



Nursing Practice In Rural and Remote Nova Scotia: An Analysis of CIHI's Nursing Database

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Highlights

- In the period between 2003 and 2010, the regulated nursing workforce in Nova Scotia grew by 11.0%, reaching a total of 12,809 regulated nurses. The greatest increase in the regulated nursing workforce during this time was in NPs (360.9%).
- In 2010, 28.5% of the regulated nursing workforce in Nova Scotia was located in rural areas of the province where 34.9% of the population lived.
- In urban areas, the nurse-to-population ratio increased for RNs and LPNs. In rural areas it held steady for RNs, but increased for LPNs.
- Fewer rural than urban RNs worked full-time. In 2010, rural LPNs had the highest proportion holding casual positions.
- The numbers of RNs in rural Nova Scotia achieving baccalaureate degrees increased from 2003 to 2010. The number of rural RNs achieving Master's degrees also increased during this time. However, these proportions remained higher in urban than in rural Nova Scotia.
- In 2003 and 2010, the proportion of rural nurses working in primary healthcare settings was 17%. The greatest increase between 2003 and 2010 was in rural NPs (from 0% to 77%).
- Although the majority of nurses educated in Nova Scotia stay in Nova Scotia, in 2010, 23% of RNs, 10% of LPNs and 35% of NPs received their initial education elsewhere.

Introduction

People who live in rural and remote parts of Canada (including the North) tend to have more health challenges than people living in urban areas. Rural and remote communities also experience limited numbers and chronic shortages of health care workers, including nurses.

In order to keep improving health services and support nurses in rural and remote communities, planners and policy makers need up-to-date information. *Nursing Practice in Rural and Remote Canada II* provides some of that information.

Nursing Practice in Rural and Remote Canada II is a study conducted in partnership with planners and policy makers who will make sure that the findings can be used to improve nursing services and access to care in rural and remote Canada.

A key activity of the *Nursing Practice in Rural and Remote Canada II* study was the analysis of the Canadian Institute for Health Information's (CIHI) Nursing Database (NDB). This analysis was undertaken in order to identify key characteristics of the regulated nursing workforce in rural and remote Canada, as well as changes in the workforce over the last decade.

- Data for the years 2003 and 2010 were analyzed.
- Data for registered nurses (RNs), nurse practitioners (NPs), and licensed practical nurses

(LPNs) were included.

This document reports key findings from the NDB analysis for Nova Scotia (NS). It provides an overview of the regulated nursing workforce in Nova Scotia, with a special focus on rural and remote locations.

Definition of Rural

We use the Statistics Canada definition of Rural and Small Town Canada (du Plessis et al., 2001, p. 6). Rural refers to communities with a core population of less than 10,000 people, where less than 50% of the population commutes to larger urban centres for work. This Statistics Canada definition of rural includes northern communities, as well as remote areas with little or no metropolitan influence as measured, in a labour market context, by the size of commuting flows to any larger urban centre.

According to the 2011 Census, Nova Scotia had a population of 921,732. As of 2011, the rural population was 321,727, which accounted for 34.9% of the total and represented a decrease of 1.7% since 2006. Table 1 lists population by health region.

Table 1. Population by health region, 2011, NS

Health Region Name	Population
South Shore and South West Health Authorities	116,370
Annapolis Valley Health Authority	82,790
Colchester East Hants and Cumberland Health Authorities	104,314
Pictou County and Guysborough Antigonish Strait Health Authorities	90,264
Cape Breton Health Authority	123,032
Capital Health Authority	428,667

Source: CIHI. (2013). *Regulated Nurses: Canadian Trends, 2007 to 2011*. Ottawa, ON: CIHI.

Nursing Database Analysis: Findings

1. Nursing Workforce Numbers in Nova Scotia

In the period between 2003 and 2010, Nova Scotia's overall regulated nursing workforce grew from 11,543 to 12,809, which represented an 11.0% increase. When this increase was examined in terms of nurse type, we found that the total number of RNs increased from 8,498 to 9,173 (up 7.9%), the total number of LPNs increased from 3,022 to 3,530 (up 16.8%), and the total number of NPs increased from 23 to 106 (up 360.9%).

The changes in the regulated nursing workforce were also examined in terms of urban and rural comparisons. The numbers of urban RNs, LPNs, and NPs all increased between 2003 and 2010. In rural locations, the number of LPNs and NPs increased (up 24.0% and 342.9%, respectively), and the number of rural RNs decreased (down 2.7%). With the exception of the decrease in rural RNs, these changes generally reflected the wider trends found at the national scale.

