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RURAL AND URBAN EDUCATIONAL ATTAINMENT: AN INVESTIGATION OF PATTERNS AND TRENDS, 1981 - 1996

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HIGHLIGHTS

- ◆ The gap in educational attainment between urban and rural regions persisted over the 1981 to 1996 period.
- ◆ Although the average gap did not close, there was a decline in the disparities in educational attainment across census divisions within each type of region. Thus, disadvantaged census divisions were relatively less disadvantaged at the end of the period.
- ◆ The rural-urban primary education gap closed considerably, but individuals with only primary educational attainment are now more concentrated in rural regions. Thus, more can still be achieved in levelling spatial disparities in primary educational attainment.
- ◆ Post-secondary educational attainment increased within each type of region – the rural-urban gap persisted – but the concentration in urban regions did not increase.
- ◆ Differences between macro-regions are marked — a major divide appears with the southern and western parts of Canada having higher levels of educational attainment and the northern and eastern parts of Canada having lower levels.



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Introduction

The educational attainment of Canadians has risen considerably over the last two decades. The average years of schooling of the population aged 25 to 54 has grown from 11.8 years in 1981 to 13.3 years in 1996. Yet it is generally perceived that spatial disparities in educational attainment

remain substantial. This bulletin investigates the spatial patterns in educational attainment and how they changed since 1981. A better understanding of sub-provincial patterns and trends can support federal and provincial policy-making in this area of concern.

The role and potential of educational enhancement strategies for communities and regions, and in particular for rural and remote regions, is in fact a thorny issue. On the one hand, education has a crucial role to play in community development. For each community, a better educated labour force can improve the community's capacity to attract or generate economic opportunities and to translate those opportunities into higher-valued employment — an uneven distribution of skills across regions may reinforce an uneven pattern of economic development. On the other hand, some areas face several challenges in enhancing their level of human capital. Rural areas often provide lower returns to investment in education and consequently individuals have lower incentives to continue their schooling. In some cases, rural areas also provide limited job opportunities to skilled workers. These communities may face specific problems in capitalizing on their investments in education as out-migration may be the most likely option for part of their highly educated work force.

The findings of this analysis show a mixed pattern of educational attainment. On average, rural regions did not close their educational gap compared to more urbanised regions during the 1981 to 1996 period. However, the disparities across census divisions (CDs) decreased — thus, the CDs that had particularly low educational attainment improved their levels and moved at least closer to the average of their regional type.

It should be made clear that the use of territorial (census division) averages hides the variation of educational attainment among communities and among individuals within a census division. However, the results provide a preliminary understanding of spatial patterns which can guide further investigation.

The broad pattern of educational attainment structure

Over the 1981 to 1996 period, educational attainment (see Box 1 for definitions) improved steadily in Canada. The share of individuals (25 to 54 years of age) with less than Grade 9 education declined from 17 to 6 percent. Meanwhile, the share of individuals (25 to 54 years of age) with some post-secondary education increased from 44 to 58 percent. In terms of rural-urban differences, three features can be noted:

1. Educational attainment has steadily improved within each type of region (see Box 2 for definitions of geographic regions). The share of individuals (25 to 54 years of age) with less than Grade 9 declined within each type of region and the share of individuals with some post-secondary education increased (Figure 1 and Appendix Table A1). These trends parallel the improvements recorded for Canada as a whole.
2. Within each census year, the level of educational attainment is consistently lower as one moves from urban to rural regions.
3. The educational attainment of rural northern regions tends to be more polarized than that of the other regional types. For instance, compared to rural non-metro-adjacent CDs, rural northern regions had a higher share of individuals with some post secondary education (49 versus 47 percent), and a higher share with individuals with less than Grade 9 (11.7 versus 9.5 percent) in 1996. This reflects in-migration of higher educated professionals into government and resource sectors combined with lower levels of education among the local population.

Box 1. Definition of educational attainment

Data are tabulated for the population 25 to 54 years of age, which is the most important demographic group for the labour market. The exception is the data on major field of study, which refers to all individuals, 15 years of age and older, with a post-secondary degree or diploma.

For the purpose of this analysis, the following classification of educational attainment was used:

Less than Grade 9:	Individuals 25 to 54 years of age with less than Grade 9 and with no post-secondary education
Grade 9 to 13:	Individuals 25 to 54 with Grade 9 or more but with no high school certificate and with no post-secondary education
High school certificate (only):	Individuals 25 to 54 years of age with a high school certificate but with no post-secondary education.
Some post-secondary:	Individuals 25 to 54 years of age with some post-secondary education, whether completed or not (university or non-university).

Major field of study:

Individuals with a post-secondary degree or diploma are classified to the following categories of major field of study:

- Educational, recreational and counselling services
- Fine and applied arts
- Humanities and related fields
- Social sciences and related fields
- Commerce, management and business administration
- Science and technology (subtotal)
 - Agricultural and biological sciences/technologies
 - Engineering and applied sciences
 - Engineering and applied science technologies and trades
 - Health professions, sciences and technologies
 - Mathematics and physical sciences

The data are tabulated from the Census of Population for 1981, 1986, 1991 and 1996.

Source: Statistics Canada (1999).

Box 2. Definition of the geographic units of analysis

The geographic unit of reference for this analysis is the census division (CD). A census division is an intermediate geographic area between the municipality (census subdivision) and the province level. Census divisions represent counties, regional districts and regional municipalities. In Newfoundland and Labrador, Manitoba, Saskatchewan and Alberta, provincial law does not provide for these administrative units. In these provinces, census divisions are delineated in co-operation with the provinces for the dissemination of statistical data.

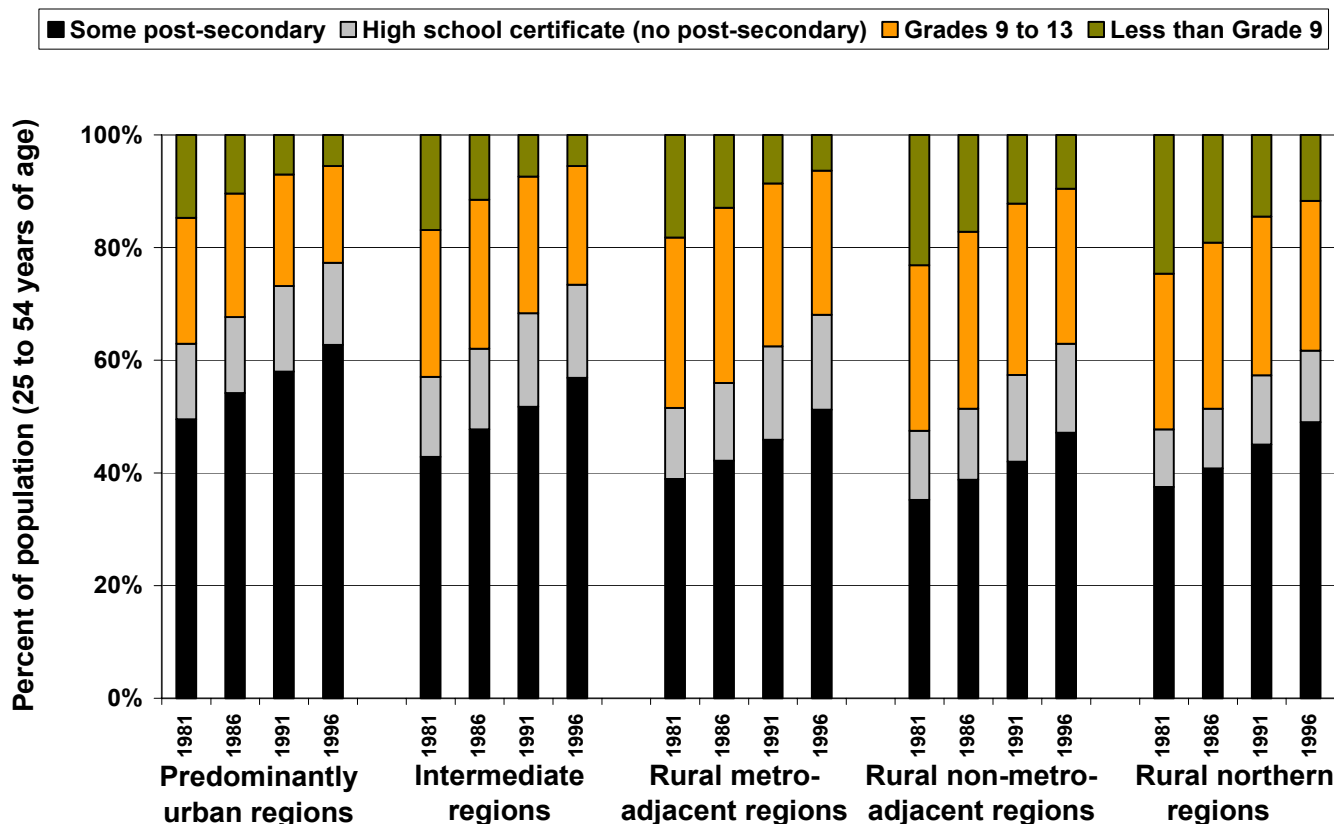
In this study, census divisions are classified into five groups, as follows:

