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## Canadian Survey on Disability

### Age of Disability: From Onset to Limitation

by Stuart Morris and Carryl McDiarmid

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# Age of Disability: From Onset to Limitation

By **Stuart Morris** and **Carrly McDiarmid**

## Abstract

Cross-sectional surveys on persons with disabilities are designed to capture disability at a single point in time. This approach can be appropriate for initiatives that require information on the current population of persons with disabilities. However, such surveys can present challenges in addressing how disabilities progress over time. Understanding when disabilities are most likely to first occur (age of onset) or limit daily activities (age of limitation) can inform the timing of program and service intervention. To address this data gap, the 2017 Canadian Survey on Disability contained questions regarding both age of onset and limitation for each disability type a person may have. Using these questions, the present paper provides an overview of the relationship between disability at time of the survey in 2017, age of onset, and age of limitation. The main findings are:

- The average age of onset for flexibility, dexterity, or mobility disabilities was 53 years. They began to limit daily activities, on average, around one year later.
- The average age of onset for hearing disabilities was 47 years. They began to limit daily activities, on average, around four years later.
- The average age of onset for pain-related disabilities was 45 years. They began to limit daily activities, on average, around two years later.
- The average age of onset for memory disabilities was 44 years. They began to limit daily activities, on average, around one year later.
- The average age of onset for seeing disabilities was 35 years. They began to limit daily activities, on average, around eight years later.
- The average age of onset for mental health-related disabilities was 28 years, however the median age was lower at around 21 years. Those with this disability type began to feel limited in their daily activities around four years later.
- The average age of onset for learning disabilities was 23 years, however the median age of onset was lower at around 10 years. This disability type began to limit daily activities, on average two years later.
- Most persons were limited in daily activities at the same age as onset, regardless of disability type. However, the proportion ranged from 54% among those with seeing disabilities to 85% among those with flexibility or dexterity disabilities.
- Overall, the average age of onset and limitation either occurred later for women than for men, or there were no differences found by sex.
- However, once disability onset occurred, the period from onset to limitation for many types was about the same across age groups and sex.

## Introduction

Services and programs can play an important role in supporting persons with disabilities and creating inclusive and accessible environments. Previous research shows that many persons with disabilities have unmet needs for various disability supports, such as aids and assistive devices, medication and workplace accommodations (Morris et al., 2018; Morris, 2019). In the context of the pandemic, a large proportion of participants with disabilities reported unmet needs for health services, for example, physiotherapy, massage therapy or chiropractic treatments, occupational therapy, and support group services (Yang, Dorrance and Aitken, 2020). Developing a better understanding of the age of onset and age of limitation for different disability types can inform the optimal timing for different services and supports. This information could allow service providers and program planners to design and implement initiatives that better meet the needs of persons with disabilities. In addition, it could lead to better coordination of programs and services, making links between services that are age based and address disability type specific needs.

This paper presents preliminary findings on the relationship between disability, age of onset or diagnosis,<sup>1</sup> and age of limitation. These findings are based on questions asked for each disability type covered in the 2017 Canadian Survey on Disability (CSD). The paper is divided into five sections. Section one defines and differentiates age of onset or diagnosis, age of limitation, and period from onset to limitation. Section two profiles each disability type<sup>2</sup> in terms of age of onset or diagnosis and limitation and, where applicable, period from onset to limitation. Section three describes differences in age of onset or diagnosis and age of limitation for each disability type by sex and severity of disability. Section four examines different age groups to uncover differences in either onset or limitation not otherwise captured when looking at the population as a whole. Finally, Section five provides a summary and conclusions.

## Section 1: Methodology and Rationale

The challenge with cross-sectional surveys on persons with disabilities is that they are designed primarily to capture disabilities at a single point in time. Conversely, longitudinal surveys, which are more costly and time-consuming, track the same individuals over time. In most instances, the cross-sectional approach can be appropriate for policies and programs that only require information on the current age and population of persons with disabilities. However, when addressing questions around the progression of disabilities (from onset to limitation), use of the cross-sectional approach can be challenging for several reasons. First, different disability types can have different ages of onset. Second, the age at which disabilities actually start to limit daily activities may not always be the same as the age of onset. And finally, disability type, onset, and limitation can intersect with other demographic characteristics, which can include severity of disability, age and sex. It can also intersect with socioeconomic characteristics, such as income and employment status, as well as psychosocial factors, health behaviours and access to timely care or support.

For the first time, the 2017 Canadian Survey on Disability contained a set of questions on both age of onset and limitation for each disability type a person may have. The present research takes advantage of these new questions to provide an overview of the relationship between disability, onset, and limitation. In this paper, four metrics are used: age of onset, age of diagnosis, age of limitation, and period from onset to limitation.

1. **Age of onset:** The self-reported age, measured in years, at which a person first began to have difficulties associated with a specific disability type (with the exception of developmental disabilities). The age of onset, in other words, addresses the first occurrence of a disability.
2. **Age of diagnosis:** Asked only of persons with developmental disabilities instead of self-reported age of onset. It refers to the age, measured in years, at which they were first diagnosed by a healthcare professional. However, age of diagnosis may not coincide with the age at which a person first experienced or was limited by their disability. Therefore direct comparability of developmental disabilities with other disability types is problematic. In addition, calculation of mean periods from diagnosis to limitation can be distorted because negative values can be assigned when age of limitation occurred before age of diagnosis.
3. **Age of limitation:** The self-reported age, measured in years, at which a person's difficulties associated with a specific disability type began to limit their daily activities. In some cases, the age of limitation will be the same as age of onset while in other cases, the age of limitation may occur later than age of onset.
4. **Period from onset to limitation:** The length of time, measured in years, between the age of onset of disability and the age when it began to limit daily activities. This can be a useful metric to compare the delay in onset to limitation (if one exists) between different disability types or within the same disability type by selected characteristics such as sex and severity of disability.

1. Persons with developmental disabilities were asked the age at which they were diagnosed by a healthcare professional instead of age of onset.

2. Technically there are eleven disability types covered in the CSD including the "unknown" category. Given its limited analytical value, this paper focuses on only the ten main disability types. This "unknown" category is however included in analyses on tables that involve the total number of disability types respondents may have.