Of the total regulated nursing workforce in Nova Scotia in 2010, 25.3% of RNs, 36.8% of LPNs, and 29.3% of NPs worked in rural communities. When we considered the rural regulated nursing workforce with respect to the rural population, we found that 28.5% of Nova Scotia nurses served 34.9% of Nova Scotia residents. The situation in urban locations was reversed; here we found that 71.5% of the regulated nursing workforce served 65.1% of the population.

2. Nurse-to-Population Ratios

Nurse-to-population ratios represent the number of nurses per 100,000 population. In rural Nova Scotia, the nurse-to-population ratios for RNs and NPs were lower than in urban locations for both data years (2003 and 2010). Nurse-to-population ratios for LPNs were higher in urban locations in 2003, but by 2010, rural locations had more LPNs per 100,000 population than urban locations. Table 2 illustrates the increase in nurse-to-population ratios for urban RNs and urban and rural LPNs. There was a decrease in the nurse-to-population ratio for rural RNs.

Table 2. Percentage (%) changes in 2003-2010 nurse-to-population ratios, NS and Canada

Jurisdiction	RNs		LPNs	
	Urban	Rural	Urban	Rural
NS	10.4	-11.0	2.7	25.2
Canada	††	††	20.7	6.8

Note: †† - no urban/rural allocations of RNs were available for RNs in Quebec in 2003. Data were suppressed for the territories due to small cell sizes.

3. Demographics

Age:

RNs in rural Nova Scotia tended to be slightly older than in urban parts of the province. The pattern for LPNs, however, was reversed. Table 3 provides information about the average ages of RNs and LPNs in urban and rural locations for 2003 and 2010. The average age of RNs and LPNs working in both urban and rural locations continues to increase.

Table 3. Average age (in years) of the regulated nursing workforce, 2003-2010, NS and Canada

Jurisdiction	RNs				LPNs			
	Urban		Rural		Urban		Rural	
	2003	2010	2003	2010	2003	2010	2003	2010
NS	44.4	46.5	45.6	47.8	43.1	45.3	42.6	44.9
Canada	††	†††	††	†††	44.4	42.8	44.6	44.8

Note: †† no urban/rural allocation was made of 2003 Quebec NDB records for RNs. ††† data to compute average ages were not submitted by Manitoba for the 2010 NDB data year.

Gender:

The proportions of males in the regulated nursing workforce remained low for all nurse types in both rural and urban locations. However, the proportion of male regulated nurses working in rural Nova Scotia was lower than in urban Nova Scotia. In urban areas, the proportion of male RNs increased, the proportion of male NPs decreased, and the proportion of male LPNs stayed the same. In rural areas, the proportion of male RNs held steady, the proportion of NPs remained zero, and the proportion of male LPNs increased slightly.

In 2003, NPs were the nurse type with the largest proportion of males in urban areas. In 2010, 6.2% of LPNs in rural Nova Scotia were male compared to 4.0% of NPs and 4.6% of RNs (see Figure 1). In the same year in rural Nova Scotia, the proportions of males were similar for RNs

and LPNs, with no male NPs reported (see Figure 2).

Figure 1. Proportion male nurses, urban NS

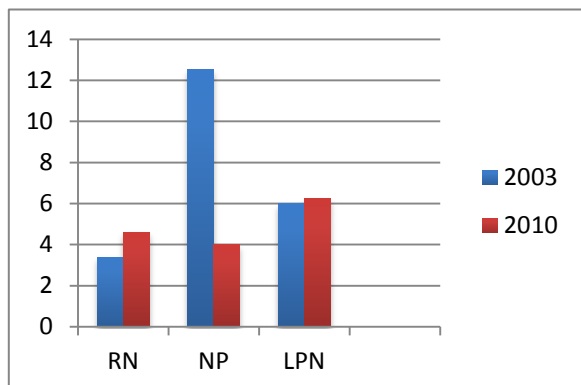
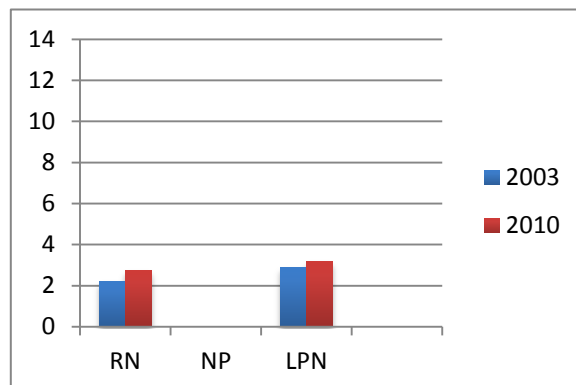


