

# Ontario's Small-Sized Regions' performance on the 3Ts of Economic Development

**Benchmarking Project: Ontario Competes**  
Ontario in the Creative Age

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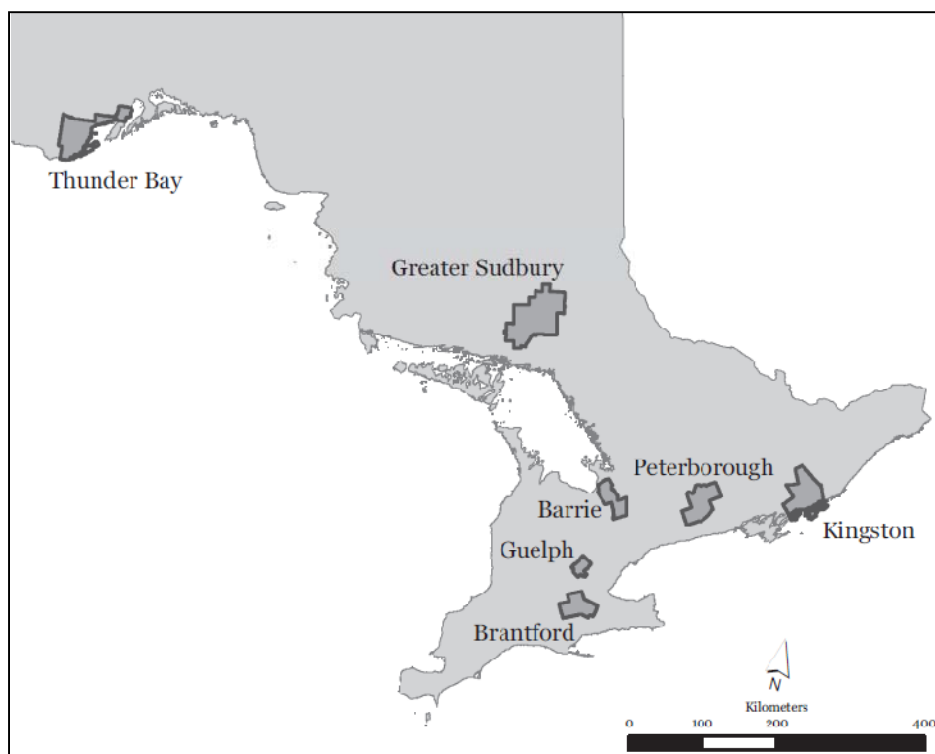
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## Small-Sized Regions: 3Ts of Economic Development

In the province of Ontario there are seven metro regions with a population between 100,000 and 250,000 and an average population of 140,000. These small-sized regions classified by Statistics Canada as Census Metropolitan Areas (CMAs) are Barrie, Brantford, Guelph, Kingston, Peterborough, Sudbury and Thunder Bay. These regions, which are predominately located around Lake Ontario, account for 8% of Ontario's population and approximately the same proportion of its GDP.

**Figure 1: Small-Sized Ontario Regions (Population 100,000-250,000)**



Source: MPI. Statistics Canada, 2006

The world in which these and other regions exist is becoming spiky with wealth and economic activities becoming highly concentrated in a small number of regions. The largest regions are absorbing capital and resources that once found their way to small-sized regions. While benchmarking the small-sized regions on the 3Ts, which will be briefly explained below, normative claims are made based on current economic and social trends as to what assets regions should be attempting to maximize if they are to

achieve economic growth. The 3Ts of economic development: Technology, Talent, or Tolerance provides a means to judge the performance of Ontario's 15 metro regions relative to other jurisdictions and their future socio-economic prosperity. The jurisdictions chosen as peers for the small-sized regions were selected based upon their population size, geographic location, and interest (importance to the North American economic system). The peer regions selected were Battle Creek, MI, Bloomington, IL, College Station, TX, Dalton, GA, Kelowna, BC, Mount Vernon, WA, Rocky Mount, NC, Sherbrooke, QC, State College, PA, Trois-Rivières, QC in addition to the seven Ontario regions themselves for a total of 17 regions.

### **3Ts Background Information**

Currently, physical capital like factories, large equipment, and various forms of real-estate remains rooted in place while human and financial capital have been largely freed to move without friction in the economy. The relocation of human and financial capital requires an alteration of its social function as it must adapt and become part of the new regional system. While the qualities inherent to any form of capital remain constant across geographies, the organization and structure that embodies it alters its social function. The relation of various forms of new capital inter-jurisdictionally provides opportunities for economic growth in both relative and absolute terms. In absolute terms the movement of capital requires resources that are committed to its reproduction and therefore necessitates an expansion of the economic "pie". The movement also causes relative economic growth, resulting from capital put to more productive uses, decreasing costs or creating competitive advantages that result in large returns – either wages or profits. All of which raise GDP per capita.

The 3Ts of economic development is part of a theory that gives primacy to the attraction and retention of a specific type of capital – *creative capital*. Creative capital differs from human capital by identifying the Creative Class as key to economic growth and its focus on the underlying factors that determine their location decisions (Florida, 2002). In the creative economy, brawn and the ability to mass produce goods is subordinate to the innate human capability to generate new ideas, concepts, products

and processes. The Creative Class is defined as people in occupations paid to think. Regions that attract and retain this group of workers are best positioned to succeed in the future. The global city hierarchy of the creative age will be determined not by access to natural resources, but by how and which are able to attract this class of worker. With the concentration of Talent and the multitude of perspectives that comes with people being able to carve out their own space in a new community (Tolerance), come new technologies and innovations that support continued growth (Technology). Each of the 3Ts plays an important role in the ability of regions to attract the Creative Class. As a result regions should not choose to focus on any one “T”; each is necessary but not sufficient for economic growth. In the creative age, regions will continued to be judged by their GDP per capita and other traditional measures, but it will be their overall creative output that determines their sustained success.

For more information on our terminology refer to the [Understanding our Terminology](#) section on our website. For an in depth explanation of the 3T’s see “Ontario Competes” (Martin Prosperity Institute, 2009).<sup>1</sup>

The following is a look at how the small-sized regions of Ontario perform on the 3Ts of economic development. The 3Ts are used to gauge how these regions compare to their peers on Talent, Technology and Tolerance related assets. Combining the indicators of the 3Ts forms the Creativity Index, a measure of how a region is performing overall. The paper will begin with an examination of the occupational mix of Ontario’s small-sized regions, specifically their Creative Class. It will then analyze how these regions are performing on Technology, Talent and Tolerance. The conclusion will discuss the aggregate of the 3Ts, the Creativity Index and its implications for the future.

## **Ontario’s Small-Sized Regions’ Creative Class**

As mentioned, the Creative Class is composed of people who are paid to think for a living, including people working in Technology, Arts and Culture, Professional and

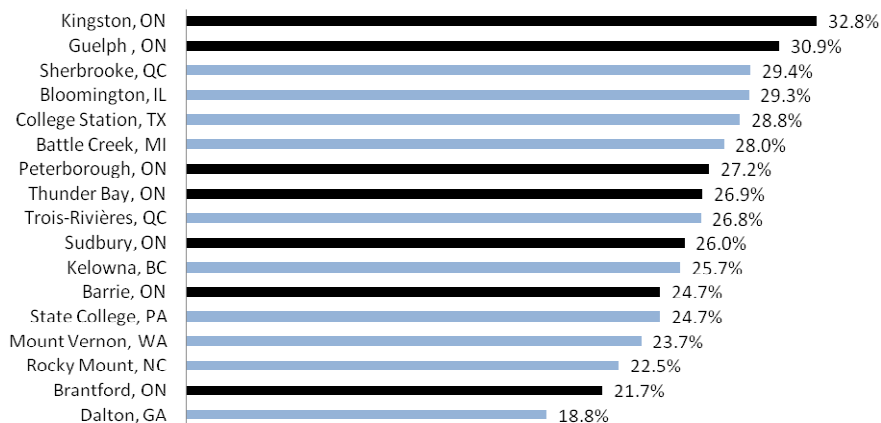
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<sup>1</sup> “Ontario Competes” is the first document released as part of the Martin Prosperity Institute’s benchmarking analysis for the *Ontario in the Creative Age* project. This document acts as a primer for all subsequent benchmarking releases; therefore, we highly recommend that one read this first. Follow this path to do so: [http://martinprosperity.org/media/pdfs/Ontario\\_Competes.pdf](http://martinprosperity.org/media/pdfs/Ontario_Competes.pdf)

Education and Health (TAPE) occupations. In Ontario occupations in the Creative Class have an average total income of \$64,100 compared to an average of \$42,600 for all occupations.

