

Traumatic Spinal Cord Injury

Brain Health in Ontario Project



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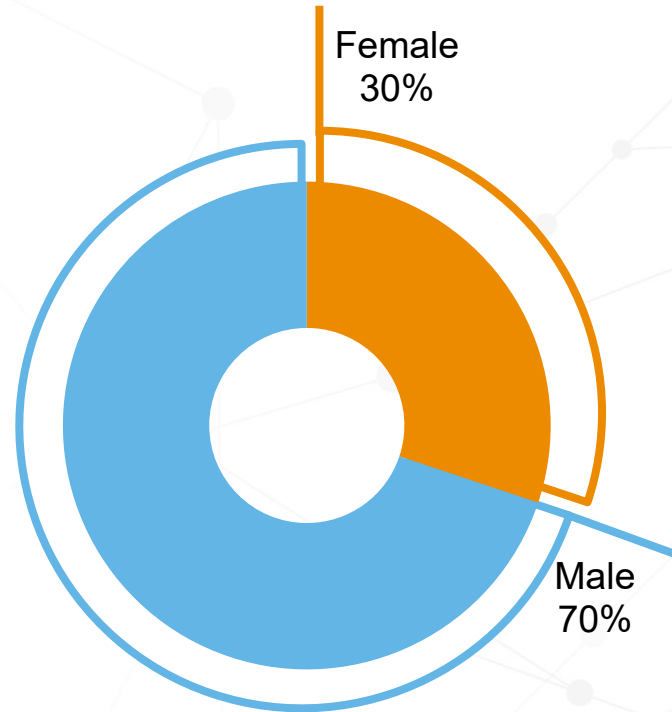
WELCOME TO BRAIN CENTRAL



Traumatic Spinal Cord Injury

- A spinal cord injury is an injury to any part of the spinal cord. The spinal cord is responsible for delivering nerve impulses (communication) between the brain and the rest of the body. Damage to the spinal cord can result in weakness or altered sensation (touch, pain, temperature) in areas of the body below the affected level of the spinal cord. It can also be associated with bowel and/or bladder dysfunction.
- An injury to the spinal cord can be either partial or complete. With a partial injury to the spinal cord, some communication can still take place between the brain and the rest of the body via the spinal cord. In this case there is only a partial disruption to neurological function (e.g., motor or sensory function). In cases of complete injury, the transmission of information is completely cut off to the parts of the body below the area of injury.
- The site of injury on the spinal cord determines how much of the body is affected such that the higher the injury on the spinal cord, the more parts of the body affected. For example, a neck injury can damage the cervical area of the spinal cord, which can affect the arms and legs and lead to quadriplegia. An injury lower down on the spinal cord can leave someone with paraplegia, where the legs are affected but the arms are spared.
- Individuals with spinal cord injuries may experience a variety of complications including chronic pain, breathing difficulties and dysfunction of the bladder and bowel. The advances in emergency care can help minimize spinal cord damage, while intensive rehabilitation can help to restore some movement and sensation. Rehabilitation programs typically involve a combination of physical therapy and skill-building activity.