## Section 2: Profile

This section presents both mean and median age of onset or diagnosis and limitation for each disability type among the overall population of persons with disabilities aged 15 years and older. It also explores differences in mean periods from onset to limitation. Finally, it covers the age distributions of onset and limitation for most disability types<sup>3</sup> as well as four interval classes for period from onset to limitation.

### 2.1 Mean and Median Age of Onset and Limitation

When looking at the overall population of persons with disabilities aged 15 years and older, there were variations in the age of onset and limitation for different types of disabilities. Overall, age of onset of physical disabilities (flexibility, dexterity, and mobility) occurred in a person's 50s; pain-related, hearing, and memory disabilities occurred in their 40s; seeing disabilities occurred in their 30s; and learning and mental health-related disabilities occurred in their 20s (Table 1).

For most disability types, the mean and median age of onset was approximately the same. The exception was learning disabilities, where the difference between mean and median was quite pronounced (13 years) and to a lesser degree mental health-related disabilities (6 years). This difference is likely a function of the high concentration of these disability types among younger age groups.

**Table 1**  
**Age of onset, age of limitation, and period from onset to limitation, persons with disabilities aged 15 years and older, by disability type, Canada, 2017**

Disability type	Age of onset		Age of limitation		Period from onset to limitation (years)
	mean	median	mean	median	mean
<b>Physical</b>					
Flexibility	52.0	52.6	52.9	54.0	0.8
Dexterity	53.0	54.2	53.8	54.6	0.8
Mobility	53.1	54.3	54.5	55.0	1.4
<b>Pain-related</b>	44.5	44.6	46.9	47.7	2.4
<b>Sensory</b>					
Hearing	47.2	49.6	50.9	53.5	3.7
Seeing	34.5	38.4	42.6	45.5	8.1
<b>Cognitive</b>					
Memory	43.7	44.3	44.8	44.9	1.2
Learning	22.6	9.7	25.0	13.9	2.3
<b>Mental health-related</b>	27.5	21.2	31.1	26.9	3.6

**Notes:** Age of onset and age of limitation are self-reported by the respondent. Developmental disabilities are not included because different age questions were asked. Median period from onset to limitation was 0 years for all disability types.

**Source:** Statistics Canada, Canadian Survey on Disability, 2017.

The age of limitation results showed a slightly different pattern than age of onset. While limitation due to physical disabilities still occurred in one's 50s, hearing disabilities moved from onset in one's late 40s to limitation in their 50s. Limitation due to pain-related and memory disabilities still occurred in one's 40s, while seeing disabilities moved from onset in one's 30s to limitation in their 40s. Limitation due to learning disabilities still occurred in one's 20s, while mental health-related disabilities moved from onset in a person's late 20s, to limitation in their early 30s. For most disability types, the mean and median yielded approximately the same ages. The exception again was learning disabilities where the difference between mean and median was 11 years and mental health-related disabilities to a lesser degree (four years).

The mean interval<sup>4</sup> from age of onset to age of limitation further highlights important variations by disability type. The shortest delay from onset to limitation occurred for flexibility, dexterity, mobility, and memory disabilities at around one year. The longest period occurred for seeing disabilities, with a mean delay of eight years from onset to limitation. Hearing and mental health-related disabilities also had relatively long delays, with a mean delay

3. Developmental disabilities were excluded from this analysis.

4. The median period from onset to limitation was 0 years for all disability types due to the high proportion with same age onset and limitation. It is not presented due to its limited analytical value in capturing important variations by disability type.

of approximately four years, while pain-related and learning disabilities averaged around two years from onset to limitation.

## 2.2 Developmental Disabilities and Age of Diagnosis

Unlike other disability types covered in the 2017 CSD, age of diagnosis was asked instead of age of onset for those with developmental disabilities. While the mean age of diagnosis was 16 years, the mean age of limitation was slightly lower at 15 years (Table 2). This suggests that those with developmental disabilities, on average, may already be experiencing some degree of limitation in their daily activities prior to being diagnosed by a healthcare professional. This is also supported by the finding that age of limitation occurred before age of diagnosis for 25% of persons with developmental disabilities. It should be noted, however, that the larger majority reported the same age for both diagnosis and limitation (64%) while the remaining 11% had limitation that occurred sometime after their diagnosis.

**Table 2**  
**Age of diagnosis and age of limitation, persons with developmental disabilities aged 15 years and older, Canada, 2017**

Disability type	Age of diagnosis mean	Age of limitation mean	Limitation occurred:		
			Prior to diagnosis percent	Same age as diagnosis percent	After diagnosis percent
Developmental	15.9	14.5	25.0	64.2	10.9

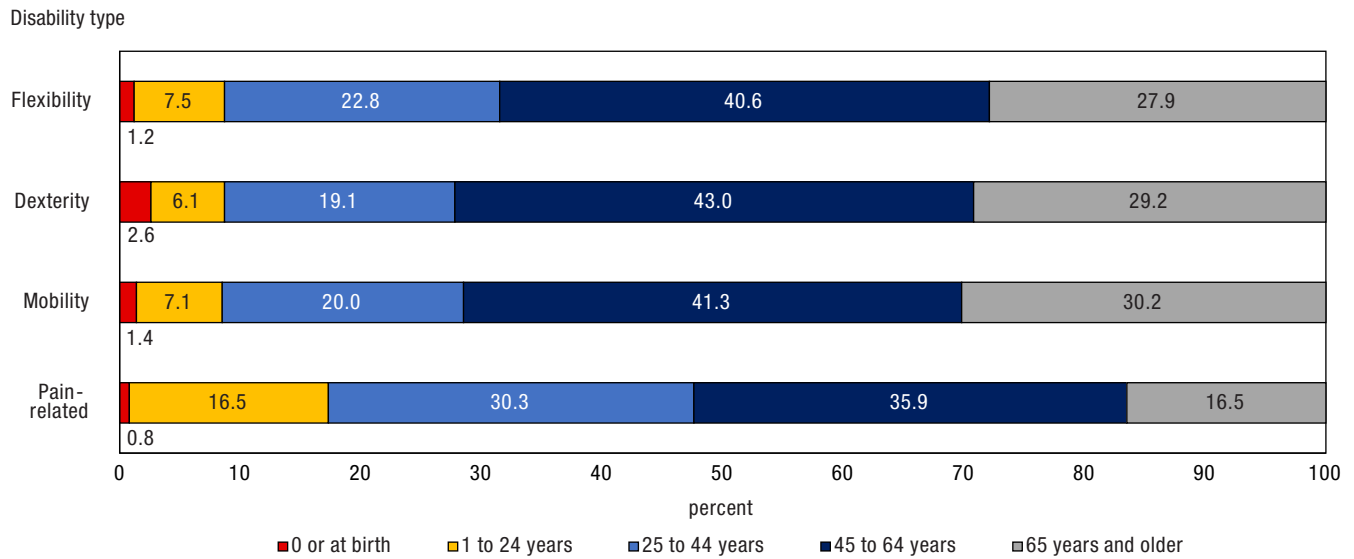
**Notes:** Respondents with developmental disabilities were asked the age at which they were diagnosed by a healthcare professional instead of self-reported age of onset. Since some may already experience limitations prior to their age of diagnosis, it is possible to have a lower age of limitation than age of diagnosis.