The share of the workforce in the Creative Class for the peer group ranges from Dalton, GA at 18.8% to Kingston, ON at 32.8% with five of the seven Ontario regions having at least one quarter of their workforce in the Creative Class. At 32.8% Kingston has the 11<sup>th</sup> highest Creative Class share of the 187 regions in North America with a population of 100,000-250,000. Between Dalton and Kingston are the other six Ontario regions spread almost evenly across the distribution. Guelph ranks second in the peer group with 30.9% of its workforce in the Creative Class while Brantford is ranked 14th among the peers and 157 out of all North American regions (Population 100,000-250,000). The average share of the workforce in the Creative Class for the peer group is 26.3%. In total, the seven Ontario regions sum to 140,000 workers or 7% of Ontario's total share of the Creative Class.

**Figure 2: Ontario's Small-Sized Regions and the Creative Class (% of Workforce)**



Source: MPI Analysis (2008). Statistics Canada Catalogue no. 94-581-XCB2006007. US Census Bureau, American Community Survey. (2006).

## Technology: Innovation and High-Tech Production

Robert Solow, Paul Romer, Robert Lucas among others, have shown in different ways that technology is the driving force behind economic growth (e.g. Solow, 1956; Romer,

1990). Regions cannot access the global economy (let alone compete in it) without technologies that connect, and provide high speed information processing. Regions like Ontario's small-sized, and Akron and State College to varying degrees have sophisticated technology sectors and consumers. Determining success in the creative age is not the difference between have and have not. Rather, the dichotomy that matters between highly competitive regions is that of leader and follower. First movers that introduce innovations and that have well developed high-tech industrial complexes are able to reap significant benefits in the form of sustainable growth and the production of new wealth.

The Overall Technology Ranking is based on three equally weighted separate measures that reflect a regions innovativeness and the size of their high-tech producing industries. The three measures are: the North American Tech-Pole Index based on the share of employment in high-tech industries relative to the North American average, and two innovation measures: 1) total patents and 2) the year over year growth in patents for a five year period. The former is based on information from US County Business Patterns and Statistics Canada. All patent data is based on utility patent data from the United States Patent and Trade Office (USPTO). Utility patents are granted for the discovery of a process, machine, article of manufacture, or composition of matter that is new, useful and non-obvious.

Table 1 ranks Ontario's small-sized regions and its peer regions according to the composite technology index. Figures 3-5 rank the Ontario regions against their peers on the North American Tech-Pole Index, Patents per 10,000 and Patent Growth. Figures 6 and 7 show the relationship between the technology indicators and the Creative Class respectively.

### **Results:**

- The top performers overall on Technology are Sherbrooke, Kelowna and Peterborough followed by Bloomington and State College.

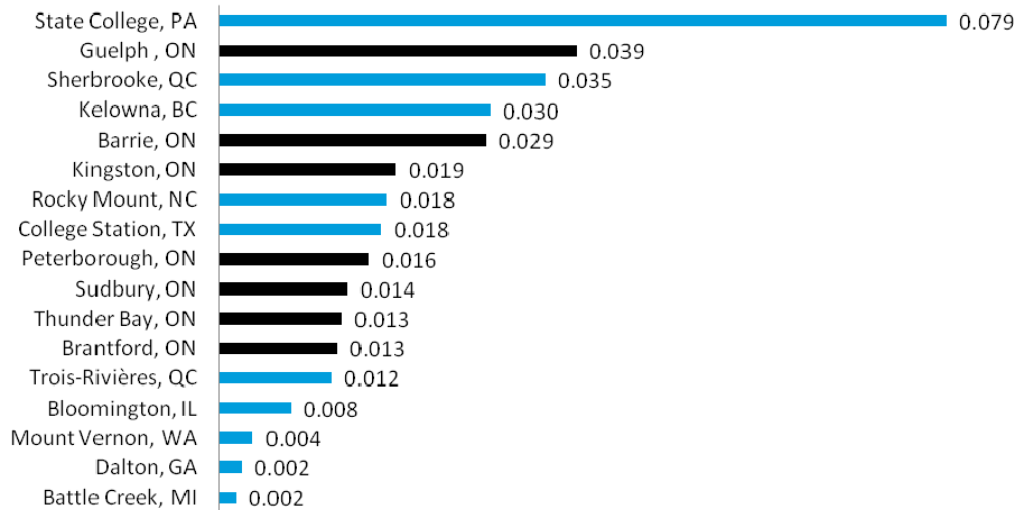


- Guelph is the highest ranked Ontario region on the North American Tech-Pole Index. It is tied with Sherbrooke with a concentration of high-tech employment of 0.04. State College is the peer leader and doubles that of Guelph.
- In 2005 Kingston was the most innovative of the small-sized Ontario regions in terms of total patents and by patents per 10,000.
- Guelph, Brantford and Kingston were clear laggards in terms of patent growth, ranking 15th, 16th and 17th respectively. Peterborough meanwhile from 2000-2005 increased its patent production on average by 30% per year. Although, looking at this region's patents growth, it can be seen that even small changes in total patent output from a very small base could result in large growth percentages, thus should be interpreted with caution.
- Three regions are laggards on Technology: Thunder Bay, Dalton and Kingston. These three regions do not rank above 11th on any of the indicators.

**Table 1: Overall Technology Ranking**

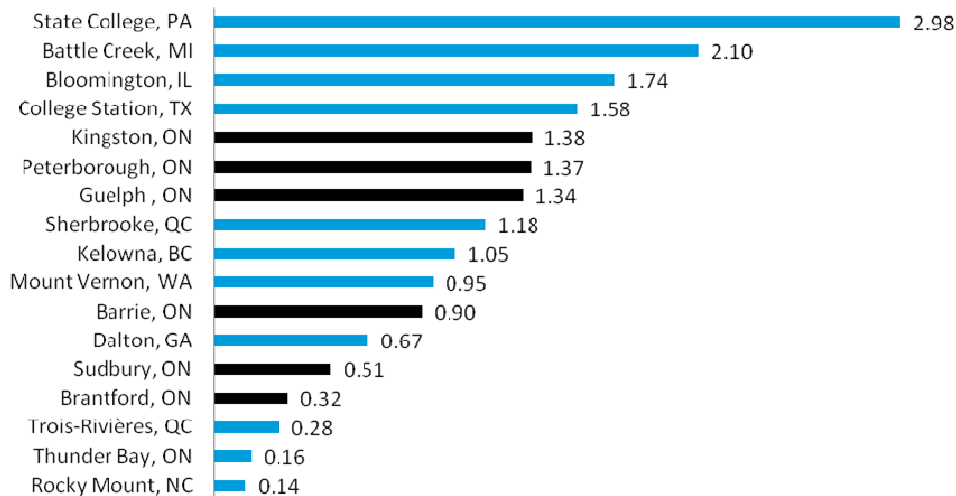
Overall Technology Ranking	North American Tech-Pole	North American Tech-Pole Ranking	Patent Count (2006)	Patent Count Ranking	Patents per 10,000	Patent per 10,000 Ranking	Patent Growth	Patent Growth Ranking	
1	Sherbrooke (CMA)	0.035	3	22	5	1.18	8	15.1%	6
2	Kelowna (CMA)	0.030	4	17	7	1.05	9	27.8%	3
3	Peterborough (CMA)	0.016	9	16	9	1.37	6	30.4%	2
4	Bloomington, IL	0.008	14	28	4	1.74	3	24.6%	4
5	State College, PA	0.079	1	42	1	2.98	1	-4.5%	14
6	Greater Sudbury (CMA)	0.014	10	8	13	0.51	13	22.2%	5
7	Barrie (CMA)	0.029	5	16	9	0.90	11	0.5%	8
8	College Station, TX	0.018	8	31	2	1.58	4	-0.7%	11
9	Trois-Rivières (CMA)	0.012	13	4	14	0.28	15	56.7%	1
10	Mount Vernon, WA	0.004	15	11	11	0.95	10	5.9%	7
11	Guelph (CMA)	0.039	2	17	7	1.34	7	-8.0%	15
12	Battle Creek, MI	0.002	17	29	3	2.10	2	-0.3%	10
13	Rocky Mount, NC	0.018	7	2	16	0.14	17	0.0%	9
14	Kingston (CMA)	0.019	6	21	6	1.38	5	-10.0%	17
15	Thunder Bay (CMA)	0.013	11	2	16	0.16	16	-3.3%	13
16	Dalton, GA	0.002	16	9	12	0.67	12	-2.0%	12

