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An update on the profile of children with affirmative responses to the 2021 Census questions on difficulties with activities of daily living



by Thomas Charters, Rubab Arim and Leanne Findlay

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An update on the profile of children with affirmative responses to the 2021 Census questions on difficulties with activities of daily living

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Abstract

This study presents an updated sociodemographic profile of children aged 0 to 14 years with affirmative responses largely based on parent reports to the questions on the 2021 Census long-form questionnaire about difficulties with activities of daily living. As part of the Disability Screening Questions, these filter questions were designed for an adult population aged 15 years and older to identify people who are likely to have a disability, and thus, relatively little is known about their suitability for a child population. In 2021, about 16.3% of children were identified as having one or more affirmative responses to the filter questions, an increase of nearly 3 percentage points from 2016. The sociodemographic associations between the presence of any affirmative responses and child and family characteristics were largely in line with findings from previous research on child disability, although some interesting results were noted given the context of the COVID-19 pandemic. Future research is required to further assess the suitability of these filter questions for generating an appropriate sampling frame for prospective data collection activities that inform inclusivity in early learning and child care for children with long-term conditions and disabilities.

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Introduction

The Multilateral Early Learning and Child Care Framework (Employment and Social Development Canada, 2017) provides a long-term vision for all children to experience high-quality early learning and child care (ELCC) that supports children's development and promotes lifelong benefits. One of the guiding principles of the framework is inclusivity, in recognition of the diversity among children and families in Canada, including children and families who experience vulnerability, such as children from low-income families or children with additional support needs.

Children with disabilities are a highly diverse group with additional support needs. Research shows that children with disabilities are less likely to receive early stimulation and responsive care, including exposure to children's books and playthings, and are more likely to experience inadequate supervision (United Nations Children's Fund, 2021). However, relatively little is known about ELCC for children with disabilities at a national level in Canada.

Knowledge gaps pertaining to ELCC for children with disabilities may arise from factors ranging from a lack of consistently collected national data on inclusivity in ELCC to challenges in identifying disabilities in children. Although the conceptualization of disability has evolved from one based on a medical model to one that incorporates the social dimension of disability (the social model)¹ (Arim, Findlay & Kohen, 2016; Furrie, 2018), challenges remain in conceptualizing and identifying childhood disability. The specific challenge is a measurement issue related to the necessary but complicated integration of both the medical and the social models of disability as depicted in the International Classification of Functioning, Disability and Health (World Health Organization, 2002).²

The main source of data on disability in Canada is the Canadian Survey on Disability (CSD), (Statistics Canada, 2021b), a post-censal survey of Canadians aged 15 years and older, excluding children aged 0 to 14 years. The CSD includes the Disability Screening Questions (DSQ), a survey measure based on a social model of disability developed by Employment and Social Development Canada (ESDC), Statistics Canada and disability experts for an adult population aged 15 years and older (Furrie, 2018; Grondin, 2016). The DSQ includes six filter questions (see Data and Methods) that are used to identify persons most likely to have a disability as well as people who are not likely to have a disability (Furrie, 2018; Grondin, 2016). Since 2016, these six filter questions have been asked on the census long-form questionnaire to generate sampling frames for the CSD, but relatively little is known about their suitability for a child population.

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1. According to Miller et al. (2013), the medical model considers disability to be something a person has because of an impairment or health condition (i.e., a medical problem), whereas the social model considers disability to be something a person with an impairment or health condition experiences because of socially imposed constraints on their autonomy and life chances (i.e., a social problem).
 2. Children are relatively dependent on their parents, caregivers and teachers, and these relationships largely determine children's activities and restrictions in participation, especially at younger ages (World Health Organization, 2007). For example, children who have a parent with the time and education to assist them with a learning disability may have the home environment needed to reduce the effect of this disability in the school environment.

