Analysis of the Parkland Residency Program Graduates' Initial and Current Practice Locations from 1992-2017

AND

Theoretical Effectiveness of the Brandon Longitudinal Clerkship Program

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PART I

Introduction

The Parkland Residency Program is Manitoba's oldest Rural Family Medicine Residency Stream and this past year celebrated its 25th Anniversary. For this part of the project, we analyzed the residency program through the years and determined how many of the programs graduates practiced family medicine in a rural area in Manitoba or Canada. Rural Manitoba was classified as practicing in a location that is not Winnipeg, and Rural Canada was classified as practicing in a location with a population of less than 20,000 and not within 100km of a larger center with a population of 100,000 people or greater. The data collected was then divided up into 5 year intervals for comparison to determine if the number of graduates practicing rurally was trending upward, downward, or remaining constant. A comparison of initial practice location and current practice location was also conducted to assess the number of physicians who remain practicing rurally for the long-term. The number of Parkland residents who remained in Manitoba to practice for some time following graduation was also analyzed via their initial and current practice location.

Methods

Data was provided via the Parkland Residency Program Coordinator. The criteria for inclusion in the study were completion of residency in the Parkland Family Medicine Stream. Those who met the criteria were identified and located using a combination The College of Physicians and Surgeons of Manitoba physician directory for those currently licensed and practicing in Manitoba and The College of Family Physicians of Canada Member list. Physicians were not contacted for information regarding their location of practice, or movement of their practice over time.

Data:

Year (Number of residents in Program that year)	*Initial Practice In Rural Canada*	*Initial Practice in Rural MB*	*Current Practice in Rural Canada*	*Current Practice in Rural MB*
1992 (5 residents)	4/5= 80%	3/5 = 60%	4/5= 80%	2/5= 40%
1993 (6 residents)	6/6= 100%	4/6= 67%	0	0
1994 (5 residents)	4/5= 80%	2/5= 40%	0	0
1995 (6 residents)	5/6= 83%	3/6=50%	2/6=33%	1/6= 17%
1996 (6 residents)	5/6=83%	5/6= 83%	2/3 = 67%	1/3= 33%
1997 (6 residents)	4/6= 67%	4/6= 67%	4/6=67%	3/6=50%
1998 (5 residents)	5/5= 100%	3/5= 60%	1/5= 20%	0
1999 (4 residents)	4/4=100%	4/4=100%	3/4= 75%	3/4 = 75%
2000 (5 residents)	4/5= 80%	3/5= 60%	0	0
2001 (7 residents)	5/7= 71%	3/7= 43%	3/7=43%	1/7= 14%

2002 (6 residents)	5/6= 83%	3/6=50%	5/5=100%	4/5=80%
2003 (5 residents)	4/5=80%	2/5=40%	0	0
2004 (2 residents)	½=50%	1/2 = 50%	1/2=50%	1/2 =50%
2005 (5 residents)	4/5= 80%	3/5= 60%	¼=25%	1/4=25%
2006 (4 residents)	4/4= 100%	4/4= 100%	2/4=50%	2/4=50%
2007 (4 residents)	2/4=50%	¼=25%	1/4=25%	1/4=25%
2008 (8 residents)	8/8= 100%	8/8=100%	5/8=63%	5/8=63%
2009 (9 residents)	6/9=67%	3/9=33%	3/9=33%	2/9= 22%
2010 (7 residents)	3/7= 43%	3/7= 43%	3/6=50%	3/6=50%
2011 (9 residents)	6/9=67%	6/9=67%	5/9=55%	5/9=55%
2012 (11 residents)	8/11= 73%	8/11=73%	8/11=73%	8/11=73%
2013 (8 residents)	6/8=75%	6/8=75%	5/7=71%	5/7=71%
2014 (6 residents)	3/6= 50%	3/6=50%	3/6=50%	3/6=50%
2015 (8 residents)	5/8=62%	5/8=62%	4/8= 50%	4/8=50%
2016 (6 residents)	5/6=87%	5/6=87%	5/6=87%	5/6=87%
2017 (5 residents)	5/5=100%	3/5=60%	5/5=100%	3/5=60%

Table 1: Analysis of residents graduating from 1992-2017 practicing rurally in Canada and Manitoba initially upon graduation from Parkland Stream, and currently.

