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## Impacts of COVID-19 on Canadian nursing homes and seniors' homes in 2021

by John Graham and Zeinab Hosseini

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# Impacts of COVID-19 on Canadian nursing homes and seniors' homes in 2021

by John Graham and Zeinab Hosseini

## Introduction

The second year of the COVID-19 pandemic (2021) was marked with a very broad range of health events and policies. These included the widespread roll-out of vaccinations, the introduction of vaccine requirements, as well as the arrival of Delta and Omicron variants of COVID-19 which had increased transmissibility and the potential to evade COVID-19 vaccines (Andrews et al., 2022; Buchan et al., 2022; Government of Canada, 2021; Public Health Agency of Canada [PHAC], 2022a).

Previous research showed that residents of nursing care facilities<sup>1</sup> (also known as long-term care homes or nursing homes) and community care facilities for the elderly<sup>2</sup> (also known as seniors' homes) have been disproportionately impacted during the COVID-19 pandemic. While there are many reasons for the vulnerability of residents in these types of facilities (Andrew et al., 2020), the characteristics of the facilities and their response to COVID-19 are also important in understanding the risk of COVID-19 infection and death among residents (Akhtar-Danesh et al., 2022; Clarke, 2021; Vijh et al., 2022).

This article presents preliminary results from the 2021 *Nursing and Residential Care Facility Survey* (NRCFS). The survey was first conducted in 2020 and is the result of a collaboration with the Public Health Agency of Canada, Health Canada, and the Canadian Institute for Health Information to address important data needs that help to monitor the impacts of the COVID-19 pandemic on Canadian nursing and residential care facilities. The preliminary results in this article use an unweighted sample of responding facilities to provide national data from nursing homes and seniors' homes on various aspects such as the changes made to facilities in response to COVID-19, the incidence of the virus among facilities, and staffing challenges.

### Note to readers

In 2021, one in every five Canadians was aged 65 and older, with this group projected to increase to one-quarter of the population (24.9% or 12 million persons) by 2051 (Statistics Canada, 2022a). Taking into account that over 90% of nursing and senior's home residents are aged 65 and older as of 2021 (Statistics Canada, 2022b), the need for such facilities is expected to increase. Roughly 1-in-20 Canadians aged 65 and older live in these types of facilities in 2021, rising to over 1-in-4 Canadians aged 85 and older (Statistics Canada 2022b; 2022c). Understanding the conditions faced by residents and staff in these facilities during times of difficulty can help us build a future where older Canadians live well and age with dignity.

1. Nursing care facilities are primarily engaged in providing in-patient nursing and rehabilitative services as well as continuous personal care services (Statistics Canada, 2018a).  
2. Community care facilities for the elderly are largely engaged in providing residential and personal care services for the elderly as well as persons either unable to fully care for themselves or do not wish to live independently (Statistics Canada, 2018b).

