



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

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Highlights

- In the period between 2003 and 2010, the regulated nursing workforce in Ontario grew by 14.1%, reaching a total of 127,090 regulated nurses. The greatest increase in the regulated nursing workforce during this time was in NPs (200.0%).
- In 2010, 7.2% of the regulated nursing workforce in Ontario was located in rural areas of the province where 11.3% of the population lived.
- In urban areas, the nurse-to-population ratio held steady for RNs and increased for RPNs. In rural areas it decreased for RNs, but increased for RPNs.
- The numbers of RNs in rural Ontario achieving baccalaureate degrees increased from 2003 to 2010. The number of rural RNs achieving Master's degrees also increased during this time, however this proportion remained higher in urban than in rural Ontario.
- In 2010, fewer rural than urban RNs worked full-time. Rural RNs held the highest proportion of casual positions.
- Between 2003 and 2010, the number of rural nurses working in primary healthcare settings increased from 17.0% to 22.7%. The greatest increase was in rural NPs (from 61.9% to 86.3%).
- Although over 90% of nurses educated in Ontario stayed in Ontario, in 2010, 19% of RNs, 7% of RPNs and 16% 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 registered practical nurses (RPNs) were included.

This document reports key findings from the NDB analysis for Ontario. It provides an overview of the regulated nursing workforce in Ontario, 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, Ontario had a population of 12,851,857 (Statistics Canada, 2012). In 2011, the majority of Ontario's population (88.7%) lived in a census metropolitan area (CMA) or census agglomeration (CA) (Statistics Canada, 2012). Of the 2.6 million Ontario residents who lived in non-metropolitan areas, 1.4 million lived in rural and small towns (Rural Ontario Institute, 2013a). According to the Rural Ontario Institute (2013b), Ontario's RST population has grown over each census period since 1986. However, as their populations have increased, the re-classifications of non-metropolitan centres have made it challenging to measure these trends over time. Between 2006 and 2011, the proportion of Ontario residents living in rural areas decreased from 11.8% to 11.3%. However, Ontario's total RST population increased from 1,440,139 to 1,448,688 (an increase of 0.6%) (Rural Ontario Institute, 2013b; Statistics Canada, 2012).

Table 1 lists population by Local Health Integration Network (LHIN).

Table 1. Population by Local Health Integration Network, 2011, ON

LHIN	Population	% of Ontario Population
Erie St. Clair	643,391	4.8
South West	962,539	7.2
Waterloo Wellington	758,084	5.7
Hamilton Niagara Haldimand Brant	1,417,408	10.6
Central West	856,656	6.4
Mississauga Halton	1,179,791	8.8
Toronto Central	1,195,032	8.9
Central	1,768,500	13.2
Central East	1,572,453	11.7
South East	491,996	3.7
Champlain	1,261,493	9.4
North Simcoe Muskoka	461,737	3.4
North East	564,050	4.2
North West	239,816	1.8

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

Nursing Database Analysis: Findings

1. Nursing Workforce Numbers in Ontario

In the period between 2003 and 2010, Ontario's overall regulated nursing workforce grew from 111,411 to 127,090 (up 14.1%). When this increase was examined in terms of nurse type, we found that the total number of RNs increased from 85,187 to 95,185 (up 11.7%), the total number of RPNs increased from 25,730 to 30,423 (up 18.2%), and the total number of NPs increased from 494 to 1,482 (up 200.0%).

The changes in the regulated nursing workforce were also examined in terms of urban and rural comparisons. The numbers of urban RNs, RPNs, and NPs all increased between 2003 and 2010. In rural locations, only the number of NPs increased (up 116.2%), and the numbers of rural RNs and RPNs both decreased. With the exception of the decrease in rural RNs and rural RPNs, these changes generally reflect the wider trends found at the national scale.

Of the total regulated nursing workforce in Ontario in 2010, 6.0% of RNs, 10.5% of RPNs, and 15.3% of NPs worked in rural communities. When we considered the rural regulated nursing workforce with respect to the rural population, we found that 7.2% of Ontario nurses served 11.3% of Ontario residents. The situation in urban locations was reversed; here we found that 92.8% of the regulated nursing workforce served 88.7% of the population (Statistics Canada, 2012).

