

# Parkinsonism

Brain Health in Ontario Project



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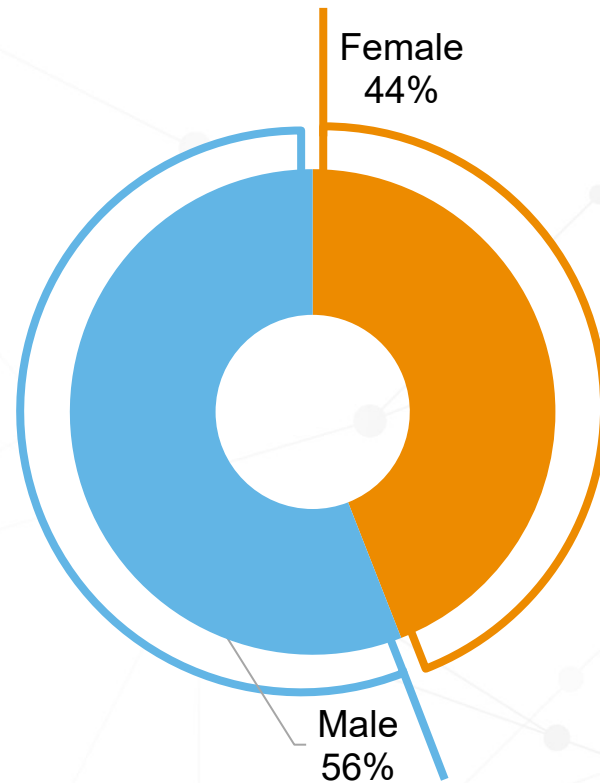
WELCOME TO BRAIN CENTRAL



# Parkinsonism

- Parkinsonism describes a cluster of symptoms including tremor, rigidity (stiffness), akinesia or bradykinesia (loss or slowness of voluntary movement) and postural instability (tendency to fall). Parkinsonism typically affects persons aged 50 years and older. The most common cause of parkinsonism is Parkinson's disease. Other causes include other brain disorders, toxins, medications and inherited disorders. These various causes lead to parkinsonism through changes in a region of the brain called the basal ganglia, where evidence suggests a loss of dopamine-producing neurons in the substantia nigra part of the basal ganglia.
- An individual with parkinsonism will experience difficulty with initiation and completion of movement, with fine motor skills and with walking. Other difficulties include effects on swallowing, volume of voice, blinking and initiation of spontaneous facial expressions. Symptoms not related to motor function include cognitive impairment, mood disturbance including depression, anxiety and apathy, constipation and bladder disturbance, pain related to rigidity, and disordered sleep – all of which greatly hamper quality of life.
- In patients with onset before the age of 65, parkinsonism may lead to premature retirement or necessitate disability leave. Parkinsonism also impairs the ability to communicate and interact with the surrounding environment, which often instills a sense of isolation among affected persons. Dopamine replacement medications can help some of the symptoms of parkinsonism, especially in Parkinson's disease, but these effects are usually transient and there are no cures.
- Many symptoms of parkinsonism cause complications leading to hospitalization – among them, pneumonia and other infections and fall-related injuries. Further, individuals with parkinsonism may develop significant cognitive impairment and psychiatric changes including hallucinations leading to nursing home placement. Persons with advanced parkinsonism require caregiver help and may become completely dependent for all activities of self-care.