**Figure 3: North American Tech-Pole Index, 2006**



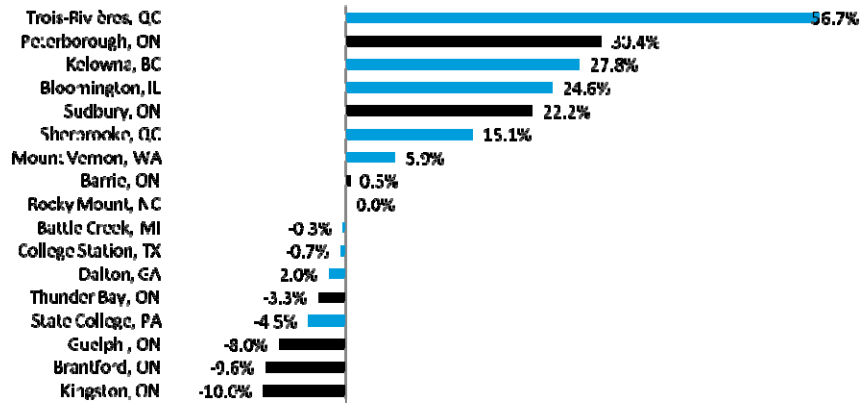
Source: MPI Analysis (2008). Statistics Canada Catalogue no. 97-559-XCB2006009. County Business Patterns, 2006

**Figure 4: Patents per 10,000, 2005**



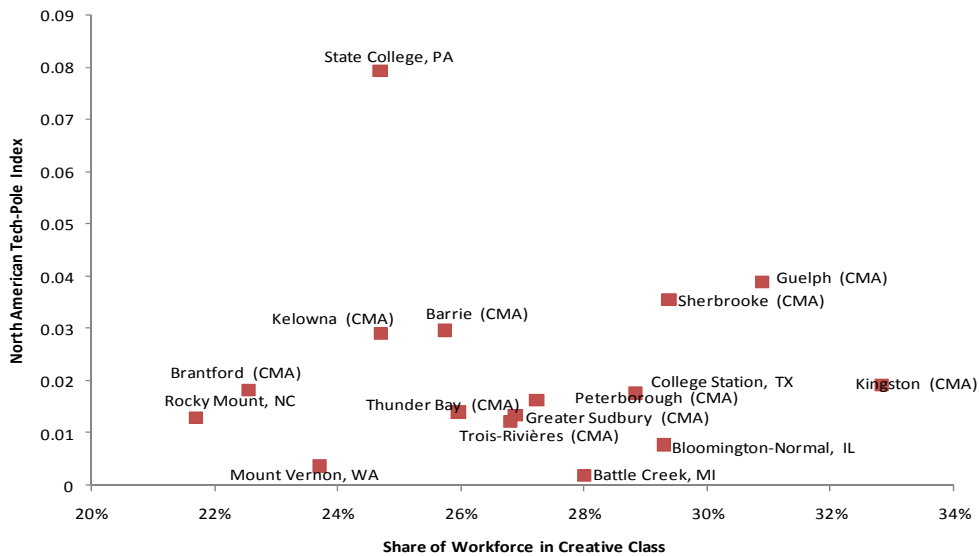
Source: MPI and Dieter Franz Kogler Analysis. USPTO (1975-07).

Figure 5: Patent Growth (2000-2005)



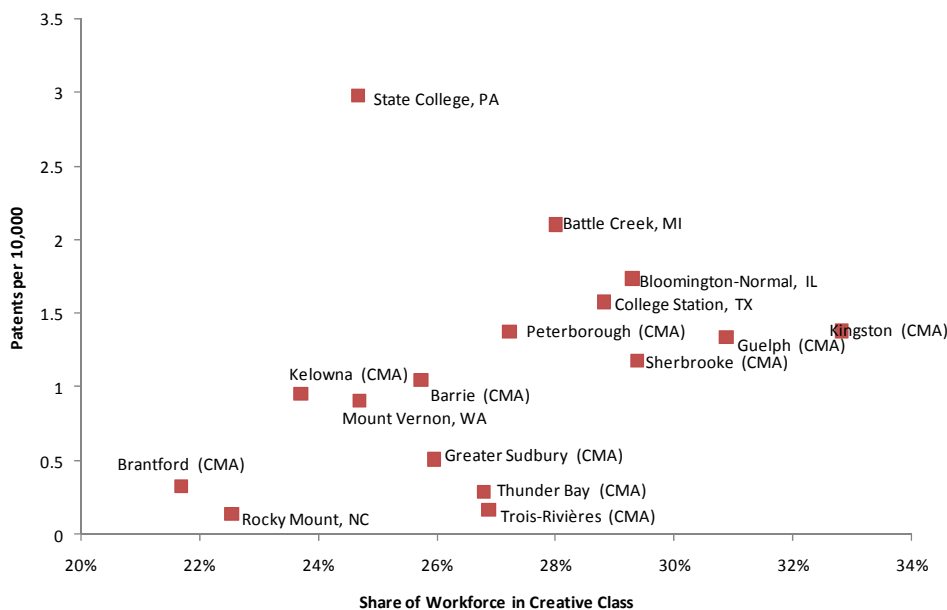
Source: MPI and Dieter Franz Kogler Analysis. USPTO (1975-07).

Figure 6: North American Tech-Pole and the Creative Class



Source: MPI Analysis (2008). Statistics Canada Catalogue no. 94-581-XCB2006007. US Census Bureau, American Community Survey. (2006). Statistics Canada Catalogue no. 97-559-XCB2006009. County Business Patterns, 2006

**Figure 7: Patents per 10,000 and the Creative Class**



Source: MPI and Dieter Franz Kogler Analysis. USPTO (1975-07). Statistics Canada Catalogue no. 94-581-XCB2006007. US Census Bureau, American Community Survey

## Talent: Human Capital and the Creative Class

The indicators that we use for “Talent” combine an examination of the Creative Class with other, more traditional measures of human capital. Using both an occupational measure and educational measures better captures the creative capital of a region but due to the high correlation we chose to only use the Creative Class to determine the Overall Talent Ranking. Human capital became a major theme in economics with the work of Jacob Mincer (1958), Gary Becker (1964), and most recently Ed Glaeser (2001). Their work has demonstrated the importance of investing in personal productivity as a way to generate growth for firms and regions. Due to the high correlation between the Talent Index (population greater than 25 years of age with a Bachelor’s Degree or above) and the Creative Class, only the latter is used to rank the peer regions on Talent in Table 2. The Creative Class reflects the ability of individuals to transfer their abilities as measured by the Talent Index into high value economic activities manifested in occupations.

