A cross-sectional study of 2014 work locations of Memorial University medical graduates: do we produce 'townies' or 'baymen'?

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Background

We examined the 2014 work locations of Memorial University of Newfoundland (MUN) medical graduates to identify the predictors of working in 1) Canada, 2) Newfoundland and Labrador (NL), 3) rural Canada, and 4) rural NL.

Methods

We linked data from graduating class lists, the alumni and post-graduate databases with Scott's Medical database to determine 2014 practice locations for MUN medical graduates (graduating classes from 1973 to 2008).

Results

In 2014, 1642 (88.1%) MUN graduates were working in Canada, 638 (34.2%) in NL, 217 (11.6%) in rural Canada, and 92 (4.9%) in rural NL. Graduates with rural backgrounds (OR=1.54, 95% CI=1.09-2.17); Newfoundlanders (OR=2.69, 95% CI=2.00-3.61); and who graduated in 1980s (OR=1.58, 95% CI=1.04-2.38), 1990s (OR=2.34, 95% CI=1.51-3.61), and 2000s (OR=1.71, 95% CI=1.12-2.61) were more likely to work in Canada than graduates with urban backgrounds, non-Newfoundlanders, and 1970s graduates, respectively. Physicians with rural backgrounds (OR=1.43, 95% CI=1.13-1.80), Newfoundlanders (OR=9.74, 95% CI=6.48-14.66), 2000s graduates (OR=2.37, 95% CI=1.66-3.38), and who did MUN residency (OR=4.97, 95% CI=3.86-6.39) were more likely to work in NL than physicians from urban backgrounds, non-Newfoundlanders, 1970s graduates and non-MUN residents, respectively. Graduates with rural backgrounds (OR=2.33, 95% CI=1.73-3.13), and family physicians (OR=3.61, 95% CI=2.62-4.96) were more likely to work in rural Canada than graduates from urban backgrounds,

and specialists, respectively. Physicians with rural backgrounds (OR=3.35, 95% CI=2.13-5.27), Newfoundlanders (OR=11.11, 95% CI=2.70-45.75), those who did MUN residency (OR=3.55, 95% CI=1.89-6.66), and family physicians (OR=3.68 95% CI=2.23-6.08) were more likely to work in rural NL than physicians from urban backgrounds, non-Newfoundlanders, non-MUN residents, and specialists, respectively.

Interpretation

Although MUN graduates comprise a growing proportion of the NL physician workforce, they form only one-fifth of the rural physician workforce in NL (unchanged since 2004). The study highlights the downstream work location impacts of the changing characteristics of medical school graduates in NL.

Part of the social accountability mandate of medical schools is to address the local, regional, and national physician workforce needs [1, 2]. Medical schools, through their "organization, location and mission play a significant role in rural health care by designing and facilitating medical training policies and programs that contribute to recruitment and retention efforts" [3]. Similar to the medical schools in northern Ontario and British Columbia today, the Memorial University of Newfoundland (MUN) medical school was established in 1967 to meet the local need for physicians, particularly in rural communities. Previously, we examined the 2004 work location of MUN medical alumni who had graduated between 1973 and 1998. We found that of the 1322 MUN graduates in our study, 1147 (86.8%) were working in Canada, 406 (30.7%) in NL, 167 (12.6%) in rural Canada and 81 (6.1%) in rural NL [4, 5]. Ten years later, we replicated the original study to examine the 2014 work locations of MUN graduates (with an additional 10 years of graduates included in the analysis), with the objective to identify the proportion and predictors of MUN medical graduates who in 2014, worked in Canada, in NL, in a rural community in Canada, and in a rural community in NL.

Physician resource policy in Canada has undergone substantial transformation in the new millennium. During the 1990s, in response to recommendations made in the Barer-Stoddart report, medical schools across Canada reduced their class sizes [6]. However, by 2014, most medical schools had not only reversed their cuts, but had increased their class sizes, surpassing the number of seats available in 1991 when Barer and Stoddart made their recommendation. In addition, new medical schools and satellite campuses of existing schools had been established. Additional residency seats were introduced for international medical graduates, as part of a series of measures to facilitate the entry of these physicians into the workforce [7, 8]. Efforts were also

made to reverse declining enrolments in family medicine [9, 10]. By 2013, reports of unemployment among certain specialties emerged [11].

