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Can Wage Setting Process for Canadian Nurses Explain Regional Shortage in this Occupation? [*]

Ruolz Ariste [†], Ali Béjaoui [‡]

Abstract/Résumé

Wage has been identified as one of the determinants of labour supply. To avoid regional shortage, the economic theory of compensating wage differentials suggest having a pay structure that differs between regions, which is typical of a decentralized system. The purposes of this study are to determine to what extent 1) the wage setting process for nurses is centralized and 2) nurse hourly wage differs from one region to another. Two different surveys were designed. Then, we empirically test for standardized regional wage differentials (SRWD) by controlling for variables that reflect human capital and work-related characteristics. Before, nursing shortage in Canada was not addressed using a regional wage differential lens. Results indicate that the wage setting process is centralized, but the wage structure cannot be described as flat: the process generates differentials across regions. We argue that there is a trade-off between efficiency and equity that needs to be reconciled.

Keywords/Mots-clés: Regional Wage, Nursing Shortage, Collective Bargaining, Provinces, Canada

JEL Codes/Codes JEL: I11, I18, J08, J31

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- Disclosure of potential conflicts of interest: *No conflict of interest to disclose*
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- Informed consent: *Not applicable. The research does not involve human participants with identifiable information.*

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1. Introduction

Healthcare stakeholders operate in different environments with different negotiation timelines, and institutions may be different from one province to another, if not from one region to another within a province. This situation may create different dynamics. Therefore, there may be different labour markets within a province, in spite of the fact that the provincial government is the main buyer of nurses' labour. Identifying the differences in nursing wage determination mechanisms can permit to detect efficiency in these mechanisms and best practices in a particular province. However, with the high unionisation rate amongst nurses (79.2% at the Canada level in 2010, Uppal 2011), collective bargaining and labour laws may flatten the wage structure. This situation can occur if the bargaining process is centralised (process of pay determination occurring at the sector level instead at the workplace or enterprise level). Such a phenomenon can deter competition, hamper efficient allocation of resources in certain regions, create regional shortage (Elliott et al. 2007)[1] and negatively impact health outcomes (Propper and Reener 2010). These findings elsewhere call for further study of the way institutions and stakeholders are organized to influence labour market outcomes for registered nurses (RN) in Canada. Even though nurses generally include licensed / registered practical nurses, registered nurses (RN) and nurse practitioners, only the RN are considered in this study. This RN group made up about 85% of all nurses in Canada (CIHI 2018).

The theory of compensating wage differentials in a competitive market is the framework used to analyze the issue of decentralisation. In this context, the current article first provides a comparative look at the nurse wage setting process in four Canadian provinces. An empirical analysis is carried out using the Labour Force Survey (LFS) data and employment insurance

[1] Using standardised spatial wage differentials (SSWDs) for nurses and their comparators, these authors have shown that a reduction in the gap in a local area is associated with an increase in the long-term vacancy rate for National Health Service (NHS) nurses.

regions in all 10 Canadian provinces to boost sample size. However, a particular attention was paid to the four selected provinces in analyzing the empirical results to determine standardized regional wage differentials (SRWD) and therefore the wage structure. Thus, this article aims to examine the level of rigidity in nursing wage determination mechanisms, the similarities and differences in these mechanisms, and the regional wage differentials which could be potentially a source of regional nursing shortage. In doing so, it addresses two broad questions:

- How the main actors in nurse wage bargaining for each of the four provinces differ from those of the general economy and to what extent decision on wages is taken at the same level as that on hiring in the hospital sector?
- Are there standardized regional wage differentials in the nursing labour market and if so, what is the correlation with regional wages?

Two different surveys were designed to address the wage setting process for nurses, one to obtain the employer perspective and the other the union perspective. Existing studies on wage setting process are not specific to nurses (Agell and Lundborg 1995, Amirault et al. 2006, 2013). Those that pay attention to an operational framework do not consider any theoretical or empirical model (Eurofund 2011, Buchan et al. 2014). Moreover, to our knowledge, no specific Canadian study on nurses addresses the wage setting process and regional differentials. *The contribution of this article is that it has given substantial room to analysis of institutions and labour relations in the nursing workforce at the pan-Canadian level, using a theoretical and empirical framework*. The rest of the paper is organised as follows. The second section is about background and theoretical context; it examines the wage setting mechanisms. Section 3 presents the materials and methods while the results are highlighted in section 4. A discussion and policy implications follow in the fifth section and section 6 concludes the paper.

2. Background and theoretical context

2.1. Wage setting mechanisms for nurses in selected Canadian provinces

Information on the broader wage setting approach is available from the ICTWSS (Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts) database by Visser (2015). This database outlines the main characteristics of wage setting approaches in the general economy of 51 countries, including Canada. Information for the health sector is compiled by the authors of this current study through surveys to reflect the Canadian provincial perspectives (see Appendix A). The selected provinces are Quebec, Ontario, Alberta and British Columbia. These four provinces account for 86% of the total population of Canada.

