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TRANSITIONING THUNDER BAY TO A KNOWLEDGE- BASED ECONOMY



North Superior
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**EMPLOYMENT
ONTARIO**

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EXECUTIVE SUMMARY

Thunder Bay's economic future lies in its ability to adapt. Central to economic adaptation is Thunder Bay's ability to transition its economy to one that is knowledge-based.

Given the economic shift being experienced in Canada and Ontario, it is well documented that Thunder Bay's economic performance, being traditionally reliant on the forestry industry, has weakened. Action is needed to support a new human capital infrastructure directed at transitioning the area to a knowledge-based economy. Such a transition is not a trendy economic development initiative, nor is it optional: a knowledge-based economy will be the primary determinant in Thunder Bay's ability to regenerate jobs, and be a competitive player in a restructured global marketplace.

Thunder Bay's transition to a knowledge-based economy must engage in the delivery of high value-added products and services. Core to achieving this are employers and workers with skills and expertise.

It is encouraging to note that shining examples already exist within Thunder Bay of industrial sectors that are knowledge-based. The Health Sciences sector, for example, has already benefited the community through the creation of highly skilled jobs and the attraction of significant public and private-sector investment in research and development.

Additionally, there are industries within the community that are typically considered "traditional" economy sectors but are extremely well positioned to make the transition to a more knowledge intensive state. Thunder Bay's Mining and Forestry sectors, for example, are some of the strongest sectors of their kind within the province. This leadership position and associated competitive advantage will be extremely beneficial as these industries look to improve worker knowledge and skills, and heighten productivity.

A proper assessment of the challenges is essential to forming a realistic and feasible approach.

A number of factors speak to the need for economic and employment transition:

- Since 2002-2003, Thunder Bay's economic output (Gross Domestic Product) increased a modest 0.9 percent compared to a 9.4 percent increase in Ontario.

- Employment declined 2.8 percent in Thunder Bay and increased 10.1 percent in Ontario.
- Revenue generated declined 5.5 percent in Thunder Bay while rising 14.1 percent in Ontario.

These factors are also reflected in Thunder Bay's labour market, where a lack of (or a perceived lack of) employment opportunities greatly affects the community's ability to retain and attract skilled labour:

- Between 2001 and 2006, Thunder Bay's migration trends show that 20,720 persons left the area while 19,757 persons moved to the area.
- Thunder Bay also experienced a net loss of employed persons, with 6,715 employed persons leaving the area and 5,005 moving to Thunder Bay, equating to a net loss of 1,710 employed persons.
- In total, 42 of the 57 occupations examined have experienced a net loss of workers, including knowledge-oriented occupations such as Professional occupations in natural and applied sciences.

The data also suggests labour skill deficiencies, based on post-secondary attainment within Thunder Bay. When compared to Ontario, Thunder Bay has a lower proportion of workers who have completed post-secondary education across the majority of occupations. In 13 of the 26 occupations examined, Ontario's proportion of workers with post-secondary credentials exceeded Thunder Bay's by three or more percentage points. In light of the necessity to be globally competitive, this difference makes the attraction of knowledge-based business investment more difficult.

Related to labour skill deficiencies, while a modest 5.1 percent of Thunder Bay CMA's workers live outside the area, they tend to have higher levels of education than those workers who reside in Thunder Bay. This suggests employers may need to extend their talent/skill search.

On the positive side, Thunder Bay's economy is incredibly resilient. Even though tens of thousands of jobs have been lost in Thunder Bay CMA over the last decade, employment remains relatively stable (with only a slight decline) over the time period. Clearly, thousands of jobs are also being created, offsetting many of those lost.

Additionally, the fact that Thunder Bay's median employment income increased 10.4 percent between 2001 and 2006 – outpacing a 10.2 percent increase in Ontario – suggests that many of the jobs being created are contributing to higher wage levels.

Thunder Bay has also shown considerable improvement in educational attainment, with the proportion of persons with post-secondary credentials increasing in all but two occupations between 2001 and 2006.

The transition to a knowledge-based economy is propelled by the need to adapt, survive and compete; paramount to this transition is a rise in productivity. While productivity is difficult to measure, a proxy for productivity is the revenue (output) per worker. With respect to this metric, Thunder Bay shows progress. On average, between 2003 and 2008, the revenue per worker increased in Thunder Bay's small- to medium-sized businesses (those with 1 to 49 employees). Businesses with 5 to 9 employees showed the greatest increase in revenue per worker, increasing from \$97,242 in 2003 to \$183,714 in 2008. This real and percentage increase in the 5 to 9 employee firm size, may be a key contributor to helping lead Thunder Bay's future economic renewal.

Thunder Bay's Manufacturing Sector is also a bright light in the transition to a knowledge-based economy. Although manufacturing employment decreased, the value added per worker increased substantially over the three-year period examined, increasing from \$165,397 in 2004 to \$202,134 in 2007.

Toward accelerating Thunder Bay's transition to a knowledge-based economy, strategies with clear and measurable goals are required. These measurable goals must be based on initiatives that are practical, feasible and suited to Thunder Bay's economy and resources. Based on the findings of this report, it is recommended that Thunder Bay's employment and training focus on:

1. Retention of Skilled Workers
2. Development of Skilled Workers
3. Increasing Employer Productivity
4. Expanding Capacity of Small and Medium Size Businesses (SMEs)
5. Strategic Investments That Builds on Thunder Bay's Economic Base

INTRODUCTION

Similar to other Canadian and Ontario communities, Thunder Bay Census Metropolitan Area (CMA) is in a state of economic challenge, with fewer persons employed in 2009 than there were in 1987. Numerous layoffs due to business closures and downsizing have had, and continue to have, an adverse affect. Thunder Bay is also challenged by its geographic location, where physical integration with other regional economies is limited by distance.

Given these realities, Thunder Bay's economic future lies in its ability to adapt. Central to economic adaptation is Thunder Bay's ability to transition its economy to one that is knowledge-based.

While the requirements of production remain the same (labour, capital and land/equipment), the *function* of labour has and continues to change dramatically – becoming an increasingly important component to productivity and competitiveness. The knowledge economy refers to economic activity that depends heavily on expertise of its workers. Knowledge workers perform knowledge-rich jobs. These workers tend to be more highly educated, typically through the completion of post-secondary education, including apprenticeship. The knowledge worker is at the centre of innovation and economic growth. National and provincial data confirm that jobs for those with post-secondary education or training (knowledge workers) are increasing while jobs for those without such training are rapidly declining.

Thunder Bay's transition to a knowledge-based economy is not optional. Without investing in developing a strong human capital (skill/talent) base, Thunder Bay will not be able to retain or attract businesses that require the skills and talents of knowledge workers. Nor will Thunder Bay be able to retain or attract businesses that rely on lower skills, lower wages or cheap land/operating costs, as these jobs will continue to go to offshore locations. Knowledge must be the means by which an economy adapts and thrives. Even in the case where natural advantages are present (i.e. Wood Product Manufacturing or Mining), knowledge must play a critical role in the productivity of such industries.

Thunder Bay's successful transition to a knowledge-based economy is not guaranteed. To encourage and actively propel this transition, a comprehensive understanding of its current economy and what is hindering – or may hinder – this transition is warranted.

The following research examines the Thunder Bay CMA with the express intent of identifying and documenting the economic and labour force characteristics and trends that demonstrate or hinder the transition to a knowledge-based economy. This will enable Thunder Bay to better address challenges and identify opportunities to accelerate this transition.



RESEARCH APPROACH

Section I of this report profiles the economic characteristics of the Thunder Bay Census Metropolitan Area (CMA) economy as the performance of the economy influences Thunder Bay's transition to a knowledge-based economy. Section II examines Thunder Bay's labour market characteristics and trends that affect or may affect the supply and demand of knowledge-based workers. Section III assesses Thunder Bay's transition to a knowledge-based economy from a productivity perspective, where revenue per worker is used as an estimate (proxy) of productivity. Section IV offers recommendations on where to focus efforts to encourage this transition.

The descriptive statistics used in this report are drawn directly from Statistics Canada data or are derived from Statistics Canada data. Wherever possible, the study uses the most current data available; however, depending on the variable examined, the data year varies due to methodological changes in Statistics Canada's data collection procedure. In some cases, the most current data available using a consistent data collection approach is for 2006, while in other instances, 2008/2009 data is appropriate and applicable.