**Source:** Statistics Canada, Canadian Survey on Disability, 2017.

## 2.3 Age Distribution of Onset and Limitation

In addition to differences in mean and median ages, the age distributions of onset and limitation also revealed distinctive patterns across different disability types. Onset for flexibility, dexterity, mobility, and pain-related disability types was most likely to occur between ages 45 to 64 years (Chart 1). For example, 36% of those with pain-related disabilities and 43% of those with dexterity disabilities reported that the onset occurred between age 45 and 64. The proportion with an onset that occurred after age 64 years was also relatively large among those with mobility (30%), dexterity (29%), and flexibility (28%) disabilities. The second largest age group for onset of pain-related disabilities occurred earlier at age 25 to 44 years (30%). This suggests that there is a high concentration of onset for pain-related disabilities during the early and middle stages of one's potential working age years.

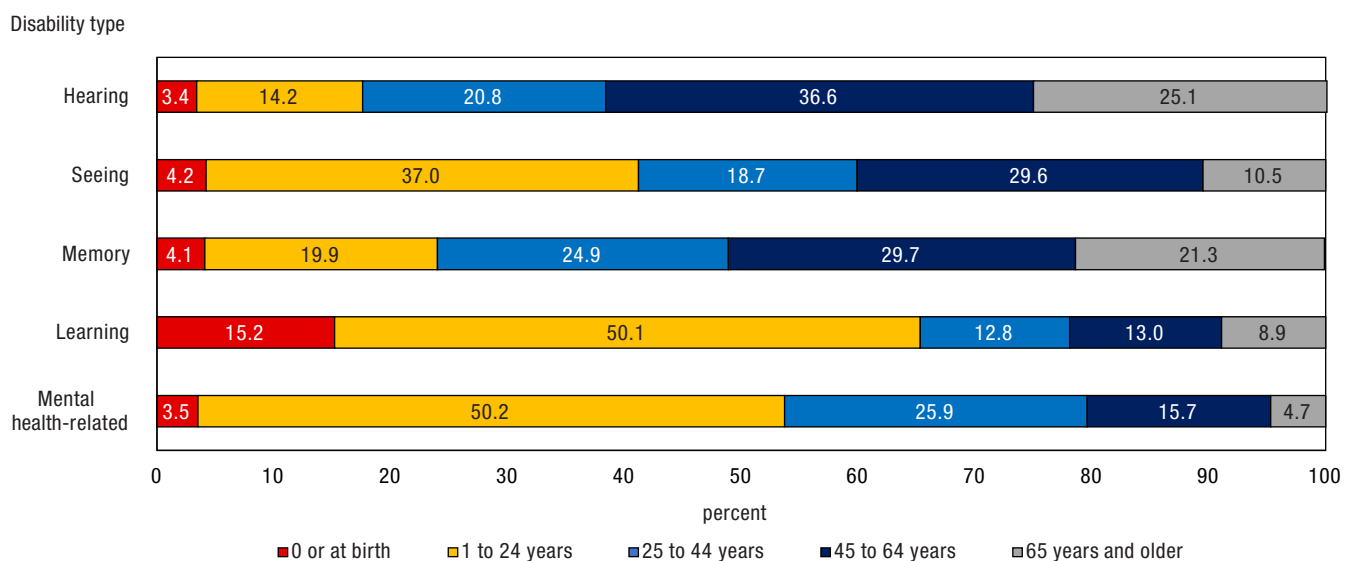
**Chart 1**  
**Distribution of age of onset, persons with disabilities aged 15 years and older, by flexibility, dexterity, mobility, and pain-related disabilities, Canada, 2017**



Source: Statistics Canada, Canadian Survey on Disability, 2017.

Among those with learning (50%) or mental health-related (50%) disabilities, onset was more likely to occur between ages 1 to 24 years (Chart 2). It is also worth noting that only a small percentage of onset occurred after 64 years of age for either disability type (9% and 5%, respectively). This finding highlights the earlier onset of learning and mental health-related disabilities relative to other disability types. For hearing (37%) and memory (30%) disabilities, onset was most likely to occur between ages 45 to 64 years. A further 25% (hearing) and 21% (memory) had onset after age 64 years. Onset of seeing disabilities was most likely to occur between ages 1 to 24 years (37%) with an additional 30% experiencing onset at ages 45 to 64 years.

**Chart 2**  
**Distribution of age of onset, persons with disabilities aged 15 years and older, by hearing, seeing, memory, learning and mental health-related disabilities, Canada, 2017**



Source: Statistics Canada, Canadian Survey on Disability, 2017.