In all the selected jurisdictions, remuneration of nurses or pay scale is negotiated between an entity representing the provincial government (the employer) and the union representing the employees. However, this entity representing the government has no control over reduction of nursing staff, except in Alberta where work contracts of nurses are officially with AHS (Alberta Health Service: the main bargaining agent for the government) that can decide to reduce nursing hours/budget (see Appendix B) . This is perceived as a more efficient process because wage and employment levels can be considered at the same time during the bargaining process, which can lead to an integrative bargaining and a better agreement. For example, the union can accept a more moderate wage increase in exchange of higher level of employment as opposed to a higher wage increase, but the same level of employment.

Even though hospital managers have no autonomy over pay level, they are provided with autonomy over the recruitment and retrenchment of staff. The selected provinces share the combination of centralised wage setting and decentralised recruitment / retrenchment. Consequently, hospital managers have some control over their staff budget, in spite of the centralised wage setting system. Overall, the wage bargaining process is more centralised in

the health sector than in the overall economy where wage setting is generally uncoordinated and there is virtually no government intervention in wage bargaining, which typically happens at local or company level (Buchan et al., 2014). This situation does not create enough flexibility to account for regional considerations, which potentially can lead to retention and shortage issue.

We also provide an overview of the extent to which wage setting for nurses is similar or different to wage setting in the overall economy and in the health sector for some OECD countries, namely France, Germany, Great Britain, New Zealand, Norway and USA (See Appendix C). This centralised wage setting, decentralised responsibility for recruitment is found both in the selected Canadian provinces and the selected OECD countries. This situation is not ideal for generating health human resources efficiency and running an efficient health system because it does not lend to a competitive market in which a higher pay can be expected in some areas of the country with higher cost of living or less pleasant working environment.

2.2. Theoretical context

The theoretical framework of compensating wage differentials may explain why an 'underlying' pay structure can differ between geographical areas (Smith 1776, Rosen 1986). With competition in labour markets, the net advantages of different jobs tend to equality. Thus, higher pay in some areas of the country is expected where the cost of living is higher while higher pay is also necessary to compensate for a less pleasant working environment. If these differentials are observable, to what extent are they correlated with regional wages? In case that provincial trusts attempt to respond to local market conditions, there will be a positive correlation. According to collective agreements consulted for the four provinces, there are premiums to compensate for regional disparities in some provinces.[2] The question is whether or not these

[2] Examples include: 1) The isolation and remote premium in Quebec of up to $20,000 per year for a nurse located in sector 5 with dependant(s) (article 29.02 of Collective agreement between CPNSSS and FIQ ending in 2020); 2) the isolation allowance in BC (in the contracts with HEABC and Facilities Bargaining Association (FBA) / Nurses' Bargaining Association (NBA)); and 3) the Remote Retention Allowance of $3,000 per year in Alberta (AHS and UNA Collective Agreement ending in 2017). These premiums are calculated on an hourly basis and paid per pay period.

differences are substantial enough. The assumption is that provincial systems of wage setting produce uniform pay rates with minimal regional differentials.

3. Materials and methods

3.1. Data, variable definitions and concepts

The main dataset is the LFS of Statistics Canada. It contains detailed information on the nursing workforce such as: hourly wage rates, employment status, tenure, employment sector, union status, age, marital status, geographic region, industry of work, etc. We used annual data from 2010 to 2012. For more information on the methodology of the LFS, see Statistics Canada (2008).

Some key variables and concepts need to be defined to avoid confusion. This is the case for *RN hourly wage*. Salaries or wages relate to the main job and include tips and commissions, before taxes and other deductions, but they usually do not include benefits and overtime.[3] In an attempt to control for outliers, all RN hourly wages less than $5 or greater than $150 were excluded from the sample.[4] We are referring to RN average hourly wage for the whole hospital. RN working in some hospital wards could earn more than those in others, but that is not the focus of this study.

Union status is defined as: a) unionized; b) non-unionized but covered by a collective agreement or an employment contract negotiated by a union; or c) non-unionized and not covered by a collective agreement. In this study, the unionization rate is the percentage of

[3] Personal communication with Labour Statistics Division staff, December 2013.
[4] We chose this lower and upper bound to account for outliers. The ceiling of $150 was chosen because we take into account the fact that an RN with a bachelor degree generally earns less than this amount. Actually, the minimum and maximum hourly wages observed in the data were $3.60 and $68.40 respectively.

employees who are union members or covered by a collective agreement (i.e. categories a and b are regrouped). This excludes the self-employed.

The *region* in this study refers to the employment insurance region (EIR). EIR are distributed as follows: 9 in Atlantic Canada; 12 in Quebec; 17 in Ontario; 7 in Manitoba and Saskatchewan; 4 in Alberta; and 6 in BC for a total of 55 regions. In order to boost the sample size, all the provinces and regions were kept in this empirical section.