The small-sized regions generally perform around the average or above on Talent indicators among their peer regions which is based solely on the share of the workforce in the Creative Class. Table 2 shows how the Ontario regions perform on the various indicators of Talent relative to their peer regions. Figures 8 and 9 visualize the information showing how the regions scores on each measure. Figure 10 crosses the Talent Index with Creative Class to show the relationship between these indicators.

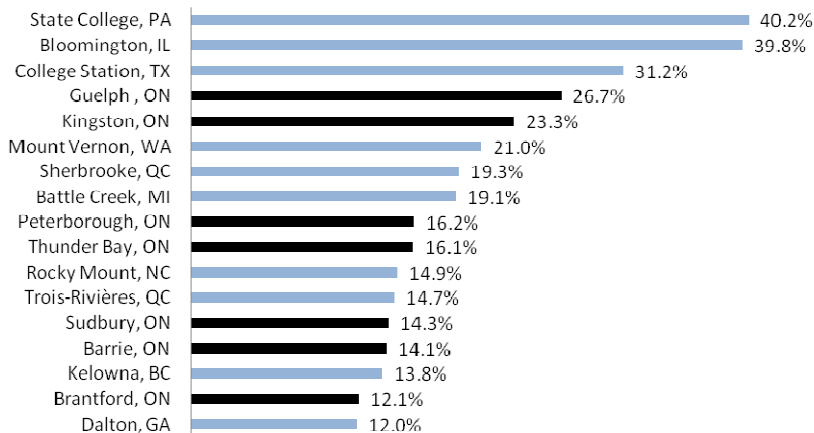
### **Results:**

- The three top performers among Ontario Regions on the Talent Index are Guelph (26.7%), Kingston (23.3%) and Peterborough (16.2%). Only the first two are above the Ontario average of 22.8%, with the rest falling below the average. On average the seven small-sized regions fall below the Ontario average. As a group they average 17.5% on the Talent Index. Brantford performs the worst on the Talent Index where just 12.1% of the population greater than 25 years of age has a Bachelor's Degree or above.
- The best performing regions among the peer regions on the Talent Index are all college towns a trend that holds true for Guelph and Kingston. The three regions of State College, Bloomington and College Station all have a Talent Index above 30%.
- Two of the 17 peer regions are experiencing a Brain Gain, Mount Vernon (1.278) and Dalton (1.231) according to the Brain Drain/Gain Index. Of the remaining regions, 12 are experiencing a Brain Drain. Kelowna, Barrie and Brantford have no universities and therefore cannot be ranked.
- The peer regions that were among the highest ranked on the Talent Index tend to be suffering the worst Brain Drain. There is a trend that shows that as the share of the Creative Class increases so does its Talent Index percentage (Figure 10).

**Table 2: Overall Talent Ranking**

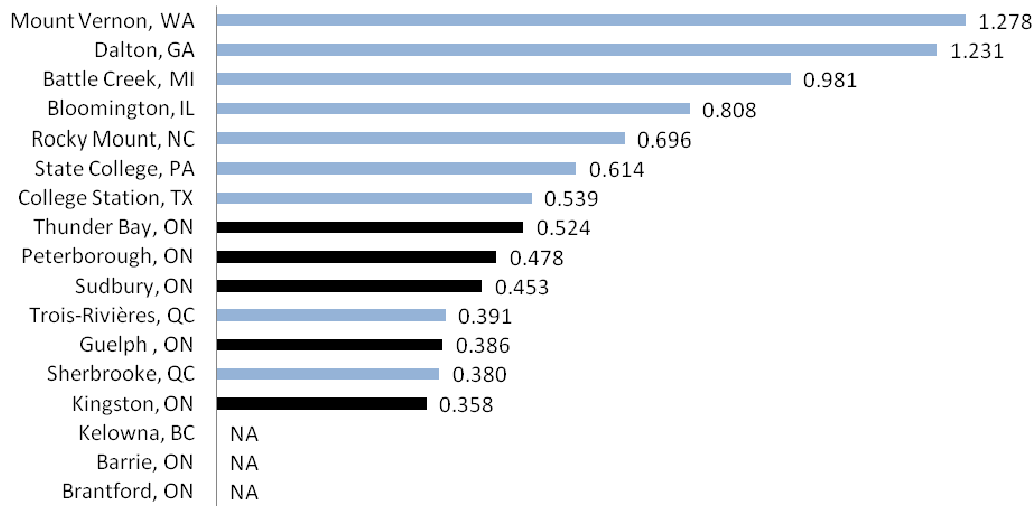
Talent Ranking	Creative Class	Creative Class Ranking	Bachelor Degrees	Bachelor Degree Ranking	Graduate Degrees	Graduate Degrees Ranking	Talent Index	Talent Index Ranking	Brain Drain/Brain Gain	Brain Drain/Brain Gain Ranking
<b>1 Kingston (CMA)</b>	<b>32.8%</b>	<b>1</b>	<b>12.5%</b>	<b>7</b>	<b>11.3%</b>	<b>4</b>	<b>23.3%</b>	<b>5</b>	<b>0.36</b>	<b>14</b>
<b>2 Guelph (CMA)</b>	<b>30.9%</b>	<b>2</b>	<b>16.0%</b>	<b>4</b>	<b>10.8%</b>	<b>5</b>	<b>26.7%</b>	<b>4</b>	<b>0.39</b>	<b>12</b>
3 Sherbrooke (CMA)	29.4%	3	11.7%	8	8.0%	7	19.3%	7	0.38	13
4 Bloomington, IL	29.3%	4	27.4%	1	12.4%	3	39.8%	2	0.81	4
5 College Station, TX	28.8%	5	18.3%	3	12.9%	2	31.2%	3	0.54	7
6 Battle Creek, MI	28.0%	6	12.6%	6	6.5%	10	19.1%	8	0.98	3
<b>7 Peterborough (CMA)</b>	<b>27.2%</b>	<b>7</b>	<b>9.7%</b>	<b>11</b>	<b>6.6%</b>	<b>9</b>	<b>16.2%</b>	<b>9</b>	<b>0.48</b>	<b>9</b>
<b>8 Thunder Bay (CMA)</b>	<b>26.9%</b>	<b>8</b>	<b>9.4%</b>	<b>13</b>	<b>6.8%</b>	<b>8</b>	<b>16.1%</b>	<b>10</b>	<b>0.52</b>	<b>8</b>
9 Trois-Rivières (CMA)	26.8%	9	10.6%	10	4.4%	14	14.7%	12	0.39	11
<b>10 Greater Sudbury (CMA)</b>	<b>26.0%</b>	<b>10</b>	<b>8.7%</b>	<b>15</b>	<b>5.7%</b>	<b>11</b>	<b>14.3%</b>	<b>13</b>	<b>0.45</b>	<b>10</b>
11 Kelowna (CMA)	25.7%	11	9.0%	14	4.9%	12	13.8%	15	N/A	N/A
<b>12 Barrie (CMA)</b>	<b>24.7%</b>	<b>12</b>	<b>9.4%</b>	<b>12</b>	<b>4.8%</b>	<b>13</b>	<b>14.1%</b>	<b>14</b>	<b>N/A</b>	<b>N/A</b>
13 State College, PA	24.7%	13	19.7%	2	20.5%	1	40.2%	1	0.61	6
14 Mount Vernon, WA	23.7%	14	12.9%	5	8.1%	6	21.0%	6	1.28	1
15 Rocky Mount, NC	22.5%	15	10.9%	9	4.0%	17	14.9%	11	0.70	5
<b>16 Brantford (CMA)</b>	<b>21.7%</b>	<b>16</b>	<b>7.9%</b>	<b>16</b>	<b>4.3%</b>	<b>15</b>	<b>12.1%</b>	<b>16</b>	<b>N/A</b>	<b>N/A</b>
17 Dalton, GA	18.8%	17	7.7%	17	4.3%	16	12.0%	17	1.23	2

