

Brain Cancer Survival in Canada: An Analysis of Canadian Cancer Registry Data by Province for Selected Histology, 1992-2008

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Objective

- The objective is to investigate patterns of survival among Canadian patients with malignant brain tumors by provinces, adjusting for age at diagnosis and sex for selected histology types.
- This work will address the needs of the neuro-oncology and brain tumour survivor community in Canada.

Cohort Inclusion/Exclusion Criteria

Brain Tumor cases

(ICD-O-2/3 Topography code C700-C729, C751-C755, C759)

Diagnosed between 1992-2008



Malignant

(ICD-O-2/3 Behavior code 3)



No previous cancer



Final cohort N=38095

Territories and Provinces with Cancer Registry Information



Statistical Analysis

- Descriptive statistics for age groups, sex, provinces and selected histology types
- Cox Proportional Hazard model for selected histology types to obtain age- (and sex-) adjusted hazard ratio estimates for provinces.
- Kaplan-Meier estimates to provide 1-yr survival rates by histology types.

Descriptive Statistics

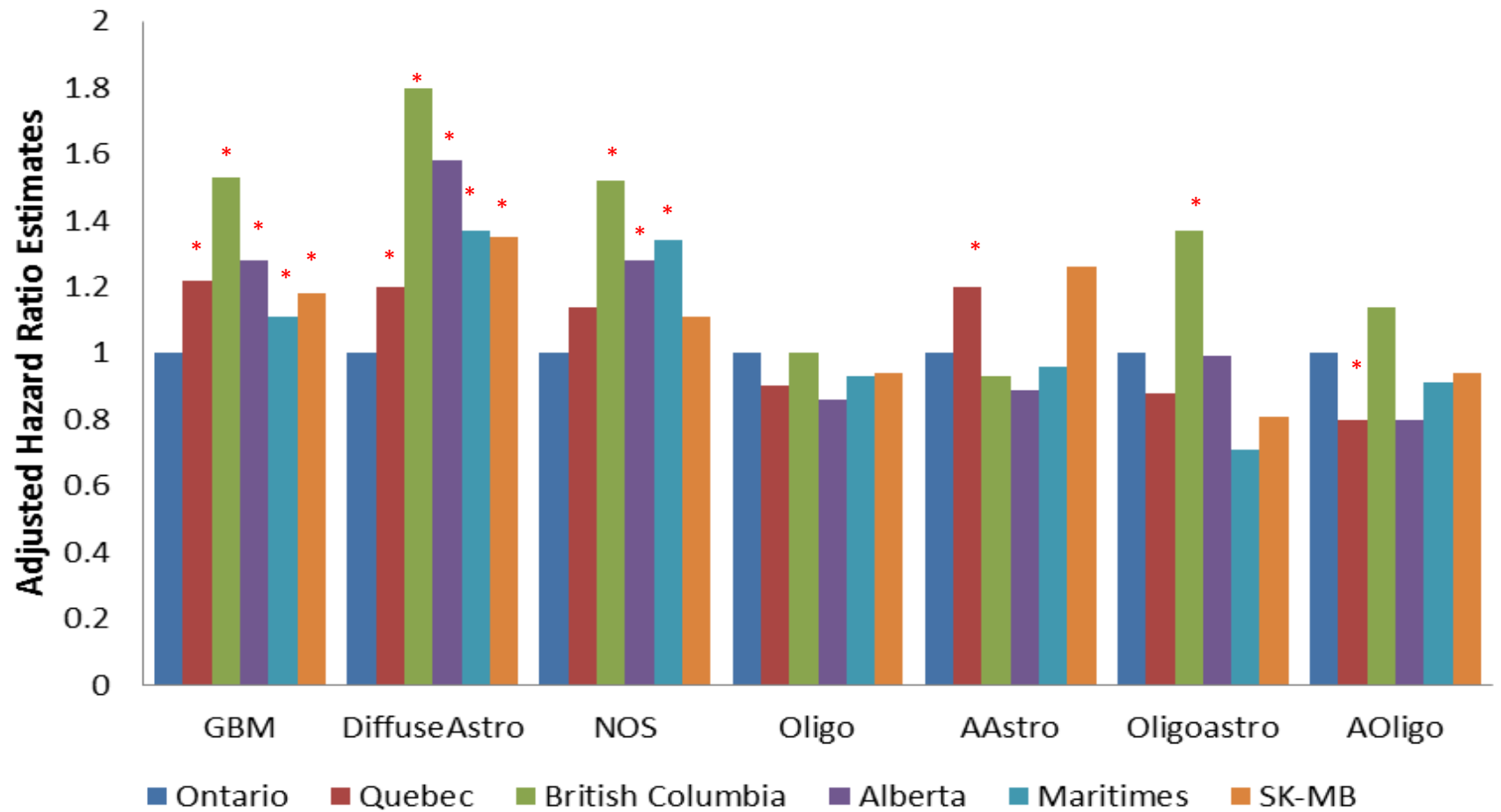
Sex	N (%)	Death (%)
Male	21260 (55.8%)	16140 (56.7%)
Female	16835 (44.2%)	12325 (43.3%)
Age		
≤ 20	4080 (10.7%)	1315 (4.6%)
21-44	7370 (19.4%)	3875 (13.6%)
45-64	12660 (33.2%)	10240 (36.0%)
≥ 65	13985 (36.7%)	13030 (45.8%)

