

Non-malignant Brain Tumour

Brain Health in Ontario Project



ONTARIO
BRAIN
INSTITUTE

INSTITUT
ONTARIEN
DU CERVEAU

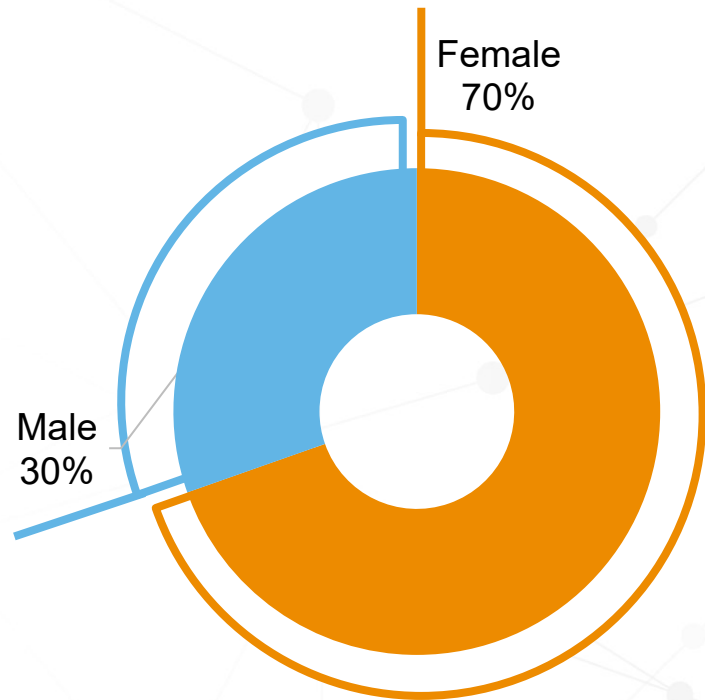
WELCOME TO BRAIN CENTRAL



Non-malignant Brain Tumour

- A brain tumour is a mass of abnormal cells in or around the brain. The cause of most brain tumours is unknown. Several factors may be associated with an increased risk of developing a brain tumour, including radiation exposure, a family history of brain tumours, and advancing age.
- Non-malignant brain tumours grow slowly and do not invade surrounding tissues.
- While non-malignant brain tumours are noncancerous (benign), their impact on brain function is nonetheless serious and may cause significant neurological symptoms, including behavioural and cognitive changes, dizziness, headaches, seizures, paralysis and even death.
- Although some tumours can be surgically removed, surgery is not always an option due to the location of the tumour in the brain. In many cases, radiation is used to treat non-malignant brain tumours.

