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Analysis in Brief

Local Manufacturing Data: A longitudinal analysis of manufacturing sales and employment for Canada's largest CMAs

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- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- ^P preliminary
- ^r revised
- X suppressed to meet the confidentiality requirements of the *Statistics Act*
- ^E use with caution
- F too unreliable to be published
- * significantly different from reference category ($p < 0.05$)

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Note to readers

1. Annual Survey of Manufacturing and Logging Industries (ASML):
<http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=2103>
2. NAICS definitions:
<http://stds.statcan.gc.ca/naics-scian/2007/ts-rt-eng.asp?criteria=31-33>
3. CMA definitions:
<http://www12.statcan.gc.ca/census-recensement/2011/ref/dict/geo009-eng.cfm>

Note of appreciation

This study would not have been possible without the assistance of a number of analysts at Statistics Canada. The authors greatly appreciate the willingness of others to provide advice, assist with technical issues, and give freely their time to review various drafts of this paper.

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Abstract

Local level manufacturing data can be used to examine manufacturing structure at the Census Metropolitan Area (CMA) level and differences in their manufacturing activities. This paper developed and analyzes an experimental local-level manufacturing database containing sales and employment for 11 Census Metropolitan Areas (CMA) in Canada for the period 2007 to 2012. The findings indicate that manufacturing sales of the Prairie provinces' CMAs and those of the Québec CMA grew between 2007 and 2012. The refining of petroleum and the manufacturing of fabricated metals and machinery were the key to their growth of sales.

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Local Manufacturing Data: A longitudinal analysis of manufacturing sales and employment for Canada's largest CMAs

By **Sebastien Chiasson and Javad Sadeghzadeh**

1. Introduction

The concentration of economic activities and population in large cities increases the need for local level-data. Local-level data are used to measure and compare economic activities of smaller regions and are an important tool for governments when making policies and setting priorities. Local-level data also provide valuable input for analytical research and study of regional development to both public and private institutions, as well as international organizations such as the Organisation for Economic Co-operation and Development (OECD).

Recently, more attention has been given to the compilation and development of local-level data among statistical agencies around the world. The Statistical Office of the European Union (Eurostat) uses a harmonized methodology to measure economic indicators at the regional level. The data are used for economic planning and policy analysis in the European Union. Statistics Canada collects and produces many socio-economic indicators such as population, employment, housing prices, health indicators, and income at the Census Metropolitan Area (CMA) level¹. The Conference Board of Canada also estimates and publishes quarterly gross domestic product (GDP) for CMAs². Despite having many socio-economic indicators available at the local level in Canada, insufficient local level business data poses a challenge for policy makers. For example, the federal government uses local-level data to allocate resources across infrastructure projects such as subways and light rail in cities or gives more attention to industries that contribute more to the economy at the local level. Local-level business data are also important for provincial governments as they analyze structural change in provincial economies and develop region-specific policies to meet new challenges.³

In recent years, experimental research has been conducted at Statistics Canada to develop new local-level databases. For example, Desmond, Brown and Gellatly (2008) estimated local-level human capital and studied the contribution of human capital to long-run employment growth from 1980 to 2000 in Canadian and U.S. cities. Brown and Rispoli (2014) employed a new experimental metric to measure the contribution to GDP by Canadian CMAs between 2001 and 2009, and estimated GDP in 33 CMAs.

This paper analyzes an experimental local-level manufacturing database containing sales and employment information for 11 Census Metropolitan Areas (CMA) for the period 2007 to 2012. The CMAs covered in this study are Vancouver, Calgary, Edmonton, Regina, Saskatoon, Winnipeg, Hamilton, Toronto, Ottawa-Gatineau, Montréal and Québec. They account for about 55% of total population in Canada. Given the diversity of local-level economies across Canada, even within provinces, developing manufacturing data for CMAs has the potential to fill an important data gap.

The local level manufacturing data developed for this study are able to show the manufacturing structure of major cities in Canada and differences in manufacturing activities across CMAs that currently cannot be gleaned from other databases. The local-level data also demonstrate trends in manufacturing employment across cities and have great potential for advancing the understanding of the Canadian economy.

The rest of the paper is organized as follows. Section 2 describes the data source and the methodology employed to derive estimates by CMA. Section 3 provides an analysis of the estimates, followed by conclusions in section 4. A series of tables in the Appendix provide local-level data and may be used for reference purposes.

