

MARTIN
Prosperity*Institute*

Thunder Bay 3Ts Reference Report

Benchmarking Project: Ontario Competes
Ontario in the Creative Age

April 2009

REF. 2009-BMONT-017



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Introduction

We have benchmarked all 15 of Ontario's Census Metropolitan Areas (CMAs) to better understand each city, its current competitive position and its future prospects. Each CMA has been benchmarked against 10 competitive North American regions of similar size.

It may also be necessary to refer to the [Understanding our Terminology](#) section on our website in order to fully understand all of the information presented here. The first working paper in this series is titled "Ontario Competes"¹ and acts as an introduction to the benchmarking process, contains our aggregate results for Ontario and is the foundation for this analysis. This paper contains a brief overview of the Thunder Bay CMA and its key results.

Thunder Bay is a CMA located in northern Ontario, has a population of 123,000 people, and a Gross Domestic Product (GDP) of \$5 billion (see Table 1). We have chosen its peers based on population size, geographic diversity and competitiveness. The population size for the Thunder Bay peer group is 100,000-250,000, and include among them:

- 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

Our analysis is based on these 10 peers and rankings are out of 11.

Table 1: Summary Benchmarks

Summary Statistics	Thunder Bay, ON	Peer Minimum	Peer Average	Peer Maximum	Provincial/State Average
	Total Population, 2006	123,000	115,700	148,000	197,000
GDP (CAD millions) 2006	\$5,000	\$4,000	\$6,000	\$9,000	\$29,000
Median Age, 2006	41.8	25.7	35.5	43.4	37.5
Overall Cost of Living Index	102.8	92.5	104.0	131.4	101.5

¹ "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

Technology Results

Technology is an area that Ontario CMAs typically underperform in and Thunder Bay is no exception (see Table 2). Thunder Bay ranks 10th, 10th and 7th on Total Patents, Patent Growth, and the North American Tech-Pole Index (see Figure 1) respectively; these three indicators are used to create the Technology input of the Creativity Index, an important measure of regional performance potential.

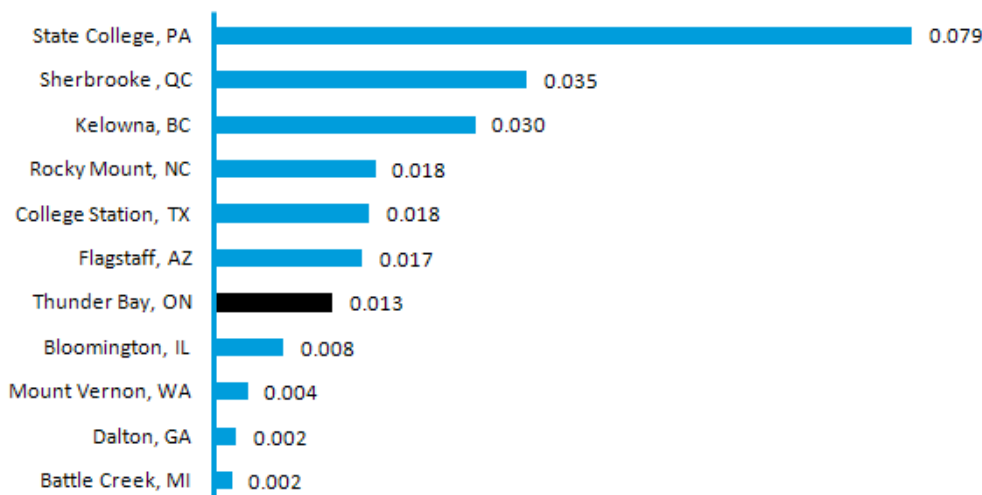
Thunder Bay performs near the middle on the North American Tech-Pole Index and on the North American High Tech LQ. While the region’s performance on these measures is stronger than on the patent indicators, it is still not competitive with its peer regions.

Thunder Bay is not producing new innovations in the form of patents and appears to lack high-tech production capability. While Ontario CMAs tend to underperform on measures of innovation, they are often more competitive than Thunder Bay on high-tech industrial employment measures.