Demographics: Sex distribution

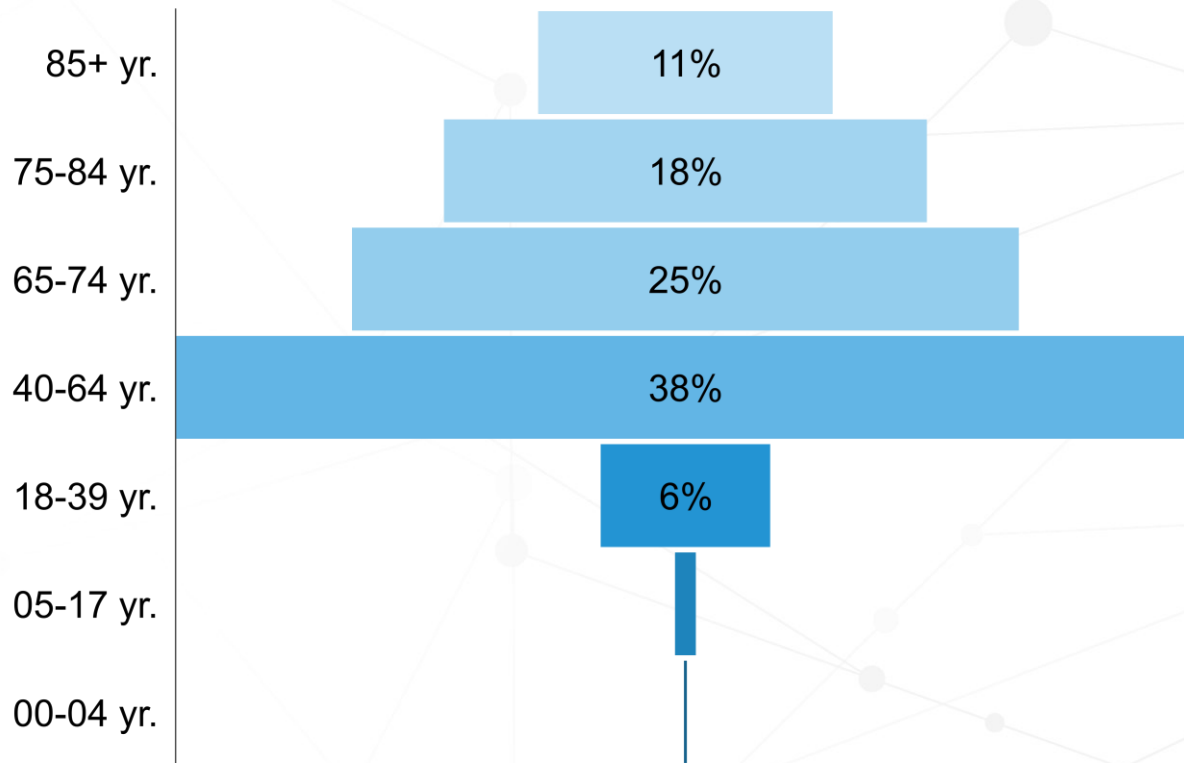


On April 1, 2019 females accounted for 70% of the 9,798 Ontarians identified with a non-malignant brain tumour.

*Note, years represent the fiscal year. For example, 2019 is from April 1, 2019 to March 31, 2020.