Despite these changes, stories of physician shortages and poor retention continue [12, 13, 14, 15, 16, 17]. Local graduates (that is, students from the province, those who graduated from local medical schools, or those who completed residency training in the province) are seen as a key contributors to a stable physician workforce since they are more likely to work in smaller communities, remain longer in those communities, and be familiar with local culture and practices [2, 5, 18, 19, 20, 21, 22]. This study will update information about the contribution of the MUN medical school to physician supply in NL and in Canada. Moreover, as graduates from the first MUN classes start to retire, this study will shed light on how the new generation of MUN physicians, with their greater emphasis on work-life- balance [23, 24], will change the distribution of the physician workforce in NL and Canada.

Methods

This study was approved by the Newfoundland and Labrador Health Research Ethics Board. We created a database of all physicians who had graduated from Memorial University medical school by linking data from graduating class lists, the alumni database, and the postgraduate database with Scott's Medical Database. To link data, we used first, last, and maiden names, as well as sex, and graduation year, since this information is common to each data source. Names were removed from the data set before analysis.

Our sample frame included all MUN graduates from the class of 1973 (the first graduating class) to the class of 2008 (36 years). We selected a cut-off of 2008 to allow sufficient time for graduates to complete their residency training and enter practice. We excluded

physicians who had died or had retired because they are no longer part of the physician workforce. We also excluded military physicians because they may have limited ability to choose their practice location. Lastly, we excluded alumni who were sponsored by the Malaysian government and required to return home after completing their training. These data (military status, retirement, etc.) were included in the alumni database and in the Scott's Medical Database. We also reviewed publications from Memorial University (such as alumni magazines) to identify deceased and retired physicians.

In our primary analysis, we examined four outcomes related to physicians' 2014 work location: a) Work in Canada (yes/no); b) Work in NL (yes/no); c) Work in rural Canada (yes/no), and d) Work in rural NL (yes/no). Work locations were taken from the 2014 Scott's Medical Database, supplemented by the alumni database. Both databases are updated when new information is received. For this study, we used work locations reported in July 2014.

We coded communities as urban (10,000 or greater population) or rural (less than 10,000 population) based on their 2001 census population, including bedroom communities as part of larger urban centres, based on Statistics Canada metropolitan influence (MIZ) scores [25]. We used the 2001 census population and 10,000 population cut-off for rural communities to be consistent with our earlier study. Community size was verified using the Statistics Canada 2001 community profiles [26].

Other variables considered in the analyses were: sex (male/female), home community (rural/urban), from NL (yes/no), decade of graduation (70s, 80s, 90s, 2000s), completed some or all residency training at MUN (yes/no), specialty (family/specialist), and age at graduation (30 years or less/over 30 years). Hometowns, reported at the time of school admission and included on the graduating class lists, were used to determine whether graduates were from Canada, from

NL and from a rural community (hometown population less than 10 000). Specialty was based on the physician's certified specialization as recorded in the Scott's Medical Database, supplemented by the alumni database. We coded each physician as either a family physician (general practitioner or family medicine specialist) or a specialist.

Analyses were done using IBM SPSS Statistics software (version 20.0: IBM, Armonk, NY, U.S.A). After describing the characteristics of the sample using frequencies, we used chi square tests to identify differences between each outcome and the predictor variables, and multiple logistic regression analysis to identify significant ($p < 0.05$) predictors for each outcome. Potential predictors for each regression model were selected on the basis of the bi-variate analysis and co-linearity between predictor variables was examined *a priori*. In supplementary analyses, we used chi-square tests to compare physicians by graduation decade.

