

## Change in occupation mix: Professional, scientific & technical services 2006-2016 Vol. 7, No. 7, 2019

### Highlights

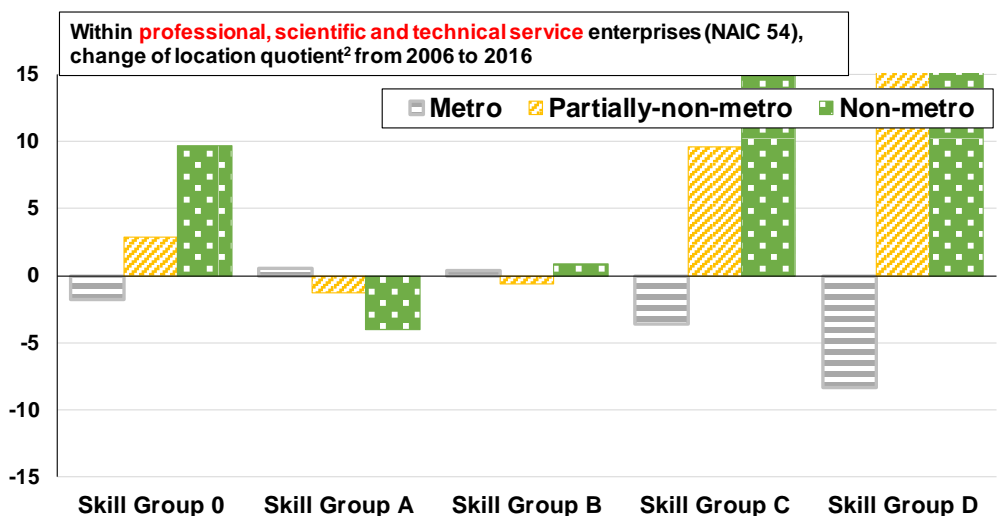
- From 2006 to 2016, there was an increase in non-metro employment in every skill group in enterprises providing professional, scientific and technical services.
- In this sector, the core occupation group is Skill Group “A” (i.e., occupations usually requiring a university degree) which comprised 45% of employment in non-metro census divisions in 2016.
- Relative to Ontario as a whole, there was a relative decline from 2006 to 2016 in the share of non-metro employment in Skill Group “A” (i.e., occupations usually requiring a university degree).
- Cautionary caveat: We are using a delineation of skills as delineated by Employment and Skills Development Canada that is based on the level of educational attainment usually required for a given occupation. However, non-metro workers know that heavy equipment mechanics (Skill Group “B”) are ‘not’ less skilled than teachers (Skill Group “A”) – the required skills are simply different.

### Why look at the mix of occupations?

There is an on-going shift to so-called “knowledge workers” who assess and design and evaluate the products and the processes of various sectors. Enterprises in professional, scientific and technical services (typically, consulting agencies in a wide range of specializations) provide these services.

The objective of this factsheet is to show the change in the mix of occupations (grouped into skill groups<sup>1</sup>) in enterprises providing professional, scientific and technical services<sup>2</sup> from 2006 to 2016<sup>3</sup>.

Figure 1 Among professional, scientific & technical service enterprises, the share of non-metro employment in Skill<sup>1</sup> Group “A” declined, relative to the Ontario average



1. Occupations are classified to Skill Groups based on: Employment and Skills Development Canada, **National Occupational Classification Matrix 2011** (<http://noc.esdc.gc.ca/English/NOC/Matrix2011.aspx?ver=11>). Group A usually requires a university education; Group B usually requires a college education or apprenticeship training; Group C usually requires a secondary school or occupation-specific training; Group D usually requires on-the-job training; Group O includes management occupations.  
 2. A location quotient is a measure, for each industry sector, of the relative intensity of employment in a skill group in, say, non-metro census divisions, compared to the employment in the skill group for Ontario as a whole. It is calculated as the percent of employment in a skill group in an industry sector for, say, non-metro census divisions, divided by the percent of employment in the skill group in the industry sector for Ontario as a whole (and then multiplied by 100).  
 Source: OMAFRA, EMSI ANALYST database. Chart by Ray D. Bollman@sasktel.net

<sup>1</sup> Occupations are classified to Skill Groups based on: Employment and Skills Development Canada, **National Occupational Classification Matrix 2011**

(<http://noc.esdc.gc.ca/English/NOC/Matrix2011.aspx?ver=11>). Group A usually requires a university education; Group B usually requires a college education or apprenticeship training; Group C usually requires a secondary school or occupation-specific training; Group D usually requires on-the-job training; and Group O includes management occupations & self-employed individuals.

