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Nursing Job Stability in Ontario: Comparing Long-Term-Care Homes with Other Health Care Sectors

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L'affirmation selon laquelle les foyers de soins de longue durée (FSLD) auraient connu un roulement élevé reflétant l'insatisfaction du personnel était très répandue pendant la pandémie de covid-19. À partir du recensement des infirmières et infirmiers autorisés (IA) et des infirmières et infirmiers auxiliaires autorisés (IAA) de l'Ontario entre 2014 et 2020, nous comparons les FSLD à d'autres secteurs des soins de santé relativement (a) aux caractéristiques du personnel et des emplois et (b) au taux de roulement des emplois (à distinguer du taux de roulement professionnel). Les IA des FSLD sont plus âgé·es, ont un niveau de scolarité inférieur et sont plus susceptibles d'avoir été formé·es à l'extérieur du Canada comparativement à la moyenne provinciale, tandis que les IAA se rapprochent davantage de cette norme. Les emplois en FSLD sont plus susceptibles d'être exercés en milieu rural et de reposer sur des contrats occasionnels et des heures irrégulières que les emplois dans la plupart des autres secteurs. Avant la pandémie, les IA des FSLD se situaient au milieu de la courbe de distribution du taux de roulement sectoriel, tandis que les IAA s'y situaient plus bas que tous les secteurs à l'exception des hôpitaux. Parmi les infirmières qui ont changé d'emploi, la rétention dans le secteur des FSLD est semblable à celle des autres secteurs. Dans l'ensemble, les indicateurs de roulement du personnel n'appuient pas l'idée que la satisfaction au travail dans les FSLD est moins élevée que dans les autres secteurs. Au cours de la première année de la pandémie, de petits changements dans le roulement du personnel ont été observés, mais il est difficile de distinguer les restrictions concernant l'occupation de plusieurs emplois, restrictions liées à la pandémie, des autres causes.

Mots clés : main-d'œuvre infirmière, roulement, stabilité d'emploi, COVID-19, soins de longue durée

Claims of high turnover, reflecting worker dissatisfaction, in the long-term-care home (LTCH) sector have been common during the coronavirus disease 2019 pandemic. Using a census of registered nurses (RNs) and registered practical nurses (RPNs) in Ontario from 2014 to 2020, we compare LTCHs and other health care sectors in terms of (a) worker and job characteristics and (b) job turnover (distinct from occupational turnover). RNs in LTCHs are older, have lower levels of education, and are more likely to be trained outside of Canada compared with the provincial average, whereas RPNs are more similar to that norm. LTCH jobs are more likely to be rural and to involve casual contracts and irregular hours than those in most, but not all, sectors. Pre-pandemic, RNs in LTCHs were in the middle of the sectoral turnover distribution, whereas RPNs were lower than all sectors except hospitals. Among nurses who changed jobs, LTCH sectoral retention was similar to that in other sectors. Overall,

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turnover measures do not suggest lower job satisfaction in LTCHs than other sectors. During the first year of the pandemic, small changes in turnover were observed, but it is difficult to disentangle pandemic restrictions on holding multiple jobs from other causes.

Keywords: nursing workforce, turnover, job stability, COVID-19, long-term care

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Introduction

The coronavirus disease 2019 (COVID-19) pandemic has drawn attention to staffing instability in the long-term-care home (LTCH; also known as the nursing home) sector in Ontario and other jurisdictions. In the first two waves of the pandemic, residents and staff in these homes were much more likely to become infected and subsequently die than were individuals of a similar age in the community.[1] Weekly COVID-19 deaths per 10,000 LTCH residents and per 100,000 community-dwelling individuals aged 70 years and older from 25 March 2020 to 2 April 2022 are displayed in Figure 1.[2] In mid-April 2020, weekly LTCH mortality was about double the pre–COVID-19 five-year average; excess mortality returned to close to zero by June 2020 as the first wave subsided but increased again as the second wave started in September 2020 (Akhtar-Danesh et al. 2022; Stall et al. 2021). By the third wave, however, LTCHs were given more resources, including priority access to vaccines, and homes improved their infection prevention and control measures (Ontario Agency for Health Protection and Promotion 2021a, 2021b). Compared with earlier waves, deaths in LTCHs were relatively low despite those in the community increasing (Ontario, 2022). As seen in Figure 1, the dominant variant in the fourth wave again negatively affected LTCHs, but the impact was less severe than during the first and second waves.

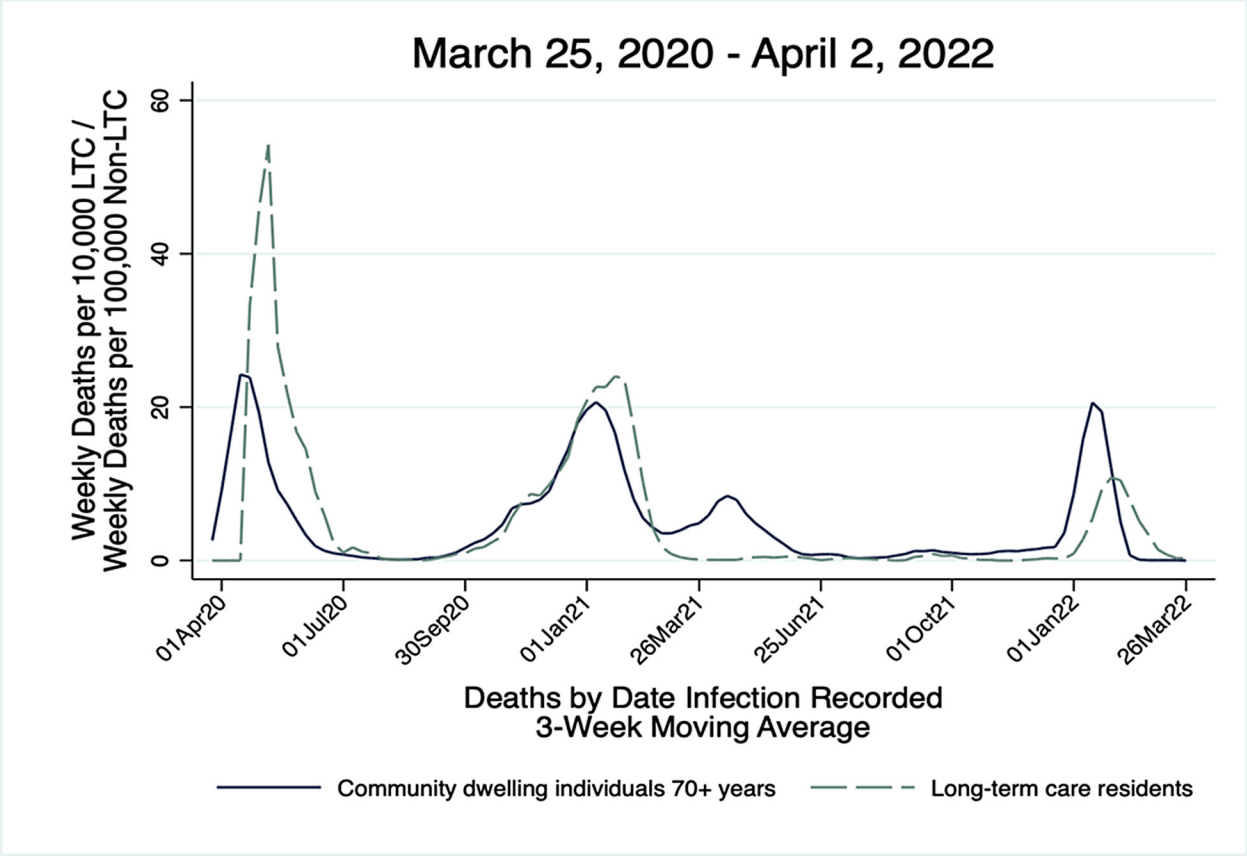

Figure 1: Weekly Death Rates Among the LTC and the Non-LTC Population Aged ≥70 y

Notes: LTC deaths are reported as 0 before 4 April 2020, the initial reporting date. Deaths include those who died with and from coronavirus disease 2019. LTC = long-term care

Source: Ontario (2022).

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Comas-Herrera et al. (2021, especially Figures 1 and 2), using national-level data to late 2020 or early 2021, show that the overall COVID-19 mortality rate in Canadian LTCHs was comparable with that in other developed nations conditional on COVID-19's prevalence in the community as proxied by deaths in the non–care-home population, and the proportion of the population in LTCHs. Although the medical frailty and advanced age (more than 50 percent of residents are older than age 85 y) of LTCH residents offers some explanation for high case fatality rates, many have questioned what led to the high case rates (Ng et al. 2020; Ontario Long Term Care Association 2019). In addition to staff instability, suggestions include inadequate infection prevention and control protocols, restricted access to personal protective equipment, insufficient funding, and outdated building designs (especially three- and four-person rooms) as contributors (Akhtar-Danesh et al. 2022; Brown et al. 2021; Faghanipour et al. 2020; Holroyd-Leduc and Laupacis 2020; Stall et al. 2020; and especially the Ontario COVID-19 Long-term Care Commission's final report by Marrocco, Coke, and Kitts 2021).

In this article, using 2014–2020 administrative data, we investigate whether workforce or job characteristics and job stability among registered nurses (RNs) and registered practical nurses (RPNs) in LTCHs differ from those in other Ontario health care sectors. Workforce characteristics include the level of education, location of first education and practice in the profession, years of practice, and languages spoken. Job characteristics include employment status (full time, part time, or irregular), employment category (permanent, temporary, or casual), and location of the job. To investigate job stability, we contrast the LTCH sector and other sectors in health care by measuring (a) the year-over-year rate of job turnover and (b), for jobs that exist in 2014, the number of years each job continues in our data window. We estimate count regression models to compare across health care sectors. We also examine the share of new nurses entering each sector, sector growth, and whether the pool of normally non-practicing nurses who may maintain their registration but are inactive in the profession was a resource during the pandemic.[3] We perform almost all of our analysis from the employer–job perspective. Hence the unit of analysis is the job, not the worker, because turnover occurs at the job level.

We focus on turnover as a measure of job instability for two reasons. First, job instability reduces continuity of care, which potentially affects quality of care; training is more frequent, and turnover serves as a vector for infectious disease transmission. Second, labour economists have long used job turnover as a measure of a job's or job–worker match's quality; the basic idea is that higher-quality matches endure longer (e.g., Abraham and Farber 1987; Pries and Rogerson 2022). We want to see whether the characterization of the LTCH sector as having low wages, chronic staff shortages, and high rates of part-time or casual work (e.g., Covert, 2020; Grant & Anderssen, 2020; Grant & Stone, 2020; Jeffords 2020) is indicative of low job quality leading to higher turnover than in other nurse employment environments in Ontario.

As background, the Canadian health care labour market is far from a textbook competitive market. It has been traditionally argued, perhaps with a US–UK lens, that the nursing labour market is monopsonistic with employers having appreciable market power (e.g., Sullivan 1989). As early as 1970, Yett saw the monopsonistic labour market structure as explaining the reports of chronic nursing shortages, which he documented as going back to at least the 1930s in varying jurisdictions (Yett 1975). A variant on this, recognizing Canadian nursing's high unionization rate, suggests that the market is better characterised as a bilateral monopoly (Sweetman 2022). In either case, the market structure problematizes the interpretation of nominal shortages.

More recently, using data from 2018, Austin et al. (2020) report that 60 percent of RNs and 61 percent of RPNs in LTCHs had part-time or casual positions, whereas only about 24 percent preferred part-time work. However, their analysis has no comparator sectors, and it is well known that part-time and casual work are common among nurses in Canadian health care. Another report from Toronto Metropolitan University's National Institute on Ageing (2019) expressed concern that Canadian LTCHs experience difficulty attracting and retaining nursing staff. This report, however, did not examine recruitment and retention issues in other health care sectors. It is unclear whether what was interpreted as high percentages of part-time or casual work and difficulty recruiting and retaining staff are a LTCH issue or a broader health care one.[4] This is one key piece of evidence that we seek to clarify in order to inform policy development in the LTCH sector and health care more broadly.