Results

Of the 2,099 physicians in the sample, we excluded 48 deceased, 10 retired, 19 physicians sponsored by Malaysian government, and 158 physicians whose 2014 location was unknown, leaving a total of 1864 physicians in the study sample. The majority of physicians in the study were male (54.1%), came from an urban hometown (71.7%), were from Canada (95.5%) and NL (74.3%), did at least some part of their postgraduate residency training at MUN (56.8%), were specialists (56.7%), and under 30 years old when they graduated (84.2%) (Table 1). The mean age at graduation was 26.54 years. The majority (88.1%) were working in Canada in 2014. Over one-third of the physicians (34.2%) were working in NL, 11.6% in rural communities in Canada and 4.9% in rural communities in NL.

Compared to those working outside Canada, a significantly larger proportion of MUN graduates working in Canada were female, from rural backgrounds, from Canada, from NL, had graduated in the 1990's, and had done at least some of their post-graduate residency training at MUN (Table 2). After controlling for other predictors, rural graduates were 1.54 times more likely than urban graduates to work in Canada in 2014 and physicians from NL were 2.69 times more likely to work in Canada than those from elsewhere (Table 3). Compared to those who graduated in the 1970's, graduates from the 1980's, 1990's and 2000s were 1.58 times, 2.34 times, and 1.71 times more likely, respectively, to work in Canada.

Compared to graduates working outside NL, a larger proportion of graduates working in the province had a rural background, were from Canada, were from NL, graduated in the 2000s, and at least some of their residency training at MUN (Table 2). After controlling for other significant predictors, physicians who had a rural background and were from NL were 1.43 times and 9.74 times more likely to work in NL in 2014 than their urban or non- Newfoundlander counterparts, respectively (Table 4). Those who had graduates in the 2000s were 2.37 times more likely to work in NL than those who had graduated in 1970s. Those who completed some or all of their residency training at MUN were 4.97 times more likely to work in the province in 2014 than those who had not done any residency training at MUN.

As shown in Table 4, compared to MUN graduates who worked in urban communities in Canada, a larger proportion of those who worked in rural communities had a rural background, had graduated in the 1970s or 1990s, had done some or all of their residency training at MUN, and were family physicians/general practitioners. MUN graduates with rural backgrounds and those who were family physicians/general practitioners were 2.33 and 3.61 times more likely to work in rural Canada than those from urban backgrounds and specialists, respectively (Table 3).

Compared to MUN graduates who did not work in rural NL, a larger proportion of MUN graduates who worked in rural NL had a rural background, was from Canada, was from NL, completed some or all of their residency training at MUN, and were family physicians/general practitioners (Table 4). After controlling for other predictors, MUN graduates with rural backgrounds and those from NL were 3.35 and 11.11 times more likely to work in rural NL than their urban and non-NL counterparts, respectively (Table 3). Physicians who had also dome some or all of their residency training at MUN were 3.55 times more likely to work in rural NL than those who had not completed any residency training at MUN. Family physicians/general practitioners were 3.68 times more likely to work in rural NL than specialists (Table 3).

In supplementary analysis, we examined the characteristics by decade (Table 5). A larger proportion of the graduates who had graduated since 2000 was female, and worked in NL than graduates from the 70s, 80s or 90s. A smaller proportion of 00s graduates was from Canada, did at least some of their residency training at MUN or became family physicians than graduates from the 70s, 80s or 90s. A larger proportion of the graduates who had graduated since 2000 had rural backgrounds than graduates from the 80s or 90s. A smaller proportion of recent (graduated 2000 or later) graduates worked in rural Canada than graduates from the 70s or 90s.

Interpretation

We examined 2014 work locations of MUN medical school graduates by linking administrative program data with Scott's Medical Database. Our study provides data on an additional ten years of classes and highlights changes in the patterns of work locations of new physicians. The proportion of MUN alumni that work in each of the four outcomes (in Canada, in NL, in rural Canada and in rural NL) in 2014 has seen slight changes compared to 2004 [4, 5].

While the proportions of alumni working in Canada, in rural communities in Canada, and in rural communities in NL have fallen, the proportion of graduates working in NL has risen. Further research is needed to determine whether these two cross-sectional studies are part of a cyclical rise and fall or indications of more long-term, sustained trends in physician employment patterns.