2. Nurse-to-Population Ratios

Nurse-to-population ratios represent the number of nurses per 100,000 population. In rural Ontario, the nurse-to-population ratios for RNs and RPNs were lower than in urban locations for both data years (2003 and 2010). Table 2 illustrates the increase in nurse-to-population ratios for rural and urban RNs and RPNs. The increases in urban nurse-to-population ratios (for both RNs and RPNs) were larger than increases in rural locations.

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

Jurisdiction	RNs		RPNs	
	Urban	Rural	Urban	Rural
ON	1.2	0.3	8.6	1.0
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:

Generally speaking, the regulated workforce in rural Ontario was older than in urban parts of the province. Table 3 provides information about the average ages of RNs and RPNs in urban and rural locations for 2003 and 2010. The average ages have increased for RNs and RPNs working in both urban and rural locations.

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

Jurisdiction	RNs				RPNs			
	Urban		Rural		Urban		Rural	
	2003	2010	2003	2010	2003	2010	2003	2010
ON	45.0	46.3	46.4	48.9	44.5	44.0	45.3	45.7
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 (<8%) for all nurse types in both rural and urban locations. However, the proportion of male regulated nurses working in rural Ontario was lower than in urban Ontario. The proportions of male RNs and RPNs increased in both urban and rural locations between 2003 and 2010.

In rural Ontario, RNs and NPs were the nurse types with the largest proportion of males. In 2010, 3.5% of RNs and 3.5% of NPs in rural Ontario were male compared to 2.3% of RPNs (see Figure 1). By contrast, in urban Ontario, RPNs were the nurse type with the largest proportion of males. For example, in 2010 7.1% of RPNs in urban Ontario were male compared to 5.1% of RNs and 4.5% of NPs (see Figure 2).

Figure 1. Proportion male nurses, rural ON

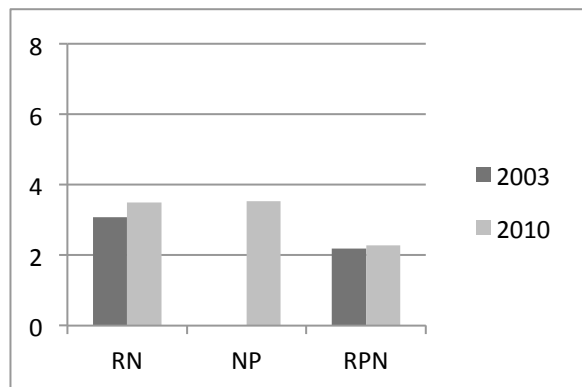
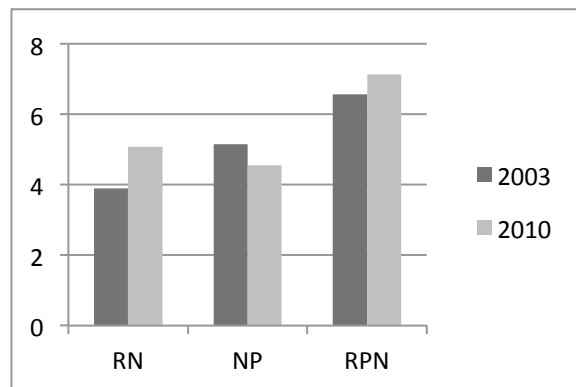


