Ontario

Funding provided, in part,
by the Government of Ontario

Epilepsy

Brain Health in Ontario Project

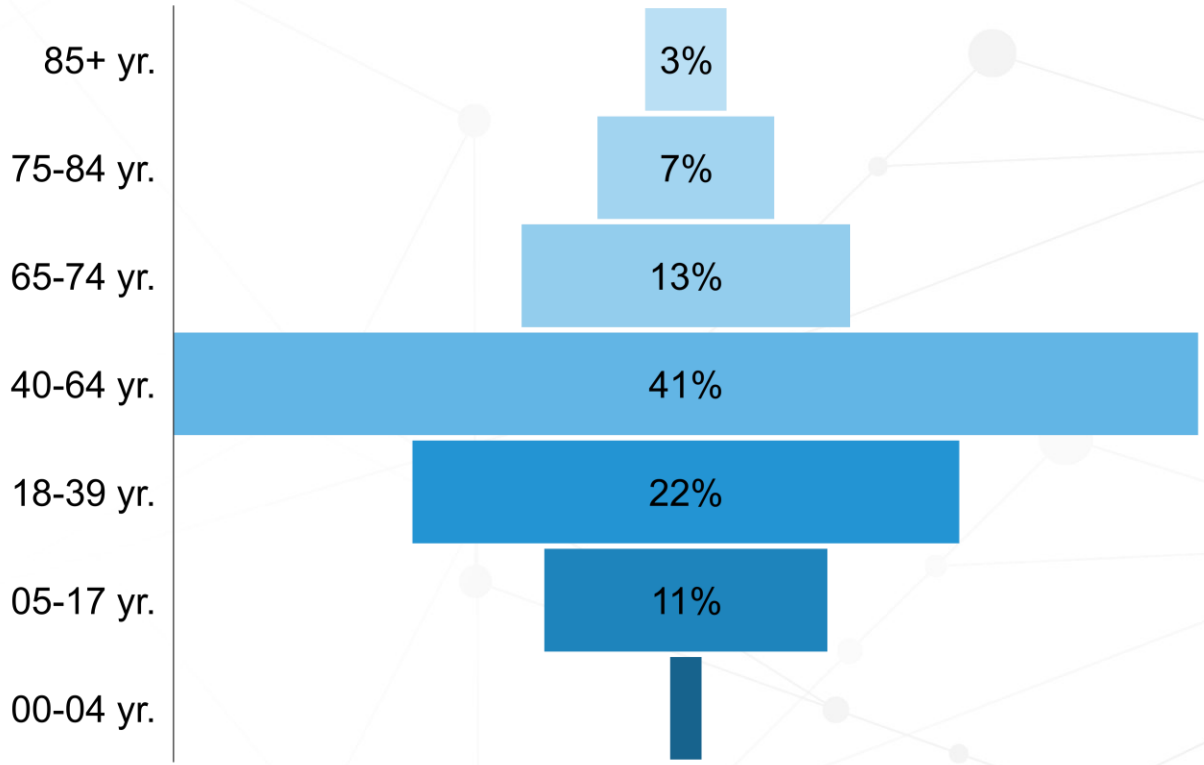
ONTARIO BRAIN INSTITUTE
INSTITUT ONTARIEN DU CERVEAU

WELCOME TO BRAIN CENTRAL

Epilepsy

- Epilepsy, sometimes referred to as a “seizure disorder,” is a common brain disorder characterized by recurrent seizures. A seizure is a burst of uncontrolled electrical activity in the brain which may cause a disruption in sensation or behaviour. Since many different brain regions may be involved in the development and spreading of seizures, the experience and clinical presentation of epilepsy can take various forms – from feeling anxiety to a loss of consciousness and severe muscle contractions (called tonic-clonic seizures).
  - Seizures can be provoked by a number of factors including chemical imbalance, head trauma, and illness, while other factors such as stress and fatigue can trigger seizures. Susceptibility to seizures varies between individuals and is also influenced by genetic and environmental factors.
  - While seizures are often unpredictable, some individuals retain awareness at the onset of, or even throughout, their seizure. Manifestations at the beginning of a seizure, such as a sense of déjà vu, a distortion of reality, a foul smell or a “rising sensation” (typically referred to as an aura) may precede the loss of awareness or consciousness.
  - In some cases, seizures can be lessened by drug, lifestyle and/or surgical intervention. However, some cases of epilepsy are uncontrollable, or “intractable.” Intractable epilepsy is severe and may result in physical harm to the body, compromised quality of life and shortened lifespan. Further, persons with intractable epilepsy may be limited in terms of suitable opportunities for education and employment, which undoubtedly impairs quality of life.
  - Severe seizures, especially those involving unusual movement or behaviour, can appear to be dramatic and may be frightening to some, adding to the misconception that epilepsy is an unpredictable and violent disorder. Additionally, the stigma associated with epilepsy often means that persons who experience seizures face consequences in daily life above and beyond those which are a direct result of the condition.