Between 2004 and 2012 (the most recently available data from the Canadian Institute for Health Information (CIHI)) the number of physicians in NL grew from 992 (192 per 100,000 population) to 1152 (240 per 100,000 population) [27, 28]. MUN graduates comprise a larger proportion of the provincial workforce; roughly 40.9% in 2004 to approximately 55.4% today (the latter figure uses 2014 numerator from this study and 2012 denominator from CIHI). These figures bode well for long-term retention given that MUN trained physicians have longer retention times in NL than either other Canadian or international medical graduates [5, 22, 29].

MUN graduates contribute unequally to the make-up of specialists and family physicians workforce over the ten year period. According to CIHI, between 2004 and 2012 the number of specialists in NL grew by 22.1% from 479 to 585, and the number of family physicians grew by 26.3% from 513 to 648 [27, 28]. In 2014, MUN graduates comprised an estimated 57.6% of the province's specialists (337 of 585) and 46.5% of the family physicians (301 of 648), compared to 42.2% (202 of 479 specialists) and 39.8% (204 of 513 family physicians) in 2004[4], respectively. Since 2004, MUN produced a net addition of 135 specialists and 97 family physicians to the provincial workforce.

Most (88.4%) MUN graduates work in urban centres. This figure is consistent with other studies [30, 31]; 16% of graduates from Canadian medical schools practice in rural communities [30].

The majority (546 of 638, 85.6%) of MUN graduates who worked in NL worked in urban communities in the province, which is not surprising given with the number of specialists alumni working in the province. Rural communities (defined in this study as having less than 10,000 population), with their smaller population and infrastructure are unlikely to support a number of specialties and sub-specialties. In 2014, there were 92 physicians working in rural NL, a net gain of 11 physicians since 2004 [5]. In 2004, MUN medical graduates made up roughly 20.8% of the rural physician workforce in NL [5]; in 2014, they made up 20.9% (based on data from the College of Physicians and Surgeons of Newfoundland and Labrador physician listing [32]). While MUN graduates make up the majority of physicians in the province as a whole, NL's rural physicians continue to be largely international and other Canadian medical graduates.

By replicating our earlier study methods (and using 2001 populations to define rural communities), we are able to compare directly two cohorts of newly graduated physicians (graduates from the 1990s in 2004 and graduates from the 2000s in 2014) in their first years of practice. These cohorts have substantially different work location patterns (Table 6). While the proportion of new graduates working in Canada has fallen, the proportion of graduates working in NL has risen. Moreover, more new graduates working in Canada were working in NL. In 2004, 152 (34.5%) of the 440 "new" graduates in Canada were working in NL[4]; in 2014 that figure grew to 47.3% (215 of the 454 new graduates working in Canada).

A smaller proportion of new graduates in 2014 than 2004 were working in rural practice in Canada or in Newfoundland (Table 6). In 2004, roughly one quarter (24.3%) of new graduates in NL worked in rural communities (37 of 152) [5]; among new graduates in 2014, that figure dropped to 9.8% (21 of 215). The decrease in rural practice among new graduates is troubling given that physicians are more likely to work in rural communities early in their career, with

many subsequently moving to urban communities [19, 33, 34]. Few urban physicians "convert" to rural practice as their careers progress.

What accounts for these shifts in work patterns? Considering the profile of MUN graduates over the decades in relations to the predictors of practice location highlights how changes in the characteristics of medical trainees impact the local physician workforce. While a larger proportion of more recent graduates (classes of 2000-2008) than have rural backgrounds, a smaller proportion are opting for family medicine or completing residency training at MUN (Table 5). After excluding seats reserved for international medical students, in 2013, less than half of all residency positions at MUN were filled by MUN graduates; in family medicine 35 (52.2%) of the 67 PG1 and PG2 seats were filled by MUN graduates [35].