Literature Review

Turnover is inconsistently defined across the literature (Cavanagh 1989; Castle 2006; Duffield et al. 2014; Hayes et al. 2006, 2012). On the one hand, a Canadian study by O'Brien, Murphy, and Shamian (2008) that defined turnover as staff voluntarily leaving their position found an average annual turnover rate of 19.9 percent in a particular sample of hospitals. Using a similar definition of turnover, North et al. (2013) found a turnover rate of 44.3 percent for a participating sample of hospitals across 11 of New Zealand's 21 health boards, and Roche et al. (2014) found a turnover rate of 15.1 percent in 11 hospitals across three states in Australia. On the other hand, a two-part US study by Jones (1990a, 1990b) defines turnover as the involuntary or voluntary transition of nursing

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staff and found an average annual turnover rate of 26.8 percent in four acute care hospitals.

Measured turnover rates in LTCHs differ substantially across homes and methodologies or data sources. In a literature review covering 1990–2003, Castle (2006) observed reports of average annual turnover rates in the United States ranging from 8 to 103 percent for LPNs and from 19 to 64 percent for RNs. Donoghue (2010) uses the 2004 US National Nursing Home Survey and reported an annual turnover rate of 56.1 percent for RNs and 51 percent for LPNs, although turnover rates also tend to move with the economy, so no single year is fully representative (Staiger et al. 2012). Furthermore, annual sampling rates do not usually take very short jobs into account. Baughman and Smith (2012) take this into consideration by using the 1996 and 2001 Survey of Income and Program Participation to examine the employment duration of direct care workers (nursing assistants or aides, home health aides, personal care aides), who provide the majority of care in US nursing homes. They find mean and median employment durations of 9.7 and 5 months, respectively (Baughman & Smith 2012).

Aside from COVID-19, staff turnover is a concern in health care because increasing turnover has a negative impact on patient care quality (Castle & Anderson 2011; Collier & Harrington 2008; Zimmerman et al. 2002). US studies have shown that health improvements from reducing turnover are highest among those aged 85 years and older and especially among nursing home residents (Miller et al. 2009; Stevens et al. 2015). To the best of our knowledge, however, there are no studies that measure LTCH turnover rates in Canada, though some research focuses on predictors of intentions to quit or actual turnover in LTCHs among narrow samples of nurses—for example, a single year of data from a particular home or set of homes (e.g., Chu et al. 2014; McGilton et al. 2013; Tourangeau et al. 2010). We fill in this knowledge gap using a census of RNs and RPNs in Ontario from 2014 to 2020 to compare nursing turnover and related job characteristics across sub-sectors of health care.

Antwi and Bowblis (2018) argue that most previous studies linking turnover and quality of care are correlational, not causal. Moreover, they suggest that unobserved factors influencing quality may also be associated with turnover. Using US data, they account for endogeneity using fixed-effects panel instrumental variable (IV) regression. Using the local unemployment rate as an instrument for turnover, these authors show that a 10-percentage point increase in nurse turnover leads to a 16.5 percent increase in deficiency citations received by a nursing home and an increase in resident discharges due to death. Lin (2014) also uses an IV approach and finds RN staffing levels, which may be related to turnover, have a large and statistically significant impact on nursing home residents' quality of care. Both studies found that ignoring endogeneity underestimates the impact of staffing levels and turnover on quality of care. Although we examine the relationship among turnover, job quality, and quality of patient care in depth, in this article we do not investigate the causal relationships. Nevertheless, understanding potential differences between causal and observational studies matters in interpreting our results.

Data

In this study, we use the Ontario Health Professions Database, an annual census of licensed nurses in the province collected late in each calendar year that is linked longitudinally by nurse. It derives from regulatory college registration records that, under the *Regulated Health Professions Act,* 1991 (Ontario 1991), nurses in Ontario are obliged to provide. The dataset contains information on employment, education, and demographic characteristics (Ontario Ministry of Health and Long-Term Care 2018). We use data for 2014–2020 (the most recent year available). However, in much of the analysis we separate the pre-COVID-19 years, 2014–2019, and analyze the first year of COVID-19 independently to highlight any discontinuity.

Following the questionnaire, a practice setting is one of the following health care sectors: LTCH (e.g., nursing home), hospital, primary care (e.g., physician's office), home care (primarily for assistance with chronic conditions and aging), supportive housing or retirement home (e.g., assisted living home), public health, and a composite "other" aggregating practice settings less relevant to our analysis.[5]

The registration process categorizes nurses as either active (including those who are unemployed) or inactive. Inactive categories include retired, left the country, changing profession, on leave, resigned, and other. Of course, care is required in interpreting these inactive categories because they are only relevant to nurses who participate in the data collection, despite being inactive. For example, a nurse who retires or leaves the country may simply cease to participate in the data collection if they no longer maintain their Ontario registration. However, in practice the vast majority of nurses who exit practice in Ontario register as inactive for at least one year before leaving the dataset.

A job, as identified in our data, consists of a unique nurse, an employer postal code in Ontario (we exclude jobs outside Ontario, and the employer is not observed other than via a postal code), and a practice setting.[6] Because the data are collected annually, usually in December, we do not capture jobs with durations of less than one year that do not cross the data collection window. Our measure of turnover includes job-to-job transitions as well as transitions to non-employment. If we observe that a nurse who is employed in one or more jobs in year t ceases to have any job in year $t + 1$, then that job ends.

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For nurses who continue to work in the province across years, for each job, if a nurse–employer postal code–practice setting ceases, then the initial job has transitioned. If a nurse changes duties (or even employers), but the postal code and practice setting remain constant, we would not see this in our data, and no job transition would be recorded. Alternatively, if an employer changes postal codes, then this will be recorded as a job transition. If the postal code is recorded as unknown, we set it to that in the following year if the setting and province of practice are the same in both years. Where this is not possible, we drop the job; however, missing data are rare and we remove only about 570 jobs out of 1,179,610—less than 0.05 percent. [7]

Missing annual characteristics (sometimes coded as not applicable in the datafile) are imputed, where possible, using data from subsequent years. Education data prior to 2017 was reported differently than in subsequent years. In response to this, to generate a consistent series, we did the following: we set education to equal that in the most recent year available and adjust reports in earlier years to never be higher than that in the most recent year.

For some of the analysis, we quantify sector switching, which means that jobs that come to an end and are replaced need to be matched with new jobs that start. We first limit this analysis to single jobholders, where there are one-to-one job transitions. However, we subsequently perform a similar analysis for the subset of multiple jobholders who prefer full-time hours but have multiple part-time or irregular jobs in year t and transition to at least one full-time job in year $t + 1$.[8] Although it is straightforward to identify sectoral transitions when a single full-time job is observed in year $t + 1$, an identification strategy is required in the case where multiple full-time jobs are observed in year $t + 1$. We elect to assign the transition to the sector of the first-listed full-time job in year $t + 1$.

Overall, the dataset is an unbalanced panel of jobs (with holes because, although rare, nurses may leave and return to a job) containing a total of 130,100 unique RNs who across the seven years of data available held 243,430 distinct jobs and 67,060 unique RPNs who similarly held 145,690 jobs.

Results

Workforce and Job Characteristics

Tables 1 and 2 and all similar tables (Tables 3–12) focus on RNs and on RPNs. Tables 1 and 2 display statistics characterizing nurses and their jobs (with each job defined by the postal code and practice setting) on a per-job basis. Focusing first on the bottom two rows of Tables 1 and 2, the average number of jobs per year shows that RPNs hold about 32 percent of combined RN and RPN jobs in Ontario, but about 63 percent of those in LTCHs. This coincides with just over 8 percent of RNs and 29 percent of RPN jobs being in LTCHs.

In Table 1, the characteristics of RNs in LTCHs differ from those of the average RN in the province (the total column), whereas RPNs (Table 2) in LTCHs are more similar to the provincial norm. RNs holding jobs in LTCHs are slightly older and have lower levels of education than the provincial average. They are also much more likely to have been educated and first practised outside of Canada or the United States than typical RNs and RPNs. Corresponding to this, RNs and RPNs in LTCHs are similarly likely to speak both English and another language, with RNs in LTCHs much more likely to do so than the provincial average. Among RNs, jobs in LTCHs are more likely to be irregular in terms of hours worked and casual in terms of employment category than the provincial norm, whereas the gaps relative to provincial norms for RPNs are much smaller.

Notable differences in characteristics are apparent across sectors, especially for RNs. The LTCH sector is not an outlier, although its jobs are more similar to those in primary care and supportive housing than they are to those in the hospital and public health sectors. For example, the educational distribution in LTCHs, primary care and supportive housing are broadly similar, with a higher share of diploma-educated RNs compared with hospitals and public health. Two areas in which LTCHs stand out are in having positions filled by individuals who speak English and another language (there is much more linguistic diversity, especially among RNs) and in being geographically rural (this latter is similar to primary care). Overall, although jobs in the LTCH sector clearly differ from those in the hospital sector in terms of the characteristics presented, there is no evidence here that LTCH jobs differ from norms in health care overall.

Pre-Pandemic Turnover Rates (2014–2019)

Panel A in Tables 3 and 4 shows average year-over-year job turnover rates for 2014–2019. Turnover includes jobs that end and are (a) replaced (job transitions) or (b) not replaced (job ends) by one or more new Ontario nursing jobs.[9] The reason a job ends is subdivided into four exhaustive and mutually exclusive categories: retired, on leave, working outside the profession or Ontario, and other.[10] For well less than 1 percent of jobs, in which a nurse has four or more jobs, we cannot always determine whether jobs continue or end because information is collected only on three jobs. Among RNs, the turnover rate in LTCHs is similar to that in home care, higher than hospitals and public health, and lower than primary care, supportive housing, and other. Among RPNs, however, the turnover rate in LTCHs is lower than that in all other

Table 1: Descriptive Statistics of Job Holders and Jobs (2014–2020): Registered Nurses

Variables	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Total
Mean age (y)	45.8	42.2	47.1	46.0	47.1	43.8	46.6	43.9
Male (%)	7.4	8.0	4.1	5.0	4.1	3.3	9.6	7.8
Highest education (%)								
Diploma	45.6	37.0	47.3	36.5	45.1	6.0	38.1	37.3
Bachelor's	50.6	58.0	48.4	58.9	49.9	84.5	50.4	56.2
Graduate	3.1	4.5	3.3	4.0	3.9	8.9	10.8	5.8
Missing	0.7	0.5	1.1	0.7	1.2	0.5	0.7	0.6
Location of first education (%)								
Ontario	68.0	82.2	81.7	85.8	77.9	89.6	81.5	81.1
Other province or territory	3.6	4.6	7.8	4.9	6.0	6.1	6.3	5.1
United States	0.9	0.7	1.3	1.2	1.2	0.9	1.1	0.8
Not Canada or United States	25.7	11.1	7.5	6.8	12.8	2.4	9.5	11.2
Missing	1.9	1.4	1.7	1.3	2.2	0.9	1.7	1.7
Location of first practice (%) and mean years of practice								
Ontario	66.2	79.5	79.2	82.8	75.6	86.7	78.6	78.5
Other province or territory	3.6	4.4	7.3	5.1	5.3	6.3	6.2	4.9
United States	2.0	2.6	3.0	2.8	3.0	2.1	2.9	2.6
Not Canada or United States	22.9	10.0	6.8	6.2	11.6	2.3	8.4	10.2
Missing (%)	5.3	3.6	3.7	3.0	4.5	2.6	4.0	3.8
Practice in Canada (y)	16.4	15.9	21.4	19.8	20.1	18.8	19.9	17.3
Practice not in Canada (y)	11.5	11.3	11.5	11.5	11.5	11.5	11.4	11.2
Missing (%)	8.2	4.6	4.5	3.6	6.0	2.9	5.0	4.9
Language(s) of practice (%)								
English only	59.2	72.7	75.8	76.3	74.4	79.4	73.7	72.3
English & French only	5.4	7.2	9.0	8.2	7.5	10.4	7.7	7.4
English and other	34.0	19.2	14.1	14.8	16.7	9.5	17.5	19.3
Other	1.5	1.0	1.1	0.7	1.4	0.7	1.1	1.0
Work time category (%)								
Full time	49.0	60.4	43.2	73.8	43.7	79.0	48.6	57.2
Part time	28.1	26.8	35.0	15.2	24.7	11.5	26.1	26.1
Irregular	22.9	12.8	21.7	11.0	31.6	9.5	25.3	16.7
Job characteristics (%)								
Permanent	74.2	86.1	74.3	85.0	66.8	86.4	64.3	79.7
Temporary	3.1	2.5	3.7	2.1	2.6	5.7	8.7	4.0
Casual	21.7	11.1	19.4	7.9	27.0	7.7	21.7	14.5
Self-employed	1.1	0.3	2.5	5.1	3.5	0.1	5.3	1.8
Rural	14.3	2.4	12.3	2.8	6.2	2.8	3.3	4.1
Sector job share (%)	8.2	57.4	4.5	4.2	0.9	3.6	21.2	100.0
Average no. of jobs/y	9,380	65,380	5,070	4,740	1,060	4,090	24,090	113,810

