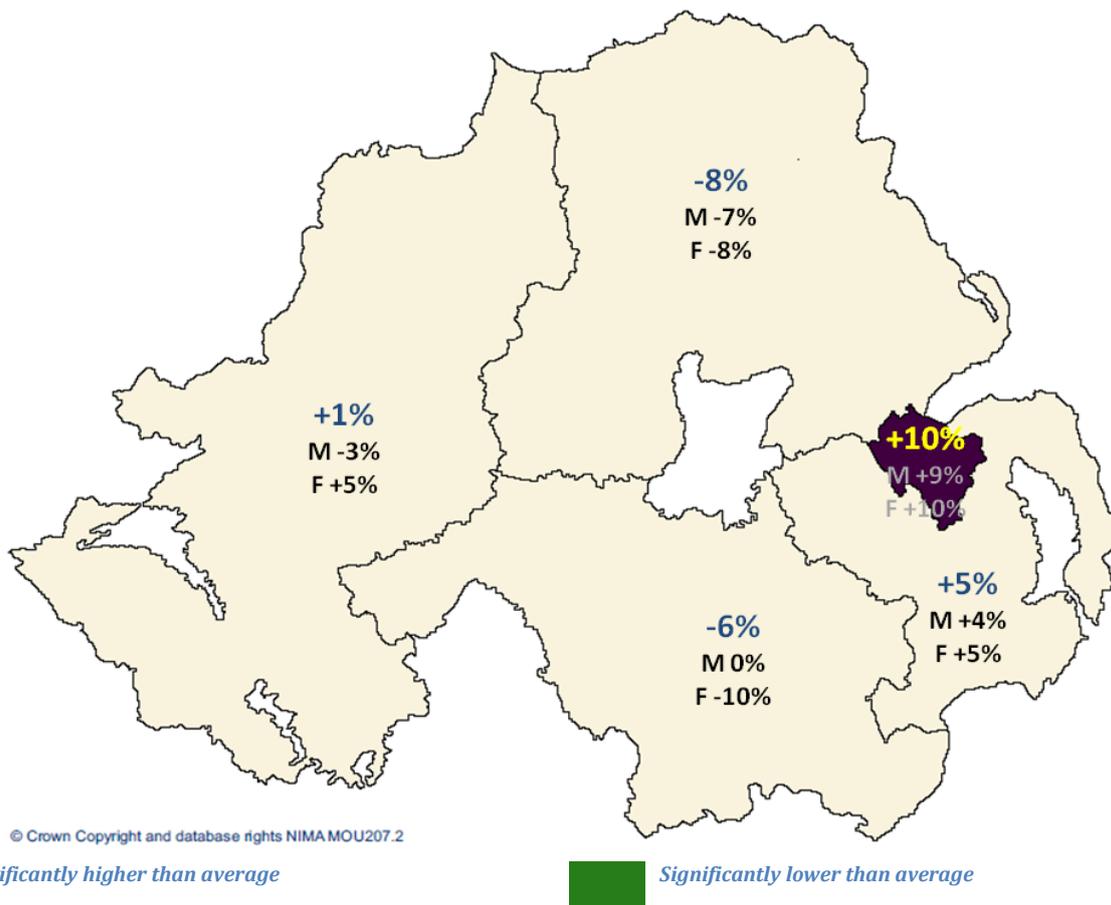
Malignant brain cancer graph



Incidence by Trust area

Non-malignant brain cancer incidence rates in 2005-2014 among people living within the Belfast health and social care trust (HSCT) area were 10% higher than the NI average. There were no statistically different differences in the incidence rate of malignant brain and central nervous system cancers in any trust area when compared with the NI average.

Figure 3: Non-malignant brain and nervous system cancer incidence rates compared to the NI average by health and social care trust of residence: 2005-2014



Incidence by deprivation

Incidence of both types of brain and central nervous system cancer were not strongly associated with social deprivation although some inter-quintile differences do exist. Patients in quintile 3 have a lower than average incidence of non-malignant brain whilst patients in quintile 2 (particularly women) have a lower than average incidence of malignant brain and other central nervous system cancer when compared to the NI average.

SURVIVAL

Patients diagnosed with a non-malignant cancer of the brain or nervous system are more likely to survive longer than patients diagnosed with a malignant cancer of the brain or nervous system. Females are likely to survive longer than males regardless of which type of brain or nervous system cancer they have been diagnosed with.