The scope of this study is exclusively on RN working in hospitals. This means that those working in nursing and residential care facilities or community services are excluded. It should also be noted that this study is not about wage gaps between hospital and community nursing. Moreover, hospital types are not considered given that the bargaining process happens at the provincial level for all hospitals combined, and not at the hospital level.

3.2. Empirical methods

The empirical analysis is performed to test the assumption that provincial systems of wage setting produce uniform pay rates with minimal regional differentials. To test the impact of region on hourly wage, we need to control for the variables that reflect personal and work-related characteristics. As in Spoor and Sutherland (2007), we argue that a conventional Mincer-type wage regression is the most appropriate model specification:

$$\ln S = \beta_0 + \sum \beta_j X + \beta_k Reg + e \quad (1)$$

Where l*nS* is the natural logarithm of hourly wage for nurse; β_0 is the intercept, a constant; *X* is a vector of personal and work-related characteristics. Specifically, we include the following variables in this vector: level of education, number of years of experience and its square, tenure, family status, job status (full time versus part-time), job sector, union status. *Reg* is a set of dummy variables representing the region where the nurse works, meaning that the β_k parameters are of principal interest to investigate the regional hourly wage differentials. The

reference region is the one with the lowest mean hourly wage (Bas St-Laurent, Côte Nord in Quebec). We use Ordinary Least Squared regression with the 'cluster- robust' standard errors.[5]

4. Results

4.1. Descriptive statistics

We provide a descriptive overview of the RN hourly wage prior to our formal analysis. Some provinces are combined based on their geographic location and the size of their workforce.[6] Specifically, Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick are combined to make up Atlantic Canada (AC) while Manitoba and Saskatchewan (MB & SK) are combined as part of the Canadian Prairies. Quebec, Ontario, Alberta and British Columbia (BC) are kept as stand-alone.

Regions associated with each province or bloc of provinces are identified in columns 1 and 2 of Table 1. Mean wage rates are presented by region in column 4 of this table. Bas St-Laurent, Côte Nord in the province of Quebec, with the lowest hourly rates, are used to derive regional hourly wage relativities define as:

$$Regional\ hourly\ wage\ relativity\ = \left[\left(\frac{mean\ hourly\ wage\ in\ the\ region}{mean\ hourly\ wage\ in\ the\ reference\ region} - 1\right) * 100\right] \qquad (1)$$

Column 5 of Table 1 shows these regional hourly wage relativities.

4.2. Empirical results

This section provides a snapshot of the extent to which regional variation in nurse hourly wage exists, after controlling for individual and job characteristics. From the wage empirical estimation, results suggest that there is a degree of regional variation in the hourly wages for

[5] Because we acknowledge that nurses are grouped into regions, and model errors may be uncorrelated across these regions but correlated within region. Not controlling for within-region error correlation can lead to misleadingly small standard errors, narrow confidence intervals, large *t*- statistics, and low *p*- values.
[6] Some provinces were combined to represent a workforce not less than 1.5 million.

nurses as shown by the coefficients in the last column of Table 1. All coefficients are significant at the 5% signification level, except for those associated with Quebec City (35) and Saguenay (38).

Table 1: Regional mean hourly wages, hourly wage relativities and hourly wage differentials for RN

ID	Region	Province	Mean hourly wage	Wage Relativities	SRWD (coefficients)
1	Abbotsford	BC	32.9	20.51	0.1865
2	Bas-Saint-Laurent/Cote-Nord	Quebec	27.3	Reference region	-
3	Calgary	AB	37.2	36.26	0.3071
4	Centre de l'Ontario	Ontario	35.7	30.77	0.2431
5	Centre du Quebec	Quebec	29.3	7.33	0.1845
6	Centre-sud de de l'Ontario	Ontario	36.1	32.23	0.2441
7	Centre-sud du Quebec	Quebec	28.6	4.76	0.0917
8	Edmonton	AB	38.8	42.12	0.3319
9	Est de l'Ontario	Ontario	35.9	31.50	0.2406
10	Est de la N-E	Atlantic	31.9	16.85	0.1378
11	Fredericton/Moncton/Saint John	Atlantic	32.2	17.95	0.1574
12	Gaspesie	Quebec	30.6	12.09	0.0954
13	Gatineau	Quebec	30.6	12.09	0.1325
14	Halifax	Atlantic	31	13.55	0.1088
15	Hamilton	Ontario	34.9	27.84	0.2006
16	Huron	Ontario	35.9	31.50	0.2676
17	I-P-E	Atlantic	30.55	11.90	0.1263
18	Int. Sud de la CB	BC	34.9	27.84	0.2318
19	Kingston	Ontario	36.3	32.97	0.2881
20	Kitchener	Ontario	35.5	30.04	0.2159
21	London	Ontario	35.3	29.30	0.2432
22	Madawaska/Charlotte	Atlantic	31.7	16.12	0.1421
23	Monteregie	Quebec	29.4	7.69	0.1069
24	Montreal	Quebec	28.3	3.66	0.0622
25	Niagara	Ontario	35.23	29.06	0.2147
26	Nord de l'AB	AB	37.1	35.90	0.2921
27	Nord de l'Ontario	Ontario	34.7	27.11	0.2123
28	Nord de la CB	BC	36.2	32.60	0.2851
29	Nord de la SKN	MB&SK	37	35.53	0.3282
30	Nord du MB	MB&SK	33.6	23.08	0.2176

