

MARTIN
Prosperity*Institute*

Ontario Competes: Performance Overview Using the 3Ts of Economic Development

Benchmarking Project Overview:
Ontario in the Creative Age

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Introduction

A rising tide may lift all boats, but prosperity shouldn't have to depend on the ebb and flow of the global economy. Some boats are more buoyant than others, and there is nothing like a recession to focus your attention not only on staying afloat, but on charting a course that does not leave you vulnerable to falling tides or turbulent waters.

It is not hard to see that Ontario is a world-class economy. It has vibrant cities and innovative companies; with its high standard of living and role as the country's economic core—Ontario has a great deal to be proud of. But is it built to weather the current economic storm and to sail into the unfamiliar waters of an ever-more competitive global market?

Ontario's place among North America's elite jurisdictions shows just what the province can achieve. But this implies that our competition is the world's elite jurisdictions. Change is inevitable in a time of economic crisis, and Ontario's challenge is to navigate change strategically and decisively, so that the province emerges not just as a competitor, but as a global leader.

The Martin Prosperity Institute (MPI) has benchmarked Ontario and its cities against peer regions to understand its competitiveness within North America as part of the larger "Ontario in the Creative Age" project, with the aim of providing input to the development of a long-term economic blueprint for the province. The larger goal is to chart the transition from an economy based on brawn to one of creativity. At a moment when every region is looking for ways to become more competitive, the question is: how does Ontario stack up?

Economic development is driven by what we call the three "T"s – technology, talent, and tolerance. All three are critical to generating sustained economic growth and prosperity. It is great to excel at one or two; however, sustained economic strength comes from performing well on all three.

To see how the province fares against competition, we compared Ontario against seventeen US states with a population of six million or more and three of the most competitive provinces—Quebec, British Columbia and Alberta. (See Appendix A for the map of peer regions.) On the traditional measures of economic prosperity, Ontario falls behind the peer average on GDP per capita by \$5,200 (2006 CAD); moreover, the province shows weakness on lagging indicators of economic prosperity such as job growth or wage growth.

The fact is that Ontario has been giving up ground to its competition for some time now. Before Ontario becomes an elite economic region it must establish its credentials in the three "T"s. This is Ontario's "Three T" report card¹.

Table 1: Overall Performance

Overall Performance	Ontario	Benchmark Ranking	Peer Min Value	Benchmark Average	Peer Max Value	N.A. Average
Population Growth (00-05)	6.6%	10	1.1%	6.9%	20.2%	5.4%
Job Growth (00-05)	8.2%	10	-1.2%	9.7%	25.9%	9.0%
GDP per capita, 2006	\$44,200	18	\$36,100	\$49,400	\$67,500	\$47,200
Change in Average Wage (00-05)	-0.2%	10	-4.8%	0.2%	16.1%	0.8%
Creativity Index, 2006	0.80	6	0.33	0.67	0.92	N/A

Technology

An economy is not technologically advanced because it is prosperous. Rather, it is prosperous because it is technologically advanced. Technology, and in particular, technological *innovation*, improves competitiveness by either providing new goods or services or by inducing cost advantages, often through productivity gains. Second, competitive advantages generate profits, which can be redistributed back into production in the form of investment or to increasing the average wage of employees. New ideas are what fuel economic growth.

The competition amongst the most technologically advanced regions resembles what is called a "race to the top" in game theory. And the way to win a race to the top is to take the most direct route. Look for the environment where

¹ See Appendix B for more information on our research methods.

structural conditions direct individuals and firms to produce more efficient outcomes, and you will find the frontrunners in the race to prosperity. Unlike some kinds of competition, which drain the rivals' resources, a race to the top affords efficiency gains for all of society, while the risk-taking innovators bear the costs of the rewards they expect to reap. The more companies and individuals you have trying to improve things, the better off the entire society will be.

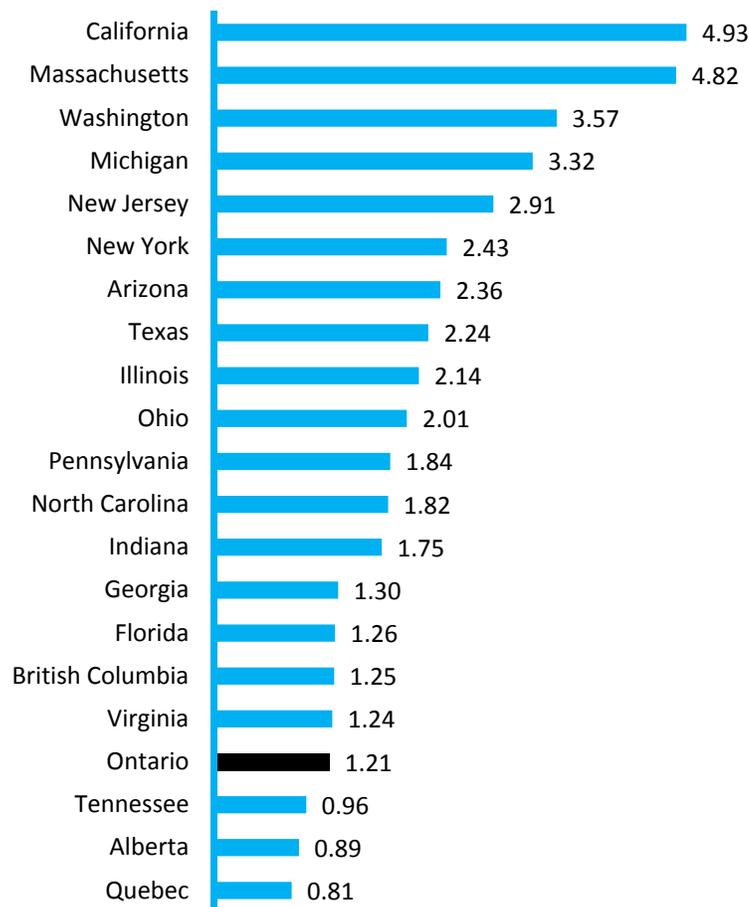
The nature of competition between firms has changed over the past decades. The marketplace for goods and services has developed from inter-firm rivalry in relatively small geographic regions to a global battle between large multinational corporations. At the apex of this economic ladder, regions are separated only by marginal differences in productivity. As a result, firms within regions are competing aggressively for the smallest technological advantages over their rivals. What this means is that if you're not innovating, you are not only failing to grow, you are giving your rivals room to do so. There is no stasis in this game.