Demographics: Sex distribution

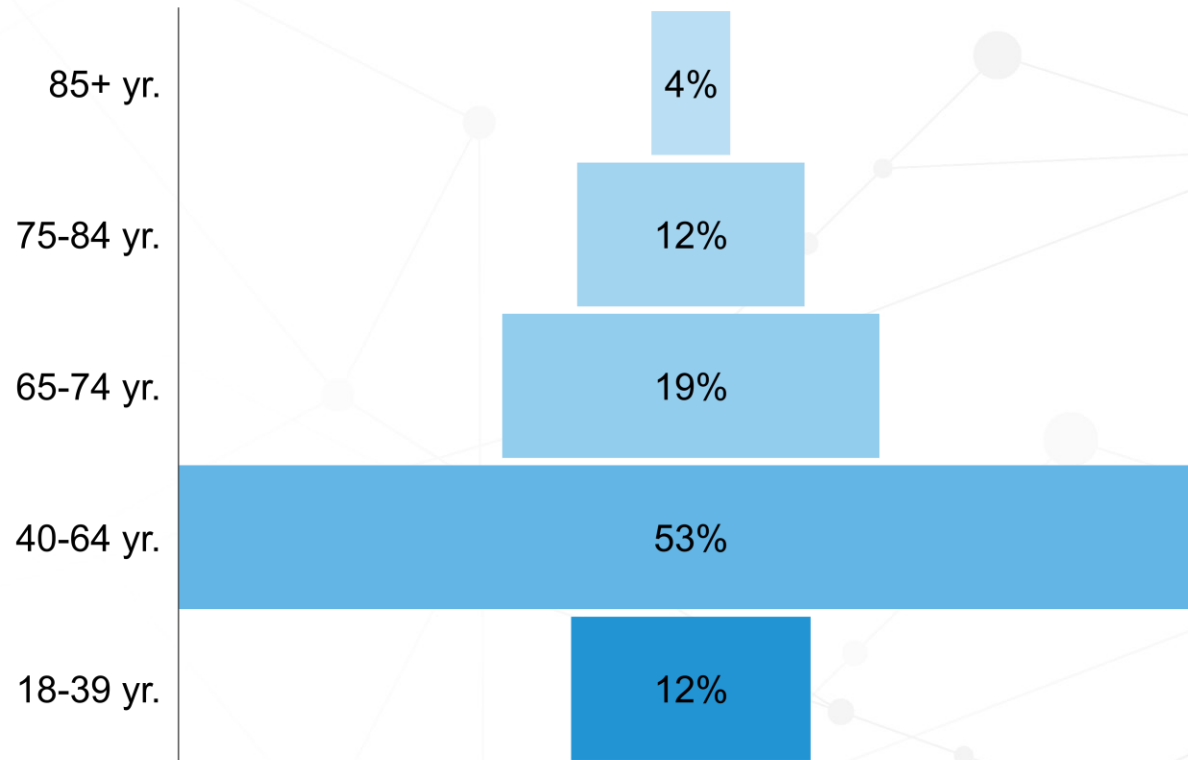


On April 1, 2019 males accounted for 70% of the 6,518 Ontarians identified with spinal cord injury.

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



Demographics: Age distribution

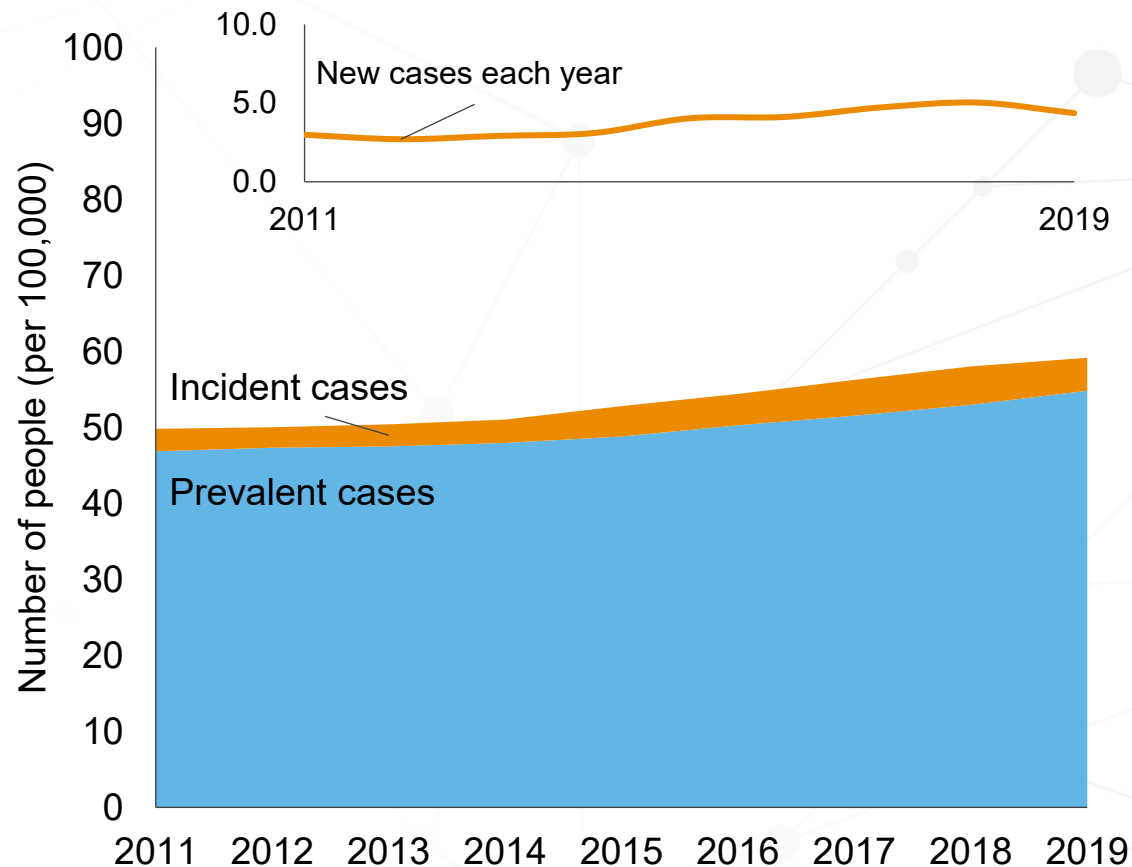


On April 1, 2019 the majority of people with a spinal cord injury were between the ages of 40 and 64 years, with 65% of people being under the age of 65. The mean age of a person with a spinal cord injury was 58 ± 16 years.