Year (Number of Residents)	**Initial Practice in MB**	**Current Practice in MB**
1992 (5)	4	3
1993 (6)	4	3
1994 (5)	3	3
1995 (6)	4	2
1996 (6)	6	1
1997 (6)	4	4
1998 (5)	3	2
1999 (4)	3	2
2000 (5)	4	2
2001 (7)	4	4
2002 (6)	4	4
2003 (5)	3	2
2004 (2)	1	1
2005 (5)	3	2
2006 (4)	4	4
2007 (4)	1	1
2008 (8)	7	5
2009 (9)	4	4
2010 (7)	6	5

2011 (9)	7	6
2012 (11)	10	10
2013 (8)	6	5
2014 (6)	6	5
2015 (8)	7	7
2016 (7)	5	5
2017 (5)	3	3

Table 2: Number of Parkland residents from each year practicing in Manitoba initially after graduation and currently.

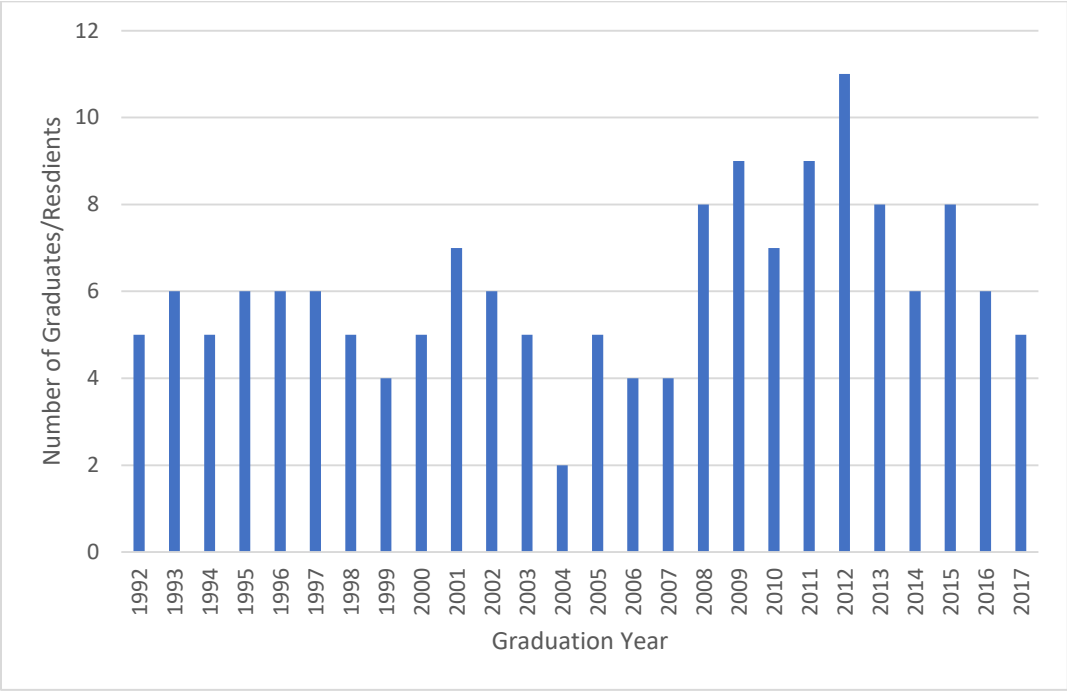

Figure 1: The number of residents in the Parkland Family Medicine Stream per year.

Discussion:

Analyzing the number of residents in the Parkland Family Medicine Stream per year, there is an average of 6 residents per year in the program. The abnormal low in 2004 was due to an increase in CaRMS positions for medical students without an increase in medical school spots. There was a clear increase in the number of residents from 2008-2013, and it was also in these years where there was an increase in the number of residents remaining in Manitoba. There have been efforts within the province of Manitoba over the past decade regarding rural recruitment of physicians and medical students, and these efforts could be influencing the data in the Parkland program and could be one explanation for this phenomenon within the data.