Demographics: Age distribution

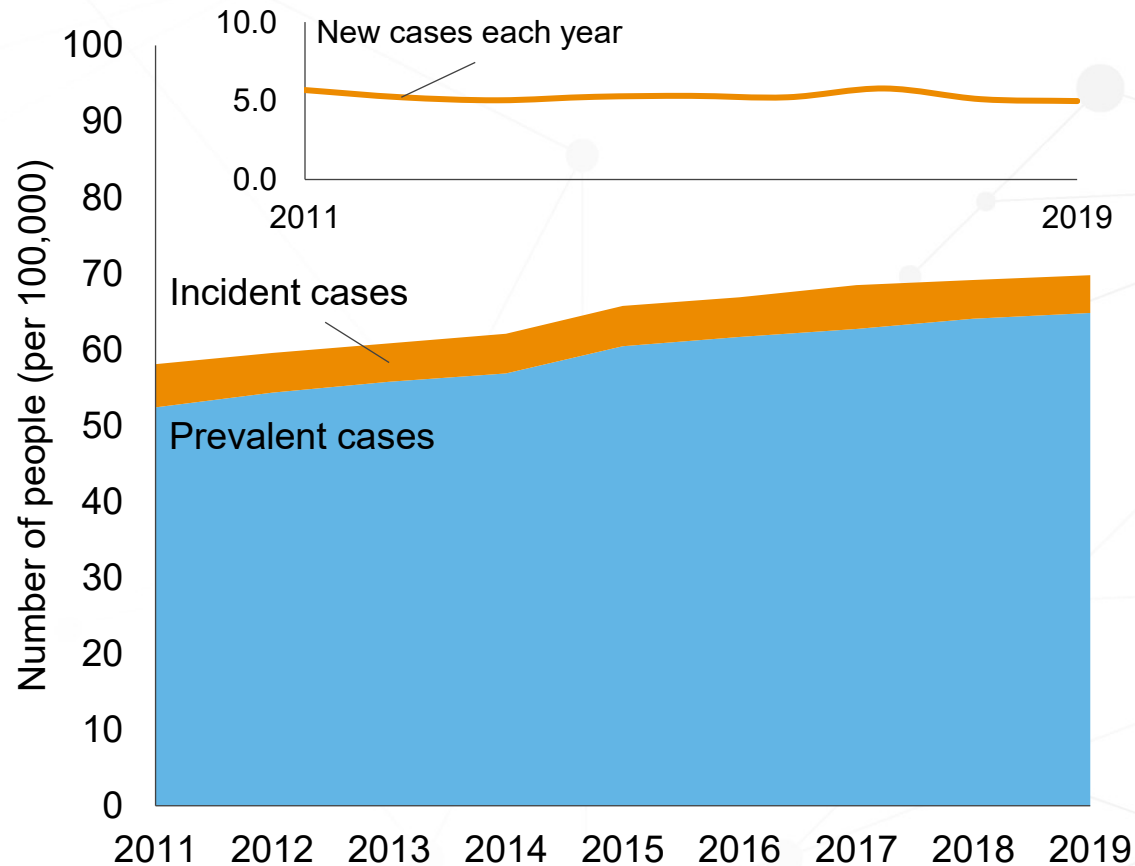


On April 1, 2019 the majority of people with a non-malignant brain tumour were between the ages of 40 and 64 years, with 54% of people being over the age of 65. The mean age of a person with a non-malignant brain tumour was 65 ± 16 years.

*Note, years represent the fiscal year. For example, 2019 is from April 1, 2019 to March 31, 2020.



Prevalence and incidence over time



Incidence is the number of people newly diagnosed with a disorder within a given time period while prevalence is the number of people existing with the disorder at a given time.

The incidence and prevalence of Ontarians with a non-malignant brain tumour are depicted in orange and blue, respectively. Between 2011 and 2019, incidence changed from 5.68 to 4.98 per 100,000 people and prevalence increased from 52.38 to 64.79 per 100,000 people.

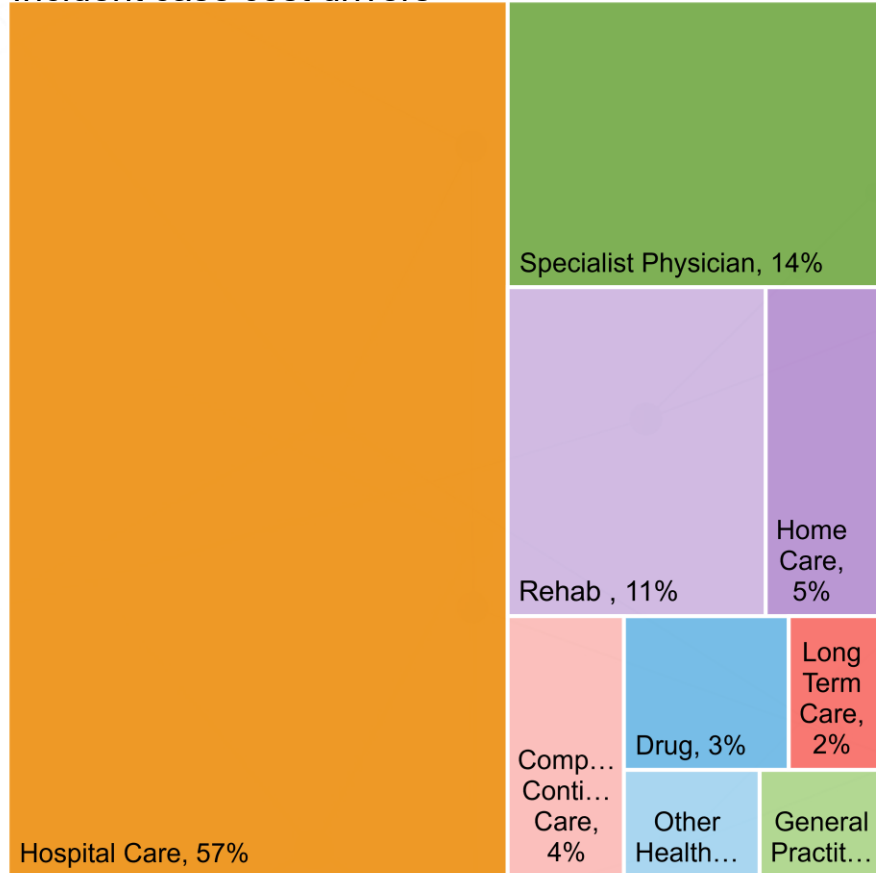
In total, the number of people with a non-malignant brain tumour increased from 6,928 in 2011 to 9,798 people in 2019.