To determine how Ontario stacks up technologically against its competitors, we looked at two indicators: how much innovation is simmering in the province, and how important technology-related industries are to the economy.

A great way to measure technological innovation is to track applications for patents. Patents are used to guarantee inventors a period of time to recoup the cost associated with bringing new ideas to the market. In the process of patenting products, inventors disclose information related to the product so that others may learn and benefit from their work. Patents promote the accumulation and growth of knowledge in the public rather than in the private sphere. You need patent protection to foster innovation, just as you need innovation to spur patent applications.

The sobering fact is that Ontario is below average in patent output, ranking 13th out of 21 amongst its peer states and provinces in 2005. With only 1,467 patents, Ontario's total output was only slightly greater than Arizona and just behind North Carolina. California, with 17,961, has set the standard for innovation and technology that any region in the world could aspire to.

Figure 1: Patents per 10,000, Ontario and Peer Regions, 2005



Source: Martin Prosperity Institute and Dieter Franz Kogler Analysis. USPTO (1975-07)

To adjust for the size difference between the regions, we calculated the number of patents per 10,000 people. California remains the clear leader, with almost 5 patents per 10,000 people. But Ontario's ranking falls further to 17th amongst its peers, with only 1.2 patents produced for every 10,000 people, which

puts it just behind Georgia, Florida and Virginia. Ontarians are simply not innovating at the same pace as their competitors.

However, the picture that emerges is not entirely disheartening. Ontario does significantly better than its peer provinces of Quebec, Alberta and British Columbia, which rank 19th, 20th and 21st respectively (See Figure 1). More importantly, Ontario's performance has been improving steadily. Over the last three decades the province's year-over-year patent growth has been 11.5%, well above that of California and New York.

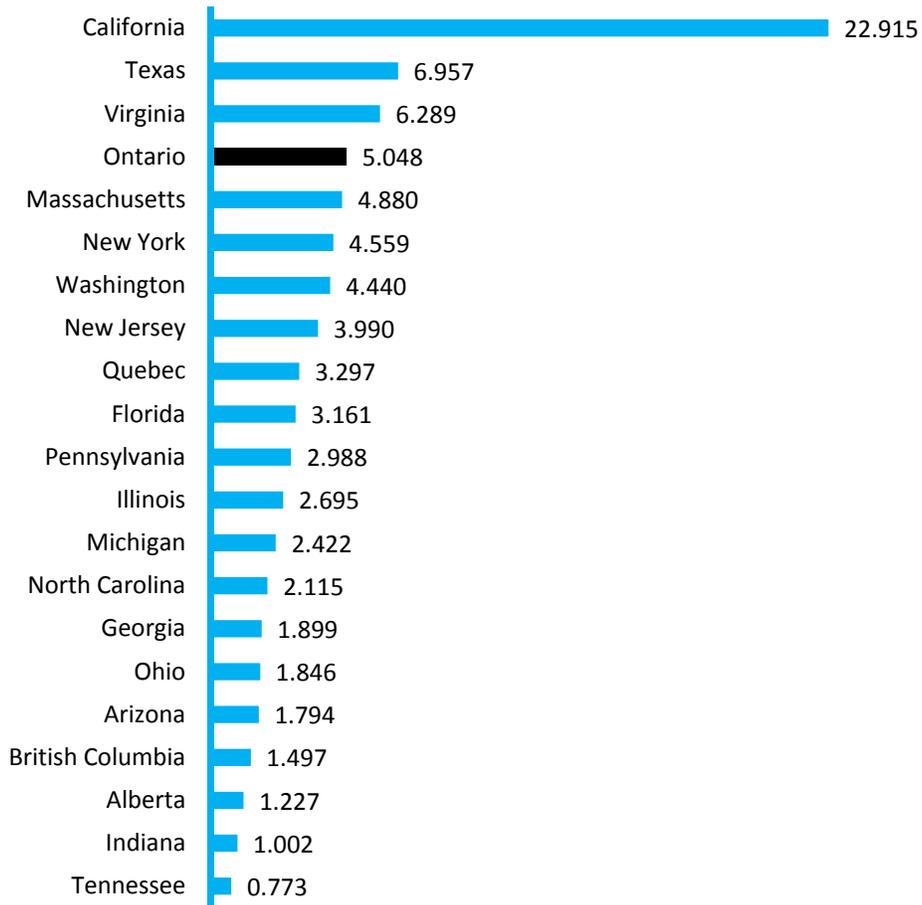
But patent activity measures only catalogued innovation, not the importance of that technology to the economy. The North American Tech-Pole Index is an indicator designed to capture the size and importance of tech industries in a region. A high ranking indicates a region with a significant level of activity in high-tech industries. The level of activity is not tied to the total economic output but rather to the number of people employed. Here Ontario fares much better.

Not surprisingly, California tops our list of regions scoring more than three times higher than its closest peer, Texas. But Ontario is near the top of the list, ranking an impressive 4th overall (See Figure 2). The index shows that the level of technological production in the province is highly competitive in the North American context, surpassing both Massachusetts and New York State.

A look at the breakdown of the industries on the Tech-Pole Index gives a sense of the breadth of technological employment in the province. There are 402,015 people employed in the high-tech industries in Ontario, contributing just over \$53 billion CAD (2005) or 11% of the GDP of Ontario. To give a sense of how important these jobs are to the province's economy, the GDP per capita of people employed in these industries is \$133,000—more than *three times* the Ontario average of \$44,200. Even more interesting is that it is \$78,000 more than the Ontario auto manufacturing industries, which contributes approximately \$17.3 billion a year, or 3.2% percent of the provincial GDP. This differential is

significant, underscoring the value of technology as a driver of economic growth. It is clear that these are the kinds of jobs the province needs to cultivate and that this is the sector of the economy we should be stimulating.