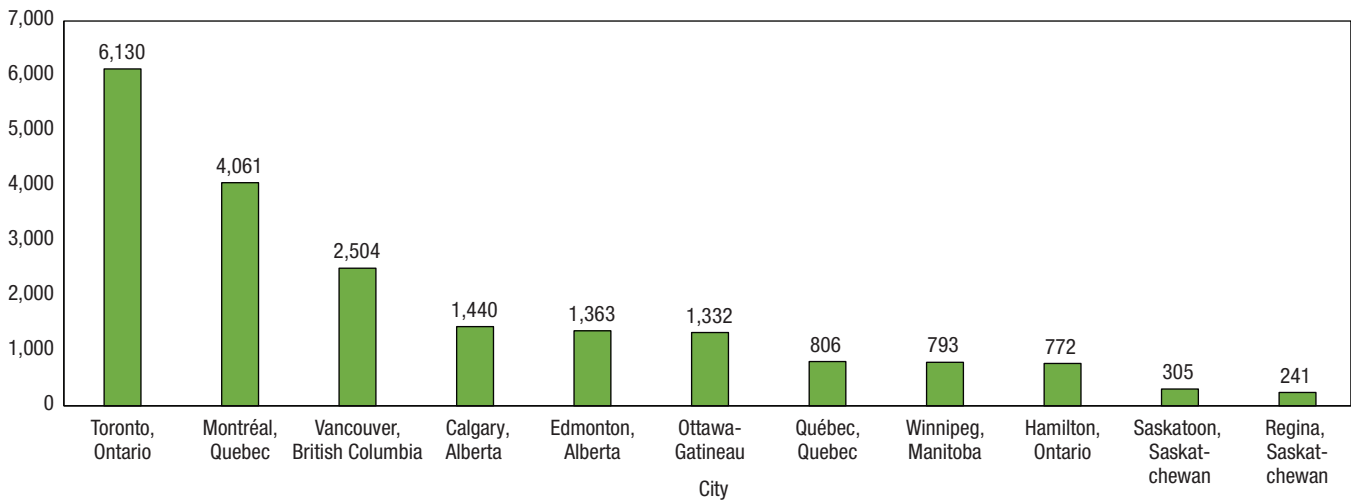
1 Metropolitan area (MA): a very large urban area (known as the urban core) together with adjacent urban and rural areas that have a high degree of social and economic integration with the urban core. A MA has an urban core population of at least 100,000, based on the previous census.

2 A CMA is formed by one or more adjacent municipalities centred on a population centre (known as the core). A CMA must have a total population of at least 100,000, of which 50,000 or more must live in the core. To be included in the CMA other adjacent municipalities must have a high degree of integration with the core, as measured by commuting flows derived from previous census place of work data. Once an area becomes a CMA, it is retained as a CMA even if its total population declines below 100,000 or the population of its core falls below 50,000.

3 See Manufacturing and Wholesale Trade Division 2016 Environmental Scan Report.

Chart 1.1
Population in selected CMAs in Canada in 2015

thousands persons



Source: Statistics Canada, Estimates of population by census metropolitan area, CANSIM (database).

2. Data and Methodology

Data used in this study come from the Annual Survey of Manufacturing and Logging (ASML). The ASML is a survey of manufacturing industries covering all manufacturing establishments in Canada. Currently, manufacturing statistics are published at the national and provincial levels by industry. Yet, some CMAs in Canada have manufacturing sectors that are larger, as measured by sales, than some of the smaller provinces.

As a result of changes in methodology to the ASML for reference year 2013, this paper examines the evolution of manufacturing sales and employment for the 11 selected CMAs between 2007 and 2012.

The paper focuses on the analysis of sales and employment. Sales are a key measure of output of the manufacturing sector, and employment is a main input to manufacturers' production functions. Other inputs, such as tangible and intangible capital, and materials are also relevant; however, they were not examined in this paper.⁴ Finally, data in this paper are compiled according to the North American Industrial Classification System (NAICS).

Throughout the paper, jobs refer to employment in manufacturing establishments, including direct manufacturing labour as well as support staff, such as management and office staff⁵. An establishment, according to the ASML methodology, is an operating entity where profit from its principal business activity can be calculated. While an enterprise may own multiple establishments including warehouses, factories, and sales offices, only data from manufacturing establishments are considered in-scope and collected.

Up to 2012 reference year, the ASML was a census of manufacturers which made it particularly suitable for compiling estimates at detailed geographical levels. As of 2013, it became a sample-based survey⁶ designed to support national and provincial level data which would require the development of more sophisticated econometric techniques to derive sub-provincial indicators.

Each manufacturing establishment in the ASML database is already coded by CMA and each CMA has a specific numeric code assigned to it according to the Standard Geographic Classification. Since addresses sometimes change, this paper used the census 2006 Standard Geographic Classification of CMA codes. If 2006 code was not available, the code for the most recent year was used. These codes were used to aggregate the ASML microdata (sales and employment for each establishment) to produce industry estimates for each CMA. Different

⁴ The methodology used in this study can be extended to incorporate other key variables such as tangible and intangible capital and materials at the CMA level.

⁵ ASML questionnaire for 2012 is available at http://www23.statcan.gc.ca/imdb-bmdi/instrument/2103_Q4_V13-eng.pdf

⁶ For a summary of changes in the ASML methodology, visit: <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getMainChange&Id=150916>

techniques were used to ensure the assignment of manufacturing establishments to geographic areas was reliable and accurate. In particular, the locations of large establishments in each CMA were verified. About 25 large establishments did not seem to fit their assigned CMAs, according to Google Maps and other information sources. Companies outside of the CMAs were excluded from the analysis.

Not all manufacturing data for industries at the CMA level can be published due to the confidentiality requirements of the Statistics Act. Hence, industry-level data, particularly for smaller CMAs including cities in the Atlantic Provinces, must remain confidential.