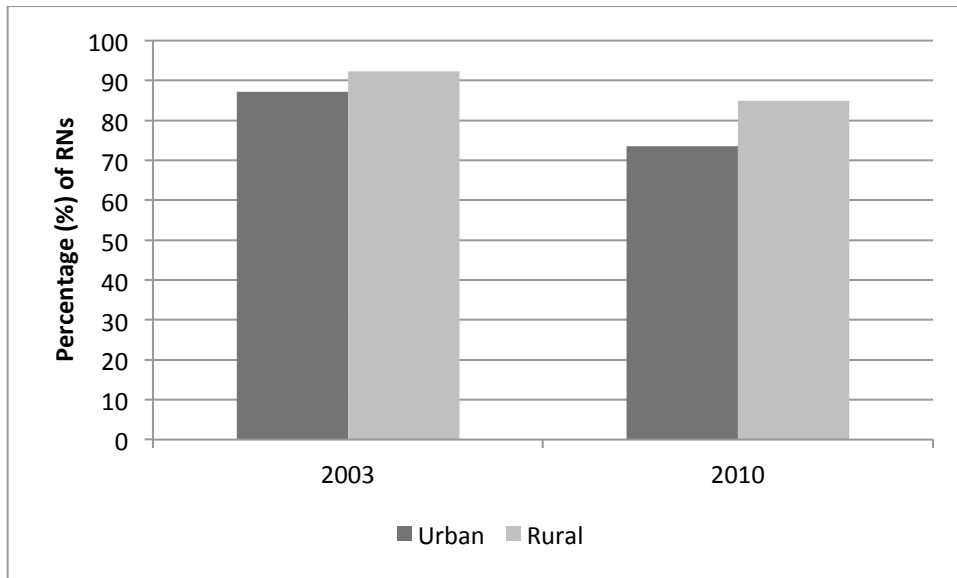
Figure 2. Proportion male nurses, urban ON



4. Education

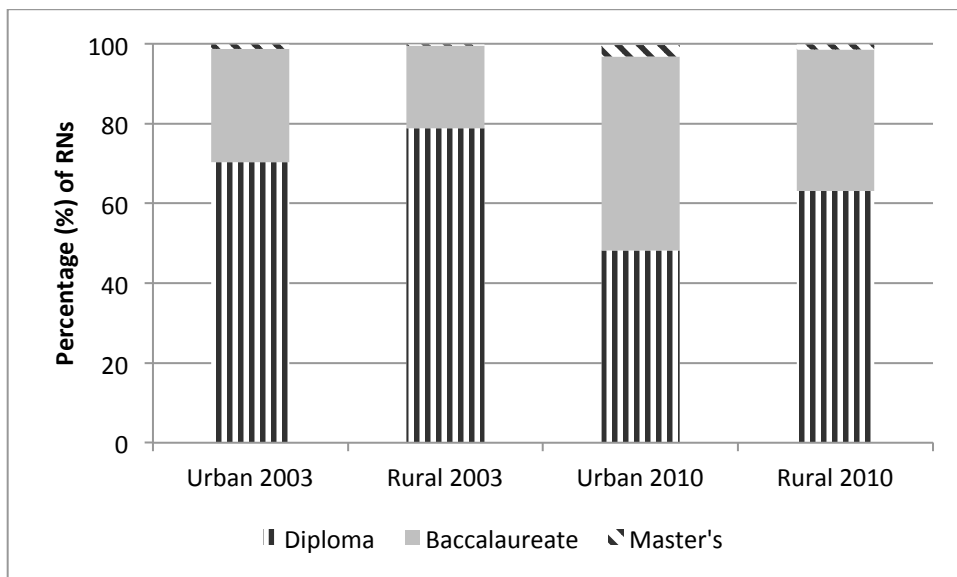
In 2003 and 2010, more rural RNs (92.3% and 84.9%, respectively) than urban RNs (87.2% and 73.6%, respectively) in Ontario had a diploma as their initial nursing education. As Figure 3 indicates, these proportions have decreased, a trend that has been observed for rural and urban RNs across Canada (exception: no information for Quebec).

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



Typically, RNs working in urban areas have achieved higher levels of education than their rural counterparts. For example, in 2003, 22.3% of urban Ontario RNs had baccalaureate degrees, compared to 14.7% of their rural counterparts. In the same year, 2.1% of urban RNs had obtained a Master's degree, while less than 0.6% of rural RNs had. By 2010, proportions of rural nurses with education beyond a diploma had increased. In this year, 25.4% of rural RNs had a baccalaureate degree and 1.5% had a Master's degree. Figure 4 compares highest nursing education categories for rural and urban RNs in Ontario for 2003 and 2010.

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



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.