*Note, years represent the fiscal year. For example, 2019 is from April 1, 2019 to March 31, 2020.

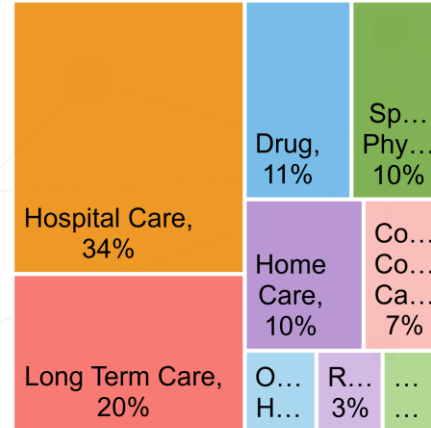


Cost Drivers: Incident vs. prevalent

Incident case cost drivers



Prevalent case cost drivers



- General Practitioner
- Specialist Physician
- Other Health Professional
- Hospital Care
- Drug
- Rehab
- Home Care
- Complex Continuing Care
- Long Term Care

*Cost drivers examined include: Hospital care, home care, general practitioner, specialist physician, other health professional, drug cost, rehab, complex continuing care, and long term care.



Cost Drivers: Incident vs. prevalent

In 2019, the average total cost to the health system for an Ontarian with a non-malignant brain tumour was 3.9X more for an incident case than a prevalent case. Cost relationship is indicated by total box size. The largest cost driver of incident cases was attributable to hospital care (57%), while hospital care (34%) and long term care (20%) had the highest costs for prevalent cases.