Data for the smallest manufacturing plants in the ASML are based on administrative records and compiled as industry-province blocks and, hence, their microdata are not available. For these cases, administrative information was used to distribute data across CMAs. In particular, data from tax files were used to estimate, by industry, the relative sizes of CMAs within the provinces, and the provincial blocks were allocated accordingly.

3. Data Analysis

This section analyzes sales and employment data for the 11 selected CMAs across Canada. The data are compared with the relevant provincial level data to show how cities are similar or divergent from their respective provinces.

3.1 British Columbia and Vancouver

British Columbia (B.C.) is the third-largest province in Canada in terms of population and area. In terms of GDP, manufacturing is the third largest sector in B.C. after real estate services and rental and leasing services. In 2012, the British Columbia manufacturing sector was responsible for 8.0% of national manufacturing GDP. When examining GDP at a national level for all economic sectors, British Columbia contributed 12.1%.

Total manufacturing sales in B.C. decreased from \$43.1 billion in 2007 to \$40.7 billion in 2012. The largest manufacturing industries (measured by sales) in British Columbia are the wood, food, and the paper industries. The local data show that Vancouver accounted for around half of British Columbia's manufacturing sales in both 2007 and 2012.

Manufacturing sales in Vancouver CMA did not change significantly between 2007 and 2012. During this period, manufacturing sales in Vancouver area fell slightly from \$21.5 billion in 2007 to \$20.9 billion in 2012.

For the majority of manufacturing industries present in B.C., Vancouver accounts for over half of their sales. The Beverage and Tobacco (312), Wood (321) and Paper (322) industries are the notable exceptions.

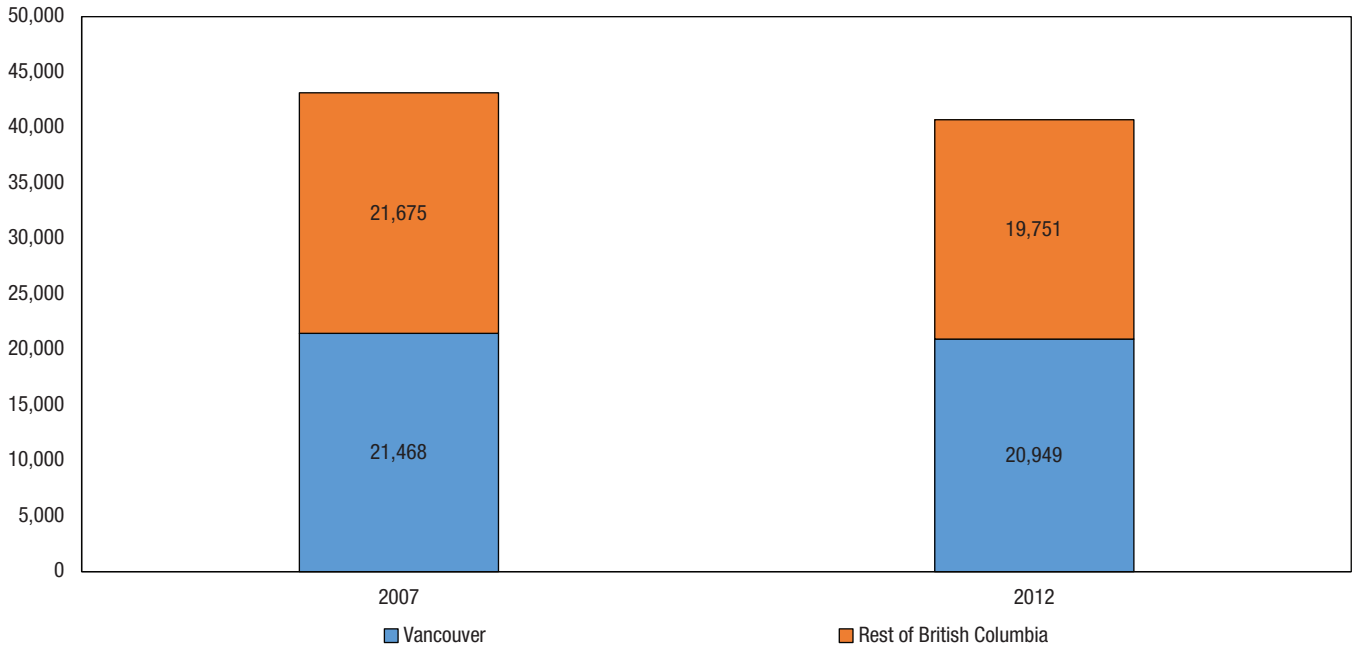
Vancouver's share of provincial sales at the industry level increased slightly from 49.8% in 2007 to 51.5% in 2012 (Table 6.2.1). Manufacturing sales in the wood industry outside of Vancouver declined between 2008 and 2009 and had not fully recovered by 2012. The trend of sales in the paper industry is observable, however individual data point can not be shown due to the confidentiality of some years (Table 6.2.1). The food industry in B.C., except in Vancouver, has experienced an increasing trend during 2007-2012 period.