Note: This report speaks of the importance of post-secondary education to a knowledge-based economy. Since data is available that allows for the measurement of educational attainment, the report uses this indicator as an indication of knowledge intensity. That said, it is recognized that persons without post-secondary credentials but who are life-long learners with on-the-job experience can be highly skilled and contribute significantly to a knowledge-based economy. Indicators for that type of skill and knowledge, however, are not readily available.

GEOGRAPHIC AREA DEFINED

In most instances, the economic indicators in this report pertain to the Thunder Bay Census Metropolitan Area. Thunder Bay CMA consists of: Conmee (Township), Fort William 52 (Indian reserve), Gillies (Township), Neebing (Municipality), O'Connor (Township), Oliver Paipoonge (Municipality), Shuniah (Township) and Thunder Bay (City). A Census Metropolitan Area is a large urban area (known as an urban core), together with adjacent urban and rural areas (known as urban and rural fringe) that have

a high degree of social and economic integration with the urban core. A CMA has a minimum urban core population of 100,000.

Considerably more data is available at the Thunder Bay CMA level of geography than at other levels, which is why the majority of the metrics are assessed at the CMA level.

The Thunder Bay District Census Division (CD) is a group of neighbouring municipalities joined together for the purposes of regional planning. Census Division is the general term for provincially legislated areas such as county and regional districts. The Thunder Bay District – with a population of just over 149,000 – is larger than the Thunder Bay CMA with a population just under 123,000. Some indicators found in this report are presented at the Census Division level of geography because the data was available at this level free of charge, and the validity of the insight provided at this level was equivalent to the insight that would be gained through purchased data at the CMA level.

Each Table identifies the geographic area referred to for that particular indicator.



SECTION I: ECONOMIC PROFILE OF THUNDER BAY CMA

The purpose of Section I is to provide economic context regarding Thunder Bay CMA's economy – its economic scale, structure, characteristics and trends. This context is critical in helping to determine the scale of the challenges, the feasibility of the approach, and the labour market priorities as Thunder Bay works to transition to a knowledge-based economy.

Some industries are already more knowledge-oriented, such as Bio or Health Sciences, or Professional and Scientific Services. Yet, more must be done. The accelerated integration of knowledge in all industries is critical to Thunder Bay's economic and employment renewal. The principal underlying the need to transition is that for the economy to be competitive in retaining and attracting business investment and jobs, it must possess the knowledge skills and talents that businesses need to be productive.

To this end, in a report titled "Strategies For Developing A Broadly Based Regional Knowledge Economy In Northwestern Ontario," Dr. Livio Di Matteo, states that:

The knowledge economy and strategies to foster it should be seen as a complement to the region's current mix of economic activity rather than some type of panacea. Indeed, it would not be so bold to suggest that in Northwestern Ontario, what is needed is a dose of creativity and knowledge applied to doing better with current activities rather than focusing on a paradigm designed to reinvent the entire economy.¹

Section I also provides benchmarks that can be used to assess and monitor the performance of the Thunder Bay economy, including:

- Gross Domestic Product (GDP)
- Change in GDP
- Number of Business Establishments
- Change in the Number of Business Establishments
- Revenue Generated
- Change in Revenue Generated

¹ L.Di Matteo (September 2006). Strategies for developing a broadly based regional knowledge economy in Northwestern Ontario. Thunder Bay, ON: North Superior Training Board.

- Employment
- Change in Employment
- Employment Income
- Migration
- Sector Profile
- Number of Businesses
- Employment
- Revenue

GROSS DOMESTIC PRODUCT (GDP)

Gross Domestic Product (GDP) measures the total value of all final goods and services produced by an economy. It is the principal way to measure the scale or size of an economy. Thunder Bay CMA's GDP reached \$5.5 billion in 2008, which is larger than the economy of Prince Edward Island with a \$4.6 billion GDP in the same year. Details are presented in Table 1.

Table 1: Gross Domestic Product at Current Dollars Thunder Bay CMA and Provinces - 2008

	(\$ billions)
PEI	\$4.6
Thunder Bay CMA	\$5.5
New Brunswick	\$27.3
Newfoundland	\$31.2
Nova Scotia	\$34.1
Manitoba	\$50.8
Saskatchewan	\$63.5
British Columbia	\$197.9
Alberta	\$291.2
Quebec	\$302.2
Ontario	\$587.8

Source: Statistics Canada and Community Benchmarks Inc.

REAL GROSS DOMESTIC PRODUCT

An examination of Gross Domestic Product growth trends tells us the rate at which an economy is growing (or declining). In order to examine GDP growth, it is necessary to look at Real GDP as it is adjusted for inflation, making year-to-year comparisons possible. Between 2002 and 2008, Thunder Bay's GDP grew 0.9 percent, which is considerably slower than the 9.4 percent growth rate for Ontario. Details are presented in Table 2.

Table 2: Real Gross Domestic Product Percent Change Thunder Bay CMA and Ontario (2002 millions)

	2002	2008	Percent Change (%)
Thunder Bay CMA	4,848	4,891	0.9
Ontario	477,763	522,444	9.4

Source: Statistics Canada, Community Benchmarks Inc.

NUMBER OF BUSINESS ESTABLISHMENTS

Statistics Canada's Canadian Business Patterns provides the most comprehensive count of business establishments within a specific geographic area. Canadian Business Patterns identifies the number of businesses by employee size range within an industry, and is derived from Canada Revenue Agency (CRA) business numbers and from payroll remittance numbers. The data for December 2008 revealed that Thunder Bay CMA had 6,385 businesses, 3,680 of which had employees and 2,705 of which had no payroll employees (i.e. are owner operated). The very small firm is the predominant form of business in Thunder Bay CMA: 42.4 percent of businesses have no employees and 91.7 percent have less than 20 employees. Details are presented in Table 3.

Table 3: Number of Business Establishments – Thunder Bay CMA – December 2008

Employee Size Range	Number of Businesses 2008	Distribution %
0 (owner operated)	2,705	42.4
1-4 employees	1,723	27.0
5-9 employees	879	13.8
10-19 employees	544	8.5
20-49 employees	340	5.3
50-99 employees	110	1.7
100-199 employees	48	0.8
200-499 employees	23	0.4
500 + employees	13	0.2
Total Businesses with payroll employees	3,680	57.7
Total	6,385	100.0*

Source: Statistics Canada, Canadian Business Patterns

* May not sum to 100 due to rounding

CHANGE IN THE NUMBER OF BUSINESS ESTABLISHMENTS

Between December 2003 and December 2008, the total number of business establishments within Thunder Bay declined from 6,911 to 6,385 – a decrease of 7.6 percent. Businesses with between 5 and 9 employees showed the greatest absolute gain, increasing from 743 to 879 businesses over this time period. Owner operated businesses experienced the largest absolute decline, decreasing from 3,089 to 2,705 between 2003 and 2008. It should be noted that increases and decreases in the number of establishments refer to the *net* change. Details are presented in Table 4.

Table 4: Change in the Number of Business Establishments by Employee Size Range

Employee Size Range	Number of Businesses 2003	Number of Businesses 2008	Absolute Change	Percent Change %
0 (owner operated)	3,089	2,705	(384)	(12.4)
1-4 employees	1,991	1,723	(268)	(13.5)
5-9 employees	743	879	136	18.3
10-19 employees	525	544	19	3.6
20-49 employees	355	340	(15)	(4.2)
50-99 employees	115	110	(5)	(4.3)
100-199 employees	52	48	(4)	(7.6)
200-499 employees	24	23	(1)	(4.2)
500 + employees	17	13	(4)	(23.5)
Total	6,911	6,385	(526)	(7.6)

Source: Statistics Canada, Canadian Business Patterns

REVENUE

The scale and performance of Thunder Bay's economy can also be measured by the revenue generated by area businesses, as revenue data shows the extent of the financial flow into an area.

In 2008, Thunder Bay's business establishments collectively generated \$7.9 billion in revenue; however, between 2003 and 2008 the total revenue generated in Thunder Bay decreased 5.5 percent. Over the same time period, revenue in Ontario increased 14.1 percent. Details are presented in Table 5.

Table 5: Revenue Growth/Decline – Thunder Bay and Ontario

	2003	2008	Percent Change (%)
Thunder Bay CMA	\$8,432,196,988	\$7,966,789,359	(5.5)
Ontario	\$1,416,027,763,830	\$1,615,922,702,046	14.1

Source: Statistics Canada, Canadian Business Patterns

EMPLOYMENT

In 2009, the number of people employed in the Thunder Bay CMA was 59,900, the lowest level since 1998. Between 2001 and 2009, employment in Thunder Bay CMA decreased 2.8 percent compared to a 10.1 percent gain in Ontario. Details are presented in Tables 6 and 7.