Previous work

To date, one study (Charters, Schimmele, & Arim, 2022) examined the suitability of the filter questions for children aged 0 to 14 years using 2016 Census data. Approximately 13.5% of children aged 0 to 14 years were identified as likely to have a disability,³ suggesting that the filter questions of the DSQ were more inclusive and thus captured more children likely to have a disability compared to filter questions in previous censuses.⁴ Additionally, the sociodemographic associations between the presence of any affirmative responses to the filter questions and child and family characteristics were largely consistent with findings from previous research, although some unexpected results were noted (see Charters et al., 2022). Overall, the authors concluded that future research was required to further assess the suitability of the filter questions of the DSQ for generating an appropriate sampling frame for prospective child disability surveys.

The present study replicates Charters and colleagues' (2022) work with more recent data. Two primary objectives of this study are to address the robustness of the previous conclusions and to contribute to ongoing efforts to develop a national survey measure of disability for children based on a social model. Replication of the work by Charters et al. (2022) is also necessary given the context of the COVID-19 pandemic. While some research during the first wave of the pandemic (May to June 2020) showed that parent-reported child neurodevelopmental disabilities and mental health worsened (Masi et al., 2021),⁵ relatively little is known about how the pandemic affected the health and well-being of children in the general population.

The present study aims to address the following two research questions: (1) what is the sociodemographic profile of children aged 0 to 14 years who are identified as likely to have a disability on the 2021 Census, and (2) how do the results compare with the findings based on the 2016 Census? While an increase in the proportion of children with affirmative responses to some of the filter questions is possible given the pandemic context, the distributions of the proportions by children's sex, age and family socioeconomic characteristics are not generally expected to differ from well-established patterns of child disability in the literature. However, it is possible that certain domains, notably mental health, may have been differentially affected during the pandemic.

Data and methods

The 2021 Census was collected from May to July 2021. The long-form questionnaire (25% sample) included the DSQ filter questions largely based on parent reports, representing about 5,938,620 children aged 0 to 14 (i.e., less than 1% of children had missing data). The overall weighted response rate for the 2021 Census long-form questionnaire was 95.7% (Statistics Canada, 2021a). The DSQ filter questions were included within a module on activities of daily living, which referred to difficulties⁶ a person may

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3. Respondents identified as likely to have a disability through the census filter questions may not be identified as people with disabilities through the DSQ (i.e., false positives). In 2016, 35.4% of respondents aged 15 years and older were identified by the census filter questions as likely to have a disability, whereas 22.3% were identified with a disability through the DSQ.
 4. Earlier filter questions (2001 to 2011) included two items (see Charters et al., 2022).
 5. Parental reports may have been influenced by parents' own reported worsened health and well-being.
 6. Respondents were instructed to consider only difficulties or long-term conditions that had lasted or were expected to last for six months or more.

have in doing certain activities (Statistics Canada, 2021b).⁷ Respondents were asked the following questions:

Does this person have any:

- a) difficulty seeing (even when wearing glasses or contact lenses)?
- b) difficulty hearing (even when using a hearing aid)?
- c) difficulty walking, using stairs, using their hands or fingers or doing other physical activities?
- d) difficulty learning, remembering or concentrating?
- e) emotional, psychological or mental health conditions (e.g., anxiety, depression, bipolar disorder, substance abuse, anorexia, etc.)?
- f) other health problem or long-term condition that has lasted or is expected to last for six months or more?

For each question, the response categories were “no,” “sometimes,” “often” and “always.” Affirmative responses (i.e., “sometimes,” “often” or “always”) to at least one filter question defined “children likely to have a disability,” while responses indicating “no” to all filter questions defined “children not likely to have a disability.” As in previous work (Charters et al., 2022), an aggregate measure of any activity limitation was derived from an affirmative response to one or more of the filter questions to estimate the total proportion of children likely to have a disability. Children with missing responses to the filter questions (0.7%) were excluded from the sociodemographic analysis. Cross-tabulations were run for total and specific types of activity limitations by children’s age, gender and family socioeconomic characteristics.⁸

Results

Overall responses

Overall, 16.3% of children aged 0 to 14 years had affirmative responses to one or more filter questions and were identified as likely to have a disability (Table 1). Of those children with activity limitations, about half (8.5%) experienced the difficulty sometimes. Affirmative responses to difficulties learning, remembering or concentrating comprised the largest single source of difficulties (9.9%).