Notes: Observations are at the job level. Counts have been rounded to the nearest 10 for confidentiality. Average jobs per year is calculated by pooling the number of jobs in each year and dividing by 7 (years).
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

sectors except the hospital sector, which has the lowest turnover rate. Overall, we do not find any evidence supporting excessive job dissatisfaction—at least not dissatisfaction resulting in abnormally high turnover—in the LTCH sector, especially for RPNs.[11]

Trends and Pandemic Turnover, Retirement, and Leave Rates

Although discussions of nursing shortages are not novel—indeed as discussed earlier they have been ongoing since the 1930s—the pandemic has increased

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Table 2: Descriptive Statistics of Job Holders and Jobs (2014–2020): Registered Practical Nurses

Variables	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Total
Mean age (y)	40.7	39.0	39.7	40.0	39.6	41.8	41.5	40.2
Male (%)	9.4	9.3	3.6	10.7	7.9	10.0	11.5	9.4
Highest education (%)								
Diploma	90.3	92.7	93.0	86.7	85.3	89.4	90.5	90.7
Bachelors	8.5	6.1	6.0	11.7	13.2	8.8	8.2	8.0
Graduate	0.5	0.3	0.4	0.8	0.7	N/A	0.5	0.5
Missing	0.7	0.9	0.7	0.8	0.8	N/A	0.8	0.8
Location of first education (%)								
Ontario	82.7	89.0	88.3	79.0	76.5	86.4	86.1	84.9
Other province or territory	1.7	1.5	2.1	1.9	2.5	2.6	1.7	1.8
United States	0.3	0.1	0.4	0.3	0.2	N/A	0.4	0.3
Not Canada or United States	13.5	7.3	7.8	16.7	19.2	8.2	10.0	11.0
Missing	1.8	2.0	1.4	2.0	1.6	N/A	1.8	2.0
Location of first practice (%) and mean years of practice								
Ontario	82.3	87.1	84.5	76.3	77.3	87.3	83.3	83.5
Other province or territory	1.4	1.4	1.8	1.8	2.1	2.2	1.6	1.5
United States	0.2	0.1	0.2	N/A	0.2	N/A	0.3	0.2
Not Canada or United States	3.9	2.1	2.6	4.9	4.7	2.3	2.6	3.0
Missing (%)	12.2	9.3	10.9	N/A	15.7	N/A	12.3	11.7
Practice in Canada (y)	10.2	11.1	12.8	9.6	9.9	14.4	12.5	11.1
Practice not in Canada (y)	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.7
Missing (%)	14.1	10.5	12.4	19.3	18.6	9.0	13.6	13.3
Language(s) of practice (%)								
English only	58.7	71.4	72.7	59.4	58.6	68.2	67.1	65.3
English & French only	5.1	6.5	6.9	4.9	5.4	N/A	5.7	5.8
English and other	34.8	21.2	19.7	34.7	34.4	23.1	26.2	27.7
Other	1.4	1.0	0.8	0.9	1.7	N/A	1.0	1.2
Work time category (%)								
Full time	43.2	47.4	53.5	43.9	43.6	62.0	45.8	45.8
Part time	35.7	39.8	31.0	33.1	34.0	11.4	32.1	35.4
Irregular	21.1	12.8	15.4	23.0	22.5	26.7	22.1	18.8
Job characteristics (%)								
Permanent	73.7	84.0	79.8	63.8	72.4	66.0	70.0	75.8
Temporary	5.0	4.6	4.9	3.9	4.0	N/A	5.3	4.9
Casual	20.7	11.3	14.3	21.2	22.3	23.3	20.7	17.7
Self-employed	0.6	0.1	1.0	11.0	1.2	N/A	3.9	1.6
Rural	11.0	5.0	12.6	4.2	6.1	2.5	3.7	7.0
Sector job share (%)	29.0	29.6	6.0	3.0	8.4	0.5	23.6	100.0
Average no. of jobs/y	15,870	16,170	3,300	1,630	4,590	260	12,890	54,710

Notes: Observations are at the job level. Counts have been rounded to the nearest 10 for confidentiality. Average jobs per year is calculated by pooling the number of jobs in each year, and dividing by 7 (years). N/A = not available (suppressed for confidentiality).
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

concerns about nurses leaving the profession as a result of stress and burnout. Our data are collected circa December, so the 2020 data in Panel B of Tables 3 and 4 allow a window into turnover rates relevant to the initial COVID-19 waves. Compared with the 2014–2019 average, both RNs and RPNs exhibit a modest increase in turnover across all sectors. For turnover rates in each year, refer to Appendix Figure A.1.

The largest turnover increase in 2020 occurs for LTCH and supportive housing RNs (5.7 and 4.1 percentage

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Table 3: Job Turnover Rates across Health Care 2014–2020 (%): Registered Nurses

Year-to-Year Job Status	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Total
	Panel A: Average Year-to-Year Job Turnover Rates (2014–2019)							
Job continues	73.9	85.7	62.4	76.4	65.5	85.0	64.1	78.4
Turnover	25.7	14.2	37.0	23.5	33.9	15.0	35.2	21.3
Job transitions (new ON job)	18.5	8.6	28.1	16.9	24.6	9.0	27.7	14.9
Job ends (no ON job)	7.2	5.6	8.9	6.6	9.3	6.0	7.5	6.4
≥4 jobs	0.5	0.2	0.6	0.2	0.6	0.0	0.7	0.3
Average no. of jobs	9,510	64,970	5,130	4,650	1,060	3,920	24,160	113,390
	Panel B: Job Turnover Rates (2019–2020)							
Job continues	67.8	84.4	60.6	77.8	62.0	84.5	61.2	76.6
Turnover	31.4	15.4	38.5	22.1	38.0	15.5	37.9	23.0
Job transitions (new ON job)	23.2	8.7	28.8	15.1	28.0	9.3	29.8	15.7
Job ends (no ON job)	8.2	6.7	9.7	7.0	10.0	6.2	8.2	7.3
≥4 jobs	0.8	0.2	1.0	0.1	0.0	0.0	0.8	0.4
Average no. of jobs	8,610	67,840	4,700	5,290	1,040	5,140	23,690	116,310

Notes: Observations have been rounded to the nearest 10 for confidentiality. Job turnover consists of job transitions (jobs that end and are replaced with at least 1 Ontario nursing job) plus job ends (jobs that end and are not replaced with an Ontario nursing job). In some circumstances (< 1%), we cannot determine whether the job continues for those who have ≥4 jobs.
Source: Ontario Ministry of Health, Health Professions Database, 2014-2020.

Table 4: Job Turnover Rates across Health Care 2014–2020 (%): Registered Practical Nurses

Year-to-year job status	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Total
	Panel A: Average Year-to-Year Job Turnover Rates (2014–2019)							
Job continues	76.8	80.7	53.8	35.2	65.4	68.4	58.8	70.2
Turnover	22.9	19.1	45.9	64.2	34.1	30.9	40.6	29.4
Job transitions (new ON job)	15.7	11.5	37.8	55.4	25.5	22.9	32.1	21.6
Job ends (no ON job)	7.2	7.6	8.1	8.8	8.6	8.0	8.6	7.9
≥4 jobs	0.3	0.2	0.3	0.6	0.6	N/A	0.5	0.4
Average no. of jobs	15,990	15,720	3,240	1,500	4,570	240	12,830	54,080
	Panel B: Job Turnover Rates (2019–2020)							
Job continues	69.3	79.4	51.3	36.7	58.6	72.9	52.3	65.1
Turnover	30.4	20.4	48.1	62.4	40.7	27.1	47.2	34.5
Job transitions (new ON job)	21.2	11.4	38.7	51.0	31.0	22.7	37.6	25.2
Job ends (no ON job)	9.2	9.0	9.4	11.4	9.6	4.4	9.6	9.3
≥4 jobs	0.3	0.2	0.5	0.9	0.7	0.0	0.5	0.4
Average no. of jobs	15,150	18,830	3,650	2,460	4,700	380	13,260	58,430

Notes: Observations have been rounded to the nearest 10 for confidentiality. Job turnover consists of job transitions (jobs that end and are replaced with at least 1 Ontario nursing job) plus job ends (jobs that end and are not replaced with an Ontario nursing job). In some circumstances (< 1%), we cannot determine whether the job continues for those who have ≥4 jobs. N/A = not available (suppressed for confidentiality).
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

points, respectively) and RPNs (7.5 and 6.6 percentage points, respectively). This increase in turnover arises from an increase in job transitions, as opposed to jobs ending. However, some of these increases undoubtedly resulted from the pandemic order preventing within-sector multi-job holding in nursing and retirement homes (Ontario 2020a, 2020b) because a large share of these jobs are replaced by another Ontario nursing job. Among jobs that come to an end and are not replaced by the data collection date, a historically high percentage

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of both RNs and RPNs report being on leave compared with the 2014–2019 average. However, the increase in LTCHs is modest. Compared with the previous year, 2019, it is only 1 percentage point for RNs and 2 for RPNs.[12] Moreover, this small increase does not indicate that a higher percentage of nurses went on leave in 2020, because going on leave is an individual-level concept, and our analysis is at the job level. Last, the percentage not working or leaving Ontario declines, as does the percentage who retire, conditional on the job ending.[13]

Ontario's LTCH Commission noted that some homes offered full-time hours to those working part-time to account for lower staffing levels that resulted from the single-site restriction in LTCHs (Marrocco et al. 2021). However, although part of the increase in turnover in LTCHs seen in 2020 may be due to the collapse of two part-time positions into one full-time job, given our data this is not the only explanation. For example, if a nurse worked two part-time jobs in different LTCHs, and this transitioned to one full-time job in 2020 with one job continuing in one of the two original homes, this would be labelled as one job ending (i.e., our definition of a job includes the practice setting and postal code, not employment status). However, if this nurse also gained employment in a different sector (which was permitted because the single-site order only applied within sectors), this would be labelled as a job transition.[14] Overall, in the first approximately ten months of the pandemic covered by these data, there appears to have been at most a very small increase in jobs ending where the nurse did not relatively quickly transition to a new nursing position in Ontario.