**Figure 8: Talent Index (Population > 25, BA and Above), 2006**



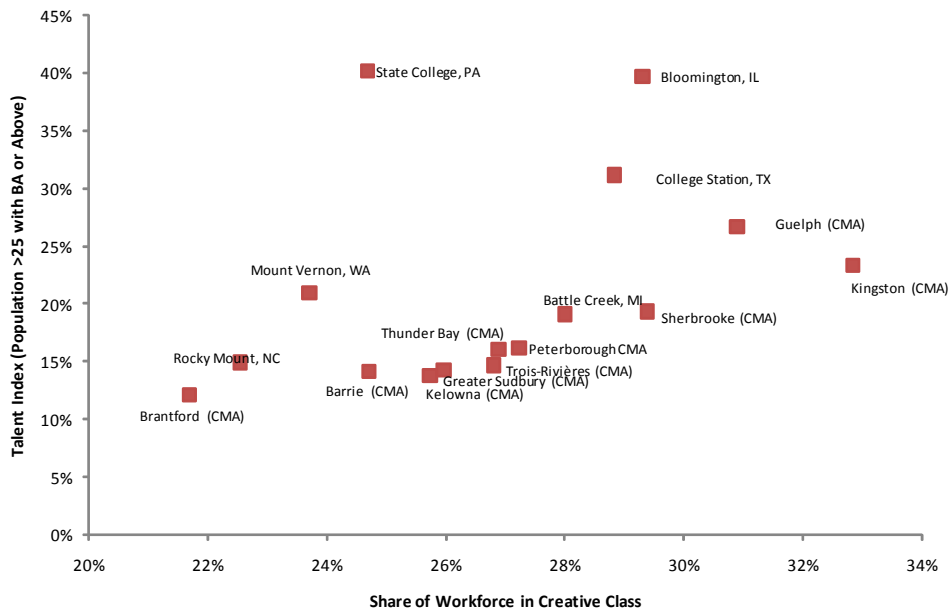
Source: MPI Analysis (2008). Statistics Canada Catalogue no. 94-581-XCB2006007. US Census Bureau, American Community Survey. (2006).

**Figure 9: Brain Drain/ Gain Index, 2006**



Source: MPI Analysis (2008). Statistics Canada Catalogue no. 94-581-XCB2006007 and AUCC Enrollment numbers 2007. US Census Bureau, American Community Survey. (2006)

**Figure 10: Talent Index and the Creative Class**



Source: MPI Analysis (2008). Statistics Canada Catalogue no. 94-581-XCB2006007. US Census Bureau, American Community Survey. (2006).

## Tolerance: Openness and Diversity

Tolerance is often overlooked in the study of economic development. As the 3<sup>rd</sup> 'T', Tolerance is necessary for regions to act as magnets of creative capital. The collection of Tolerance indicators is not meant to suggest that regions with high levels of gay and lesbians, bohemians, or immigrants cause economic growth. Rather these indicators go deeper to reflecting cultural elements that are difficult to capture empirically. Regions that are open to different types of people have a more open-minded culture, which is conducive to idea exchange and the creativity that is vital to the process of innovation. When regions are open to new ideas and tolerant of different views it acts as a signal to others that the creative ecosystem of the region is a place where people can be successful. The ability to tap into the rich diversity of a region is a great competitive advantage that all regions should aspire towards.

The Overall Tolerance Ranking is based on four of the five measures that reflect the openness and diversity of the peer regions. The four measures are: 1) the Bohemian Index, which compares the share of regional employment in a select group of occupations against the North American Share; 2) the Gay and Lesbian Index which measures the share of a region's same sex marriages relative to the North American average; 3) The Mosaic Index, the percent of the population that is foreign born; and 4) the Integration Index, which uses neighbourhood and regional data to determine how racially mixed the peer regions are.

### Results:

- The small-sized Ontario regions perform very well on Tolerance, accounting for five of the top ranked regions.
- Kingston is the most tolerant region in the peer group with a very consistent performance on all measures. Just below Kingston is Guelph which ranks number one on two of the four indicators that determine the overall Tolerance ranking. Guelph's level of integration, ranking 12<sup>th</sup> among peers, pulls down its score sufficiently to knock it out of the top spot. Kingston meanwhile ranks 1<sup>st</sup> on



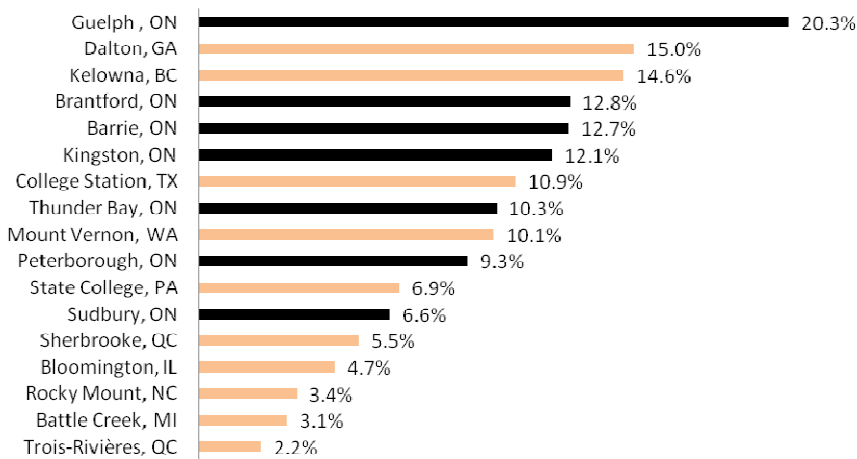
the Gay and Lesbian Index and top six on the other 3 indicators which determine the Tolerance ranking, the Mosaic Index (12.1%), Integration Index (0.86) and the Bohemian Index (0.93).

- The US peers, except for State College, round out the bottom six spots among the peers on Tolerance. Dalton, ranking 2nd on the Mosaic Index, is the sole US peer that has a ranking on Tolerance indicators (excluding Visible Minorities) in the top 5 of the peer regions.
- The Gay and Lesbian Index is the only Tolerance indicator that is significantly correlated with the share of the Creative Class. The Bohemian Index when plotted against the share of the population in the Creative Class does not show a relationship among the 17 regions benchmarked here. When the correlations are run among the 374 metro regions in North American a positive relationship does appear.