1. **Predominantly urban regions:** less than 15 percent of the population resides in rural communities where a “rural community” has a population density of less than 150 persons per square kilometre.
2. **Intermediate regions:** 15 to 49 percent of the population lives in a “rural community”.
Predominantly rural regions: 50 percent or more of the population lives in a “rural community”. Following Ehrensaft and Beeman (1992), the predominantly rural regions are further disaggregated into:
 3. **Rural metro-adjacent regions;**
 4. **Rural non-metro-adjacent regions; and**
 5. **Rural northern regions.**

Data are tabulated for each census year within constant 1996 census division boundaries.

Figure 1

Educational attainment is lower in rural regions, but is increasing over time



Source: Statistics Canada. Census of Population, 1981 to 1996.

Within each type of region, there is considerable variation in educational attainment, meaning that CDs belonging to the same regional type can show substantially different educational outcomes. This variation is further investigated below for selected indicators.

The average years of schooling has improved within each type of region – the disparity within each type of region is decreasing but the gap in years of schooling between types of regions is not closing

The data on average years of schooling (Figure 2 and Appendix Table A2) confirm the overall improvement of educational attainment within each type of region over the 1981 to 1996 period.

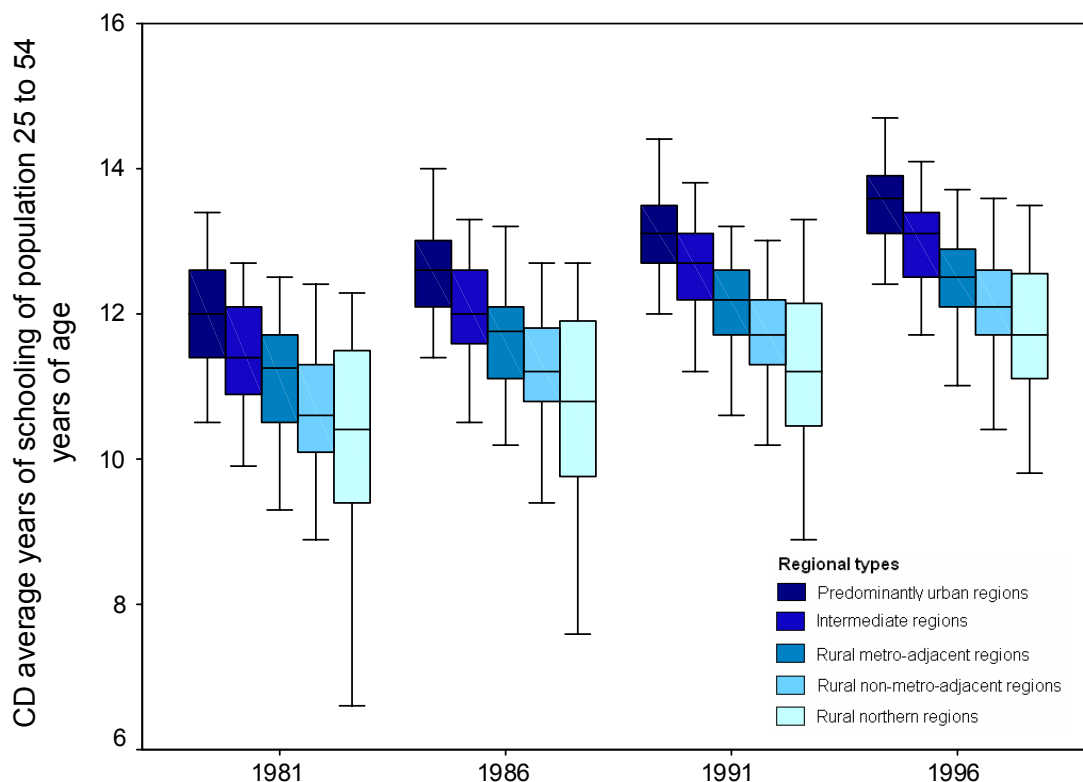
The dispersion of education outcomes has decreased considerably within each region over time, particularly among the rural northern CDs. For this regional type, the difference in average years of schooling between the top and bottom quartiles declined from 3.4 in 1981 to 2.4 years in 1996.

This appears visually in Figure 2 as the length between the top and bottom whisker, as well as the length of the whiskers themselves, became shorter over time¹ (for data, see Appendix Table A2).

¹ Note: Each component of the box represents the range of a quartile, for a regional type and a census year.

Figure 2

Dispersion of CDs by average years of schooling, within each type of region, 1981 to 1996



How to read this figure: For each type of region, the CDs are ranked by average years of schooling and are divided into four equal groups (quartiles). For each box, the central line is the median (or middle) CD of the distribution of CDs. The boxes cover the range of the CD observations in the two central quartiles and the length of the “whiskers” show the range of CD observations in the bottom and top quartiles.

See Boxes 1 and 2 for definitions.

Source: Statistics Canada. Census of Population, 1981 to 1996.

However, the relative distance between the central values of each regional type (i.e., the lines in the middle of the boxes) did not decrease between 1981 and 1996. Thus, the gap in educational attainment is not closing between the regional types.