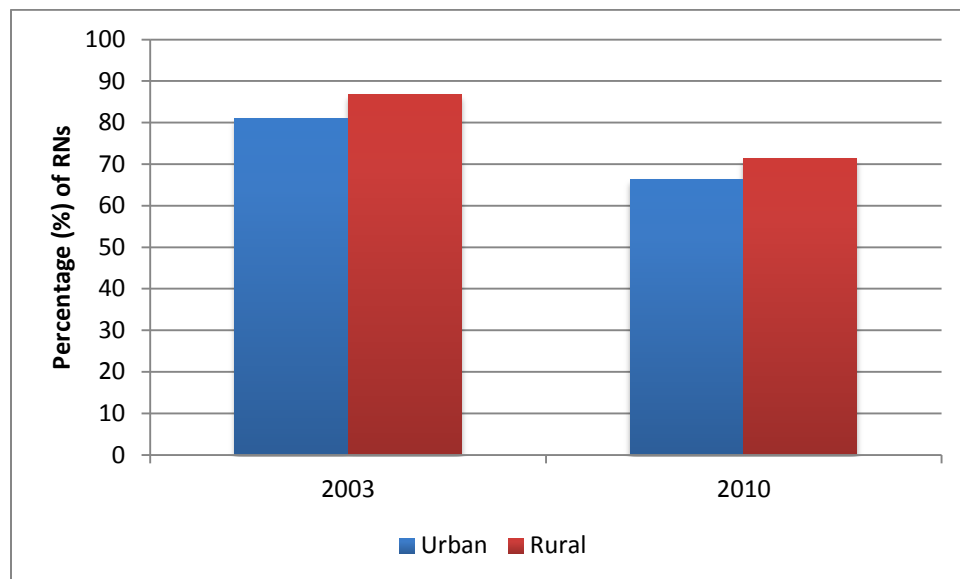
Figure 2. Proportion male nurses, rural NS



4. Education

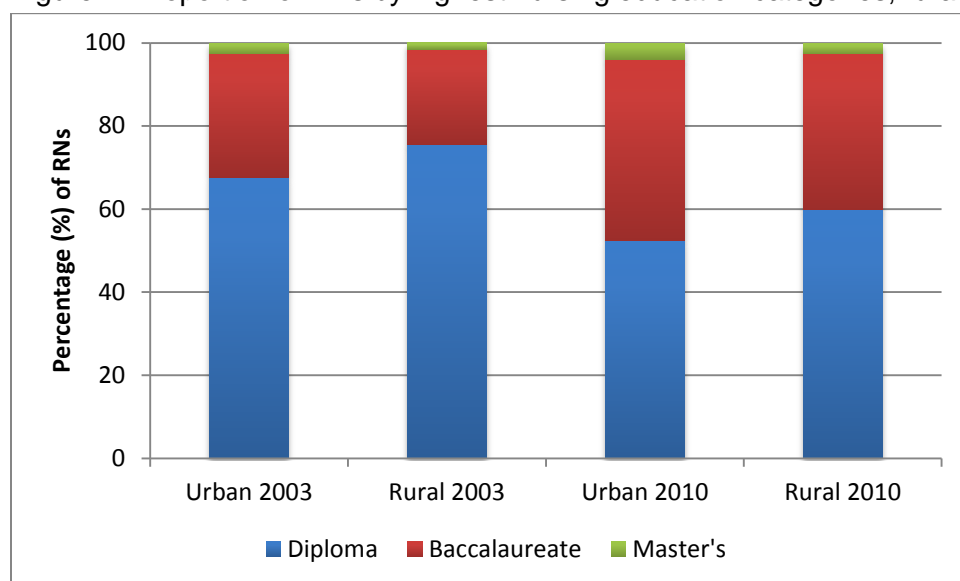
More rural than urban Nova Scotia RNs had a diploma as their initial nursing education in 2003 and 2010. As Figure 3 indicates, the proportion of RNs with diplomas as initial nursing education was decreasing in both rural and urban areas.