7. These questions do not provide an estimate of disability in Canada (Statistics Canada, 2021b) but can be used to identify people who are likely to have a disability.

8. Cross-tabulations present frequency distributions of activity limitations by selected sociodemographic characteristics and are not intended to be estimates of causation or risk of activity limitations.

Table 1
Activity limitations of Canadian children aged 0 to 14 years, weighted estimates of population percentages

Presence and frequency of activity limitations	Any activity limitation	Seeing	Hearing	Mobility, flexibility or dexterity	Learning, remembering or concentrating	Emotional, psychological or mental health	Other health problem or condition
				percentage			
No	83.0	96.2	98.2	97.6	89.3	92.7	94.9
Yes	16.3	3.0	1.0	1.6	9.9	6.5	4.3
Yes, always	4.9	0.8	0.1	0.4	1.8	1.2	2.7
Yes, often	2.9	0.4	0.1	0.3	2.3	1.1	0.5
Yes, sometimes	8.5	1.8	0.7	0.9	5.8	4.1	1.1
Not stated	0.7	0.8	0.8	0.8	0.8	0.8	0.8

Notes: Weighted number = 5,938,620. The percentages in rows 7 to 9 reflect components of row 6 (yes response).

Source: Statistics Canada, Census of Population, 2021.

Gender and age patterns

Gender refers to an individual's personal and social identity as a man, woman or non-binary person. Given that the non-binary population is small, data aggregation to a two-category gender variable was necessary to protect respondent confidentiality. Individuals in the category of "non-binary persons" were randomly distributed into the other two gender categories, denoted by the "+" symbol (see Statistics Canada, 2022).⁹ Overall, among children aged 0 to 14 years, a higher proportion of boys+¹⁰ (17.9%) than girls+¹¹ (14.9%) had an activity limitation (Table 2). The greatest single source for this difference was observed in the learning, remembering or concentrating attribute, where 12.0% of boys+ had an activity limitation compared with 7.9% of girls+.

9. This statistical method was used to maintain the balance between disseminating gender-based data as much as possible and preserving confidentiality.

10. Includes boys and some non-binary children.

11. Includes girls and some non-binary children.

Table 2
Activity limitations of Canadian children aged 0 to 14 years by age and gender, weighted estimates of population percentages

	Any activity limitation ¹	Seeing ²	Hearing ³	Mobility, flexibility or dexterity ⁴	Learning, remembering or concentrating ⁵	Emotional, psychological or mental health ⁶	Other health problem or condition ⁷
	percentage						
Child's gender							
Girl+	14.9	3.3	0.9	1.4	7.9	6.4	3.5
Boy+	17.9	2.8	1.1	1.8	12.0	6.6	5.2
Child's age (years) (total)							
0 to 3	5.3	0.6	0.5	1.8	2.5	0.7	2.0
4 to 5	10.8	1.6	0.9	1.3	6.7	2.7	3.8
6 to 9	18.6	3.4	1.2	1.5	12.2	6.7	4.8
10 to 12	23.5	4.6	1.2	1.6	14.7	10.7	5.6
13 to 14	25.7	5.5	1.2	1.7	14.5	13.3	6.0
Child's age (years) (girls+)							
0 to 3	4.7	0.6	0.4	1.7	1.9	0.6	1.7
4 to 5	8.8	1.6	0.8	1.1	4.9	2.1	2.9
6 to 9	16.1	3.5	1.0	1.2	9.5	5.8	3.7
10 to 12	21.5	5.0	1.1	1.3	11.8	10.4	4.5
13 to 14	25.7	6.3	1.1	1.5	12.0	15.3	5.3
Child's age (years) (boys+)							
0 to 3	5.9	0.6	0.6	1.8	3.0	0.8	2.3
4 to 5	12.7	1.5	1.0	1.6	8.5	3.3	4.6
6 to 9	20.9	3.3	1.3	1.8	14.7	7.5	5.9
10 to 12	25.4	4.3	1.3	1.9	17.5	10.9	6.7
13 to 14	25.6	4.7	1.3	1.9	16.9	11.5	6.6

