

# Dementia (incl. Alzheimer's Disease)

Brain Health in Ontario Project



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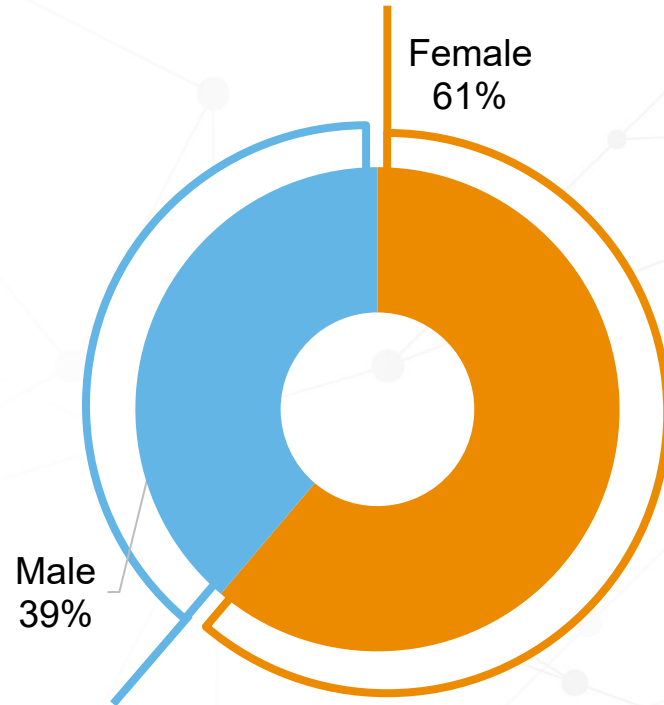
WELCOME TO BRAIN CENTRAL



# Dementia (incl. Alzheimer's Disease)

- As individuals age, they may see a decline in one or more areas of their thinking, such as memory or decision-making. Changes of this nature seen with normal aging are mild and do not have a significant impact on the ability to live independently. However, if the decline interferes with independence in everyday activities and cannot be explained by another mental disorder like a depression or a delirium (acute confusional state), it is characteristic of a disorder called dementia. In addition to its cognitive and functional manifestations, dementia can be associated with changes in mood and behaviour.
- Dementia arises from changes in the structure and function of people's brains. Although there is a growing understanding of dementia and its causes, there is much to learn. Dementia is more common after the age of 65 and affects both men and women. Primarily because women in general live longer than men, there are more women with dementia.
- There are many possible causes of dementia. The most common is a condition called Alzheimer's disease, which accounts for approximately six in 10 cases of dementia. Other causes include vascular dementia, Parkinson's disease and Lewy body dementia, fronto-temporal degenerations, traumatic brain injuries, and excessive consumption of alcohol. It is not unusual in older persons with a dementia to find more than one underlying cause.
- Doing things like protecting the head from injury, avoiding excessive alcohol intake, following a heart-healthy diet, and living an active physical, mental and social life can decrease a person's risk of developing a dementia. A healthy lifestyle may ward off dementia just as it does other conditions. Because dementia often progresses over time, it is important to ensure early on that advance planning is done. Options for drug treatment of the more common causes of dementia are limited.
- Dementia can have a profound impact on the quality of life of the person with the condition and their primary caregiver, who is often a spouse or other family member. Over time, services typically have to be mobilized to support dementia sufferers, with many of them eventually having to move into a care facility.

