



Nursing Practice In Rural and Remote New Brunswick: An Analysis of CIHI's Nursing Database

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Highlights

- In the period between 2003 and 2010, the regulated nursing workforce in New Brunswick grew by 14.1%, reaching a total of 10,973 regulated nurses. The greatest increase in the regulated nursing workforce during this time was in NPs.¹
- In 2010, 23.6% of the regulated nursing in New Brunswick was located in rural areas of the province where 38.9% of the population lived.
- In urban areas, the nurse-to-population ratio increased for RNs, LPNs and NPs. In rural areas it decreased for RNs, but increased for LPNs and NPs.
- Fewer rural than urban RNs work full-time. In 2010, rural LPNs had the highest proportion holding casual positions.
- The proportion of RNs in rural New Brunswick with baccalaureate degrees increased from 2003 to 2010. The proportion of rural RNs with Master's degrees also increased during this time, however this proportion remained higher in urban than in rural New Brunswick.
- Between 2003 and 2010, the proportion of rural nurses working in primary healthcare settings increased from 9.8% to 22.6%. The greatest increase was in rural NPs (from 0% to 51.9%).
- The majority of nurses educated in New Brunswick stay in New Brunswick. In 2010, 85% of RNs, 90% of LPNs and 77% of NPs received their initial education in New Brunswick.
- Registered Psychiatric Nurses (RPNs) are not authorized to practice in New Brunswick.

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

¹ Nurse Practitioners (NPs) were first authorized and regulated to work in New Brunswick in 2002.

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 New Brunswick (NB). It provides an overview of the regulated nursing workforce in New Brunswick, 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, New Brunswick had a population of 751,173. As of 2011, the rural population was 292,478, which accounted for 38.9% of the total and represented a decrease of 3.5% since 2006. Table 1 lists population by health region.

Table 1. Population by health region, 2011, NB

Health Region Name	Population
Moncton	207,009
Saint John	176,222
Fredericton	175,047
Edmundston	48,805
Campbelton	26,114
Bathurst	77,187
Miramichi	45,071

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

Nursing Database Analysis: Findings

1. Nursing Workforce Numbers in New Brunswick

In the period between 2003 and 2010, New Brunswick's overall regulated nursing workforce grew from 9,621 to 10,973, which represented a 14.1% increase. When this increase was examined in terms of nurse type, we found that the total number of RNs increased from 7,186 to 8,102 (up 12.7%), the total number of LPNs increased from 2,429 to 2,802 (up 15.4%), and the total number of NPs increased from 6 to 69. Nurse Practitioners (NPs) were first authorized and regulated to work in New Brunswick in 2002.

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 10.9% and 2600%, respectively), and the number of rural RNs decreased (down 21.2%). 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 New Brunswick in 2010, 33.1% of RNs, 20.2% of LPNs, and 39.1% of NPs worked in rural communities. When we considered the rural regulated nursing workforce with respect to the rural population, we found that 23.6% of New Brunswick nurses served 38.9% of New Brunswick residents. The situation in urban locations was reversed; here we found that 76.4% of the regulated nursing workforce served 61.1% of the population.

2. Nurse-to-Population Ratios

Nurse-to-population ratios represent the number of nurses per 100,000 population. In rural New Brunswick, the nurse-to-population ratios for RNs and LPNs were lower than in urban locations for both data years (2003 and 2010). Nurse-to-population ratios for NPs increased in both rural and urban areas, but remained low in 2010 (9.2 for both). 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, NB and Canada

Jurisdiction	RNs		LPNs	
	Urban	Rural	Urban	Rural
NB	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:

The regulated workforce in rural New Brunswick tended to be slightly older than in urban parts of the province. Table 3 provides information about the average ages of RNs and LPNs in urban and rural locations for 2003 and 2010. The average ages 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, NB and Canada

Jurisdiction	RNs				LPNs			
	Urban		Rural		Urban		Rural	
	2003	2010	2003	2010	2003	2010	2003	2010
NB	43.8	45.0	42.7	46.1	42.4	43.3	43.7	44.5
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 proportion 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 New Brunswick was lower than in urban New Brunswick. With the exception of rural RNs, the

proportions of male RNs and LPNs increased between 2003 and 2010.