Table 1: Regional mean hourly wages, hourly wage relativities and hourly wage differentials for RN, cont'd

ID	Region	Province	Mean hourly wage	Wage Relativities	SRWD (coefficients)
31	Nord-ouest du Quebec	Quebec	29.7	8.79	0.0903
32	Oshawa	Ontario	34.3	25.64	0.2515
33	Ottawa	Ontario	34.8	27.47	0.2144
34	Ouest de la N-E	Atlantic	31.3	14.65	0.1641
35	Quebec City	Quebec	28.1	2.93	0.0527*
36	Regina	MB&SK	38.4	40.66	0.3527
37	Restigouche/Albert	Atlantic	33.1	21.25	0.1959
38	Saguenay	Quebec	28.6	4.76	0.0339*
39	Saskatoon	MB&SK	36	31.87	0.2811
40	Sherbrooke	Quebec	29.4	7.69	0.0834
41	St-John's	Atlantic	33.9	24.18	0.2062
42	St. Catharines	Ontario	33.3	21.98	0.1451
43	Sud cotier de la CB	BC	32.9	20.51	0.1669
44	Sud de l'AB	AB	36.1	32.23	0.2944
45	Sud de la SK	MB&SK	38.5	41.03	0.3406
46	Sud du MB	MB&SK	33.4	22.34	0.1790
47	Sudbury	Ontario	35.6	30.40	0.2635
48	T-N&L	Atlantic	33.7	23.44	0.2051
49	Thunder Bay	Ontario	34.3	25.64	0.2057
50	Toronto	Ontario	36	31.87	0.2084
51	Trois-Rivieres	Quebec	29.3	7.33	0.0798
52	Vancouver	BC	34.6	26.74	0.2157
53	Victoria	BC	34.6	26.74	0.2115
54	Windsor	Ontario	36.1	32.23	0.2817
55	Winnipeg	MB&SK	34.2	25.27	0.2077

Notes:

1. * = Not statistically significant at the 5% level.
2. The percentage wage differential for each region relative to the omitted region (namely Bas-Saint-Laurent/Cote-Nord) is obtained when the reported coefficient is multiplied by 100.
3. As mentioned in the text, the estimated wage equation also included individual and job characteristics control variables.
4. Regression diagnostics:

Number of observations	=	18,090
F(62, 18027)	=	45.42
Prob > F	=	0.0000
R-squared	=	0.180
Root MSE	=	0.2801

At the national level, the standard deviation of the SRWD coefficients is 7.9 around a mean value of 20.0 (see Table 2, last row). These values are also reported in this table for each province or bloc of provinces.

Table 2. Summary statistics for Standardized Regional Wage Differentials by Province for RN