# Demographics: Sex distribution



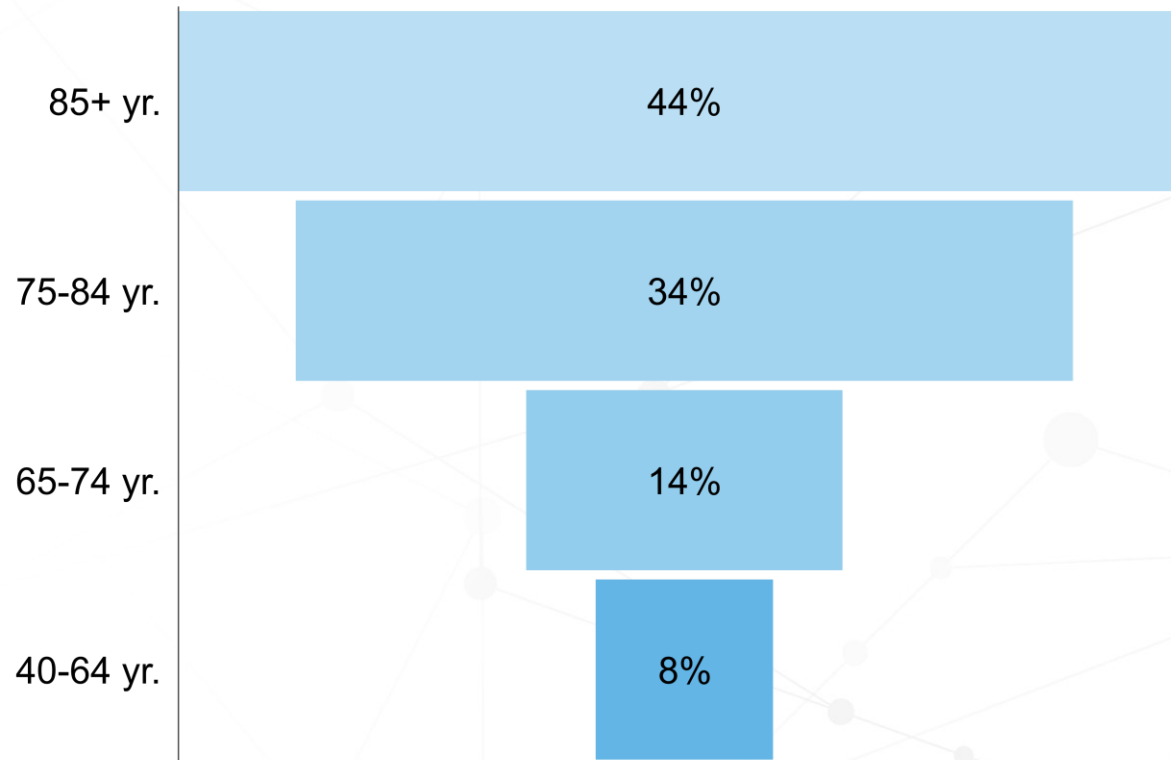
On April 1, 2019 females accounted for 61% of the 196,052 Ontarians identified with dementia.