In rural and urban New Brunswick, LPNs were the nurse types with the largest proportion of males. In 2010, 7.7% of LPNs in rural New Brunswick were male compared to 3.3% of RNs (see Figure 1). In the same year in urban New Brunswick, 12.8% of LPNs were male compared to 4.9% of RNs (see Figure 2).

Figure 1. Proportion male nurses, rural NB

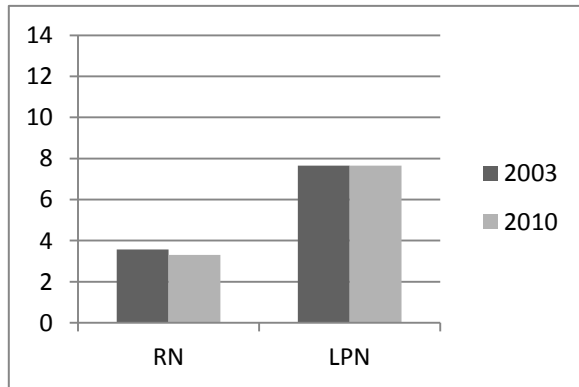
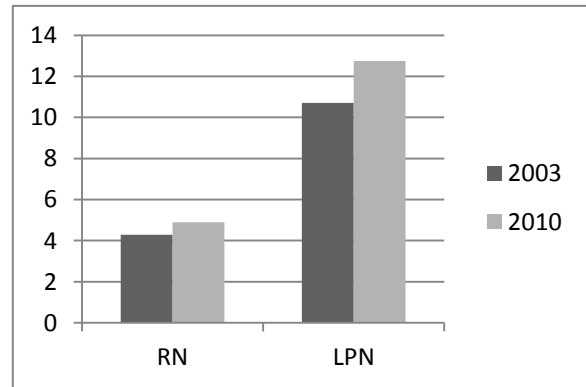


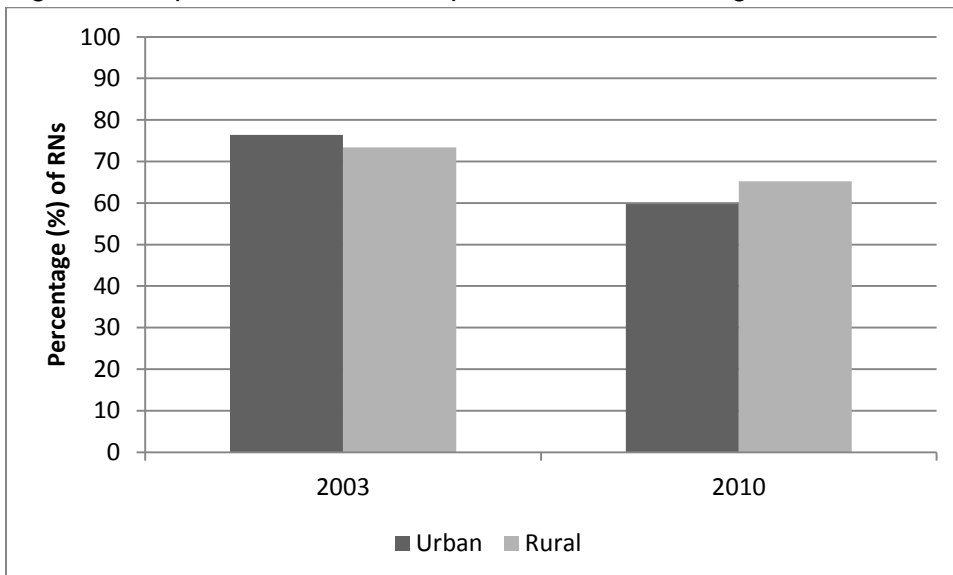
Figure 2. Proportion male nurses, urban NB



4. Education

In 2003, more urban RNs (76.4%) than rural RNs (73.4%) in New Brunswick had a diploma as their initial nursing education. As Figure 3 indicates, by 2010, this trend had reversed and more rural RNs (65.2%) than urban RNs (59.7%) had a diploma as initial nursing education. Overall, the proportion of RNs with diplomas as initial nursing education was decreasing in both rural and urban areas.