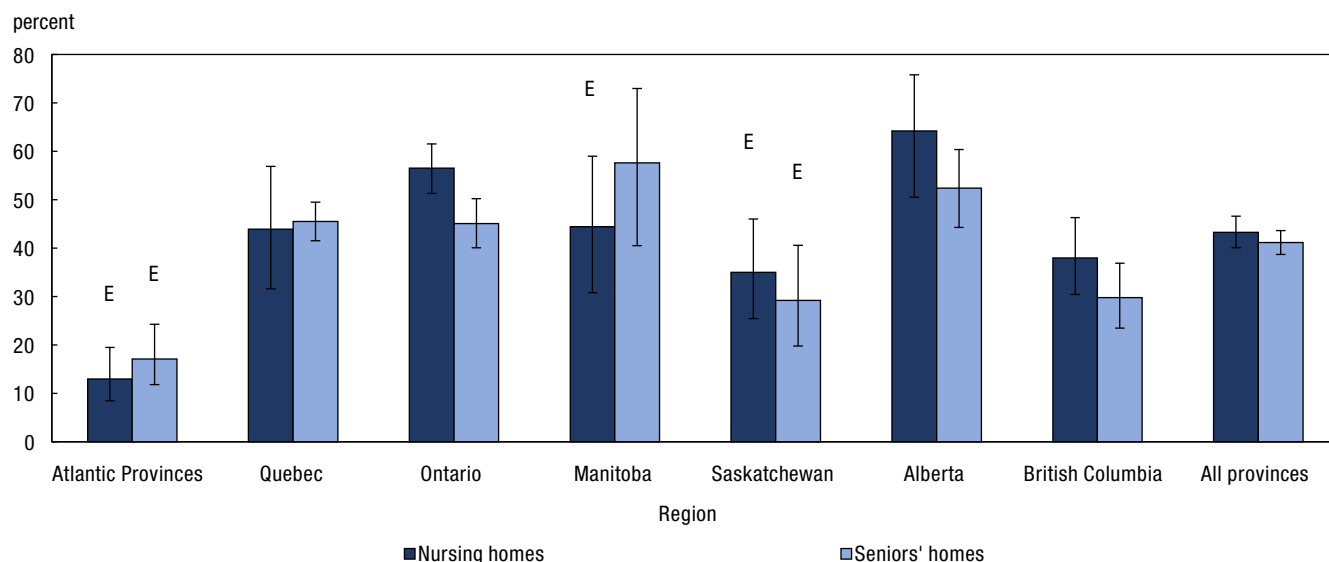


## Two-fifths of Canadian nursing homes and seniors' homes had at least one resident with COVID-19 in 2021

Across the provinces, 43.3% of nursing homes had at least one resident case of COVID-19. Regional variations in the proportion of facilities with at least one resident COVID-19 case can provide a high-level indication of the differential impact of the virus across Canada. In 2021, 64.2% of Alberta nursing homes reported that at least one of their residents was diagnosed with COVID-19, followed by Ontario (56.5%), Manitoba (44.4%<sup>E</sup>), Quebec (43.9%), British Columbia (38.0%), Saskatchewan (35.0%<sup>E</sup>), and the Atlantic Provinces (13.0%<sup>E</sup>) (Chart 1).

Overall, 41.2% of seniors' homes across the provinces had at least one resident with COVID-19. In 2021, 57.6% of Manitoba seniors' homes reported at least one resident case followed by Alberta (52.4%), Quebec (45.5%), Ontario (45.1%), British Columbia (29.8%), Saskatchewan (29.2%<sup>E</sup>) and the Atlantic Provinces (17.1%<sup>E</sup>). Grouping nursing homes and seniors' homes together, facilities in the Atlantic Provinces had a significantly lower proportion of facilities with at least one COVID-19 case than other regions in Canada (data not shown).

**Chart 1**  
Percent of responding facilities reporting at least one COVID-19 case among residents, by region and type of facility, 2021



<sup>E</sup> use with caution (15.0 < coefficient of variation ≤ 35.0)

**Note:** At this time, these results are considered preliminary and are subject to change. Results from 2021 include cases between January 1, 2021 up to and including December 31, 2021.

**Source:** Nursing and Residential Care Facility Survey 2021.

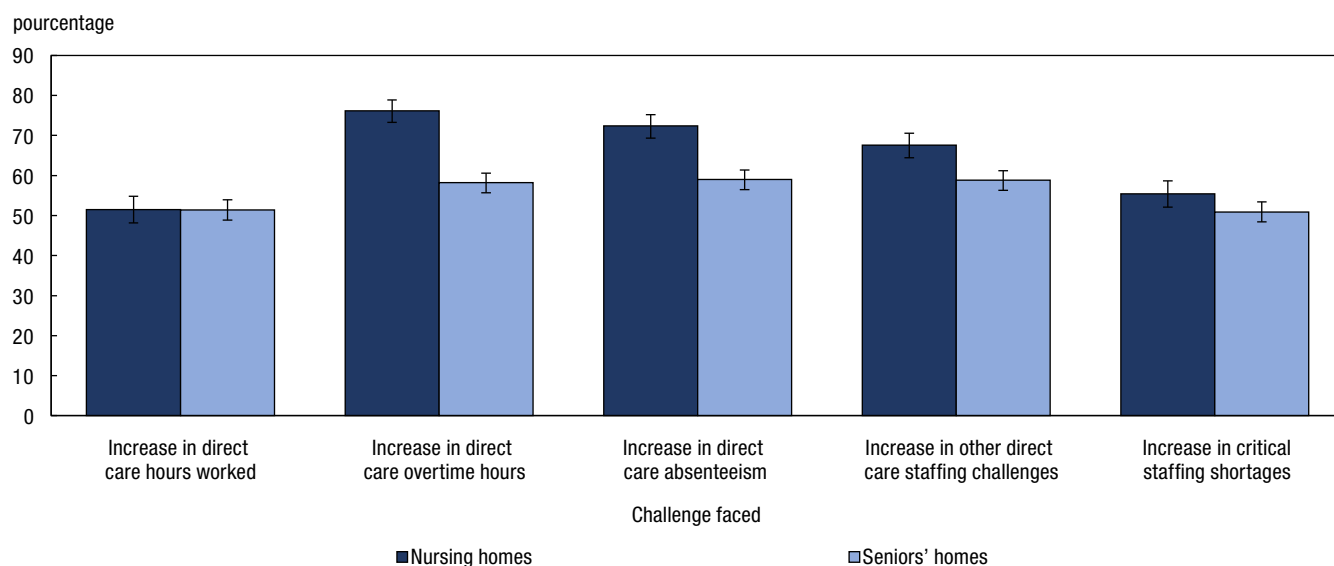
<sup>E</sup> use with caution (15.0 < coefficient of variation ≤ 35.0).