Table 6: Employment – Thunder Bay CMA

Number Employed	
1987	61,700
1998	57,400
1999	60,200
2000	60,900
2001	61,600
2002	61,200
2003	65,200
2004	63,000
2005	63,800
2006	61,500
2007	63,200
2008	62,600
2009	59,900

Source: Statistics Canada, Labour Force Survey

Table 7: Employment Growth/Decline – Thunder Bay and Ontario

	2001	2009	Percent Change (%)
Thunder Bay CMA	61,600	59,900	(2.8)
Ontario	5,926,200	6,526,100	10.1

Source: Statistics Canada, Labour Force Survey

EMPLOYMENT INCOME

In 2006, the total employment income generated by Thunder Bay CMA residents reached \$2.3 billion. In the same year, Thunder Bay CMA's median employment income reached \$28,700. Between 2001 and 2006 Thunder Bay's median employment income increased 10.4 percent, slightly outpacing Ontario's 10.2 percent increase. Details are presented in Table 8.

Table 8: Employment Income – Thunder Bay CMA and Ontario

	Total Employment Income 2006	Median Employment Income 2001	Median Employment Income 2006	Median Employment Income Percent Change 2001 to 2006
Thunder Bay CMA	\$2,365,689,000	\$26,000	\$28,700	10.4 %
Ontario	\$275,777,590,000	\$26,600	\$29,300	10.2 %

Source: Statistics Canada, Taxfiler



MIGRATION

Areas offering the greatest employment opportunities attract more persons than they lose. Between 2002 and 2007, Thunder Bay CMA attracted 19,757 in-migrants while losing 20,720 persons to out-migration, equating to a net migration loss of 963 persons.

Further insight into migration patterns is provided by examining the three different types of migration. Intra-provincial migration refers to migration within Ontario; inter-provincial migration refers to migration between Ontario and other provinces; and international migration refers to migrants leaving and entering the country.

Of the three different types of migration, Thunder Bay CMA experienced the greatest gains in intra-provincial migration, which posted a net gain of 1,683 migrants. International migration contributed a net gain of 550, while inter-provincial migrants had a net loss of 3,196.

Details are presented in Tables 9 and 10.

Table 9: Net Migration Patterns - Thunder Bay CMA 2002 to 2007

In-migrants	Out-migrants	Net-Migrants
19,757	20,720	(963)

Source: Statistics Canada, Taxfiler

Table 10: Net Migration by Type of Migrants – Thunder Bay CMA 2002 to 2007

Net Intra-provincial Migrants	Net Inter-provincial Migrants	Net International Migrants	Total Net Migrants
1,683	(3,196)	550	(963)

Source: Statistics Canada, Taxfiler

SECTOR PROFILE

This section of the research provides a more detailed statistical description of the Thunder Bay CMA number of business establishments, employment and revenue. These metrics are examined for each 2-digit sector of the North American Industrial Classification System (NAICS).

The North American Industry Classification System (NAICS) is the system used by the statistical agencies of Canada, the United States and Mexico to classify business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the economy. The NAICS is designed to provide common definitions of industrial structure of the three countries. NAICS is a comprehensive system encompassing all economic activities. It has a hierarchical structure: at the highest level, it divides the economy into 20 sectors. At the lower levels, it further distinguishes the different economic activities in which businesses are engaged.

Note that the Labour Force Survey (employment data) is available for 16 NAICS sectors (some sectors are combined) and the number of business establishments and revenue data is available for 20 sectors.

CHANGE IN THE NUMBER OF BUSINESS ESTABLISHMENTS BY SECTOR

While Thunder Bay is comprised of 6,385 business establishments as of December 2008, they are not evenly distributed across the 20 2-digit NAICS sectors. Thunder Bay's Retail Trade sector (NAICS 44-45) had the most businesses with 713, while Utilities (NAICS 22) had the fewest, with seven.

Between 2003 and 2008, the Health Care and Social Assistance sector (NAICS 62) experienced the greatest percent growth in the number of businesses in Thunder Bay, increasing 27.9 percent, from 358 to 458 businesses. In total, only six sectors experienced growth in the number of businesses. Over the same period, 15 sectors experienced decline in the number of business establishments. Details are presented in Table 11.

Table 11: Change in the Number of Business Establishments

	Thunder Bay 2003	Thunder Bay 2008	Percent Change Thunder Bay	Percent Change Ontario
11 - Agriculture, Forestry, Fishing and Hunting	437	325	(25.6)	(13.5)
21 - Mining and Oil and Gas Extraction	33	32	(3.0)	5.7
22 - Utilities	8	7	(12.5)	6.5
23 - Construction	845	711	(15.9)	(1.3)
31-33 - Manufacturing	238	204	(14.3)	(14.0)
41 - Wholesale Trade	312	284	(9.0)	(8.0)
44-45 - Retail Trade	839	713	(15.0)	(7.1)
48-49 - Transportation and Warehousing	394	355	(9.9)	31.2
51 - Information and Cultural Industries	50	51	2.0	9.8
52 - Finance and Insurance	323	370	14.6	14.8
53 - Real Estate and Rental and Leasing	631	596	(5.5)	17.0
54 - Professional, Scientific and Technical Services	637	607	(4.7)	1.1
55 - Management of Companies and Enterprises	247	254	2.8	16.4
56 - Administrative and Support, Waste Management and Remediation Services	286	255	(10.8)	(4.4)
61 - Educational Services	81	87	7.4	16.5
62 - Health Care and Social Assistance	358	458	27.9	18.3
71 - Arts, Entertainment and Recreation	117	92	(21.4)	(7.7)
72 - Accommodation and Food Services	421	344	(18.3)	(14.2)
81 - Other Services (except Public Administration)	639	622	(2.7)	25.5
91 - Public Administration	15	18	20.0	21.8
Total	6,911	6,385	(7.6)	3.5

Source: Statistics Canada, Canadian Business Patterns

EMPLOYMENT BY SECTOR

According to the Labour Force Survey, the number of persons employed in Thunder Bay declined to 59,900 in 2009. The Trade sector and the Health Care and Social Assistance sector remained the area's largest sectors, employing 9,900 and 9,200 people respectively. In total, 7 sectors employed more than 3,500 persons each.

When employment growth trends are examined, 8 sectors experienced employment growth between 2001 and 2009, and 5 experienced employment decline (data was not

available for the Agriculture, Forestry or Utilities sectors because the Labour Force Survey does not produce an adequate sample to estimate employment for these sectors).

Of greatest consequence was the decline in Manufacturing employment. This sector lost 4,200 jobs between 2001 and 2009. The Information, Culture and Recreation sector added the most jobs at 800, over the time period examined.

Details are presented in Table 12.

Table 12: Employment Growth/Decline by Sector – 2001 to 2009

Industry Sector	Thunder Bay CMA			
	2001	2009	Absolute Change	Percent Change %
Agriculture	0 ¹	0 ¹	na	na
Forestry, fishing, mining, oil and gas	0 ¹	0 ¹	na	na
Utilities	0 ¹	0 ¹	na	na
Construction	3,300	3,900	600	18.2
Manufacturing	7,100	2,900	(4,200)	(59.2)
Trade	9,300	9,900	600	6.5
Transportation and warehousing	3,900	3,600	(300)	(7.7)
Finance, insurance, real estate and leasing	2,900	2,500	(400)	(13.8)
Professional, scientific and technical services	2,400	3,100	700	29.2
Business, building and other support services	2,200	1,800	(400)	(18.2)
Educational services	5,000	5,700	700	14.0
Health care and social assistance	9,200	9,900	700	7.6
Information, culture and recreation	2,200	3,000	800	36.4
Accommodation and food services	4,200	4,300	100	2.4
Other services	3,100	3,200	100	3.2
Public administration	4,300	3,900	(400)	(9.3)
TOTAL	61,600	59,900	(1,700)	(2.8)

Source: Statistics Canada, Labour Force Survey

1. Sector actually employs workers, however Labour Force Survey does not produce adequate sample to estimate employment for the Thunder Bay Census Metropolitan Area. Employment data for Northwest Economic Region is presented in Table 13.