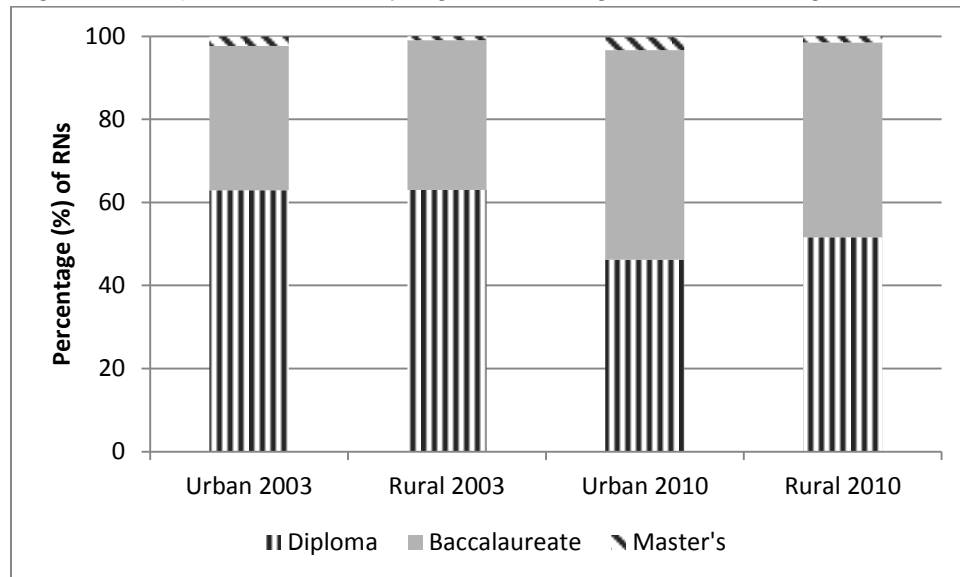
Figure 3. Proportion of RNs with diploma as initial nursing education, rural-urban, 2003-2010, NB



Typically, RNs working in urban areas had slightly higher levels of education than their rural counterparts. However, in New Brunswick, this trend was not very pronounced, and in 2003,

more rural than urban RNs had baccalaureate degrees. In 2010, 50.4% of urban New Brunswick RNs had baccalaureate degrees, compared to 46.9% of their rural counterparts. In the same year, 3.1% of urban RNs had obtained a Master’s degree, while 1.5% of rural RNs had. Overall, the level of education was increasing in rural and urban areas; the proportion of RNs with diplomas was decreasing, while the proportions with baccalaureate degrees and Master’s degrees were growing. Figure 4 compares highest nursing education categories for rural and urban RNs in New Brunswick for 2003 and 2010.

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



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, slightly more urban RNs were in full-time positions than their rural counterparts (61.6% compared to 59.2%). In the same year, the proportion of rural RNs in part-time positions was higher than for urban RNs (31.1% compared to 28.9%), and the proportion in casual positions was nearly the same for both rural and urban RNs (9.7% and 9.6%).

The proportion of RNs working full-time increased between 2003 and 2010 in both urban and rural locations, although this proportion remained lower for rural than for urban RNs. For both urban and rural RNs, the proportion in part-time positions decreased between 2003 and 2010.

The proportion of rural casual RN positions increased between 2003 and 2010 while this proportion decreased slightly in urban locations. In 2010, the proportion of rural RNs in part-time and casual positions was higher than it was for their urban counterparts.

