

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

NUMBER OF CASES PER YEAR (2008-2012)			NUMBER OF DEATHS PER YEAR (2009-2013)		
Male	Female	Both sexes	Male	Female	Both sexes
78	119	198	15	12	27
FIVE-YEAR SURVIVAL (2003-2007)			21-YEAR PREVALENCE (2012)		
Male	Female	Both sexes	Male	Female	Both sexes
75.5%	77.9%	77.1%	821	1,220	2,041

NUMBER OF CASES PER YEAR (2009-2013)			NUMBER OF DEATHS PER YEAR (2009-2013)		
Male	Female	Both sexes	Male	Female	Both sexes
81	55	136	66	43	109
FIVE-YEAR SURVIVAL (2004-2008)			21-YEAR PREVALENCE (2013)		
Male	Female	Both sexes	Male	Female	Both sexes
24.1%	25.7%	24.8%	302	267	569

INCIDENCE

A total of 692 males and 1,023 females were diagnosed with non-malignant brain tumours between 2003 and 2012. This compares with a total of 777 males and 534 females who were diagnosed with malignant brain tumours in a similar time period. The probability of developing a non-malignant brain tumour before the age of 75 are 1 in 159 for a male and 1 in 125 for a female whilst the probability of developing a malignant brain tumour before the age of 75 are 1 in 142 for a male and 1 in 235 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: 2003-2012

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Male	51	58	52	73	66	89	87	85	76	55
Female	74	79	78	82	113	137	117	122	112	109
Both sexes	125	137	130	155	179	226	204	207	188	164

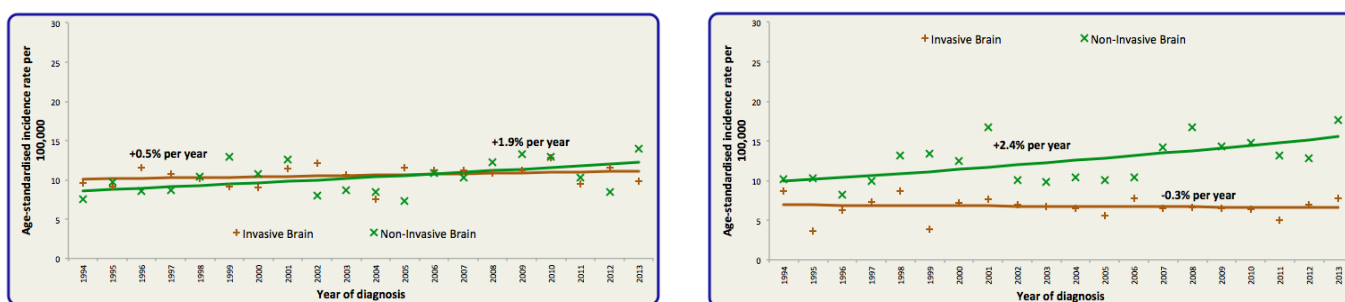
Table 2: Incidence of malignant brain and CNS cancer by sex and year of diagnosis: 2004-2013

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Male	53	79	81	83	77	80	91	73	83	77
Female	50	44	60	53	52	54	52	43	59	67
Both sexes	103	123	141	136	129	134	143	116	142	144

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-year period. Incidence of non-invasive brain cancer has increased by almost 2% each year in men and almost 2.5% each year in women.

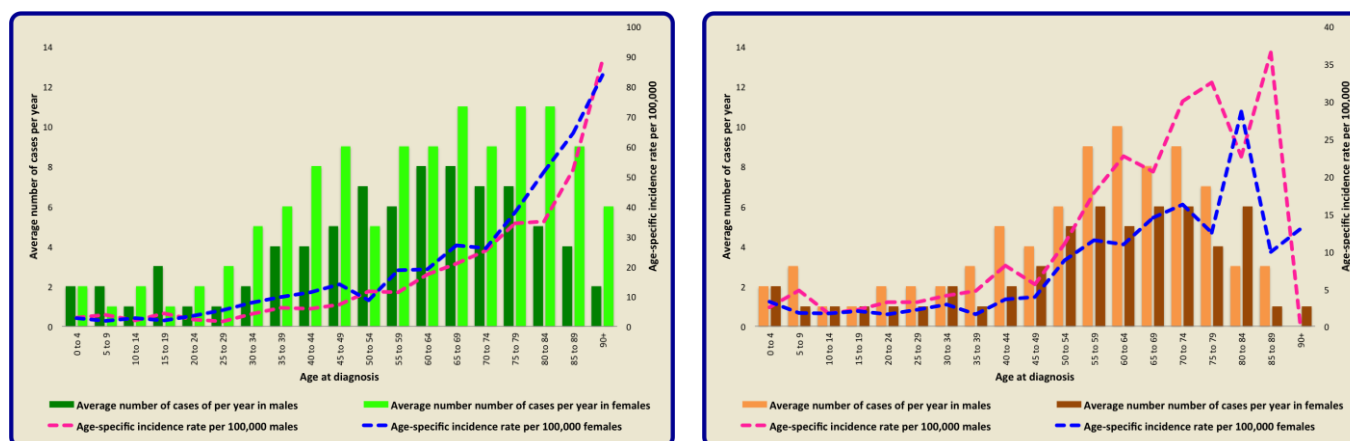
Figure 1: Male (left) and female (right) 20-year trend in both types of brain cancer incidence rates: 1993-2013