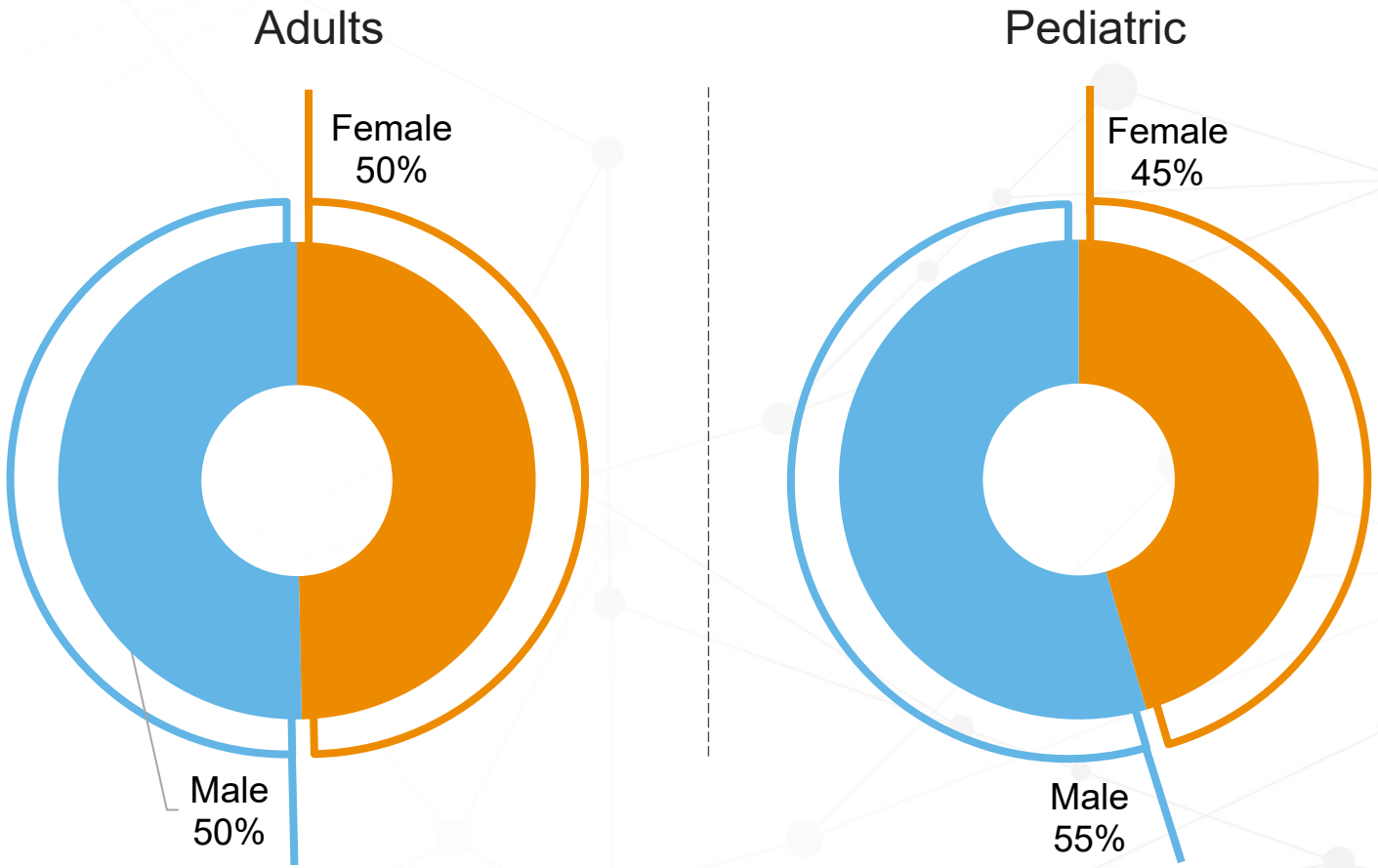
Demographics: Age distribution



On April 1, 2019 the majority of people with epilepsy were between the ages of 40 and 64 years, with 76% of people being under the age of 65. The mean age of a person with epilepsy was 48 ± 16 years.