In 2003, 100% of rural and urban NPs reported being in full-time positions. Between 2003 and 2010, for both urban and rural locations, the proportions of NPs in full-time positions decreased to 87.8% and 85.2% respectively. During this time, the proportion of NPs in part-time and casual positions increased.

More LPNs reported full-time employment 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 31.4% for rural locations and 33.2% for urban locations. Between 2003 and 2010, the proportion of urban and rural LPNs in full-time positions increased while part-time and casual employment decreased.

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

	Urban			Rural		
	%FT	%PT	%Casual	%FT	%PT	%Casual
2003						
RNs	61.6	28.9	9.6	59.2	31.1	9.7
NPs	100.0	0.0	0.0	100	0.0	0.0
LPNs	46.0	33.2	20.8	50.3	31.4	18.3
2010						
RNs	65.7	25.0	9.3	59.6	29.3	11.1
NPs	87.8	7.3	4.9	85.2	7.4	7.4
LPNs	54.3	32.8	12.9	54.4	29.0	16.6

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 New Brunswick who worked for more than one employer decreased from 12.3% to 11.7%. During the same time period, this proportion also decreased for urban RNs, from 12.0% in 2003 to 9.2% in 2010. More rural than urban RNs reported multiple employers in 2010.

Data for NPs with multiple employers were not available for 2003. In 2010, 11.9% of urban and 18.5% of rural NPs reported having multiple employers.

The proportion of rural LPNs working for more than one employer decreased slightly between 2003 and 2010 from 13.5% to 9.5%. Over the same time period, the proportion of urban LPNs working for multiple employers also decreased, from 11.1% to 7.2%. In 2010, more rural than urban LPNs had more than one employer.

Place of Work:

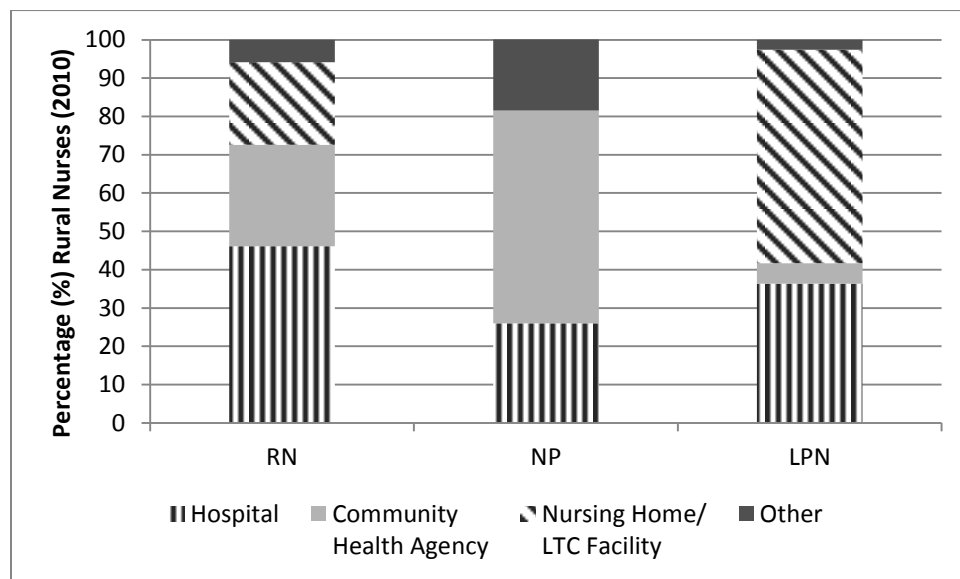
The ‘place of work’ NDB data element consists of approximately fifteen sub-elements. Enumeration of these sub-elements by urban-rural nurses and jurisdiction produces a large

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**

Figure 5 shows who worked in rural New Brunswick hospitals, community agencies, nursing homes/LTC facilities and other settings in 2010. The proportion of rural RNs working in hospital settings decreased from 68.8% in 2003 to 46.1% in 2010. Over the same time period, the proportion of rural RNs working in community health agencies and nursing homes/LTC facilities increased from 7.8% to 26.5%, and 16.2% to 21.5%, respectively. In urban locations between 2003 and 2010, the proportions of RNs in community health agencies increased, while the proportion working in hospitals, nursing homes/LTC facilities, and other settings all decreased slightly. In 2010, 72.7% of urban RNs worked in hospital settings compared to 46.1% of their rural counterparts.