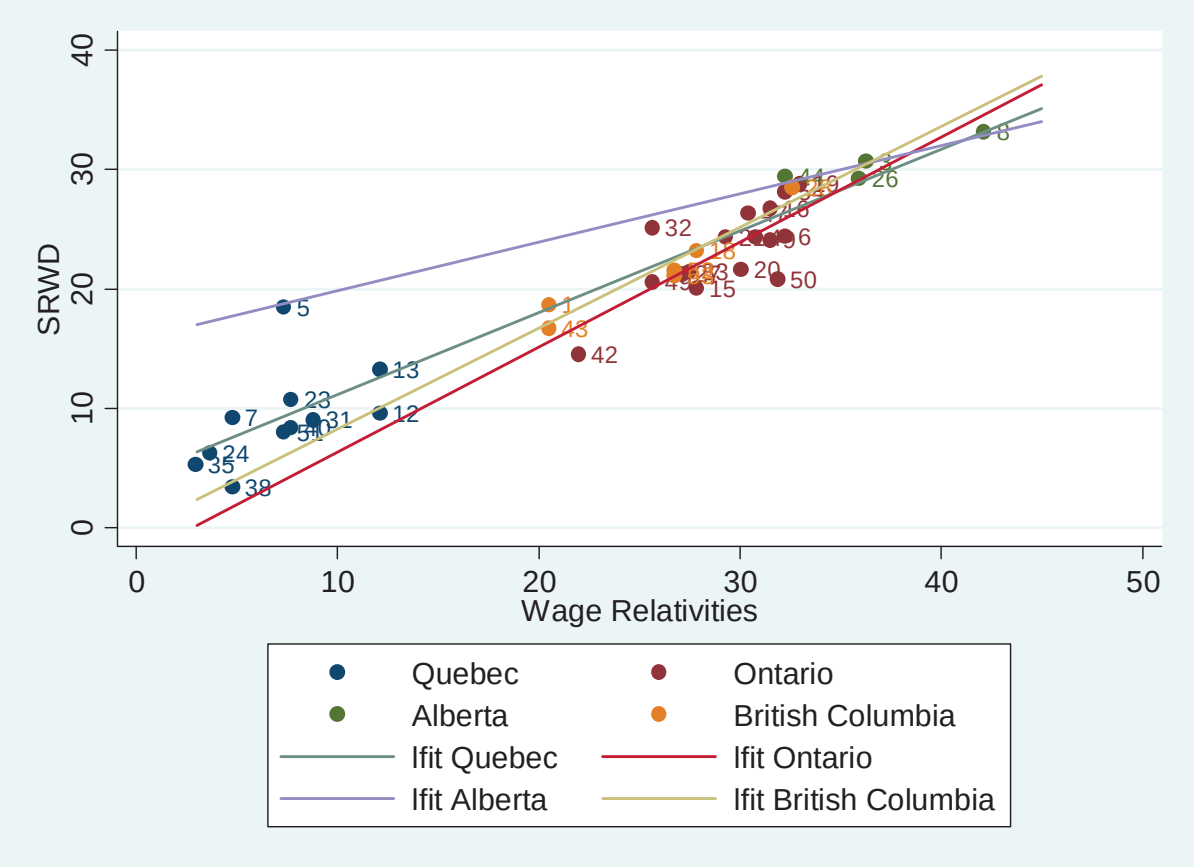
Province	Mean	Standard deviation	min	max
AB	30.6	1.8	29.2	33.2
Atlantic	16.0	3.5	10.9	20.6
BC	21.6	4.1	16.7	28.5
MB&SK	27.2	7.1	17.9	35.3
Ontario	23.3	3.6	14.5	28.8
Quebec	9.2	4.1	3.4	18.4
Total	20.0	7.9	3.4	35.3

Notes:

1. The minimum SRWD of 3.4 is for Saguenay (38) and the maximum of 35.3 is for Regina (36).

Based on these results, the wage outcome cannot be described either as ‘flat’ or as ‘uniform’, even though the wage determination process is predominantly centralised. The fact that Saguenay and Regina are the regions with the minimum and maximum SRWD respectively suggests some positive correlation between the value of SRWD and the mean hourly wages. Figure 1 presents scatter plots of the results of the regression of SRWD for RN (i.e. the values of the coefficients of the regional dummy variables reported in the last column of Table 1) on regional hourly wage relativities (as reported in column 5 of Table 1). The scatter plots are shown for the four selected provinces identified in section 2 of this study.

Figure 1 Scatter plot of SRWD and regional hourly wage relativities for RN



The regions are identified as per column1 and 2 of Table 1. The values of the slope coefficients are positive in relatively well-defined models. For example, they are 0.686 for Quebec (R^2=0.267, p-value = 0.104) and 0.880 for Ontario (R^2=0.563, p-value = 0.001). Therefore, the evidence suggests that the pay determination process for hospital nurses in Canada generates differentials which vary across regions. For example, SRWD for the province of Quebec are the highest in Centre du Quebec (5) and Gatineau (13) where they were respectively 18.5% and 13.3% higher than Bas-Saint-Laurent/Cote-Nord (2: the reference region with the lowest mean hourly wage). It should be noted that the two major Census Metropolitan Areas in Quebec, Montreal (24) and Quebec City (35) have SRWD of 6.2 and 5.3 respectively. Thus, they are among the regions which rank below the mean SRWD of the

province, which is 9.2. Moreover, SRWD for Ontario are the highest in Kingston (19) and Windsor (54). Both are about 28% higher than the reference region. While the SRWD in Toronto (50) is around the national level (20.8 vs 20.0), it ranks below the mean SRWD of the province, which is 23.3. Moreover, the results suggest that Ontario has less regional wage differentials compared to the other three provinces.

An analysis of the coefficients of the control variables is not systematically provided, given that the focus of this study is on regional wage differential. They are all significant with the expected signs. For example, we found a positive correlation between hourly wage and level of education, experience and being unionized (details of the empirical analysis are available upon request).

5. Discussion and policy implications

The nature of the wage variation is such that these SRWD are positively correlated with wage relativities across the regions. In other words, we found evidence of some regional pay responsiveness. However, we are not in a position to assess how this variation in SRWD for RN working in Canadian hospitals would compare with the variation associated with some substitute, conjectural decentralised pay determination process. Furthermore, given that data on vacancy rates by occupation and region is not available, we cannot investigate whether or not the observed differential is adequate in meeting regional nursing shortages, should they exist. We reiterate that this wage gap is not between hospital wards. Even though nursing services include complexities, they are not addressed in this analysis. Moreover, wages are taken from the LFS, not from collective agreements because they are not as geographically detailed as in the LFS and are not carried out at the same time throughout the country. Otherwise, the date of these negotiations might explain a substantial part of these differentials.