## Half or more of responding nursing homes and seniors' homes in 2021 reported increasing staffing challenges over the same period in the previous year

As the pandemic progressed, there has been a significant impact on healthcare workers such as extended work hours, decreased vacation time, and changes in the methods of delivering care (Statistics Canada, 2022d). Nursing and seniors' homes across Canada had reported various staffing challenges during the first year of the pandemic (Clarke, 2021) including absenteeism and increased overtime hours. Another study in 2021 showed that job stress or burnout was the most common reason for leaving or changing jobs among healthcare workers not planning to retire (Statistics Canada, 2022d). Among those not intending to retire, about one in five (20.8%) health care workers in these types of facilities intended to leave or change jobs in the next three years (Statistics Canada, 2022d). In the 2021 NRCFS, facilities were asked to report staffing challenges compared with the same period last year (Chart 2).

**Chart 2**  
**Percent of responding facilities in 2021 reporting select challenges that increased compared with the same period last year, by challenge and type of facility, 2021**



**Note:** At this time, these results are considered preliminary and are subject to change. Results from 2021 include challenges faced between January 1, 2021 up to and including December 31, 2021.  
**Source:** Nursing and Residential Care Facility Survey 2021.

Over half of nursing homes and roughly half of seniors' homes reported an increase in critical staffing shortages, while roughly half of both types of facilities reported an increase in the number of hours worked, when compared with the same period the year before. Critical staffing shortages were shortages of staff that had an impact on the quality of resident care and employee safety. These critical shortages affect staff chiefly in key roles such as directors of care, nurses or personal support workers (Clarke, 2021). Additionally, over 70% of nursing homes and over 55% of seniors' homes reported an increase in direct care overtime hours compared to the previous year. Among nursing homes, 72.4% reported an increase in absenteeism among direct care staff, as did 59% of seniors' homes. Some reasons for this increased absenteeism may include decreased availability due to self-isolation, or to