Sector Transitions for Single Jobholders

In Tables 5 and 6, we consider jobs that terminate in one year where each nurse (who is a single jobholder) in question finds one new Ontario nursing job the following year or becomes inactive. Table 5 (Panel A) shows, for example, that 28.3 percent of jobs held by RNs in LTCHs that come to an end in one year are replaced by another job in the same sector in the next year (averaged over 2014–2019). The similar percentage for RPNs is 16.9 (Table 6, Panel A).

It is, however, difficult to compare rates of same-sector transitions across sectors since the sectors are of different sizes. For example, as seen in Table 1, 57.4 percent of RNs' jobs are in hospitals, whereas only 8.2 percent are in LTCHs. If new job finding was purely random and new jobs were available in proportion to each sector's size, then we would expect, for example, that 57.4 percent of new jobs would be obtained in hospitals. On this basis, we calculate the relative likelihood of finding a job in the same sector as the previous job compared with the sector's size. Although jobs are unlikely to be available in direct proportion to each sector size because, as seen in Tables 3 and 4, turnover rates vary across sector, the comparison does provide some insight. Focusing again on RNs in the LTCH sector, those who lose a job in that sector are 3.4 times more likely (Table 5, Panel C) to obtain a job in the same sector than would be expected on the basis of the size of the sector. In contrast, RPNs (Table 6, Panel C) whose job ends in a LTCH are less likely to obtain a new job in the same sector than would be expected on the basis of the size of the sector. RNs appear to be more attached to the LTCH sector than are RPNs. Comparing across sectors and among jobs that end, nurse retention in the LTCH sector appears to be on the low side compared with the rest of health care, but as seen in Tables 3 and 4, it also has fewer jobs that end. Sectoral retention of workers is, of course, a combination of these two rates.

Sector transitions and retention for 2020 are displayed in Panels B and D of Tables 5 and 6. From 2019 to 2020, our measure of sector retention increases for most sectors, except among primary care RNs and RPNs; however, the changes are small (with the exception of public health RNs).[15]

Transitions for Inactive Nurses

Nurses who have withdrawn from active practice are frequently thought of as a reservoir of talent that may be drawn upon in a crisis, and there are media reports about former nurses returning to the profession to assist during the pandemic (e.g., Beauchemin & Jones 2020; Lowrie 2020). We explore this among single jobholders (Tables 5 and 6), which is (unusually for this article) from the individual perspective.[16]

There are a number of reasons why a nurse may be inactive, including going on leave (including maternity leave), retiring, leaving the country or province, changing professions, and so forth.[17] For single jobholders (Tables 5 and 6), in the last row of Panels A and B, we show the sector to which inactive nurses transition the following year (including remaining inactive).[18]

Among RNs and RPNs who are single jobholders, most inactive nurses remain inactive. For example, averaged over 2014–2019, 81.9 percent of nurses who are inactive in an initial year remain inactive the following year. Similarly, among all nurses (single and multiple jobholders), the majority of inactive nurses remain inactive or leave the dataset the following year.[19]

Focusing on the pandemic in 2020 (Tables 5 and 6, Panel B), for both RNs and RPNs (both single jobholders, and all nurses) we see an increase in the percentage of nurses who were inactive in 2019 and report employment in 2020. For example, among all RNs who were inactive in 2018, 9.7 percent came back to work in 2019, whereas for those who were inactive in 2019, 16.6 percent came back to work in 2020, representing a 71 percent increase

Table 5: Transition Matrix and Sector Retention Among Single Jobholders Who Change Jobs 2014–2020 (%): Registered Nurses

	Sector Year t + 1								
Sector Year t	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Inactive	No. of Observations
	Panel A: 2014–2019 Average Year-to-Year Transitions (%)								
Long-term care	28.3	14.3	N/A	2.4	2.8	N/A	15.7	34.2	940
Hospital	2.4	28.0	3.1	1.8	0.3	0.5	20.6	43.2	4,630
Primary care	1.5	11.4	29.0	3.4	0.5	1.6	27.6	24.9	1,000
Home care	2.7	7.6	3.9	11.1	N/A	N/A	46.0	26.9	630
Supportive housing	19.1	7.6	3.2	3.8	16.0	0.0	19.8	30.5	160
Public health	N/A	2.8	3.9	N/A	2.9	38.4	12.1	37.7	360
Other	3.1	20.1	6.6	7.6	1.0	0.9	38.3	22.3	3,940
Inactive	1.2	10.4	1.0	0.8	0.1	0.9	3.6	81.9	5,330
	Panel B: 2020 Transitions (%)								
Long-term care	27.2	15.6	1.3	3.0	2.4	2.3	11.9	36.3	1,080
Hospital	1.9	24.2	2.3	1.7	0.3	3.1	16.5	50.0	5,420
Primary care	N/A	10.7	24.3	5.2	N/A	4.8	25.6	27.6	970
Home care	3.5	7.9	7.5	15.6	1.0	3.0	28.3	33.2	630
Supportive housing	15.2	12.9	N/A	5.8	14.0	N/A	14.0	32.7	170
Public health	N/A	2.6	2.1	N/A	0.0	46.2	10.7	36.8	380
Other	3.2	19.5	5.3	11.7	0.9	2.9	32.0	24.4	4,470
Inactive	3.0	20.3	1.9	1.7	0.2	2.6	6.5	63.8	4,080
	Panel C: 2014–2019 Average Year-to-Year Sector Retention								
Average same sector (%)	28.3	28.0	29.0	11.1	16.0	38.4	38.3	—	—
Average share of jobs (%)	8.2	57.4	4.5	4.2	0.9	3.6	21.2	—	—
Average Pr(sector)/ E(sector)	3.4	0.5	6.5	2.7	17.2	10.7	1.8	—	—
	Panel D: 2020 Sector Retention								
Same sector (%)	27.2	24.2	24.3	15.6	14.0	46.2	32.0	—	—
Share of jobs (%)	7.4	58.3	4.0	4.6	0.9	4.4	20.4	—	—
Pr(sector)/E(sector)	3.7	0.4	6.0	3.4	15.6	10.5	1.6	—	—

Notes: Observations are at the individual level. Sample is based on nurses who are single jobholders in year t and year t + 1 and those who change jobs in year t + 1. Rows total 100% in the Panels A and B. Observations have been rounded to the nearest 10 for confidentiality, and the totals may therefore be affected by rounding. Dashes indicate not applicable. N/A = not available (suppressed for confidentiality).
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

in the return rate compared with the previous year; this implies an increase of about 690 RNs or a 0.6 percent increase in the number working.[20] For RPNs, there is a 46 percent increase, or about 300 returnees, representing a 0.5 percent increase in the workforce. In our transition matrix for single jobholders, we see a similar result (Tables 5 and 6, Panel B).[21] Overall, although there is evidence of above-normal returns to practice from inactive status in the first year of the crisis, the overall scale of the effect is modest.

Turnover and Job–Worker Match Quality

While we do not investigate the causal relationship between turnover and job quality, in Tables 7 and 8 we investigate the percentage of nurses (single jobholders) who transition jobs and move up (i.e., to a higher-quality worker–job match) on the basis of their employment status in year t + 1. We take into account employment preferences for work schedules to define higher-quality job–worker matches. Tables 7 and 8 consider four groups of nurses: (a) involuntary part-time or irregular, (b) voluntary part-time or irregular, (c) involuntary full-time, and (d) voluntary full-time nurses. Involuntary part-time or irregular nurses prefer full-time employment but are employed in a part-time or irregular job; involuntary full-time nurses prefer part-time or irregular employment but are employed in a full-time job. Voluntary part-time or irregular and full-time nurses, by contrast, are

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Table 6: Transition Matrix and Sector Retention among Single Jobholders Who Change Jobs 2014–2020 (%): Registered Practical Nurses

	Sector Year *t* + 1								
Sector Year *t*	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Inactive	No. of Observations
	Panel A: 2014–2019 Average Year-to-Year Transitions (%)								
Long-term care	16.9	14.2	2.8	N/A	8.2	N/A	16.2	40.1	1,410
Hospital	7.6	18.1	3.3	N/A	1.2	N/A	23.5	45.5	1,580
Primary care	3.1	6.5	35.9	4.9	N/A	N/A	31.5	15.6	730
Home care	4.2	N/A	6.9	8.9	3.5	N/A	59.2	14.0	460
Supportive housing	19.7	6.8	4.1	N/A	20.2	N/A	19.5	26.9	580
Public health	N/A	N/A	N/A	N/A	0.0	N/A	29.5	32.9	30
Other	6.3	15.6	8.8	10.5	3.8	0.4	32.4	22.3	2,410
Inactive	6.8	6.3	1.6	N/A	1.7	N/A	5.7	77.0	2,260
	Panel B: 2020 Transitions (%)								
Long-term care	17.4	15.5	2.4	2.2	7.8	0.5	12.7	41.4	1,970
Hospital	6.5	14.7	2.7	1.2	1.5	0.3	20.5	52.7	1,920
Primary care	5.7	9.5	30.7	8.2	3.5	1.0	22.7	18.7	950
Home care	5.4	7.4	10.7	12.0	3.7	0.0	39.1	21.7	520
Supportive housing	21.2	11.8	N/A	3.8	20.0	N/A	15.0	24.7	860
Public health	N/A	N/A	N/A	N/A	0.0	N/A	34.4	21.9	30
Other	7.6	15.6	8.0	18.8	3.4	0.3	24.6	21.5	3,520
Inactive	8.9	10.7	2.7	2.0	2.8	0.3	8.2	64.2	2,410
	Panel C: 2014–2019 Average Year-to-Year Sector Retention								
Average same sector (%)	16.9	18.1	35.9	8.9	20.2	N/A	32.4	—	—
Average share of jobs (%)	29.0	29.6	6.0	3.0	8.4	0.5	23.6	—	—
Average Pr(sector)/E(sector)	0.6	0.6	6.0	3.0	2.4	N/A	1.4	—	—
	Panel D: 2020 Sector Retention								
Same sector (%)	17.4	14.7	30.7	12.0	20.0	N/A	24.6	—	—
Share of jobs (%)	25.9	32.2	6.3	4.2	8.1	0.6	22.7	—	—
Pr(sector)/E(sector)	0.7	0.5	4.9	2.9	2.5	N/A	1.1	—	—

Notes: Observations are at the individual level. Sample is based on nurses who are single jobholders in year *t* and year *t* + 1 and those who change jobs in year *t* + 1. Rows total 100% in Panels A and B. Observations have been rounded to the nearest 10 for confidentiality, and the totals may therefore be affected by rounding. Dashes indicate not applicable. N/A = not available (suppressed for confidentiality).
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

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employed in a job with the desired characteristics. For example, averaged over 2014–2019 (Table 7, Panel A), 48.3 percent of LTCH RNs who are involuntary part-time or irregular in year *t* transition to a full-time job in year *t* + 1, and 51.7 percent transition to a new job that is part time or irregular.

Among both RNs and RPNs, across all sectors (except hospital RNs), it is slightly more common for nurses with involuntary part-time or irregular jobs to transition to a new job that is part time or irregular, as opposed to transitioning to a new job that is full time (i.e., move up to a higher-quality job–worker match, based on their stated preference in the first year). Involuntarily part-time or irregular RNs in LTCHs appear to be slightly less successful at transitioning to a full-time job compared with nurses in hospitals and home care and more successful compared with nurses in primary care and other. LTCH RPNs are more successful at transitioning to a full-time job compared with all sectors, except supportive housing. Interestingly, across most sectors, it is uncommon for involuntarily full-time RNs and RPNs to move to a higher-quality job–worker match (i.e., move to a part-time or irregular position). Within the LTCH sector, involuntarily full-time RNs are less likely to transition to a desired part-time or irregular job, whereas RPNs are more likely to do so.