Figure 3. Proportion of RNs with diploma as initial nursing education, rural-urban, 2003-2010, NS



Typically, RNs working in urban areas had higher levels of education than their rural counterparts. In Nova Scotia, more urban than rural RNs had baccalaureate and Master's degrees in both data years. However, this gap was narrowing. In 2010, 43.4% of urban RNs had baccalaureate degrees, compared to 37.5% of their rural counterparts. In the same year, 4.0% of urban RNs had obtained a Master's degree while 2.5% of rural RNs had. Figure 4 compares highest nursing education categories for rural and urban RNs in Nova Scotia for 2003 and 2010.

Figure 4. Proportion of RNs by highest nursing education categories, rural-urban, 2003-2010, NS



5. Employment

Employment Status:

The NDB 'employment status' categories are: full-time, part-time, casual and not stated. The nursing colleges and CIHI define regular nursing employment as guaranteeing "a fixed number of hours of work per pay period. May be defined by the employer as full-time or part-time, but reflects permanent employment even though it may be time limited" (CIHI 2012, p. 8). Casual nursing employment "does not guarantee a fixed number of hours of work per pay period" (CIHI 2012, p. 8). Table 4 provides employment status proportions by nurse type, rural/urban, and year.

In 2003, more urban RNs were in full-time positions than their rural counterparts (62.4% compared to 58.3%). In the same year, the proportions of rural RNs in part-time and casual positions were marginally higher than for urban RNs (29.0% compared to 27.2%, and 12.7% compared to 10.5%, respectively).

The proportion of RNs working full-time increased between 2003 and 2010 in both urban and rural locations, although this proportion remained slightly lower for rural than for urban RNs. For both urban and rural RNs, the proportion in part-time and casual positions decreased between 2003 and 2010. In 2010, the proportion of rural RNs in casual positions was higher than it was for their urban counterparts.

In 2003, 100% of urban NPs and 71.4% of rural NPs reported being in full-time positions. Between 2003 and 2010, the proportion of NPs in full-time positions decreased in urban areas to 85.3% and increased in rural areas to 87.1%, respectively. During this time, the proportion of rural NPs in part-time and casual positions decreased.

More LPNs reported full-time than part-time or casual status in both 2003 and 2010, in rural and urban areas. The proportion of LPNs in part-time positions in 2003 was 28.8% for rural locations

and 23.9% and urban locations. Between 2003 and 2010, the proportion of urban and rural LPNs in full-time and casual positions decreased while part-time employment increased.

Table 4. Employment status proportions by nurse type, rural and urban, 2003 and 2010, NS

	Urban			Rural		
	%FT	%PT	%Casual	%FT	%PT	%Casual
2003						
RNs	62.4	27.12	10.5	58.3	29.0	12.7
NPs	100.0	0.0	0.0	71.4	14.3	14.3
LPNs	52.5	23.9	23.6	44.1	28.8	27.2
2010						
RNs	65.8	24.2	10.0	64.2	24.6	11.2
NPs	85.3	14.7	0.0	87.1	6.5	6.5
LPNs	48.7	32.6	18.7	40.3	37.0	22.7

Multiple Employers:

‘Multiple employers’ refers only to whether nurses have one or more employers. The actual number of employers was not available for this study.

Between 2003 and 2010, the proportion of rural RNs in Nova Scotia who worked for more than one employer increased from 7.9% to 9.6%. During the same time period, this proportion also increased for urban RNs, from 6.3% in 2003 to 9.5% in 2010. Multiple employer status was essentially the same for rural and urban RNs in 2010.

Data for NPs with multiple employers was not available.

The proportion of rural LPNs with more than one employer decreased slightly between 2003 and 2010 from 15.0% to 14.7%, respectively. Over the same time period, the proportion of urban LPNs with multiple employers held steady at 15%. In 2010, multiple employer status was essentially the same for rural and urban LPNs.