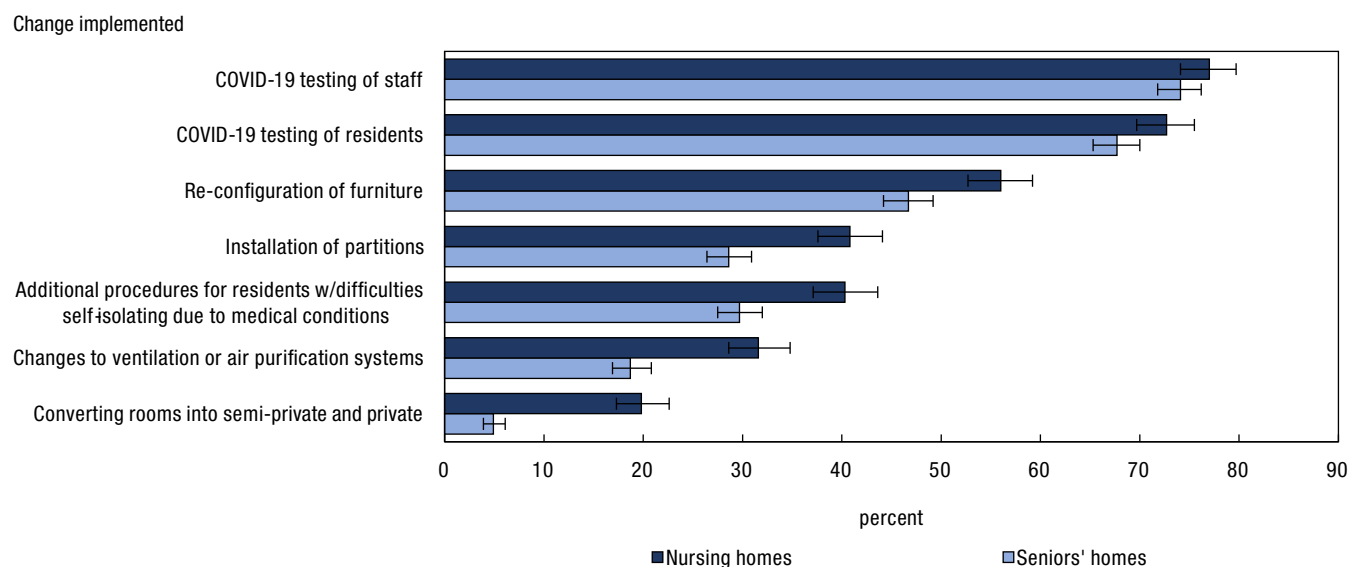


care for family members. Two out of every three nursing homes reported an increase in other staffing challenges, such as restrictions on hiring staff or that staff can only work at one facility, as did three out of every five seniors' homes. While some outpatient settings may have had the ability to transition to virtual care, staff working in long-term care homes likely would have had to continue to do their work in person.

## Roughly one-third of nursing homes implemented changes to ventilation and air purification

While nursing homes and seniors' homes are areas often thought of as providing healthcare services, they are also living spaces for many older Canadians. Changes made to these facilities in response to COVID-19 are therefore important not just in understanding our healthcare system, but also the living conditions of vulnerable populations. In 2021, facilities were asked whether they had made various changes in response to the COVID-19 pandemic, such as the COVID-19 testing of staff or residents, the re-configuration of furniture, the installation of partitions, or changes to ventilation or air purification systems. (Chart 3).

**Chart 3**  
**Percent of responding facilities indicating select changes implemented in response to the COVID-19 pandemic in 2021, by change made and type of facility, 2021**



**Note:** At this time, these results are considered preliminary and are subject to change. Results from 2021 include challenges faced between January 1, 2021 up to and including December 31, 2021.

**Source:** Nursing and Residential Care Facility Survey 2021.

Infrastructural changes to facilities are worth noting as although they were made in response to COVID-19, they will likely remain in place once pandemic-related health risks subside. In response to the COVID-19 pandemic, 31.6% of nursing homes made changes to ventilation or air purification systems in 2021, as did just under one-in-five seniors' homes (18.7%).<sup>3</sup> Ventilation has been recognized as having an important role in reducing indoor transmission of COVID-19 (PHAC, 2021), with outbreaks having been linked to poor ventilation. Additionally,

3. While facilities reported that these changes were made in response to the COVID-19 pandemic, these changes may have also coincided with regular maintenance needs.



19.8% of nursing homes and 4.9% of seniors' homes indicated that they had converted rooms into semi-private and private. In contrast with shorter-term changes such as the re-configuration of furniture or the installation of partitions, changes to ventilation or air purification systems as well as room conversions indicate longer-term changes made to these facilities in response to the pandemic.

Other changes facilities put in place in response to COVID-19 that did not require infrastructural changes, such as testing and isolation procedures, were also examined. In 2020, roughly four out of every five nursing homes were regularly testing residents and staff for COVID-19 (Clarke, 2021), while in 2021 72.7% of facilities were testing residents and 77% were testing staff. There was no statistically significant difference between nursing homes and seniors' homes in terms of COVID-19 testing of staff in 2021; however, a higher percentage of nursing homes (72.7%) tested residents than seniors' homes (67.7%). Additional procedures for individuals with difficulty self-isolating, such as residents diagnosed with Alzheimer's disease or any other dementia were also put in place in many facilities. In 2021, two out of every five (40.3%) nursing homes implemented additional procedures for residents with difficulties self-isolating due to medical conditions, as well as 29.7% of seniors' homes. The difference between these two types of facilities was statistically significant, as the level of resident autonomy among seniors' homes may have led to fewer access restrictions than in nursing homes.