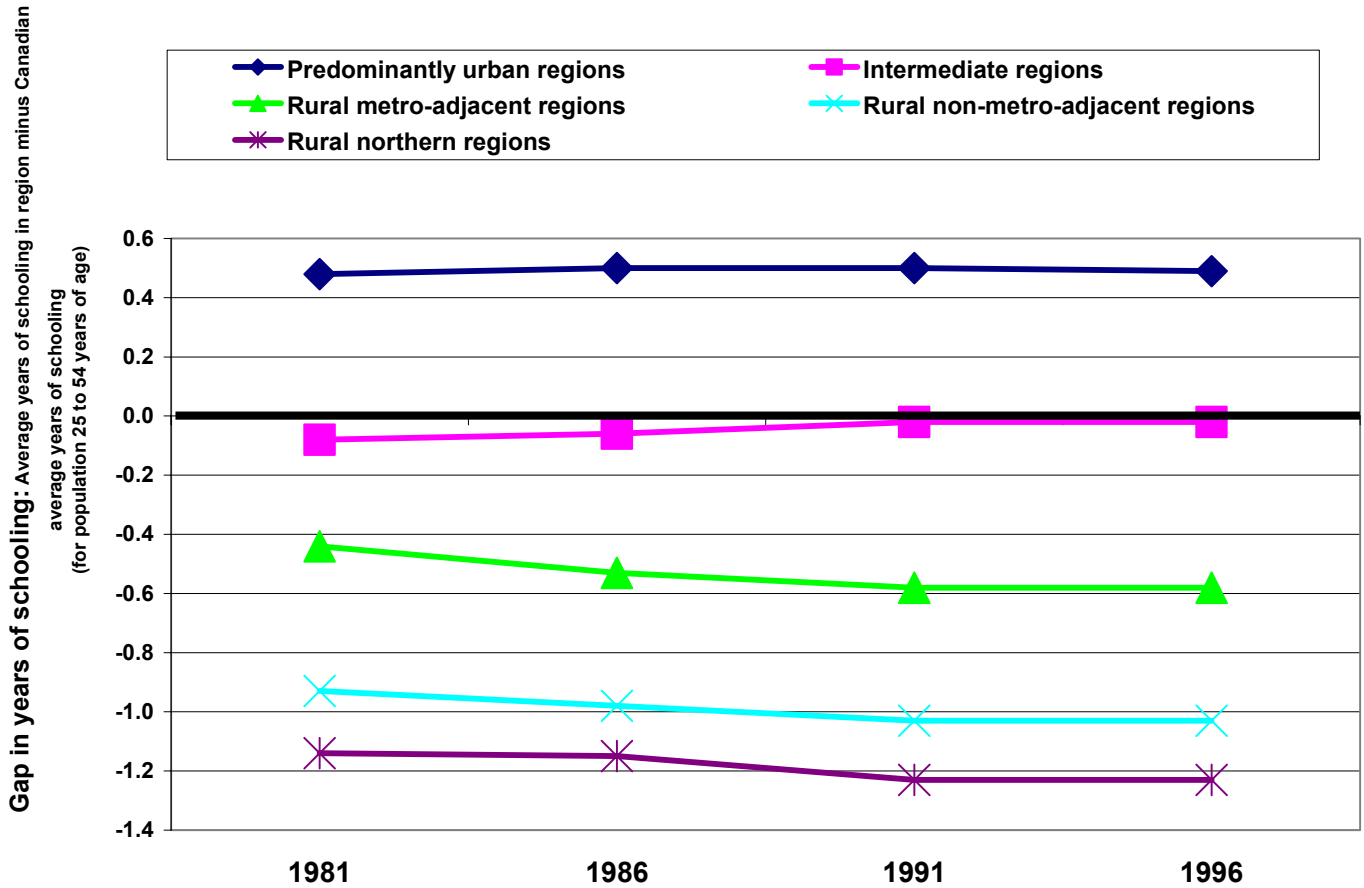
Figure 3 confirms this impression. Across the four census periods, predominantly urban regions have

maintained an average educational advantage of about 0.5 years over the national average, while intermediate regions have closed the gap (Appendix Table A2 - line labelled “Regional gap: Regional average minus Canadian average”). In contrast, each of the predominantly rural regions shows a slightly increasing gap. For rural metro-adjacent regions the gap increased from -0.4 to -0.6 years; rural non-metro-

adjacent regions saw their gap grow from -0.9 to -1.2 years (Appendix Table A2).
 -1 year; and rural northern regions from -1.1 to

Figure 3

Gap in educational attainment has widened slightly in predominantly rural regions, relative to the Canadian average



Source: Statistics Canada. Census of Population, 1981 to 1996.

The primary education gap has decreased considerably, but primary educational attainment is now more concentrated in rural areas

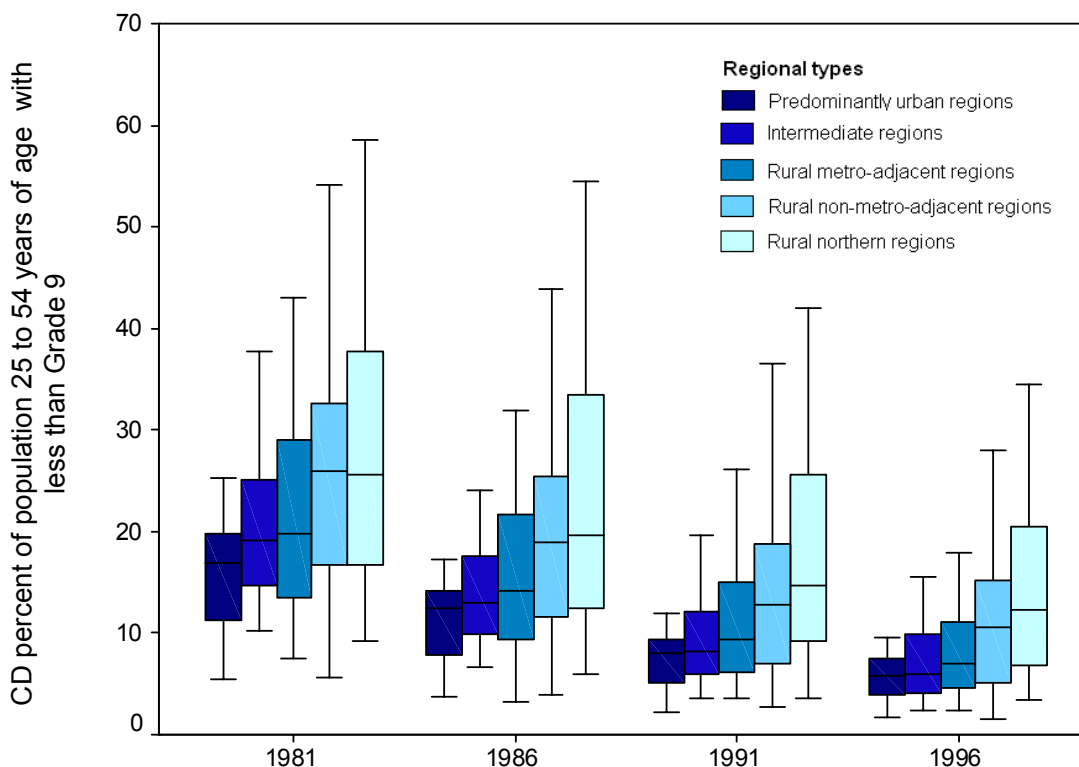
When we consider the share of the population 25 to 54 years of age, with less than Grade 9, we see a reduction over time within each type of region (Figure 4 and Appendix Table A3). Perhaps more importantly, there has been a striking reduction in the variation across CDs within each regional type and in particular for the rural regions. Demographic changes that occurred over this period are likely the major determinant of this trend – specifically, the fact that older age cohorts with less education surpassed 55 years of age since 1981. In 1981, there were 14 CDs with more than 40 percent of the population age 25 to 54 with less than Grade 9 – all of these CDs were predominantly rural regions. In 1981, the distance between the top and bottom quartiles in terms of the share of individuals with less than Grade 9 was 32.7 percentage points for rural northern regions – this gap decreased to 21.2 percentage points in 1996. In predominantly urban regions,

the distance between the top and bottom quartiles was 15.3 percentage points in 1981 – and this spread decreased to 5.9 percentage points in 1996.

It appears that much could still be achieved in levelling spatial disparities in the share of the population with less than Grade 9. In fact, the first quartile shows a similar share of population with less than Grade 9 regardless of the regional type while the fourth quartile shows greater variability (Appendix Table A3). In other words, the lower quartile is similar for each type of region in 1996, ranging from 3.1 percent for predominantly urban regions to 4.9 percent for rural northern regions. In 1996, the average CD in the top quartile for predominantly urban regions shows only 9 percent of individuals with less than Grade 9 education (Appendix Table A3). In comparison, the average CD in the top quartile in rural northern regions reports 26 percent of individuals with less than Grade 9 education. Thus, there remains considerable diversity of educational outcomes among the CDs belonging to the same regional type (Figure 4).

Figure 4

Dispersion of CDs within each type of region, 1981-1996



How to read this figure: For each type of region, the CDs are ranked by percent of population with less than Grade 9 and are divided into four equal groups (quartiles). For each box, the central line is the median (or middle) CD of the distribution of CDs. The boxes cover the range of the CD observations in the two central quartiles and the length of the “whiskers” show the range of CD observations in the bottom and top quartiles.