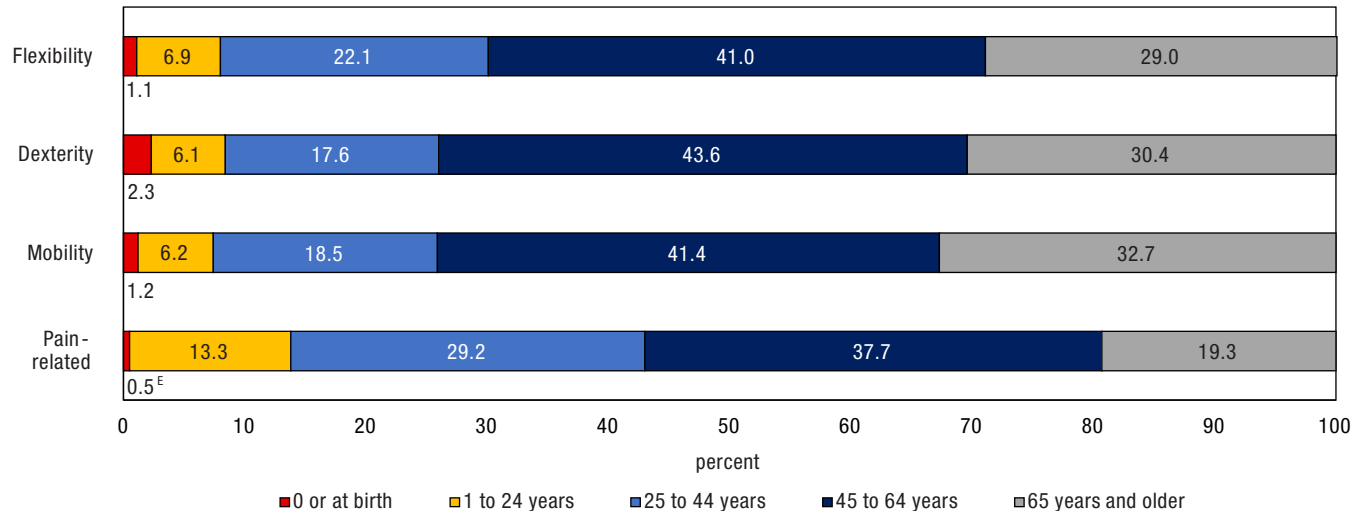


As was the case with onset, limitation was most likely to occur between ages 45 to 64 years for flexibility, dexterity, mobility and pain-related disabilities (Chart 3). Limitation in this age group ranged from 38% among pain-related disabilities to 44% among dexterity disabilities. The proportion with limitation after age 64 years was also relatively large for mobility (33%), dexterity (30%), and flexibility (29%) disabilities. As was the case with onset, the second largest age range for limitation due to pain-related disabilities (29%) occurred earlier between ages 25 to 44 years.

### Chart 3

#### Distribution of age of limitation, persons with disabilities aged 15 years and older, by flexibility, dexterity, mobility, and pain-related disabilities, Canada, 2017

Disability type



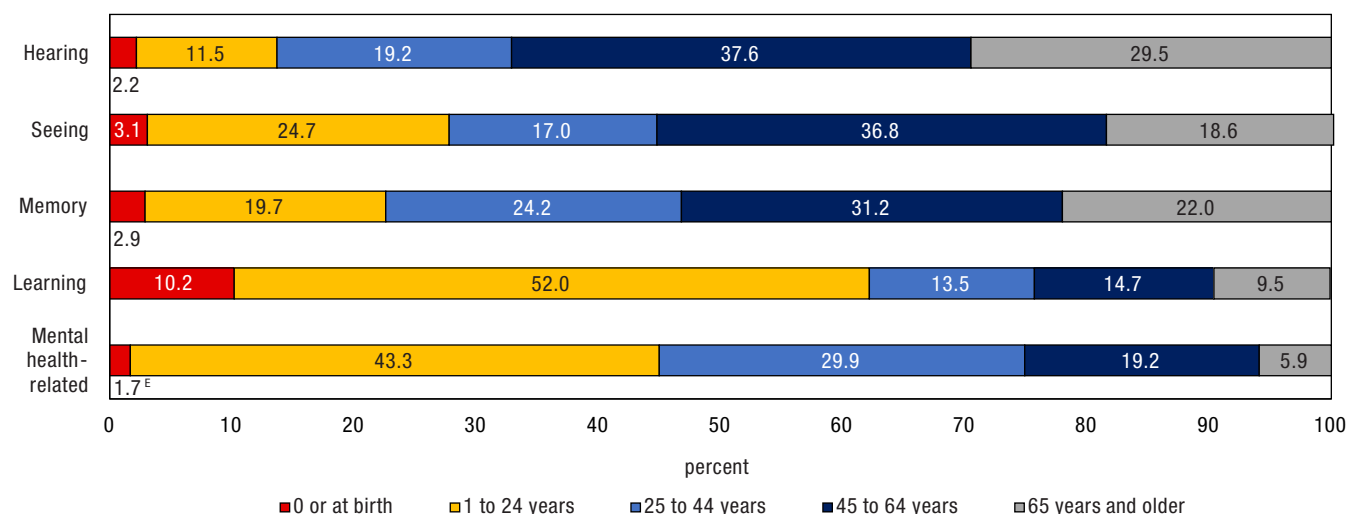
<sup>E</sup> use with caution

Source: Statistics Canada, Canadian Survey on Disability, 2017.

Limitation due to learning (52%) or mental health-related (43%) disabilities was more likely to occur between ages 1 to 24 years (Chart 4). For hearing (38%), seeing (37%), and memory (31%) disabilities, limitation was most common between ages 45 to 64 years. For mental health-related disabilities, limitation was least likely to occur after age 64 years (6%).

**Chart 4****Distribution of age of limitation, persons with disabilities aged 15 years and older, by hearing, seeing, memory, learning and mental health-related disabilities, Canada, 2017**

Disability type

<sup>E</sup> use with caution

Source: Statistics Canada, Canadian Survey on Disability, 2017.

**2.4 From Onset to Limitation: Intervals**

The majority of persons were limited in daily activities at the same age as the onset of their disability, regardless of disability type (Table 3). In other words, age of limitation was the same as age of onset in many cases. Flexibility or dexterity disabilities had the highest rate of same age of onset as limitation (85%). The proportions were also high for disabilities related to memory (79%), mobility (77%), learning (73%), and pain (71%). The percentage with same age onset to limitation was somewhat lower for disabilities related to mental health (63%), hearing (57%), and seeing (54%). For delays of at least 6 years or more from onset to limitation, the highest percentage was for seeing disabilities (30%) and to a lesser degree for mental health-related or hearing disabilities (18%).