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

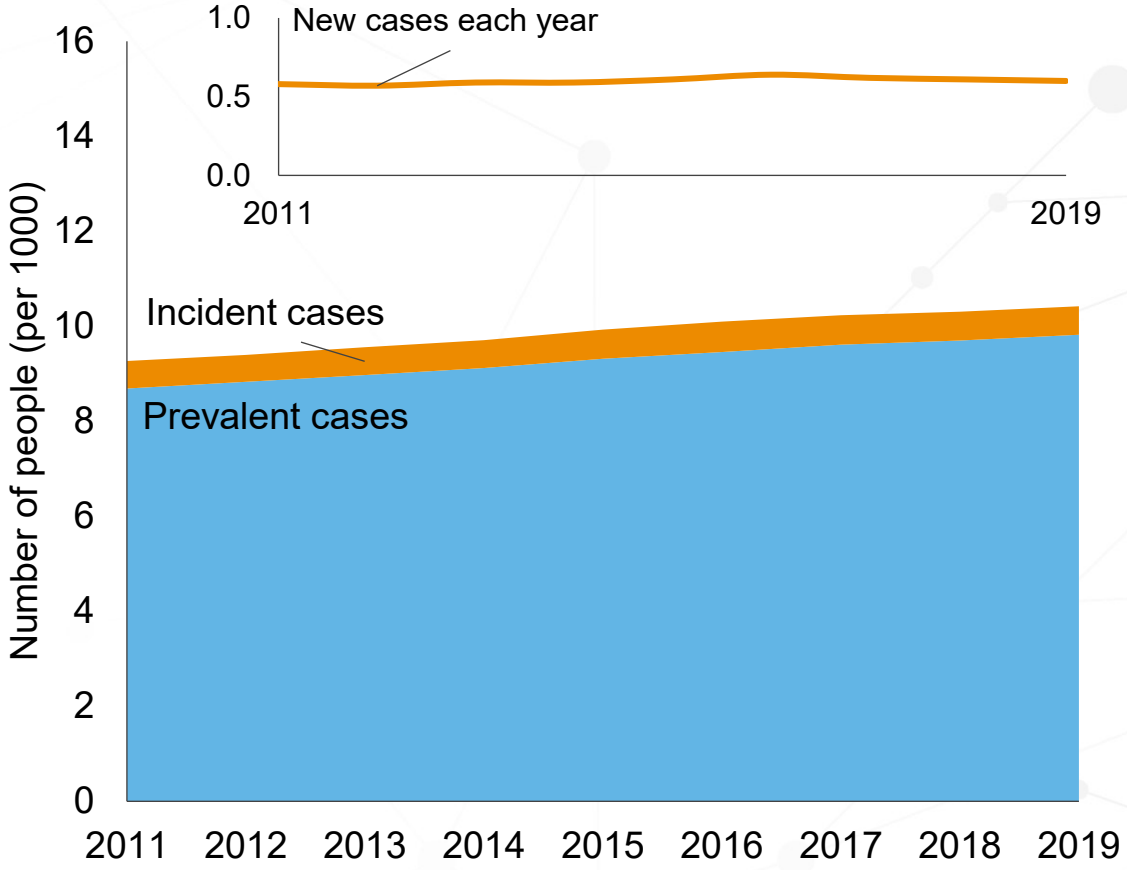
Demographics: Sex distribution



Sex distribution for epilepsy varies in pediatric and adult cases. In adults (18+), on April 1, 2019 males accounted for 50% of the 116,957 adult Ontarians identified with epilepsy. In pediatric individuals (0 – 17), on April 1, 2019 males accounted for 55% of the 17,051 pediatric Ontarians identified with epilepsy.

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

Prevalence and incidence over time: Adult



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 adult (18+) Ontarians with epilepsy are depicted in orange and blue, respectively. Between 2011 and 2019, incidence changed from 0.58 to 0.60 per 1000 people and prevalence increased from 8.69 to 9.82 per 1000 people.

The number of adults with epilepsy increased from 91,494 in 2011 to 116,957 people in 2019.