Even though one common region is used to serve as a reference region in the wage relativity calculations across all provinces, the consistency of the differences within a province is

still maintained. This means the ranking of the regions within a province is the same in terms of wage relativities, whether one common region is chosen or separate reference region is chosen for each province. The common reference region allows for interprovincial comparison of nurse wages while the lowest to the highest paid regions within a particular province can still be identified.

Having said that, it appears there is a trade-off between efficiency (associated with the decentralisation of wages to reduce turnover rate and shortage) and equity (ensured by the harmonization of wages for equal qualifications). How to reconcile these two principles is a key public policy issue. In addition to policies put in place to solve the shortage problem (for example: targeted immigration, recall of retired workers, increasing enrollment in nursing programs), it is imperative for regional healthcare managers to address this issue via improved employment conditions of existing nurses (e.g. appropriate staffing level; reduced overtime; work-life balance mindset, with a family focus and on-site daycare) in conjunction with the issue of pay. Given that some empirical evidence suggests that the labour supply of nurses may be unresponsive to wage changes (e.g. Antonazzo et al. 2003; Di Tommaso et al. 2009) and the recent cry of some Quebec nurses for help on social media (CBC 2018), improving nurse workplace environment could be a critical component of the solution. Some authors called to mind other factors that are crucial for the nursing workforce, such as shift work, flexible hours, part-time employment, perceived job security, support at work (Zeytinoglu et al. 2011) and scope of practice (McGillis et al. 2013). During the last decade, there had been a trend in Canada to account for these factors in an effort to attract and retain nurses in the profession. For example, a public policy initiative in Ontario, the Nursing Graduate Guarantee, was established by the provincial government in the mid-late 2000s to stimulate full-time employment (Baumann et al. 2012).

6. Conclusion

This article has examined the level of rigidity in nursing wage determination mechanisms and the regional wage differentials, which could be potentially a source of regional nursing shortage. In doing so, the authors 1) refers to the literature and conduct surveys to assess the level of decentralisation in the Canadian nursing labour market and 2) use the compensating wage differentials approach to test if the pay structure differ between geographical areas. Contextual information suggests that the wage setting process in the nursing labour market is more centralised than the general labour market. This situation tend to produce flatter wage structure and is not favourable to equalize net advantages of different jobs and to minimize imbalance as it would be the case in a competitive market. Even though our empirical result does not support a flat wage structure, we cannot determine if the observed wage differentials are substantial enough to eliminate any shortage that may exist in a regional market. In any case, other factors (such as reduced overtime, work-life balance) are as important as wages to reduce nurse high turnover rate and shortage.

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Appendix A: Survey of Wage Setting Process for Nurses

In Canada, each province and territory is responsible for the administration and delivery of healthcare services for their own population. As such, province constitutes the focal point for nurse wage setting process. We designed two different surveys.[7] Both addressed wage setting process for nurses, but one aims to capture the employer perspective and the other the union perspective. Four provinces (Quebec, Ontario, Alberta and British Columbia) were retained for these surveys. They are those with a workforce of over 3 million in 2016 and account for 86 % of the total Canadian population. The survey questions are similar to Buchan et al. (2014), except that additional ones on overtime were added due to the importance and recurrence of this issue in the Canadian nurse labour market.

The survey questions were sent to the main bargaining agents for employers (representative of provincial government) and the main bargaining agents for employees (union leaders or labour relations specialists) in each of the selected provinces. A summary of the main findings was sent back to the respondents. Then, they had the option of either confirm (validate the findings) or amend these findings.

Prior to producing the survey questionnaire, relevant literature and collective agreements in each of the selected provinces were consulted to make sure pertinent phenomenon or issues were covered. It is important to mention that the employer-focussed survey asks questions on both recruitment and retrenchment of nurses. On this basis, the results can provide enough information to infer whether or not hospital managers have the ability to influence their overall wage bill even if wages are negotiated centrally. This survey also asks questions about the specific entity responsible to negotiate nurses' remuneration and overtime regulations. It is relevant to compare provinces along these dimensions because this can help to shed light on the efficiency of the labour market. As for the survey with the union perspective, the inquiries are about union (affiliate) role in wage bargaining, confederal involvement in wage agreements negotiated by its affiliate unions, status of work council and also overtime regulations. The latter dimension is covered in both perspectives to attempt to capture any diversity of perception since it has been identified among the factors responsible for nursing shortage. A copy of the survey that was sent to the parties is presented below.