1. Weighted number = 5,895,380.

2. Weighted number = 5,893,200.

3. Weighted number = 5,891,710.

4. Weighted number = 5,890,630.

5. Weighted number = 5,889,410.

6. Weighted number = 5,889,225.

7. Weighted number = 5,889,710.

Note: + Gender refers to an individual's personal and social identity as a man, woman or non-binary person. Given that the non-binary population is small, data aggregation to a two-category gender variable was necessary to protect respondent confidentiality. Individuals in the category of "non-binary persons" were randomly distributed into the other two gender categories, denoted by the "+" symbol

Source: Statistics Canada, Census of Population, 2021.

The proportion of children with an activity limitation increased with age. About 5.3% of children aged 0 to 3 years had an activity limitation, increasing in each age category to 25.7% in children aged 13 to 14 years. This trend was observed in children of both gender+ categories. By ages 13 to 14 years, children in both gender+ categories had near-equal proportions of overall activity limitations (about 26%). At 13 to 14 years of age, emotional, psychological or mental health conditions were the most common activity limitation in girls+ (15.3%), compared with 11.5% in boys+, and difficulties learning, remembering or concentrating were the most common limitation in boys+ (16.9%), compared with 12.0% in girls+.

Socioeconomic patterns

A higher proportion of children in one-parent families were reported as having an activity limitation (24.3%) than children in couple families (14.6%).¹² This pattern was observed across all functional attributes (Table 3).

Table 3
Activity limitations of Canadian children aged 0 to 14 years by family socioeconomic characteristics, weighted estimates of population percentages

	Any activity limitation ⁴	Seeing ⁵	Hearing ⁶	Mobility, flexibility or dexterity ⁷	Learning, remembering or concentrating ⁸	Emotional, psychological or mental health ⁹	Other health problem or condition ¹⁰
	percentage						
Census family status							
Couple with children	14.6	2.6	0.8	1.4	8.6	5.5	3.8
One-parent family	24.3	5.0	1.6	2.2	15.7	10.8	6.5
Highest parental education							
No certificate, diploma or degree	18.3	4.7	1.6	2.2	11.8	6.3	4.8
Secondary school or equivalent	18.8	4.3	1.4	2.0	11.9	7.6	4.9
Apprenticeship, trades, college or CEGEP	20.3	3.7	1.2	1.9	13.2	8.4	5.2
University degree or diploma (any)	13.2	2.1	0.7	1.3	7.3	5.1	3.7
Census family work arrangement							
Parent or parents not employed ¹	20.4	5.3	1.8	2.7	13.1	8.4	6.4
One parent works part time ^{1,2}	21.6	4.5	1.5	2.2	13.9	9.4	6.1
One parent works full time ^{1,2}	17.5	3.3	1.0	1.7	10.8	7.1	4.7
One parent works full time and one part time ^{2,3}	15.5	2.5	0.8	1.5	9.2	6.2	4.3
Two parents work part time ^{2,3}	14.1	2.7	1.0	1.8	8.5	4.9	4.2
Two parents work full time ^{2,3}	14.6	2.4	0.7	1.2	8.6	5.5	3.4
Household income quintile							
Quintile 1 (lowest)	18.4	4.2	1.3	2.0	11.6	7.1	5.1
Quintile 2	17.1	3.5	1.1	1.7	10.8	6.7	4.4
Quintile 3	16.6	2.9	1.0	1.6	10.3	6.5	4.4
Quintile 4	15.9	2.6	0.8	1.5	9.5	6.3	4.2
Quintile 5 (highest)	14.1	2.0	0.7	1.2	7.9	5.8	3.7

1. May indicate the employment status of one parent in a couple family or the employment status of a parent in a one-parent family.

2. Full-time work was defined as 30 hours per week or higher and part-time work as less than 30 hours per week.

3. Includes couple families only.

4. Weighted number = 5,895,380.

5. Weighted number = 5,893,200.

6. Weighted number = 5,891,710.

7. Weighted number = 5,890,630.

8. Weighted number = 5,889,410.

9. Weighted number = 5,889,225.

10. Weighted number = 5,889,710.

Source: Statistics Canada, Census of Population, 2021.