# Demographics: Sex distribution



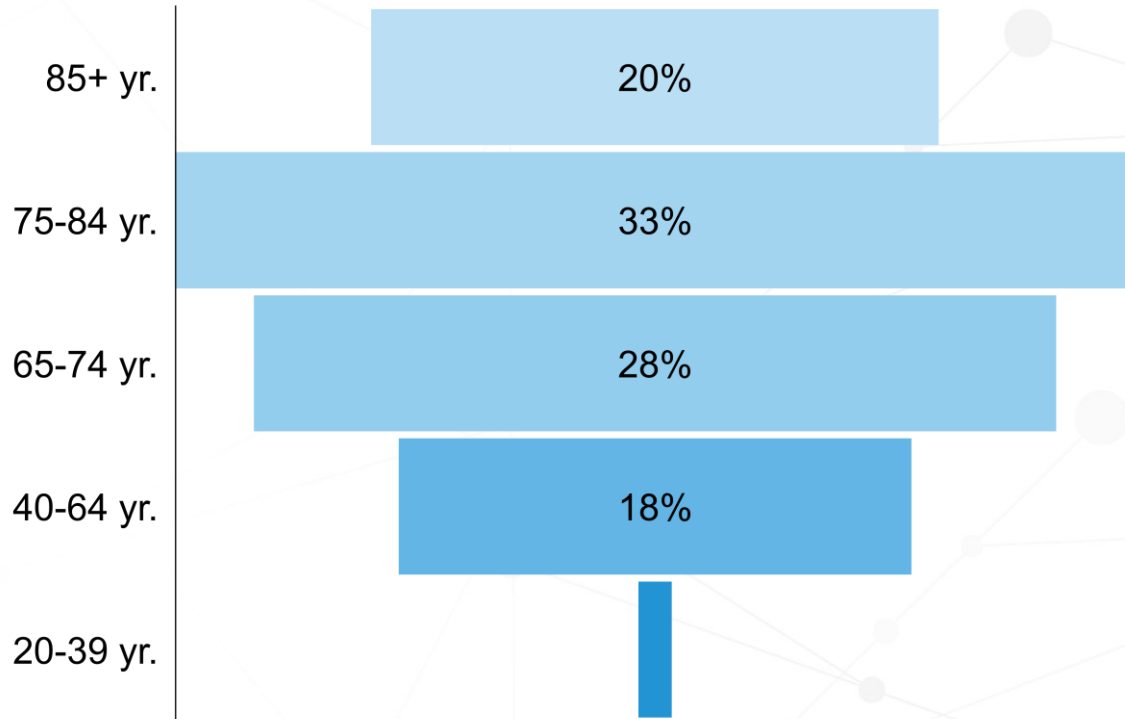
On April 1, 2019 males accounted for 56% of the 44,503 Ontarians identified with parkinsonism.