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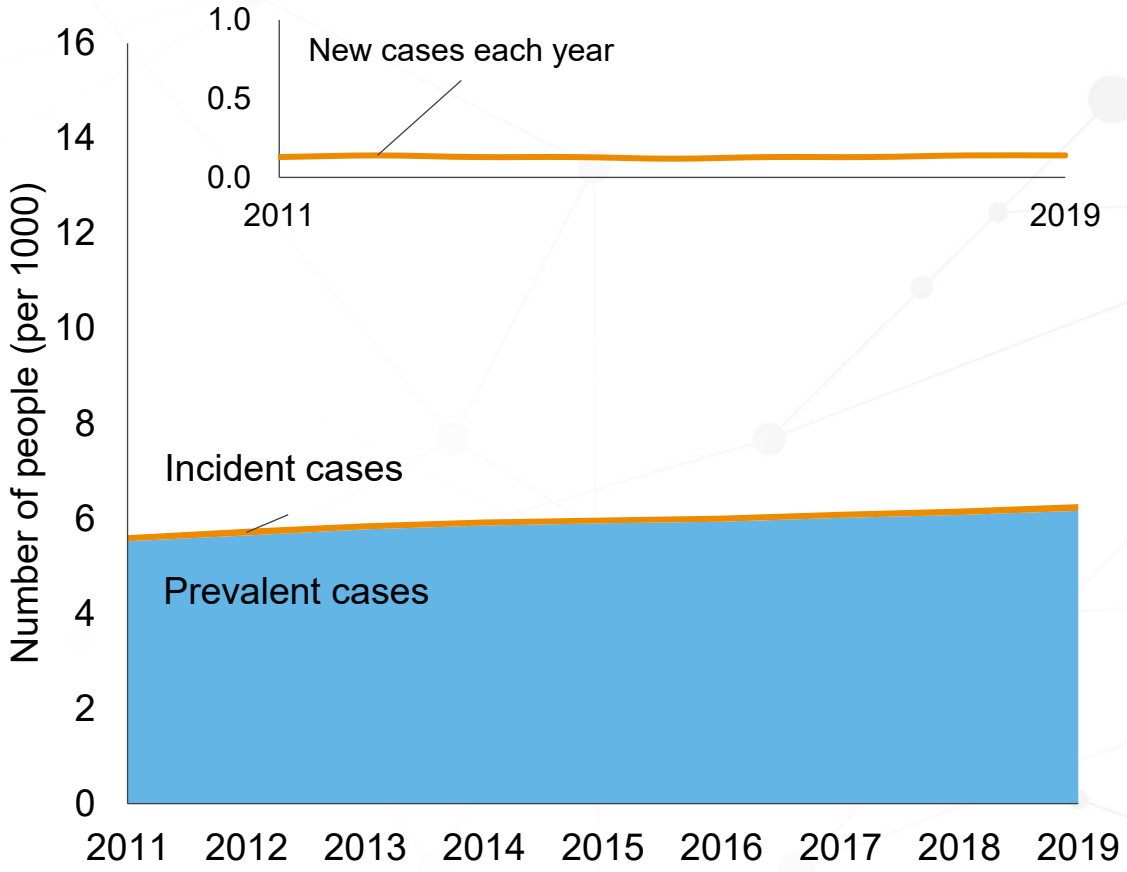
Prevalence and incidence over time: Pediatric



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 pediatric (<18) Ontarians with epilepsy are depicted in orange and blue, respectively. Between 2011 and 2019, incidence changed from 0.13 to 0.14 per 1000 people and prevalence increased from 5.52 to 6.16 per 1000 people.

The number of youth with epilepsy increased from 15,236 in 2011 to 17,051 people in 2019.