Figure 2: North American Tech-Pole Index, Ontario and Peer Regions, 2006



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

However, just having a significant proportion of the workforce in technology related jobs is not enough to measure up in this first of the three "T"s, as Ontario's performance in patent output shows. While it is critically important to have large numbers of people employed in technology industries, it is equally crucial to fuel these industries with patentable new ideas.

Table 2: North American Tech-Pole Industries by Size

Industry	Total Employment in Tech Industries (Ontario)	Percentage of Tech Employment (Ontario)	Percentage of Tech Employment (Canada)
Computer systems design and related services	108,505	27%	24%
Architectural, engineering and related services	69,090	17.19%	21%
Other professional, scientific and technical services	36,400	9.05%	10%
Wired telecommunications carriers	27,530	6.85%	8%
Scientific research and development services	24,385	6.07%	6%
Motion picture and video industries	23,970	5.96%	6%
Pharmaceutical and medicine manufacturing	14,710	3.66%	3%
Aerospace product and parts manufacturing	13,735	3.42%	5%
Semiconductor and other electronic component manufacturing	13,715	3.41%	3%
Communications equipment manufacturing	13,315	3.31%	2%
Navigational, measuring, medical and control instruments manufacturing	12,735	3.17%	2%
Wireless telecommunications carriers (except satellite)	11,860	2.95%	3%
Software publishers	10,775	2.68%	2%
Medical equipment and supplies manufacturing	8,540	2.12%	2%
Computer and peripheral equipment manufacturing	6,490	1.61%	1%
Internet service providers, web search portals	4,490	1.12%	1%
Telecommunications resellers	1,770	0.44%	1%
SUM of Tech Employment	402,015	100%	100%
Total Employment in Ontario	6,587,580		

Source: Martin Prosperity Institute Analysis (2008). Statistics Canada Catalogue no. 97-559-XCB2006009

Ontario's economic environment for technology is not significantly different than that of New York, Massachusetts or any other region that outperforms Ontario. As a share of total employment, Ontario's high-tech industry employment is amongst the highest in North America. Yet the relative dearth of innovation suggests that while Ontario is a region able to support technological industries, it is not one leading the charge in the global race to the top.

Ontario, on the whole, is a reactive region taking in new technologies and products from around the world, creating new markets and demand but not taking advantage of its own technological strengths or taking the entrepreneurial risks required to bring new ideas to market. These industries are major employers but they are not innovators on the scale required to hold on to their most talented people. Ontario's future success is in large part dependent on creating a jurisdiction that not only promotes technology, but excels in it. This is a difficult challenge as there is no clear route to creating an environment that is adaptive, creative and innovative. However, Ontario can better utilize its growing pool of Talent and strength in Tolerance to help facilitate technologically driven growth. As such, we will turn our discussion to these factors.

Talent

One key to improving Ontario's ranking against its technological peers is the performance of the province's talent, the second of the three "T"s. Ontario requires its creative people to provide the innovation necessary to compete globally. How the province stacks up against the competition will go a long way towards determining the kind of prosperity we can look forward to.

There are a number of ways to measure something as intangible as talent, but they fall into two categories: education level and occupation. Education is a good proxy for talent—measure the population's education level and you begin to

get a sense of what it is capable of achieving. And looking at what those people actually do day in and day out is a good way measuring how talented they are.

Talent's role in regional development is not entirely straightforward. It is not a commodity in the traditional sense or a product that the individual can use. Talent enhances a region's prosperity, and through this the individual benefits. This process occurs through a number of mechanisms, such as the attraction of business and the utilization of knowledge and skills to the creation of new ideas, which in turn lead to greater economic productivity.

Talent is the driving force behind production. Talented people generate ideas and bring them to market. And it is a talented workforce that innovates and develops the technologies that stimulate economic development. Moreover, this dependence on talent only increases in a global economy marked by the flow of new ideas and the sharing of knowledge. Talent breeds talent.

The processes that allow a region to perform well on talent are not accidental. There are distinct ways in which a region can concentrate its efforts to improve upon its talent base. By creating, attracting, and retaining talent, a region can achieve advantages over other places. Although regional advantage was once limited to transportation access, natural resources and the costs of labour, this is no longer the case. Talent is becoming increasingly uneven and divergent between regions. And, while talent creation is important, the regions that can successfully attract and retain talent will ultimately be the most competitive. More than ever before, talented workers have the ability to locate wherever they desire. An excellent example of this would be Silicon Valley, which acts as a talent magnet, drawing talented workers from all over North America and globally. These workers have in turn created some of the most successful companies in the world, thus it is no surprise that Northern California is an incredibly prosperous region.

But while great migrations of talented people mean that some places swell with creative, innovative people, things do not look as promising if you live in one

of the places where your talented neighbours are packing up to head to more prosperous locales. The sobering reality is that if you are not attracting talent, you are probably losing it. In the race to the top, those in front just get faster, while those tailing tend to stay behind. As with the other two "T"s, the point is not for the province just to perform decently. Ontario's goal must be to rank among the very best globally competitive jurisdictions.