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





# Demographics: Age distribution

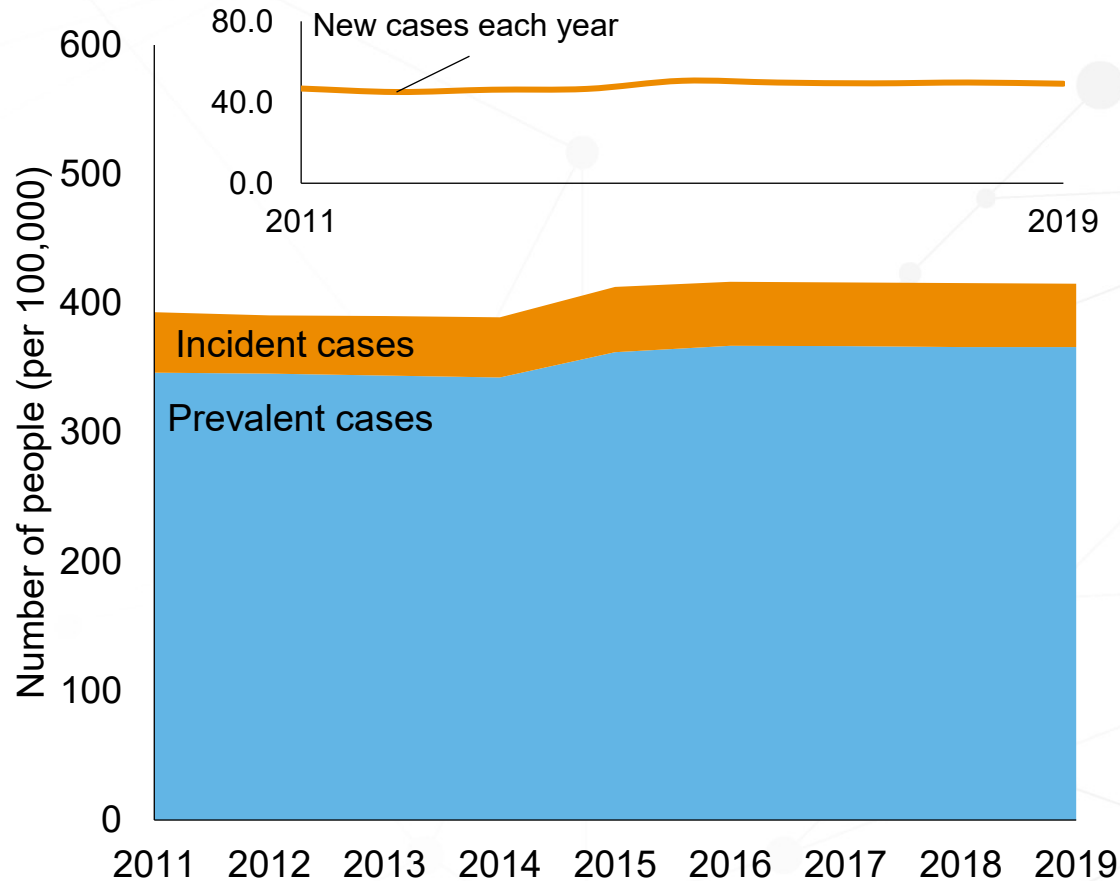


On April 1, 2019 the majority of people with parkinsonism were between the ages of 75 and 84 years, with 81% of people being over the age of 65. The mean age of a person with parkinsonism was  $74 \pm 12$  years.

\*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 parkinsonism are depicted in orange and blue, respectively. Between 2011 and 2019, incidence changed from 46.78 to 49.11 per 100,000 people and prevalence increased from 346.20 to 366.05 per 100,000 people.

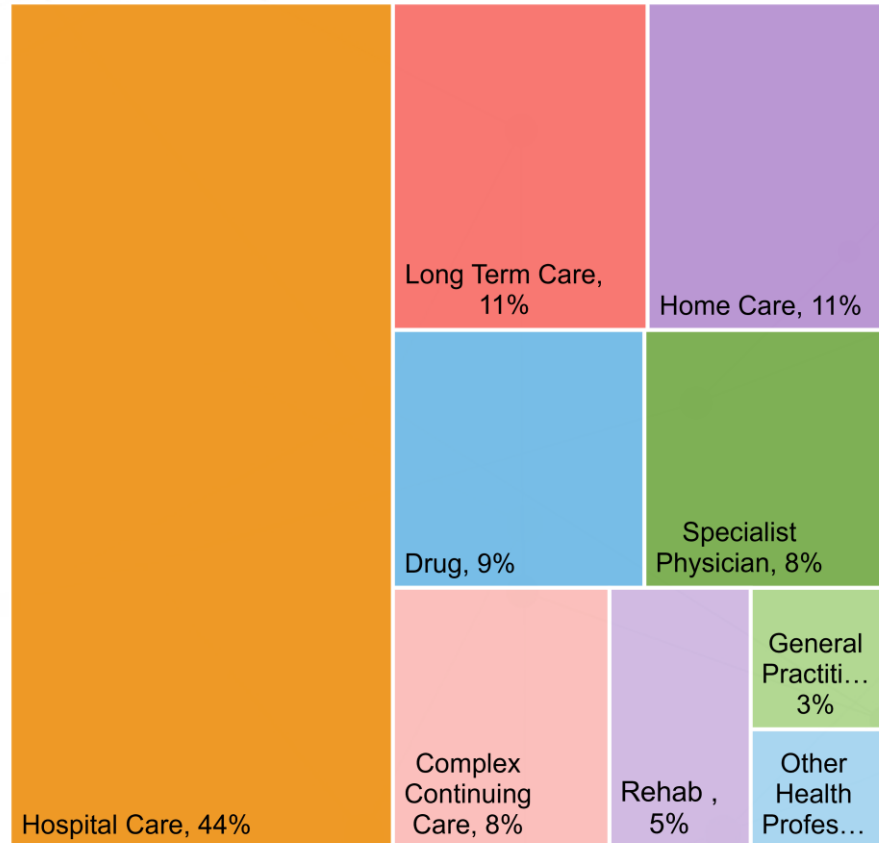
In total, the number of people with parkinsonism increased from 35,157 in 2011 to 44,503 people in 2019.