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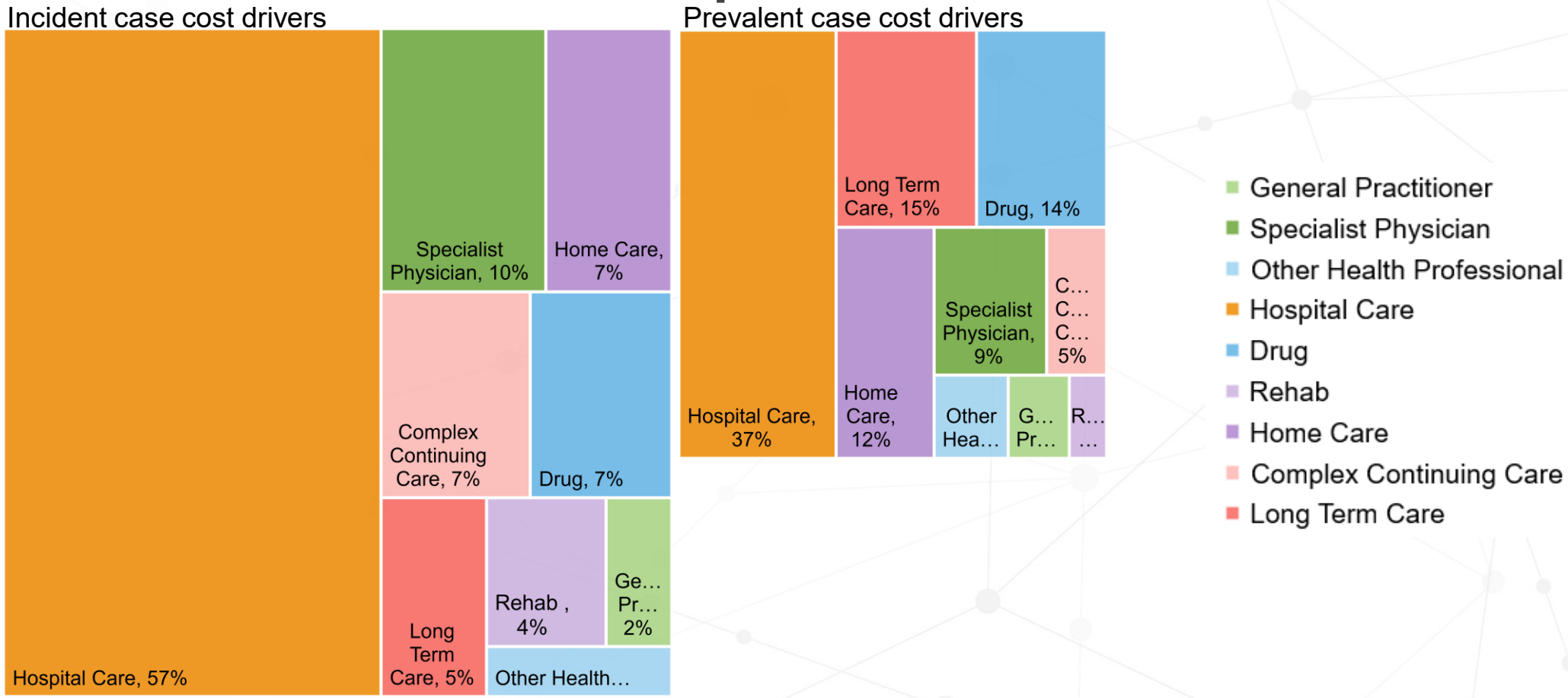
Cost Drivers: Incident vs. prevalent



*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 epilepsy was 2.3X 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%). Hospital care was also the largest cost driver of prevalent cases (37%), followed by long term care (15%).

The average total health care costs for a person with epilepsy (prevalent case) for 1 year are 8X higher for pediatric individuals (<18), 5X higher for adults (18 – 64), and 2X higher for seniors (65+) compared to the average Ontarian.