The Vancouver CMA manufacturing sector is less reliant on the wood and paper industries relative to the rest of the province. But these are still important industries for Vancouver. Food processing is the largest industry in Vancouver and contributed 20.6% to total manufacturing sales in 2012. The food industry was among the few industries to have grown since 2007 (14.5% between 2007 and 2012). The remaining portion of the CMA's manufacturing is accounted for by wood, fabricated metals, machinery, chemicals, computers and electronics and transportation. The wood industry experienced the largest drop in sales (-24.9%), followed by non-metallic minerals (-22.9%) and fabricated metals (-21.6%).

Compared with sales, the share of employment by industry out of total manufacturing employment was stable for many industries except food. The share of Vancouver's food manufacturing employment in B.C. increased from 16.4% in 2007 to 20.0% in 2009 and remained almost flat until 2012. In other industries, the proportions were relatively unchanged.

Chart 3.1
Manufacturing sales in British Columbia

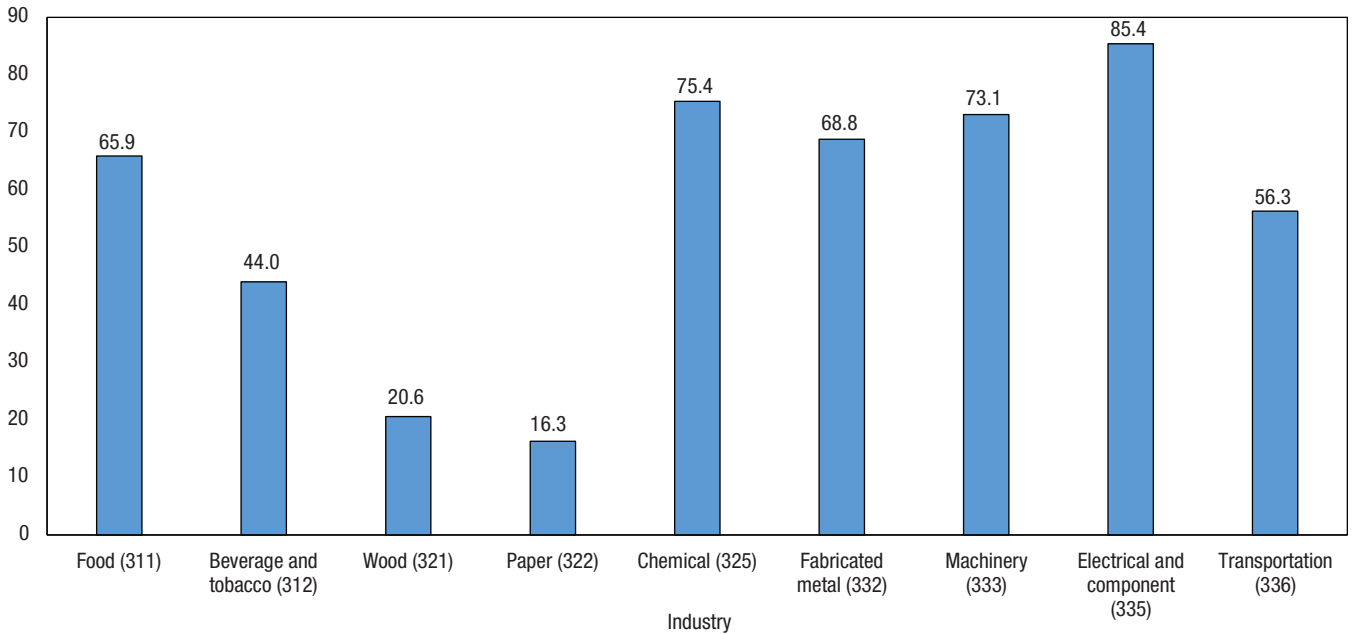
millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.2
Share of Vancouver in manufacturing sales in British Columbia in 2012