Table 13: Employment - Northwest Economic Region

Industry Sector	2001	2009
Agriculture	0	0
Forestry, fishing, mining, oil and gas	8,800	3,000
Utilities	0	2,200

Source: Statistics Canada, Labour Force Survey

REVENUE BY SECTOR

With respect to revenue, Thunder Bay's Retail sector (NAICS 44-45) generated the most revenue, reaching \$1.6 billion in 2008. The Manufacturing sector (NAICS 31-33) was second with revenue in excess of \$1.3 billion. Eleven sectors in Thunder Bay CMA each generated more than \$200 million in revenue in 2008.

When Thunder Bay revenue trends are examined between 2003 and 2008, 9 sectors experienced revenue increases and 8 underwent revenue decline (the data for 3 sectors was not available). Details are presented in Table 14.

Table 14: Revenue Growth/Decline by Sector – Thunder Bay 2003 to 2008

	2003	2008	Percent Change
11 - Agriculture, Forestry, Fishing and Hunting	\$759,163,185	\$351,211,590	-53.7%
21 - Mining, Quarring, and Oil and Gas Extraction	\$102,192,210	\$104,980,421	2.7%
22 - Utilities	N/A	N/A	
23 - Construction	\$694,706,497	\$706,111,607	1.6%
31-33 - Manufacturing	\$1,285,502,037	\$1,316,406,786	2.4%
41 - Wholesale Trade	\$1,071,531,267	\$933,394,551	-12.9%
44-45 - Retail Trade	\$1,147,659,516	\$1,618,628,975	41.0%
48-49 - Transportation and Warehousing	\$546,030,733	\$589,405,628	7.9%
51 - Information and Cultural Industries	\$77,029,870	\$74,282,119	-3.6%
52 - Finance and Insurance	\$496,458,638	\$503,305,174	1.4%
53 - Real Estate and Rental and Leasing	\$171,666,364	\$195,225,852	13.7%
54 - Professional, Scientific and Technical Services	\$192,421,965	\$234,302,238	21.8%

	2003	2008	Percent Change
55 - Management of Companies and Enterprises	\$66,573,617	\$28,525,022	-57.2%
56 - Administrative and Support, Waste Management and Remediation Services	\$86,354,495	\$119,306,235	38.2%
61 - Educational Services	N/A	N/A	
62 - Health Care and Social Assistance	\$455,030,668	\$373,245,703	-18.0%
71 - Arts, Entertainment and Recreation	\$27,833,248	\$27,674,162	-0.6%
72 - Accommodation and Food Services	\$245,851,578	\$208,863,959	-15.0%
81 - Other Services (except Public Admin.)	\$270,771,084	\$252,997,778	-6.6%
91 - Public Administration	N/A	N/A	
Total	\$8,432,196,988	\$7,966,789,359	-5.5%

Source: Statistics Canada
N/A Data not available

IMPLICATIONS

The findings of Section I point to a number of implications as Thunder Bay transitions to a knowledge-based economy.

Thunder Bay's Gross Domestic Product reached \$5.5 billion in 2008. While economies of this size are large enough to be resilient to specific economic setbacks, they can also be slow to turn around. As such, there is a requirement to put into place strategies that will speed the transition.

Over the 2003 and 2008 time period, the revenue generated by Thunder Bay's businesses declined 5.5 percent while rising 14.1 percent in Ontario. Clearly, Thunder Bay's economy is growing much slower than Ontario's.

Between 2001 and 2009, employment in Thunder Bay declined 2.8 percent while increasing 10.1 percent in Ontario. Considering tens of thousands of jobs have been lost in Thunder Bay over the last decade, the fact that employment levels only declined slightly suggests that a considerable number of jobs were also created. The employment figures do not provide insight into the types of jobs created nor how the nature of work is changing. This information would be extremely valuable in helping Thunder Bay understand how the demand for skills is changing.

Thunder Bay's migration characteristics reflect its economic conditions. Between 2002 and 2007, the area attracted 19,757 persons through in-migration, but lost 20,720 persons to out-migration.

Based on this data, it appears Thunder Bay's transition to a knowledge-based economy is disadvantaged when it comes to attracting skilled workers, as competing communities offer more employment opportunities. This means that the retention and development of existing workers' (versus skill attraction) skill is critical to Thunder Bay's transition to a knowledge-based economy.



SECTION II: LABOUR MARKET CHARACTERISTICS AND TRENDS

Thunder Bay's transition to a knowledge-based economy hinges on the existence of an adequate supply of knowledge workers with the skill sets in demand. For that reason, Section II examines Thunder Bay's labour market characteristics and trends that affect or may affect the transition to a knowledge-based economy.

The following questions form the basis for gaining the required insight: Where does Thunder Bay's employed labour force live? How far afield must Thunder Bay employers reach to assess the occupation skills needed? How do Thunder Bay's migration trends affect the supply of labour by occupation? How do Thunder Bay's educational attainment levels affect competitiveness?

The answers to these questions will determine Thunder Bay's labour market challenges and priorities going forward.

THUNDER BAY EMPLOYED LABOUR FORCE, PLACE OF RESIDENCE

An examination of where Thunder Bay's employed labour force lives provides insight into the distance Thunder Bay employees are traveling to work, and provides perspective on how far afield businesses based in Thunder Bay CMA must reach to find the labour they require.

In 2006, 52,090 or 94.9 percent of people who worked in Thunder Bay CMA also lived in Thunder Bay CMA. Within the context of Ontario communities, having almost 95 percent of your employed labour force work in the same community as they live is unique, as most communities have a much lower percentage of their employed labour force living within their local area. This attribute is beneficial for the CMA because people earn and spend their money locally, greatly limiting the leakages of money out of the community.

Another 2,105 people who work in Thunder Bay CMA live in the Northwest Economic Region (excluding Thunder Bay CMA). Depending on where they live within the Economic Region, these people may be commuting anywhere from 10 km to 500 km. Lastly, another 695 people employed in Thunder Bay CMA live outside the Northwest

Economic Region entirely. Given the distance, these workers must be either working remotely and/or traveling to work by plane.

To access some of the talent they require, Thunder Bay employers are reaching well beyond the Census Metropolitan Area. While long commutes to work are not uncommon, they are usually defined by driving distance.

Details are presented in Table 15.

Table 15: Thunder Bay CMA Employed Labour Force – by Place of Residence (2006)

	Live in Thunder Bay CMA	Live in Northwest Economic Region ¹	Live Outside Northwest
Total Employed Labour Force ¹	52,090	2,105	695

Source: Statistics Canada

1. Includes people with a regular place of work

Thunder Bay Employed Labour Force, Place of Residence and Occupation

Thunder Bay CMA's transition to a knowledge-based economy depends on the community's ability to meet the current and future demand for skills. An examination of where Thunder Bay's employed labour force lives by occupation provides insight into how far afield businesses based in Thunder Bay CMA must reach to find the skilled labour they require.

An overlay of the occupations of these workers traveling from outside Thunder Bay CMA does not reveal a shortage in any particular occupation(s). Instead, workers living outside Thunder Bay CMA appear to be from a range of occupations, from Professional occupations in natural and applied sciences to Sales and service occupations.

Details are presented in Table 16.

Table 16: Thunder Bay CMA Employed Labour Force by – Place of Residence and Occupation (2006)

	Live in Thunder Bay CMA	Live in Northwest Economic Region ¹	Live Outside Northwest
A Management occupations	4,615	115	50
A0 Senior management occupations	375	25	0
A1 Specialist managers	1,040	35	10
A2 Managers in retail trade, food and accommodation services	1,825	20	20
A3 Other managers, n.e.c.	1,375	35	20
B Business, finance and administrative occupations	9,735	385	80
B0 Professional occupations in business and finance	975	45	0
B1 Finance and insurance administrative occupations	730	25	10
B2 Secretaries	1,100	40	0
B3 Administrative and regulatory occupations	1,115	55	0
B4 Clerical supervisors	315	0	0
B5 Clerical occupations	5,500	215	60
C Natural and applied sciences and related occupations	2,615	125	50
C0 Professional occupations in natural and applied sciences	990	60	20
C1 Technical occupations related to natural and applied sciences	1,630	65	25
D Health occupations	4,525	170	35
D0 Professional occupations in health	695	25	25
D1 Nurse supervisors and registered nurses	1,590	65	0
D2 Technical and related occupations in health	1,050	50	10
D3 Assisting occupations in support of health services	1,185	30	0
E Occupations in social science, education, government service and religion	5,325	220	25
E0 Judges, lawyers, psychologists, social workers, ministers of religion, and policy and program officers	1,390	65	10
E1 Teachers and professors	2,555	90	10