Place of Work:

The ‘place of work’ NDB data element consists of approximately fifteen sub-elements. Enumeration of these sub-elements by urban-rural nurses and jurisdiction produces a large number of small cell sizes. As the numbers in these small cell sizes were suppressed, it was necessary to employ the CIHI grouping as indicated below:

- **Hospital:** Hospital, Mental Health Centre, Rehabilitation/Convalescent Centre
- **Community Health Agency:** Nursing Station (outpost or clinic), Home Care Agency, Community Health Centre, Public Health Department/Unit
- **Nursing Home/Long Term Care Facility**
- **Other Place of Work:** Business/Industry/Occupational Health Office, Private Nursing Agency/Private Duty, Self-Employed, Physician’s Office/Family Practice Unit, Educational Institution, Nursing Association/Government, Other
- **Not Stated**

Figures 5 and 6 shows who worked in rural and urban Nova Scotia hospitals, community agencies, nursing homes/LTC facilities and other settings in 2010. The proportion of rural RNs working in hospital settings decreased slightly from 58.0% in 2003 to 55.1% in 2010. Over the same time period the proportion of rural RNs working in community health agencies and nursing homes/LTC facilities held steady, at 14.4% and ~17% respectively. This trend was similar to patterns found in urban locations between 2003 and 2010 where the proportions of RNs working in hospitals, community health agencies hospitals and nursing homes/LTC facilities changed very little. In 2010, 70.7% of urban RNs worked in hospital settings compared to 55.1% of their rural counterparts.

Figure 5. Place of work, rural, 2010, NS

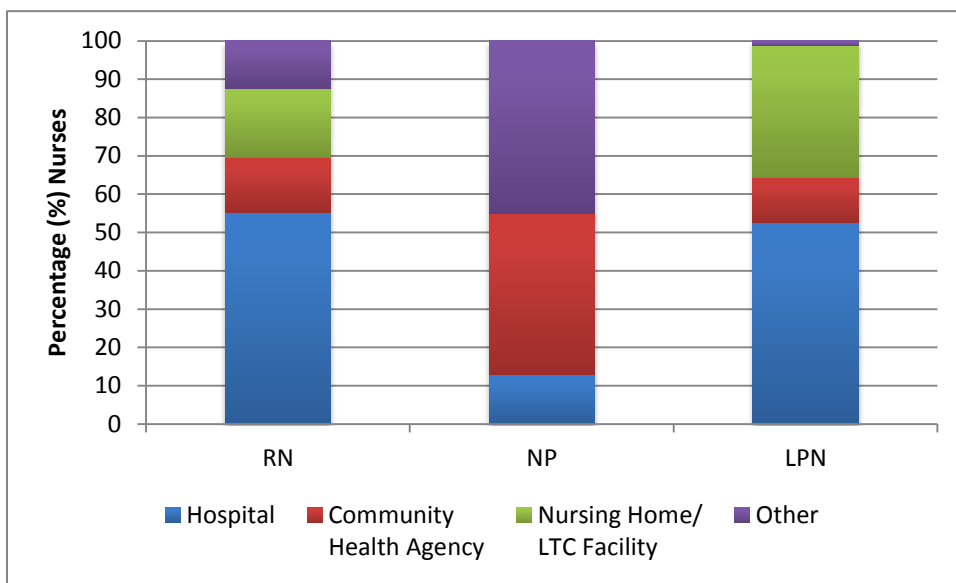
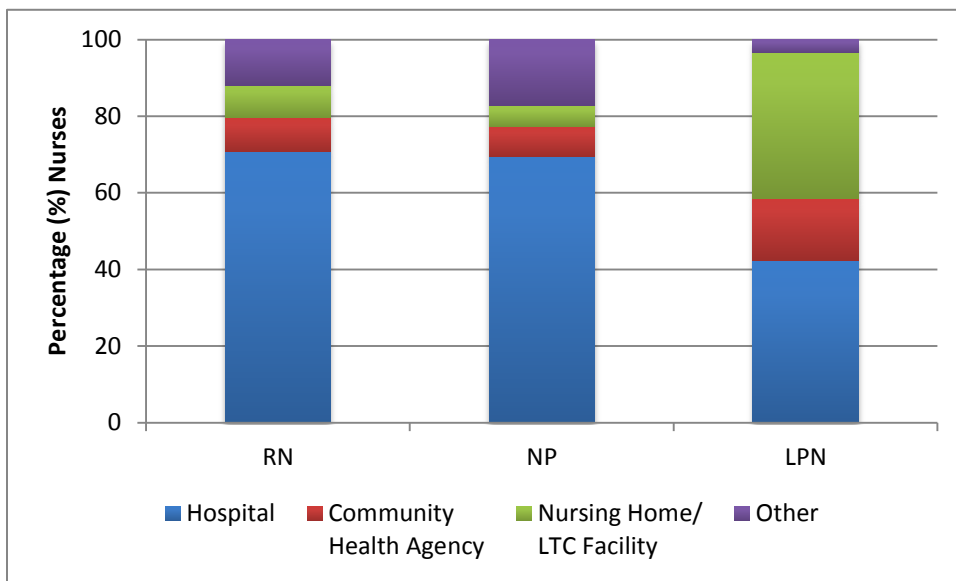


Figure 6. Place of work, urban, 2010, NS



Note: Percentages computed excluding 'not stated' category.