Compared with the 2014–2019 year-over-year average (Tables 7 and 8, Panel A), in 2020 (Tables 7 and 8, Panel

Table 7: Employment Status Transitions among Involuntary Part-Time, Irregular, and Full-Time Single Jobholders Who Change Jobs 2014–2020 (%): Registered Nurses

Type of Nurse Year *t* and Employment Status (Year *t* + 1)	Sector Year *t*							
	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Total
	Panel A: 2014–2019 Average Year-over-Year Transitions (%)							
Involuntary part time or irregular, *n*	120	400	70	40	10	10	290	940
Switch to full time	48.3	53.0	38.3	48.8	N/A	N/A	42.7	47.9
Stay part time or irregular	51.7	47.0	61.7	51.2	N/A	N/A	57.3	52.1
Voluntary part time or irregular, *n*	80	450	210	100	30	20	620	1,510
Switch to full time	17.6	15.0	8.3	8.4	N/A	N/A	8.2	10.7
Stay part time or irregular	82.4	85.0	91.7	91.6	N/A	N/A	91.8	89.3
Involuntary full time, *n*	30	120	30	20	10	20	160	380
Stay full time	51.4	42.9	55.2	46.5	N/A	58.8	63.0	54.1
Switch to part time or irregular	48.6	57.1	44.8	53.5	N/A	41.2	37.0	45.9
Voluntary full time, *n*	120	400	70	40	10	10	290	940
Stay full time	83.7	84.7	88.9	89.4	N/A	N/A	93.1	89.0
Switch to part time or irregular	16.3	15.3	11.1	10.6	N/A	N/A	6.9	11.0
	Panel B: 2020 Transitions (%)							
Involuntary part time or irregular, *n*	130	450	50	30	20	0	280	960
Switch to full time	53.9	58.9	51.0	42.3	50.0	0.0	46.1	53.3
Stay part time or irregular	46.1	41.1	49.0	57.7	50.0	0.0	53.9	46.7
Voluntary part time or irregular, *n*	100	530	200	90	20	20	690	1,640
Switch to full time	27.4	29.2	13.8	12.2	N/A	N/A	13.3	19.4
Stay part time or irregular	86.3	70.8	86.2	87.8	N/A	N/A	86.7	80.6
Involuntary full time, *n*	20	100	30	20	0	10	130	310
Stay full time	54.5	62.0	67.9	68.8	0.0	N/A	68.8	65.8
Switch to part time or irregular	45.5	38.0	32.1	31.3	0.0	N/A	31.3	34.2
Voluntary full time, *n*	420	1,580	400	270	70	210	2,160	5,110
Stay full time	81.6	80.8	90.2	88.5	83.6	93.7	91.6	87.1
Switch to part time or irregular	25.0	19.2	9.8	11.5	16.4	6.3	8.4	12.9

Notes: *n*s are reported for type of nurse, and percentages are reported for employment status. Observations are at the individual level. Sample is based on nurses who are single jobholders in year *t* and year *t* + 1 and who change jobs in year *t* + 1. Sector analysis is based on the sector in year *t*; thus, the sector to which nurses transition in year *t* + 1 may not be the same sector as listed in year *t*. Observations have been rounded to the nearest 10 for confidentiality, and the totals may therefore be affected by rounding. N/A = not available (suppressed for confidentiality).
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

B), there appears to be improvement in the percentage of nurses who transition to a higher-quality job–worker match across most sectors (except home care) for both RNs and RPNs who are involuntarily part time or irregular.[22] For example, in 2020, 53.9 percent of involuntarily part-time or irregular LTCH RNs transitioned to a full-time job, compared with an average of 48.3 percent over 2014–2019. However, when we compare the average of involuntary full-time nurses and their transitions to part-time or irregular work in 2020 with the 2014–2019 average, we see a decline.[23]

We also perform a similar analysis on the sub-sample of multiple jobholders who involuntarily work part-time or irregular schedules and have two or more such jobs (those who have multiple non–full-time jobs, whose hours are comparable to full time, and report wanting a full-time job).[24] Among this group, in Tables 9 and 10 we investigate who gains full-time employment and whether the job is in the same sector. This analysis is from the individual perspective, where multiple jobholders are assigned to the sector of their first-listed job. Furthermore, in the rare case of two or more full-time jobs in year *t* + 1, the sector is defined as that of the first-listed full-time job.

Tables 9 and 10, Panel A, shows that among involuntarily part-time or irregular nurses in LTCHs, 24.2 percent

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Table 8: Employment Status Transitions among Involuntary Part-Time, Irregular, and Full-Time Single Jobholders Who Change Jobs 2014–2020 (%): Registered Practical Nurses

Type of Nurse Year *t* and Employment Status (Year *t* + 1)	Sector Year *t*							
	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Total
	Panel A: 2014–2019 Average Year-over-Year Transitions (%)							
Involuntary part time or irregular, *n*	270	210	110	80	110	10	380	1,180
Switch to full time	36.7	34.4	35.9	33.1	37.5	N/A	33.0	34.9
Stay part time or irregular	63.3	65.6	64.1	66.9	62.5	N/A	67.0	65.1
Voluntary part time or irregular, *n*	140	170	80	80	60	0	310	850
Switch to full time	14.3	13.2	12.3	9.9	14.1	0.0	10.7	12.1
Stay part time or irregular	85.7	86.8	87.7	90.1	85.9	0.0	89.3	87.9
Involuntary full time, *n*	20	20	20	10	10	0	60	150
Stay full time	29.1	45.4	51.9	N/A	N/A	0.0	59.2	50.0
Switch to part time or irregular	70.9	54.6	48.1	N/A	N/A	0.0	40.8	50.0
Voluntary full time, *n*	120	400	70	40	10	10	290	940
Stay full time	76.7	88.0	88.1	N/A	N/A	N/A	88.1	85.5
Switch to part time or irregular	23.3	12.0	11.9	N/A	N/A	N/A	11.9	14.5
	Panel B: 2020 Transitions (%)							
Involuntary part time or irregular, *n*	380	220	120	60	210	0	550	1,550
Switch to full time	40.5	50.9	42.6	29.7	43.9	0.0	33.9	39.7
Stay part time or irregular	59.5	49.1	57.4	70.3	56.1	0.0	66.1	60.3
Voluntary part time or irregular, *n*	230	210	110	80	110	0	420	1,160
Switch to full time	22.6	19.1	13.3	19.5	22.4	0.0	17.5	19.0
Stay part time or irregular	77.4	80.9	86.7	80.5	77.6	0.0	82.5	81.0
Involuntary full time, *n*	10	20	20	0	10	0	70	120
Stay full time	N/A	47.1	68.4	0.0	N/A	0.0	65.7	63.6
Switch to part time or irregular	N/A	52.9	31.6	0.0	N/A	0.0	34.3	36.4
Voluntary full time, *n*	470	430	510	240	320	10	1,650	3,630
Stay full time	71.3	79.8	82.7	86.1	75.7	N/A	86.3	82.1
Switch to part time or irregular	28.7	20.2	17.3	13.9	24.3	N/A	13.7	17.9

Notes: *n*s are reported for type of nurse, and percentages are reported for employment status. Observations are at the individual level. Sample is based on nurses who are single jobholders in year *t* and year *t* + 1 and who change jobs in year *t* + 1. Sector analysis is based on the sector in year *t*; thus, the sector to which nurses transition in year *t* + 1 may not be the same sector as listed in year *t*. Observations have been rounded to the nearest 10 for confidentiality, and the totals may therefore be affected by rounding. N/A = available (suppressed for confidentiality).

Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

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of RNs and 14.5 percent of RPNs found at least one full-time job by year *t* + 1. The rate of success in obtaining full-time employment in year *t* + 1 is slightly higher for LTCH RNs and lower for LTCH RPNs compared with the provincial norm, but the differences in the magnitudes are modest. Among these LTCH nurses who find full-time employment, about half do so in the same sector. Across all sectors, it is more likely for involuntarily part-time or irregular nurses to remain part time or casual or not to change or transition jobs.

Tables 9 and 10, Panel B, displays the transition rates between 2019 and 2020. The percentage of involuntarily part-time or irregular multiple jobholders who transition to at least one full-time job increases slightly across most sectors for both RNs and RPNs (with the exception of home care RNs) compared with the 2014–2019 year-over-year average (Tables 9 and 10, Panel A).[25]

New Nurses and Sector Growth

Tables 11 and 12, Panel A, displays the total number of full-time equivalent (FTE) jobs held by nurses new in Ontario (new graduates plus migrants) and the distribution of those jobs across sectors (each year's row sums to 100 percent).[26] For example, in 2014, 3,110 FTE positions were obtained by new nurses, 12.7 percent of which were in LTCHs. For new RNs, the total number of FTE

Table 9: Transitions among Involuntary Part-Time or Irregular Multiple Jobholders Who Change Jobs 2014–2020 (%): Registered Nurses

	Sector Year *t*							
Year *t* + 1	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Total
	Panel A: 2014–2019 Average Year-over-Year Transitions (%)							
Find full time	24.2	21.4	24.5	33.5	30.0	26.5	22.2	22.5
Stay part time or irregular	31.5	30.2	37.7	34.5	35.0	N/A	38.0	32.3
No transition	44.3	48.4	37.8	31.9	35.1	N/A	39.8	45.2
n	410	1,450	100	40	30	20	500	2,550
Full-time sector *t* + 1								
Same sector	50.8	74.6	34.1	N/A	N/A	N/A	45.0	61.3
Different sector	49.2	25.4	65.9	N/A	N/A	N/A	55.0	38.7
	Panel B: 2019–2020 Transitions (%)							
Find full time	26.4	24.9	24.7	28.2	48.0	29.6	21.2	24.8
Stay part time or irregular	38.3	29.5	41.6	38.5	36.0	N/A	39.1	32.9
No transition	35.3	45.7	33.7	33.3	16.0	N/A	39.8	42.3
n	330	1,510	90	40	30	30	430	2,440
Full-time sector *t* + 1								
Same sector	61.6	79.5	31.8	N/A	N/A	N/A	46.7	68.4
Different sector	38.4	20.5	68.2	N/A	N/A	N/A	53.3	31.6

Notes: Observations are at the individual level. Nurses are assigned to the sector of their first job in each year. Nurses who obtain two full-time jobs in year *t* + 1 are assigned to the sector of the full-time job listed first. Observations have been rounded to the nearest 10 for confidentiality, and the totals may therefore be affected by rounding. N/A = not available (suppressed for confidentiality).
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

Table 10: Transitions among Involuntary Part-Time or Irregular Multiple Jobholders Who Change Jobs 2014–2020 (%): Registered Practical Nurses

	Sector Year *t*							
Year *t* + 1	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Total
	Panel A: 2014–2019 Average Year-over-Year Transitions (%)							
Find full time	14.5	15.9	23.1	24.4	19.9	N/A	19.3	17.0
Stay part time or irregular	36.8	38.0	45.9	55.8	41.5	N/A	45.3	40.1
No transition	48.7	46.1	31.0	19.8	38.6	N/A	35.4	42.8
n	1,130	770	140	80	320	10	590	3,040
Full-time sector *t* + 1								
Same sector	51.8	70.7	49.1	26.9	52.2	N/A	54.3	55.6
Different sector	48.3	31.7	52.9	75.7	48.9	N/A	46.3	44.4
	Panel B: 2019–2020 Transitions (%)							
Find full time	22.9	20.4	29.5	24.7	32.2	N/A	25.3	23.9
Stay part time or irregular	44.4	35.9	44.0	39.5	36.9	N/A	46.3	41.1
No transition	32.7	43.7	26.5	35.8	30.9	N/A	28.4	35.0
n	990	1,010	170	80	300	N/A	590	3,140
Full-time sector *t* + 1								
Same sector	60.2	78.2	42.9	N/A	63.9	N/A	47.3	60.5
Different sector	39.8	21.8	57.1	N/A	36.1	N/A	52.7	39.5