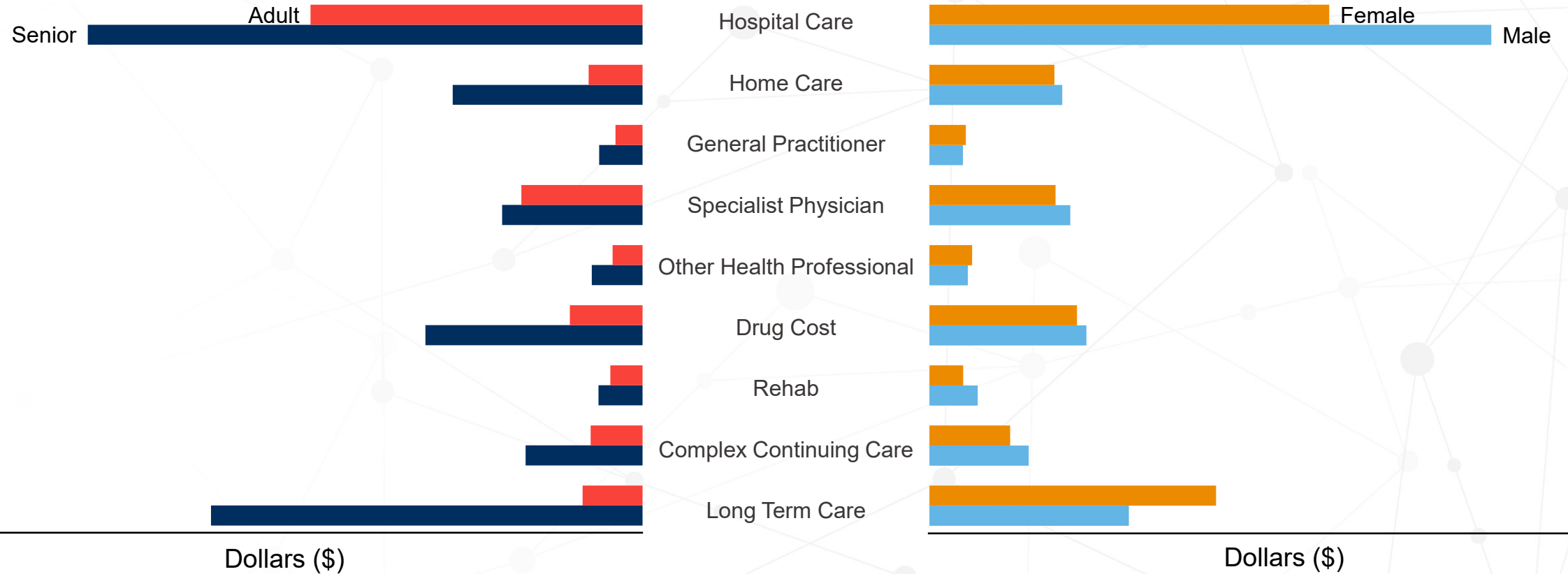
The average total health care costs for a person with a non-malignant brain tumour (prevalent case) for 1 year are 5X higher for pediatric individuals (0 – 17 years), 4X higher for adults (18 – 64 years) and 2X higher for seniors (65+ years) compared to the average Ontarian.

*Note, years represent the fiscal year. For example, 2019 is from April 1, 2019 to March 31, 2020.

*Cost drivers examined include: Hospital care, home care, general practitioner, specialist physician, other health professional, drug cost, rehab, complex continuing care, and long term care.



Cost Drivers vary by age and sex for prevalent cases



*Note, years represent the fiscal year. For example, 2019 is from April 1, 2019 to March 31, 2020.