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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 spinal cord injury are depicted in orange and blue, respectively. Between 2011 and 2019, incidence increased from 2.97 to 4.35 per 100,000 people and prevalence increased from 46.86 to 54.82 per 100,000 people.

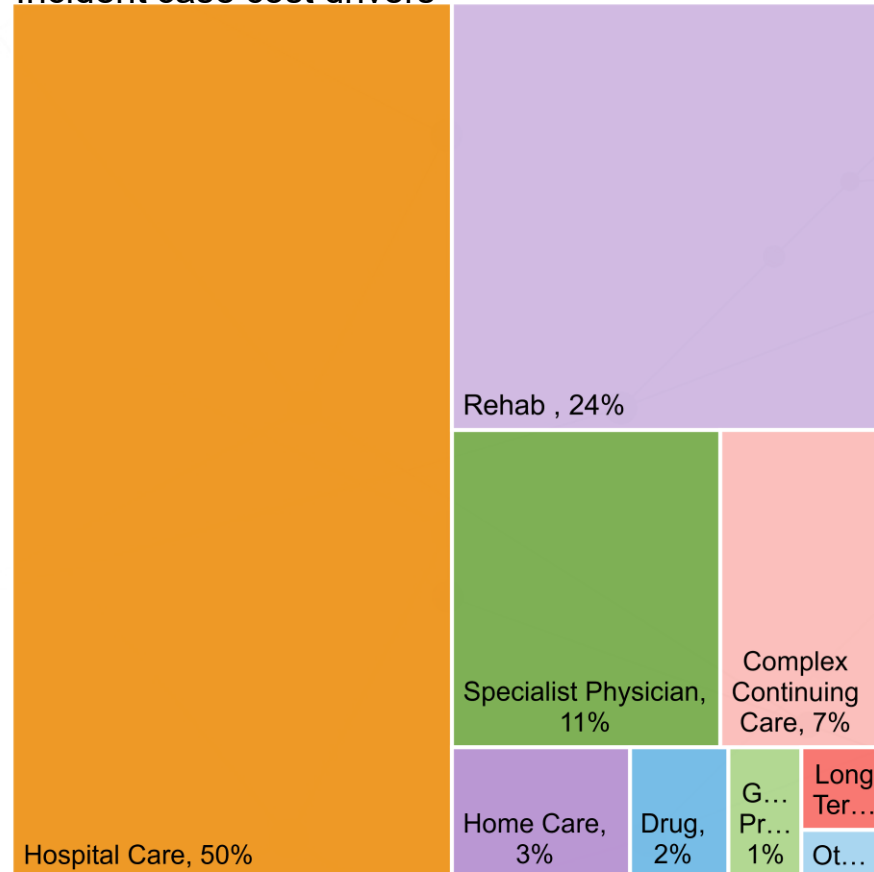
In total, the number of people with a spinal cord injury increased from 4,910 in 2011 to 6,518 people in 2019.

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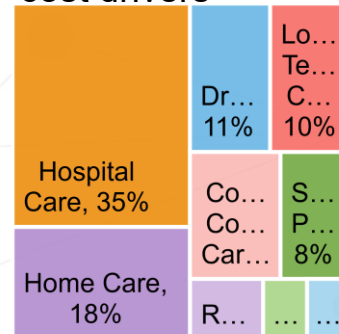


Cost Drivers: Incident vs. prevalent

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 spinal cord injury was 6.1X 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 (50%) followed by rehab (24%), while hospital care (35%) followed by home care (18%) had the highest costs for prevalent cases.