Table 2: Technology Benchmarks

Technology	Thunder Bay, ON	Peer Ranking	Peer Minimum	Peer Average	Peer Maximum	Provincial/State Average
Total Patents, 2005	2	10	2	19	42	517
Patents per 10,000, 2005	0.16	10	0.14	1.29	2.98	2.46
Patent Growth, Short Term (00-05)	-3.3%	10	-4.5%	5.4%	27.8%	-0.5%
North American High Tech LQ, 2006	0.51	7	0.22	0.60	1.54	0.63
North American Tech-Pole Index	0.013	7	0.002	0.021	0.079	0.189

Figure 1: North American Tech-Pole Index, 2006



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

Talent Results

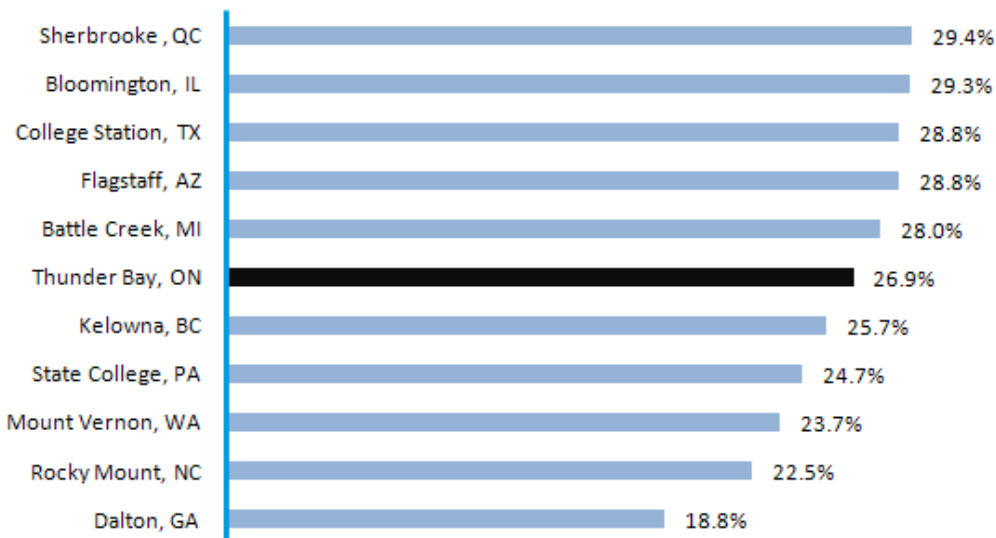
Talent indicators are measures of a region’s human capital and Thunder Bay’s performance on these dimensions is below average (see Table 3). The region does satisfactorily on our occupational measures of human capital, ranking 6th on the Creative Class or 26.9 percent of the workforce in creative jobs (see Figure 2); this is compared to the Ontario average of 30.3 percent.

Thunder Bay does not perform as well on traditional education measures. The region ranks 8th among its peers on the Talent Index and 7th when it comes to the share of its population 25 years of age or older with a Graduate and/or Professional Degree. Thunder Bay also underperforms on the Brain Drain/Gain Index, ranking 9th; this indicates that the region is losing human capital, a trend which will only cause Thunder Bay to further lag behind its top performing peer regions. Talent is vital to competing in the creative economy.

Table 3: Talent Benchmarks

Talent	Thunder Bay, ON	Peer Ranking	Peer Min Value	Peer Average	Peer Max Value	N.A. Average of Urban Regions
Creative Class as % of Workforce, 2006	26.9%	6	18.8%	26.1%	29.4%	26.1%
Super Creative Core as % of Workforce, 2006	14.7%	4	6.6%	12.2%	18.5%	11.0%
Pop > 25, Above High School below BA, 2006	58.2%	5	51.7%	58.0%	65.5%	59.0%
Talent Index (Pop > 25, BA and above), 2006	16.1%	8	12.0%	23.4%	40.2%	21.7%
Pop > 25, Graduate and/or Professional Degree, 2006	6.8%	7	4.0%	9.2%	20.5%	7.5%
Brain Drain/Gain Index, 2006	0.52	9	0.00	0.72	1.28	N/A

Figure 2: Creative Class, 2006



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

Tolerance Results

Tolerance is almost always a strength for Ontario’s CMAs, often ranking within the top three of their peers. Thunder Bay performs above average four out of five of our Tolerance indicators.