[7] They did not require an ethical approval because they are based exclusively on institutional information (do not use any human/animal subjects) and the respondents remain anonymous.

Université Laval and Université du Québec en Outaouais

Department of Industrial Relations

Survey of Wage Setting Processes in Nurse Labour Market

(Employers)

I. Recruitment of nurses:

1. Hospital managers have complete autonomy
2. Hospitals must negotiate with Regional Health Authorities (RHAs)
3. RHA decides
4. Provincial government decides

II. Retrenchment of nurses:

1. Hospital managers have complete autonomy
2. Hospitals must negotiate with RHAs
3. Hospitals or RHAs must meet with Union to discuss the scope of the retrenchment
4. RHA decides
5. Provincial government decides

III) Remuneration level of nurses:

1. Hospital managers have complete autonomy
2. A pay scale is set or negotiated with the RHAs
3. A pay scale is set or negotiated with the hospital association
4. A pay scale is set or negotiated directly with the provincial government

IV) Work contracts of nurses officially with:

1. The hospital
2. Regional health authority
3. Provincial government

V) Overtime regulations:

1. What is the reference period to define overtime?
    a. Day: Hours in excess of the regular work hours during a day
    b. Week: Hours in excess of the regular work hours during a week
    c. 2-week period: Hours in excess of the regular work hours during a 2-week period.
2. Does unpaid overtime exist in the organisation agreement?
    a. Yes, for only a maximum reporting time of 15 minutes between tour/shift

b. Yes, for reporting time of 15 minutes between tour/shift and other time
c. No

3. If 2b, what are the factors that are taken into account for unpaid overtime?

    a. Every hour worked in excess of the regular daily hours, but not exceeding the legislated daily limit.
    b. Every hour worked in excess of the regular weekly hours, but not exceeding the legislated weekly limit
    c. Every hour worked in excess of the regular hours during a 2-week period, but not exceeding the legislated time limit during the 2-week period.
    d. Other factors (Please, specify)

Université Laval and Université du Québec en Outaouais

Department of Industrial Relations

Survey of Wage Setting Processes in Nurse Labour Market

(Union Leaders)

I. Union (affiliate) role in wage bargaining:

1. Union negotiates enforceable agreement at sector level and has veto power over company agreements

2. Union negotiates agreements at sector level allowing enterprise or company branches to vary within limits

3. Union does not negotiate sector agreements

II. Confederal involvement in wage agreements negotiated by its affiliate unions:

1. Confederation has mandate to negotiate agreement with employers and/or government on wage issues

2. Confederation has mandate to negotiate agreement with employers and/or government on non-wage issues

3. None of the above

III. Overtime regulations:

4. What is the reference period to define overtime?

    a. Day: Hours in excess of the regular work hours during a day
    b. Week: Hours in excess of the regular work hours during a week
    c. 2-week period: Hours in excess of the regular work hours during a 2-week period.

5. Does unpaid overtime exist in the organisation agreement?

    a. Yes, for only a maximum reporting time of 15 minutes between tour/shift

    b. Yes, for reporting time of 15 minutes between tour/shift and other time
    c. No

6. If 2b, what are the factors that are taken into account for unpaid overtime?

    a. Every hour worked in excess of the regular daily hours, but not exceeding the legislated daily limit.
    b. Every hour worked in excess of the regular weekly hours, but not exceeding the legislated weekly limit
    c. Every hour worked in excess of the regular hours during a 2-week period, but not exceeding the legislated time limit during the 2-week period.
    d. Other factors (Please, specify)

IV) Status of work council:

1. Work councils or similar structure (union and non-union-based) for employee representation exist within firms or enterprises (they are mandated by law or established through basic general agreement between unions and employers and can confront management)

2. Work councils are voluntary, i.e. even where they are mandated by law, there are no legal sanctions for non-observance

3. Work councils or similar (union or non-union) based institutions of employee representation that can confront management do not exist or are exceptional.

Appendix B: Wage Setting Structures and Processes in the Four Selected Canadian Provinces

	Quebec	Ontario	Alberta	BC
Main bargaining agents for employers	Comité patronal de négociation du secteur de la santé et des services sociaux (CPNSSS) representing the Ministry of Health (MH)	Ontario Hospital Association (OHA) representing the MH, voluntary process for each hospital	Alberta Health Services (AHS), under the MH	Health Employers Association of BC (HEABC)
Main bargaining agents for employees	Fédération interprofessionnelle de la santé du Québec (FIQ)	Ontario Nurses' Association (ONA)	United Nurses of Alberta (UNA)	BC Nurses Union (BCNU)
Remuneration of nurses	Pay scale negotiated between the MH (via CPNSSS) and FIQ	Pay scale negotiated between the MH (via OHA) and ONA	Pay scale negotiated between the MH (via AHS) and UNA	Pay scale negotiated between the MH (via HEABC) and BCNU
Recruitment of nurses	Hospital managers have autonomy, some influence coming from Centre intégré de santé et des services sociaux (CISSS)	Hospital managers have autonomy, some influence coming from Local Health Integration Networks (LHINs)	Hospital managers have complete autonomy	Hospital managers have complete autonomy
Retrenchment of nurses[8]	CISSS can decide to reduce nursing hours/budget. Hospital managers have autonomy to decide which position to eliminate	Hospital managers have complete autonomy	AHS can decide to reduce nursing hours/budget. Hospital managers have autonomy to decide which position to eliminate.	Hospital managers have complete autonomy