	Live in Thunder Bay CMA	Live in Northwest Economic Region ¹	Live Outside Northwest
E2 Paralegals, social services workers and occupations in education and religion, n.e.c.	1,375	70	10
F Occupations in art, culture, recreation and sport	1,245	40	25
F0 Professional occupations in art and culture	455	10	20
F1 Technical occupations in art, culture, recreation and sport	790	40	10
G Sales and service occupations	14,870	490	205
G0 Sales and service supervisors	585	10	0
G1 Wholesale, technical, insurance, real estate sales specialists, and retail, wholesale and grain buyers	830	40	0
G2 Retail salespersons and sales clerks	2,640	65	45
G3 Cashiers	1,200	80	0
G4 Chefs and cooks	890	20	30
G5 Occupations in food and beverage service	1,065	15	10
G6 Occupations in protective services	1,235	50	25
G7 Occupations in travel and accommodation, including attendants in recreation and sport	500	25	15
G8 Childcare and home support workers	910	35	0
G9 Sales and service occupations, n.e.c.	5,010	150	65
H Trades, transport and equipment operators and related occupations	6,485	400	65
H0 Contractors and supervisors in trades and transportation	310	10	10
H1 Construction trades	485	25	0
H2 Stationary engineers, power station operators and electrical trades and telecommunications occupations	595	30	0
H3 Machinists, metal forming, shaping and erecting occupations	610	65	0
H4 Mechanics	1,495	120	10
H5 Other trades, n.e.c.	300	15	0
H6 Heavy equipment and crane operators, including drillers	310	35	0
H7 Transportation equipment operators and related workers, excluding	1,685	80	25

	Live in Thunder Bay CMA	Live in Northwest Economic Region ¹	Live Outside Northwest
labourers			
H8 Trades helpers, construction, and transportation labourers and related occupations	690	30	20
I Occupations unique to primary industry	880	70	130
I0 Occupations unique to agriculture, excluding labourers	435	10	0
I1 Occupations unique to forestry operations, mining, oil and gas extraction, and fishing, excluding labourers	170	40	45
I2 Primary production labourers	280	25	85
J Occupations unique to processing, manufacturing and utilities	1,805	95	35
J0 Supervisors in manufacturing	180	0	0
J1 Machine operators in manufacturing	900	60	0
J2 Assemblers in manufacturing	225	25	25
J3 Labourers in processing, manufacturing and utilities	495	10	0
Total - Occupation - NOC Statistics 2006	52,090	2,105	695

Source: Statistics Canada, 2006 Census

1. Live in Northwest Economic Region excluding Thunder Bay CMA



EDUCATIONAL ATTAINMENT BY PLACE OF RESIDENCE

Further insight into the skill set of Thunder Bay's employed labour force by their place of residence is provided by examining the educational attainment of the three groups (those living within Thunder Bay CMA; those living in the Northwest Economic Region; and those living outside this Region).

When you compare the educational attainment (specifically, the proportion with post-secondary completion) of each occupation, in many instances, workers living outside Thunder Bay and/or the Northwest Economic Region tended to have higher proportion of post-secondary completion.

For example, 100.0 percent of those people who are employed in Technical Occupations Related to Natural and Applied Sciences and live outside of the Northwest Economic Region have completed post-secondary education. Of those people in the same occupation who live within the Northwest Economic Region, 76.9 percent have post-secondary education. Finally, of those people employed in this occupation and live in Thunder Bay CMA, only 71.2 percent have post-secondary education.

It makes sense that people traveling a great distance to work (or working remotely) are highly skilled, as it does not seem practical for someone engaged in less skilled work to make such a significant commute. However, this trend suggests skill shortages within the Thunder Bay CMA area – if the skills in demand could be found locally, it would likely be unnecessary to hire external people.

Skill shortages such as these may hinder or slow the area's transition to a knowledge-based economy. While workers can and do work remotely, the knowledge economy has not done away with the need for face-to-face interaction and collaboration. Additionally, employers of these remote workers are vulnerable as they are more likely to lose these workers to employment opportunities closer to home.

Details are presented in Table 17.

Table 17: Thunder Bay Employed Labour Force – by Place of Residence, Occupation and Post Secondary Completion (2006)

	Proportion With Post-secondary Credentials		
	Live in Thunder Bay CMA	Live in Northwest Economic Region ¹	Live Outside Northwest
A Management occupations	63.9%	65.2%	80.0%
A2 Managers in retail trade, food and accommodation services	44.4%	75.0%	50.0%
A3 Other managers, n.e.c.	77.8%	71.4%	75.0%
B Business, finance and administrative occupations	56.7%	57.1%	31.3%
B5 Clerical occupations	48.3%	55.8%	33.3%
C Natural and applied sciences and related occupations	79.9%	88.0%	90.0%
C0 Professional occupations in natural and applied sciences	94.4%	100.0%	100.0%
C1 Technical occupations related to natural and applied sciences	71.2%	76.9%	100.0%
D Health occupations	91.0%	91.2%	100.0%
D0 Professional occupations in health	99.3%	80.0%	100.0%
D2 Technical and related occupations in health	91.9%	90.0%	100.0%
E Occupations in social science, education, government service and religion	91.6%	88.6%	80.0%
E0 Judges, lawyers, psychologists, social workers, ministers of religion, and policy and program officers	90.6%	100.0%	100.0%
E1 Teachers and professors	96.9%	88.9%	100.0%
F Occupations in art, culture, recreation and sport	67.1%	62.5%	80.0%
F0 Professional occupations in art and culture	73.6%	100.0%	100.0%
G Sales and service occupations	35.8%	31.6%	46.3%
G2 Retail salespersons and sales clerks	33.0%	23.1%	33.3%
G4 Chefs and cooks	25.8%	0.0%	50.0%
G7 Occupations in travel and accommodation, including attendants in recreation and sport	41.0%	0.0%	66.7%
G9 Sales and service occupations, n.e.c.	27.5%	23.3%	69.2%
H Trades, transport and equipment operators and related occupations	59.9%	70.0%	30.8%
H4 Mechanics	82.9%	95.8%	100.0%
H8 Trades helpers, construction, and transportation labourers and related occupations	33.3%	33.3%	50.0%
I Occupations unique to primary industry	34.1%	35.7%	53.8%
I1 Occupations unique to forestry operations, mining, oil and gas extraction, and fishing, excluding labourers	38.2%	37.5%	66.7%
I2 Primary production labourers	25.0%	40.0%	41.2%

Source: Statistics Canada

1. Live in Northwest Economic Region excluding Thunder Bay CMA

Note: only the occupations where data was available are shown, when the number of people employed per occupation was too small, educational attainment data was not available.

RISING EDUCATIONAL ATTAINMENT

While the proportion of the employed labour force with post-secondary education varies considerably from occupation to occupation, it is critical that the *proportion with post-secondary attainment is rising across all occupations*, as the transition to a knowledge-based economy depends on it. As most work is becoming more challenging due to the increasing sophistication of processes and technology, a higher level of capability and knowledge is required to do this work. Post-secondary education is a fundamental means to acquiring that capability and knowledge.

Between 2001 and 2006, the proportion of people employed with post-secondary education increased in the vast majority of occupations in the Thunder Bay District. For example, within Professional occupations in natural and applied sciences, the proportion of workers with a post-secondary education increased from 89.6 percent in 2001 to 93.3 percent in 2006. Trades helpers, construction labourers and related occupations with post-secondary education increased from 22.0 percent to 35.9 percent over the same five-year period.

Several occupations did not see an increase in educational attainment. In these occupations, however, the proportion of the employed labour force with post-secondary attainment remained high.

Details are presented in Table 18.