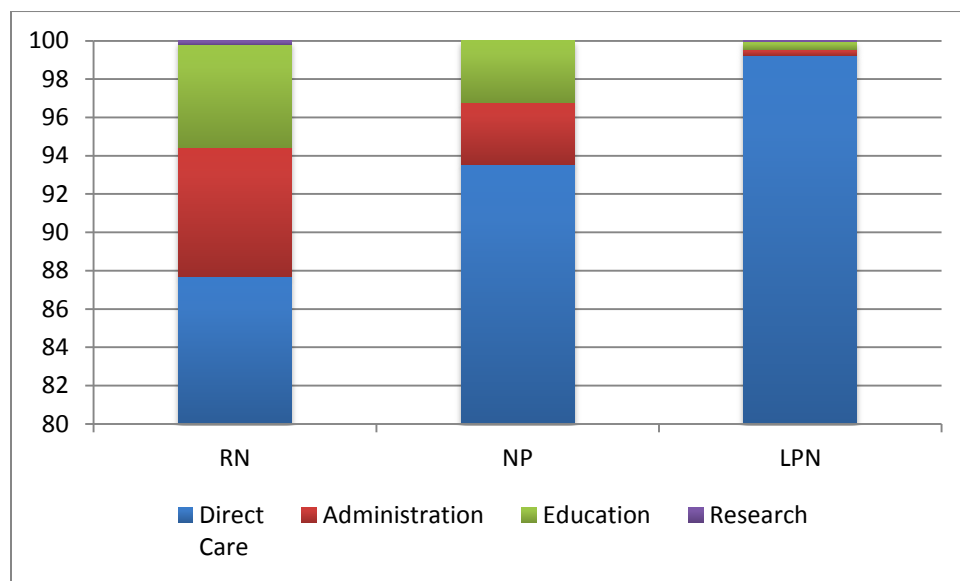
In 2003, 62.5% of urban NPs and 42.9% of rural NPs reported working in hospitals. By 2010, these proportions increased to 69.3% for urban NPs and decreased to 12.9% for rural NPs. In rural settings, the proportion of NPs working in community health agencies increased from 28.6% to 41.9% between 2003 and 2010, while the proportion working in nursing homes/LTC facilities remained 0%. In 2010, the majority of rural NPs worked in the category of 'other' settings (45.2%). In contrast, the majority of urban NPs worked in hospital settings in 2010, followed by 'other', community health agencies and nursing homes/LTC facilities.

The proportion of rural LPNs working in hospitals increased between 2003 and 2010 from 45.9% to 52.5%. The proportion of rural LPNs working in community health agencies increased from 4.8% to 11.9%, while the proportion working in nursing homes/LTC facilities decreased from 42.7% to 34.3%. In urban areas, the proportion of LPNs working in hospitals decreased, the proportion working in community health agencies and nursing homes/LTC facilities increased.

Primary Area of Responsibility:

Figure 7 illustrates nurses' primary areas of responsibility in rural Nova Scotia in 2010. The proportion of rural and urban RNs in direct care decreased slightly between 2003 and 2010 from 89% to 88%. During the same time period, the proportions of RNs in administration stayed between 5% and 7% for both urban and rural areas. Proportions of RNs in education remained at 4-5% for both urban and rural RNs. In 2003 and 2010, there were larger proportions of rural RNs than urban RNs in research, though these percentages are very small (0.2% to 1.7%).

Figure 7. Primary area of responsibility, rural nurses, 2010, NS



Note: Percentages computed excluding 'not stated' category.