The study relied on administrative program data which do not capture the full range of factors that affect work location decisions. The study is cross-sectional and provides work location data at one point in time and does not estimate the length of time a physician has worked in a given location. It also includes physicians at different stages of their careers. While we are able to compare the results with a previous study of identical design, we can only directly compare the work pattern of new graduates. The study also looks at one medical school and one province. Results may not apply to other jurisdictions.

Conclusions

Over one-third of the MUN medical graduates work in the NL and represent roughly 55.4% of the provincial physician workforce. The majority of MUN medical graduates are specialists working in urban areas in the province. Although MUN medical graduates comprise a growing proportion of the physician workforce in NL, they form one-fifth of the province's rural

physician workforce, a figure that remains unchanged since 2004. Rural practice among recent MUN alumni, whether in a community in NL or anywhere in Canada, has fallen to almost half the rates of new graduates from a decade ago. The study highlights the downstream impact of the changes in the characteristics of physicians graduating from medical school in NL, who increasingly opt for specialist practice and residency training outside the province.

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Table 1. Characteristics of study sample (1973-2008 MUN graduates).

Characteristics	MUN Medical Graduates (1973-2008; n=1864) n (%)
Sex	
Male	1008 (54.1)
Female	856 (45.9)
Rural Background	
Urban	1318 (71.7)
Rural	520 (27.9)
From Canada	
No (International)	83 (4.5)
Yes	1766 (95.5)
From NL	
No	475 (25.7)
Yes	1374 (74.3)
Graduation Year	
1973-1979	291 (15.6)
190-1989	514 (27.6)
1990-1999	546 (29.3)
2000-2008	513 (27.5)
Did MUN Residency	
No	795 (43.2)
Yes	1047 (56.8)
Specialty	
Specialist	1057 (56.7)
GP/FP	806 (43.3)
Age at Graduation	
Young (< 30)	1561 (84.2)
Old (≥ 30)	292 (15.7)
Workplace in Canada	
No	222 (11.9)
Yes	1642 (88.1)
Workplace in NL	
No	1226 (65.8)
Yes	638 (34.2)
Workplace in Rural Canada	
No	1647 (88.4)
Yes	217 (11.6)
Workplace in Rural NL	
No	1772 (95.1)
Yes	92 (4.9)

*numbers may not add up to 1864 due to missing numbers; MUN= Memorial University or Newfoundland; NL= Newfoundland and Labrador; GP/FP= general practitioners/family physician

Table 2. Characteristics of MUN medical graduates who work in and outside Canada, and in and outside NL

Variable	Work in Canada in 2014			Work in NL in 2014		
	No **n (%)**	Yes **n (%)**	P value	No **n (%)**	Yes **n (%)**	P value
Sex			0.010			0.202
Male	138 (62.2)	870 (53.0)		676 (55.1)	332 (52.0)	
Female	84 (37.8)	772 (47.0)		550 (44.9)	306 (48.0)	
Rural Background			0.002			0.000
Urban	173 (78.6)	1106 (68.3)		890 (73.9)	389 (61.4)	
Rural	47 (21.4)	513 (31.7)		315 (26.1)	245 (38.6)	
From Canada			0.000			0.000
No (International)	56 (25.3)	27 (1.7)		79 (6.5)	4 (0.6)	
Yes	165 (74.7)	1601 (98.3)		1137 (93.5)	629 (99.4)	
From NL			0.000			0.000
No	98 (44.3)	377 (23.2)		447 (36.8)	28 (4.4)	
Yes	123 (55.7)	1251 (76.8)		768 (63.2)	606 (95.6)	
Graduation Year			0.006			0.000
1973-1979	50 (22.5)	241 (14.7)		196 (16.0)	95 (14.9)	
190-1989	64 (28.8)	450 (27.4)		361 (29.4)	153 (24.0)	
1990-1999	49 (22.1)	497 (30.3)		371 (30.3)	175 (27.4)	
2000-2008	59 (26.6)	454 (27.6)		298 (24.3)	215 (33.7)	
Did MUN Residency			0.000			0.000
No	120 (54.3)	675 (41.6)		671 (55.5)	124 (19.6)	
Yes	101 (45.7)	946 (58.4)		539 (44.5)	508 (80.4)	
Specialty			0.466			0.014
Specialist	131 (59.0)	926 (56.4)		720 (58.8)	337 (52.8)	
GP/FP	91 (41.0)	715 (43.6)		505 (41.2)	301 (47.2)	
Age at Graduation			0.412			0.937
Young (< 30)	182 (82.4)	1379 (84.5)		1028 (84.2)	533 (84.3)	
Old (≥ 30)	39 (17.6)	253 (15.5)		193 (15.8)	99 (15.7)	