Incidence and age

Incidence of both types of brain cancer increases with age. Females are consistently more likely than males to suffer from 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. Males are consistently more likely to develop 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 (note the absence of any data for males aged 90 or above). Data is visually represented below (non-malignant incidence by age and sex on left and malignant incidence by age and sex on right).

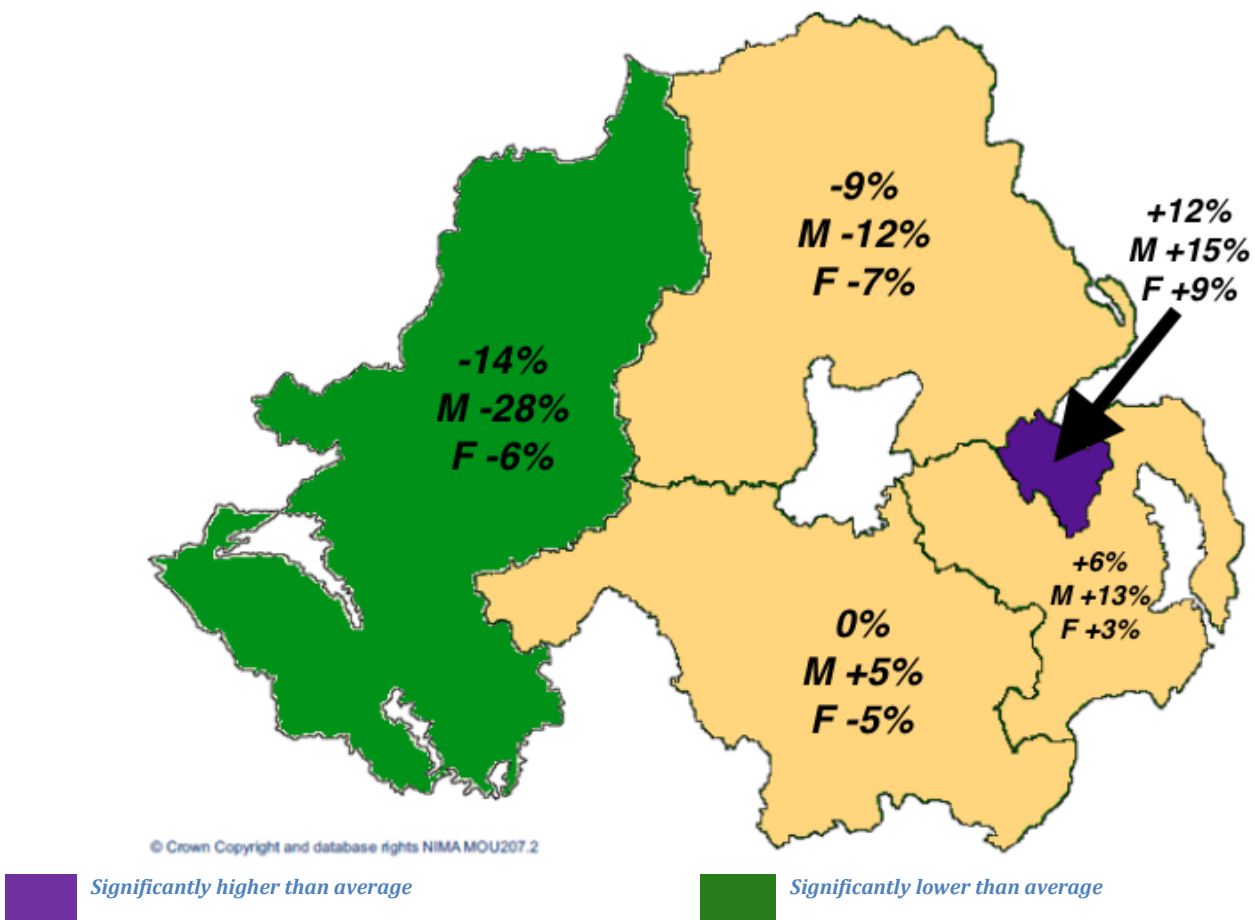
Figure 2: Incidence of brain and CNS cancer by age, sex, and type: 2009-2013: non-malignant brain cancer graph on left and malignant brain cancer graph on right



Incidence by Trust area

Non-malignant brain and central nervous system cancer incidence rates in 2003-2012 among people living within the Belfast health and social care trust (HSCT) area were 12% higher than the NI average. However, they were 14% lower than the NI average among people living in the Western Trust area. 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: 2003-2012



Incidence by deprivation

Incidences 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 and nervous system cancer whilst patients in quintile 2 (particularly females) have a lower than average incidence of malignant brain and nervous system cancer when compared to the NI average.