Analyzing the proportion of residents initially practicing in areas of Rural Canada upon graduation from the Parkland program, there is an apparent decrease in this area from the beginning of the program. From 1992-1996, 82.1% of residents began rural practice in Canada upon completion of their residency in the Parkland (Figure 4b) whereas from 2012-2017 only 72.7% began rural practice (Figure 8b). The lowest proportion of residents initially practicing rurally was from 2007-2011 with 67.6% (Figure 7b) despite an increase in the number of residents each year during this period. Although there is a decrease in the proportion initially practicing rurally in Canada, the proportion of Parkland graduates currently practicing in rurally in Canada has increased. From 1992-1996, only 28.6% of Parkland residents in this period are currently practicing in Rural Canada (Figure 4a) whereas 68.2% of graduates from 2012-2017 are currently practicing rurally in Canada (Figure 8a). These numbers could be affected by the fact that graduates in the earlier years of the program may have initially practiced in areas that had lower populations when they first began practice. In such cases, a physician may have been classified as a rural physician initially in their practice but due to population growth, they were no longer considered rural under the classification used in this study. Furthermore, since the development of the Parkland program in 1992, many other residency programs have been developed in other areas of rural Canada and even rural Manitoba (Portage, Steinbach, Boundary Trails, Brandon, and Northern Unit). Medical students now have more options as to where they want to train in family medicine, and many can choose a training facility that is closer to a larger urban center, while still getting the variety and added quality of training in a rural location. The Parkland residency program is located primarily in Dauphin, which is 166 kilometers from Brandon and 320 kilometers from Winnipeg. Residents who match in the Parkland become fully submerged in rural lifestyle and cannot access the amenities that urban locations have as easily in other rural settings around the province. Medical students who preferentially match to the Parkland program likely understand the location of the program and have a willingness to practice and live in a rural community without easy access to an urban center. This could be another reason as to why there is an increase in the number of Parkland graduates currently practicing in rural Canada as compared to earlier graduates of the Parkland program.

Rural recruitment of physicians is a growing issue nationwide across Canada, and is a major issue within health care in the province of Manitoba. Of all the graduates of the Parkland program since its beginning in 1992, of those who began practice in Manitoba, 87.9% did so in rural Manitoba (Figure 3). Certainly, when looking at the proportion of graduates from the Parkland program each year who are currently practicing in Manitoba, this number decreases over time. However, it should be noted that every class of graduates from the Parkland program has at least one resident still currently practicing within the province of Manitoba, either rurally or in urban Manitoba. The Parkland classes of 1996, 2006, and 2014 had 100% of their graduates being practice initially in Manitoba (Figure 10b). Currently the 2006 class is the only class with 100% of its graduates still practicing in Manitoba (Figure 10a). The 2014 class has 83.3% of its graduates still practicing in Manitoba while the 1996 class only has 16.7% of its class practicing in Manitoba currently (Figure 10a). This data suggests that the Parkland

program is improving at retaining physicians within Manitoba as time progresses, with most graduates practicing for some amount of time in a rural location during their career.

PART II

In 2013, only 14% of family physicians are practicing in rural or remote areas where approximately 6 million Canadian reside.[1] Thus it is becoming a growing challenge to delivering quality and timely healthcare to those that reside in these communities. There had been attempts to recruit more physicians to set up practice in smaller communities. Some offer physicians signing bonuses, living arrangements, and/or career opportunities for their spouses. The Government of Manitoba had also implemented the Medical Student/Resident Financial Assistant program, where medical trainees are offered grants and in return practice in an underserviced community for a length of time.[2] While these programs may have had some initial success in recruiting physicians, it is also true that many leave after their contract expires and do not stay there for an extended period.