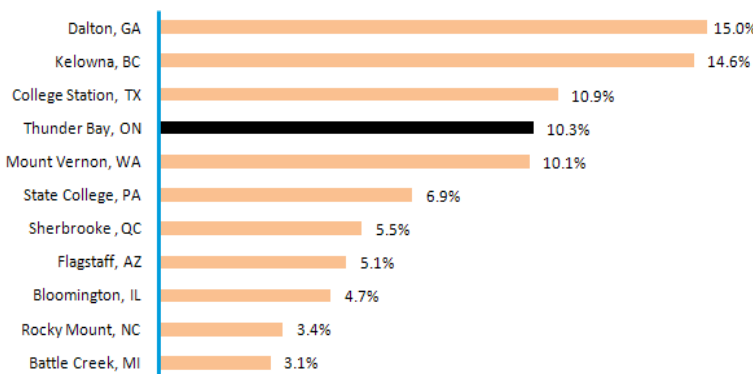
Thunder Bay ranks 4th on the Mosaic Index, (see Figure 3) which is an input to the Creativity Index. This is not surprising given the high levels of immigration in Canada. Thunder Bay also performs above the peer average on the Gay and Lesbian Index (see Figure 4) with a rank of 5th but is still below the North American average for attracting Gay and Lesbian couples. Even with a large Aboriginal population Thunder Bay is under represented by visible minorities with only 2.7 percent of its population being non-white.

Based on these results Thunder Bay appears to be a region that has above average levels of openness, which is important because diversity of thought is a key component to creativity.

Table 4: Tolerance Benchmarks

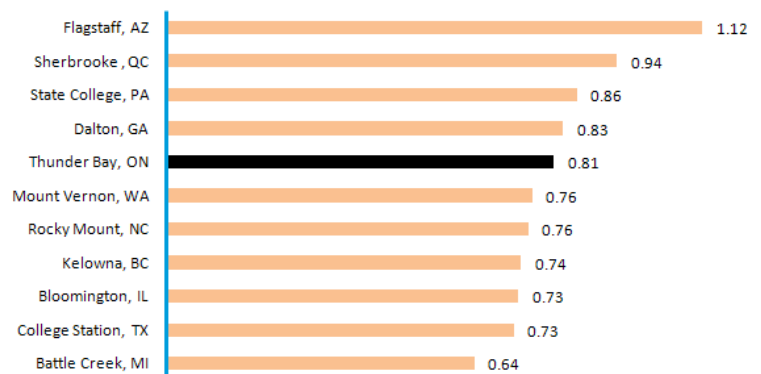
Tolerance	Thunder Bay, ON	Peer Ranking	Peer Min Value	Peer Average	Peer Max Value	N.A. Average of Urban Regions
Visible Minorities (% Pop), 2006	2.7%	11	2.7%	18.3%	49.4%	11.1%
Mosaic Index (% Pop), 2006	10.3%	4	3.1%	8.2%	15.0%	7.9%
Gay and Lesbian Index, 2006	0.81	5	0.64	0.81	1.12	0.81
Bohemian Index, 2006	0.67	3	0.16	0.44	1.05	0.69
Integration Index, 2006	0.83	5	0	0.71	0.88	N/A