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

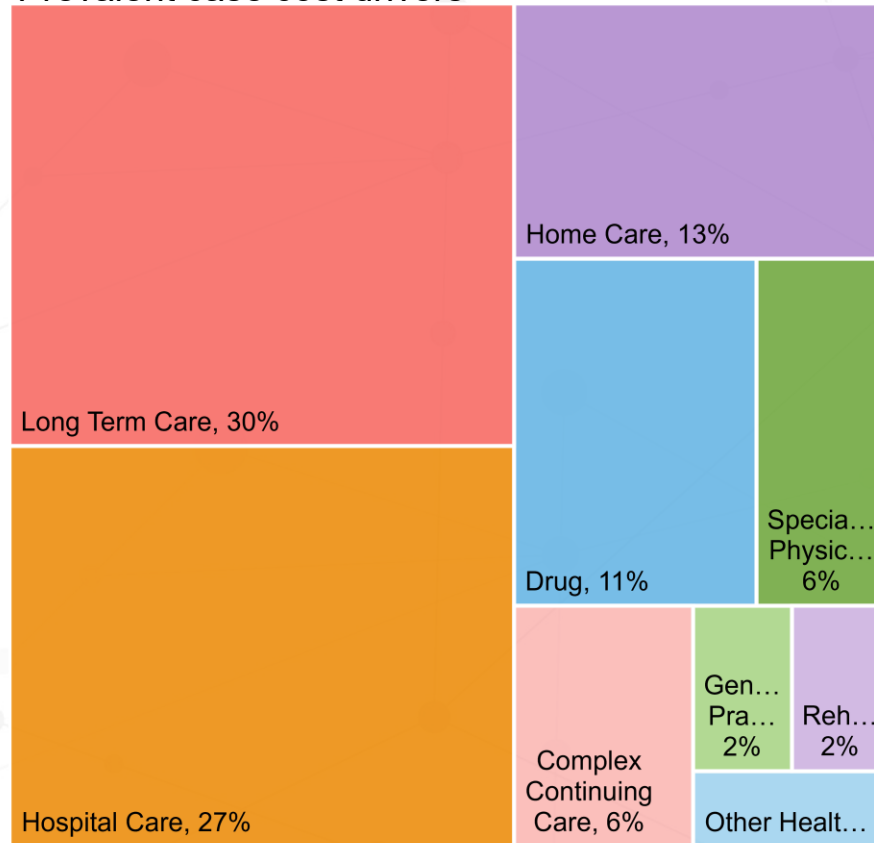


# Cost Drivers: Incident vs. prevalent

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 parkinsonism was approximately equal for an incident case and a prevalent case. Cost relationship is indicated by total box size. The largest cost driver of incident cases was attributable to hospital care (44%), while long term care (30%) and hospital care (27%) had the highest costs for prevalent cases.