A systematic review that looked at the rural training experience on medical students found in 22 of the 72 studies (31%) student experience in a rural setting predicted future employment location.[3] In another study conducted in the United States, it was found that medical trainees that completed rural rotations were about three times more likely (33%) to practice in a rural community compared to the national average (9%).[4]

The University of Manitoba College of Medicine has incorporated some rural medical education within its medical curriculum. An example of this is Rural Week, in which first year medical students spend a week in various small communities across Manitoba working with local physicians to gain a better understanding of what living and practicing in these communities are like. This year the University of Manitoba also introduced the Brandon Longitudinal Clerkship (LInC) Program to be piloted in the upcoming year. This program is aimed at third-year medical students to do their core rotations in Brandon and surrounding areas. The goal of the program is to have students train in a rural setting, hoping that they will be more likely to practice in a rural area once they are done their training.

The purpose of this part of report is to theorize the effectiveness of the Brandon LInC program in recruiting more physicians to rural Manitoba by examining a similar program implemented by the Northern Ontario School of Medical (NOSM). During the third year of the NOSM MD program, students are required to complete eight months of longitudinal clerkship known as the Comprehensive Community Clerkship (CCC). During this period, students obtain their clinical experience away from the main campuses of Sudbury and Thunder Bay. Instead, students are divided into smaller groups and dispersed into small urban/rural communities where they will live and learn. The goal of CCC is to provide opportunities to enhance knowledge, skills and attitudes of practicing medicine in remote, rural, and underserviced communities.[5] In a recent retrospective cross-sectional study by Wenghofer et al, the question was asked whether physicians educated from NOSM were more likely to set up practice in rural and northern Ontario compared to physicians that were educated from other Canadian medical

schools. Physician data such as their undergraduate(UG) medical school, postgraduate(PG) medical school and their current primary practice location were collected from the College of Physicians and Surgeons of Ontario. Physicians' primary practice location data was used as the outcome and was categorized as either rural north, rural south, urban north and urban south. The physicians' medical education was categorized into four categories; NOSM/NOSM (physicians that graduated from NOSM UG medical education and NOSM PG family medicine residency training); NOSM/other (physicians that graduated from NOSM UG program and PG training elsewhere in Canada); other/NOSM (physicians that graduated from a Canadian UG program other than NOSM and completed NOSM PG training); other/other (physicians that did not graduated from NOSM UG or complete any PG training at NOSM). In total, the study population consists of 535 family physicians. In the NOSM/NOSM study, there were 9 physicians practicing in rural north, 3 in rural south, 23 in urban north, and 1 in urban south. In the NOSM/other category, there were 4 practicing in rural south, 1 in urban north and 9 in urban south. In the other/NOSM category, there was 1 in rural south, 12 in urban north and 4 in urban south. In the other/other category, there were 11 in rural north, 37 in rural south, 9 in urban south and 411 in urban south. Statistical analysis using the Fisher's exact test revealed that there were significant differences in physicians practice locations by medical school category. The NOSM/NOSM group had the largest proportion of physicians practicing in rural Ontario at 25%. While in the other/other group, majority of physicians were located in urban areas at 87.8%. Family physicians who graduated from the NOSM UG medical program were significantly more likely to have practices located in rural settings (OR=2.6, p=0.014). As well, those that completed any PG NOSM training were also significantly more likely to have practices in northern Ontario (OR=57.7, $p<0.001$).[6]

From the results of the Wengoher et al study, those that were trained in the UG MD program had a significant higher number of physicians that are currently practicing in rural Ontario, indicating that the CCC program is effective in recruiting more physicians to rural communities. Additionally, many other literature shows good evidence that having rural education experience promotes future rural practice. Therefore, it is worthwhile for the University of Manitoba to implement the Brandon LInC program, it has the potential to recruit more physicians to set up practice in rural Manitoba. Ultimately, only time will tell if the program will be successful.

References:

Part II

1. Bosco C, Oandasan I. Review of Family Medicine Within Rural and Remote Canada: Education, Practice, and Policy. Mississauga, ON: College of Family Physicians of Canada; 2016.