Notes: Observations are at the individual level. Nurses are assigned to the sector of their first job in each year. Nurses who obtain two full-time jobs in year *t* + 1 are assigned to the sector of the full-time job listed first. Observations have been rounded to the nearest 10 for confidentiality, and the totals may therefore be affected by rounding. N/A = not available (suppressed for confidentiality).
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

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Table 11: New Entrants to the Profession, Sector Growth, and Overall Share of Positions in Ontario 2014–2020 (%): Registered Nurses

Year(s)	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Others	Total (*N*)
	Panel A: Full-Time Equivalent New Entrants to Ontario (%)							
2014	12.7	65.2	2.9	1.8	1.1	2.0	14.3	3,110
2015	13.0	64.9	3.2	1.7	1.0	1.8	14.3	2,480
2016	13.0	63.2	2.8	2.8	0.9	2.0	15.4	2,980
2017	11.6	64.8	2.9	2.6	0.9	1.9	15.3	3,380
2018	13.8	64.6	2.9	1.8	1.2	1.2	14.5	3,980
2019	12.5	65.9	2.7	1.7	1.3	1.0	14.9	3,910
2020	9.6	65.8	2.6	2.3	0.9	6.5	12.3	4,190
	Panel B: Full-Time Equivalent Sector Net Growth (%)							
2014–2015	0.0	214.0	−101.4	132.2	−28.7	−51.7	−64.3	70
2015–2016	12.6	56.1	18.3	−15.2	−3.0	11.0	20.2	−420
2016–2017	−7.2	70.7	−10.8	2.8	−2.0	0.6	45.9	960
2017–2018	11.4	70.0	N/A	N/A	0.8	−2.2	20.6	2,040
2018–2019	12.6	92.6	−11.6	4.0	4.3	−20.9	19.1	610
2019–2020	−39.4	77.4	−6.6	41.5	−1.2	86.9	−58.5	1,280
	Panel C: Full-Time Equivalent Share of All (New and Existing) Positions (%)							
2014	8.0	58.2	4.4	4.4	0.9	4.1	20.1	87,940
2015	8.0	58.3	4.3	4.5	0.8	4.1	20.0	88,010
2016	7.9	58.3	4.2	4.6	0.9	4.0	20.0	87,590
2017	7.8	58.4	4.0	4.6	0.8	4.0	20.3	88,550
2018	7.9	58.7	4.0	4.5	0.8	3.9	20.3	90,590
2019	7.9	58.9	3.9	4.5	0.9	3.7	20.3	91,200
2020	7.2	59.2	3.7	5.0	0.8	4.8	19.2	92,490

Notes: Observations are at the job level. Observations have been rounded to the nearest 10 for confidentiality, and the totals may therefore be affected by rounding. Fewer than 1% of new nurses did not report a sector. N/A = not available (suppressed for confidentiality).
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

jobs varies non-monotonically over time. Across sectors, the shares of new FTE jobs are approximately stable from 2014–2019. However, during the first year of the pandemic, 2020, there is a marked decline in the share of FTE jobs in the LTCH sector and a dramatic increase in the share of those public health. Of course, the total also increased. Notably, the percentage of FTE jobs held by new RNs in public health increased from 1.0 percent in 2019 to 6.5 percent in 2020, which is unsurprising during a pandemic. Among RPNs, Table 12, Panel A, also shows year-to-year variation in the number of FTE jobs held by new entrants, with 2014 and 2016 being the lowest under study. As with RNs, across sectors there is also broad stability in shares from 2014–2019, although there is a modest trend toward a higher percentage going to hospitals.[27]

Panel B of Tables 11 and 12 displays the year-to-year net growth (i.e., entrants minus exits) of FTE jobs and the share of this total in each sector. The row percentages sum to 100 percent, and a negative percentage implies that the sector's growth is in the opposite direction from provincial growth (the "Total" column). For example, between 2015 and 2016, there were 2,480 FTE positions obtained by new RNs, and exits from 2,900 FTE positions, leading to an overall decrease of 420 FTE positions. However, home care and supportive housing saw increases in FTE positions (i.e., new nurse FTE positions exceeded FTE exits), whereas all other sectors experienced a decline (note that here a positive percentage implies a decline because there was an overall provincial decline in FTEs). Furthermore, between 2014 and 2015, the total number of FTE positions among new RNs in LTCHs (395 FTEs), exactly offset the number of exits, resulting in 0 percent net growth. With the exception of 2019–2020, there have been more net new FTE RPN positions than RN ones. Last, in Panel C, we display the share of all (new and existing) FTE positions across sectors. For example, in 2014, among RNs, there were 87,940 FTEs, 58.2 percent of which (or 51,180 FTEs) were in hospitals. From 2014 to 2020, total FTE positions increased by about 5 percent among RNs and by 27 percent among RPNs. This aligns with research demonstrating that the RPN workforce in Canada is growing faster than the RN workforce (Olaizola & Sweetman 2019).

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Table 12: New Entrants to the Profession, Sector Growth, and Overall Share of Positions in Ontario 2014–2020 (%): Registered Practical Nurses

Year(s)	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Others	Total (*N*)
	Panel A: Full-Time Equivalent New Entrants to Ontario (%)							
2014	34.1	21.8	6.8	3.6	12.1	0.3	21.3	2,130
2015	33.3	22.5	6.1	4.5	13.6	0.3	19.7	2,230
2016	30.1	23.4	7.1	N/A	13.7	N/A	20.8	2,050
2017	28.8	23.0	6.1	4.7	13.1	0.3	24.1	2,510
2018	29.7	23.9	5.8	5.2	14.4	0.2	20.8	2,990
2019	29.6	25.8	6.2	N/A	13.2	N/A	21.4	2,340
2020	29.1	33.8	3.8	4.5	11.0	0.5	17.4	2,140
	Panel B: Full-Time Equivalent Sector Net Growth (%)							
2014–2015	20.6	22.9	8.9	N/A	12.5	N/A	30.1	1,950
2015–2016	2.1	21.7	8.8	11.2	18.6	0.8	36.8	1,370
2016–2017	9.6	29.5	10.6	7.9	9.0	0.4	33.1	2,120
2017–2018	17.6	30.8	6.3	N/A	10.1	N/A	30.1	2,470
2018–2019	3.2	40.4	14.2	−5.7	10.7	0.4	36.8	1,330
2019–2020	−187.8	413.1	−22.0	244.5	−55.2	32.8	−325.5	270
	Panel C: Full-Time Equivalent Share of All (New and Existing) Positions (%)							
2014	31.1	29.9	6.0	2.2	7.7	0.5	22.6	34,570
2015	30.5	29.5	6.1	2.4	8.0	0.5	23.0	36,520
2016	29.5	29.2	6.2	2.7	8.4	0.5	23.5	37,890
2017	28.5	29.2	6.4	3.0	8.4	0.5	24.0	40,000
2018	27.8	29.3	6.4	3.1	8.5	0.5	24.4	42,470
2019	27.1	29.7	6.7	2.8	8.6	0.5	24.7	43,800
2020	25.8	32.0	6.5	4.3	8.2	0.7	22.6	44,070

Notes: Observations are at the job level. Observations have been rounded to the nearest 10 for confidentiality, and the totals may therefore be affected by rounding. Fewer than 1% of new nurses did not report a sector. N/A = not available (suppressed for confidentiality).
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

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As previously discussed, Toronto Metropolitan University's National Institute on Ageing (2019) reported concerns with staff recruitment and retention in Canadian LTCHs, but as seen in previous tables (especially Tables 3 and 4), turnover in that sector does not differ much from the rest of health care. In 2020, however, there was a decline in the share of new nurse (Tables 11 and 12, Panel A) and net (Panel B) FTE positions in LTCHs among both RNs and RPNs (although the decrease in new nurse FTE positions among LTCH RPNs is small). This may lead one to conclude that LTCHs faced challenges recruiting nurses during the first year of the pandemic. However, this may represent a temporary shift among nurses to other sectors. For example, many resources were devoted to hospitals, especially at the beginning of the pandemic, which can be seen in the large share of net FTE position growth in hospitals among RPNs (413.1 percent), compared with the previous year (40.4 percent). It is also notable that the decline in the share of new nurse FTE positions in LTCHs is not as sharp compared with the decline in the share of net FTE growth for both RNs and RPNs. Future analysis is required to determine any long-standing effects the early days of the pandemic may have had on recruitment and retention in the LTCH sector.

Count Data

In Table 13, we take a different approach to measuring job stability by reporting the number of years jobs observed in 2014 continue to exist between then and 2019. If a nurse leaves and returns to an employer (postal code and practice setting), this is treated as a single job, although our count does not include the years away. This does not measure completed job duration because our data are left and right censored, but the comparison across sectors provides an estimate of relative job instability or turnover.

The percentage of 2014 jobs that continue throughout the entirety of our period is 37.3 percent and 41.9 percent for RNs and RPNs in LTCHs, respectively. For RNs in LTCHs, this is low compared to hospitals, home care, and public health, but high compared to primary care,

Table 13: Number of Years Jobs in 2014 Are Observed to Exist between 2014 and 2019

Years Job Exists (2014–2019)	(%)							
	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Total
	RNs							
0	21.5	11.2	30.0	18.1	31.7	12.8	27.9	17.0
1	13.9	8.8	15.5	9.7	14.9	10.0	16.1	11.2
2	11.0	8.7	12.0	8.1	12.3	6.5	11.5	9.6
3	8.2	7.1	9.7	8.2	8.9	12.3	9.3	8.0
4	8.2	10.2	9.6	10.2	8.1	7.5	10.0	9.8
5	37.3	54.1	23.3	45.7	24.1	50.8	25.3	44.3
n	9,460	63,670	5,390	4,530	1,060	4,070	23,770	111,940
	RPNs							
0	18.4	14.1	36.1	54.7	28.5	26.2	31.3	22.7
1	12.6	11.3	16.0	18.2	14.6	11.1	15.9	13.4
2	9.5	10.6	10.5	11.2	12.3	12.9	11.8	10.7
3	8.1	8.6	8.3	5.3	8.9	4.9	9.6	8.6
4	9.6	11.5	10.0	5.7	8.9	6.7	9.7	10.0
5	41.9	43.9	19.1	4.9	26.7	38.2	21.6	34.5
n	15,030	13,950	2,700	1,100	3,730	230	10,780	47,510

Notes: Observations are at the job level and have been rounded to the nearest 10 for confidentiality. Totals may be affected by rounding.
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

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supportive housing, and other. It is several percentage points below the health care average. For RPNs, the same percentage for LTCHs is higher than all sectors, except hospitals, and 7.4 percentage points above the overall average.

In an effort to understand the sensitivity of the results to left censoring, we perform the same analysis for jobs that start in 2017 (Appendix Table A.1) in which the job does not exist in 2014, 2015, or 2016. One concern is nurses on leave from 2014 to 2016: such jobs would be inaccurately defined as 2017 job starts. However, it appears to be rare for a nurse to be on leave for more than two years. In general, the relationships found in 2017 are similar to those of 2014. However, among RNs, the percentage of jobs worked by the same nurse for the entire period of analysis is now higher in LTCHs compared with home care (i.e., 35.0 percent vs. 29.7 percent) and about the same in supportive housing (34.1 percent). Overall, job instability in LTCHs does not seem very different from the rest of health care among RNs, and among RPNs it seems to be particularly low.

Count Model Regression Analyses

Using the data described in Table 13, in Table 14 we estimate Poisson regressions to compare job instability across sectors and display average marginal effects (and Appendix Table A.2 displays those for jobs starting in 2017).[28] Columns 1 and 4 display differences across sectors without any controls. Column (1), for RNs, is similar to Table 13, showing that jobs in LTCHs are less durable (more unstable) than those in hospitals, home care, and public health, but more stable than those in primary care, supportive housing and other. In the five years under study, the average RN hospital job lasted almost 0.8 years longer than the average LTCH job. In contrast, LTCH RPN jobs are more stable than all sectors except hospitals.