<sup>2</sup> Specifically, NAICS 54 in Statistics Canada. (2017) **North American Industry Classification System: 2017** (Ottawa: Statistics Canada, Catalogue no. 12-501) (<http://www5.statcan.gc.ca/olc-cel/olc.action?objId=12-501-X&objType=2&lang=en&limit=0>).

<sup>3</sup> From 1991 to 2001 in most industries, the share of employment in higher-skilled jobs increased (slightly) more in urban areas than in rural areas. See Erik Magnusson and Alessandro Alasia. (2004) “Occupational patterns within industry groups: A rural-urban comparison.” **Rural and Small Town Canada Analysis Bulletin** Vol. 5, No. 6 (Ottawa: Statistics Canada, Catalogue no. 21-006-

Summary data for each sector is in an appendix<sup>4</sup>.

### Findings

Employment in professional, scientific and technical services increased by 26% in Ontario from 2006 to 2016 (Table 1). The increase was the smallest (11%) in non-metro census divisions (CDs) followed by a 26% increase in metro CDs and a 28% increase in

XIE) ([www.statcan.gc.ca/bsolc/english/bsolc?catno=21-006-X&CHROPG=1](http://www.statcan.gc.ca/bsolc/english/bsolc?catno=21-006-X&CHROPG=1)).

<sup>4</sup> Appendix: Tables and Charts showing the Level and Change of Employment by Skill Group for each Industry Sector, by Type of Census Division, Ontario, 2006 – 2016.

partially-non-metro CDs in non-metro<sup>5</sup> census divisions (CDs) followed by a 26% increase in metro CDs and a 28% increase in partially-non-metro CDs.

Employment increased in each skill group at the Ontario level and for each skill group in non-metro and partially-non-metro CDs. Within metro CDs, the number employed in the Skill Groups “C” and “D” declined slightly.

A location quotient (LQ) calculates a relative intensity (Columns 6 and 7 in Table 1). For example, Skill Group “A” represented 45% of non-metro employment in professional, scientific and technical services employment in non-metro CDs in 2016. When we take this 45% share and divide by the 54% share at the Ontario level (and multiply by 100), we generate an LQ (or relative intensity) of 83 (in Column 7) as a measure of the relative intensity of non-metro manufacturing in Skill Group “A”, relative to 100 for Ontario as a whole. A figure less than 100 indicates that this group has a lower share (or is less intensive) compared to Ontario as a whole. From 2006 to 2016, the non-metro LQ for employment in Skill Group “A” declined by 4 points (Figure 1). This decline indicates a (slight) relative decline in the non-metro share of employment in this skill group, relative to the Ontario level change. While the proportion in Group “A” in non-metro CDs in this sector increased, it failed to keep pace with the scale of the increase in Ontario thus showing a declining LQ.

In fact, within non-metro enterprises in professional, scientific and technical services, in four of the five skill groups, the share of employment in the skill group increased relative to the change for the province as a whole. The change in the location quotient was positive in each skill group – except Skill Group “A”. Relative to the Ontario average change, the share of employment in non-metro CDs increased in Skill Group “O” (management occupations which would include self-employed consultants). However, the share in Skill Group “A” decreased slightly (Figure 1) in non-metro professional, scientific and technical services enterprises, relative to the change across all CDs in Ontario.

From 2006 to 2016, the positive change in Figure 1 for the non-metro LQ for Skill Group “B” and Skill Group “C” indicates a relative increase in the share of these occupations in non-metro professional, scientific and technical services enterprises, compared to Ontario as a whole.