**Table 3****Period from onset to limitation intervals, persons with disabilities aged 15 years and older, by disability type, Canada, 2017**

Disability type	Period intervals: From onset to limitation			
	0 or same age	1 to 2 years	3 to 5 years	6 years or greater
	percent			
<b>Physical</b>				
Flexibility	85.3	5.7	5.2	3.8
Dexterity	85.2	6.3	4.3	4.1
Mobility	77.4	8.3	7.5	6.8
<b>Pain-related</b>	70.6	7.5	9.5	12.5
<b>Sensory</b>				
Hearing	57.3	9.2	15.7	17.8
Seeing	53.9	7.3	8.8	30.0
<b>Cognitive</b>				
Memory	78.6	9.4	6.0	6.0
Learning	72.7	7.2	7.9	12.2
<b>Mental health-related</b>	63.4	9.6	8.8	18.2

Note: Significance tests were not performed by disability type because persons can have multiple or co-occurring disabilities.

Source: Statistics Canada, Canadian Survey on Disability, 2017.

## Section 3: Selected Characteristics

This section explores potential variations in mean age of onset and limitation for each disability type among two key variables: sex<sup>5</sup> and severity of disability. For ease of readability, disabilities with common underlying attributes (physical, sensory, and cognitive)<sup>6</sup> are presented together in separate tables. For other disability types that do not fit neatly based on underlying attributes (disabilities related to pain, mental-health, and developmental), a separate table is presented.

### Text box 1 Severity class for each disability type

A severity score for each disability type was developed for the CSD, which took into account the level of difficulty experienced in performing certain tasks and the frequency of activity limitations. To simplify the concept of severity, two severity classes were established: less severe and more severe. It is important to understand, however, that the name assigned to each class is simply intended to facilitate use of the severity score and is not a label or judgement concerning the person's level of disability.

### 3.1 Physical Disabilities: Sex and Severity

Among those with physical disabilities, the mean age of onset occurred later for women with either flexibility (53 years) or dexterity (54 years) disabilities than it did for men (51 years for both types; Table 4). There were no differences between women and men for mean age of onset for mobility disabilities, which was approximately 53 years. For flexibility or dexterity disabilities, the mean age of limitation also occurred later for women than for men. This difference is likely a function of the later age of onset, since there were no differences by sex for mean period from onset to limitation. In other words, once the disability occurred, the time from onset to limitation was about the same for both women and men.

**Table 4**  
**Age of onset, age of limitation, and period from onset to limitation, persons with physical disabilities aged 15 years and older, by sex and severity, Canada, 2017**

Physical disability, sex, and severity of disability	Age of onset	Age of limitation	Period from onset to limitation (years)
	mean		
<b>Flexibility</b>			
Men (reference category)	51.0	51.8	0.9
Women	52.9*	53.7*	0.8
Less severe (reference category)	51.6	52.4	0.8
More severe	52.5	53.3	0.9
<b>Dexterity</b>			
Men (reference category)	51.1	51.8	0.7
Women	54.3*	55.1*	0.8
Less severe (reference category)	53.7	54.5	0.7
More severe	51.7*	52.5*	0.8
<b>Mobility</b>			
Men (reference category)	52.8	54.2	1.4
Women	53.3	54.8	1.5
Less severe (reference category)	52.6	53.9	1.3
More severe	53.6	55.2*	1.6*

\* significantly different from reference category ( $p < 0.05$ )

Source: Statistics Canada, Canadian Survey on Disability, 2017.

5. In the survey, the question was asked in the following way: "Are you....?" Respondents were asked to select male or female. Separate questions on sex at birth and gender were not asked in 2017.

6. Physical disability includes mobility, flexibility, and dexterity disability types. Sensory disability includes seeing and hearing disability types. Cognitive disability includes learning and memory disability types.

When broken down by severity of disability, no differences were found in mean age of onset for either flexibility or mobility disabilities. However, the mean age of onset occurred earlier for persons with “more severe” (52 years) than those with “less severe” (54 years) dexterity disabilities. The mean age of limitation also occurred earlier for persons with “more severe” dexterity disabilities compared to those with “less severe” dexterity disabilities. Again, this difference is likely a function of the earlier onset, since there were no differences by severity for mean period from onset to limitation. The mean age of limitation occurred later and the period from onset to limitation was longer for persons with “more severe” mobility disabilities compared to their “less severe” counterparts.

### 3.2 Sensory Disabilities: Sex and Severity

Among those with either hearing or seeing disabilities, there were no differences between women and men for mean age of onset. However, for those with hearing disabilities, the mean age of limitation occurred later for women (52 years) than for men (50 years). The mean period from onset to limitation was not different by sex for those with hearing disabilities. For those with seeing disabilities, however, women experienced longer delays (nine years) than did men (six years).

**Table 5**  
**Age of onset, age of limitation, and period from onset to limitation, persons with sensory disabilities aged 15 years and older, by sex and severity, Canada, 2017**

Sensory disability, sex, and severity of disability	Age of onset	Age of limitation	Period from onset to limitation (years)
	mean		
<b>Hearing</b>			
Men (reference category)	46.2	49.6	3.4
Women	48.4	52.4*	4.0
Less severe (reference category)	48.0	51.4	3.4
More severe	44.4*	49.2	4.8*
<b>Seeing</b>			
Men (reference category)	35.8	42.0	6.2
Women	33.6	43.0	9.4*
Less severe (reference category)	34.0	43.0	8.9
More severe	35.8	41.6	5.8*

\* significantly different from reference category ( $p < 0.05$ )

Source: Statistics Canada, Canadian Survey on Disability, 2017.

When broken down by severity of disability, the mean age of onset occurred earlier for persons with “more severe” (44 years) hearing disabilities than for those with “less severe” (48 years) hearing disabilities. No differences by severity were found for those with seeing disabilities. The mean age of limitation was not significantly different by severity for either hearing or seeing disabilities. However, the mean period from onset to limitation was significant for both disability types. Specifically, longer periods were found for those with “more severe” hearing disabilities whereas shorter periods were found for those with “more severe” seeing disabilities, compared to their “less severe” counterparts.

### 3.3 Cognitive Disabilities: Sex and Severity

The mean age of onset occurred later for women with learning disabilities (26 years) than it did for men (20 years). The mean age of limitation also occurred later for women with learning disabilities than it did for men. Again, this result is likely a function of the later age of onset among women, because no significant differences by sex were found for mean period from onset to limitation. There were no differences between women and men for mean age of onset or mean age of limitation for memory disabilities.