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





# Demographics: Age distribution

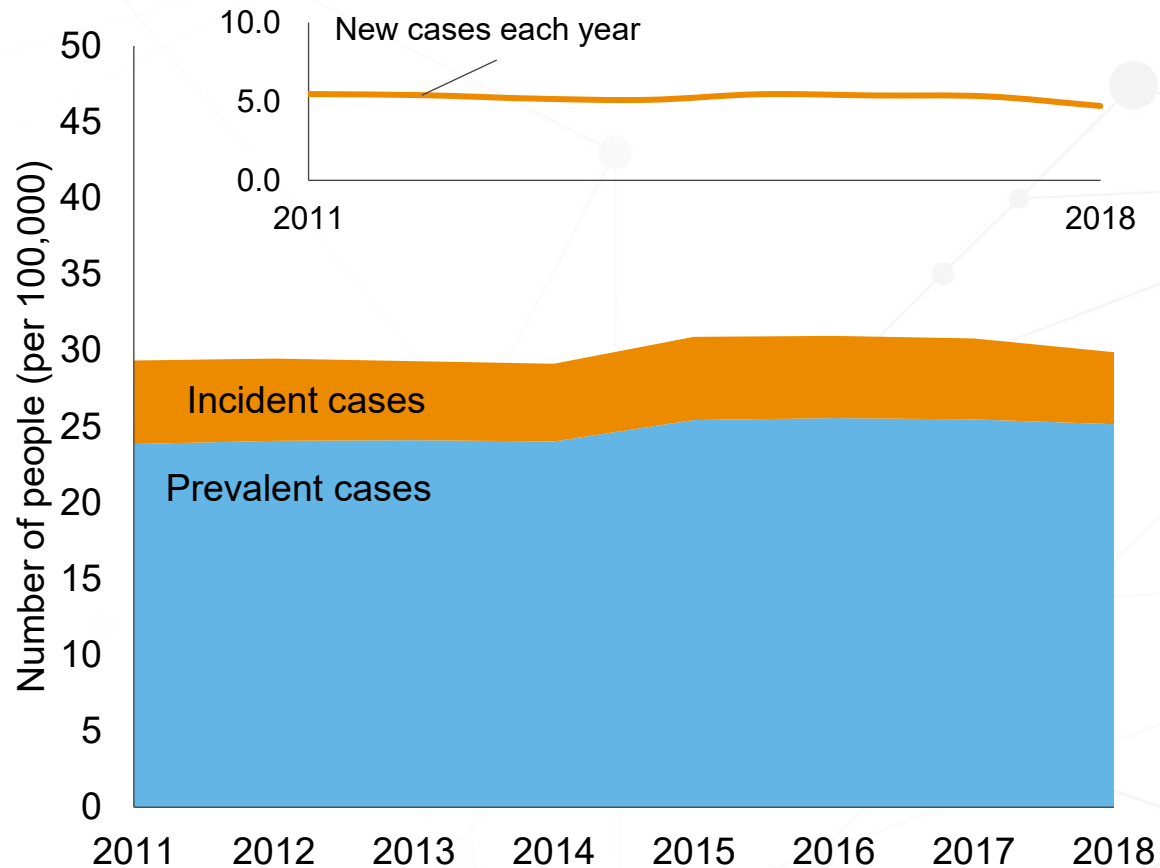


On April 1, 2019 the majority of people with dementia were over 85 years of age, with 92% of people being over the age of 65. The mean age of a person with dementia was  $82 \pm 10$  years.

\*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 dementia are depicted in orange and blue, respectively. Between 2011 and 2018, incidence decreased from 5.48 to 4.72 per 100,000 people and prevalence changed from 23.86 to 25.16 per 100,000 people.

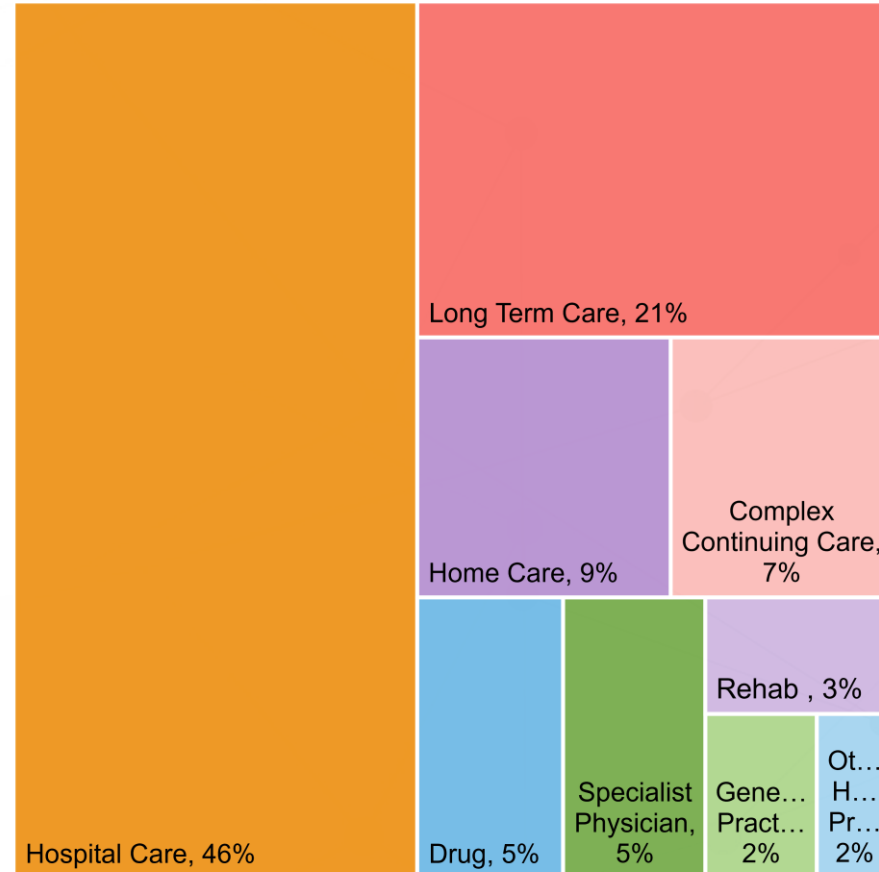
In total, the number of people with dementia increased from 157,168 in 2011 to 194,548 people in 2018 (not shown: 196,052 people in 2019).