## Nursing and seniors' homes increased various infection prevention and control protocols and practices in 2021

As was the case in 2020 (Clarke, 2021), there were various infection prevention and control (IPC)<sup>4</sup> protocols and practices in place at Canadian nursing homes and seniors' homes in 2021. To better understand the continued response of these facilities to the pandemic in 2021, nursing homes and seniors' homes provided information on various protocols that were already in place at the start of the 2021 calendar year and have since been increased (Chart 4). Given the already considerable effect COVID-19 has had on these facilities in 2020, this provided a unique insight into the expansion of IPC protocols during the pandemic's second year.

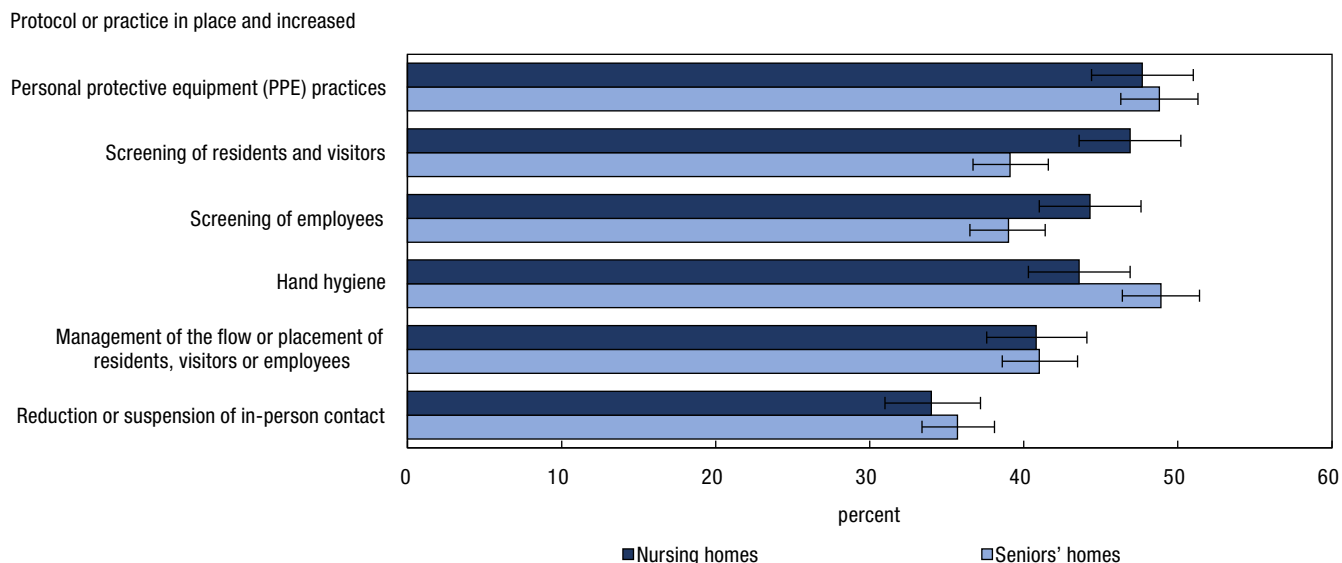
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4. The acronym IPAC (Infection Prevention and Control) is also used by some jurisdictions.



**Chart 4**

**Percent of responding facilities reporting select infection prevention and control (IPC) protocols and practices that were in place and increased, by type of facility, Canada, 2021**



**Note:** At this time, these results are considered preliminary and are subject to change. Results from 2021 include infection prevention and control (IPC) protocols and practices that were in place and increased at any time between January 1, 2021 up to and including December 31, 2021.  
**Source:** Nursing and Residential Care Facility Survey 2021.

National guidance indicates that all long-term care homes have a hand hygiene program in place, and make every effort to achieve 100% hand hygiene adherence (PHAC, 2022b). In 2020, 94.6% of responding nursing homes and 94.3% of seniors' homes reported practicing hand hygiene (Clarke, 2021). In 2021, roughly two out of every five nursing homes and about half of all seniors' homes reported that hand hygiene had increased. Management of the flow or placement of residents, visitors or employees was found to have increased among roughly two-fifths of nursing homes (40.8%) and seniors' homes (41.0%), while 34.0% of nursing homes and 35.7% of seniors' homes further reduced or suspended in-person contact. A higher proportion of seniors' homes reported that hand hygiene was increased than nursing homes in 2021. National guidance also notes that personal protective equipment (PPE) including gloves, gowns, medical masks, N95 or equivalent respirators, and eye protection (PHAC, 2022b) should be readily accessible for staff and visitors. Approximately half of both nursing homes and seniors' homes reported that their PPE practices increased in 2021.