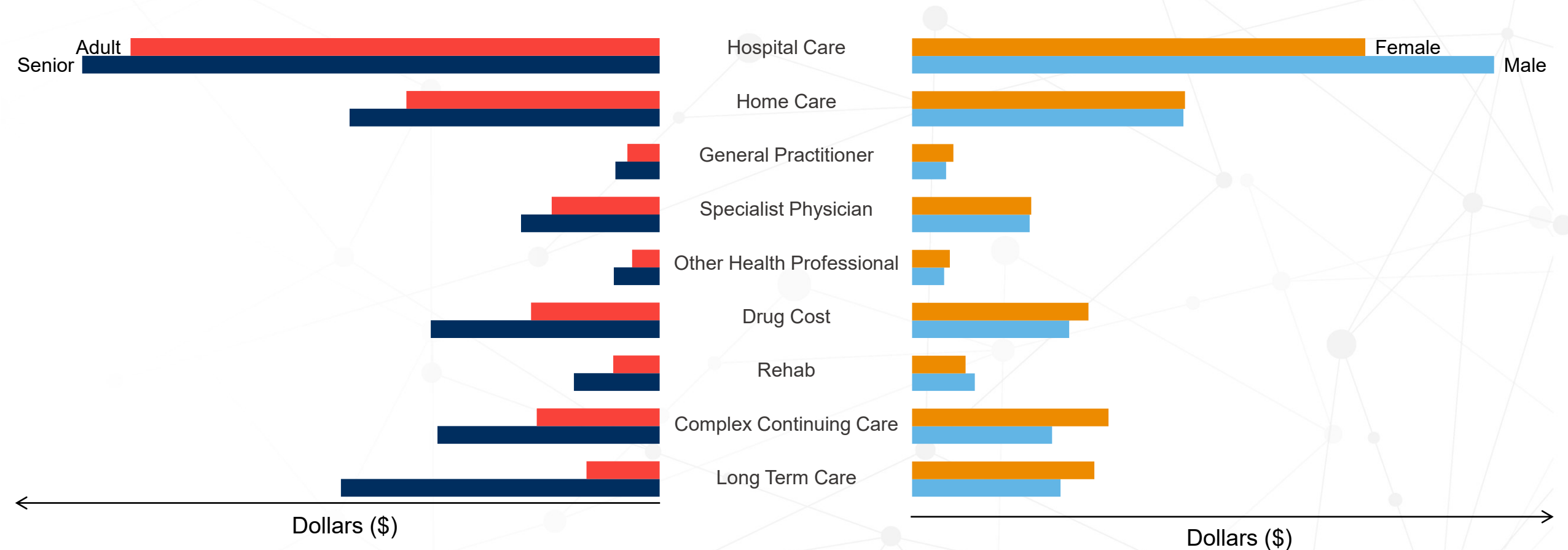
The average total health care costs for a person with a spinal cord injury (prevalent case) for 1 year are 8X higher for adults and 2X higher for seniors compared to the average Ontarian.

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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



*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

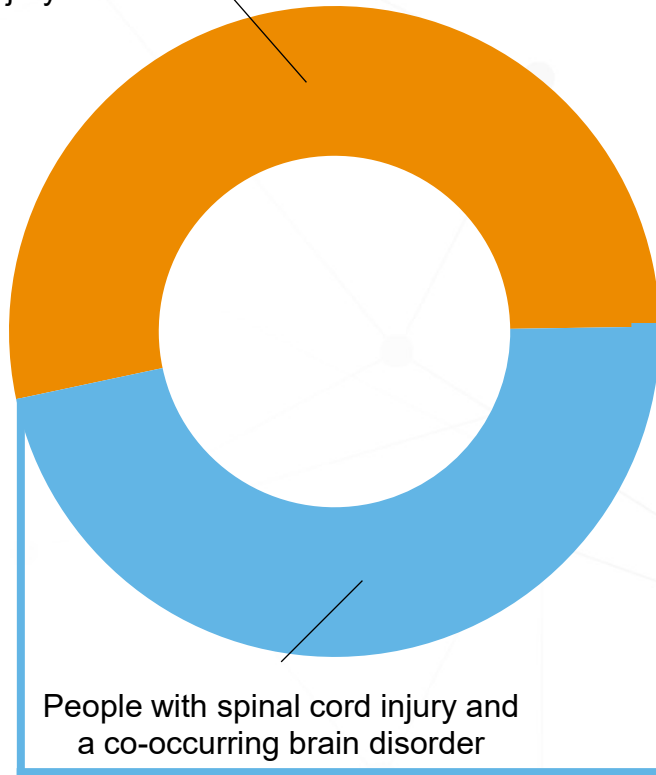
Overall, health care costs (in Canadian dollars, 2019) for people with a spinal cord injury are higher for seniors (65+ years) compared to adults (18 - 64 years) and are also similar for females and males. The cost drivers, those services that drive health care costs, vary depending on age and sex. Amongst adults, hospital care accounts for the largest cost driver at 40% of all costs, while hospital care and long term care drives costs in the senior population at 30% and 16% respectively. Hospital care is the largest cost driver in both females and males representing 30% and 38% of the health care costs respectively.