Frequency data shown here and later have been “random rounded” in accordance with Statistics Canada requirements.

Descriptive Statistics

Provinces	N (%)	Death (%)
Ontario	14700 (38.6%)	10265 (36.1%)
Quebec	9920 (26.1%)	7570 (26.7%)
British Columbia	4705 (12.4%)	3775 (13.3%)
Alberta	3210 (8.4%)	2415 (8.5%)
Maritimes	2950 (7.8%)	2340 (8.2%)
Manitoba-Saskatchewan	2550 (6.7%)	2060 (7.2%)

Territories data is not shown



N	14120	5680	1845	1715	1100	1030	885
Death (%)	13340 (94.5)	4475 (78.8)	1245 (67.5)	785 (45.8)	900 (81.8)	590 (57.3)	580 (65.5)
1 year KM survival (%) (95% CI)	26.5 (25.7 – 27.2)	48.9 (47.6 – 50.2)	49.5 (47.1 – 51.8)	87.5 (85.8 – 89.0)	47.9 (44.9 – 50.9)	78.0 (75.3 – 80.4)	76.5 (73.6 – 79.12)

Adjusted Hazard Ratio Estimates

	Glioblastoma	Diffuse astrocytoma	Oligoastrocytic tumors	Anaplastic oligodendroglioma
Ontario	1.00	1.00	1.00	1.00
Quebec	1.22*	1.20*	0.88	0.80*
British Columbia	1.53*	1.80*	1.37*	1.14
Alberta	1.28*	1.58*	0.99	0.80
Maritimes	1.11*	1.37*	0.71	0.91
SK-MB	1.18*	1.35*	0.81	0.94

Adjusted Hazard Ratio Estimates (continue)

	Glioma, NOS	Oligodendroglioma	Anaplastic astrocytoma
Ontario	1.00	1.00	1.00
Quebec	1.14	0.90	1.20*
British Columbia	1.52*	1.00	0.93
Alberta	1.28*	1.58*	0.99
Maritimes	1.34*	0.93	0.96
SK-MB	1.11	0.94	1.26

Discussion and Conclusions

- Histology types with better prognosis, such as Oligoastrocytic tumors, Oligodendroglioma and Anaplastic astrocytoma, did not vary much across regions.
- Ontario patients typically have a better survival outlook and BC patients almost always have the worst survival experience, among all Canadian provinces.
- Access to treatment, population structure and health care system difference may explain these observations.