2. Government of Manitoba. Medical Student/Resident Financial Assistance Program (MSRFAP). http://www.gov.mb.ca/health/msrfap/. Accessed August 19, 2017

3. Barrett FA, Lipsky MS, Lutfiyya MN. The Impact of Rural Training Experiences on Medical Students : A Critical Review. 2011;86(2):259-263. doi:10.1097/ACM.0b013e3182046387.

4. Lang F, Ferguson KP, Bennard B, Zahorik P, Sliger C. The Appalachian Preceptorship : Over Two Decades of an Integrated Clinical – Classroom Experience of Rural Medicine and Appalachian Culture. 2005;80(8):717-723.

5. Matte M. Overview of the Four Year Undergraduate Medical Education Program at the Northern Ontario School of Medicine. 2014. Northern Ontario School of Medicine.

6. Wenghofer EF, Hogenbirk JC, Timony PE. Impact of the rural pipeline in medical education : practice locations of recently graduated family physicians in Ontario. 2017:1-6. doi:10.1186/s12960-017-0191-6.

Appendix:

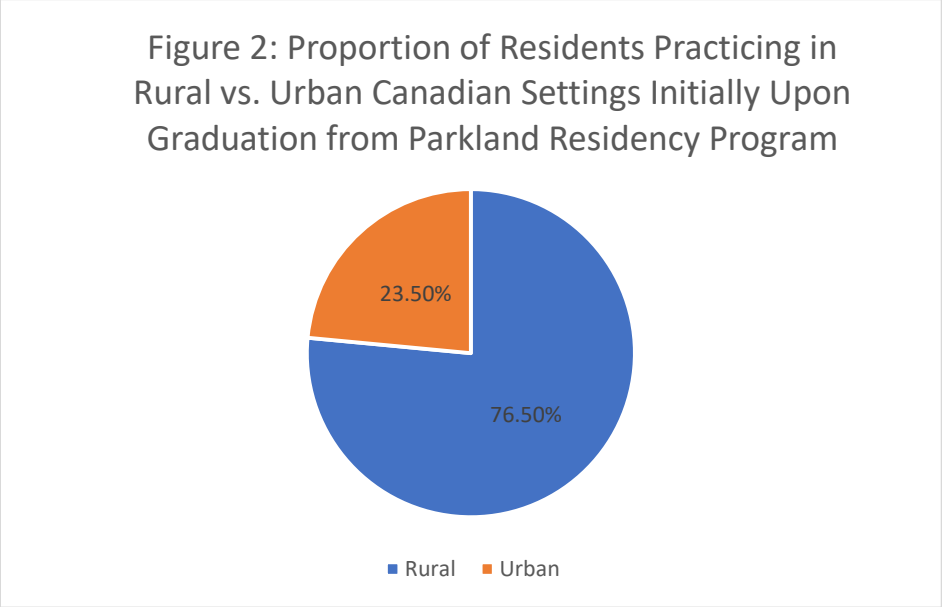
Figure 2: Proportion of Residents Practicing in Rural vs. Urban Canadian Settings Initially Upon Graduation from Parkland Residency Program
23.50%
76.50%
Rural
Urban

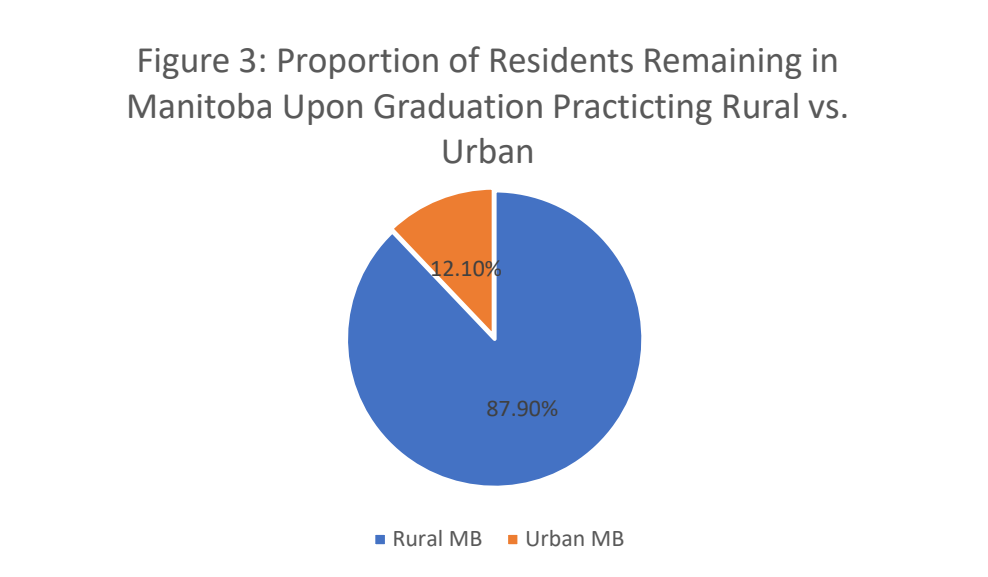
Figure 3: Proportion of Residents Remaining in Manitoba Upon Graduation Practicting Rural vs. Urban
12.10%
87.90%
Rural MB
Urban MB