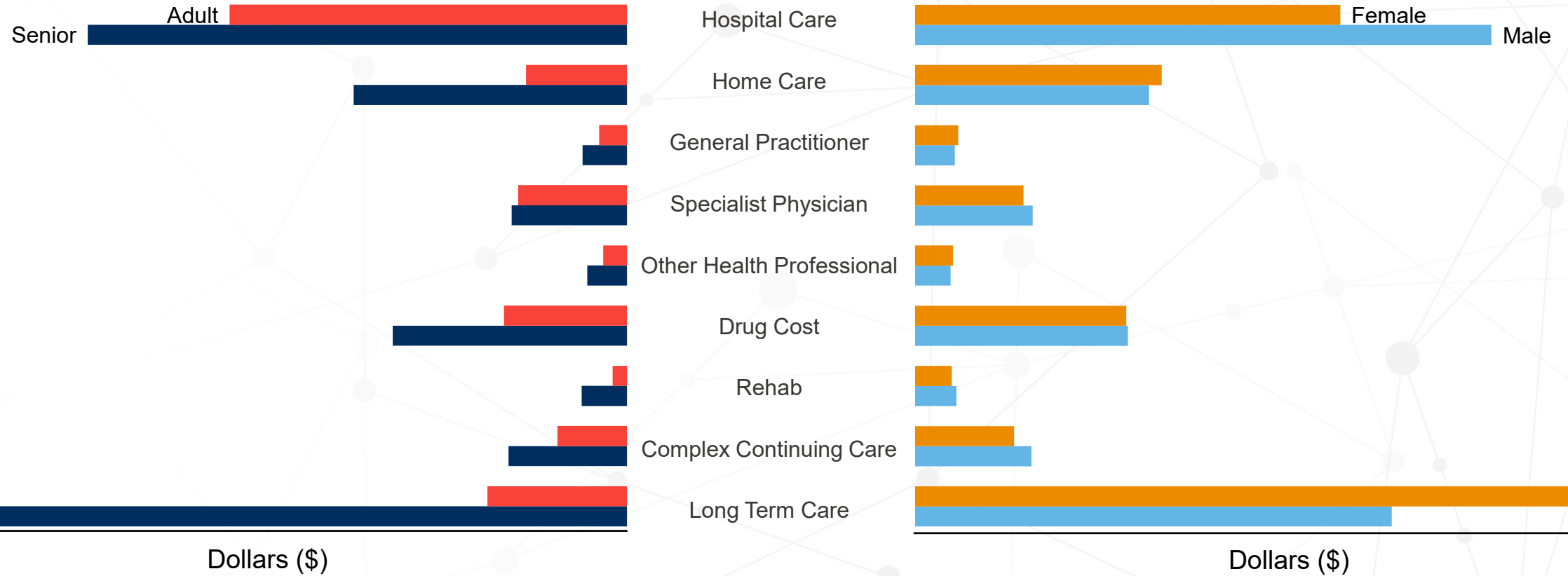
The average total health care costs for a person with parkinsonism (prevalent case) for 1 year are 7X higher for adults and 3X higher for seniors compared to the average Ontarian.

\*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

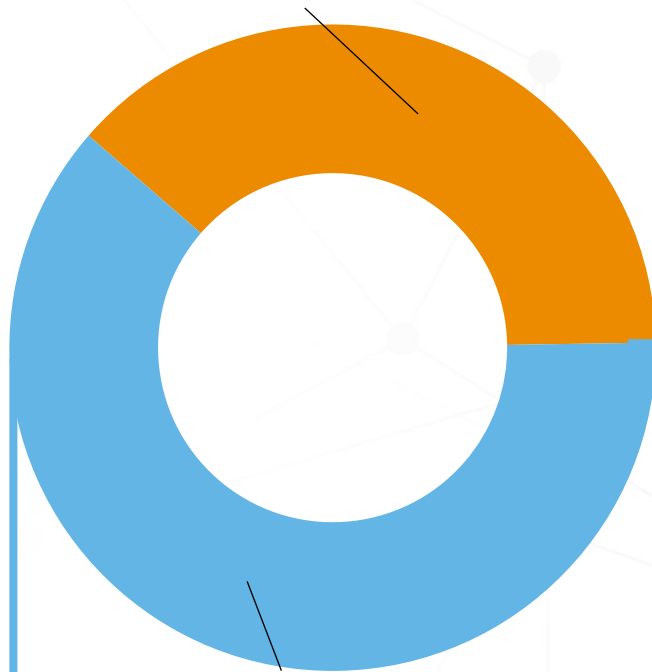
Overall, health care costs (in Canadian dollars, 2019) for people with parkinsonism are higher for the senior (65+ years) population compared to adults (20 - 64 years) and are also similar for females and males. The cost drivers, those services that drive health care costs, vary depending on age and sex. Amongst senior, long care accounts for the largest cost driver at 32% of all costs, while hospital care drives costs in the adult population at 40% of all costs. Long term care is the largest cost driver in females at 36% and hospital care drives costs in males at 31% of the health care costs.