## Nearly nine in ten responding nursing homes reported that 95% or more of their employees were fully vaccinated against COVID-19

Beginning in December 2020, the National Advisory Committee on Immunizations (NACI) (2020) recommended that long-term care staff and residents be prioritized for the first COVID-19 vaccine doses. Overall, responding nursing homes and seniors' homes had high COVID-19 vaccination coverage for both staff and residents by the end of 2021. Across both nursing homes and seniors' homes, 83.6% of responding facilities reported that at least





95% of their residents were fully vaccinated.<sup>5</sup> Resident vaccination coverage varied across Canada from Quebec (91.4%), the Atlantic Provinces (88.1%), Ontario (84.4%), Manitoba (79.5%), Saskatchewan (76.3%), British Columbia (73.4%), and Alberta (71.7%), though the differences were not always statistically significant.

In 2021, several provinces introduced vaccine requirements for staff or visitors of various types of communal living facilities. Taking both nursing homes and seniors' homes together, 85.9% of facilities had a 95% or greater employee vaccination coverage in Canada, including nearly nine in ten (87.3%) nursing homes and over four-fifths (85.1%) of seniors' homes. Facilities in Ontario (91.6% vs 79.6%) and British Columbia (95.1% vs 86.5%) reported higher vaccine coverage among employees in nursing homes than in seniors' homes, while there were no significant differences between employee vaccine coverage in the Atlantic provinces, Quebec, or in any of the Prairie provinces of Manitoba, Saskatchewan or Alberta.

## Having at least one employee case of COVID-19 was associated with having one or more COVID-19 resident cases

An important goal of the NRCFS Cycle 2 was to better understand the factors associated with the incidence of COVID-19 infection in 2021. Logistic regression analyses were undertaken to examine the multivariate nature of infection for a sub-set<sup>6</sup> of both nursing homes and seniors' homes. Using some of the reported staffing challenges and responses made by facilities in direct response to COVID-19 in 2021, several factors previously introduced in this article were examined to better understand the complexities associated with COVID-19 infection in these settings.

**Table 1**  
**Adjusted odds ratios for reporting at least one COVID-19 case among residents in nursing homes and seniors' homes, by selected facility characteristics, 2021**

| Characteristic   | Nursing homes                    |                         |       | Seniors' homes                   |                         |       |
|--|----------------------------------|-------------------------|-------|----------------------------------|-------------------------|-------|
|  | Adjusted Odds Ratio <sup>1</sup> | 95% Confidence interval |       | Adjusted Odds Ratio <sup>1</sup> | 95% Confidence interval |       |
|  |                                  | from                    | to    |                                  | from                    | to    |
| <b>For profit status</b>   |                                  |                         |       |                                  |                         |       |
| For profit   | 1.17                             | 0.82                    | 1.65  | 1.15                             | 0.82                    | 1.60  |
| Not for profit †   | ...                              | ...                     | ...   | ...                              | ...                     | ...   |
| <b>Percentage of long term beds in private rooms<sup>2</sup></b> |                                  |                         |       |                                  |                         |       |
| Over 50%   | 1.31                             | 0.90                    | 1.92  | 0.76                             | 0.54                    | 1.09  |
| 50% or fewer †   | ...                              | ...                     | ...   | ...                              | ...                     | ...   |
| <b>Size of facility (number of residents)</b>                    |                                  |                         |       |                                  |                         |       |
| 25 or fewer residents †  | ...                              | ...                     | ...   | ...                              | ...                     | ...   |
| 26 to 50 residents   | 0.94                             | 0.51                    | 1.72  | 1.53*                            | 1.02                    | 2.28  |
| 51 to 100 residents  | 2.04*                            | 1.16                    | 3.59  | 2.55*                            | 1.73                    | 3.76  |
| 101 or more residents  | 3.59*                            | 1.99                    | 6.47  | 3.60*                            | 2.42                    | 5.36  |
| <b>Registered nurses on staff</b>                                |                                  |                         |       |                                  |                         |       |
| Yes  | 0.95                             | 0.55                    | 1.65  | 0.94                             | 0.68                    | 1.28  |
| No †   | ...                              | ...                     | ...   | ...                              | ...                     | ...   |
| <b>At least one employee case reported</b>                       |                                  |                         |       |                                  |                         |       |
| Yes  | 8.77*                            | 5.44                    | 14.14 | 16.27*                           | 12.13                   | 21.82 |
| No †   | ...                              | ...                     | ...   | ...                              | ...                     | ...   |