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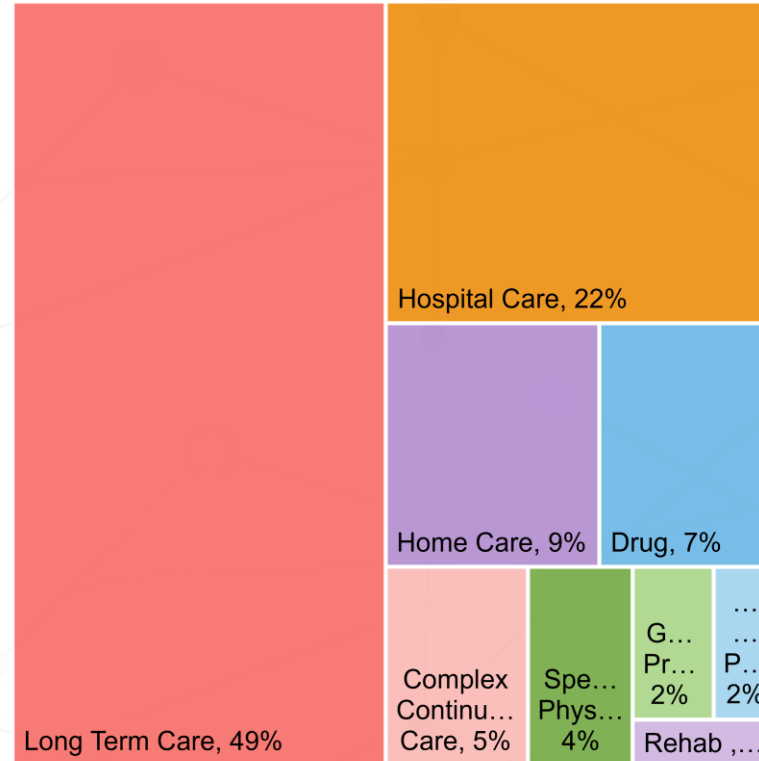


# Cost Drivers: Incident vs. prevalent

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 dementia was 1.3X 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 (46%), while long term care (49%) had the highest cost for prevalent cases.

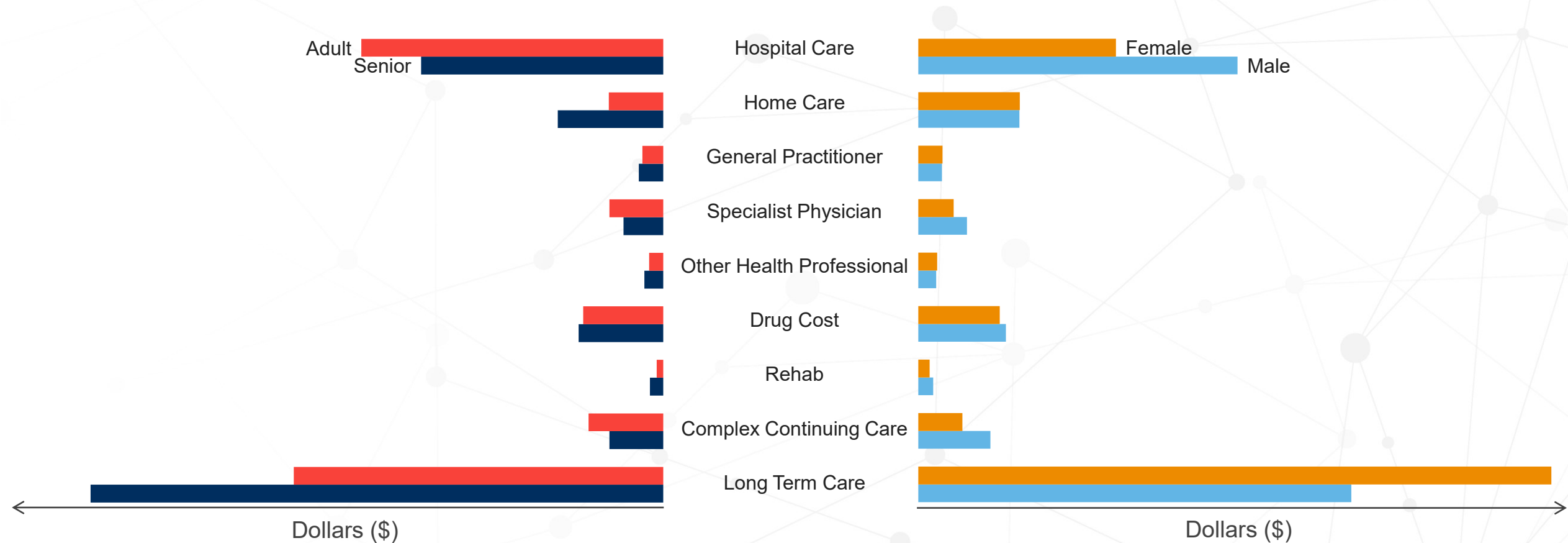
The average total health care costs for a person with dementia (prevalent case) for 1 year are 4X higher for seniors (65+ years) and 15X higher for adults representing the early onset population (40 – 64 years) compared to the average Ontarian.