See Boxes 1 and 2 for definitions.

Source: Statistics Canada. Census of Population, 1981 to 1996.

Note also that the gap between regional and national average shares has decreased considerably (Appendix Table A3). Between 1981 and 1996, the difference between regional and national shares of the population (25 to 54 years of age) with less than Grade 9 has dropped from 7.6 to 5.4 percentage points for rural northern regions, and from -2.3 to -0.8 for predominantly urban regions, indicating a progressive alignment

of the regional average shares toward the national value.

Despite the reduction of the gap, the concentration of individuals with less than Grade 9 education increased in rural non-metro-adjacent regions and in rural northern regions over the period of time considered (Table 1). Concentration is measured by the location quotient, where a value greater

than one indicates that the given region has a relatively greater concentration of population with less than Grade 9 – if the location quotient increases, then individuals with less than Grade 9 are concentrating in this region, relatively. Thus,

in rural northern regions in 1996, individuals 25 to 54 years of age were 1.86 times more likely to have less than Grade 9 than the average Canadian (25 to 54 years of age).

Table 1. Concentration of population (25 to 54 years of age) with less than Grade 9, 1981-1996

Regional type	1981	1986	1991	1996
Predominantly urban regions	0.86	0.86	0.86	0.88
Intermediate regions	0.99	0.95	0.91	0.88
Rural metro-adjacent regions	1.07	1.07	1.05	1.01
Rural non-metro-adjacent regions	1.36	1.42	1.50	1.52
Rural northern regions	1.45	1.58	1.77	1.86

Note: Concentration is measured by the location quotient. A location quotient indicates the intensity within the given region, relative to the intensity for Canada as whole. For example, a location quotient of 0.88 in 1996 for predominantly urban regions is calculated by dividing the regional share with less than Grade 9 (5.5 percent) by the national share (6.3 percent).

Source: Statistics Canada. Census of Population, 1981 to 1996.

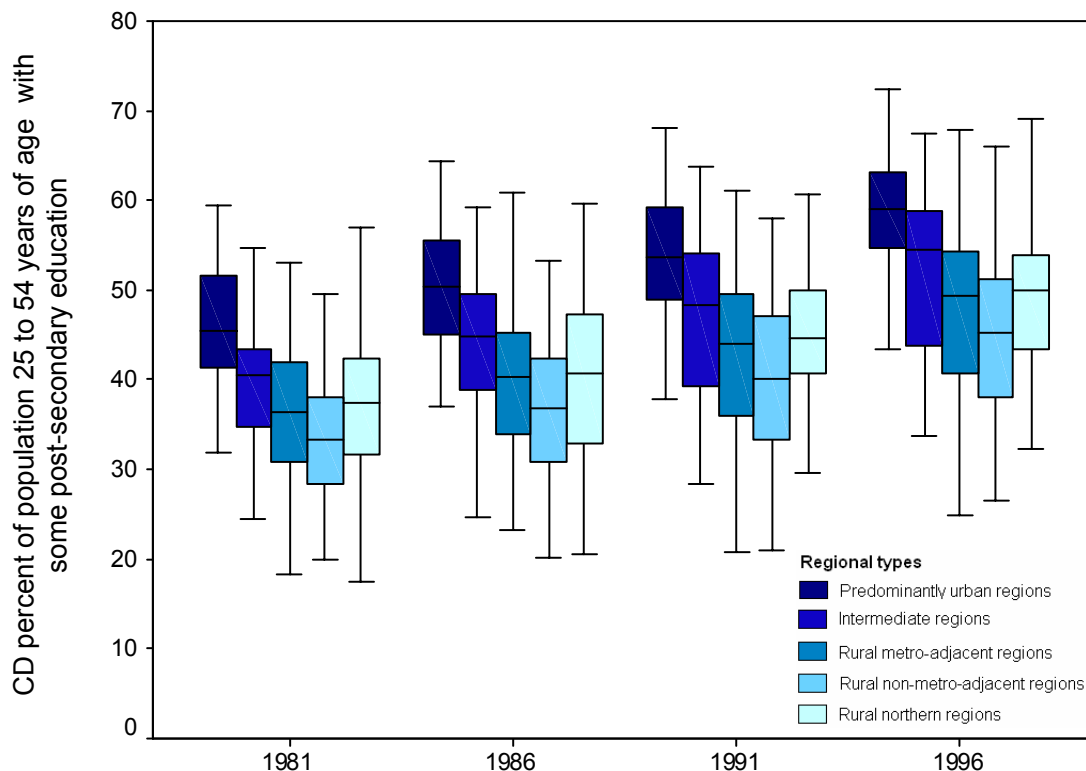
Post-secondary education increased within each type of region – the rural-urban gap persisted – but concentration did not increase

Canada has one of the highest shares of post-secondary college and trade–vocational (non-university) graduates among OECD countries and the second highest share of university graduates, behind the United States (Statistics Canada, 2000). Between 1981 and 1996, the share of

Canadians (25 to 54 years of age) with some post-secondary education increased from 44 percent to 58 percent. Interestingly, this share increased in a rather uniform manner across all types of regions (Figure 5 and Appendix Table A4). Consequently, the relative gain was somewhat larger for rural regions, because they started at a lower level. But the change in terms of percentage point increase favoured the intermediate and predominantly urban regions.

Figure 5

Dispersion of CDs within each type of region, 1981 – 1996



How to read this figure: Within each type of region, the CDs are ranked by percent of population with some post-secondary education and are divided into four equal groups (quartiles). For each box, the central line is the median (or middle) CD of the distribution of CDs. The boxes cover the range of the CD observations in the two central quartiles and the length of the “whiskers” show the range of CD observations in the bottom and top quartiles.

See Boxes 1 and 2 for definitions.

Source: Statistics Canada. Census of Population, 1981 to 1996.

Specifically, the 5 percentage point gap between the predominantly urban regions and the national average has been stable over time. The gap has dropped (i.e. improved) for intermediate regions, from -1.5 percent in 1981 to -0.7 percent in 1996. In contrast, the region to nation gap has increased for all rural regional types by about one percentage point (see Appendix Table A4).

Furthermore, between 1981 and 1996, the gap between the top and the bottom quartiles of each regional type has also increased for intermediate, rural metro-adjacent and rural non-metro-adjacent regions. For instance, the gap between extreme quartiles for intermediate regions was 19.8 percentage points in 1981, which increased to 23.8 percentage point in 1996 (see Appendix Table A4). In 1996, the top quartile of intermediate regions (64.2 percent) reached a

post-secondary attainment that was getting close to the top quartile of the urban regions (67.7 percent), while the bottom quartile of the intermediate regions (40.4 percent) remained considerably behind the level for predominantly urban regions (52.1 percent). Similarly, the gap between the extreme quartiles of predominantly rural regions increased about two percentage points, except for rural northern regions where the gap in 1996 was the same as in 1981.

Despite this pattern of change in educational gaps, in terms of percentage point differentials, in 1996 post-secondary education is slightly less concentrated in urban regions than it was in 1981 (the location quotient declined from 1.12 to 1.09 in predominantly urban regions) (Table 2). The changes are marginal in all cases – nevertheless, they signal a declining concentration of post-secondary education in predominantly urban areas in favour of a relative increase in concentration in intermediate and predominantly rural regions.

Table 2. Concentration of population (25 to 54 years of age) with some post-secondary education, 1981-1996

Regional type	1981	1986	1991	1996
Predominantly urban regions	1.12	1.11	1.10	1.09
Intermediate regions	0.96	0.98	0.98	0.99
Rural metro-adjacent regions	0.88	0.86	0.87	0.89
Rural non-metro-adjacent regions	0.79	0.79	0.80	0.82
Rural northern regions	0.84	0.84	0.86	0.85

Note: Concentration is measured by the location quotient. A location quotient indicates the intensity within the given region, relative to the intensity for Canada as whole. For example, a location quotient of 1.09 in 1996 for predominantly urban regions is calculated by dividing the regional share of population with some post-secondary education (62.8 percent) by the national share (57.6 percent).