Figure 3: Mosaic Index, 2006



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

Figure 4: Gay and Lesbian Index, 2006



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

Overall Performance

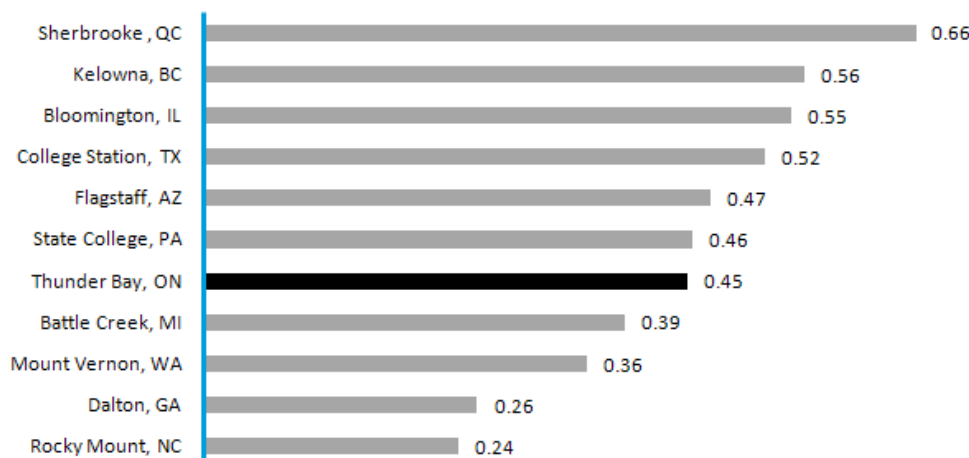
We also benchmark a number of indicators² that describe the region more broadly than the 3T indicators (see Table 5). GDP per capita is used as a traditional measure of regional performance. The Creativity Index (see Figure 5), which is a composite of select 3T indicators, is another effective measure of regional performance and a leading indicator; this is important as it ranks regions based on potential performance, not past performance.

Thunder Bay ranks 6th on the GDP per capita measure (Bloomington is ranked 1st). Thunder Bay performs slightly below average on the Creativity Index, with an index of 0.45. The region only had positive growth on the Population Growth indicator (0.8 percent); however, it still ranked 10th among its peers. Thunder Bay had negative growth in jobs and wages, ranking 10th and 8th respectively. These results should be considered carefully if Thunder Bay is to compete in a more creative economy.

Table 5: Overall Benchmarks

Overall Performance	Thunder Bay, ON	Peer Ranking	Peer Min Value	Peer Average	Peer Max Value	N.A. Average of Urban Regions
Population Growth (00-05)	0.8%	10	0%	6.2%	12.4%	5.7%
Job Growth (00-05)	-3.4%	10	-3.6%	5.5%	19.9%	9.3%
GDP per capita, 2006	\$43,000	6	35,500	\$45,000	\$58,200	\$45,000
Change in Average Wage (00-05)	-2.4%	8	-11.2%	-1.4%	7.8%	0.1%
Creativity Index	0.45	7	0.24	0.45	0.66	N/A

Figure 5: Creativity Index, 2006



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

² The growth numbers are important, but it must be noted that due to the short time frame covered, the data can be misleading.

Appendix A: 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 its 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 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 a 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 (See Appendix A–Map of Benchmarked Regions).

The indicators used to inform this report were based on previous research conducted by Richard Florida (2002) which showed that 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.

Appendix B: 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 use CPI data from both the US and Canada.

Overall Statistics	
Population Growth (2000-2005)	(Population(2006) - Population(2001))/Population(2001)
Job Growth (2000-2005)	(Labor Force, Total Employment(2006) - Labor Force, Total Employment(2001))/Labor Force, Total Employment(2001)
GDP per Capita, 2006	GDP/Population, PPP adjusted
Change in Average Wage (2000-2005)	(Average Wage(2000) - Average Wage(2001))/Average Wage(2001)
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 specific 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 workforce, age 25 and above, with at least a college certificate divided by the percentage of the population age 20 to 24 currently attending college or university

Tolerance (Inclusiveness) Measures	
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 VGroupDA,G is the population of group G in the dissemination area And where VGroupDA,H is the population of group H in the dissemination area Where VGroupG is the total population of group G in the CMA Where VGroupH is the total population in group H in the CMA</p>

Research Team

This work was jointly supervised by Dr. Kevin Stolarick, Research Director and David Smith, Project Leader. They would like to acknowledge the tremendous efforts of researchers Ronnie Sanders and Michael Wolfe for their countless hours dedicated to gathering, analyzing and processing the wide range of data used during this benchmarking project. They would also like to acknowledge the early contributions from researchers Scott Pennington and Yousuf Haque.

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.