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Co-occurring brain disorders

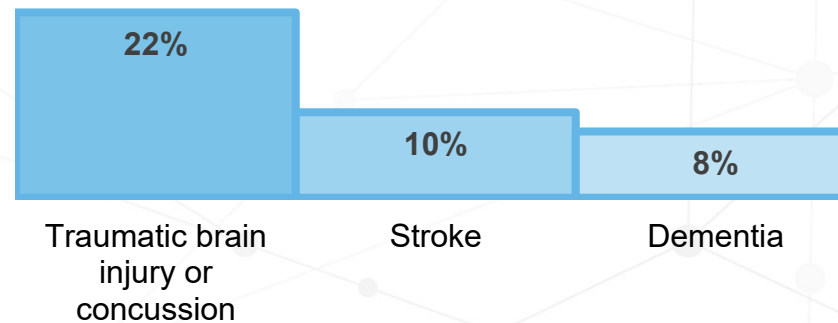
People with spinal cord injury alone



Of those individuals who were identified as having a spinal cord injury between 2011 and 2019, 47% (blue) were also identified as having one of the other 12 brain disorders studied using health administrative data. Traumatic brain injury or concussion was the top co-occurring brain

disorder, with 22% of those with a spinal cord injury also having a brain injury, followed by 10% having had a stroke, and 8% having dementia.

The most common co-occurring brain disorders are:

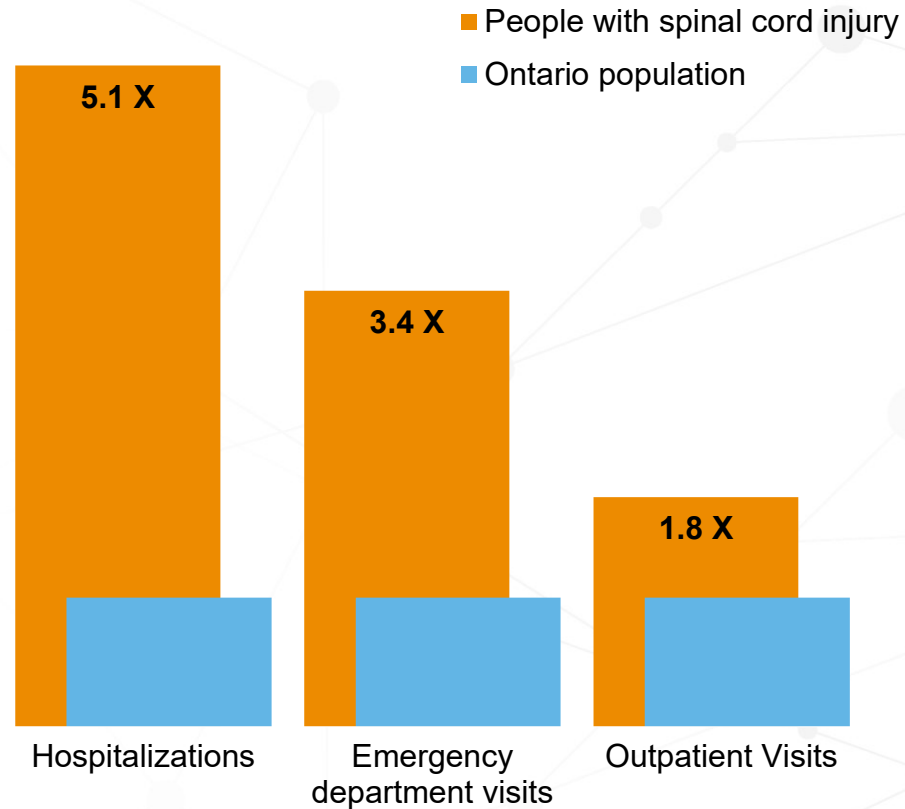


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*Note, other brain disorders studied include: non-malignant brain tumour, benign brain tumour, dementia (incl. Alzheimer's disease), epilepsy, motor neuron disease, multiple sclerosis, parkinsonism, schizophrenia, spina bifida, spinal cord injury,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



Mental Health and addictions service use



Of those individuals who were identified as having a spinal cord injury in 2019, their visit rates for mental health and addictions related services were between 1.8X to 5.1X greater than the general Ontario population, depending on visit type.

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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
Spinal cord injury	II	Accepted algorithm	1 hospitalization record	806, 907.2, 952	S14.0, S14.1, S24.0, S24.1, S34.0, S34.1, S34.3, T06.0, T06.1	N/A	N/A	N/A	18 years and older

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



Publication information

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