Source: Statistics Canada. Census of Population, 1981 to 1996.

Higher education shows a substantial territorial variation

The role of higher education in stimulating economic growth and innovation has been stressed by scholars and policy-makers alike. Broad policy objectives are sometimes stated in terms of having a minimum share of population with at least a high school certificate. For example, the federal government, as part of its 1991 “Prosperity Initiative”, proposed an objective of having 90 percent of all individuals having completed Grade 12 (or equivalent) by age 25 (Government of Canada, 1991, p. x).

CDs were ranked in terms of the share of the population with a high school certificate, relative to the Canadian average. First, note that only 73

percent of Canadians, 25 to 54 years of age, had a high school certificate in 1996 (Appendix Table A1). The CDs were classified into five groups (Table 3). The top group (see the top row in Table 3) refers to CDs where the share of the population (25 to 54 years of age) with a high school certificate is above the national average. In predominantly urban regions, 80 percent of the CDs are above the national average whereas only 4.3 percent of rural northern regions are above the national average. Rural regions in general have some distance to go to reach the objective of 90 percent of individuals with at least a high school certificate. CDs above the national average (shaded dark blue in Map 1) are associated with larger cities (such as Whitehorse, Victoria, Vancouver, Calgary, Edmonton, Regina, Saskatoon, Winnipeg, the Golden Horseshoe area

from Toronto to Niagara, Ottawa, Kingston, Montreal, Quebec City, Fredericton and Halifax). Note also the dark blue in south-eastern British Columbia – where the climate is attractive to many in-migrants.

The second row in Table 3 refers to CDs where the share of the population (25 to 54 years of age) with at least a high school certificate is between 90 percent and 100 percent of the Canadian average. Again, a minority of rural regions are at this level. CDs at this level are associated with southern British Columbia, southern Alberta, CDs around Winnipeg, Thunder Bay, Sault Ste. Marie, Sudbury, southern Ontario, around Montreal and Quebec City and CDs associated with larger cities in the Atlantic Provinces. Note that the darker

shades of blue tend to be in western and southern regions of Canada – a lower share of individuals with at least a high school certificate (i.e., the lighter shades of blue) are found in northern and eastern regions. In particular, 17 percent of rural northern regions report less than 51 percent of their population (25 to 54 years of age) has at least a high school certificate.

Thus, there appears to be a rather clear spatial divide between north-central Canada to north-eastern Canada, on the one hand, and western Canada and the southern fringe, running along the St. Lawrence Valley and including the south-western part of New Brunswick, on the other hand (Map 1).

Table 3. Percent distribution of CDs by share of population with at least a high-school certificate, 1996

CD percent of population (25 to 54 years of age) with at least a high school diploma	Predominantly urban regions	Intermediate regions	Rural metro-adjacent regions	Rural non-metro-adjacent regions	Rural northern regions
*** Percent distribution of census divisions ***					
More than 73 percent (1)	80.0	48.6	14.0	5.1	4.3
66 to 73 percent (2)	20.0	27.0	40.7	20.5	17.4
58 to 65 percent (3)	0.0	21.6	27.9	35.9	34.8
51 to 57 percent (4)	0.0	2.7	15.1	26.5	26.1
Less than 51 percent (5)	0.0	0.0	2.3	12.0	17.4
All CDs	100.0	100.0	100.0	100.0	100.0

(1) For Canada as a whole, 73 percent of the population (25 to 54 years of age) has at least a high school diploma.

(2) These are CDs that are between 0.9 and 1.0 of the Canadian average.

(3) These are CDs that are between 0.8 and 0.9 of the Canadian average.

(4) These are CDs that are between 0.7 and 0.8 of the Canadian average.

(5) These are CDs that are less than 0.7 of the Canadian average.

Source: Statistics Canada. Census of Population, 1996.

Major field of study shows regional pattern

To a large extent, the regional pattern of the major field of study for individuals with a post-secondary diploma or degree reflects the different economic structure of each regional type. Not surprisingly, therefore, agriculture and biological science diplomas and degrees are most prevalent in rural metro-adjacent regions (Table 4). Fine

arts degrees present a clear regional gradient, with a declining concentration as one moves from urban to rural regional types. Note that the groups of major field of study are highly aggregated -- for instance, a diploma or degree in educational, recreational and counselling services is considerably more concentrated in rural regions, but this represents a heterogeneous group of specialties. However, rural regions are less endowed with diplomas and degrees in science

and technology (see Box 2 for the fields of study grouped as “science and technology”). The location quotient is 1.04 in predominantly urban regions, while the same indicator of relative intensity is only 0.88 for rural non-metro-adjacent regions.

The spatial pattern of the intensity of science and technology diplomas and degrees (Map 2) shows a rather clear regional divide extending from the north-central part of the country to the eastern part, on one hand (excluding a few clusters of CDs in Nova Scotia and New Brunswick), and the rest of Canada, on the other hand. The southern and western parts of Canada tend to show a higher concentration of science and technology degrees.

This is particularly evident in Southern Ontario and some CDs surrounding Montreal, the southern part of Manitoba, the region at the border between southern Saskatchewan and Alberta, and a large part of southern and western British Columbia. In contrast, most of the CDs in lighter shades of blue (intensity of science and technology degrees from 60 to 79 percent and less than 60 percent of Canada as a whole) are located in the northern and eastern part of the country.

It should be stressed that this category encompasses a heterogeneous set of degrees; nonetheless the emerging patterns suggests, at minimum, that the nature of this divide should be further investigated.

Table 4. Concentration of population by major field of study within each type of region, 1996

Field of study	Predominantly urban regions	Intermediate regions	Rural metro-adjacent regions	Rural non-metro-adjacent regions	Rural northern regions
Educational, recreational and counselling services	0.77	1.10	1.55	1.83	1.83
Fine and applied arts	1.15	0.77	0.78	0.68	0.51
Humanities and related fields	1.06	0.94	0.91	0.83	0.72
Social sciences and related fields	1.05	1.00	0.88	0.75	0.93
Commerce, management and business administration	1.08	1.00	0.77	0.71	0.59
Science and technology degrees	1.04	0.98	0.91	0.88	0.89
... Agricultural and biological sciences/technologies	0.88	1.09	1.39	1.29	0.84
... Engineering and applied sciences	1.11	0.92	0.71	0.66	0.97
... Engineering and applied science tech. and trades	1.13	0.90	0.68	0.67	0.44
... Health professions, sciences and technologies	0.97	1.01	1.06	1.13	1.00
... Mathematics and physical sciences	1.12	0.95	0.65	0.59	0.68

Note: Concentration is measured by location quotients. A location quotient indicates the intensity within the given region, relative to the intensity for Canada as whole. For example, a location quotient of 0.51 for fine and applied arts in rural northern regions is calculated by dividing the regional share of post-secondary education in fine and applied arts (1.4 percent) by the national share of post-secondary education in fine and applied arts (2.7 percent).

Source : Statistics Canada. Census of Population, 1996

Summary

In aggregate terms, predominantly rural regions have followed the educational shifts that have taken place in the country as a whole. However, predominantly rural regions have not closed the gap in the structure of educational attainment – this gap has persisted throughout the 1981 to 1996 period. In fact, the gap in average years of schooling has tended to widen between predominantly urban and predominantly rural regions. Furthermore, even though primary education levels improved substantially in the regions that had a lower educational level in 1981, the relative gain has been larger in predominantly urban regions. Thus, there is still room for significant improvements in rural regions. In contrast, post-secondary education has improved relatively more in predominantly rural regions,

but not enough to close the regional gap in the structure of post-secondary attainment, which in fact has persisted through the years.