12. Children may live in a married or common-law couple census family (opposite or same sex) or a one-parent family. Children may be related to a census family by birth, marriage, common-law union or adoption, provided they reside in the same dwelling and do not live with a spouse or common-law partner or with their own child. Children living solely with grandparents also constitute a census family. Additional adults within the residence (such as in multi-generational households) or foster parents are excluded.

The lowest proportions of activity limitations were found in children in census families where one or more parents had a university degree or diploma (13.2%), and the highest proportions were among families with one or more parents with an educational attainment at the apprenticeship, trades, college or CEGEP level (20.3%). This pattern was found for attributes relating to difficulties learning, remembering or concentrating; emotional, psychological or mental health conditions; and other health problems or conditions. In contrast, activity limitations in the three other categories (seeing; hearing; and mobility, flexibility or dexterity) were highest among those with no certificate, diploma or degree and decreased in each category of higher education.

Higher proportions of children with activity limitations were observed among those in households where one parent worked part time (21.6%) or where no parent was employed (20.4%). Census families where two parents worked either part time (14.1%) or full time (14.6%) had the lowest proportions. Similar patterns were found across functional attributes.

The association between household income and overall activity limitations showed a clear gradient, decreasing in each ascending category of income from the lowest income quintile (18.4%) to the highest income quintile (14.1%).¹³ This trend was generally consistent across all functional attributes.

Conclusion

In 2021, 16.3% of children aged 0 to 14 years had one or more affirmative responses to the census filter questions that identified them as likely to have a disability. This represented an increase of nearly 3 percentage points over findings from the 2016 Census (13.5%) (Charters et al., 2022). The change likely corresponds to increases in affirmative responses for difficulties learning, remembering or concentrating (9.9% in 2021 versus 7.9% in 2016) and emotional, psychological or mental health conditions (6.5% in 2021 versus 4.0% in 2016). These results are consistent with past research indicating negative effects of the COVID-19 pandemic on children's learning and mental health given school closures, the suspension of extracurricular activities, lockdowns and other restrictions (Cost et al., 2022; Samji et al., 2022; World Bank, 2020). Similarly, parental reporting may be influenced by parents' own mental health (Masi et al., 2021) and increased observation of their children in the home environment. Notably, increases in affirmative responses were mostly related to experiencing difficulties or long-term conditions "sometimes", which may reflect the pandemic's effect on reporting behaviours, rather than an actual change in the likelihood of a disability.

Increases in affirmative responses to the DSQ filter questions in children are similar to those found in adults. The proportion of the population aged 15 years and older with an activity limitation increased 4.1 percentage points, from 35.4% in 2016 to 39.5% in 2021 (data not shown, available upon request). Increases in affirmative responses were found in all attributes between 2016 and 2021, with the greatest increases found in emotional, psychological or mental health conditions.

To the authors' knowledge, this is the first study to examine activity limitations in children across gender+ categories. While not directly comparable with previous studies focusing on sex differences, these results show similar patterns in activity limitations between boys+ (17.9%) and girls+ (14.9%), largely driven by gender differences in difficulties learning, remembering or concentrating (boys+: 12.0%; girls+: 7.9%).

13. Quintiles were based on adjusted after-tax household income in the weighted sample. The adjustment took aggregated after-tax income over the square root of the number of people in the household to account for economies of scale. The quintiles correspond to adjusted household incomes up to \$31,800 (Quintile 1; Q1), \$31,800 to \$42,800 (Q2), \$42,800 to \$54,400 (Q3), \$54,400 to \$70,500 (Q4), and \$70,500 and higher (Q5).

Boys+ were more likely to experience an activity limitation compared with girls+, except for difficulties seeing.