Between 2003 and 2010, the proportion of rural NPs working in direct care decreased from 100% to 93.6%. Conversely, the proportion of urban NPs working in direct care increased from 75.0% to 93.3%. In urban settings, the proportion of urban NPs reporting administrative roles was 0% in

2003 and 2010. Between 2003 and 2010, the proportion of urban NPs in education decreased from 25.0% to 6.7%. In contrast, the proportion of rural NPs in administrative and education roles increased from 0% to 3.2%. No NPs reported research as a primary responsibility in 2003 or 2010.

The proportion of both rural and urban LPNs in direct care held steady at 99% between 2003 and 2010. Very few rural and urban LPNs reported working in administration, education or research ($\leq 1\%$).

6. Work in Primary Healthcare Settings

Primary healthcare (PHC) settings include the following places of work: nursing station/outpost/nurse clinic; private nursing agency/private duty; business/industry/occupational health; self-employed/private practice; mental health centre; physician's office; home care agency; and, public health agency/community health centre (Wong et al., 2009).

The proportions of regulated nurses working in rural PHC settings in Nova Scotia held steady at 17% in 2003 and 2010. Between 2003 and 2010, the proportions of rural nurses practicing in PHC settings increased only for NPs (0% to 77.4%) and essentially did not change for RNs or LPNs (see Figure 8).

Similarly, between 2003 and 2010, the proportion of regulated nurses working in urban PHC settings changed very little. The proportion of urban RNs in PHC settings increased slightly from 13.0% to 14.2%, the proportion of urban NPs increased from 0.0% to 20.0%, and the proportion of urban LPNs decreased from 21.5% to 14.4% (see Figure 9).

Figure 8. Nurses in PHC settings, rural, NS

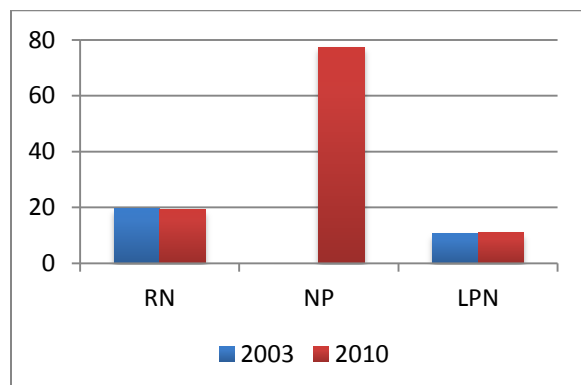
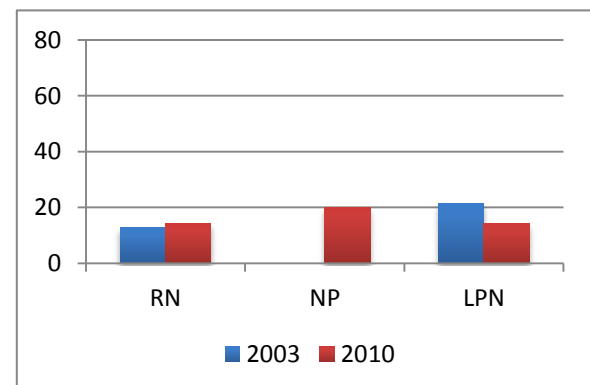


Figure 9. Nurses in PHC settings, urban, NS



Note: Percentages are estimates due to suppressed cells in some categories.

7. Migration

International:

Nurses who obtained their entry-to-practice education in a country other than Canada are considered to be 'international nursing graduates' (INGs).¹ Generally, in Canada, larger

¹ Also known as 'internationally educated nurses' (IENs).

proportions of urban than rural nurses are INGs.

In Nova Scotia, between 2003 and 2010, the proportion of urban RNs who were INGs stayed between 2% and 3%, and the proportion of rural RNs who were INGs increased from 2.3% to 3.1%.

Interprovincial:

Canadian interprovincial migration is generally characterized as nurses moving to a neighbouring province/territory or to a relatively large 'magnet' province. In 2003 and 2010, the top interprovincial migration destinations for Nova Scotia-educated nurses – both rural and urban – were Ontario and Alberta. Table 5 provides details of interprovincial migration for RNs, LPNs and NPs in 2003 and 2010.