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# Co-occurring brain disorders

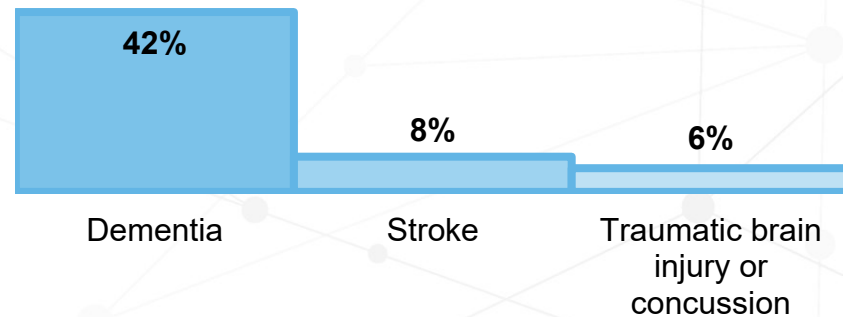
People with parkinsonism alone



People with parkinsonism and a co-occurring brain disorder

Of those individuals who were identified as having parkinsonism between 2011 and 2019, 62% (blue) were also identified as having one of the other 12 brain disorders studied using health administrative data. Dementia was the top co-occurring brain disorder, with 42% of those with parkinsonism also having dementia, followed by 8% having had a stroke, and 6% having a traumatic brain injury or concussion.

The most common co-occurring brain disorders are:

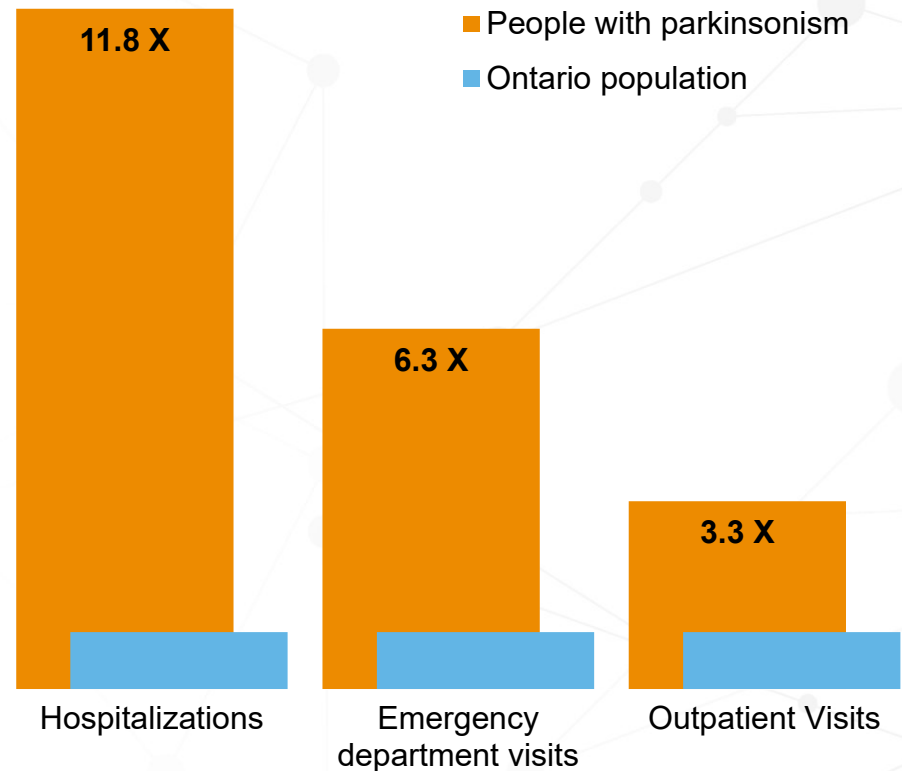


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\*Note, other brain disorders studied include: non-malignant brain tumour, benign brain tumour, dementia (incl. Alzheimer's disease), epilepsy, motor neuron disease, multiple sclerosis, parkinsonism, schizophrenia, spina bifida, spinal cord injury,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



# Mental Health and addictions service use



Of those individuals who were identified as having parkinsonism in 2019, their visit rates for mental health and addictions related services were between 3.3X to 11.8X 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
Parkinsonism (including Parkinson's disease)	I		1 hospitalization record <u>or</u> 2 physician claim records at least 30 days apart in a 1-year period	332.0, 332.1	F02.3, G20, G21.0, G21.1, G21.2, G21.3, G21.4, G21.8, G21.9, G22	332	N/A	N/A	20 years and older

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





# Publication information

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Suggested Citation:

*Brain Health in Ontario: Forming an Integrated Approach*. Ontario Brain Institute. February 2023.  
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