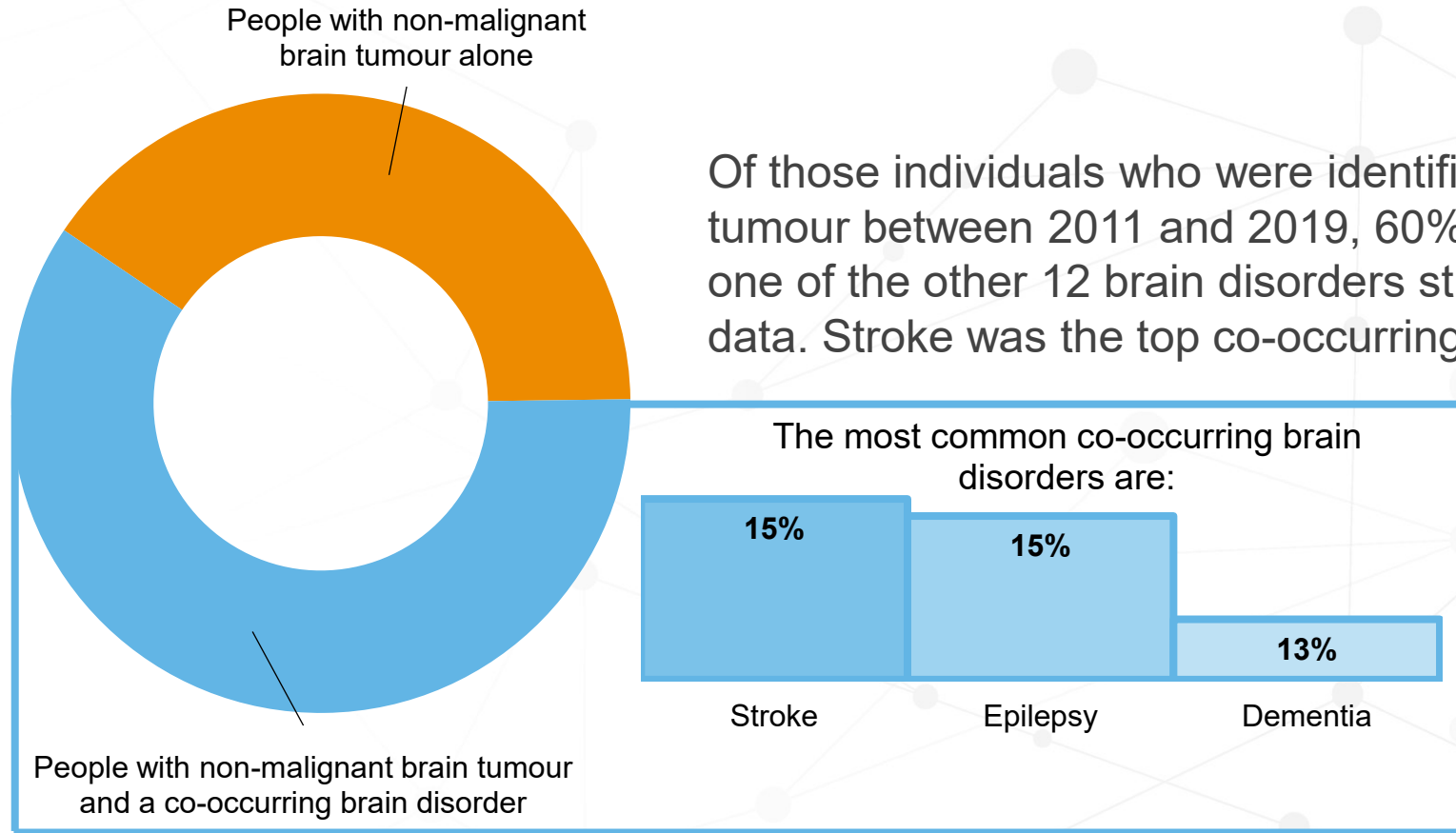
Cost Drivers vary by age and sex for prevalent cases

Overall, health care costs (in Canadian dollars, 2019) for people with a non-malignant brain tumour are higher for the senior (65+ years) population compared to adults (18 – 64 years) and are also higher for males than females. The cost drivers, those services that drive health care costs, vary depending on age and sex. Amongst adults, hospital care accounts for the largest cost driver at 43% of all costs, while hospital care and long term care drives costs in the senior population at 31% and 24% respectively. Hospital care is the largest cost driver in both females and males representing 31% and 40% of the health care costs respectively.

*Note, years represent the fiscal year. For example, 2019 is from April 1, 2019 to March 31, 2020.