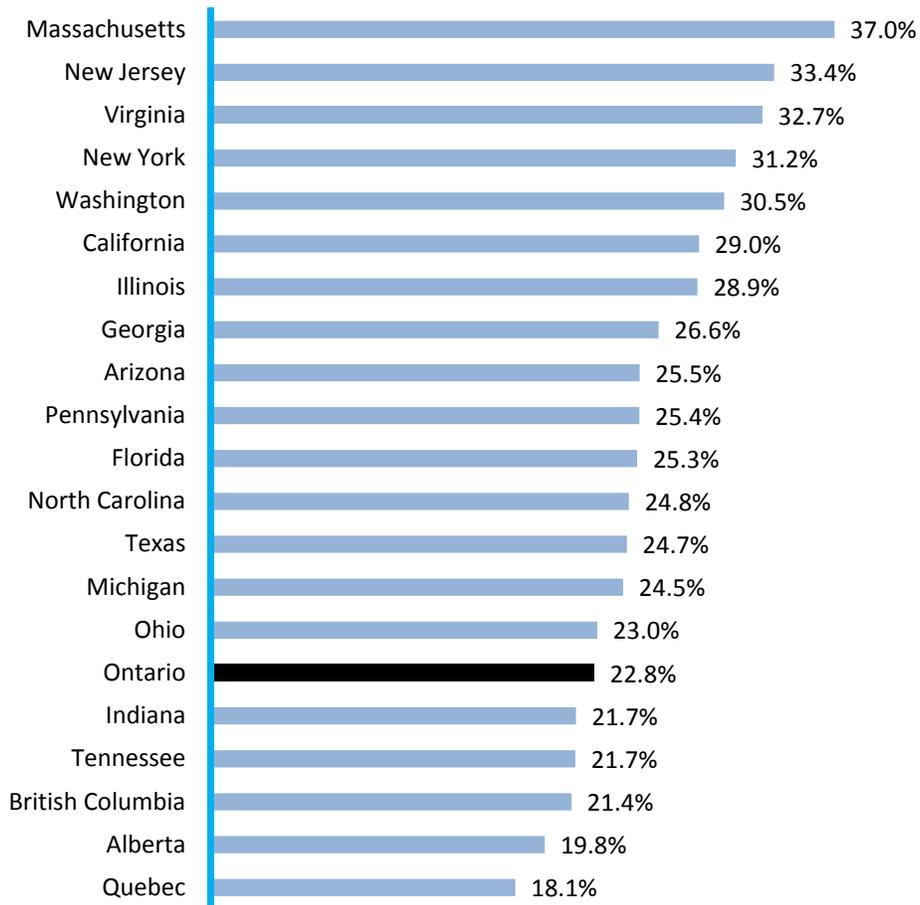
Given the importance of creative, innovative people to a region's economy, Ontario has a lot of ground to make up. The two measures of education we have used are the Talent Index, and Graduate and Professional Degrees. The Talent Index is the percentage of a region's population with a bachelor's degree (BA) or above, and Graduate and Professional Degrees is the percentage of a region's population whose highest level of achievement is an advanced degree. Neither index provides very reassuring news for Ontario.

Ontario ranks 16th out of 21 on the Talent Index, with Massachusetts ranking 1st and a number of less competitive states also outperform the province (See Figure 3). Ontario fares slightly better on Graduate and Professional Degrees, ranking 12th out of 21, but is still among the bottom half of its peers with only 9% of people having obtained these important degrees (See Figure 4). The province underperforms considerably on both measures of human capital, ranking lower than even some of the least competitive regions, such as Michigan. The province's race to the top begins from somewhere near the back of the pack.

What is truly surprising is that researchers affiliated with the Martin Prosperity Institute have shown that college degrees have no significant impact on income, and are unlikely to affect regional development.² If we want to improve Ontario's performance, we will need to put our investments where they are most effective.

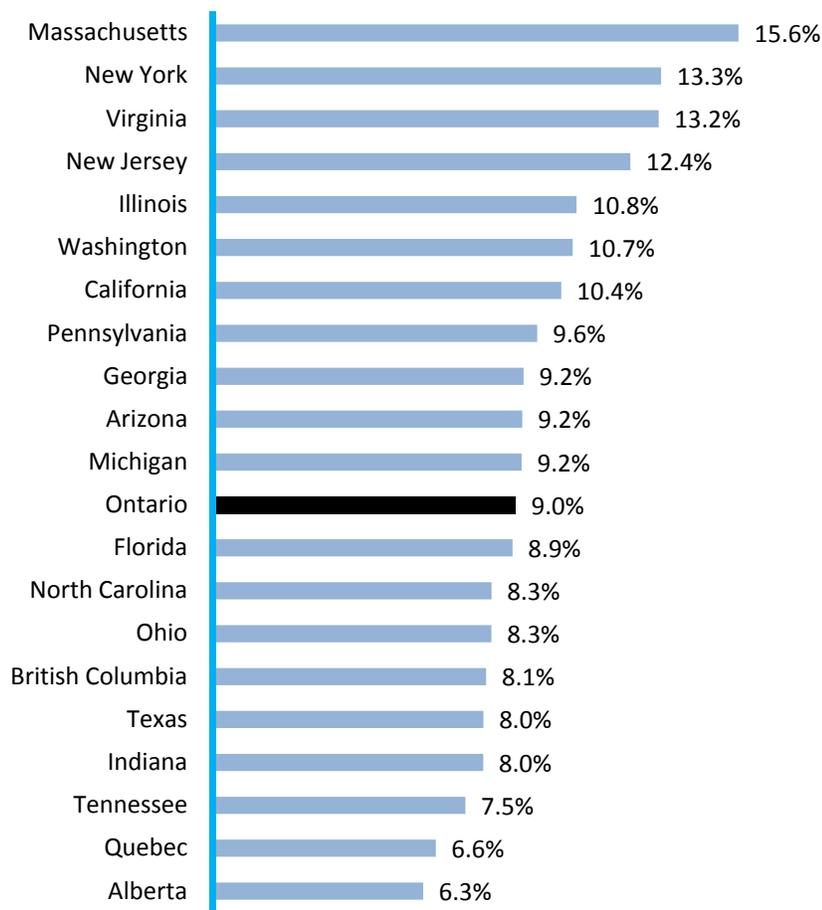
¹ MPI Working Paper - Richard Florida, Charlotta Mellander, Kevin Stolarick (2009). Talent, Technology and Tolerance in Canadian Regional Development

Figure 3: Talent Index (Population >25, Bachelors and Above), Ontario and Peer Regions, 2006



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

Figure 4: Population > 25, Graduate and/or Professional Degree, Ontario and Peers, 2006



Source: Statistics Canada Catalogue no. 94-581-XCB2006004. U.S. Census Bureau, 2006 American Community Survey

One positive indicator along this dimension shows both what the province is doing effectively and how it is falling short. The Brain Drain/Gain Index measures the number of people graduating with degrees in Ontario, versus the number of people working with degrees in the province. It tells us roughly what direction a region's talent is headed. A Brain Drain/Gain Index number of over 1.0 indicates that a region is attracting educated workers, and a number of less than 1.0 indicates that a region is losing them to other places.