Table 18: Proportion Employed with Post Secondary Credentials – Thunder Bay District

	2001	2006
Management occupations	60.5%	62.9%
00 Senior management occupations	68.2%	71.0%
01-09 Middle and other management occupations	59.5%	62.2%
Business, finance and administration	50.1%	55.3%
11 Professional occupations in business and finance	81.1%	83.5%
12 Skilled administrative and business occupations	49.6%	59.8%
14 Clerical occupations	44.3%	47.5%
Natural and applied sciences and related occupations	80.9%	79.7%
21 Professional occupations in Natural and applied sciences	89.6%	93.3%
22 Technical occupation related to natural and applied sciences	74.3%	71.7%
Health occupations	92.0%	91.5%
31 Professional occupations in health	97.7%	98.5%
32 Technical and skilled occupations in health	92.2%	93.0%
34 Assisting occupations in support of health services	70.9%	75.1%
Occupations in social science, education, government service and religion	88.6%	89.4%
41 Professional occupations in social science, education, government services and religion	91.9%	93.3%
42 Paraprofessional occupations in law, social services, education and religion	78.0%	77.9%
Occupations in art, culture, recreation and sport	55.1%	63.2%
51 Professional occupations in art and culture	68.9%	71.8%
52 Technical and skilled occupations in art, culture, recreation and sport	46.5%	59.5%
Sales and service occupations	32.4%	36.3%
62 Skilled sales and service occupations	46.5%	47.5%
64 Intermediate sales and service occupations	36.7%	42.7%
66 Elemental sales and service occupations	21.4%	24.1%
Trades, transport and equipment operators and related occupations	51.6%	57.9%
72-73 Trades and skilled transport and equipment operators	67.4%	75.9%
74 Intermediate occupations in transport, equipment operation, installation and maintenance	28.6%	33.8%
76 Trades helpers, construction labourers and related occupations	22.0%	35.9%
Occupations unique to primary industry	29.0%	34.0%
82 Skilled occupations in primary industry	28.2%	36.0%
84 Intermediate occupations in primary industry	34.2%	35.3%
86 Labourers in primary industry	27.6%	30.0%
Occupations unique to processing, manufacturing and utilities	29.4%	32.8%
92 Processing, manufacturing and utilities supervisors and skilled operators	42.6%	46.5%
94-95 Processing and manufacturing machine operators	29.1%	32.8%
96 Labourers in processing, manufacturing and utilities	20.6%	22.1%
Total - Occupation	52.3%	57.1%

Source: Statistics Canada, 2006 Census

Note: only the occupations where data was available are shown, when the number of people employed per occupation was too small, educational attainment data was not available.

COMPARING POST-SECONDARY COMPLETION BY OCCUPATION

While the proportion of workers who have completed post-secondary education is rising in Thunder Bay across the majority of occupations, a comparison of these increases with those in Ontario provides context to assess Thunder Bay's relative progress.

Table 18 shows the proportion of employment with post-secondary completion in each 2-digit occupation. In the majority of occupations, Thunder Bay lags Ontario, with a lower proportion of workers who have completed post-secondary education. In 13 of the 26 occupations examined, Ontario's proportion of workers with post-secondary credentials exceeded Thunder Bay's by three or more percentage points. This educational disadvantage will definitely hinder Thunder Bay's transition to a knowledge-based economy if not addressed.

Thunder Bay does have an educational advantage in some occupations, such as Professional occupations in natural and applied sciences, but these are few and far between.

While it is understandable that the post-secondary education attainment levels of Thunder Bay's labour force *overall* is proportionally lower than Ontario's due to the area's economic structure (i.e. Thunder Bay's resource-based economy), this does not account for lower proportional post-secondary attainment in an occupation-to-occupation comparison. For example, despite the fact that Thunder Bay has proportionately fewer people working in Professional occupations in business and finance than in Ontario as a whole, the proportion of people who have completed post-secondary education within this occupation should be equivalent to the proportion of those with post-secondary education within the same occupation in Ontario.

What are the consequences for Thunder Bay? This puts area employers at a disadvantage from a competitive perspective. Assuming that higher-skilled employees allows for the incorporation of more sophisticated processes or technologies and translates to an improved level of productivity, Thunder Bay employers have a harder time competing with similar businesses elsewhere in Ontario. Details are presented in Table 19.

**Table 19: Proportion Employed with Post-secondary Credentials by Occupation –
Thunder Bay District and Ontario (2006)**

Occupations	Thunder Bay	Ontario
Management occupations	62.9%	69.5%
00 Senior Management Occupations	71.0%	77.6%
01-09 Middle and other management occupations	62.2%	68.4%
Business, finance and administration	55.3%	60.2%
11 Professional occupations in business and finance	83.5%	86.6%
12 Skilled administrative and business occupations	59.8%	62.0%
14 Clerical occupations	47.5%	51.7%
Natural and applied sciences and related occupations	79.7%	86.0%
21 Professional occupations in natural and applied sciences	93.3%	91.4%
22 Technical occupations related to natural and applied sciences	71.7%	78.2%
Health occupations	91.5%	91.5%
31 Professional occupations in health	98.5%	98.4%
32 Technical and skilled occupations in health	93.0%	92.3%
34 Assisting occupations in support of health services	75.1%	77.2%
Occupations in social science, education, government service and religion	89.4%	89.9%
41 Professional occupations in social science, education, government services and religion	93.3%	94.8%
42 Paraprofessional occupations in law, social services, education and religion	77.9%	75.0%
Occupations in art, culture, recreation and sport	63.2%	71.1%
51 Professional occupations in art and culture	71.8%	79.6%
52 Technical and skilled occupations in art, culture, recreation and sport	59.5%	64.1%
Sales and service occupations	36.3%	42.3%
62 Skilled sales and service occupations	47.5%	57.8%
64 Intermediate sales and service occupations	42.7%	47.8%
66 Elemental sales and service occupations	24.1%	27.4%
Trades, transport and equipment operators and related occupations	57.9%	49.9%
72-73 Trades and skilled transport and equipment operators	75.9%	62.9%
74 Intermediate occupations in transport, equipment operation, installation and maintenance	33.8%	34.6%
76 Trades helpers, construction labourers and related occupations	35.9%	26.7%
Occupations unique to primary industry	34.0%	32.5%
82 Skilled occupations in primary industry	36.0%	40.3%
84 Intermediate occupations in primary industry	35.3%	23.7%
86 Labourers in primary industry	30.0%	28.1%
Occupations unique to processing, manufacturing and utilities	32.8%	34.4%
92 Processing, manufacturing and utilities supervisors and skilled operators	46.5%	49.5%
94-95 Processing and manufacturing machine operators and assemblers	32.8%	34.8%
96 Labourers in processing, manufacturing and utilities	22.1%	27.5%
Total - Occupation	57.1%	59.5%

Source: Statistics Canada, 2006 Census

Insight into Thunder Bay's demand for labour skill is provided by examining the community's migration trends. Thunder Bay's employed labour force migration trends show how many workers left the community and how many moved to the community.

Between 2001 and 2006 Thunder Bay lost 6,715 workers to out-migration and gained 5,005 workers from in-migration. Of course, these workers are not interchangeable as they have different skills sets and the demand for their skills varies.

Therefore, Thunder Bay's migration trends are examined from an occupation perspective. If a select group of occupations dominates Thunder Bay's migration patterns (whether in-migration or out-migration) it may reflect specific labour supply or demand issues.

What is most startling is the significant amount of movement within each occupation. For example, within Professional occupations in business and finance, 145 workers left the region, and 95 moved into the area. Within Nurse supervisors and registered nurses occupations, 165 workers left Thunder Bay and 165 moved to Thunder Bay.

As Thunder Bay moves to a knowledge-based economy, the net loss of labourers (i.e. those in lower knowledge-oriented occupations), for example, may not be a concern. The data presented in Table 19, however, shows a net loss of workers in 42 of the 57 occupations examined.

Of greatest concern to a knowledge-based economy is the net loss of occupations such as Professional occupations in natural and applied sciences and Technical occupations related to natural and applied sciences, Professional occupations in business and finance, Professional occupations in art and culture, etc.

Judges, lawyers, psychologists, social workers, ministers of religion, and policy and program officers, another more obvious knowledge occupation group, had the greatest net gain of workers, adding 65 between 2001 and 2006. The second greatest net gain of workers was in Clerical occupations, as well as Child care and home support workers occupations, which each added 50 workers respectively.

The ability to retain and attract workers with expertise is critical to Thunder Bay's transition to a knowledge-based economy. Details are presented in Table 20.