[8] Subject to Collective Agreement restrictions. For example, Collective Agreement can permit the employer to eliminate specific positions that are no longer operationally necessary or to lay off the least senior nurse in case of staff retrenchment.

Appendix B: Wage Setting Structures and Processes in the Four Selected Canadian Provinces, Cont'd

	Quebec	**Ontario**	**Alberta**	**BC**
Work contracts of nurses officially with	CISSS	The hospital	AHS	Provincial government
Reference period to define overtime	Day (Minimum of 16 hours required between shift; applied to any work status)	Day (applied to any work status).	Day for full-time nurses; Day / Week for part-time nurses; four-week for casual nurses.	Day for full-time nurses; Day / Week for part-time nurses; four-week for casual nurses.
Existence of unpaid overtime	No	Yes, for a maximum reporting time of 15 minutes between shift	No	No
Union role in wage bargaining	Union negotiates agreements at sector level allowing enterprise to vary within limits	Union negotiates enforceable agreement at sector level and has veto power over company agreements	Union negotiates agreements at sector level allowing enterprise to vary within limits	Union negotiates agreements at sector level allowing enterprise to vary within limits
Confederal involvement in agreements negotiated by its affiliate unions	Yes (FIQ has mandate to negotiate agreement with employers on wage and non-wage issues)	No mandate to negotiate agreement	No mandate to negotiate agreement	No mandate to negotiate agreement
Work council	Established in collective agreement	Does not exist	Does not exist	Established in collective agreement (for unionised nurses only)

Source: Authors' compilation from surveys administered to employers, union leaders and labour relations specialists.

Appendix C: Wage setting process for selected OECD countries

Based on Visser (2015) and Buchan et al. (2014), we highlight some of these key characteristics of wage setting in the selected OECD countries.

	Sector	**Type of coordination of wage setting**	**Government intervention in wage bargaining**	**Predominant level(s) at which wage bargaining occurs**
Canada	All	Uncoordinated	None	Local / company
	Health	Mix of provincial level and local collective agreements	Indirect, at the provincial level	Provincial
France	All	Uncoordinated	Indirect through price setting, indexation, etc	Sector[9] / company
	Health	National level, with local scope for "top up"	Direct	National / sub-sectoral / some local
Germany	All	Pattern bargaining	Indirect, by providing an Institutional framework of consultation	Sector / industry
	Health	Decentralized. Contracts at federal, regional, local, company levels, and no contracts are possible.	Direct, at the regional and local level as employers of hospitals. Minimum wage for some non-core services.	Decentralized, but partly based on frame contracts negotiated at federal level.

[9] The term "sector" is taken from the production perspective and refers to at least one industry. It is used as opposed to the term "company'' that denotes the smallest physical unit of production.

Appendix C: Wage setting process for selected OECD countries, cont'd

	Sector	Type of coordination of wage setting	Government intervention in wage bargaining	Predominant level(s) at which wage bargaining occurs
Great Britain	All	Uncoordinated	Indirect, through institutional framework	Local /company
	Health	Recommendations by an independent pay review body, based on evidence from trade unions, employers and government	Direct, as employer and funder	National-sectoral
New Zealand	All	Uncoordinated	Indirect, through institutional framework of consultation	Local /company
	Health	Multi-Employer Collective Agreement (MECA) by occupation	Indirect, through institutional framework of consultation	National-sectoral / some local
Norway	All	Pattern bargaining	Indirect through price setting, indexation, etc.	Sector / industry
	Health	National level, with local scope for "top up	Indirect	Sector / local
USA	All	Uncoordinated	None	Local /company
	Health	Mix of state level and local collective agreements	Indirect, at the state or municipal level	Sector/Local

Sources: Overall economy: Authors' compilation from ICTWSS database; Health sector: Buchan et al (2014), except USA that is based on authors' compilation.

As for the case in Canada and the selected Canadian provinces, the wage bargaining process is more centralised in the health sector than in the overall economy for the selected OECD countries. However, in Germany, government is not involved in wage setting, except at the local or municipal level as employers. Hospital owners are free to decide about the use of contracts. In this regard, it is close to the Ontario model where at each round of negotiation, each hospital elects to participate in central bargaining or not. According

to the OECD (2012 and 2016) Health Systems Characteristics Survey, hospital managers have complete autonomy for staff recruitment.