Ontario performs quite well on this measure, ranking 6th of 21 with an Index number of 1.34. (See Figure 5). The ability to attract talent is the mark of a

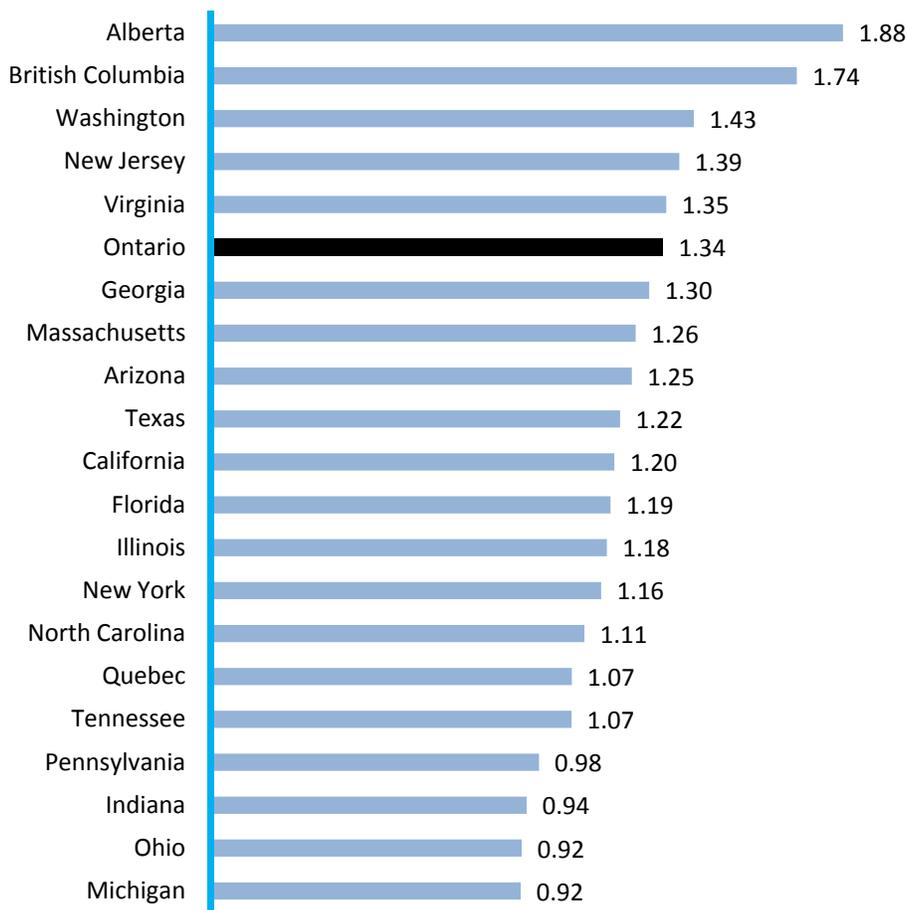
vibrant culture and economy, and is itself a real achievement. But Ontario's performance reveals a dependence on talent developed elsewhere, which is a vulnerability. If Ontario could develop talent at the same pace it attracts it, the province would climb these indices and, more importantly, show measurable gains in innovation.

Although education shows a high correlation with regional development, it is not the only indicator of talent. Talent is measured by other factors, and creativity is an extremely important dimension. Unfortunately, capturing the creative component of talent is difficult when using education levels as a measure. The inability of education to properly describe all aspects of talent forces us to use other indicators as well if we want a complete picture. Instead of looking just at what people know, we need to look at what they actually *do*³.

Occupational skill affects wages, and through this leads to increases in regional labour productivity. It is a dynamic measure which makes occupation an excellent measure of talent, and has been shown to have strong relationships with regional development. Looking at specific occupations, we can measure the creative component of a region's workforce; if you can figure out how creative a region's workforce is, you can benchmark how talented it is. Creative workers are important to Ontario because of their ability to invent and innovate. Companies locate in cities and regions with large numbers of creative workers in order to capture the benefits these people offer. Not only do good companies attract good people; good people attract good companies.

³ MPI Working Paper - Karen King, Charlotta Mellander, Kevin Stolarick (2009). What You Do, Not Who You Work For: A Comparison of the Occupational and Industry Structures of Canada, the United States, and Sweden

Figure 5: Brain Drain/Gain Index, Ontario and Peer Regions, 2006



Source: Statistics Canada. Postsecondary Student Information System (PSIS). U.S. Census Bureau, 2006 American Community Survey

Creativity in Ontario is measured by examining jobs that pay a person to think; this is in contrast to most working class jobs, which require routine physical inputs. We refer to this group of creative workers as creativity-oriented, or the Creative Class. Although the exact definition of the Creative Class is not fixed and will change over time as the requirements of various occupations change, it is possible to identify the occupations which currently can be considered as ‘creative’ work. Broadly, the acronym TAPE is used to describe the Creative Class. It stands for Technology, Arts and Culture, Professionals, Educators—people who add economic value by using their creativity. Generally, the Creative Class includes senior and specialist managers, high-ranking business

and finance positions, health care professionals, scientists and advanced technicians, educators, professional occupations in arts, culture and sport, and thinkers like judges, lawyers, social workers and psychologists. The important characteristic these occupations share is their intellectual autonomy. These people are not only paid to think, but to make decisions.