Figure 4a: Current Proportion of Parkland Graduates from 1992-1996 Practicing Rurally in Canada

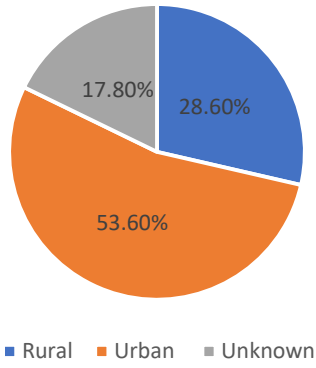

Figure 4b: Initial Proportion of Parkland Graduates from 1992-1996 Practicing Rurally in Canada

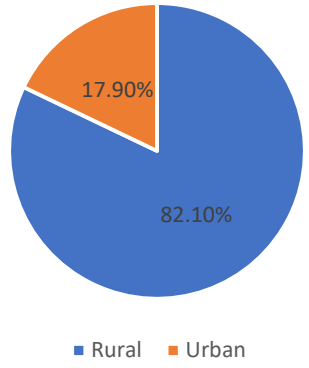

Figure 5a: Current Proportion of Parkland Graduates from 1997-2001 Practicing Rurally in Canada

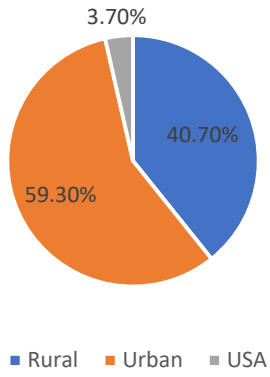

Figure 5b: Initial Proportion of Parkland Graduates from 1997-2001 Practicing Rurally in Canada

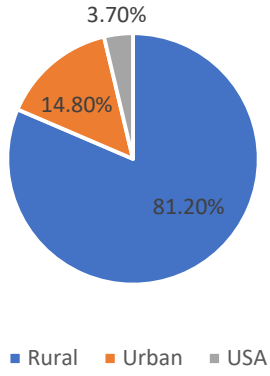

Figure 6a: Current Proportion of Parkland Graduates from 2002-2006 Practicing Rurally in Canada

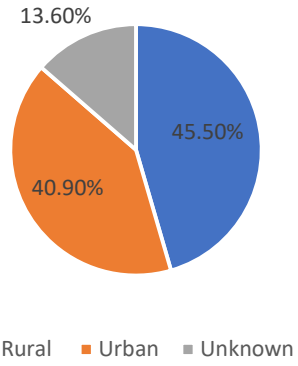

Figure 6b: Initial Proportion of Parkland Graduates from 2002-2006 Practicing Rurally in Canada

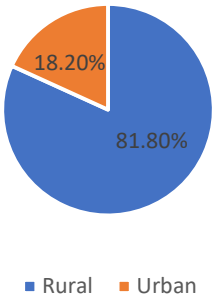

Figure 7a: Current Proportion of Parkland Graduates from 2007-2011 Practicing Rurally in Canada