Nurse characteristics and job characteristics exogenous to the employer (i.e., rural job location) are introduced as controls in Models 2 and 5 of Table 14, and job characteristics over which the employer has more immediate control (part-time or irregular status with full time omitted) are added in Models 3 and 6. Note that variables representing location of first practice and languages spoken in the profession are excluded because they are extremely highly collinear with the location of first education. Similarly, variables representing employment categories (permanent, temporary, casual) are excluded because they are highly collinear with employment status. Although the sector coefficients change in the controlled models, they remain broadly similar, and statistically significant, across all models for both RNs and RPNs.

Most control variables' coefficients are statistically significant, but small in magnitude, although there are exceptions. Unsurprisingly, RN jobs with irregular schedules exist fewer years than full-time RN jobs; perhaps surprisingly, they exist only 1.3–1.4 years less. Nurses who do not report their education to the regulator have much shorter job durations; however, for

Table 14 Poisson Regression Analysis Job Stability (2014–2019)

	RNs			RPNs		
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Sector (ref. = long-term care)						
Hospital	0.790***	0.750***	0.629***	0.202***	0.240***	0.133***
	(0.022)	(0.022)	(0.021)	(0.023)	(0.022)	(0.021)
Primary care	−0.563***	−0.485***	−0.503***	−1.063***	−1.036***	−1.108***
	(0.034)	(0.034)	(0.034)	(0.041)	(0.040)	(0.038)
Home care	0.401***	0.386***	0.216***	−1.999***	−1.963***	−1.968***
	(0.037)	(0.035)	(0.033)	(0.049)	(0.048)	(0.048)
Supportive housing	−0.603***	−0.505***	−0.467***	−0.682***	−0.609***	−0.628***
	(0.065)	(0.065)	(0.067)	(0.037)	(0.037)	(0.035)
Public health	0.645***	0.648***	0.447***	−0.343*	−0.307*	−0.325**
	(0.036)	(0.036)	(0.034)	(0.142)	(0.137)	(0.124)
Other	−0.461***	−0.437***	−0.430***	−0.883***	−0.858***	−0.852***
	(0.025)	(0.024)	(0.024)	(0.025)	(0.024)	(0.024)
Education (ref. = diploma)						
Missing		−2.977***	−2.945***		−2.497***	−2.484***
		(0.017)	(0.018)		(0.026)	(0.026)
Baccalaureate degree		−0.130***	−0.114***		−0.676***	−0.616***
		(0.014)	(0.013)		(0.047)	(0.047)
Graduate degree		−0.151***	−0.150***		−1.068***	−0.957***
		(0.031)	(0.030)		(0.160)	(0.164)
Location of first education (ref. = Ontario)						
Missing		−0.293***	−0.274***		−0.330***	−0.220*
		(0.058)	(0.056)		(0.094)	(0.096)
Other province or territory		−0.105***	−0.105***		−0.267***	−0.238***
		(0.025)	(0.025)		(0.062)	(0.061)
United States		−0.273***	−0.220**		−0.424*	−0.398*
		(0.068)	(0.067)		(0.180)	(0.172)
Outside Canada or United States		0.143***	0.162***		0.063	0.125**
		(0.018)	(0.017)		(0.043)	(0.042)
Age category, y (ref. = ≤35						
36–55		0.496***	0.464***		0.465***	0.343***
		(0.015)	(0.014)		(0.019)	(0.019)
≥55		−0.246***	−0.210***		0.023	−0.103***
		(0.019)	(0.018)		(0.027)	(0.027)
Male		0.004	0.012		−0.025	0.005
		(0.023)	(0.022)		(0.033)	(0.032)
Rural		−0.112***	−0.088**		−0.071*	−0.064*
		(0.031)	(0.031)		(0.032)	(0.031)
Employment status (ref. = full time)						
Part time			−0.271***			−0.372***
			(0.013)			(0.019)
Irregular			−1.262***			−1.326***
			(0.016)			(0.024)
No. of observations	111,940	111,940	111,940	47,510	47,510	47,510

Notes: Standard errors are in parentheses. Observations have been rounded to the nearest 10 for confidentiality. Average marginal effects are used.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Source: Ontario Ministry of Health, Health Professions Database, 2014-2020.

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some this relationship is spurious.[29] Interestingly, jobs involving RNs and RPNs with higher levels of education tend to exist for a shorter time, especially among RPNs. Furthermore, jobs employing RNs and RPNs who began their education outside Canada or the United States exist longer, although the coefficients are small in magnitude for both RNs and RPNs.[30]

The Poisson regression results for jobs that start in 2017 appear in Appendix Table A.2. The patterns of relationships are fairly similar to those for 2014 for both RNs and RPNs.

Discussion

Discussions of LTCH nurse job instability, including high turnover rates and high proportions of part-time or casual employment, have been heard throughout the pandemic. However, no studies have investigated how LTCHs compare with other health care sectors on these dimensions despite health care staffing being associated with quality of care, including poorer infection prevention and control. We seek to close this gap by comparing employment stability and job–workforce characteristics in LTCHs compared with the rest of health care among RNs and RPNs in Ontario.

Overall, we find differences in job and workforce characteristics across sectors. The proportion of jobs worked by internationally educated nurses is markedly higher among LTCH RNs and slightly above average for LTCH RPNs. Moreover, although the prevalence of part-time or irregular work schedules is higher than the provincial average among LTCH RNs, the sector is not an outlier, with primary care, supportive housing, and other having similar but slightly higher levels. Moreover, the share of part-time or irregular employment is similar to the overall average among RPNs. In contrast, if we focus on new entrants to nursing in Ontario, we see the smallest percentage with full-time employment in LTCHs and supportive housing for both RNs and RPNs.[31]

We find that employment instability, measured by turnover rates and count data, is slightly above the provincial average among LTCH RNs and lower among LTCH RPNs. However, job stability among LTCH RNs is not an outlier. It is low compared with primary care, supportive housing, and other and high compared with most other sectors. Among both RNs and RPNs, hospitals have the lowest turnover rates. Indeed, across the industry the hospital sector tends to be the outlier on most dimensions. This may be due to varying government funding levels, and hence wages, across sectors. For example, although there is institution-specific variation, wages are typically higher in hospitals and lower in home care compared with the LTCH sector (Austin et al. 2020). See also Olaizola, Loertscher, and Sweetman (2020) for trends in pay in home care.

There has also been increasing concern among some that the pandemic may result in an increase in the number of nurses who retire (i.e., the great resignation) or leave the profession pre-retirement. We have only the first year of pandemic data and can therefore only provide preliminary evidence on the effect of the pandemic on nursing supply. Overall, the data suggest that the 2020 rate at which jobs ended because nurses went on leave, retired, or exited the profession in Ontario does not substantially differ from that in 2019. However, we find a large increase in the turnover rate from 2019 to 2020 among LTCH RNs and RPNs, and a concomitant increase in the share of full-time employment among existing and new nursing entrants (despite a decrease in FTE positions overall), which suggests that this may follow, at least in part, from the single-site-of-work order issued during the pandemic. Aligned with the single-site order as a key source of this change is that supportive housing, the only other sector also faced with this order, had similar patterns.

One limitation is that our measure of turnover is calculated annually and thus does not capture jobs that last less than one year and are not active at data collection. Still, the analysis captures relative job instability as long as such very short jobs are not too common or unevenly distributed across sectors.

Conclusion

Overall, perhaps surprisingly given media reports, we observe that RNs in LTCHs are in the middle of the distribution compared with those in the rest of health care on most measures of job stability. Moreover, pre-pandemic, LTCH RPNs, who form the majority of the nursing staff, have job stability that is greater than that of RPNs in all sectors except hospitals.

In 2020, the first year of the pandemic, turnover rates remained similar across most sectors but increased in LTCHs and supportive housing for both RNs and RPNs. Nurses in LTCHs and supportive housing, exclusively, also experienced a shift to more full-time employment, which may in part be due to the single-site restriction that was introduced only in these two sectors. Turning to the distribution of new nurses in Ontario, which was relatively stable across sectors from 2014–2019, in LTCHs we observe a decrease in the percentage of new FTE RNs in 2020. This occurred despite a greater share of full-time employment, which appears to indicate some trouble recruiting, but the magnitude is modest.

Using count data regression analysis for the number of years a job continues to exist in our data period pre–COVID-19, we find that for LTCH RNs, jobs tend to exist longer than those in primary care, supportive housing, and other and for fewer years than those in hospitals,

public health, and home care. This continues a pattern of LTCHs having outcomes in the middle of the distribution of sectors. In contrast, LTCH RPN jobs tend to exist longer than jobs in all sectors except hospitals. Our analysis demonstrates that turnover and job instability may be an issue in health care overall, but it is not limited to LTCHs.

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Notes

1 The overall COVID-19 mortality rate (in LTCHs, the community, or both) can be decomposed into the case rate times the case fatality rate. The values, dynamics, and determinants of these two components of the overall mortality rate may differ appreciably in LTCHs and the community. Also, although not the focus of this study, some care is needed in interpreting COVID-19 statistics given associated measurement challenges, especially (a) there has been some confounding of deaths attributable to COVID-19 and deaths among those with COVID-19 for which that disease was not the primary cause and (b) testing rates have varied over time and context with more pervasive testing in LTCHs.

2 For weekly deaths per 100,000 in both populations, see Online Appendix Figure 1.

3 This group of nurses includes those who do not have an active registration status and are not actively practicing but still participate in the data collection and those who have an active registration status but are not actively practicing (e.g., they are on leave or retired but still maintain their registration). For the purpose of this article, both groups of nurses are labeled *inactive.*

4 In contrast, Austin et al. (2020) provide comparisons of RN and RPN wages across sectors showing that, although there is heterogeneity across individual employers, LTCHs tend to pay hourly wages to RNs and RPNs that are somewhat less than those of hospitals and more than those in the home and community care sector, which is consistent with common understandings in nursing about the sectoral wage hierarchy.

5 For a description of each health care sector, refer to the "Glossary of Health Care Sectors" in the Online Appendix.

6 We do not include employment status (full time, part time, or irregular) in our definition of the job, nor do we perform our measure of turnover based on full-time-equivalent (FTE) jobs.

7 All counts are rounded to the nearest ten for confidentiality.

8 For this analysis, multiple jobholders are assigned to the sector of their first listed job. This analysis is performed at the individual level, as opposed to the job level.

9 For multiple jobholders, a job transition occurs if the job that changes is replaced by at least one new Ontario nursing job. For example, if a nurse has two jobs, and both jobs change, this is considered a job transition for both jobs if the nurse in question gains at least one new Ontario nursing job the following year.

10 Further details are in Online Appendix Figures 2–4

11 For turnover rates by age group, because young nurses have been shown to be more mobile (LaVassuer et al. 2009), refer to Online Appendix Tables 1–3. We also find higher turnover rates among young nurses.

12 Refer to Online Appendix Figure 2 for yearly rates of jobs that end as a result of nurses reporting they are on leave.

13 Trends in the retirement rate, and the rate of nurses leaving the Ontario nursing profession (resulting from jobs ending) can be found in Online Appendix Figure 3 and Online Appendix Figure 4 respectively. For similar analyses by age group, refer to the discussion in the Online Appendix," Supplementary Analysis by Age Group," and Online Appendix Figures 5 through 12.

14 Similarly, if a nurse had part-time employment in one LTCH but transitioned to a new full-time job in a different LTCH, this would be labelled as a job transition.

15 Sector transitions among single jobholders for each year (2014–2019) can be found in Online Appendix Tables 4–8. For sector retention in 2019, refer to Online Appendix Table 8, Panel B.

16 The same analysis, also from the individual perspective, is performed among all nurses (both single and multiple jobholders) in Online Appendix Table 9.

17 In practice, not all leaves are associated with an inactive registration status; however, for the purposes of this article, nurses on leave are identified as inactive.