**Table 6**  
**Age of onset, age of limitation, and period from onset to limitation, persons with cognitive disabilities aged 15 years and older, by sex and severity, Canada, 2017**

Cognitive disability, sex, and severity of disability	Age of onset	Age of limitation	Period from onset to limitation (years)
	mean		
<b>Memory</b>			
Men (reference category)	43.0	44.1	1.0
Women	44.2	45.5	1.2
Less severe (reference category)	44.0	45.2	1.2
More severe	43.1	44.2	1.1 <sup>£</sup>
<b>Learning</b>			
Men (reference category)	19.6	22.1	2.5
Women	25.7*	27.9*	2.2
Less severe (reference category)	21.4	24.2	2.8
More severe	24.3*	26.1	1.7*

<sup>£</sup> use with caution

\* significantly different from reference category ( $p < 0.05$ )

Source: Statistics Canada, Canadian Survey on Disability, 2017.

When examined by disability severity, the mean age of onset occurred later for persons with “more severe” (24 years) learning disabilities than it did for their “less severe” (21 years) counterparts. No differences in age of onset were found among those with memory disabilities. The age of limitation was not significantly different by severity for either memory or learning disabilities. However, the period from onset to limitation was significantly shorter for persons with “more severe” (two years) learning disabilities than those with “less severe” learning disabilities (three years).

### 3.4 Developmental Disabilities: Sex and Severity

Among those with developmental disabilities, no differences were found between women and men (Table 7). The mean age of diagnosis was 17 years for women compared to 15 years for men. The mean age of limitation was not significantly different for women (16 years) relative to men (14 years). There were roughly equal percentages of men and women who reported that their limitation occurred prior to diagnoses (around 25%) and at the same time as diagnosis (around 64%).

**Table 7**  
**Age of diagnosis and age of limitation, persons with developmental disabilities aged 15 years and older, by sex and severity, Canada, 2017**

Sex and severity of disability	Age of diagnosis	Age of limitation	Limitation occurred:		
			Prior to diagnosis	Same age as diagnosis	After diagnosis
	mean		percent		
<b>Developmental</b>					
Men (reference category)	15.0	13.8	25.2	64.6	10.1 <sup>£</sup>
Women	17.3	15.7	24.6	63.4	12.0 <sup>£</sup>
Less severe (reference category)	15.4	14.0	22.8	68.9	8.3 <sup>£</sup>
More severe	16.2	14.9	27.5	58.7	13.8 <sup>£</sup>

<sup>£</sup> use with caution

Notes: Respondents with developmental disabilities were asked the age at which they were diagnosed by a healthcare professional instead of the age of actual onset. Since some may experience limitations in their daily activities prior to their age of diagnosis, it is possible to have a lower age of limitation than age of diagnosis. Significant differences were not found by sex or severity of disability ( $p < 0.05$ ).

Source: Statistics Canada, Canadian Survey on Disability, 2017.

When broken down by severity of disability, no differences were found for either average age of diagnosis (around 15 years) or age of limitation (around 14 years). Again, most reported the same age of limitation as age of diagnosis (around three in five) and more than one in five reported that their limitation occurred prior to diagnoses, regardless of severity of disability.

### 3.5 Pain and Mental Health-Related Disabilities: Sex and Severity

Among those with disabilities related to pain or mental health, there were no differences between women and men in either mean age of onset or mean age of limitation. However, for those with pain-related disabilities, the mean period from onset to limitation was significantly longer for women (three years) than it was for men (two years). Among those with mental health-related disabilities, there were no differences between women and men in the period from onset to limitation.

**Table 8**  
**Age of onset, age of limitation, and period from onset to limitation, persons with pain and mental health-related disabilities aged 15 years and older, by sex and severity, Canada, 2017**

Disability type, sex, and severity of disability	Age of onset	Age of limitation	Period from onset to limitation (years)
	mean		
<b>Pain-related</b>			
Men (reference category)	44.5	46.7	2.2
Women	44.4	47.0	2.6*
Less severe (reference category)	44.1	46.5	2.4
More severe	45.0	47.5	2.5
<b>Mental health-related</b>			
Men (reference category)	28.2	31.4	3.2
Women	27.1	31.0	3.9
Less severe (reference category)	28.2	31.4	3.2
More severe	26.5*	30.7	4.2*

\* significantly different from reference category ( $p < 0.05$ )

Source: Statistics Canada, Canadian Survey on Disability, 2017.

The mean age of onset was not significantly different by severity of disability among those with pain-related disabilities. However, the mean age of onset did occur earlier among those with “more severe” (27 years) mental health-related disabilities than their “less severe” (28 years) counterparts. There were no differences in mean age of limitation by severity for either pain-related or mental health-related disabilities. However, the period from onset to limitation was significantly longer for persons with “more severe” mental health-related disabilities than for those with “less severe” mental health-related disabilities. This difference is likely due to the earlier age of onset among those with “more severe” disabilities.

## Section 4: Age Groups

This section explores potential variations in mean age of onset and limitation for each disability type among four age groups: 15 to 24 years, 25 to 44 years, 45 to 64 years, and 65 years and older. This analysis of age groups highlights important differences that could otherwise be missed when looking at the total population of persons with disabilities aged 15 years and older. The characteristics of each age group and the likelihood of developing certain disability types at certain points in one’s lifespan can influence the average age of onset and limitation. Analyzing age groups can provide more precise information on the timing of disability onset and limitation as well as differences, if any, in the length of period from onset to limitation between age groups.

### 4.1 Age Group: 15 to 24 years

Among those aged 15 to 24 years, the mean age of onset varied by disability type. Learning (6 years) and hearing (7 years; Table 9) disabilities had the earliest onset. Pain-related and flexibility disabilities occurred the latest, (both 14 years). For mental health-related and mobility disabilities, the mean age of onset for this group was 12 years. The mean age of limitation followed a similar ordering to age of onset: learning disabilities had the earliest age of limitation (8 years) whereas pain-related disabilities had the latest (15 years).