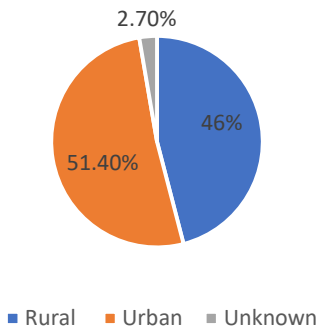

Figure 7b: Initial Proportion of Parkland Graduates from 2007-2011 Practicing Rurally in Canada

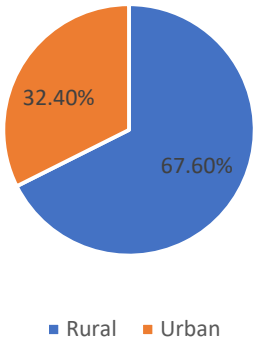

Figure 8a: Current Proportion of Parkland Graduates from 2012-2017 Practicing Rurally in Canada

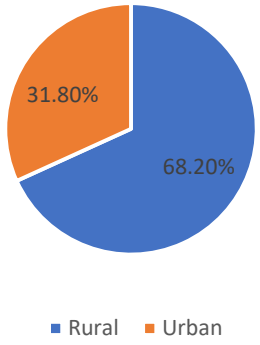

Figure 8b: Initial Proportion of Parkland Graduates from 2012-2017 Practicing Rurally in Canada

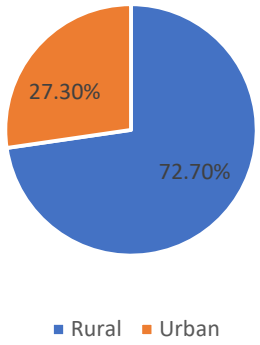

Figure 9a: Comparison of Current Proportion of Parkland Graduates Practicing Rurally in Canada By 5-year Intervals

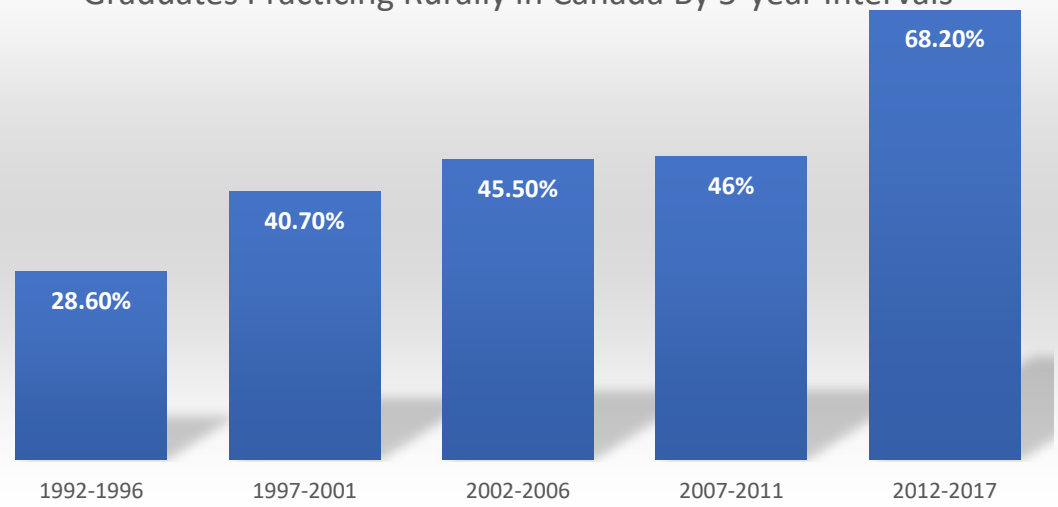

Figure 9b: Comparison of Initial Proportion of Parkland Graduates Practicing Rurally in Canada By 5-year Intervals