Part of the observed spatial differences is due to the economic and demographic differences among the regions. Therefore, spatial variations in educational attainment are to some extent a natural consequence of a different demography and different educational requirements of each industry. Nevertheless, part of this variability could become a greater policy concern to the extent that it reflects a low human capital intensity for areas that share similar structural characteristics. This issue is part of a current research project.

References

- Canadian Education Statistical Council. 2000. **Education indicators in Canada: report of the Pan-Canadian Education Indicators Program, 1999**. Ottawa.
- Ehrensaft, Philip and Jennifer Beeman. 1992. "Distance and diversity in nonmetropolitan economies." Chapter 9 in Ray D. Bollman (ed.) **Rural and Small Town Canada** (Toronto: Thompson Educational Publishing), pp. 193-224.
- Government of Canada. 2002. **Innovation Strategy**. Ottawa (www.innovationstrategy.gc.ca).
- Government of Canada. 1991. **Learning Well ... Living Well, Consultation Paper, Prosperity Initiative** (Ottawa: Catalogue no. C2-180/1991E).
- Statistics Canada. 1999. **1996 Census Dictionary** (Ottawa: Statistics Canada, Catalogue no. 92-351).

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Stay Tuned

We will soon be publishing bulletins on:

- "Self-employment in rural Canada";" and
- "More than just farming: Employment in the agriculture and agri-food industry in rural and urban Canada."

Appendices

**Appendix Table A1. Percent distribution of population (25 to 54 years of age)
by level of educational attainment, Canada**

		Level of educational attainment				Total
		Less than Grade 9	Grades 9 to 13 (no certificate)	High school certificate (no post-secondary)	Some post-secondary	
Predominantly urban regions						
	1981	14.7	22.4	13.4	49.6	100.0
	1986	10.4	21.9	13.5	54.2	100.0
	1991	7.0	19.8	15.2	58.0	100.0
	1996	5.5	17.2	14.6	62.8	100.0
Intermediate regions						
	1981	16.9	26.1	14.2	42.9	100.0
	1986	11.5	26.4	14.3	47.7	100.0
	1991	7.4	24.2	16.6	51.7	100.0
	1996	5.5	21.1	16.5	56.9	100.0
All predominantly rural regions						
	1981	20.9	29.7	12.3	37.1	100.0
	1986	15.3	31.1	13.0	40.5	100.0
	1991	10.6	29.5	15.7	44.1	100.0
	1996	8.1	26.5	16.1	49.3	100.0
Rural metro-adjacent regions						
	1981	18.2	30.2	12.6	38.9	100.0
	1986	12.9	31.1	13.8	42.2	100.0
	1991	8.6	28.9	16.6	45.9	100.0
	1996	6.3	25.6	16.8	51.2	100.0
Rural non-metro-adjacent regions						
	1981	23.1	29.4	12.3	35.2	100.0
	1986	17.2	31.4	12.6	38.8	100.0
	1991	12.2	30.4	15.4	42.0	100.0
	1996	9.5	27.5	15.8	47.1	100.0
Rural northern regions						
	1981	24.6	27.6	10.2	37.5	100.0
	1986	19.1	29.5	10.6	40.8	100.0
	1991	14.5	28.2	12.3	45.1	100.0
	1996	11.7	26.6	12.7	49.0	100.0
Canada						
	1981	17.0	25.4	13.2	44.4	100.0
	1986	12.1	25.6	13.5	48.8	100.0
	1991	8.2	23.5	15.6	52.6	100.0
	1996	6.3	20.7	15.4	57.6	100.0

Source: Statistics Canada. Census of Population, 1981 to 1996.

Appendix Table A2. Average years of schooling (25 to 54 years of age) by quartile group of CDs within each type of region, 1981 to 1996

Quartile	Predominantly urban				Intermediate regions				Rural metro-adjacent				Rural non-metro-adjacent				Rural northern regions			
	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996
4 th	11.10	11.71	12.39	12.75	10.56	11.21	11.86	12.21	10.05	10.72	11.30	11.73	9.68	10.31	10.90	11.28	8.46	9.03	9.84	10.41
3 rd	11.54	12.27	13.00	13.44	11.26	11.86	12.45	12.88	10.89	11.44	11.99	12.37	10.33	10.94	11.49	11.89	9.8	10.23	10.79	11.34
2 nd	12.37	12.92	13.46	13.84	11.76	12.32	12.93	13.31	11.47	11.92	12.43	12.79	10.99	11.51	11.99	12.34	10.81	11.46	11.93	12.3
1 st	13.00	13.43	13.83	14.09	12.43	12.92	13.45	13.77	11.97	12.31	12.75	13.09	11.79	12.15	12.56	12.91	11.88	12.32	12.64	12.89
Regional average	12.28 12.85 13.41 13.77				11.72 12.29 12.89 13.27				11.36 11.82 12.33 12.71				10.87 11.37 11.88 12.26				10.66 11.2 11.68 12.06			
Absolute gap: 4th quartile minus 1st quartile	1.89 1.72 1.45 1.34				1.87 1.71 1.59 1.56				1.92 1.59 1.46 1.36				2.11 1.84 1.65 1.63				3.42 3.28 2.8 2.48			
Absolute gap: Regional average minus Canadian average	0.48 0.50 0.50 0.49				-0.08 -0.06 -0.02 -0.02				-0.44 -0.53 -0.58 -0.58				-0.93 -0.98 -1.03 -1.03				-1.14 -1.15 -1.23 -1.23			
Relative gap: 4th quartile minus 1st quartile as percent of regional average	15.39 13.39 10.81 9.73				15.96 13.91 12.34 11.76				16.90 13.45 11.84 10.70				19.41 16.18 13.89 13.30				32.08 29.29 23.97 20.56			
Relative gap: Region average minus Canadian average, as a percent of the Canadian average	4.07 4.05 3.87 3.69				-0.68 -0.49 -0.15 -0.15				-3.73 -4.29 -4.49 -4.36				-7.88 -7.94 -7.98 -7.75				-9.66 -9.31 -9.53 -9.26			

Note: CDs are classified according to their quartile ranking in 1981 and the data for 1986, 1991 and 1996 were tabulated for this constant group of CDs.

This differs from the presentation in Figure 1 where the quartiles are (re)calculated within each census year.

The average years of schooling for Canada were 11.80 in 1981, 12.35 in 1986, 12.91 in 1991 and 13.29 in 1996.

Source: Statistics Canada. Census of Population, 1981 to 1996.

Appendix Table A3. Percent of individuals (25 to 54 years of age) with less than Grade 9 by regional type and quartile, 1981 to 1996

Quartile	Predominantly urban regions				Intermediate regions				Rural metro-adjacent regions				Rural non-metro-adjacent regions				Rural northern regions			
	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996
4 th	23.1	16.8	11.4	9.0	28.8	21.2	14.4	11.3	33.9	25.2	18.5	14.1	37.2	29.1	22.5	18.6	44.4	38.4	30.6	26.1
3 rd	18.6	13.0	8.9	6.7	20.8	14.7	9.7	7.4	23.8	17.1	11.5	8.6	29.7	21.9	16.2	13.1	29.1	22.8	16.7	12.5
2 nd	14.7	10.7	7.4	5.7	16.3	10.8	6.8	4.7	16.6	11.4	7.4	5.5	20.3	14.5	9.8	7.4	20.3	14.7	11.7	9.2
1 st	7.8	5.3	3.6	3.1	11.2	7.5	4.9	3.6	11.3	7.8	4.9	3.5	12.2	8.6	5.4	3.9	11.7	7.9	5.1	4.9
Regional average	<hr/>				<hr/>				<hr/>				<hr/>				<hr/>			
	14.7	10.4	7.0	5.5	16.9	11.5	7.4	5.5	18.2	12.9	8.6	6.3	23.1	17.2	12.2	9.5	24.6	19.1	14.5	11.7
Quartile gap: 4th quartile minus 1st quartile	<hr/>				<hr/>				<hr/>				<hr/>				<hr/>			
	15.3	11.5	7.8	5.9	17.6	13.7	9.5	7.7	22.6	17.4	13.6	10.6	25.0	20.5	17.1	14.7	32.7	30.5	25.5	21.2
Regional gap: Regional average minus Canadian average	<hr/>				<hr/>				<hr/>				<hr/>				<hr/>			
	-2.3	-1.7	-1.2	-0.8	-0.1	-0.6	-0.8	-0.8	1.2	0.8	0.4	0.0	6.1	5.1	4.0	3.2	7.6	7.0	6.3	5.4

Note: CDs are classified according to their quartile ranking in 1981 and the data for 1986, 1991 and 1996 were tabulated for this constant group of CDs.