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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

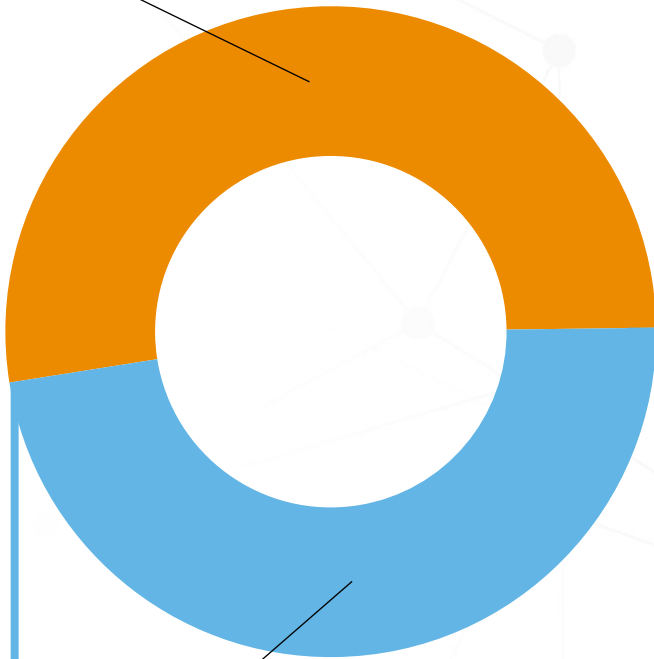
Overall, health care costs (in Canadian dollars, 2019) for people with dementia are higher for the senior (65+ years) population compared to adults (40 - 64 years) and are also higher for females than males. The cost drivers, those services that drive health care costs, vary depending on age and sex. Amongst seniors, long term care accounts for the largest cost driver at 50% of all costs, while long term care and hospital care drives costs in the adult population at 38% and 31% respectively. Long term care is the largest cost driver in both females and males representing 55% and 39% of the health care costs respectively.

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# Co-occurring brain disorders

People with dementia alone

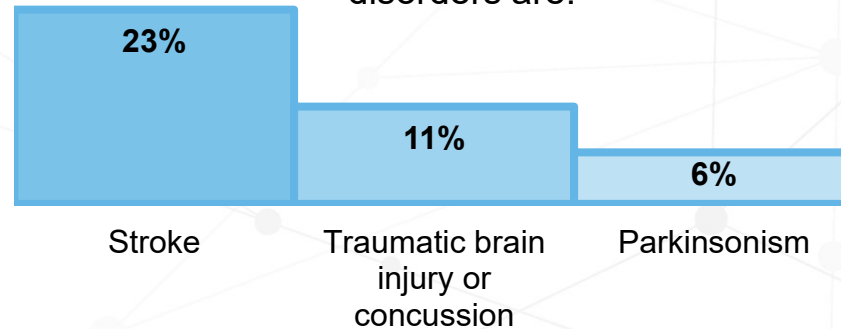


People with dementia and a co-occurring brain disorder

Of those individuals who were identified as having dementia between 2011 and 2019, 48% (blue) were also identified as having one of the other 12 brain disorders studied using health administrative data. Stroke, including transient ischemic attack, was the top co-occurring brain disorder, with

23% of those with dementia also having had a stroke, followed by 11% with a traumatic brain injury or concussion, and 6% having parkinsonism.