**Table 3: Overall Tolerance Ranking**

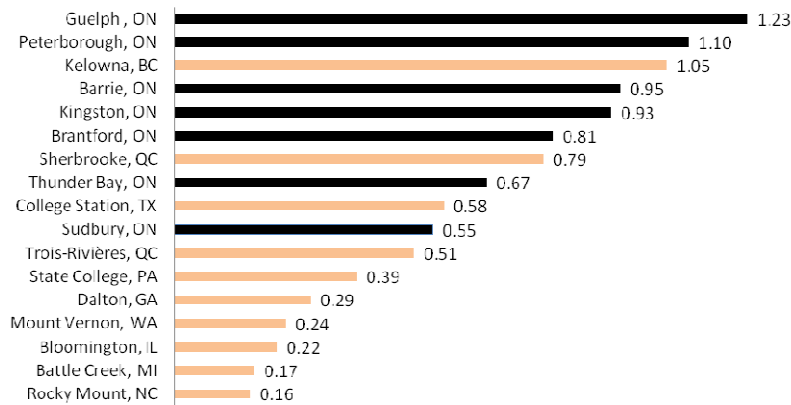
Tolerance Ranking	Mosaic Index	Mosaic Index Ranking	Integration Index	Integration Index Ranking	Bohemian Index	Bohemian Index Ranking	Gay and Lesbian Index	Gay and Lesbian Index Ranking	Visible Minorities	Visible Minorities Ranking
<b>1 Kingston (CMA)</b>	<b>12.1%</b>	<b>6</b>	<b>0.86</b>	<b>5</b>	<b>0.93</b>	<b>5</b>	<b>1.42</b>	<b>1</b>	<b>5.6%</b>	<b>10</b>
<b>2 Guelph (CMA)</b>	<b>20.3%</b>	<b>1</b>	<b>0.78</b>	<b>12</b>	<b>1.23</b>	<b>1</b>	<b>1.15</b>	<b>2</b>	<b>12.6%</b>	<b>7</b>
<b>3 Peterborough (CMA)</b>	<b>9.3%</b>	<b>10</b>	<b>0.89</b>	<b>2</b>	<b>1.10</b>	<b>2</b>	<b>0.78</b>	<b>8</b>	<b>2.7%</b>	<b>15</b>
4 Kelowna (CMA)	14.6%	3	0.86	7	1.05	3	0.74	11	5.1%	12
5 Sherbrooke (CMA)	5.5%	13	0.88	3	0.79	7	0.94	4	3.7%	13
<b>6 Thunder Bay (CMA)</b>	<b>10.3%</b>	<b>8</b>	<b>0.83</b>	<b>11</b>	<b>0.67</b>	<b>8</b>	<b>0.81</b>	<b>7</b>	<b>2.7%</b>	<b>14</b>
<b>7 Barrie (CMA)</b>	<b>12.7%</b>	<b>5</b>	<b>0.86</b>	<b>6</b>	<b>0.95</b>	<b>4</b>	<b>0.47</b>	<b>16</b>	<b>5.7%</b>	<b>9</b>
8 Trois-Rivières (CMA)	2.2%	17	0.92	1	0.51	11	1.09	3	1.6%	17
9 State College, PA	6.9%	11	0.84	9	0.39	12	0.86	5	10.1%	8
<b>10 Brantford (CMA)</b>	<b>12.8%</b>	<b>4</b>	<b>0.84</b>	<b>10</b>	<b>0.81</b>	<b>6</b>	<b>0.34</b>	<b>17</b>	<b>5.4%</b>	<b>11</b>
<b>11 Greater Sudbury (CMA)</b>	<b>6.6%</b>	<b>12</b>	<b>0.87</b>	<b>4</b>	<b>0.55</b>	<b>10</b>	<b>0.68</b>	<b>14</b>	<b>2.1%</b>	<b>16</b>
12 Dalton, GA	15.0%	2	0.64	15	0.29	13	0.83	6	19.9%	3
13 Mount Vernon, WA	10.1%	9	0.77	13	0.24	14	0.76	9	15.6%	5
14 College Station, TX	10.9%	7	0.58	16	0.58	9	0.73	13	28.1%	2
15 Bloomington-Normal, IL	4.7%	14	0.85	8	0.22	15	0.73	12	13.6%	6
16 Battle Creek, MI	3.1%	16	0.69	14	0.17	16	0.64	15	15.8%	4
17 Rocky Mount, NC	3.4%	15	0.52	17	0.16	17	0.76	10	49.4%	1

**Figure 11: Mosaic Index (% of Population Foreign Born), 2006**



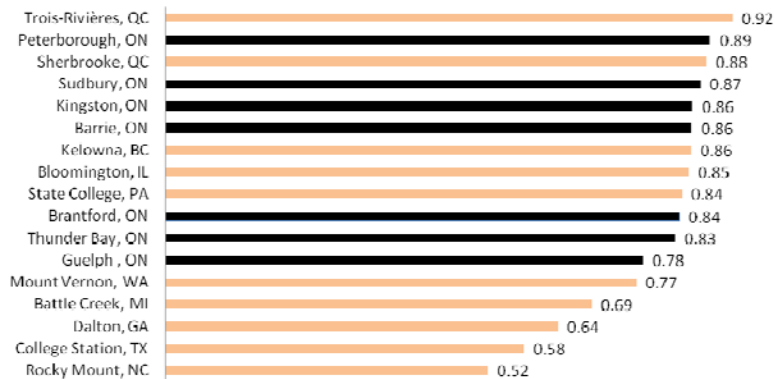
Source: MPI Analysis (2008). Statistics Canada Catalogue no. 94-581-XCB2006007. US Census Bureau, American Community Survey. (2006).

**Figure 12: Bohemian Index, 2006**



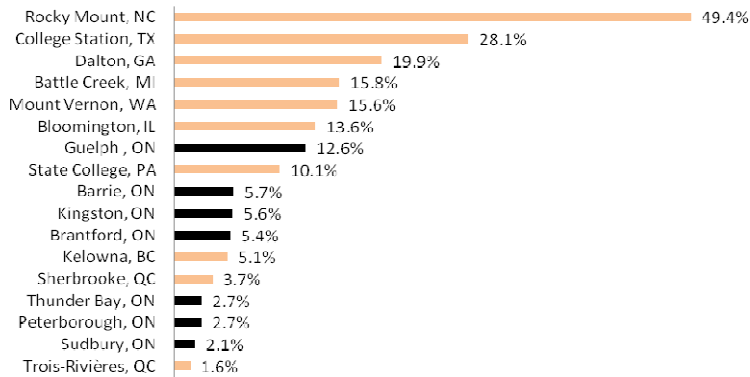
Source: MPI Analysis (2008). Statistics Canada Catalogue no. 97-559-XCB2006011 and 97-F0012-XCB-01049. US, County Business Patterns, 2006.

**Figure 13: Integration Index, 2006**



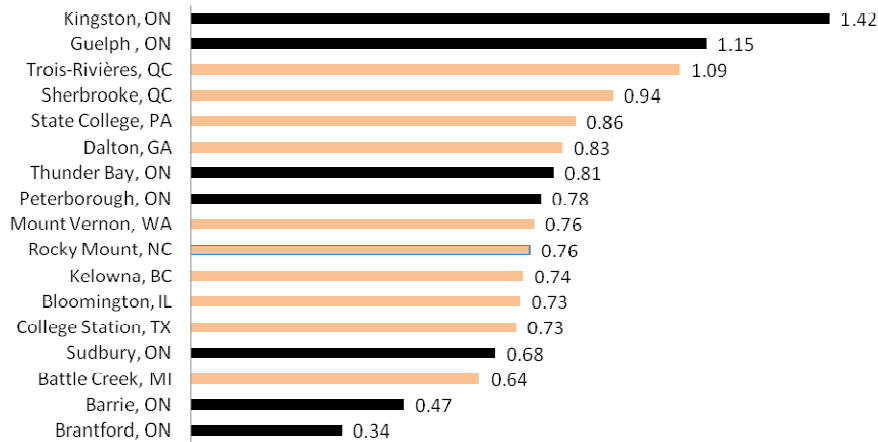
Source: Statistics Canada Catalogue no. 94-581-XCB2006007 and 94-580-XCB2006005. US Census Bureau, American Community Survey. (2006).

**Figure 14: Visible Minorities, 2006**



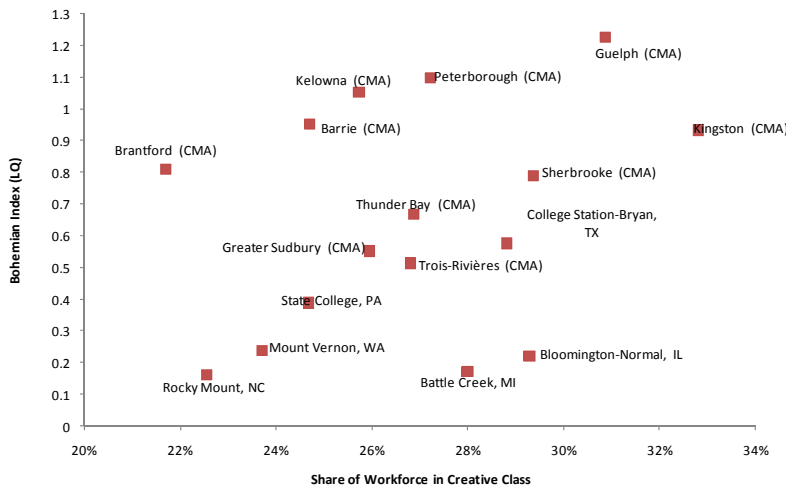
Source: MPI Analysis (2008). Statistics Canada Catalogue no. 94-581-XCB2006007. US Census Bureau, American Community Survey. (2006).