- Patients in quintile 3 are 12% less likely to develop non-malignant brain cancer
- Patients in quintile 2 are 15% less likely to develop malignant brain cancer

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 2003-2007		
	Male	Female	Both sexes
6 months	84.2%	90.2%	87.9%
1 year	83.0%	87.0%	85.5%
5 years	75.5%	77.9%	77.1%

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

Time since diagnosis	Diagnosed 2004-2008		
	Male	Female	Both sexes
6 months	59.9%	62.4%	61.2%
1 year	43.9%	43.9%	44.1%
5 years	24.1%	25.7%	24.8%

Survival Trends

Five-year survival for non-malignant brain and nervous system cancer has improved from the 1993-1997 diagnosis period to the 2003-2007 diagnosis period; increasing for men from 66.4% to 75.5%, and for women from 60.5% to 77.9%. Similar improvements in five-year survival rates are seen in malignant cancers of the brain and nervous system. In 1993-1998 a mere 15% of men diagnosed with malignant brain cancer survived to five years after diagnosis. This increased to 24.1% of men in 2004-2008. Female survival rates from malignant cancer followed a similar trend but to a lesser extent than men. In 2004-2008 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
1993-1997	66.4%	60.5%	64.5%
1998-2002	70.8%	72.7%	72.4%
2003-2007	75.5%	77.9%	77.1%

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

Period of diagnosis	Male	Female	Both sexes
1993-1998	15.0%	22.0%	18.3%
1999-2003	22.5%	25.8%	24.0%
2004-2008	24.1%	25.7%	24.8%

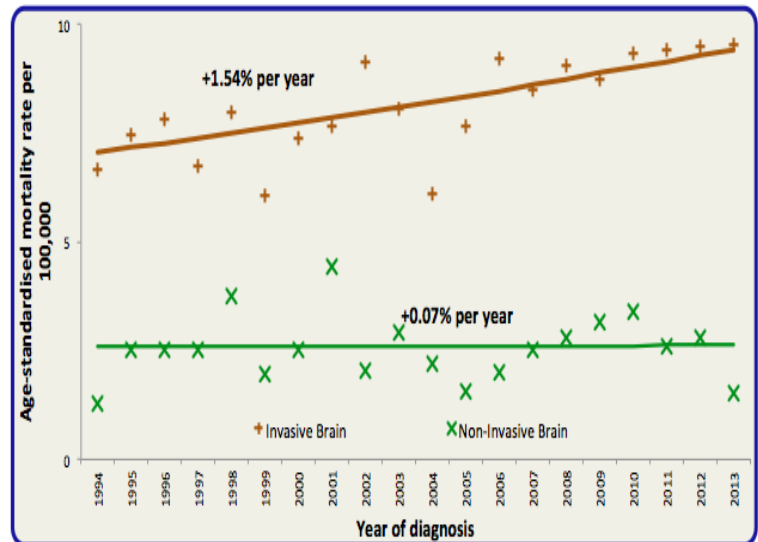
MORTALITY

In 2009-2013 there were an average of 15 male and 12 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 66 males and 43 females died each year.

Mortality trends

The number of non-malignant brain cancer deaths has decreased from a total of 25 (14 in men and 11 in women) in 2003 to 22 (10 in men and 12 in women) in 2013. Numbers of malignant brain cancer deaths has increased from a total of 86 in 2003 (51 in men and 35 in women) to 113 (69 in men and 44 in women) in 2013. When adjusted for age and population change, mortality rates have remained stable in women whilst invasive brain mortality rates have increased by 1.5% each year since 1994.

Figure 4: Trends in male brain cancer mortality rates



PREVALENCE

At the end of 2013 there were 2,610 people living in Northern Ireland who had been diagnosed with a form of brain or nervous system cancer. Of these people, 2,041 were living with non-malignant cancer whilst 569 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 9.1% had been diagnosed the previous year.

Table 7: Number of people of both genders living with brain and CNS cancer at the end of 2013 who were diagnosed from 1993-2013 divided into non-malignant and malignant subtypes

Type	Age	Time since diagnosis				21-year Prevalence
		0-1 year	1-5 years	5-10 years	10-21 years	
Non-malignant	0-69	82	442	362	560	1446
	70+	61	177	149	208	595
	All ages	143	619	511	768	2041
Malignant	0-69	76	119	125	186	506
	70+	18	11	10	24	63
	All ages	94	130	135	210	569

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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