**Table 9**  
**Age of onset and age of limitation, persons with disabilities aged 15 to 24 years, by disability type, Canada, 2017**

Disability type by age group: 15 to 24 years	Age of onset			Age of limitation		
	Both sexes	Women	Men (reference category)	Both sexes	Women	Men (reference category)
	mean					
Flexibility	13.6	14.7*	12.1	14.0	15.2*	12.4
Dexterity	7.7	9.1	6.4 <sup>†</sup>	8.6	9.9	7.5 <sup>†</sup>
Mobility	11.8	12.7*	9.9	12.6	13.6*	10.7
Pain-related	14.2	14.3	14.1	15.4	15.6	14.9
Hearing	7.4	8.0	6.8	9.7	11.2*	7.9
Seeing	10.4	10.9*	9.3	12.0	12.6*	10.9
Memory	10.4	11.4*	9.3	11.3	12.5*	10.0
Learning	6.0	7.2*	5.0	7.8	9.4*	6.4
Mental health-related	11.9	12.5*	10.8	13.7	14.3*	12.4

<sup>†</sup> use with caution

\* significantly different from reference category ( $p < 0.05$ )

Note: Significance tests were not performed on "both sexes" categories.

Source: Statistics Canada, Canadian Survey on Disability, 2017.

The mean age of limitation occurred later for women than for men for most disability types. For instance, the mean age of limitation for women with mental health-related disabilities was 14 years, compared to 12 years for men. The largest sex difference was found between women (15 years) with flexibility disabilities versus men (12 years) with flexibility disabilities. The only exception was for those with dexterity or pain-related disabilities, where there were no differences by sex.

## 4.2 Age Group: 25 to 44 years

The mean age of onset varied by disability type for those aged 25 to 44 years. Learning disabilities (12 years) and seeing disabilities (17 years; Table 10) occurred the earliest. Flexibility and mobility disabilities occurred the latest, with a mean age of onset of 28 years for both. For mental health-related disabilities, the mean age of onset was 19 years. The mean age of limitation followed a similar pattern to age of onset, with the earliest occurring for learning (14 years) disabilities and the latest occurring for flexibility and mobility (29 years for both) disabilities.

**Table 10**  
**Age of onset and age of limitation, persons with disabilities aged 25 to 44 years, by disability type, Canada, 2017**

Disability type by age group: 25 to 44 years	Age of onset			Age of limitation		
	Both sexes	Women	Men (reference category)	Both sexes	Women	Men (reference category)
	mean					
Flexibility	28.2	28.6	27.6	28.8	29.4	28.2
Dexterity	27.2	27.9	26.0	27.7	28.6	26.3
Mobility	28.0	28.7	26.9	28.9	29.5	27.9
Pain-related	26.1	25.8	26.6	28.0	27.9	28.2
Hearing	21.0	20.7	21.3	24.7	25.2	24.2
Seeing	16.7	16.6	16.8	20.4	20.8	19.7
Memory	24.9	26.2*	23.2	26.0	27.5*	24.1
Learning	11.7	13.8*	9.5	14.0	16.3*	11.6
Mental health-related	19.4	19.5	19.3	22.7	23.0	22.2

\* significantly different from reference category ( $p < 0.05$ )

Note: Significance tests were not performed on "both sexes" categories.

Source: Statistics Canada, Canadian Survey on Disability, 2017.

When examining mean differences by sex, both the age of onset and the age of limitation occurred later for women than men for memory and learning disabilities. The mean age of limitation was 28 years for women with memory disabilities compared to 24 years for men. For learning disabilities, the mean age of limitation was 16 years for women compared to 12 years for men. There were no other differences by sex for any of the other disability types.

### 4.3 Age Group: 45 to 64 years

The mean age of onset varied by disability type with the earliest occurring for disabilities related to learning (27 years), mental health (33 years), and seeing (33 years; Table 11). Dexterity (48 years), flexibility, and mobility (47 years for both) disabilities occurred the latest. The mean age of limitation followed a somewhat similar ordering to age of onset with the earliest occurring for learning (29 years) disabilities and the latest occurring for dexterity (49 years), flexibility (48 years) and mobility (48 years). Notably, when examining mean age of limitation no differences were found between men or women on any of the disability types.

**Table 11**

**Age of onset and age of limitation, persons with disabilities aged 45 to 64 years, by disability type, Canada, 2017**

Disability type by age group: 45 to 64 years	Age of onset			Age of limitation		
	Both sexes	Women	Men (reference category)	Both sexes	Women	Men (reference category)
	mean					
Flexibility	46.8	47.3	46.1	47.7	48.2	47.0
Dexterity	47.7	48.4	46.8	48.5	49.2	47.5
Mobility	46.7	46.6	46.8	48.0	48.1	47.9
Pain-related	43.2	43.4	43.1	45.5	45.8	45.0
Hearing	40.4	39.4	41.1	43.8	43.6	44.0
Seeing	33.2	32.0	34.8	41.2	41.5	40.8
Memory	42.5	42.8	42.1	43.7	44.2	43.1
Learning	26.8	28.8	24.7	29.2	30.7	27.6
Mental health-related	33.3	33.1	33.8	37.7	38.0	37.3

\* significantly different from reference category ( $p < 0.05$ )

Note: Significance tests were not performed on "both sexes" categories.

Source: Statistics Canada, Canadian Survey on Disability, 2017.

### 4.4 Age Group: 65 years and older

The mean age of onset varied by disability type among this age group. The earliest occurred for disabilities related to seeing (50 years) and mental health (52 years; Table 12). Memory (70 years) and dexterity (68 years) disabilities occurred the latest. The mean age of limitation followed a similar pattern to age of onset. The earliest limitation occurred for mental health-related disabilities (57 years) and the latest occurred for dexterity (69 years), flexibility (68 years), and mobility (68 years) disabilities.

**Table 12**

**Age of onset and age of limitation, persons with disabilities aged 65 years and older, by disability type, Canada, 2017**

Disability type by age group: 65 years and older	Age of onset			Age of limitation		
	Both sexes	Women	Men (reference category)	Both sexes	Women	Men (reference category)
	mean					
Flexibility	67.4	68.4*	66.0	68.2	69.2*	67.1
Dexterity	68.1	68.8	67.0	68.9	69.6	67.7
Mobility	66.7	67.3*	65.8	68.4	69.0*	67.5
Pain-related	61.3	61.8	60.5	64.4	65.1*	63.5
Hearing	61.5	64.0*	59.1	65.4	67.8*	63.2
Seeing	50.3	49.5	51.5	62.2	63.1	60.8
Memory	70.1	70.8	69.3	71.2	71.7	70.6
Learning	57.2	62.5*	51.2	60.1	64.8*	54.9
Mental health-related	52.3	52.1	52.5	56.9	56.6	57.2

\* significantly different from reference category ( $p < 0.05$ )

Note: Significance tests were not performed on "both sexes" categories.