Co-occurring brain disorders



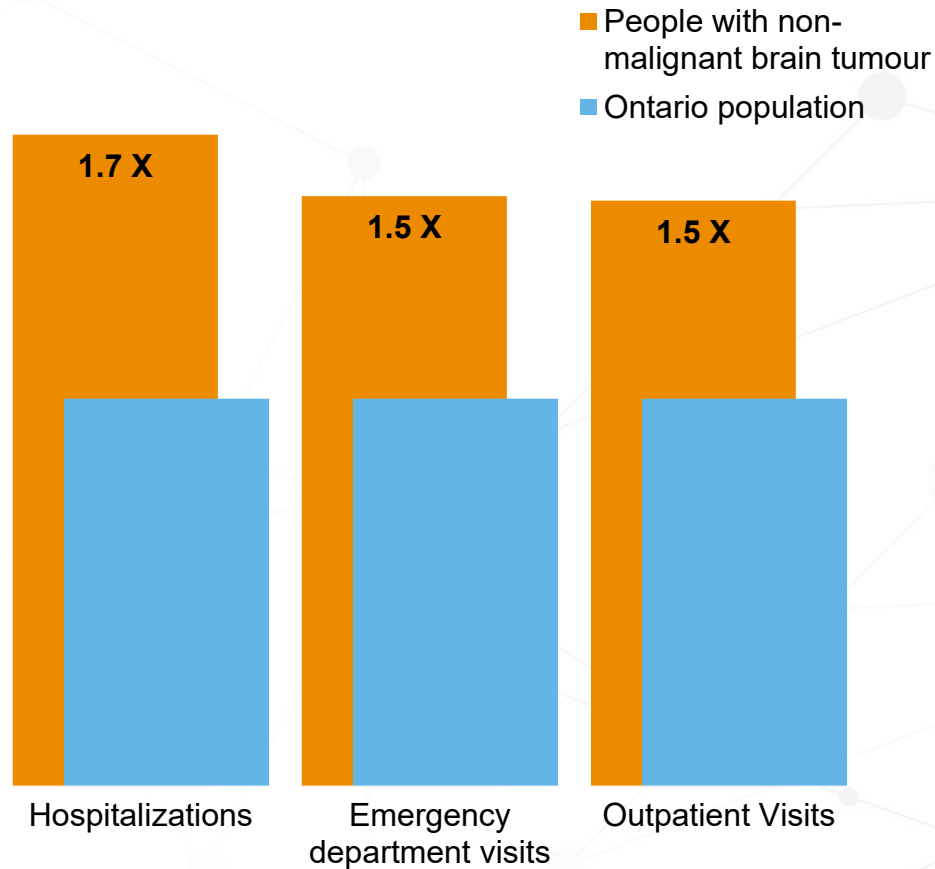
Of those individuals who were identified as having a non-malignant brain tumour between 2011 and 2019, 60% (blue) were also identified as having one of the other 12 brain disorders studied using health administrative data. Stroke was the top co-occurring brain disorder, with 15% of those with a non-malignant brain tumour also having had a stroke or transient ischemic attack, followed by 15% having epilepsy and 13% having dementia.

*Note, years represent the fiscal year. For example, 2019 is from April 1, 2019 to March 31, 2020.

*Note, other brain disorders studied include: non-malignant brain tumour, benign brain tumour, dementia (incl. Alzheimer's disease), epilepsy, motor neuron disease, multiple sclerosis, parkinsonism, schizophrenia, spina bifida, spinal cord injury, stroke, and traumatic brain injury & concussion.



Mental Health and addictions service use



Of those individuals who were identified as having a non-malignant brain tumour in 2019, their visit rates for mental health and addictions related services were between 1.5X to 1.7X greater than the general Ontario population, depending on visit type.

*Note, years represent the fiscal year. For example, 2019 is from April 1, 2019 to March 31, 2020.



Additional study information

Brain Disorder	Evidence Grade	Reference	Algorithm	ICD-09 (CM) codes	ICD-10 codes	OHIP Dx codes	ODB drugs name	OMHRS codes	Age Restriction
Brain tumor, benign	III	Clinical and health administrative data expertise	1 hospitalization record	225.0, 225.2	D32.0, D32.9, D33.0, D33.1, D33.2	N/A	N/A	N/A	None

Brain health in Ontario project main page: www.braininstitute.ca/BrainHealth
Methods and Considerations: www.braininstitute.ca/brainhealth-methodology



Publication information

Creative Commons License:

CC BY-NC-ND 4.0; <http://creativecommons.org/licenses/by-nc-nd/4.0/>



Suggested Citation:

Brain Health in Ontario: Forming an Integrated Approach. Ontario Brain Institute. February 2023.
www.braininstitute.ca/BrainHealth. License: CC BY-NC-ND 4.0; <http://creativecommons.org/licenses/by-nc-nd/4.0/>