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

	Urban			Rural		
	%FT	%PT	%Casual	%FT	%PT	%Casual
2003						
RNs	59.3	32.4	8.4	50.3	41.7	8.0
NPs	71.1	24.6	4.3	79.8	18.1	2.1
RPNs	59.6	32.5	7.8	51.9	39.6	8.5
2010						
RNs	66.2	25.7	8.2	59.6	31.2	9.2
NPs	83.1	14.1	2.8	83.3	14.1	2.6
RPNs	58.4	32.9	8.8	54.5	37.1	8.4

In 2003, more urban RNs were in full-time positions than their rural counterparts (59.3% compared to 50.3%). In the same year, the proportion of rural RNs in part-time positions was higher than for urban RNs (41.7% compared to 32.4%), and the proportion in casual positions was nearly the same for both rural and urban RNs (8.0% and 8.4%).

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 in urban locations. In 2010, the proportion of rural RNs in part-time positions was higher than it was for their urban counterparts, while the proportion in casual positions was nearly the same.

In 2003 and 2010, more rural NPs were in full-time positions than their urban counterparts (79.8% compared to 71.1% in 2003, and 83.3% compared to 83.1% in 2010). Between 2003 and 2010, for both urban and rural locations, the proportions of NPs in full-time positions increased and the proportion of part-time NP positions decreased. Over the same time period, the proportion of casual NP employment decreased in urban locations, while it increased in rural locations.

More RPNs reported full-time employment than part-time or casual status in both 2003 and 2010, in rural and urban areas. The proportion of RPNs in part-time positions in 2003 was 39.6% for

rural locations and 32.5% and urban locations. Between 2003 and 2010, the proportion of urban RPNs in full-time positions decreased, while the same proportion in rural locations increased. Part-time and casual employment increased for urban RPNs between 2003 and 2010, while these proportions decreased for rural part-time and casual RPNs.

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 Ontario who worked for more than one employer increased from 9.9% to 11.1%. During the same time period, this proportion increased for urban RNs from 10.3% in 2003 to 13.2% in 2010. More urban than rural RNs reported multiple employers in 2010.

In urban Ontario, the proportion of NPs who worked for multiple employers decreased from 19.8% to 18.4% between 2003 and 2010. This proportion increased for rural NPs from 17.1% to 20.3% during the same time period. In 2010, more rural than urban NPs reported multiple employers.

The proportion of rural RPNs who worked for more than one employer increased slightly between 2003 and 2010 from 12.1% to 12.7%. Over the same time period, the proportion of urban RPNs who worked for multiple employers increased from 12.7% to 16.5%. In 2010, more urban than rural RPNs had more than one employer.

Place of Work:

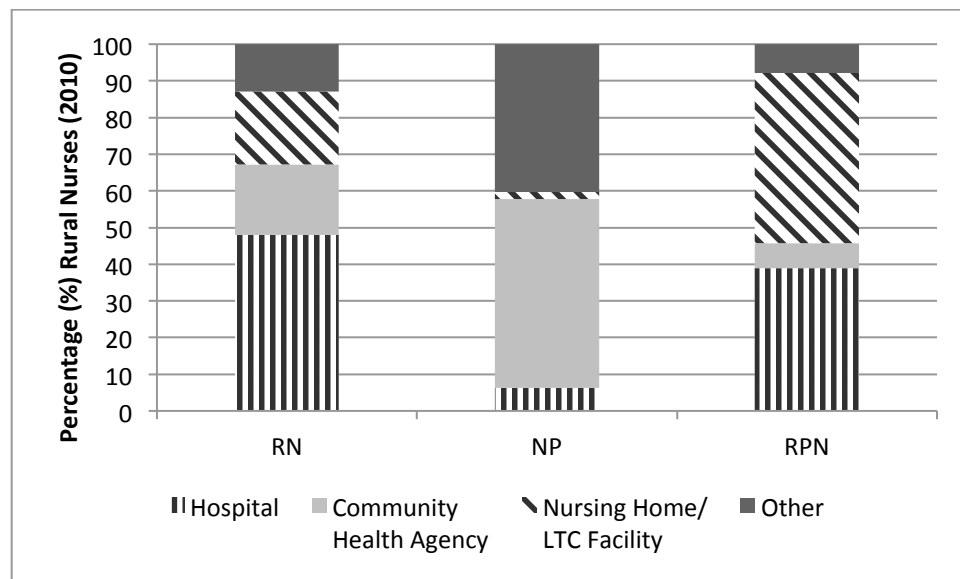
The 'place of work' NDB data element consists of approximately fifteen sub-elements. Enumeration of these sub-elements by urban-rural nurses and jurisdiction produced a large number of small cell sizes. As the numbers in these small cell sizes were suppressed, it was necessary to employ the CIHI grouping 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 Ontario hospitals, community agencies, nursing homes/LTC facilities and other settings in 2010. The proportion of rural RNs working in hospital settings decreased slightly from 48.7% in 2003 to 48.0% in 2010. Over the same time period the proportion of rural RNs working in community health agencies and nursing homes/LTC facilities increased from 17.0% to 19.3%, and 18.7% to 19.9%, respectively. In urban locations, the