Table 3: Average Wages for Occupational Groups, Ontario

Ontario Wages	Creative Class	Working Class	Service Class
Average	\$64,100	\$37,500	\$30,900

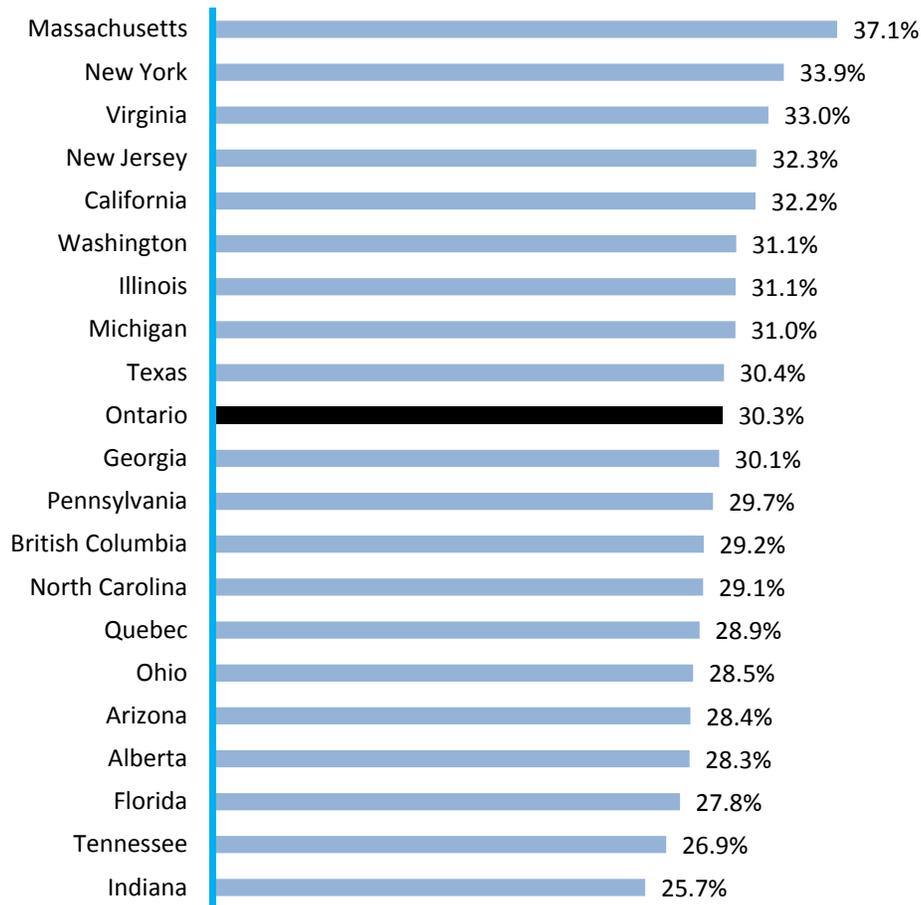
Source: Martin Prosperity Institute analysis based on data from Statistics Canada, Census 2006. Note: FFF occupations only account for 1.5% of the workforce and have an employment income of \$26,400

The Creative Class approximates the talent a region possesses. Simply by looking at the average full-time wages in Ontario by occupational class, we can see the tremendous difference for the individual, and the indirect effect it should have on the provincial economy. Above are the *full-time* and *part-time* average employment incomes for the Creative Class, Service Class, and Working Class in Ontario. The difference in average wage between these class groupings is significant and demonstrates the varying role that certain occupations have on prosperity. Just as technology fuels a modern economy, so does talent.

Despite its disappointing performance on education measures, Ontario performs moderately well on the Creative Class indicator. Ontario ranks 10th out of 21 on the Creative Class against its peers (See Figure 6). With 30.3% of the workforce employed in Creative Class occupations, Ontario ranks only slightly below the nine peers above. Only Massachusetts has a considerably higher percentage of Creative Class workers. Measured by what we do rather than what we know, our workforce begins to look a little more talented. And we look better still when we focus on a subsection of the Creative Class that has been identified as the Super Creative Core. These people are considered to be extremely creative, developing new knowledge across many fields of study and work in occupations “that produce new forms and ideas that are readily transferable and widely

useful” (Florida, 2002). They tend to be the professionals and teachers across the disciplines of science and culture who furnish a society with its ideas.

Figure 6: Creative Class as a Percentage of Workforce, Ontario and Peer Regions, 2006



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

Because of the uniqueness and potentially distinct advantage that this group of workers provides, we have also benchmarked Ontario’s Super Creative Core. Here Ontario sprints to the top, ranking 1st among its peers. Canadian provinces seem to outperform the US peers consistently, with Quebec and British Columbia coming 2nd and 3rd respectively. Alberta also ranks well at 6th; the only

US peers higher are Virginia and Massachusetts, two states that have consistently ranked highly on measures of talent.

This silver lining may be wrapped in another layer of bad news, since it is possible that Canadians are working less hours, or less efficiently, and thus are forced to hire more people for the same tasks. But the fact is that Canada, in general, and Ontario in particular, has a wealth of people working in super-creative occupations to help steer our economy into the future.

When you rank number one in something, you have every reason to believe you are doing something right and there is no doubt that Ontario has done well in fostering its Creative Class. But that should not be allowed to obscure the fact that the province is at a disadvantage in education compared to its peers. The lack of human capital in Ontario will prove to be detrimental in the long run. Whether this is due to a problem with talent creation, attraction or retention, it is important to perform well on both occupation and education measures. The two are complementary, not offsetting, and both are important to success. The peer regions we have used are very competitive, but that is just the point. These regions are Ontario's competition, and the province must strive to perform at or above their level. Currently Ontario is underperforming on these measures, and, as one of the critical components for economic development this deficiency must be corrected.

Tolerance

So far, we have focused primarily on how talent and technology are important to Ontario's continued success, but little has been said of how the province can improve in these areas. This is the role the third "T" plays in regional development: talent is attracted to a place by tolerance of other views, ethnicities, and sexual orientations, and that talent in turn generates technology and economic development. While tolerance is not

normally considered vital to economic growth, openness and inclusiveness are not just ethical goals—they imply whole new ways of thinking that lead to innovation. John Stuart Mill (1869) recognized long ago that tolerance is essential to objective thinking. The toleration of diverse opinions allows an intellectual freedom that is just not available when the individual rights of the person are not given their fullest expression.