Figure 5. Primary place of work, rural nurses, 2010, NB



Note: Percentages computed excluding 'not stated' category.

In New Brunswick, only primary healthcare or Family All Ages NPs are regulated; therefore, NPs in New Brunswick do not work in acute care settings as they are not authorized to care for patients admitted to these facilities. The following data reflects the small number of NPs who

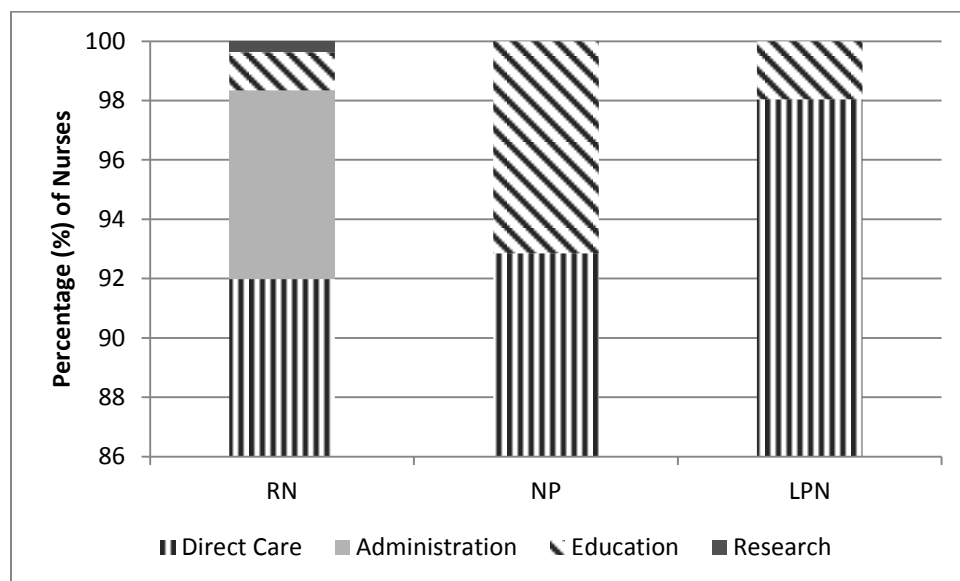
were employed in emergency departments and ambulatory services. In 2003, all NPs reported working in hospitals. However, by 2010, the majority of rural NPs worked in community health agencies (55.6%). The proportion of rural NPs working in hospitals decreased from 100% to 25.9% over this time period. In urban settings, the proportion of NPs working in hospitals stayed around 40% between 2003 and 2010. The proportions of urban NPs working in community health agencies decreased (40.0% to 14.3%), while the proportion working in nursing homes/LTC facilities and other settings increased.

The proportion of rural LPNs working in hospitals changed very little between 2003 and 2010. The proportion of rural LPNs working in community health agencies increased from 1.7% to 5.4%, while the proportion working in nursing homes/LTC facilities decreased from 61.7% to 55.7%. In urban areas, the proportion of LPNs working in hospitals increased, the proportion working in community health agencies stayed the same, and the proportion working in nursing homes/LTC facilities decreased.

Primary Area of Responsibility:

Figure 6 illustrates nurses' primary areas of responsibility in rural New Brunswick in 2010. The proportion of rural RNs in direct care remained at 92% between 2003 and 2010. Urban RNs in direct care decreased slightly from 90.5% to 88.8%. In 2003, there was a marginally greater proportion of rural than urban RNs in direct care (91.7% compared to 90.5%), and this gap widened by 2010 to 92.0% in rural compared to 88.8% in urban areas.