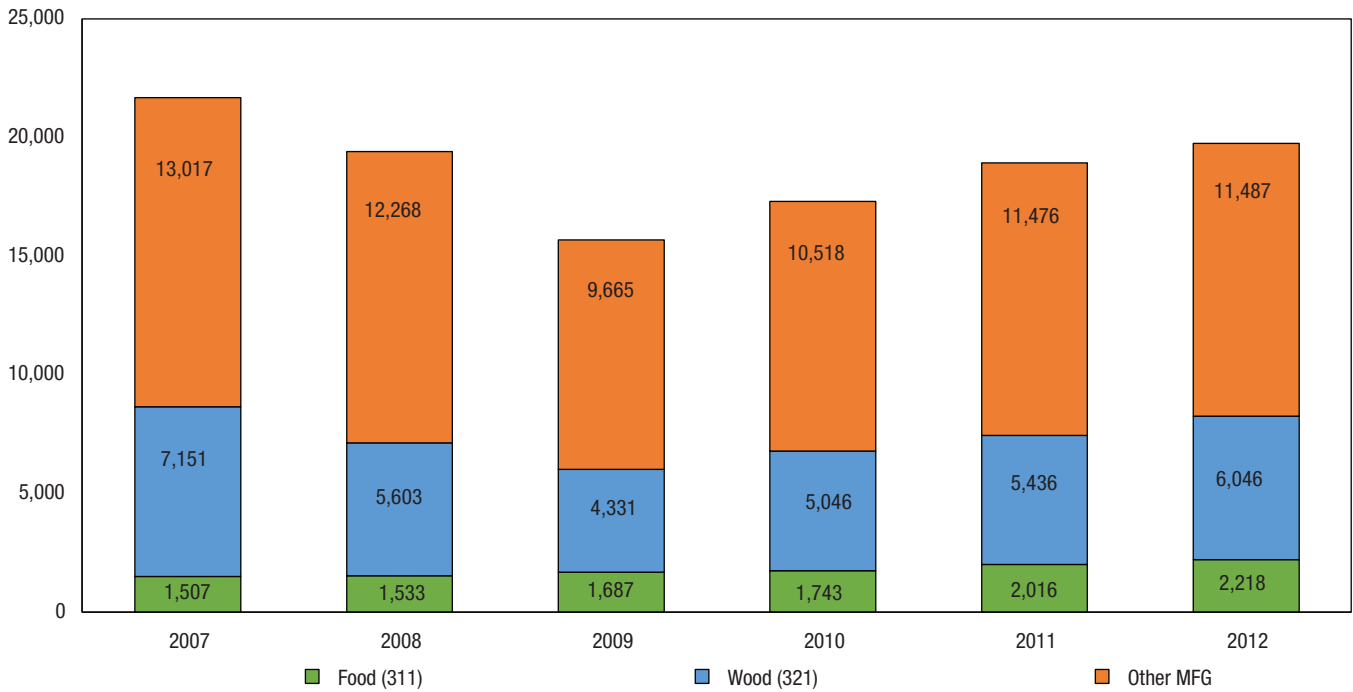
percent



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.3
Manufacturing sales in British Columbia except Vancouver

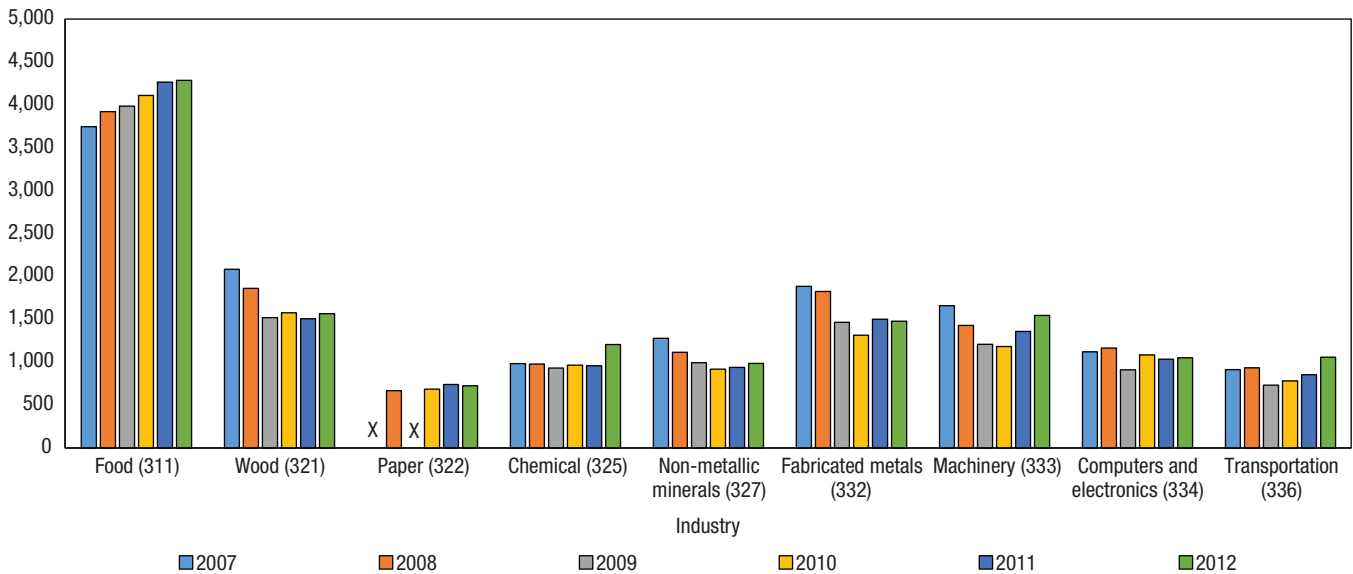
millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.4
Manufacturing sales in Vancouver by industry