proportions of RNs in hospitals, nursing homes/LTC facilities, and community health agencies all increased while the proportion working in other settings decreased slightly between 2003 and 2010. In 2010, 66.4% of urban RNs worked in hospital settings compared to 48.0% of their rural counterparts.

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



Note: Percentages computed excluding 'not stated' category.

In both 2003 and 2010, a large proportion of rural NPs worked in community health agencies, increasing from 49.0% in 2003 to 51.6% in 2010. The proportion of rural NPs working in hospitals decreased from 11.5% to 6.3% over this time period, as did proportion of rural NPs working in nursing homes/LTC facilities (1.9% to 1.8%). In urban settings, the proportion of NPs working in hospitals increased from 23.8% to 43.9% between 2003 and 2010. The proportions of urban NPs working in community health agencies, nursing homes/LTC facilities and other settings each decreased between 2003 and 2010.

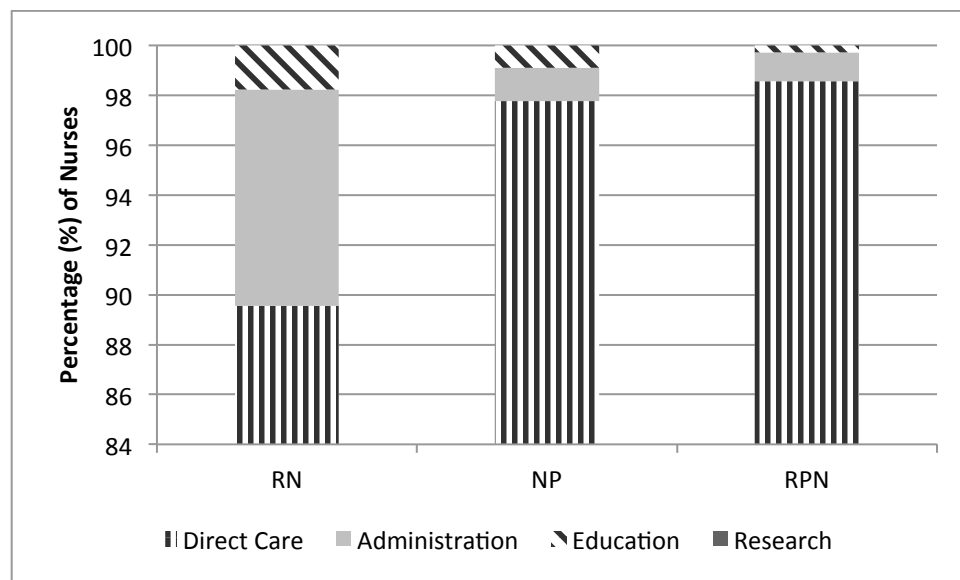
The proportion of rural RPNs working in hospitals decreased between 2003 and 2010, from 43.6% to 38.9%, as did the proportion of rural RPNs working in community health agencies, from 7.0% to 6.8%. Meanwhile, the proportion working in nursing homes/LTC facilities increased from 39.4% to 46.6%. In urban areas, the proportion of RPNs working in community health agencies and nursing homes/LTC facilities increased while the proportion working in hospitals decreased between 2003 and 2010.