### Summary

Between 2006 and 2016, there was an increase in non-metro employment in every skill group in enterprises providing professional, scientific and technical services. However, relative to Ontario as a whole, in non-metro census divisions, the share of employment in Skill Group “A” did not increase as fast as the share at the Ontario level.

**Table 1. Level and change in skill<sup>1</sup> structure of employment in professional, scientific and technical services (NAICS 54), by type of census division in Ontario, 2006 and 2016**

Skill group <sup>1</sup>	Number employed (,000)		Percent change, 2006 to 2016	Number employed as percent of total		Location quotient <sup>2</sup>		
	2006	2016		2006	2016	2006	2016	Change <sup>3</sup>
<b>Metro census divisions<sup>4</sup></b>								
O	26	30	15	8	7	105	103	-2
A	175	238	36	52	56	103	104	1
B	92	114	24	27	27	93	94	0
C	38	38	-1	11	9	99	95	-4
D	4	3	-6	1	1	106	97	-8
Total	334	423	26	100	100	100	100	0
<b>Partially-non-metro census divisions<sup>4</sup></b>								
O	5	6	23	7	6	90	93	3
A	37	51	35	46	49	91	90	-1
B	28	35	25	34	33	117	116	-1
C	10	11	13	12	11	103	113	10
D	1	1	28	1	1	87	108	21
Total	81	104	28	100	100	100	100	0
<b>Non-metro census divisions<sup>4</sup></b>								
O	2	2	18	5	5	70	79	10
A	14	16	14	44	45	87	83	-4
B	12	13	10	38	37	129	130	1
C	4	4	4	12	11	103	118	15
D	0	0	36	1	1	71	107	36
Total	31	35	11	100	100	100	100	0
<b>All census divisions</b>								
O	33	38	17	7	7	100	100	0
A	226	304	34	51	54	100	100	0
B	132	162	23	29	29	100	100	0
C	52	53	2	12	9	100	100	0
D	5	5	2	1	1	100	100	0
Total	447	562	26	100	100	100	100	0

1. Occupations are classified to Skill Groups based on: Employment and Skills Development Canada. **National Occupational Classification Matrix 2011** (<http://noc.esdc.gc.ca/English/NOC/Matrix2011.aspx?ver=11>). **Group A** usually requires a university education; **Group B** usually requires a college education or apprenticeship training; **Group C** usually requires a secondary school or occupation-specific training; **Group D** usually requires on-the-job training; **Group O** includes management occupations and self-employed individuals.

2. A location quotient is a measure, for each industry sector, of the relative intensity of employment in a skill group in, say, non-metro census divisions, compared to the employment in the skill group for Ontario as a whole. It is calculated as the percent of employment in a skill group in an industry sector for, say, non-metro census divisions, divided by the percent of employment in the skill group in the industry sector for Ontario as a whole (and then multiplied by 100).

3. The change in the location quotient indicates whether a given geographic group (e.g., non-metro census divisions) reported an increase or decrease in the percent of their employment in a given skill group, relative to Ontario as a whole.

4. The classification of census divisions is shown in Table 2 in “Rural Ontario’s Demography: Census Update to 2016” **Focus on Rural Ontario** (March, 2017).

Source: OMAFRA, EMSI ANALYST database.

Rural Ontario Institute gratefully acknowledges the work of Ray Bollman in preparing this edition of [Focus on Rural Ontario](#). Questions on data sources can be directed to [RayD.Bollman@sasktel.net](mailto:RayD.Bollman@sasktel.net). Any comments or discussions can be directed to [NRageltie@RuralOntarioInstitute.ca](mailto:NRageltie@RuralOntarioInstitute.ca)

<sup>5</sup> Defined in “Rural Ontario’s Demography: Census Update 2016.” **Focus on Rural Ontario** (Guelph: Rural Ontario Institute, March) (<http://www.ruralontarioinstitute.ca/focus-on-rural-ontario.aspx>).