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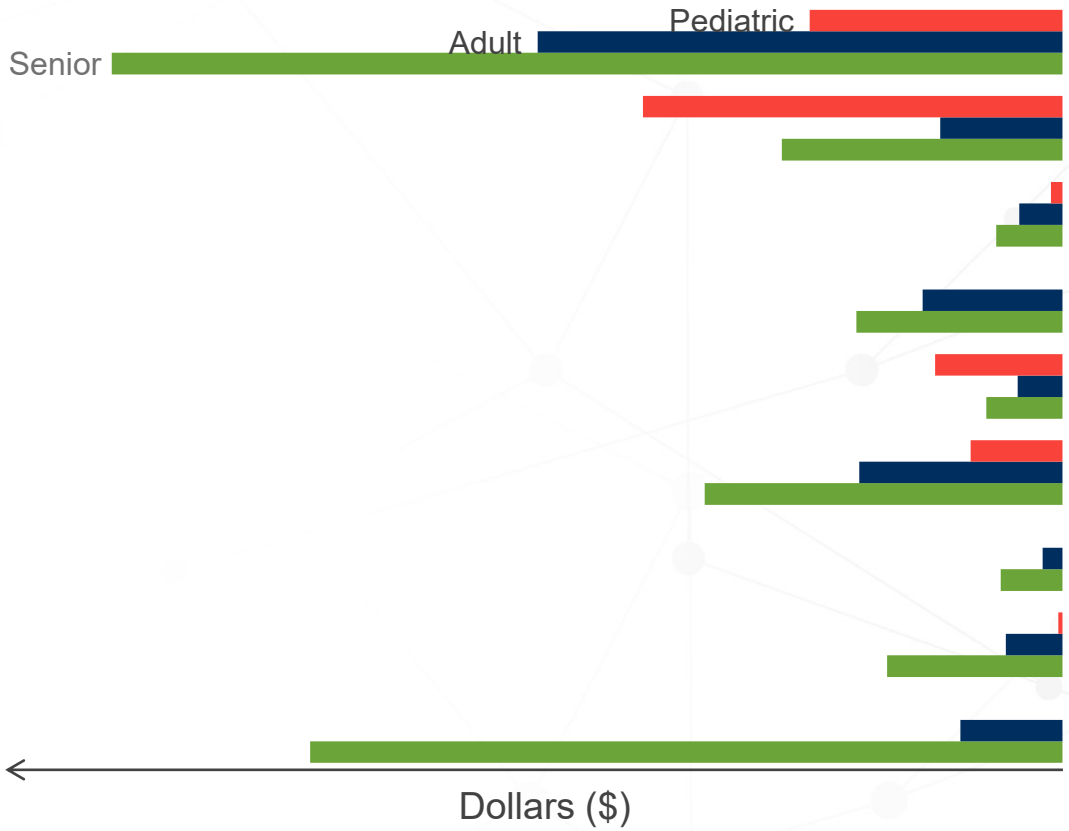
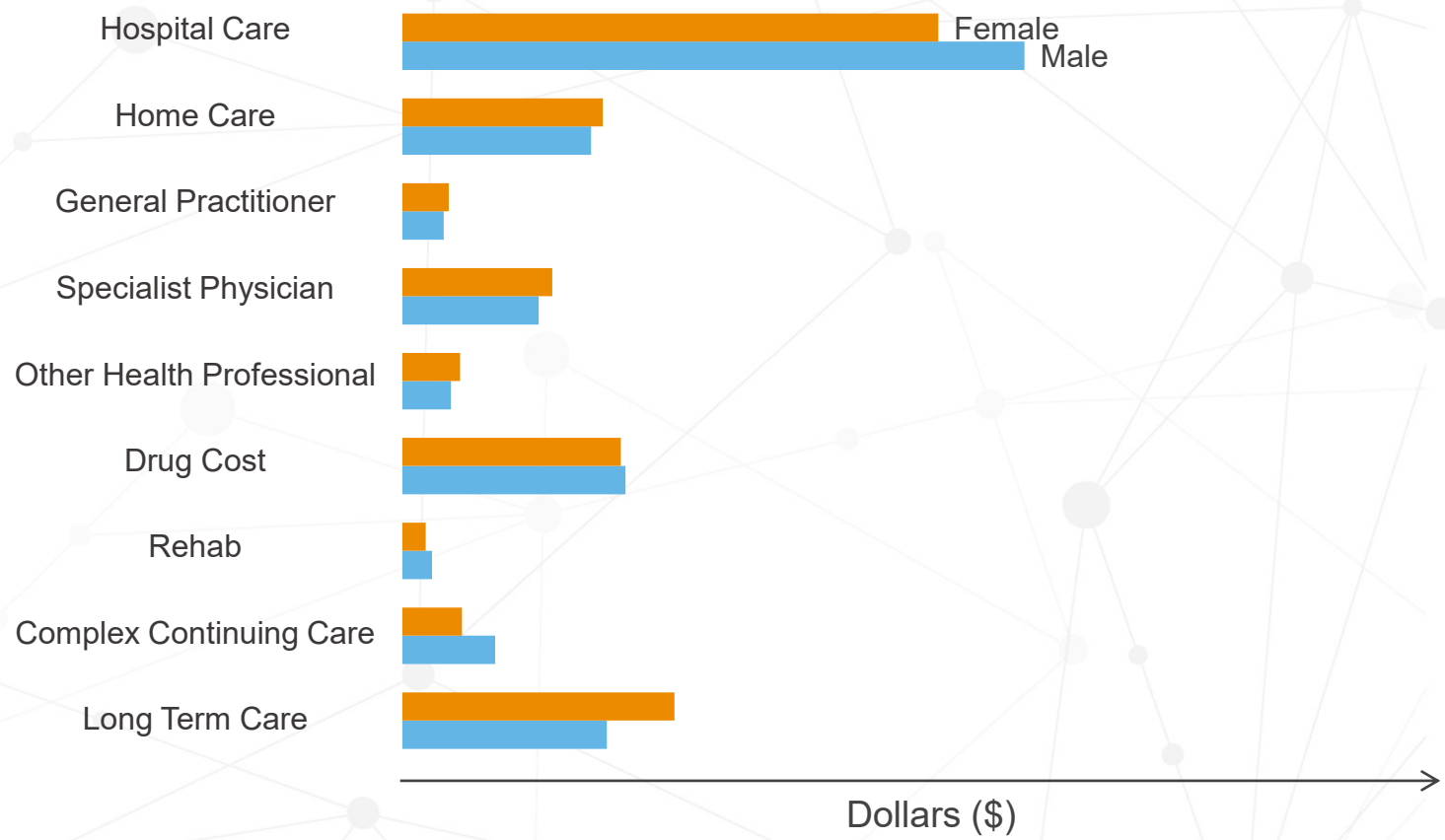
*Cost drivers examined include: Hospital care, home care, general practitioner, specialist physician, other health professional, drug cost, rehab, complex continuing care, and long term care.