Primary Area of Responsibility:

Figure 6 illustrates nurses' primary areas of responsibility in rural Ontario in 2010. The proportion of rural RNs in direct care increased between 2003 and 2010 from 88.6% to 89.6%. Urban RNs in direct care also increased from 87.3% to 90.7%. In 2003, there was a slightly greater proportion of rural than urban RNs in direct care (88.6% vs. 87.3%), however in 2010 there was a greater proportion of urban RNs in direct care than rural (90.7% vs. 89.6%). The proportions of

RNs in administration increased between 2003 and 2010 for both urban and rural areas. Conversely, proportions of RNs in education decreased between 2003 and 2010 for both urban and rural RNs. In 2003 and 2010, there was a larger proportion of rural RNs than urban RNs in administration, and there was a larger proportion of urban RNs than rural RNs in education and research.

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



Note: Percentages computed excluding 'not stated' category.

Between 2003 and 2010, the proportion of rural NPs working in direct care increased from 92.4% to 97.8%. Similarly, the proportion of urban NPs working in direct care increased from 93.3% to 96.0%. In urban settings, the proportion of NPs working in administrative roles increased slightly during this time. The proportion of NPs reporting education as a primary responsibility decreased for both urban and rural NPs between 2003 and 2010, and in 2010 no NPs reported research as a primary responsibility.

The proportion of RPNs in direct care increased slightly between 2003 and 2010 from 96.7% to 98.0% in urban locations and from 97.2% to 98.6% in rural areas. Very few rural and urban RPNs reported working in administration, education, and research roles (<2%).

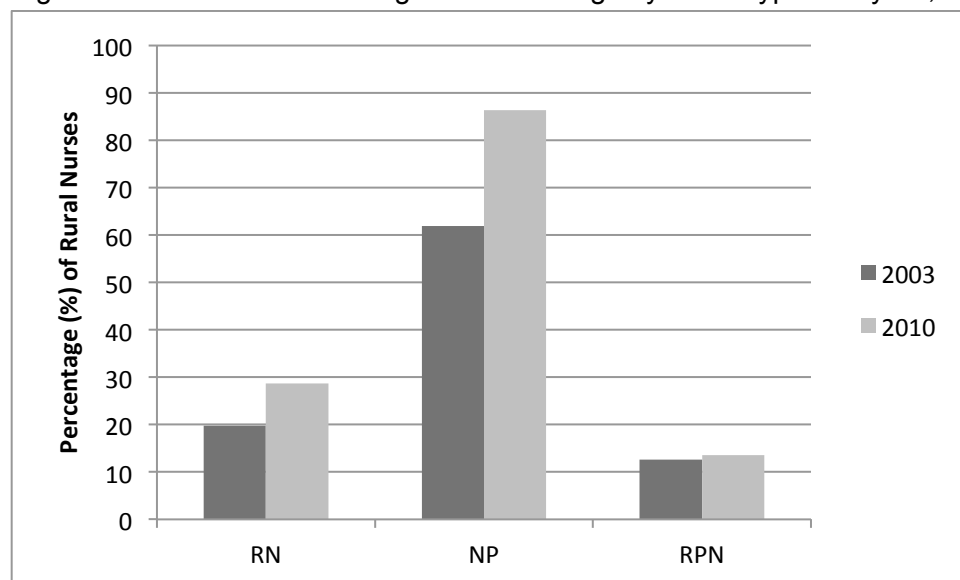
6. Work in Primary Health Care Settings

Primary Health Care (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 Ontario increased from 17.0% in 2003 to 22.7% 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 19.7% to 28.6%, the proportion of rural NPs increased from 61.9% to 86.3%, and the proportion of rural RPNs increased from 12.6% to 13.6%.

Figure 7. Rural nurses working in PHC settings by nurse type and year, ON



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

Similarly, between 2003 and 2010, the total numbers of regulated nurses working in urban PHC settings increased among RNs and RPNs. However, the proportion of urban NPs working in PHC settings decreased from 53.0% to 47.3% despite the increase in the total number of NPs in PHC settings (from 389 to 1,255).

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 proportions of urban than rural nurses are ING.

In Ontario, between 2003 and 2010, the proportion of urban RNs who were ING increased from 12.0% to 12.7%, and the proportion of rural RNs who were ING decreased from 3.2% to 3.0%.