In other words, a society should strive for tolerance not for the sake of the people it is called upon to tolerate, but for everyone's benefit. We all benefit from tolerance and positive attitudes towards diverse points of view. It is only when everyone is free to express diverse opinions that we can fully explore the world. Just as technology breeds technology, and talent attracts talent, tolerance leads to more tolerance. It attracts the Creative Class.

The Creative Class can be defined along two lines. First, they prize individuality and the opportunity for self-expression. Second, they very clearly value diversity and openness; in fact, the very idea of an occupationally defined creative class cuts across all classifications based on ethnicity, gender, or sexual orientation. A bellwether subgroup of this class is what we call Bohemians, or the artists and iconoclasts that keep a culture fresh and fizzing with new ideas. Bohemians do not seek to be at the core of accepted culture; they would rather remain on the edge where they can be individuals, and allowed freedom of self-expression. A vibrant economy relies on these people for innovation, and tolerance of the new and challenging is what attracts and keeps them around. The regions and cities with the highest concentrations of bohemians tend to be the world's most exciting and prosperous, just as tolerant regions provide talent the space necessary to conduct research and to engage in activities that may not be possible in less open and diverse places.

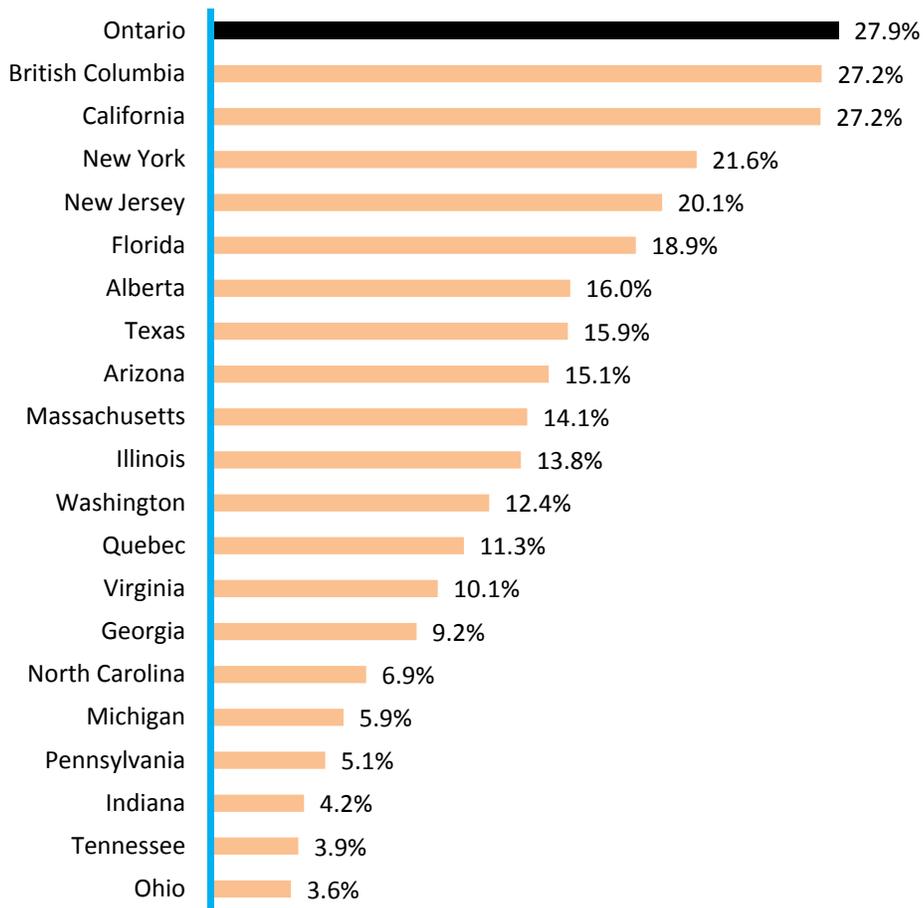
The level of tolerance in a society or region can only be approximated. To understand the variation in tolerance between different North American jurisdictions we use five variables which measure diversity as a marker of

tolerance: the Mosaic Index, Visible Minorities Index, the Bohemian Index, the Integration Index and the Gay and Lesbian Index indicate the openness and diversity of regions. The Bohemian, Gay and Lesbian, and Mosaic index are used as the main indicators of openness. (The Integration Index, which measures whether racial groups live together in a community is not included at the provincial level because it is meant for analysis of urban regions, but it will form an important part of the analysis of Ontario's CMAs.) The diversity of a region, which is measured by the Visible Minority Index, indicates low barriers to entry.

A tolerant and inclusive culture does not guarantee success, but it does provide greater access for everyone. Tolerance acts to equalize differences; it facilitates talent by embracing difference and focusing on merit. Of course, tolerance does not magically erase all inequalities, but it works towards this goal. Ontario has a culture of tolerance. People from all over the world come to live here. While Ontario does have a core cultural group, it does not exclude other groups on the periphery from accessing the public sphere. So it may not come as a surprise that the province performs well on tolerance measures, and is in fact a North American leader.

Ontario can be proud of its rank on the Mosaic Index: 1st out of 21. The Mosaic Index measures the proportion of the total population that is foreign born. As an indicator of tolerance the Mosaic Index helps describe the ability of a region to attract and retain the immigrants needed in today's global competition for talent. Regions that fail to do so miss the opportunity to add new high-skill workers that generate economic value to their labour force. They also lose the potential creative and innovative output that often flows from the interaction of cultures. With 27.9% of Ontario's population being foreign born, Ontario is only

Figure 7: Mosaic Index (% Pop), Ontario and Peer Regions, 2006



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

slightly ahead of British Columbia and California, which have 27.2% foreign-born populations. (See Figure 7) What is most remarkable though is the wide range in our results. What is clear is that immigrants heavily favour some places over others⁴. Those regions hold an immense diversity advantage.