This differs from the presentation in Figure 4 where the quartiles are (re)calculated within each census year.

The percent of individuals (25 to 54 years of age) with less than Grade 9 at the Canada level were 17.0 in 1981, 12.1 in 1986, 8.2 in 1991 and 6.3 in 1996.

Source: Statistics Canada. Census of Population, 1981 to 1996.

Appendix Table A4. Percent of individuals (25 to 54 years of age) with some post-secondary education by regional type and quartile, 1981 to 1996

Quartile	Predominantly urban regions				Intermediate regions				Rural metro-adjacent regions				Rural non-metro-adjacent regions				Rural northern regions			
	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996
4 th	56.4	60.4	63.7	67.7	51.4	56.1	59.9	64.2	45.9	49.2	53.0	57.9	43.5	47.0	50.7	55.8	48.6	52.9	56.2	59.0
3 rd	49.4	54.1	57.9	62.5	42.3	46.9	51.2	56.8	39.6	43.2	47.6	53.2	35.7	39.6	43.1	47.8	40.5	44.6	48.2	52.3
2 nd	43.8	48.8	53.1	58.5	37.8	42.8	46.7	52.4	34.5	37.4	41.0	46.3	30.8	34.5	37.0	41.9	33.5	36.5	41.7	45.7
1 st	38.6	42.8	46.6	52.1	31.6	34.3	35.8	40.4	27.4	30.5	32.0	37.6	24.8	27.6	29.6	34.1	25.1	25.3	29.8	35.3
Regional average	<hr/>				<hr/>				<hr/>				<hr/>				<hr/>			
	49.6	54.2	58.0	62.8	42.9	47.7	51.7	56.9	38.9	42.2	45.9	51.2	35.2	38.8	42.0	47.1	37.5	40.8	45.1	49.0
Quartile gap: 4th quartile minus 1st quartile	<hr/>				<hr/>				<hr/>				<hr/>				<hr/>			
	17.8	17.6	17.1	15.6	19.8	21.8	24.1	23.8	18.5	18.7	21.0	20.3	18.7	19.4	21.1	21.7	23.5	27.6	26.4	23.7
Regional gap: Regional average minus Canadian average	<hr/>				<hr/>				<hr/>				<hr/>				<hr/>			
	5.2	5.4	5.4	5.2	-1.5	-1.1	-0.9	-0.7	-5.5	-6.6	-6.7	-6.4	-9.2	-10.0	-10.6	-10.5	-6.9	-8.0	-7.5	-8.6

Note: CDs are classified according to their quartile ranking in 1981 and the data for 1986, 1991 and 1996 were tabulated for this constant group of CDs.

This differs from the presentation in Figure 5 where the quartiles are (re)calculated within each census year.

The percent of individuals (25 to 54 years of age) with some post-secondary education at the Canada level were 44.4 in 1981, 48.8 in 1986, 52.6 in 1991 and 57.6 in 1996.

Source: Statistics Canada. Census of Population, 1981 to 1996.

Appendix Table A5. Concentration of individuals (25 to 54 years of age) with less than Grade 9, by regional type and quartile, 1981 to 1996

Quartile	Predominantly urban regions				Intermediate regions				Rural metro-adjacent regions				Rural non-metro-adjacent regions				Rural northern regions			
	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996
*** Concentration or intensity (location quotient) of individuals (25 to 54 years of age) with less than Grade 9, relative to the Canadian average ***																				
4 th	1.35	1.39	1.40	1.43	1.69	1.75	1.76	1.81	1.99	2.09	2.27	2.24	2.18	2.41	2.75	2.97	2.61	3.17	3.74	4.16
3 rd	1.09	1.08	1.09	1.07	1.22	1.21	1.19	1.18	1.40	1.41	1.41	1.36	1.75	1.81	1.98	2.09	1.71	1.88	2.04	2.00
2 nd	0.86	0.88	0.90	0.91	0.96	0.89	0.83	0.75	0.98	0.94	0.90	0.87	1.19	1.20	1.20	1.18	1.19	1.21	1.43	1.46
1 st	0.46	0.44	0.45	0.49	0.66	0.62	0.60	0.58	0.66	0.64	0.60	0.56	0.72	0.71	0.66	0.63	0.69	0.65	0.63	0.78
Regional average	0.86	0.86	0.86	0.88	0.99	0.95	0.91	0.88	1.07	1.07	1.05	1.01	1.36	1.42	1.50	1.52	1.45	1.58	1.77	1.86

Note: CDs are classified according to their quartile ranking in 1981 and the data for 1986, 1991 and 1996 were tabulated for this constant group of CDs.

Concentration is measured by the location quotient which gives the intensity in the quartile, relative to the intensity at the Canada level.

Source: Statistics Canada. Census of Population, 1981 to 1996.

Appendix Table A6. Concentration of individuals (25 to 54 years of age) with some post-secondary education, by regional type and quartile, 1981 to 1996