Source: Statistics Canada, Canadian Survey on Disability, 2017.

Age of limitation occurred later for women than for men for flexibility, mobility, pain-related, hearing, and learning disabilities. The largest difference was between women (65 years) with learning disabilities versus men (55 years). There were no significant differences by sex for dexterity, seeing, memory, or mental health-related disabilities.



## 4.5 Age Groups: Onset to Limitation

In addition to age of onset and limitation, it is useful to examine the period from onset to limitation for different disability types between age groups. While there can be variations in the age of disability onset by age groups, it is worth examining whether the actual length of the period from onset to limitation is similar between these groups. In other words, once the disability first occurs, is the delay (if any such exists) from onset to limitation similar across age groups?

When examining mean periods from onset to limitation, only certain disability types had differences between age groups (Table 13). For disabilities related to dexterity, memory, and learning, there were no differences in mean period among age groups. For flexibility and hearing disabilities, only those aged 15 to 24 years had significantly shorter periods compared to those aged 65 years and older. For disabilities related to mobility, pain, and seeing, mean periods were shorter for all three younger age groups relative to those aged 65 years and older. For mental health-related disabilities, both those aged 15 to 24 years and 25 to 44 years had significantly shorter mean periods compared to those aged 65 years and older.

**Table 13**  
Period from onset to limitation, persons with disabilities aged 15 years and older, by age cohort group and disability type, Canada, 2017

Disability type	Age group: Period from onset to limitation				
	15 years and older	15 to 24 years	25 to 44 years	45 to 64 years	65 years and older (reference category)
	mean (years)				
Flexibility	0.8	0.4 <sup>E*</sup>	0.7	0.9	0.9
Dexterity	0.8	0.9 <sup>E</sup>	0.5 <sup>E</sup>	0.8	0.8
Mobility	1.4	0.8 <sup>E*</sup>	0.9 <sup>*</sup>	1.3 <sup>*</sup>	1.7
Pain-related	2.4	1.1 <sup>*</sup>	1.9 <sup>*</sup>	2.2 <sup>*</sup>	3.2
Hearing	3.7	2.2 <sup>*</sup>	3.7 <sup>E</sup>	3.5	4.0
Seeing	8.1	1.6 <sup>*</sup>	3.7 <sup>*</sup>	8.0 <sup>*</sup>	11.9
Memory	1.2	0.9 <sup>E</sup>	1.2	1.2 <sup>E</sup>	1.1
Learning	2.3	1.8	2.3	2.4	3.0 <sup>E</sup>
Mental health-related	3.6	1.8 <sup>*</sup>	3.3 <sup>*</sup>	4.4	4.6

<sup>E</sup> use with caution

\* significantly different from reference category ( $p < 0.05$ )

**Note:** Significance tests were not performed on "15 years and older" category.

**Source:** Statistics Canada, Canadian Survey on Disability, 2017.

## Section 5: Conclusions

The age-related questions in the 2017 CSD allowed for analyses of age of onset and age of limitation for each disability type a person may have. The present findings indicate there are variations in the average age of onset, age of limitation, and the period from onset to limitation for different disability types. The findings also highlight the impact (if any) by sex, disability severity, and age group.

### Profile:

The paper reveals that disabilities related to flexibility, dexterity, and mobility had a later onset: around one's early 50s. High concentrations of onset occurred between ages of 45 to 64 years, and 65 years and older for these disability types. Disabilities related to pain, hearing, and memory, on the other hand, had a mean age of onset around the mid-40s. A high concentration of onset occurred between ages 25 to 44 years (particularly for pain-related and memory disabilities) and 45 to 64 years. Learning and mental health-related disabilities tended to have an earlier onset with mean ages around mid-20s; onset was concentrated between ages 1 to 24 years.

While most people experienced limitations in daily activities at the same age as onset, it was also disability specific. Disabilities related to flexibility, dexterity, and mobility had a close proximity between onset and limitation: around

80% had the same age of onset as limitation. On the other hand, disabilities related to hearing, seeing, and mental health had a greater timespan between onset and limitation: around 60% had the same age for both.

## Sex and Severity:

The paper also highlights the intersection of disability, onset, and limitation with other important characteristics including sex and severity. For all disability types, age of onset and limitation either occurred later for women than for men (flexibility, dexterity and learning disabilities) or at the same time. In almost all cases where women had later ages of limitation relative to men, it was largely due to the later age of onset as there were no differences by sex in mean interval between onset and limitation. In other words, once the disability occurred, the time from onset to limitation was about the same for both women and men. When broken down by severity of disability, there were differences only among four disability types: mobility, learning, hearing and mental health-related. For those with mobility or learning disabilities, mean age of onset or limitation occurred later for those with “more severe” than “less severe” disabilities. For those with hearing and mental health-related disabilities, mean age of onset occurred earlier for those with “more severe” versus “less severe” disabilities.

## Age Groups:

The paper also illustrates the impact of age group by disability type. There were wide variations in mean age of onset and limitation between age groups for each disability type. This finding highlights the importance of taking into account the current age of person with disabilities, since examining the overall population can mask key differences. However, when actual periods from onset to limitation were analyzed, there were minimal differences by age group for most disability types. In other words, once a disability occurred, the time from onset to limitation for most types was about the same across age groups.

## Summary

While the current findings show variation in age of onset and limitation for different disability types, in many cases the period from onset to limitation was consistent when examined by different characteristics. The results also indicate that for many persons with disabilities, the onset of their disability coincides with them feeling limited by their disability. By understanding the average age of onset and limitation for different disability types, service providers can better understand when to implement certain interventions to produce better outcomes for persons with disabilities. This information could also provide insight as to when potential prevention strategies should be implemented to reduce the risk of developing increased severity of disability or developing additional disability types or chronic conditions.

As many persons with disabilities often have more than one disability type, a limitation of the current study is that the impact of multiple disability types on age of onset and age of limitation was not examined. Due to the cross-sectional nature of the study, the findings cannot provide information on the progression over time of different disability types. Future work should consist of examining other socioeconomic factors, such as income, education or different population groups, and the intersectionality of these characteristics. In addition, further research should be done to examine the profiles of those with early disability onset versus those who experience onset later in life. Both of these considerations could help indicate the best approach for certain targeted services and programs for persons with disabilities.

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