Ontario performs adequately on the Visible Minority Index, however due to large amount of non-immigrant visible minorities in certain US states Ontario ranks lower than one might expect. With 22.6% of the population classified as

⁴ MPI Working Paper - Karen King (2009). The Geography of Immigration in Canada: Settlement, Education, Labour Activity and Occupation Profiles

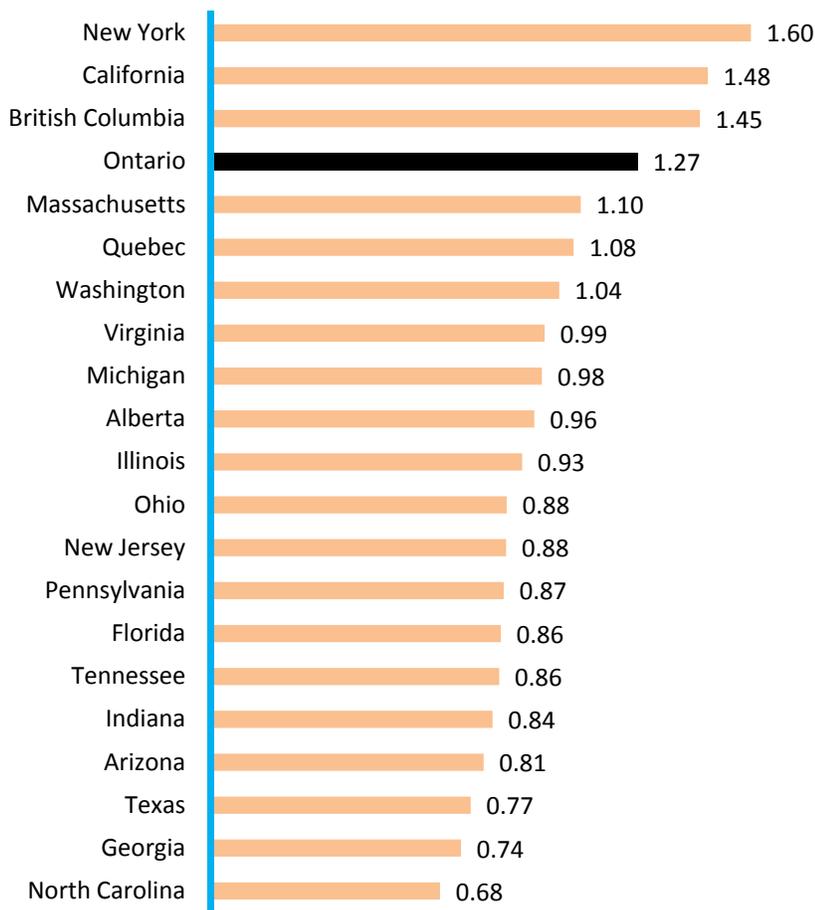
visible minorities, 1 in 5 Ontarians would fall under this category. However, California dwarfs Ontario's numbers at 40.2%.

The third indicator used to judge Ontario's tolerance is the Gay and Lesbian Index. This measure compares the share of same-sex couples in a region to the national share of same-sex couples. The presence of same sex couples and a large gay population in general tends to correspond not only with openness but prosperity as well. Ontario's performance on this indicator is decent as well, ranking 11th out of 21, with a location quotient of 1.00 meaning that the proportion of gay and lesbians in North America is the same as Ontario.

Finally, we created the Bohemian Index in an attempt to measure the freedom individuals have to express themselves in a given region. The index measures whether the number of bohemians in a region is greater or less than the average. Ontario ranks a respectable 4th out of 21 on the Bohemian Index, trailing only New York, California, and British Columbia (See Figure 8).

It is not difficult to see what Ontario does well. The province's culture of tolerance has created a place for Ontario among North America's most competitive jurisdictions. Ontario is a magnet for exactly the kind of people we need to nourish economic growth and cross the threshold between an economy built on brawn to one fuelled by brains. We need the infusion of new ideas that comes with rubbing shoulders with different cultures and perspectives, and our tolerance should ensure that we keep building on this strength.

Figure 8: Bohemian Index, Ontario and Peer Regions, 2006



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

Conclusion

The global economy has been changing steadily for decades, and the current financial turmoil is only accelerating the pace of its evolution. It is the most creative and innovative economies that will emerge as leaders, and while Ontario is in many ways a laggard in its ranking on the crucial three "Ts" of technology, tolerance and talent, careful leadership and investment can steer the province ambitiously into the future.

The province is already a leader in tolerance, and must foster this advantage and leverage it to improve in technology and talent. But it cannot afford to wait for ideas and innovators to arrive. At a time when the province is called upon to invest, it must mobilize its assets where they will yield the strongest return: not in propping up the fading artifacts of an old economy, but in bolstering the competitive advantages of the new one. We have fallen behind our peers by a wide margin in education. However, increasing the proportion of the population with at least a bachelor's degree from 22.3 percent to the peer median of 25.3 percent is an attainable milestone that would not only move the province up the rankings, but would also increase the pace of patenting and innovation in Ontario.

The continued development of an already strong culture of tolerance can help attract and retain the talent to make the prior two goals a reality: improving talent and technology through tolerance. Ontario has slipped in the past decades from an elite among its peers to an unassuming spot in the middle of the pack. But it still has many robust strengths and glittering advantages, like its impressive Creative Class. If the province deploys its three "Ts" judiciously, Ontario is poised to begin making up lost ground in the race to the top.

Appendix A: Map of Benchmarked 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)	$(\text{Population}(2006) - \text{Population}(2001)) / \text{Population}(2001)$
Job Growth (2000-2005)	$(\text{Labor Force, Total Employment}(2006) - \text{Labor Force, Total Employment}(2001)) / \text{Labor Force, Total Employment}(2001)$
GDP per Capita, 2006	GDP/Population, PPP adjusted
Change in Average Wage (2000-2005)	$(\text{Average Wage}(2000) - \text{Average Wage}(2001)) / \text{Average Wage}(2001)$
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}_{\text{region}}}{\text{Total Population}_{\text{region}}} \right) \sum \left \frac{V_{\text{GroupDA,G}}}{V_{\text{GroupG}}} - \frac{V_{\text{GroupDAH}}}{V_{\text{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>

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

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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.