Figure 6. Primary area of responsibility, rural nurses, 2010, NB



Note: Percentages computed excluding 'not stated' category.

The proportions of RNs in administration stayed at ~6% between 2003 and 2010 for both urban and rural areas. Proportions of RNs in education decreased between 2003 and 2010 for both urban and rural RNs. In 2003 and 2010, there were larger proportions of rural RNs than urban RNs in administration, and there were larger proportions of urban RNs than rural RNs in

education and research.

Between 2003 and 2010, the proportion of rural NPs working in direct care decreased from 100% to 92.9%. Conversely, the proportion of urban NPs working in direct care increased from 60.0% to 88.1%. In urban settings, the proportion of NPs reporting administrative and education roles decreased during this time. No NPs reported research as a primary responsibility in 2003 or 2010.

The proportion of rural LPNs in direct care held steady at 98% between 2003 and 2010. The proportion of urban LPNs in direct care decreased slightly between 2003 and 2010 from 95.4% to 93.8%. Very few rural and urban LPNs reported working in administration, and none reported working in research (<2%). LPNs reporting education as a primary responsibility increased in urban and rural areas, from 0.1% to 5.4% and 0.0% to 2.0%, respectively.

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 New Brunswick increased from 9.8% in 2003 to 22.6% in 2010. Between 2003 and 2010, the proportions of rural nurses practicing in PHC settings increased for each type of nurse (see Figure 7). The proportion of rural RNs in PHC settings increased from 12.5% to 31.2%, the proportion of rural NPs increased from 0.0% to 51.9%, and the proportion of rural LPNs increased from 2.9% to 6.7%.

Similarly, between 2003 and 2010, the total numbers of regulated nurses working in urban PHC settings increased. The proportion of urban RNs in PHC settings increased from 10.7% to 13.0%, the proportion of urban NPs increased from 0.0% to 23.8%, and the proportion of urban LPNs increased from 4.1% to 5.4% (see Figure 8).

Figure 7. Nurses in PHC settings, rural, NB

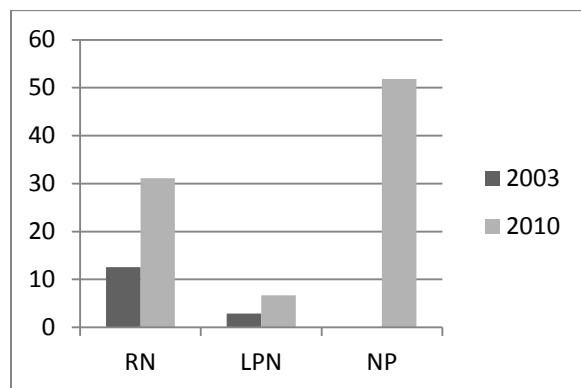
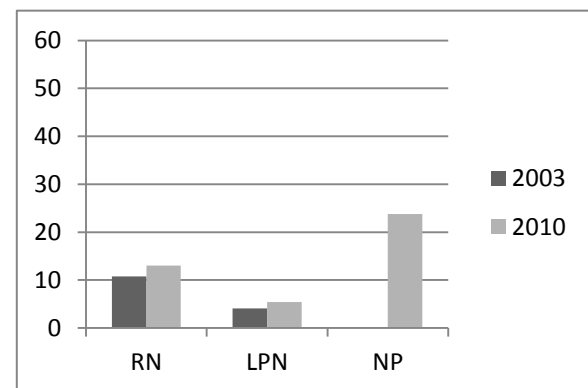


Figure 8. Nurses in PHC settings, urban, NB



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).² Generally, in Canada, larger proportions of urban than rural nurses are ING.