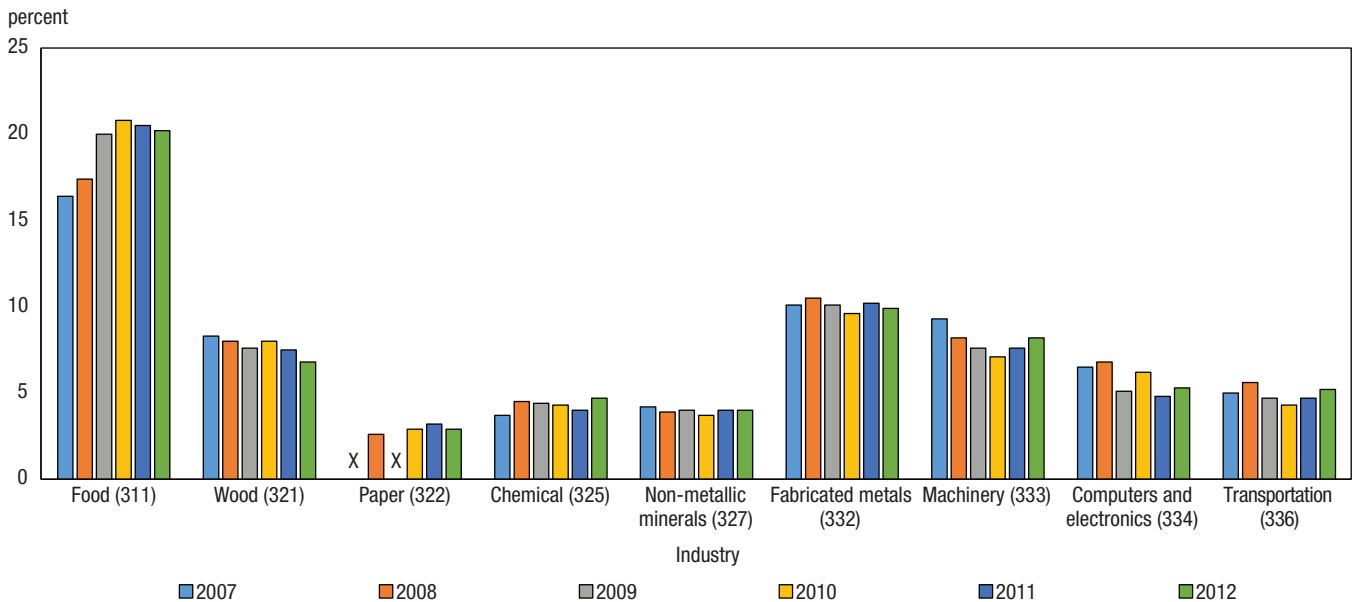
millions of dollars



X suppressed to meet the confidentiality requirements of the *Statistics Act*

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.5
Share of Vancouver in manufacturing employment in British Columbia



X suppressed to meet the confidentiality requirements of the *Statistics Act*
 Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

3.2 Alberta, Calgary, and Edmonton

Alberta is characterized by its large oil and gas operations. In 2012, the share of Alberta's manufacturing GDP in total manufacturing GDP for Canada was 13.0%. In 2012, Alberta also contributed 17.8% to national GDP for all economic sectors.

During the 2008-2009 recession, Alberta diverged from the rest of Canada, in terms of manufacturing sales. The timing of the downturn was different in the province, occurring in 2009 rather than in 2008. By 2012, sales in the province had overtaken their pre-downturn peak, while national sales had not.

Local data provide evidence that manufacturing sales grew differently in Calgary and Edmonton between 2007 and 2012. In particular, Edmonton had a stronger recovery than the rest of the province after the recession. The stronger recovery in Edmonton was attributable to sales growth in the petroleum refining industry as prices of petroleum products recovered, as well as higher sales in industries that support oil and gas extraction sector.

More than two-thirds of total manufacturing sales in the province are reported by firms located in the Edmonton and Calgary CMAs. This proportion has hardly changed over the six-year period. On average, Edmonton contributed 50.4% to the total manufacturing sales in Alberta between 2007 and 2012.

Employment in the manufacturing sector in Alberta is distributed differently than sales. Calgary has a higher share of employment compared with its share of sales. Yet, its employment share is less than Edmonton's. Manufacturing employment fell in Calgary between 2007 and 2012 from 50.9 thousand jobs to 43.4 thousand jobs. However, Edmonton and the rest of the province experienced an increase in the number of manufacturing workers over the same period. A shift in industrial composition or industry input intensity could be responsible for the change in manufacturing employment across CMAs in Alberta between 2007 and 2012.

The oil and gas extraction sector helps to explain differences in proportion and distribution of manufacturing sales and employment across CMAs in Alberta. Petroleum and coal product manufacturing is Edmonton's largest manufacturing industry and generated \$17.7 billion dollars of sales in 2012 (about 46.7% of total manufacturing sales in Edmonton CMA). Yet, because the petroleum industry is highly capital-intensive, it accounts for 2.6% of the CMA's total manufacturing employment. Differences between sales and employment levels are also seen in other manufacturing industries related to oil and gas extraction. The fabricated metals industry in Edmonton

contributed 8.7% (\$3.3 billion) to total manufacturing sales in this CMA in 2012 (total manufacturing sales in Edmonton were \$38.0 billion in 2012). The fabricated metals industry in Edmonton employed 15.1 thousands workers or 25.5% of total manufacturing employment in the CMA⁷.

In 2012, manufacturing sales of mining, gas, and oil field extraction machinery were \$3.1 billion or 8.1% of total manufacturing sales in Edmonton (Table 6.2.7). In Calgary, they accounted for \$1.4 billion or 11.8% of total manufacturing sales. The mining, gas, and oil field extraction sub-industry (33313) supplies drills, derricks, and other extraction equipment to the oil extraction industry (it also includes machinery for mineral mining and gas extraction). Hence, Edmonton's manufacturing sector as a whole simultaneously assists the primary extraction of oil and performs the secondary transformation of oil into a refined product.