Interprovincial:

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

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

Table 5. Interprovincial migration for RNs, RPNs and NPs, 2003- 2010, ON

	RNs		RPNs		NPs	
	2003	2010	2003	2010	2003	2010
Total number of nurses in ON	85,187	95,185	25,730	30,423	494	1,482
Received initial nursing education in ON	75,495	84,165	24,698	29,082	431	1,339
Proportion retained ²	91% (n=68,852)	92% (n=77,344)	97% (n=23,977)	97% (n=28,200)	96% (n=412)	93% (n=1,245)
Number not retained ³	6,645	6,821	721	882	19	94
Proportion working in urban areas of other jurisdictions ⁴	77%	85%	81%	80%	47%	69%
Proportion working in rural areas of other jurisdictions ⁵	13%	14%	18%	20%	53%	30%
Top two destinations	BC (39%) AB (27%)	BC (37%) AB (26%)	BC (39%) AB (21%)	AB (31%) BC (30%)	AB (54%) --	AB (26%) NWT/NU (24%)
Proportion registered in ON who received initial nursing education elsewhere	19% (n=16,255)	19% (n=17,720)	7% (n=1,737)	7% (n=2,214)	17% (n=82)	16% (n=237)
Top three jurisdictions other than ON where initial nursing education was received	ING (60%) QC (16%) NS (5%)	ING (65%) QC (14%) NS (4%)	ING (49%) QC (14%) NS (10%)	ING (63%) QC (12%) NL (6%)	ING (30%) QC (22%) MB (13%)	ING (32%) QC (22%) MB (9%)

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 Ontario who are also registered in Ontario.

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

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

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

Ontario Synopsis

	Year 2010		RNs		RPNs		NPs	
			Urban	Rural	Urban	Rural	Urban	Rural
	Number of nurses employed in nursing	89,437	5,748	27,231	3,192	1,255	227	
Number of nurses per 100,000 population	784	397	239	220	†	†		
Average age (years)	46	49	44	46	†	†		
Gender (%)	5 Male 95 Female	4 96	7 93	2 98	5 95	4 96		
Place of work (%)	Hospital Community Health Agency Nursing Home/LTC Facility	66 16 8	46 12 36	39 7 47	44 31 3	6 52 2		
Primary area of responsibility (%)	Direct Care Administration Education Research	91 7 2 0	98 2 0 0	99 1 0 0	96 2 2 0	98 1 1 0		
Full-time/part-time status (%)	Full-Time Part-Time	66 31	58 33	55 37	83 14	83 14		
Position (%)	Staff Managerial Other	77 6 18	88 0 12	87 0 13	5 2 93	5 1 94		
Highest education in nursing (%)	Diploma Bachelor's Master's	58 38 4	n/a	n/a	†	†		
Place of graduation (%)	Canada Foreign	87 13	95 5	99 1	94 6	98 2		

† 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		RPNs		All Reg Nurses	
		Direct Care Counts	Per 100,000 Population	Direct Care Counts	Per 100,000 Population	Direct Care Counts	Per 100,000 Population
Erie St. Clair	643,391	4,023	625	1,704	265	5,727	890
South West	962,539	7,919	823	2,879	299	10,798	1,122
Waterloo Wellington	758,084	3,768	497	1,720	227	5,488	724
Hamilton Niagara Haldimand Brant	1,417,408	9,435	666	3,616	255	13,051	921
Central West	856,656	2,405	281	833	97	3,238	378
Mississauga Halton	1,179,791	5,206	441	1,342	114	6,548	555
Toronto Central	1,195,032	14,450	1,209	2,776	232	17,226	1,441
Central	1,768,550	6,531	369	2,345	133	8,876	502
Central East	1,572,453	6,888	438	3,009	191	9,897	629
South East	491,996	3,959	805	1,786	363	5,745	1,168
Champlain	1,261,493	9,434	748	3,181	252	12,615	1,000
North Simcoe Muskoka	461,737	2,792	605	1,317	285	4,109	890
North East	564,050	4,747	842	2,314	410	7,061	1,252
North West	239,816	2,247	937	1,046	436	3,293	1,373
Ontario (Direct Care Total)	13,372,996	83,804	627	29,868	223	113,672	850
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.