18 For all nurses who are inactive (Online Appendix Table 9), we determine the percentage who (a) remain

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inactive, (b) leave the dataset, (c) report an active registration status and no employment, or (d) report an active status and employment.

19 However, among all nurses (Online Appendix Table 9), starting in 2016–2017 there is a decrease in the percentage of both RNs and RPNs who remain inactive and an increase in the percentage who leave the Health Professions Database.

20 Refer to Online Appendix Table 9.

21 For inactive transitions among single jobholders in each year, refer to Online Appendix Tables 4–8.

22 Transition rates in each year can be found in Online Appendix Tables 10–14 (refer to Online Appendix Table 14 for 2018–2019 transition rates). Results are similar when comparing 2019–2020 transition rates with the previous year.

23 However, when we compare this transition rate with the previous year (Online Appendix Table 14), we see a decline or increase depending on the sector. In 2020, there was a 12.2 percentage point increase in the percentage of full-time LTCH RNs who transitioned to a part-time or irregular job. However, for hospitals there was a 15.9 percentage point decline.

24 Surprisingly, averaged over 2014–2020, 58.2 percent of RNs with two or more part-time or irregular jobs prefer part-time or irregular hours. For these workers, combining two part-time jobs is preferred. In contrast, among single job holders who work part-time or irregular jobs, only 21.2 percent prefer part-time or irregular hours. The similar figures for RPNs are 14.4 and 36.6 percent, respectively. There is substantial heterogeneity in tastes and outcomes.

25 For transition rates in each year, refer to Online Appendix Tables 15–19. Comparing 2020 with the previous year (Online Appendix Table 19), the percentage of involuntarily part-time or irregular multiple jobholders who transition to at least one full-time job also increases slightly across most sectors for both RNs and RPNs (with the exception of primary care RNs and RPNs and home care RPNs).

26 Our data capture weekly hours across all jobs, as opposed to weekly hours for each job. Thus, in our definition of FTEs, one full-time job equals one FTE, and one part-time or irregular job equals half an FTE.

27 For the same analysis using headcounts instead of FTEs, see Online Appendix Table 20; despite a decrease in FTE positions among new LTCH RNs, the percentage of full-time positions increased from 20 percent in 2019 to 35.6 percent in 2020.

28 As a sensitivity test, we also perform negative binomial regression (Online Appendix Tables 21 and 22). Results from both methods are identical, because our data do not exhibit overdispersion.

29 Education is imputed at the individual level, not at the job level. Thus, the relationship between those with missing education and job instability may be spurious for those, for example, who did not report their education in 2014–2016 and disappear from the data set in later years, preventing the imputation.

30 To investigate the control variables' coefficients by sector, we run regressions separately for LTCHs (Columns 1–4) and hospitals (Columns 5–8) in Online Appendix Table 23. Of particular interest is that the sign of the education coefficient remains the same among RNs and RPNs in both sectors, whereas the coefficient on location of first practice outside Canada or the United States increases in magnitude for LTCH RNs and RPNs and remains similar among hospital RNs and RPNs (although the sign changes among RPNs). This latter finding may suggest heterogeneity in the suitability of education levels or location of first education across health care sectors and within the nursing profession (RNs vs. RPNs). The 2017 results restricted to hospitals and LTCHs appear in Online Appendix Table 24.

31 Refer to Online Appendix Table 20, Panel A.

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Appendix

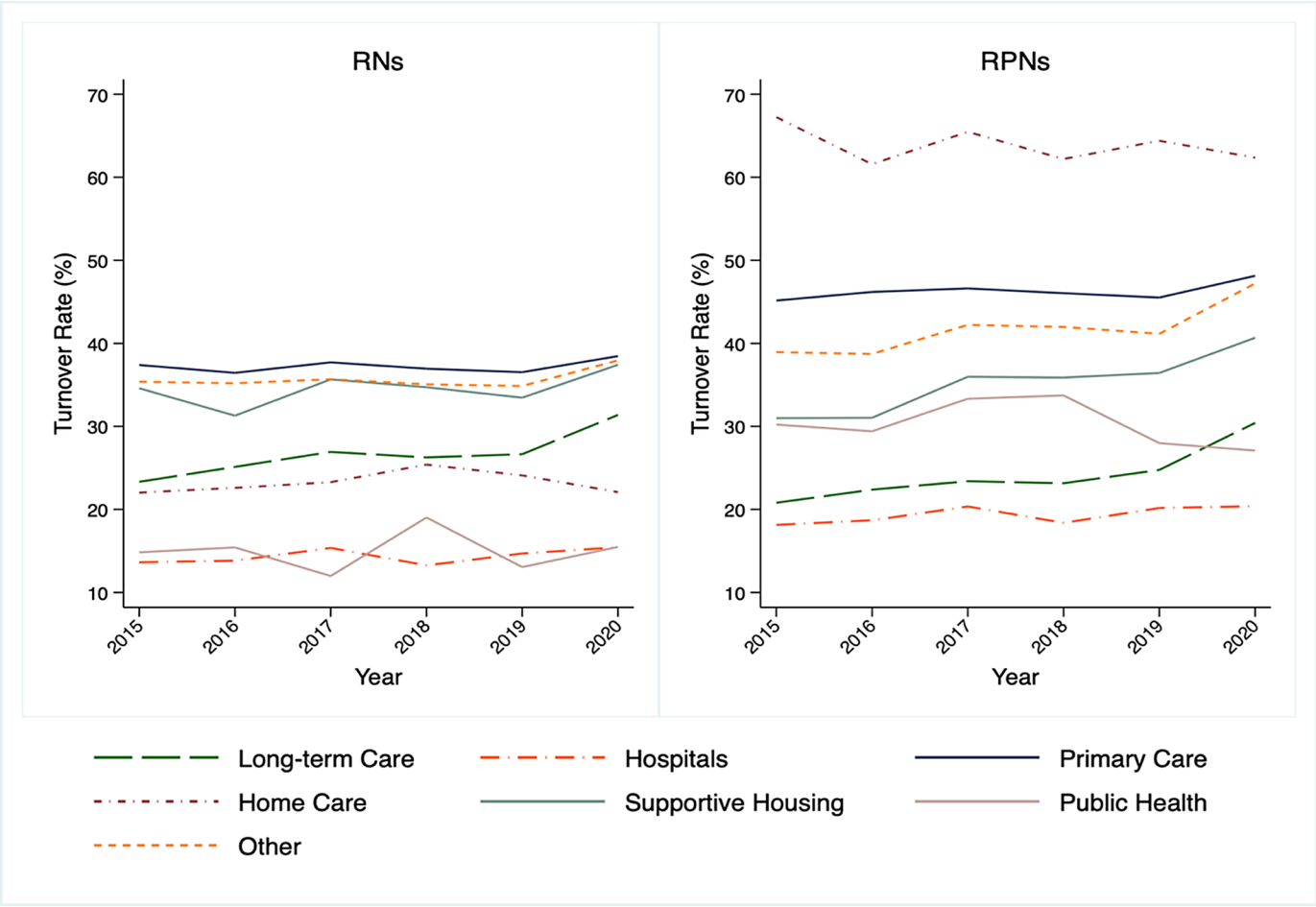

Figure A.1: Yearly Turnover Rates 2014–2020

Note: RNs = registered nurses; RPNs = registered practical nurses.

Source: Ontario Ministry of Health, Health Professions Database, 2014-2020.

Table A.1: Stability of 2017 Nursing Jobs across Sectors (2017–2019)

Years Job Exists (2017–2019)	%							
	Long-Term Care	Hospital	Primary Care	Home Care	Supportive Housing	Public Health	Other	Total
RNs								
0	45.8	21.7	54.4	51.5	44.8	30.2	49.5	37.7
1	19.2	16.6	19.4	18.8	21.1	19.3	22.6	19.3
2	35.0	61.6	26.2	29.7	34.1	50.5	27.9	43.0
No. of observations	2,290	9,120	1,480	950	340	370	7,530	22,080
RPNs								
0	41.0	25.6	61.1	65.1	49.1	65.9	52.7	45.8
1	19.9	18.6	19.3	23.0	21.6	10.6	23.5	21.0
2	39.1	55.8	19.6	11.9	29.3	23.5	23.8	33.1
No. of observations	3,580	3,470	1,500	1,060	1,810	90	5,340	16,850

Notes: Observations are at the job level and have been rounded to the nearest 10 for confidentiality. Totals may be affected by rounding.
RNs = registered nurses; RPNs = registered practical nurses.
Source: Ontario Ministry of Health, Health Professions Database, 2014-2020.

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Table A.2: Poisson Regression Analysis Job Stability (2017–2019)

	RNs			RPNs		
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Sector (ref. = long-term care)						
Hospital	0.507***	0.494***	0.423***	0.320***	0.315***	0.249***
	(0.021)	(0.021)	(0.022)	(0.021)	(0.021)	(0.021)
Primary care	−0.174***	−0.165***	−0.201***	−0.396***	−0.398***	−0.453***
	(0.029)	(0.030)	(0.030)	(0.026)	(0.026)	(0.026)
Home care	−0.110**	−0.105**	−0.150***	−0.513***	−0.511***	−0.555***
	(0.034)	(0.035)	(0.034)	(0.026)	(0.027)	(0.027)
Supportive housing	0.001	0.008	0.008	−0.180***	−0.177***	−0.203***
	(0.053)	(0.053)	(0.055)	(0.025)	(0.026)	(0.026)
Public health	0.312***	0.306***	0.220***	−0.405***	−0.402***	−0.402***
	(0.049)	(0.050)	(0.050)	(0.093)	(0.094)	(0.096)
Other	−0.108***	−0.103***	−0.132***	−0.271***	−0.272***	−0.315***
	(0.021)	(0.022)	(0.022)	(0.019)	(0.019)	(0.020)
Education (ref. = diploma)						
Missing		−0.111	−0.108		−0.160	−0.154
		(0.196)	(0.199)		(0.148)	(0.147)
Baccalaureate degree		−0.036	−0.033		−0.207***	−0.211***
		(0.019)	(0.018)		(0.027)	(0.026)
Graduate degree		−0.020	−0.028		−0.157	−0.167*
		(0.030)	(0.029)		(0.080)	(0.078)
Location of first education (ref. = Ontario)						
Missing		0.002	0.004		0.020	0.030
		(0.054)	(0.053)		(0.074)	(0.075)
Other province or territory		−0.106***	−0.110***		−0.045	−0.049
		(0.026)	(0.026)		(0.050)	(0.049)
United States		−0.142*	−0.131*		−0.148	−0.131
		(0.062)	(0.062)		(0.137)	(0.135)
Outside Canada or United States		0.020	0.025		0.045	0.058*
		(0.021)	(0.021)		(0.028)	(0.028)
Age category, y (ref. = ≤35)						
36–55		−0.015	−0.012		0.038**	0.037**
		(0.015)	(0.015)		(0.014)	(0.014)
≥55		−0.127***	−0.110***		−0.066*	−0.072*
		(0.023)	(0.024)		(0.030)	(0.029)
Male		−0.001	−0.008		0.011	0.011
		(0.019)	(0.019)		(0.022)	(0.022)
Rural		−0.056	−0.056		−0.042	−0.042
		(0.031)	(0.030)		(0.027)	(0.027)
Employment status (ref. = full time)						
Part time			−0.072***			−0.009
			(0.013)			(0.017)
Irregular			−0.309***			−0.253***
			(0.015)			(0.018)
No. of observations	22,080	22,080	22,080	16,850	16,850	16,850

Notes: Standard errors are in parentheses. Observations have been rounded to the nearest ten for confidentiality. Average marginal effects are used. ref. = reference group; RNs = registered nurses; RPNs = registered practical nurses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.
Source: Ontario Ministry of Health, Health Professions Database, 2014–2020.

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