MUN= Memorial University or Newfoundland; NL= Newfoundland and Labrador; GP/FP= general practitioners/family physician

Table 3. Predictors of MUN medical graduates who work in Canada, in NL, in rural Canada, and in rural NL

Variable	In Canada OR (95% CI)	In NL OR (95% CI)	In rural Canada OR (95% CI)	In rural NL OR (95% CI)
Rural Background				
Urban	1.00	1.00	1.00	1.00
Rural	1.54 (1.09-2.17)	1.43 (1.13-1.80)	2.33 (1.73-3.13)	3.35 (2.13-5.27)
From NL				
No	1.00	1.00	-	1.00
Yes	2.69 (2.00-3.61)	9.74 (6.48-14.66)	-	11.11 (2.70-45.75)
Graduation Year				
1973-1979	1.00	1.00	-	-
1980-1989	1.58 (1.05-2.38)	-	-	-
1990-1999	2.34 (1.51-3.61)	-	-	-
2000-2008	1.71 (1.12-2.61)	2.37 (1.66-3.38)	-	-
Did MUN Residency				
No	-	1.00	-	1.00
Yes	-	4.97 (3.86-6.39)	-	3.55 (1.89-6.66)
Specialty				
Specialist	-	-	1.00	1.00
GP/FP	-	-	3.61 (2.62-4.96)	3.68 (2.23-6.08)

OR=odds ratio; 95% CI= 95% confidence interval; MUN=Memorial University of Newfoundland; NL= Newfoundland and Labrador; GP/FP= general practitioners/family physician

Table 4. Characteristics of MUN medical graduates who work in and outside rural Canada, and in and outside rural NL

Variable	Work in rural Canada in 2014		P value	Work in rural NL in 2014		P value
	No **n (%)**	Yes **n (%)**		No **n (%)**	Yes **n (%)**	
Sex			0.091			0.260
Male	879 (53.4)	129 (59.4)		953 (53.8)	55 (59.8)	
Female	768 (46.6)	88 (40.6)		819 (46.2)	37 (40.2)	
Rural Background			0.000			0.000
Urban	1174 (72.2)	105 (49.5)		1246 (71.3)	33 (35.9)	
Rural	453 (27.8)	107 (50.5)		501 (28.7)	59 (64.1)	
From Canada			0.049			0.033
No (International)	79 (4.8)	4 (1.9)		83 (4.7)	0 (0)	
Yes	1556 (95.2)	210 (98.1)		1674 (95.3)	92 (100.0)	
From NL			0.320			0.000
No	426 (26.1)	49 (22.9)		473 (26.9)	2 (2.2)	
Yes	1209 (73.9)	165 (77.1)		1284 (73.1)	90 (97.8)	
Graduation Year			0.021			0.079
1973-1979	253 (15.4)	38 (17.5)		271 (15.3)	20 (21.7)	
190-1989	458 (27.8)	56 (25.8)		496 (28.0)	18 (19.6)	
1990-1999	467 (28.4)	79 (36.4)		513 (29.0)	33 (35.9)	
2000-2008	469 (28.5)	44 (20.3)		492 (27.8)	21 (22.8)	
Did MUN Residency			0.003			0.000
No	723 (44.4)	72 (33.6)		783 (44.7)	12 (13.0)	
Yes	905 (55.6)	142 (66.4)		967 (55.3)	80 (87.0)	
Specialty			0.000			0.000
Specialist	994 (60.4)	63 (29.0)		1035 (58.4)	22 (23.9)	
GP/FP	652 (39.6)	154 (71.0)		736 (41.6)	70 (76.1)	
Age at Graduation			0.556			0.883
Young (< 30)	1382 (84.4)	179 (82.9)		1484 (84.3)	77 (83.7)	
Old (≥ 30)	255 (15.6)	37 (17.1)		277 (15.7)	15 (16.3)	