Cost Drivers vary by age and sex for prevalent cases





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Cost Drivers vary by age and sex for prevalent cases

Overall, health care costs (in Canadian dollars, 2019) for people with epilepsy are highest for seniors, followed by adults then pediatric individuals. Costs are similar for females than males. The cost drivers, those services that drive health care costs, vary depending on age and sex.

Amongst pediatric individuals, home care accounts for the largest cost driver at 46% of all costs, while hospital care drives costs in the adult and senior population at 42% and 32% respectively.

Hospital care is the largest cost driver in both males and females representing 39% and 34% of the health care costs respectively.

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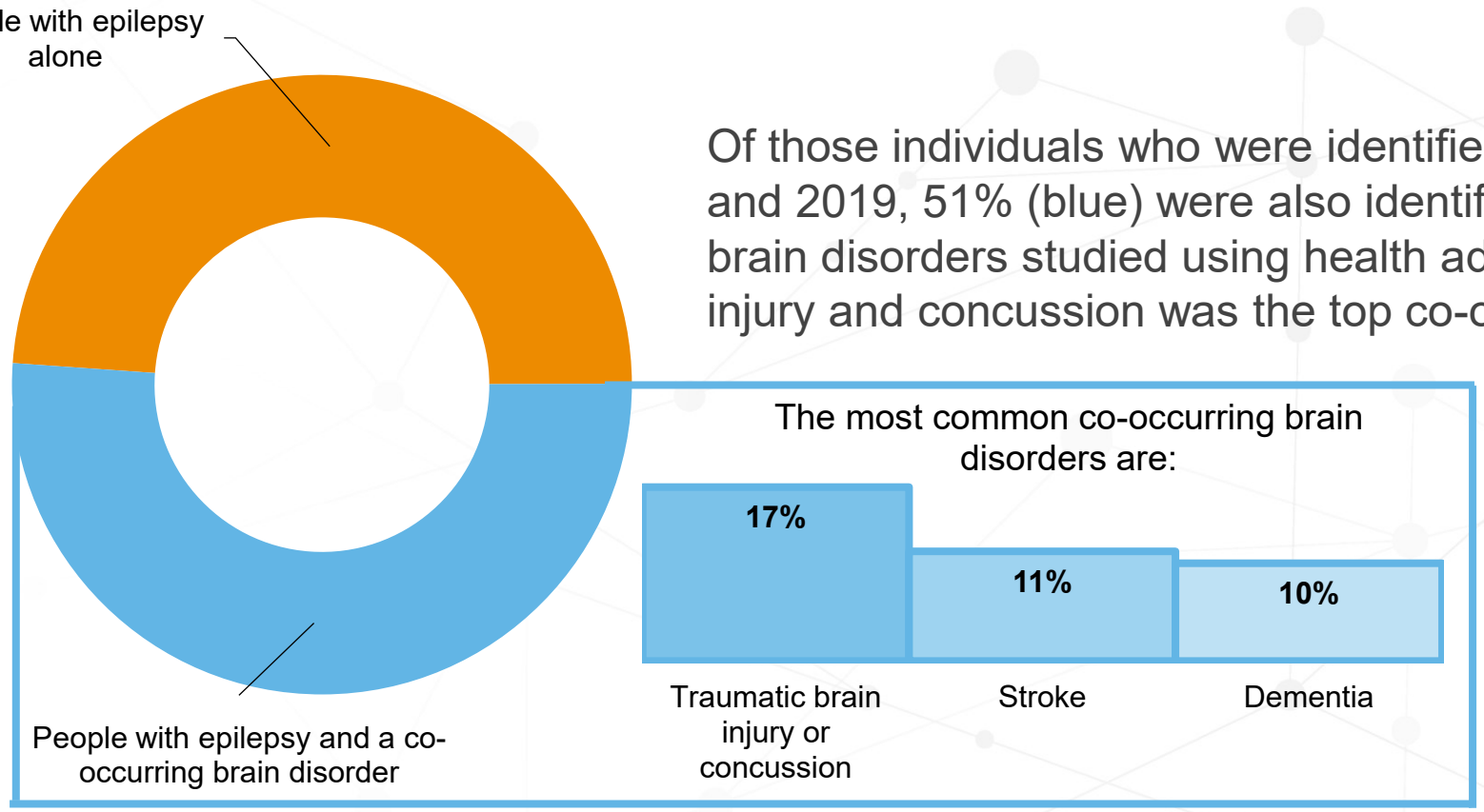
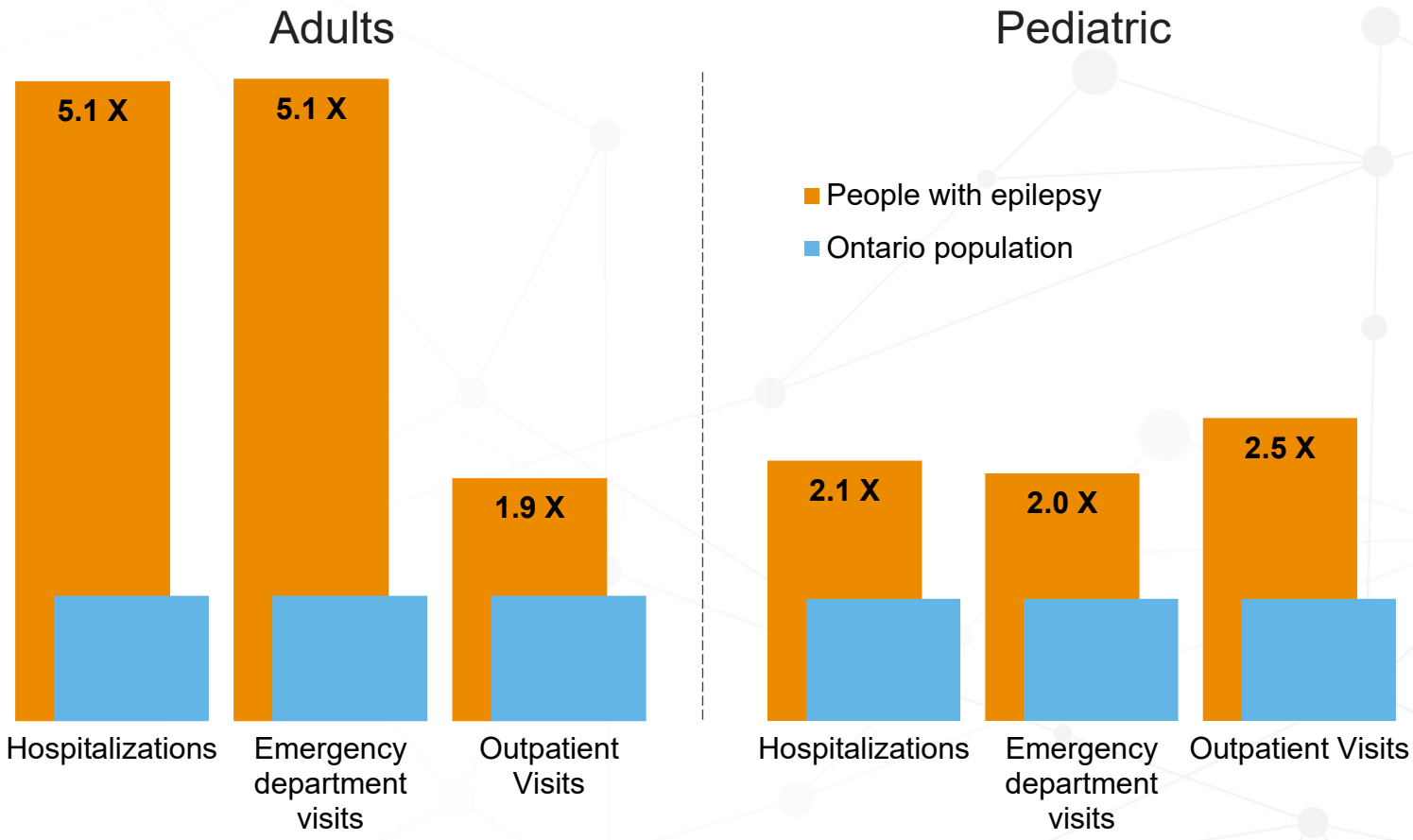
Co-occurring brain disorders



Of those individuals who were identified as having epilepsy between 2011 and 2019, 51% (blue) were also identified as having one of the other 12 brain disorders studied using health administrative data. Traumatic brain injury and concussion was the top co-occurring brain disorder, with 17% of those with epilepsy also having a brain injury, followed by 11% having had a stroke, and 10% having had 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 epilepsy in 2019, their visit rates for mental health and addictions related services were between 1.9X to 5.1X greater than the general Ontario population, depending on visit type and age group.

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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
Epilepsy	I	Validated algorithm	For individuals <18 years: 3 physician claim records at least 30 days apart in a 2-year period For individuals 18 years and older: 1 hospitalization record or 3 physician claim records at least 30 days apart in a 2-year period	345.0, 345.1, 345.4, 345.5, 345.6, 345.7, 345.8, 345.9	G40.x	345	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