Table 3: Five-year non-malignant brain and CNS cancer survival by time and sex

Time since diagnosis	Diagnosed 2005-2009		
	Male	Female	Both sexes
6 months	91.4%	94.4%	93.3%
1 year	89.6%	93.1.0%	91.7%
5 years	84.0%	89.1%	87.0%

Table 4: Five-year malignant brain and CNS cancer survival by time and sex

Time since diagnosis	Diagnosed 2005-2009		
	Male	Female	Both sexes
6 months	61.1%	63.7%	62.3%
1 year	44.8%	46.2%	45.5%
5 years	23.7%	24.6%	24.2%

Survival Trends

Five-year survival for non-malignant brain and nervous system cancer has improved from the 1993-1999 diagnosis period to the 2005-2009 diagnosis period; increasing for men from 79.3% to 84.0%, and for women from 78.9% to 89.1%. Similar improvements in five-year survival rates are seen in malignant cancers of the brain and nervous system. In 1993-1999, 16.3% of men diagnosed with malignant brain cancer survived to five years after diagnosis. This increased to 23.7% of men in 2005-2009. Female survival rates from malignant cancer followed a similar trend but to a lesser extent than men. In 2005-2009 about 1 in 4 patients diagnosed with malignant brain cancer survived for five years after diagnosis.

Table 5: Five-year non-malignant brain and CNS cancer survival by period of diagnosis and sex

Period of diagnosis	Male	Female	Both sexes
1993-1999	79.3%	78.9%	79.1%
2000-2004	86.9%	86.2%	86.3%
2005-2009	84.0%	89.1%	87.0%

Table 6: Five-year malignant brain and CNS cancer survival by period of diagnosis and sex

Period of diagnosis	Male	Female	Both sexes
1993-1999	16.3%	22.0%	18.8%
2000-2004	21.6%	24.1%	22.9%
2005-2009	23.7%	24.6%	24.2%

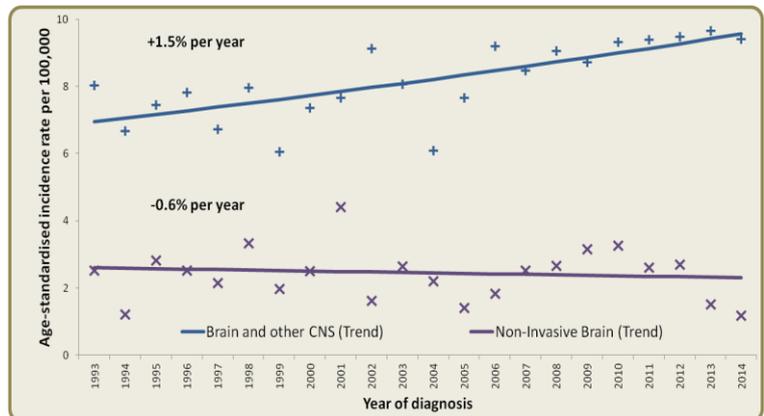
MORTALITY

In 2010-2014 there were an average of 13 male and 11 female deaths from non-malignant brain and nervous system cancer each year. This contrasts with malignant brain cancer deaths during the same period where an average of 68 males and 43 females died each year.

Mortality trends

The number of non-malignant brain cancer deaths has decreased from a total of 25 (13 in men and 12 in women) in 2004 to 18 (8 in men and 10 in women) in 2014. Numbers of malignant brain cancer deaths has increased from a total of 74 in 2004 (41 in men and 33 in women) to 111 (7069 in men and 44 in women) in 2013. When adjusted for age and population change, mortality rates have remained stable in women whilst for men invasive brain mortality rates have increased by 1.5% each year since 1993 (figure 4).

Figure 4: Trends in male brain cancer mortality rates



PREVALENCE

At the end of 2014 there were 3,451 people living in Northern Ireland who had been diagnosed with a form of brain or nervous system cancer. Of these people, 2,881 were living with non-malignant cancer whilst 570 were living with malignant cancer. Over one third of all adults living with a diagnosis of brain cancer in Northern Ireland are under the age of 50 and 8.0% had been diagnosed the previous year.

Table 7: Number of people of both genders living with brain and CNS cancer at the end of 2014 who were diagnosed from 1993-2014 divided into non-malignant and malignant subtypes

Type	Age	Time since diagnosis				22-year Prevalence
		0-1 year	1-5 years	5-10 years	10-21 years	
Non-malignant	0-69	122	540	557	823	2042
	70+	57	240	196	346	839
	All ages	179	780	753	1169	2881
Malignant	0-69	79	125	121	185	510
	70+	17	13	11	19	60
	All ages	96	138	132	204	570

FURTHER INFORMATION

Further data is available from the Northern Ireland Cancer Registry web site: www.qub.ac.uk/nicr

NI Cancer Registry

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