Similar to previous work (Charters et al., 2022), proportions of children experiencing activity limitations increased with age, from 5.3% at ages 0 to 3 years to 25.7% at ages 13 to 14 years. Disaggregated results revealed similar increasing patterns with age within each gender+ category. Increased proportions of children with activity limitations (ranging from 2 to 5 percentage points) were apparent in all but the youngest age group (0 to 3 years), compared with responses to the 2016 Census. These results may reflect known age differences in child disability, in addition to the effects of the COVID-19 pandemic on children's global health (particularly school-aged children) (Cost et al., 2022). In 2021, boys+ aged 13 to 14 years were most likely to have difficulties learning, remembering and concentrating, while girls+ were most likely to have emotional, psychological or mental health conditions. In contrast, difficulties learning, remembering and concentrating were the most common source of activity limitations in 2016 for 13- to 14-year-olds of both sexes. While results for 2016 and 2021 are not directly comparable, the two groups as identified by sex or gender were generally very similar.

Associations between family socioeconomic disadvantage and activity limitations observed in the 2021 Census were largely consistent with findings from previous research on child disability (Spencer, Blackburn, & Read, 2015). For example, higher proportions of children experienced activity limitations in one-parent (24.3%) than in couple (14.6%) families and in low-income (18.4%) than in high-income (14.1%) households. While these associations do not infer causality, they provide support for the filter questions' ability to differentiate the likelihood of disability in children across a socioeconomic gradient. In contrast, other findings may reflect the differential effects of the COVID-19 pandemic by education and employment (Statistics Canada, 2021c; 2021d). Specifically, while the presence of activity limitations indicated a gradient across parental education in 2016 (Charters et al., 2022), in 2021, the presence of activity limitations was highest among children with parents with the second-highest education level (apprenticeship, trades, college or CEGEP) and less differentiated among those with parents with a high school diploma or less. This distribution was largely driven by patterns in learning, remembering or concentrating difficulties and in emotional, psychological or mental health conditions. In other domains (seeing; hearing; mobility, flexibility or dexterity) activity limitations more closely followed the gradient of parental education, consistent with 2016 findings (Charters et al., 2022).

Similarly, the previously observed gradient between children's activity limitations and family work arrangement (Charters et al., 2022) was not replicated in 2021. The highest proportion of children with any activity limitation was observed among children living in households where one parent worked part time (21.6%), rather than in households where no parent(s) were employed, and the lowest proportion was observed among children with two parents working part time (14.1%), rather than those with two parents working full time. These results may partly reflect differential effects of the COVID-19 pandemic by education and employment (Statistics Canada, 2021c; 2021d), but also challenges faced by parents in managing work, school and child care demands, particularly for children with disabilities, during the COVID-19 pandemic (Statistics Canada, 2020). Again, results were largely driven by emotional, psychological or mental health conditions and learning, remembering or concentrating difficulties. As the emotional, psychological or mental health attribute references specific mental health conditions, response patterns may be influenced by inequities in access to mental health services along socioeconomic lines (Bartram, 2019).

Overall, this study provided a further assessment of the suitability of the filter questions of the Disability Screening Questions (DSQ) for a child population, with a focus on comparing the results between the 2016 Census (before the pandemic) and the 2021 Census (during the pandemic). While the findings from 2021 were largely consistent with those from the 2016 Census, important exceptions were noted. Most notably, the findings indicated an increase (almost 3 percentage points) in the proportion of children aged 0 to 14 years identified as likely to have a disability. This rise appears to be largely the result of increases

in affirmative responses to the questions on learning, remembering or concentrating difficulties and emotional, psychological or mental health conditions. It remains unknown whether this will be further associated with an increase in children with disabilities. Further research and analysis are required to make recommendations for using the DSQ filter questions for a child population. It would be useful to compare the responses to the DSQ filter questions with those to another instrument with the same respondents to determine whether the DSQ filter questions are appropriate for a child population. These findings may inform future data collection activities pertaining to inclusivity in ELCC for children with long-term conditions and disabilities. Future research should continue to assess the appropriateness and usefulness of existing survey measures to identify children with disabilities in the Canadian context and unravel the long-term effects of the COVID-19 pandemic on children's health and development.

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