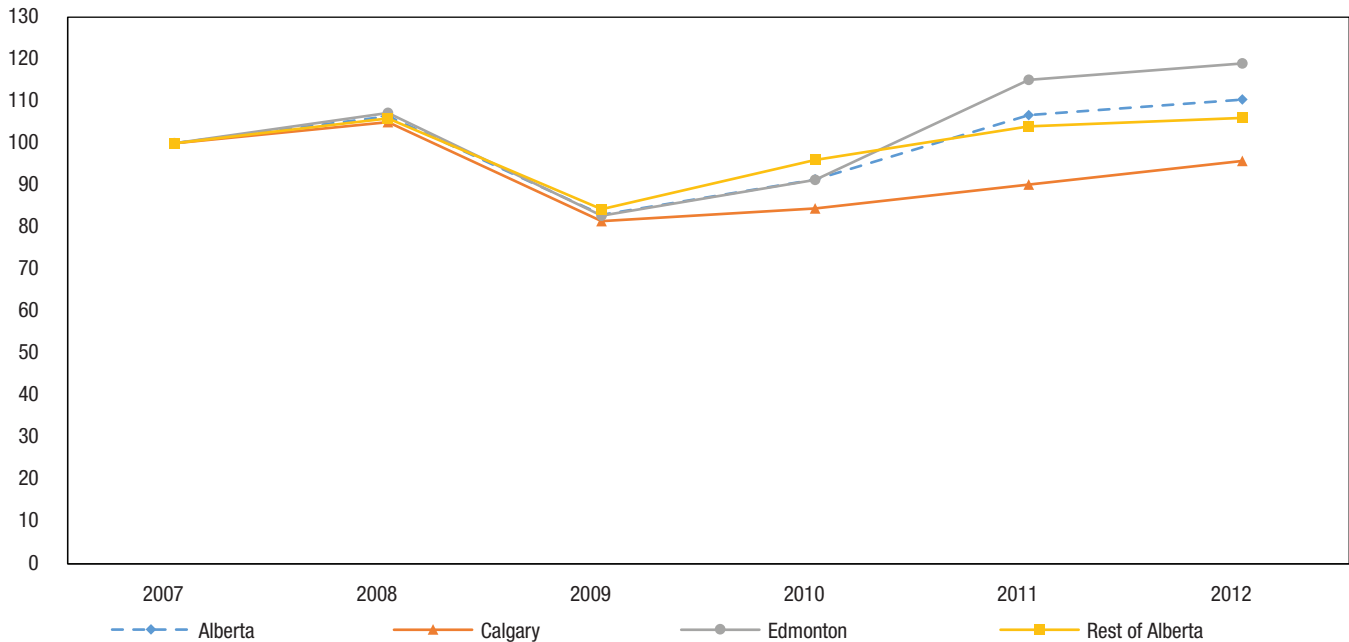
The size of manufacturing sector in Calgary is smaller than Edmonton, because there are no large refineries in this CMA. Calgary's main manufacturing industries (measured by sales) are machinery manufacturing (22.8% in 2012), fabricated metals (13.6% in 2012), and food (11.2% in 2012). The rest of the CMA's manufacturing sales are distributed somewhat uniformly among smaller industries.

Manufacturing sectors in Calgary experienced different sales growth rates between 2007 and 2012. Sales in other publishable manufacturing industries increased during the same period, but for food, non-metallic minerals, and printing industries posted lower sales from 2007 to 2012.

In terms of employment, Edmonton showed a stronger recovery in manufacturing employment than Calgary and the rest of the province. Manufacturing employment decreased in Calgary from 50.9 thousand in 2007 to 43.4 thousand in 2012.