Table 5. Interprovincial migration for RNs, LPNs and NPs, 2003- 2010, NS

	RNs		LPNs		NPs	
	2003	2010	2003	2010	2003	2010
Total number of nurses in NS	8,498	9,173	3,022	3,530	23	106
Received initial nursing education in NS	8,697	9,289	3,171	3,561	†	102
Proportion retained ²	76% (n=6,593)	76% (n=7,063)	87% (n=2,767)	90% (n=3,191)	†	67% (n=69)
Number not retained ³	2,104	2,226	404	370	†	33
Proportion working in urban areas of other jurisdictions ⁴	84%	85%	83%	84%	†	73%
Proportion working in rural areas of other jurisdictions ⁵	14%	15%	17%	16%	†	27%
Top two destinations	ON (37%) AB (15%)	ON (31%) AB 18%	ON (42%) BC (17%)	ON (34%) AB (21%)	†	ON (48%) AB (21%)
Proportion registered in NS who received initial nursing education elsewhere	22% (n=1,905)	23% (n=2,110)	8% (n=255)	10% (n=339)	57% (n=13)	35% (n=37)
Top three jurisdictions other than NS where initial nursing education was received	NL (25%) NB (22%) ON (21%)	NL (23%) ON (21%) NB (21%)	ON (32%) NB (20%) NL (17%)	ON (28%) NB (19%) NL (15%)	†	ON (27%) NL (22%) -

† Information not available due to suppression of small cells.

Note: The numbers and proportions reported in this table should be considered estimates due to suppression of small cells.

² This is the proportion of those nurses who received their initial education in Nova Scotia who are also registered in Nova Scotia.

³ This is the proportion of those nurses who received their initial education in Nova Scotia who are registered in jurisdictions other than Nova Scotia.

⁴ This refers to a percentage of those nurses who were not retained (i.e., received initial education in Nova Scotia but are registered in jurisdictions other than Nova Scotia).

⁵ Percentages for urban and rural may not add up to 100 due to some suppressed cells.

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Further information about the full study is available from:

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APPENDIX 1

Nova Scotia Synopsis

Year 2010	RNs		LPNs		NPs	
	Urban	Rural	Urban	Rural	Urban	Rural
Number of nurses employed in nursing	6,840	2,322	2,229	1,300	75	31
Number of nurses per 100,000 population	1,140	722	371	404	12	10
Average age (years)	47	48	45	45	46	45
Gender (%)						
	5 Male	3	6	3	4	0
	95 Female	97	94	97	96	100
Place of work (%)						
	Hospital	55	42	53	69	13
	Community Health Agency	9	16	12	8	42
	Nursing Home/LTC Facility	9	18	38	5	0
Primary area of responsibility (%)						
	Direct Care	88	99	99	93	94
	Administration	6	7	1	0	3
	Education	5	5	1	0	3
	Research	1	0	0	0	0
Full-time/part-time status (%)						
	Full-Time	66	49	40	85	87
	Part-Time	24	25	33	15	6
Position (%)						
	Staff	77	93	93	9	10
	Managerial	10	13	0	1	0
	Other	14	14	7	89	90
Highest education in nursing (%)						
	Diploma	53	n/a	n/a	3	13
	Bachelor's	43			25	45
	Master's	4			71	42
Place of graduation (%)						
	Canada	97	99	100	96	94
	Foreign	3	1	0	4	6

APPENDIX 2

The Regulated Nursing Workforce Employed in Direct Care, By Health Region, 2011

Health Region Name	RNs			LPNs			All Reg Nurses		
	Pop Estimates	Direct Care Counts	Per 100,000 Population	Direct Care Counts	Per 100,000 Population	Direct Care Counts	Per 100,000 Population		
South Shore and South West Health Authorities	116,370	753	647	576	495	1,329	1,142		
Annapolis Valley Health Authority	82,790	549	663	342	413	891	1,076		
Colchester East Hants and Cumberland Health Authorities	104,314	645	618	341	327	986	945		
Pictou County and Guysborough Antigonish Strait Health Authorities	90,264	773	856	355	393	1,128	1,250		
Cape Breton Health Authority	123,032	1,297	1,054	743	604	2,040	1,658		
Capital Health Authority	428,667	4,152	969	1,285	300	5,437	1,268		
Nova Scotia (Direct Care Total)	945,437	8,169	864	3,642	385	1,1811	1,249		
Canada (Direct Care Total)	34,482,779	231,234	671	81,646	237	317,464	921		

Source: CIHI. (n.d.). Regulated Nurses: Canadian Trends, 2007-2011. Ottawa, ON: CIHI.

Note: The urban-rural breakdown of these data and comparable 2010 data are not available. Data were suppressed in accordance with CIHI's privacy policy; small cell size.