**Figure 115: Gay and Lesbian Index, 2006**



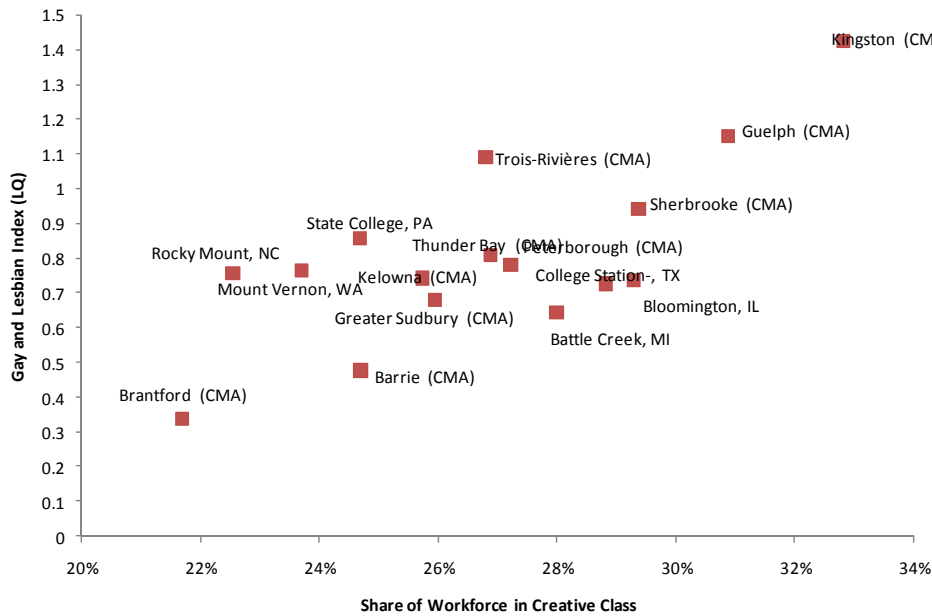
Source: MPI Analysis (2008). Statistics Canada Catalogue no. 97-553-XWE2006002 and 97-552-XCB2006007. US Census (2006).

**Figure 16: Bohemian Index and the Creative Class**



Source: MPI Analysis (2008). Statistics Canada Catalogue no. 97-559-XCB2006011 and 97-F0012-XCB-01049. US, County Business Patterns, 2006. Statistics Canada Catalogue no. 94-581-XCB2006007. US Census Bureau, American Community Survey. (2006).

**Figure 17: Gay and Lesbian Index and the Creative Class**



Source: MPI Analysis (2008). Statistics Canada Catalogue no. 97-553-XWE2006002 and 97-552-XCB2006007. US Census (2006). Statistics Canada Catalogue no. 94-581-XCB2006007. US Census Bureau, American Community Survey. (2006).

## Conclusions for Ontario's Small-Sized Regions

The small-sized regions of Ontario make up a significant part of the provincial output and population. Some of these regions are better prepared for the creative age according to the Creativity Index which is used here as a leading indicator of potential for future economic growth. (See Table 4)

**Table 4: Creativity Index**

Creativity Index Ranking	Creativity Index	Technology Ranking	Talent Ranking	Tolerance Ranking
<b>1 Kingston, ON</b>	<b>0.67</b>	<b>14</b>	<b>1</b>	<b>1</b>
2 Sherbrooke, QC	0.66	1	3	5
<b>3 Guelph, ON</b>	<b>0.66</b>	<b>11</b>	<b>2</b>	<b>2</b>
<b>4 Peterborough, ON</b>	<b>0.59</b>	<b>3</b>	<b>7</b>	<b>3</b>
5 Kelowna, BC	0.56	2	11	4
6 Bloomington, IL	0.55	4	4	15
7 College Station, TX	0.52	8	5	14
8 Trois-Rivières, QC	0.50	9	9	8
<b>9 Sudbury, ON</b>	<b>0.47</b>	<b>6</b>	<b>10</b>	<b>11</b>
10 State College, PA	0.46	5	13	9
<b>11 Barrie, ON</b>	<b>0.45</b>	<b>7</b>	<b>12</b>	<b>7</b>
<b>12 Thunder Bay, ON</b>	<b>0.45</b>	<b>15</b>	<b>8</b>	<b>6</b>
13 Battle Creek, MI	0.39	12	6	16
14 Mount Vernon, WA	0.36	10	14	13
<b>15 Brantford, ON</b>	<b>0.28</b>	<b>17</b>	<b>16</b>	<b>10</b>
16 Dalton, GA	0.26	16	17	12
17 Rocky Mount, NC	0.24	13	15	17

- Kingston ranks first among the peer regions on the Creativity Index ahead of Sherbrooke and Guelph. Both Kingston and Guelph are among the top 100 most creative regions in North America.
- Sudbury, Barrie, Thunder Bay and Brantford are lagging behind their provincial peers and are all below the North American median on the Creativity Index. Brantford ranks 332nd in North America, while the other 3 rank between 188th and 220th.

The most creative regions, big or small, are better positioned to compete in the creative age. While smaller regions do not have the mass to directly compete with larger

regions they have 3 options available to them in a world that is becoming concentrated in large urban centers. First, regions can continue on as if nothing has changed locally and globally which will likely lead to a decline as economic resources tend to relocate to larger urban centers (Polse & Shearmur, 2006). Second, the small-sized regions of Ontario can work closely with other regions having complementary assets in order to think and act “big”. The final option left open for these regions is to integrate with the larger global-city regions. The choice that regions make depends upon a number of factors such as their location and connectivity to other regions.

Whatever the choice made by regions the infrastructure recommendations we made in our capstone report “Ontario in the Creative Age” are meant to address these smaller more disconnected regions. The ideas outlined in the report suggested that Ontario needs to become the first jurisdiction in the creative age to get infrastructure right. What does this mean? If the small-sized regions of Ontario are going to be able to tap into their full creative potential it requires that they be connected to the flows of knowledge and creative capital. By increasing the velocity of information and people within the province, geographic distance is minimized, in effect making Ontario a smaller place. Connecting regions through high-speed rail and broadband can make the choice of living in smaller regions a more realistic economic option. Individuals should not have to choose between economic success and a preferred lifestyle.

Connecting the regions of Ontario is mutually beneficial for all. Regions like Kingston, Guelph and Peterborough are highly creative regions that can help support industry and business across the province. While the lagging small-sized regions of Ontario (Brantford, Thunder Bay and Barrie) stand to benefit from a system that allows creative capital to be provincially mobile.

The 3Ts of economic development show that the small-sized regions of Ontario are lacking when it comes to Technology and the education of the population. Moving forward these regions must improve their performance on innovation, an issue closely linked with the levels of education seen in regions around the province. Without a workforce trained and educated with the most up-to-date knowledge and theories it is difficult to produce new market leading innovations and processes. The high levels of

Tolerance found in the small-sized regions of Ontario make them places that are open to new ideas and filled with diverse perspectives. Working together, when people are educated and open minded to different ideas, the best and most creative ideas tend to rise to the top. Regions able to harness the creative potential of their citizens attract the human, financial and physical capital necessary to commercialize products and services by forming new firms, and make existing ones more effective.