MUN= Memorial University or Newfoundland; NL= Newfoundland and Labrador; GP/FP= general practitioners/family physician

Table 5. Characteristics of Memorial University Medical Graduates by Decade of Graduation

Variable	70s **n (%)**	80s **n (%)**	90s **n (%)**	00s **n (%)**	P value
Sex					<0.000 [a,b,c,d,e,f]
Male	206 (70.8)	307 (59.7)	276 (50.5)	219 (42.7)	
Female	85 (29.2)	207 (40.3)	270 (49.5)	294 (57.3)	
Rural Background					0.002 [d,e,f]
Urban	197 (69.9)	382 (75.0)	379 (69.5)	321 (63.8)	
Rural	85 (30.1)	127 (25.0)	166 (30.5)	182 (36.2)	
From Canada					<0.000 [a,b,c,e,f,]
No (International)	15 (5.2)	7 (1.4)	4 (0.7)	57 (11.3)	
Yes	272 (94.8)	507 (98.6)	540 (99.3)	447 (88.7)	
From NL					0.632
No	65 (22.6)	133 (25.9)	145 (26.6)	132 (26..2)	
Yes	222 (77.4)	381 (74.1)	400 (73.4)	371 (73.8)	
Did MUN Residency					<0.000 [c,e,f]
No	108 (37.6)	191 (37.2)	216 (40.3)	280 (55.3)	
Yes	179 (62.4)	322 (62.8)	320 (59.7)	226 (44.7)	
Specialty					<0.000 [c,e,f]
Specialist	142 (48.8)	284 (55.3)	294 (53.9)	337 (65.7)	
GP/FP	149 (51.2)	230 (44.7)	251 (46.1)	176 (34.3)	
Age at Graduation					0.364
Young (< 30)	249 (85.9)	442 (86.0)	452 (83.2)	418 (82.6)	
Old (≥ 30)	41 (14.1)	72 (14.0)	91 (16.8)	88 (17.4)	
Workplace in Canada					0.006 [b,c]
No	50 (17.2)	64 (12.5)	49 (9.0)	59 (11.5)	
Yes	241 (82.8)	450 (87.5)	497 (91.0)	454 (88.5)	
Workplace in NL					<0.000 [c,e,f]
No	196 (67.4)	361 (70.2)	371 (67.9)	298 (58.1)	
Yes	95 (32.6)	153 (29.8)	175 (32.1)	215 (41.9)	
Workplace in Rural Canada					0.021 [c,f]
No	253 (86.9)	458 (89.1)	467 (85.5)	469 (91.4)	
Yes	38 (13.1)	56 (10.9)	79 (14.5)	44 (8.6)	
Workplace in Rural NL					0.079
No	271 (93.1)	496 (96.5)	513 (94.0)	492 (95.9)	
Yes	20 (6.9)	18 (3.5)	33 (6.0)	21 (4.1)	

MUN= Memorial University of Newfoundland; NL= Newfoundland and Labrador; post hoc tests: a= 70s significantly differ from 80s, b= 70s significantly differ from 90s, c= 70s significantly differ from 00s, d= 80s significantly differ from 90s, e= 80s significantly differ from 00s, f= 90s significantly differ from 00s

Table 6: Work location of MUN medical graduates in their first 10 years of practice

	2004 for 90s graduates % of graduates	2014 for 00s graduates % of graduates
In Canada	90.3	88.1
In NL	31.2	41.9
In rural Canada	15.4	8.6
In rural NL	7.6	4.1
NL=Newfoundland and Labrador		