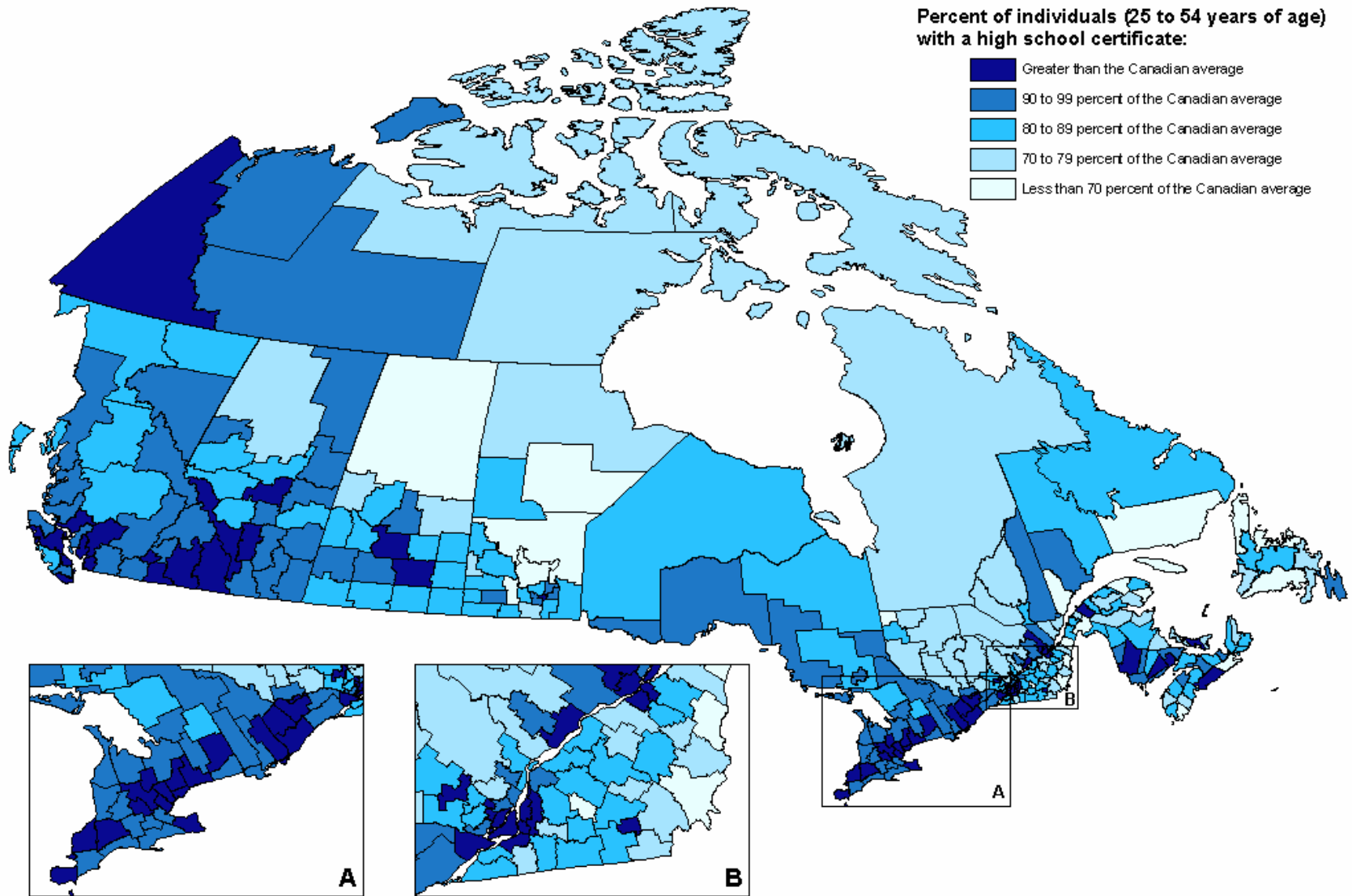
Quartile	Predominantly urban regions				Intermediate regions				Rural metro-adjacent regions				Rural non-metro-adjacent regions				Rural northern regions			
	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996	1981	1986	1991	1996
*** Concentration or intensity (location quotient) of individuals (25 to 54 years of age) with some post-secondary education, relative to the Canadian average ***																				
4 th	1.27	1.24	1.21	1.17	1.16	1.15	1.14	1.11	1.03	1.01	1.01	1.00	0.98	0.96	0.96	0.97	1.09	1.08	1.07	1.02
3 rd	1.11	1.11	1.10	1.08	0.95	0.96	0.97	0.99	0.89	0.89	0.90	0.92	0.80	0.81	0.82	0.83	0.91	0.91	0.92	0.91
2 nd	0.99	1.00	1.01	1.02	0.85	0.88	0.89	0.91	0.78	0.77	0.78	0.80	0.69	0.71	0.70	0.73	0.75	0.75	0.79	0.79
1 st	0.87	0.88	0.88	0.90	0.71	0.70	0.68	0.70	0.62	0.62	0.61	0.65	0.56	0.57	0.56	0.59	0.56	0.52	0.57	0.61
Regional average	1.12	1.11	1.10	1.09	0.96	0.98	0.98	0.99	0.88	0.86	0.87	0.89	0.79	0.79	0.80	0.82	0.84	0.84	0.86	0.85

Note: CDs are classified according to their quartile ranking in 1981 and the data for 1986, 1991 and 1996 were tabulated for this constant group of CDs.

Concentration is measured by the location quotient which gives the intensity in the quartile, relative to the intensity at the Canada level.

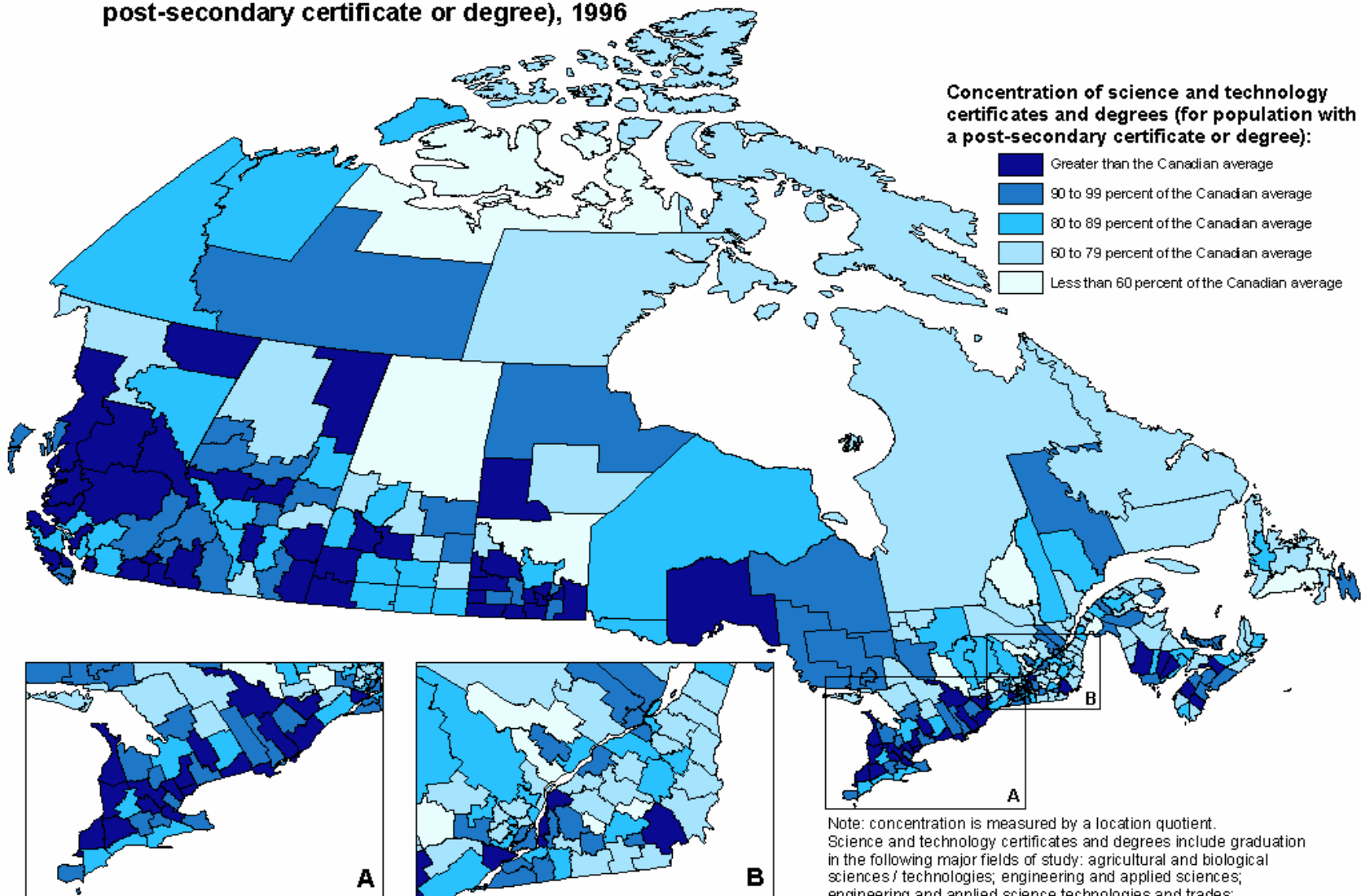
Source: Statistics Canada. Census of Population, 1981 to 1996.

Map 1. Individuals with a high school certificate, 1996



Source: Statistics Canada, Census of Population, 1996.
Map produced by Spatial Analysis and Geomatics Applications (SAGA), Agriculture Division, Statistics Canada, 2003.

Map 2. Concentration of science and technology certificates and degrees (for population with a post-secondary certificate or degree), 1996



Source: Statistics Canada, Census of Population, 1996.
 Map produced by Spatial Analysis and Geomatics Applications (SAGA), Agriculture Division, Statistics Canada, 2003.

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