## Appendix A: Metric Definitions for Ontario Project Benchmarking

Summary Statistics	
Population	Population Counts from ACS and Statistics Canada, 2006
Median Age	Median Age from ACS and Statistics Canada, 2006
Overall Cost of Living Index	Composite measure that uses CPI data from both the US and Canada.

Overall Statistics	
Population Growth (2000-2005)	$(\text{Population}(2005) - \text{Population}(2000)) / \text{Population}(2000)$
Job Growth (2000-2005)	$(\text{Labor Force, Total Employment}(2005) - \text{Labor Force, Total Employment}(2000)) / \text{Labor Force, Total Employment}(2000)$
GDP per Capita, 2006	GDP/Population, PPP adjusted. Canadian GDP numbers are calculated based on the relationship between the Bureau of Economic Analysis regional GDP numbers and average total income.
Change in Average Wage (2000-2005)	$(\text{Average Wage}(2005) - \text{Average Wage}(2000)) / \text{Average Wage}(2000)$
Creativity Index	State and Province: Technology (North American Tech Pole, Patent Growth (00-05) and Total Patents, Tolerance ( Bohemian Index, Integration Index, Gay Index and Mosaic Index), Talent (Creative Class) each account for 1/3 of index

Technology Measures	
Total Patents, 2005	Total number of patents issued to primary inventors in region 2005; US Patent & Trademark Office (USPTO)
Patents per 10,000, 2005	Total patents issued per 10,000 residents 2005; USPTO & U.S. Census
Patent Growth, Short Term (00-05)	Average annual growth in number of patents issued 2000-2005; USPTO
North American High Tech LQ, 2006	A location quotient captures the difference between a specific regions concentration of a characteristic and the average concentration across the entire country or larger regions. The high tech LQ measures the concentration of high technology among employment for a region against the concentration of high technology among employment for the US and Canada combined.
North American Tech Pole Index	Combination of two factors (1) the share of a region's employment that is high-tech and (2) the high tech location quotient (below) for U.S and Canada combined. High Tech includes software, electronics, biomedical products, and engineering

Talent Measures	
Creative Class, 2006	Percentage of the employed population in the region in the Super Creative occupations (see below) or occupations in the following categories: Management, Business/Finance, Law, Healthcare (does not include Healthcare support)
Super Creative Core, 2006	Percentage of the employed population in the region in occupations in the following categories: Computers, Architecture/Engineering, Science, Education, Arts and Design
Pop > 25, Above High School Below BA, 2006	Percentage of the population aged 25 and above in the region that has a high school diploma or equivalent and Percentage of the population aged 25 and above in the region that has a college certificate (associate's degree for U.S.)
Talent Index (Pop >25, BA and Above)	Percentage of the population aged 25 and above with a bachelor's degree or higher
Graduate and/or Professional Degree	Percentage of population aged 25 and above with a graduate and or professional degree
Brain Gain/ Brain Drain Index	Percentage of the population, age 25 and above, with at least a bachelor's degree divided by the percentage of the population age 18 to 34 currently attending university

Tolerance Measures (Inclusiveness)	
Visible Minorities (% Pop)	Percentage of Non-white population
Mosaic Index (% Pop)	Percent of population that is foreign born
Gay and Lesbian Index	Location quotient that is the ratio of same sex unmarried partners to total partners in the region over same sex unmarried partners to total partners for the entire U.S. (from 2000); Census
Bohemian Index	Bohemian Index; Location quotient that measures whether a region has more or fewer professional artistically creative people than the average region 2006; estimated from Census, ACS
Integration Index	$\text{Integration Index} = 1 - \left( \frac{\text{Total Visible Minority}_{region}}{\text{Total Population}_{region}} \right) \sum \left  \frac{V_{GroupDA,G}}{V_{GroupG}} - \frac{V_{GroupDA,H}}{V_{GroupH}} \right $ <p>Where V<sub>GroupDA,G</sub> is the population of group G in the dissemination area .                      And where V<sub>GroupDA,H</sub> is the population of group H in the dissemination area                      Where V<sub>GroupG</sub> is the total population of group G in the CMA.                      Where V<sub>GroupH</sub> is the total population in group H in the CMA.                      The integrations index measure the degree to which a cities visible minority population is intermixed with non-visible minorities.</p>



## Appendix B: High-Tech Industries – NAICS

Computer systems design and related services
Architectural, engineering and related services
Other professional, scientific and technical services
Wired telecommunications carriers
Scientific research and development services
Motion picture and video industries
Pharmaceutical and medicine manufacturing
Aerospace product and parts manufacturing
Semiconductor and other electronic component manufacturing
Communications equipment manufacturing
Navigational, measuring, medical and control instruments manufacturing
Wireless telecommunications carriers (except satellite)
Software publishers
Medical equipment and supplies manufacturing
Computer and peripheral equipment manufacturing
Internet service providers, web search portals
Telecommunications resellers

## Appendix C: Research Methods

The process of benchmarking the Province of Ontario and its 15 Census Metropolitan Areas (CMAs) against peer regions in both the United States and Canada was conducted as part of the *Ontario in the Creative Age* project commissioned by the government of Ontario. In order to better understand the competitiveness of Ontario and its CMAs we conducted a quantitative analysis of North America by collecting data from national statistical agencies on over 30 different indicators that have been shown to influence regional economic prosperity. These collections of indicators developed by Florida (2002) are representative of the 3Ts of economic development (Technology, Talent and Tolerance) and are part of his larger Creative Class theory.

In selecting the North American regions for the benchmarking, the main determinate of peers for Ontario's CMAs was population. Population is a highly important variable to control for because each of the following factors is size and density dependent: the division of labour, economies of scope, agglomeration and scale. In total we compared the province to 20 peer states and provinces, selecting sub-national regions with a population of 6 million or more (17 states) and the 3 largest provinces (Quebec, British Columbia and Alberta). For the CMAs which range from Toronto with a population of 5.1 million to Peterborough with just under 120,000 people, we subdivided the 15 regions into five class categories (Population >2 million, 1-2 million, 0.5-1 million, 250,000-500,000 and 100,000-250,000) for which 10 peer regions having a similar population were selected. In total 50 peer regions were selected from the 20 peer states and provinces.

The indicators used to inform this report were based on previous research conducted by Richard Florida (2002) which showed that Technology, Talent, and Tolerance are key elements for the success and continued development of a region. A region needs substantial but balanced performance across ALL of the "Three Ts" to grow and be prosperous.

In order to maintain objectivity, the analysis involved in this benchmarking process was entirely quantitative. This may lead to results that seem odd when discussed out of context or by an individual with specific regional knowledge. For example, our analysis found that Ottawa-Gatineau is incredibly competitive on certain occupation measures which are a result of the large federal government presence in the CMA. When viewing the results it is important to remember that they have not been informed by specific knowledge that is local to the regions.

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## Research Team

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## Benchmarking Project

This paper is part of the *Ontario in the Creative Age* series, a project we are conducting for the Ontario Government. The project was first announced in the 2008 Ontario Budget Speech, and its purpose is to understand the changing composition of Ontario's economy and workforce, examine historical changes and projected future trends affecting Ontario, and provide recommendations to the Province for ensuring that Ontario's economy and people remain globally competitive and prosperous.

The purpose of the benchmarking papers in this series was to gather and analyze data on Ontario's CMAs and assess how well they compete with similar jurisdictions across North America our 3Ts of Economic Development. The assessments are intended to inform a constructive discussion on what factors contribute to regional economic development. They are not intended to be all encompassing.

## Disclaimer

The views represented in this paper are those of the Martin Prosperity Institute and may not necessarily reflect the views of its affiliates or its funding partners.

Any omissions or errors remain the sole responsibility of the research team. Any comments or questions regarding the content of this report may be directed to [info@martinprosperity.org](mailto:info@martinprosperity.org).