The most common co-occurring brain disorders are:

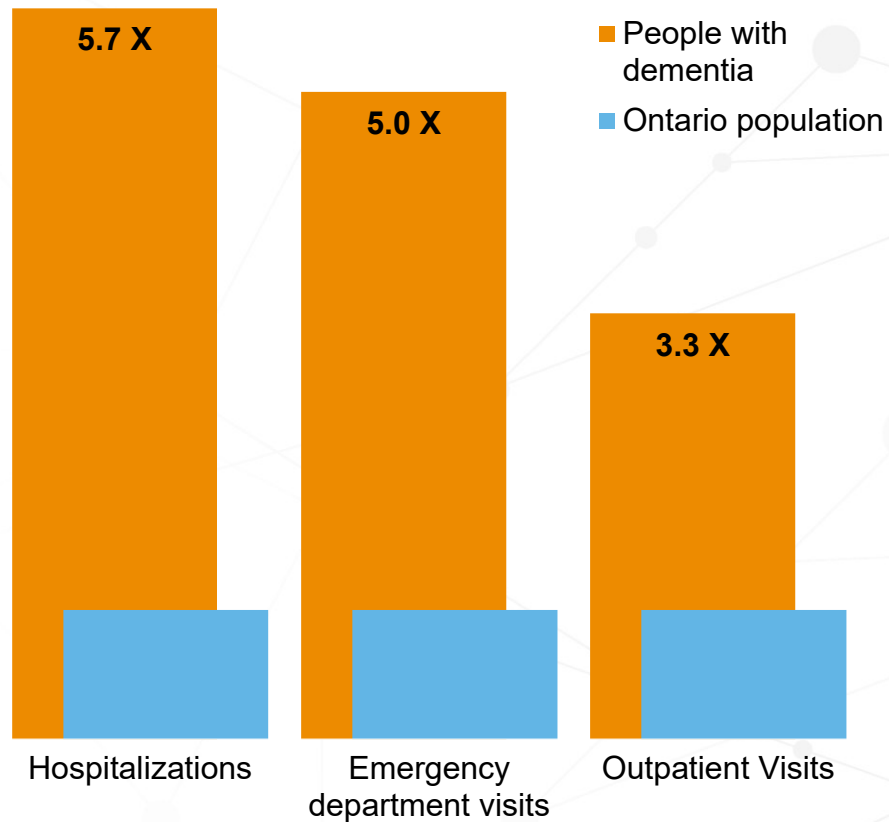


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\*Note, other brain disorders studied include: non-malignant brain tumour, benign brain tumour, dementia (incl. Alzheimer's disease), epilepsy, motor neuron disease, multiple sclerosis, parkinsonism, schizophrenia, spina bifida, spinal cord injury,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



# Mental Health and addictions service use



Of those individuals who were identified as having dementia in 2019, their visit rates for mental health and addictions related services were between 3.3X to 5.7X 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
Dementia (including Alzheimer's disease)	I	Accepted/validated algorithm: <a href="https://content.iospress.com/articles/journal-of-alzheimers-disease/jad16010">https://content.iospress.com/articles/journal-of-alzheimers-disease/jad16010</a>	1 hospitalization record <u>or</u> 3 physician claim records at least 30 days apart in a 2-year period <u>or</u> 1 prescription drug reimbursement record	46.1, 290.0, 290.1, 290.2, 290.3, 290.4, 294, 331.0, 331.1, 331.5	F00, F01, F02, F03, G30	N/A	Cholinesterase inhibitors = Donepezil, Galantamine, Memantine, Rivastigmine, Tacrine	N/A	40 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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