5. Residents and staff considered fully vaccinated against COVID-19 have either:

- received both doses of a vaccine that requires two doses (such as Pfizer-BioNTech, Moderna, AstraZeneca, or COVISHIELD COVID-19 vaccines)
- received one dose of a vaccine that only requires one dose (such as the Janssen COVID-19 vaccine)
- received one dose of a COVID-19 vaccine after a laboratory-confirmed COVID-19 infection (only in Quebec).

6. Due to an insufficient number of responding facilities in Yukon, Northwest Territories and Nunavut, these facilities have been excluded from the regression analysis.



**Table 1**  
**Adjusted odds ratios for reporting at least one COVID-19 case among residents in nursing homes and seniors' homes, by selected facility characteristics, 2021**

| Characteristic  | Nursing homes                    |                         |      | Seniors' homes                   |                         |      |
|---|----------------------------------|-------------------------|------|----------------------------------|-------------------------|------|
|   | Adjusted Odds Ratio <sup>1</sup> | 95% Confidence interval |      | Adjusted Odds Ratio <sup>1</sup> | 95% Confidence interval |      |
|   |                                  | from                    | to   |                                  | from                    | to   |
| <b>Critical staffing shortages<sup>3</sup></b>            |                                  |                         |      |                                  |                         |      |
| Increased   | 1.16                             | 0.83                    | 1.62 | 1.03                             | 0.78                    | 1.36 |
| Decreased or no change †                                  | ...                              | ...                     | ...  | ...                              | ...                     | ...  |
| <b>Changes to ventilation or air purification systems</b> |                                  |                         |      |                                  |                         |      |
| Yes   | 1.22                             | 0.82                    | 1.80 | 1.53*                            | 1.06                    | 2.20 |
| No †  | ...                              | ...                     | ...  | ...                              | ...                     | ...  |

... not applicable

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

† Reference category

1. An odds ratio greater than 1 indicates increased odds and an odds ratio less than 1 indicates decreased odds. All variables presented are included in the same model, and are also adjusted for region: Atlantic provinces, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia. The territories are excluded.

2. Includes private rooms with both private bathrooms and shared bathrooms.

3. A critical staffing shortage was defined as a shortage in direct-care staff (e.g. nurses) that impact the quality of resident care and employee safety.

Note: At this time, these results are considered preliminary and are subject to change. Results refer to COVID-19 cases reported between January 1, 2021 and December 31, 2021.

Source: Nursing and Residential Care Facility Survey 2021.

Logistic regression analyses of both responding nursing homes and seniors' homes suggest that facilities were more likely to report having had at least one case of COVID-19 among residents if they had at least one case of COVID-19 reported among employees (Table 1). As it was with preliminary 2020 data (Clarke, 2021), COVID-19 cases among employees was a significant predictor of facilities having at least one resident case of COVID-19 in 2021. Nursing homes reporting at least one case of COVID-19 among employees were about 9 times more likely to have had at least one resident case of COVID-19 among residents than those that did not. As well, correlative results indicate that seniors' homes with at least one employee case of COVID-19 were associated with a roughly 16-fold greater odds of having at least one resident case. A potential explanation for this might be that the most predominant mode of transmission for COVID-19 is between individuals in close proximity (PHAC, 2021).

Larger nursing homes and seniors' homes with over 50 residents were at increased likelihood of having at least one resident case of COVID-19 in 2021. Seniors' homes with over 25 residents were also at increased likelihood of resident COVID-19 relative to facilities with 25 or fewer residents. Nursing homes and seniors homes with over 100 residents had approximately a 3.6-fold increase in the odds of having at least one resident case compared with smaller facilities of 25 or fewer residents. Seniors' homes that reported at least one COVID-19 case among residents were more likely to report having made changes to ventilation or air purification systems, while this association was not found to be significant among nursing homes. The timing of ventilation changes in 2021 was not known, and investments in improved ventilation may have followed facilities having COVID-19 cases earlier that same year. Additionally, while ventilation is considered an important component of strategies aiming to reduce transmission, ventilation may not reduce COVID-19 transmission among individuals in close proximity (PHAC, 2021).