In New Brunswick, between 2003 and 2010, the proportion of urban RNs who were ING stayed ~1%, and the proportion of rural RNs who were ING increased from 1.2% 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 New Brunswick-educated nurses – both rural and urban – were Ontario and Nova Scotia. 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, NB

	RNs		LPNs		NPs	
	2003	2010	2003	2010	2003	2010
Total number of nurses in NB	7,186	8,102	2,429	2,802	6	69
Received initial nursing education in NB	8,078	8,754	2,383	2,725	13	76
Proportion retained ³	76% (n=6,171)	79% (n=6,917)	93% (n=2,216)	93% (n=2,531)	46% (n=6)	70% (n=53)
Number not retained ⁴	1,907	1,837	167	194	7	23
Proportion working in urban areas of other jurisdictions ⁵	69%	84%	79%	76%	43%	70%
Proportion working in rural areas of other jurisdictions ⁶	12%	16%	20%	24%	†	30%
Top two destinations	ON (30%) NS (22%)	ON (27%) NS (24%)	ON (38%) NS (31%)	NS (32%) ON (29%)	†	†
Proportion registered in NB who received initial nursing education elsewhere	14% (n=1,014)	15% (n=1,184)	9% (n=213)	10% (n=271)	0% (n=0)	23% (n=16)
Top three jurisdictions other than NB where initial nursing education was received	NS (29%) QC (27%) ON (17%)	NS (30%) QC (24%) ON (15%)	NS (29%) ON (23%) QC (23%)	QC (35%) ON (20%) NS (20%)	n/a	†

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

² Also known as ‘internationally educated nurses’ (IENs).

³ This is the proportion of those nurses who received their initial education in New Brunswick who are also registered in New Brunswick.

⁴ This is the proportion of those nurses who received their initial education in New Brunswick who are registered in jurisdictions other than New Brunswick.

⁵ This refers to a percentage of those nurses who were not retained (i.e., received initial education in New Brunswick but are registered in jurisdictions other than New Brunswick).

⁶ 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

New Brunswick Synopsis

Year 2010	RNs		LPNs		NPs	
	Urban	Rural	Urban	Rural	Urban	Rural
Number of nurses employed in nursing	6,468	1,634	1,874	928	42	27
Number of nurses per 100,000 population	1,410	559	409	317	†	†
Average age (years)	45	46	43	45	†	†
Gender (%)	Male 5	3	13	8	†	†
	Female 95	97	87	92		
Place of work (%)	Hospital 73	46	65	36	43	26
	Community Health Agency 8	27	3	5	14	56
	Nursing Home/LTC Facility 7	22	29	56	7	0
Primary area of responsibility (%)	Direct Care 89	92	94	98	88	93
	Administration 6	6	1	0	0	0
	Education 5	1	5	2	12	7
	Research 1	0	0	0	0	0
Full-time/part-time status (%)	Full-Time 66	60	54	54	88	85
	Part-Time 24	29	33	29	7	7
Position (%)	Staff 79	81	90	91	7	11
	Managerial 11	14	0	0	2	0
	Other 10	5	10	9	90	89
Highest education in nursing (%)	Diploma 46	52	n/a	n/a	0	0
	Bachelor's 50	47			14	30
	Master's 3	2			83	70
Place of graduation (%)	Canada 99	97	99	100	95	96
	Foreign 1	3	1	0	5	4

† no urban/rural allocations of NPs were available.

APPENDIX 2

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

Health Region Name	Pop Estimates	RNs		LPNs		All Reg Nurses	
		Direct Care Counts	Per 100,000 Population	Direct Care Counts	Per 100,000 Population	Direct Care Counts	Per 100,000 Population
Moncton	207,009	2,067	999	577	279	2,644	1,277
Saint John	176,222	1,747	991	680	386	2,427	1,377
Fredericton	175,047	1,442	824	536	306	1,978	1,130
Edmundston	48,805	533	1,092	195	400	728	1,492
Campbelton	26,114	389	1,490	176	674	565	2,164
Bathurst	77,187	742	961	386	500	1,128	1,461
Miramichi	45,071	397	881	163	362	560	1,242
New Brunswick (Direct Care Total)	755,455	7,317	2,713	2,713	359	10,030	1,328
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.