

For-profit long-term care homes and the risk of COVID-19 outbreaks and resident deaths



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Linked work: Association Between Nursing Home Crowding and COVID-19 Infection and Mortality in Ontario, Canada
<https://www.medrxiv.org/content/10.1101/2020.06.23.20137729v1>

Podcast: <https://soundcloud.com/cmajpodcasts/201197-res>
(if you prefer to listen!)

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COVID-19 outbreaks and deaths in Ontario long-term care homes (Mar. 29 to May 20, 2020)

Of 623 homes in Ontario, accounting for 78,607 residents:

Region characteristics

Regional COVID-19 incidence
(per 10,000 residents)

1 st Quartile (0.11, 0.46)	148 (24.0)
2 nd Quartile (0.51, 0.93)	141 (22.8)
3 rd Quartile (0.94, 1.29)	159 (25.7)
4 th Quartile (1.30, 1.88)	170 (27.5)

Outcomes

Residents	78,607
Infections (N, % residents)	5,218 (6.64)
Mortality (N, % residents)	1,452 (1.85)
≥1 Infection (N, %)	190 (30.7)

Nursing home characteristics

Ownership (N, %)

Private for-profit	358 (57.9)
Private non-profit	159 (25.7)
Municipal	101 (16.3)

Design standard (N, %)

1999	310 (50.2)
Pre-1999	308 (49.8)

Size of home (N, %)

<100	244 (39.5)
≥100	374 (60.5)

Case fatality rate 27.8%

86% of infections (4,496) occurred in 10% (63) homes

Table 4: Extent* of COVID-19 outbreaks in long-term care homes, by profit status

Variable	Model 1 (profit status only), adjusted RR (95% CI)	Model 2 (+ adjustment for health region characteristics), adjusted RR (95% CI)	Model 3 (explanatory) (+ adjustment for LTC home characteristics), adjusted RR (95% CI)
Profit status			
Nonprofit (Ref.)	–	–	–
For-profit	1.83 (1.18–2.84)	1.96 (1.26–3.05)	0.96 (0.57–1.61)
Municipal	0.60 (0.28–1.30)	0.64 (0.29–1.40)	0.85 (0.40–1.82)
Health region characteristics			
COVID-19 cumulative incidence in the public health unit region (cases per 1000)	–	1.84 (1.10–3.08)	1.65 (1.02–2.67)
Population			
≥ 500 000 (ref)	–	–	–
10 000–499 999	–	0.65 (0.33–1.24)	0.55 (0.30–0.99)
< 10 000 (rural)	–	0.85 (0.22–3.28)	0.53 (0.15–1.83)
LTC home characteristics			
No. of residents (unit of 50)	–	–	0.84 (0.73–0.95)
Older design standards	–	–	1.88 (1.27–2.79)
Chain ownership (v. single home)	–	–	1.84 (1.08–3.15)
Staff (full-time equivalent):bed ratio	–	–	0.73 (0.10–5.35)

Note: adjusted RR = risk ratio adjusted for all other covariates in the model, CI = confidence interval, COVID-19 = coronavirus disease 2019, LTC = long-term care.

*Number of residents with COVID-19 among long-term care homes with outbreaks.

Table 3: Odds of a COVID-19 outbreak in a long-term care home, by profit status

Variable	Model 1 (profit status only), adjusted OR (95% CI)	Model 2 (+ adjustment for health region characteristics), adjusted OR (95% CI)	Model 3 (explanatory) (+ adjustment for LTC home characteristics), adjusted OR (95% CI)
Profit status			
Nonprofit (Ref.)	–	–	–
For-profit	1.01 (0.64–1.57)	0.96 (0.61–1.49)	0.71 (0.40–1.25)
Municipal	0.83 (0.45–1.54)	0.85 (0.46–1.58)	0.71 (0.36–1.42)
Health region characteristics			
COVID-19 cumulative incidence in the public health unit region (1 case per 1000)	–	2.02 (1.20–3.38)	1.91 (1.19–3.05)
Population			
≥ 500 000 (Ref.)	–	–	–
10 000–499 999	–	0.57 (0.32–1.00)	0.56 (0.33–0.95)
< 10 000 (rural)	–	0.27 (0.13–0.58)	0.39 (0.18–0.83)
LTC home characteristics			
No. of residents (unit of 50)	–	–	1.38 (1.18–1.61)
Older design standards	–	–	1.55 (1.01–2.38)
Chain ownership (v. single home)	–	–	1.47 (0.86–2.51)
Staff (full-time equivalent):bed ratio	–	–	1.98 (0.39–9.97)

Note: adjusted OR = odds ratio adjusted for all other covariates in the model, CI = confidence interval, COVID-19 = coronavirus disease 2019, Ref. = reference category, LTC = long-term care.

Distribution of the extent of outbreaks of coronavirus disease 2019 (COVID-19) in long-term care homes, by profit status.