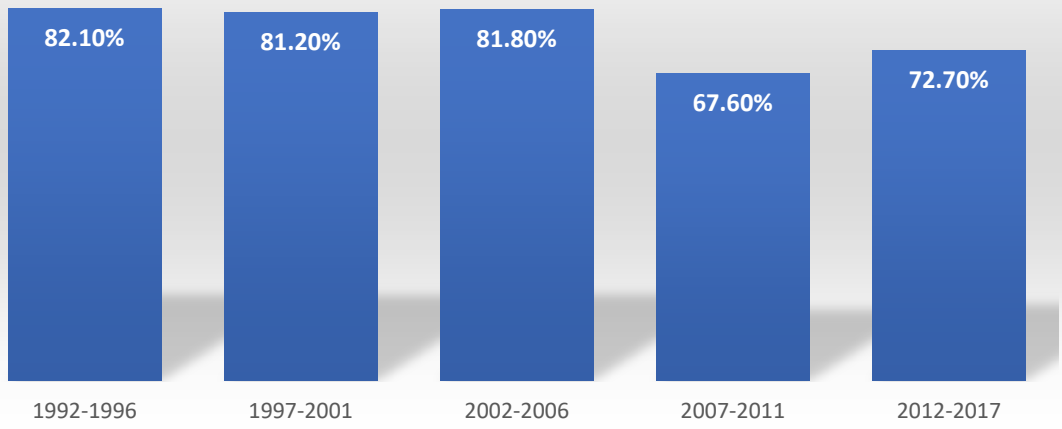

FIGURE 10A: PROPORTION OF PARKLAND RESIDENTS CURRENTLY PRACTICING IN MANITOBA

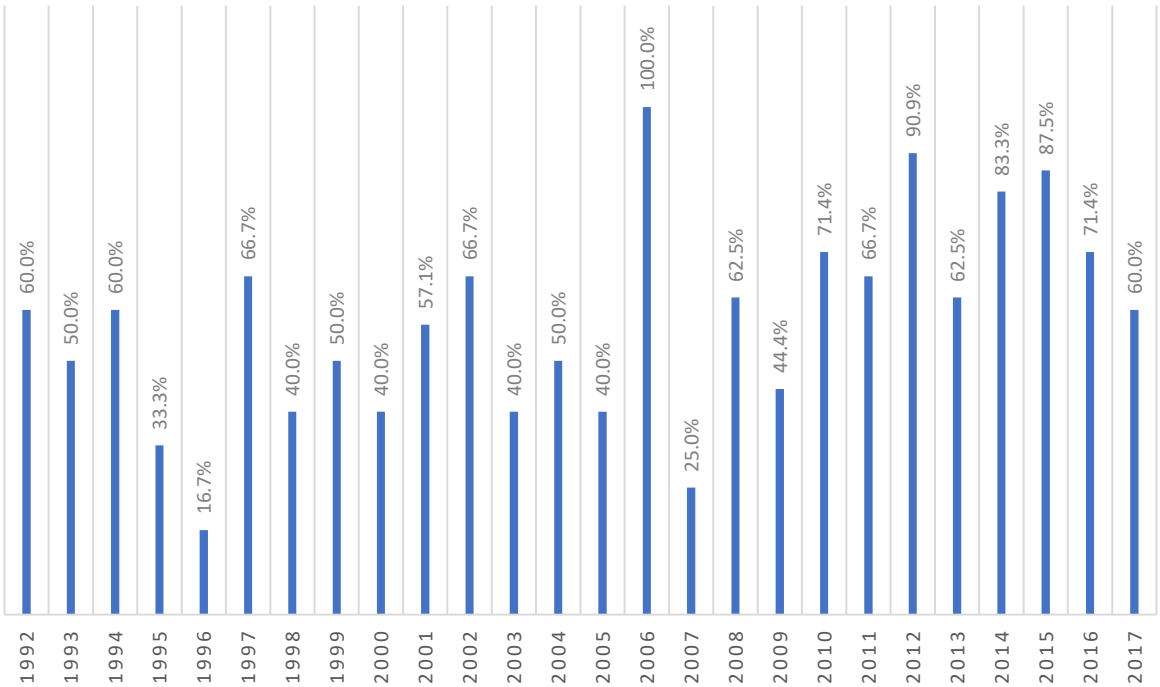

FIGURE 10B: PROPORTION OF PARKLAND RESIDENTS INITIALLY PRACTICING IN MANITOBA UPON GRADUATION