Table 20: Employed Labour Force Migration Trends – Thunder Bay (2001 to 2006)

	Out Migration	In Migration	Net-Migration
A Management occupations	580	465	-115
A0 Senior management occupations	55	25	-30
A1 Specialist managers	150	80	-70
A2 Managers in retail trade, food and accommodation services	170	185	15
A3 Other managers, n.e.c.	200	175	-25
B Business, finance and administrative occupations	875	825	-50
B0 Professional occupations in business and finance	145	95	-50
B1 Finance and insurance administrative occupations	50	55	5
B2 Secretaries	50	75	25
B3 Administrative and regulatory occupations	150	80	-70
B4 Clerical supervisors	30	30	0
B5 Clerical occupations	445	495	50
C Natural and applied sciences and related occupations	725	420	-305
C0 Professional occupations in natural and applied sciences	410	175	-235
C1 Technical occupations related to natural and applied sciences	315	245	-70
D Health occupations	460	475	15
D0 Professional occupations in health	130	145	15
D1 Nurse supervisors and registered nurses	165	165	0
D2 Technical and related occupations in health	120	95	-25
D3 Assisting occupations in support of health services	50	75	25
E Occupations in social science, education, government service and religion	820	705	-115
E0 Judges, lawyers, psychologists, social workers, ministers of religion, and policy and program officers	185	250	65
E1 Teachers and professors	480	295	-185
E2 Paralegals, social services workers and occupations in education and religion, n.e.c.	150	165	15
F Occupations in art, culture, recreation and sport	225	150	-75
F0 Professional occupations in art and culture	120	75	-45
F1 Technical occupations in art, culture, recreation and sport	105	75	-30
G Sales and service occupations	1625	1125	-500
G0 Sales and service supervisors	75	30	-45
G1 Wholesale, technical, insurance, real estate sales specialists, and retail, wholesale and grain buyers	115	40	-75
G2 Retail salespersons and sales clerks	315	170	-145
G3 Cashiers	130	85	-45
G4 Chefs and cooks	100	75	-25
G5 Occupations in food and beverage service	130	85	-45

	Out Migration	In Migration	Net- Migration
G6 Occupations in protective services	195	180	-15
G7 Occupations in travel and accommodation, including attendants in recreation and sport	95	15	-80
G8 Childcare and home support workers	80	130	50
G9 Sales and service occupations, n.e.c.	375	315	-60
H Trades, transport and equipment operators and related occupations	965	600	-365
H0 Contractors and supervisors in trades and transportation	10	30	20
H1 Construction trades	170	40	-130
H2 Stationary engineers, power station operators and electrical trades and telecommunications occupations	85	55	-30
H3 Machinists, metal forming, shaping and erecting occupations	75	70	-5
H4 Mechanics	240	100	-140
H5 Other trades, n.e.c.	65	40	-25
H6 Heavy equipment and crane operators, including drillers	55	30	-25
H7 Transportation equipment operators and related workers, excluding labourers	135	160	25
H8 Trades helpers, construction, and transportation labourers and related occupations	125	65	-60
I Occupations unique to primary industry	235	165	-70
I0 Occupations unique to agriculture, excluding labourers	55	55	0
I1 Occupations unique to forestry operations, mining, oil and gas extraction, and fishing, excluding labourers	75	65	-10
I2 Primary production labourers	110	40	-70
J Occupations unique to processing, manufacturing and utilities	200	75	-125
J0 Supervisors in manufacturing	25	10	-15
J1 Machine operators in manufacturing	110	45	-65
J2 Assemblers in manufacturing	40	0	-40
J3 Labourers in processing, manufacturing and utilities	30	15	-15
All occupations	6,715	5,005	-1,710

Source: Statistics Canada

IMPLICATIONS

Several of Thunder Bay's labour force characteristics and trends have implications for its transition to a knowledge-based economy.

While only five percent of Thunder Bay's employed labour force live outside the CMA area, the fact that these workers tend to have higher post-secondary completion rates suggests Thunder Bay employers need to reach farther afield to find the higher level of skills they require.

Also related to skill, the proportion of people employed with post-secondary education increased in the vast majority of occupations in Thunder Bay between 2001 and 2006. That said, the fact that Thunder Bay lags Ontario by a considerable margin when post-secondary attainment by occupation is examined leaves Thunder Bay employers at a competitive disadvantage.

Migration trends are also negatively affecting Thunder Bay's labour pool. The area lost significantly more workers than it gained between 2001 and 2006, demonstrating the challenge to retain and attract workers. Related to this, a wide range of occupations experienced a considerable amount of in and out movement, which may suggest changing demand for skill levels within occupations.



SECTION III: REVENUE PER WORKER

To reiterate, Thunder Bay's transition to a knowledge-based economy is not a trendy solution to its economic problems. The transition to a knowledge-based economy is propelled by the need to adapt, survive and compete; paramount to this transition is a rise in productivity.

While it is difficult to separate out the precise contribution of knowledge to productivity growth, knowledge is a critical component to raising productivity. As a proxy for productivity, revenue per worker trends are examined for Thunder Bay businesses within different employee size ranges. A rise in productivity should accompany Thunder Bay's transition to a knowledge-based economy.

Between 2003 and 2008, revenue per worker increased considerably in businesses with between 1 to 4 employees, businesses with 5 to 9 employees, 10 to 19 employees, and businesses with 20 to 49 employees. Businesses with 5 to 9 employees saw revenue per employee increase the most, rising from \$97,242 in 2003 to \$183,714 in 2008. In total, the Thunder Bay CMA had 3,486 businesses with between 1 and 49 employees. The revenue per worker increases refer to the *average* increase, as not all businesses would have experienced increases.

In contrast, revenue per worker decreased significantly within businesses with 50 or more employees. The greatest decline happened in the 200 to 499 employee size range, with revenue per worker dropping from \$187,322 to \$126,622 between 2003 and 2008. In total, there are 194 businesses with 50 or more employees in the Thunder Bay CMA. Here again, the decrease in revenue per worker refers to the average decrease, as not all businesses would have experienced declines in revenue per worker.

Details are presented in Table 21.

Table 21: Average Revenue Per Worker in Businesses by Employee Size Range – Thunder Bay CMA

Employee Size Range	Average Revenue Per Worker 2003	Average Revenue Per Worker 2008
1-4	\$88,946	\$125,095
5-9	\$97,242	\$183,714
10-19	\$121,976	\$144,493
20-49	\$117,933	\$134,832
50-99	\$165,948	\$144,142
100-199	\$104,277	\$73,672
200-499	\$187,322	\$126,622
500 +	\$101,080	\$77,804
Average All Businesses	\$128,037	\$127,683

Source: Statistics Canada

REVENUE PER WORKER BY SECTOR

Another perspective from which to examine Thunder Bay's revenue per worker trends is from a sector viewpoint. Recalling that Thunder Bay's small and medium sized businesses tended to see an increase in revenue per worker and larger businesses tended to experience a decline in revenue per worker, the business composition of each industry certainly influences revenue per worker numbers as some industries consist primarily of small businesses, while other industries have a mix of business sizes.

Between 2003 and 2008, revenue per worker increased the most in the Retail Trade sector (44-45), jumping from \$148,218 in 2003 to \$230,804 in 2008. The Manufacturing sector (31-33) increased the second most, from \$183,407 to \$255,018 over the period examined. Thunder Bay's Agriculture, Forestry, Fishing and Hunting sector experienced the greatest decline in revenue per worker, decreasing from \$337,405 in 2003 to \$142,306 in 2008. Details are presented in Table 22.

Since many factors can affect revenue per worker (i.e sales cycles, layoffs, etc.) it is important to monitor these trends as anomalies can occur in any given year.

Table 22: Average Revenue Per Worker by Sector – Thunder Bay CMA

NAICS Sector	Average Revenue/Worker 2003	Average Revenue/Worker 2008
11 - Agriculture, Forestry, Fishing and Hunting	\$337,405.86	\$142,306.15
21 - Mining and Oil and Gas Extraction	N/A	\$159,544.71
22 - Utilities	N/A	N/A
23 - Construction	\$133,340.98	\$161,323.19
31-33 - Manufacturing	\$183,407.34	\$255,018.75
41 - Wholesale Trade	\$371,672.31	\$351,958.73
44-45 - Retail Trade	\$148,218.97	\$230,804.07
48-49 - Transportation and Warehousing	\$126,191.53	\$135,807.75
51 - Information and Cultural Industries	\$173,100.83	\$128,962.01
52 - Finance and Insurance	\$368,019.75	\$360,018.01
53 - Real Estate and Rental and Leasing	\$197,091.12	\$207,466.37
54 - Professional, Scientific and Technical Services	\$73,640.25	\$112,375.17
55 - Management of Companies and Enterprises	\$252,172.79	\$205,215.99
56 - Administrative and Support, Waste Management and Remediation Services	\$65,569.09	\$69,243.32
61 - Educational Services	N/A	N/A
62 - Health Care and Social Assistance	\$44,641.49	\$36,248.00
71 - Arts, Entertainment and Recreation	N/A	\$31,809.38
72 - Accommodation and Food Services	\$36,716.19	\$35,527.12
81 - Other Services (except Public Administration)	\$94,774.62	\$82,275.70
91 - Public Administration	N/A	N/A
Average all Sectors	\$128,037.98	\$127,683.14

Source: Statistics Canada

N/A Either employment or revenue data was not available, therefore calculation could not be made.