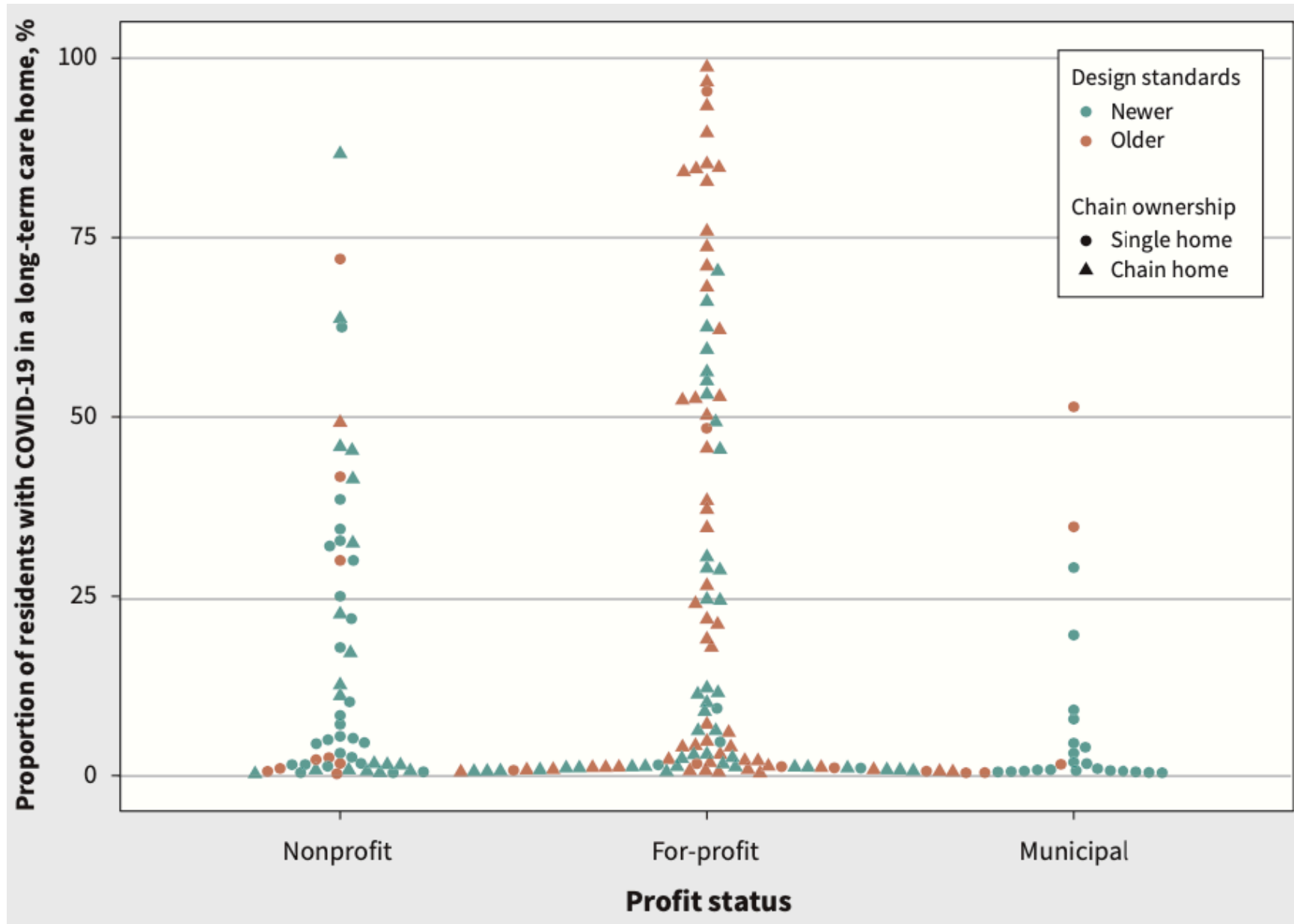


Table 5: Number of deaths from COVID-19 among long-term care home residents, by profit status

Variable	Model 1 (profit status only), adjusted RR (95% CI)	Model 2 (+ adjustment for health region characteristics), adjusted RR (95% CI)	Model 3 (+ adjustment for LTC home characteristics), adjusted RR (95% CI)
Profit status			
Nonprofit (Ref.)	–	–	–
For-profit	1.67 (0.99–2.79)	1.78 (1.03–3.07)	0.82 (0.44–1.54)
Municipal	0.50 (0.19–1.29)	0.54 (0.20–1.49)	0.73 (0.28–1.88)
Health region characteristics			
COVID-19 cumulative incidence in the public health unit region (cases per 1000)	–	1.77 (0.47–6.60)	1.44 (0.81–2.55)
Population			
≥ 500 000 (ref)	–	–	–
10 000–499 999	–	0.62 (0.26–1.47)	0.51 (0.25–1.05)
< 10 000 (rural)	–	0.72 (0.12–4.25)	0.40 (0.08–1.89)
LTC home characteristics			
No. of residents (unit of 50)	–	–	0.81 (0.70–0.95)
Older design standards	–	–	2.08 (1.28–3.36)
Chain ownership (v. single home)	–	–	1.89 (1.00–3.59)
Staff (full-time equivalent):bed ratio	–	–	0.84 (0.09–8.75)

Note: adjusted RR = risk ratio adjusted for all other covariates in the model, CI = confidence interval, COVID-19 = coronavirus disease 2019, LTC = long-term care.