Several variables that were included in this analysis were not significant. In 2021, neither type of facility was more or less likely to have had a resident COVID-19 case if over half of the rooms were private, nor were critical staffing shortages found to pose a significantly increased odds of having at least one resident COVID-19 case.

## Conclusion

Nursing homes and seniors' homes are not just healthcare facilities, but the living spaces of many Canadians. The COVID-19 pandemic has highlighted some of the vulnerabilities that exist among populations living within these types of facilities in 2021. Preliminary results from the NRCFS 2021 have shown that the proportion of



facilities with at least one resident case of COVID-19 was lower in the Atlantic Provinces than in Quebec, Ontario, Manitoba, Saskatchewan, Alberta or British Columbia. Additionally, facility size and having at least one staff case of COVID-19 was associated with an increased odds of a facility having at least one COVID-19 case among residents. This article highlighted continued staffing challenges that nursing homes and seniors' homes faced during the pandemic's second year with over half of homes reporting an increase in critical staffing shortages compared to the previous year. The findings also showed that facilities continued to increase several IPC protocols during 2021. Finally, the preliminary data showed that over four-fifths of residents and nearly nine in ten nursing homes across the provinces had a 95% or greater vaccination coverage. In conclusion, further research is needed to better understand the impact of COVID-19 on residents and staff in nursing homes and seniors' homes in Canada.

## Data source and methods

Data for analysis are from the 2021 Nursing and Residential Care Facility Survey (NRCFS), a national survey targeting public and private sector establishments classified to code 623 "Nursing and residential care facilities" of the North American Industry Classification System (NAICS) 2017. The sample includes nursing care facilities (nursing homes), community care facilities for the elderly (seniors' homes), mental health facilities and other care facilities (such as transition homes for women). Data were collected directly from facilities using an electronic questionnaire between January 4 and April 14, 2022, inclusively. At the time of analysis, the overall response rate for the survey was 60.9% (n = 4,527 facilities). Response rates varied by province (from as high as 73.6% in Nova Scotia and as low as 48.5% in Newfoundland and Labrador). Included in this article are responding facilities that reported being nursing care facilities including those in hospitals as well as community care facilities for the elderly across Canada's ten provinces that reported having at least one bed, at least one resident and at least one employee (n=2,422). Excluded were those that were in the territories due to an insufficient number of responding facilities, or facilities that were considered out of scope for the survey. Public facilities in Quebec did not participate in this survey.

The survey collected basic information on facility characteristics, such as employee and resident counts for the 2020/2021 fiscal year, as well as information related to the COVID-19 pandemic for the calendar year January 1, 2021 to December 31, 2021. Basic descriptive statistics are used to describe the proportion of facilities with at least one case of COVID-19 among residents, the IPC measures that were in place and increased, changes implemented in response to the COVID-19 pandemic, and staffing challenges faced by facilities. The NRCFS is a survey intended to produce both provincially and nationally representative estimates. Results from this analysis are preliminary and do not use survey weights that account for survey non-response. The final NRCFS microdata will be weighted to account for NAICS group, province, and whether facilities were public or private. In this analysis, descriptive statistics were stratified to account for whether facilities were public or private, as well as by region (Atlantic Provinces, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia). Weighted results for the Nursing and Residential Care Facility Survey 2021 will be released in October 2022.

Logistic regression models were adjusted to control for region (Atlantic Provinces, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia). In nursing homes and seniors' homes, logistic regression was used to assess the relationship between certain facility characteristics (including: region, for-profit status, the percentage of long-term beds in private rooms (over 50% and 50% or fewer), registered nurses on staff, cases of COVID-19 among employees, critical staffing shortages and whether there were changes made to ventilation or air purification systems) and the outcome of having one or more COVID-19 cases among residents. Results are presented as odds ratios, which compare the odds of having at least one COVID-19 case among residents for one group (e.g. Atlantic Provinces) versus another group (e.g. Quebec), after adjusting for all other listed variables. An odds ratio greater than 1.0 indicates increased odds, a odds ratio less than 1.0 indicates decreased odds, while an odds ratio of 1.0 demonstrates identical odds exists between the two groups. Statistical significance for these comparisons were determined at a  $p < 0.05$  level.



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