MANUFACTURING SECTOR

While not Thunder Bay's largest employment sector, manufacturing is still important as it produces \$1.3 billion in revenue or 16.5 percent of total revenue generated in Thunder Bay in 2008. Only the Retail sector – with revenue of \$1.6 billion – generated more.

The data for Thunder Bay shows promising signs with the increase in productivity. Even though Manufacturing employment has decreased, total revenue and revenue per worker has increased. Between 2003 and 2008 the sector's total revenue increased from \$1.2 billion to \$1.3 billion, and revenue per worker increased from \$183,407 to \$255,018.

Further evidence of knowledge penetration within Thunder Bay's Manufacturing sector is found by examining the value-added within manufacturing. Value added per worker is a measure of how much value, on average, workers generate using the capital employed in production. Statistics Canada gathers value-added data for this sector alone.

In light of competitive pressures, it is important that the value-added per worker increases over time, reflecting improved productivity. Between 2004 and 2007, value-added per worker in Manufacturing increased from \$165,397 to \$202,134. Details are presented in Table 23.

Table 23: Manufacturing Characteristics – Thunder Bay CMA

	2003	2008
Employment ¹	6,600	3,600
Employment ²	7,009	5,162
	2003	2008
Total Revenue ²	\$1,285,502,037	\$1,316,406,786
Revenue Per Worker	\$183,407	\$255,018
	2004	2007
Total Value Added ³	\$949,214,000	667,447,000
Value-Added Per Worker	\$165,397	\$202,134

Source: Statistics Canada

1. Labour Force Survey

2. Canadian Business Pattern

3. Manufacturing Principal Statistics

IMPLICATIONS

Productivity improvements hinge on the quality of the Thunder Bay workforce; failure to meet the labour skill requirements of the current and future labour force will hinder productivity.

While many factors affect productivity/revenue per worker (i.e. sales cycles, layoffs, etc.) it is necessary to monitor this data on an annual basis to determine where and how improvements to labour force skills can be made, and the resulting impact of those improvements.



SECTION IV: FOCUS AREAS

Thunder Bay's transition to a knowledge-based economy requires strategies with clear and measurable goals, and initiatives that are practical, feasible and suited to Thunder Bay's economy and resources. Based on the findings of this report, several areas emerge as ones that are the most critical to focus on if Thunder Bay is going to encourage and actively propel the transition towards a knowledge-based economy. These include:

1. Focus on the Retention of Skilled Workers:

Thunder Bay's economic performance and weak labour market put it at a disadvantage when it comes to attracting skilled workers, as competing communities offer more employment opportunities. Thunder Bay's geographic location also compounds the community's ability to attract workers. While it is not possible or realistic to expect to retain all persons currently in the area, a key objective must be to retain all those who would stay in Thunder Bay if employment opportunities were available.

2. Focus on the Development of Skilled Workers:

Since Thunder Bay must focus on workforce retention versus attraction, there is a subsequent responsibility to improve the skill levels of those workers already in the community. Increasing skills will not only improve the workers' employability but also employer competitiveness. Thunder Bay must set the labour market bar for self-reliance.

3. Focus on Increasing Employer Productivity:

While many factors affect employer productivity, focusing on what can be done to improve productivity from a labour perspective should be a priority. Working directly with employers to determine ways to improve the productivity of existing employees is appropriate given the competitive environment in which businesses operate.

4. Focus on Small and Medium Size Businesses:

Within Thunder Bay, small and medium sized businesses are currently serving as the economic engine from a productivity and growth perspective. Working directly

with businesses of this size to understand and address their unique skill needs is necessary for these businesses to flourish.

5. Focus on Thunder Bay's Economic Base:

Thunder Bay's economic base (those industries or economic activity that produce goods or services for export (outside of Thunder Bay)) brings wealth into the community, propelling the rest of the economy. Without a strong economic base the rest of the economy that serves the local population cannot thrive. Assisting economic base firms identify and attend to their labour market needs will ultimately help them increase their productivity.

Note: The Northern Ontario Places to Grow Report also supports a focus on small and medium sized businesses as well as economic base activities including the following sectors: Mining, Forestry, Green Energy, Bioeconomy, agriculture and aquaculture, and tourism and cultural industries.



A FRAMEWORK TO ASSESS LABOUR MARKET INITIATIVES BY INDUSTRY

While the focus areas above are justified by the findings of this report it does not mean that they will be easy to address. In order to help Thunder Bay prioritize its related labour force initiatives, an Industry Evaluation Framework is beneficial. This type of framework can be used to: target industries/employers for labour market initiatives (e.g. quickly and easily identify industries with a significant number of small and medium sized businesses); justify labour market initiatives (e.g. where the scale of economic activity warrants effort); and, monitor industry labour market initiatives (e.g. determine if initiatives are affecting industry performance). A sample of this framework is provided below for the Fabricated Metal Industry:

Table 24: Industry Evaluation Framework - Fabricated Metal Product Manufacturing (Thunder Bay CMA)

Year	Employee Size Range						Total
	1-4	5-9	10-19	20-49	50-99	100+	
Number of Businesses							
2009	4	2	7	6	1	0	20
2010							
2011							
Employment							
2009	7	x	93	194	x	0	394
2010							
2011							
Revenue							
2009	\$581,173	x	\$11,745,624	\$30,270,289	x	0	\$63,671,011
2010							
2011							
Revenue Per Worker							
2009	\$83,024	x	\$126,297	\$156,032	x	na	\$161,601
2010							
2011							

Source: Statistics Canada, Canadian Business Patterns
 X - data suppressed for confidentiality reasons

Developing an Industry Evaluation Framework for each of Thunder Bay's three-digit industries will offer a robust and current profile of their economic situation, which provides context for evidenced-based labour marketing decision making and initiatives.

EMPLOYER ENGAGEMENT

While the Industry Evaluation Framework provides much needed context for labour market decision making, its utility is only fully realized when Thunder Bay employers provide detailed information regarding the changing nature of skills within their industry. Traditionally, the emphasis of employer engagement was on surveying employers about their hiring intentions over the coming period of time (whether 6 months, or a year, etc). While collecting insight into their hiring needs from a quantitative perspective is beneficial, developing much more robust insight into existing labour force skill requirements or deficiencies is paramount.

Specifically, overlaying employer information on the Industry Evaluation Framework will provide Thunder Bay with the specific guidance necessary to propel the community towards a more productive economy.

Those employers truly interested in increasing productivity through labour force enhancement need to answer the following questions for their respective industries:

- What labour force skill issues need to be addressed to help your company be more productive and profitable?
- How has the nature of work changed in your industry?
- What labour force skill issues could be addressed to help your company be more innovative?

The answers to these questions and the ensuing actions will help Thunder Bay retain workers beyond just filling job openings, train workers in the skills required and desired by local employers, and improve productivity through improved worker knowledge and skill.

Economic Region (ER) – Statistics Canada defines an Economic Region as a geographic unit generally composed of several Census Divisions within a province. Economic Regions enable reliable labour force estimates for areas that too small on their own, so they are grouped with neighbouring region(s). The Northwest Economic Region includes the following Census Divisions: Thunder Bay Census District, Kenora Census District, and Rainy River Census District.

Knowledge-Based Economy is an economy that engages in the delivery of high value-added products and services, and depends heavily on the expertise of its workers. Knowledge workers tend to be highly educated, typically through the completion of post-secondary education.

The **North American Industrial Classification System (NAICS)** is the system used by the statistical agencies of Canada, the United States and Mexico to classify business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the economy.

The **National Occupational Classification (NOC)** was developed by Human Resources Skills Development Canada in collaboration with Statistics Canada to describe, in a consistent framework, the work done by Canadians.

Thunder Bay Census Metropolitan Area (CMA) consists of: Conmee (Township), Fort William 52 (Indian reserve), Gillies (Township), Neebing (Municipality), O'Connor (Township), Oliver Paipoonge (Municipality), Shuniah (Township) and Thunder Bay (City). A Census Metropolitan Area is a large urban area (known as an urban core), together with adjacent urban and rural areas (known as urban and rural fringe) that have a high degree of social and economic integration with the urban core. A CMA has a minimum urban core population of 100,000.

Thunder Bay District Census Division (CD) is a group of neighbouring municipalities joined together for the purposes of regional planning. Census Division is the general term for provincially legislated areas such as county and regional districts. The Thunder Bay District – with a population of just over 149,000 – is larger than the Thunder Bay CMA with a population just under 123,000.



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