Chart 3.6
Manufacturing sales for selected areas of Alberta

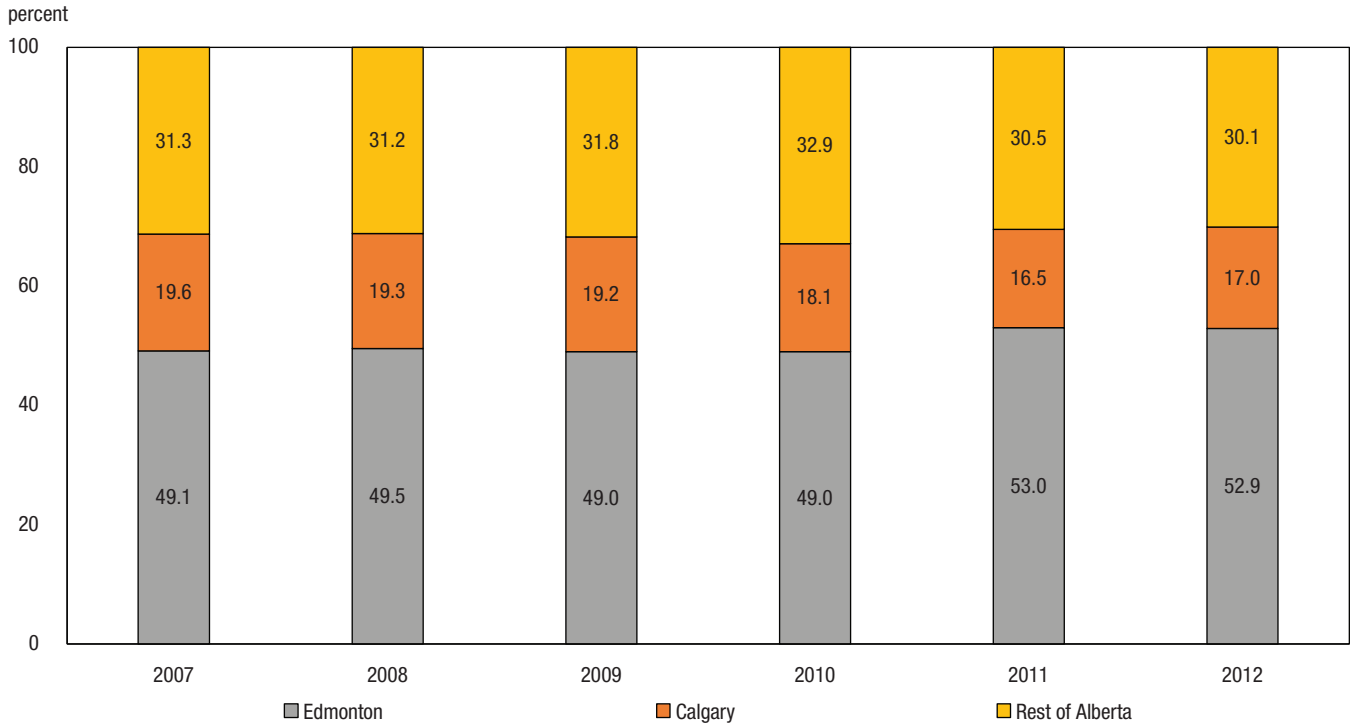
2007=100



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

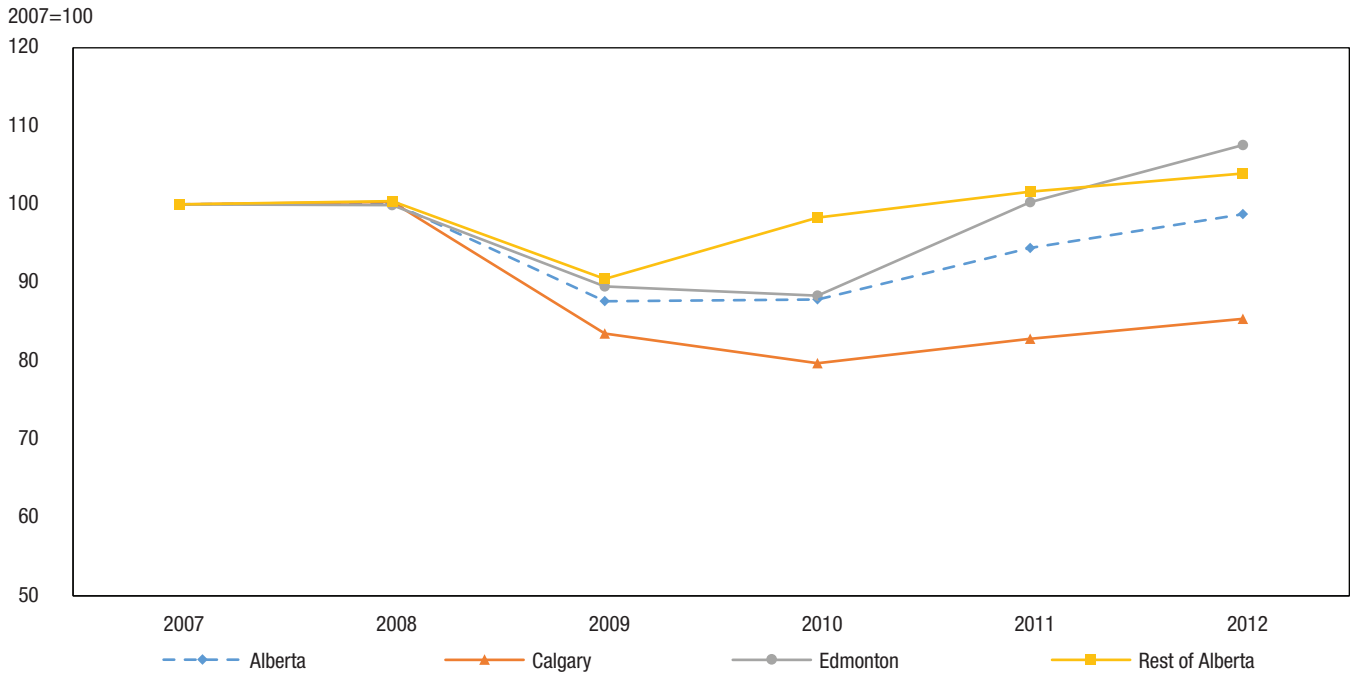
⁷ Tables 6.2.7 and Table 6.2.8 in Appendix.

Chart 3.7
Share of CMAs in total Alberta manufacturing sales



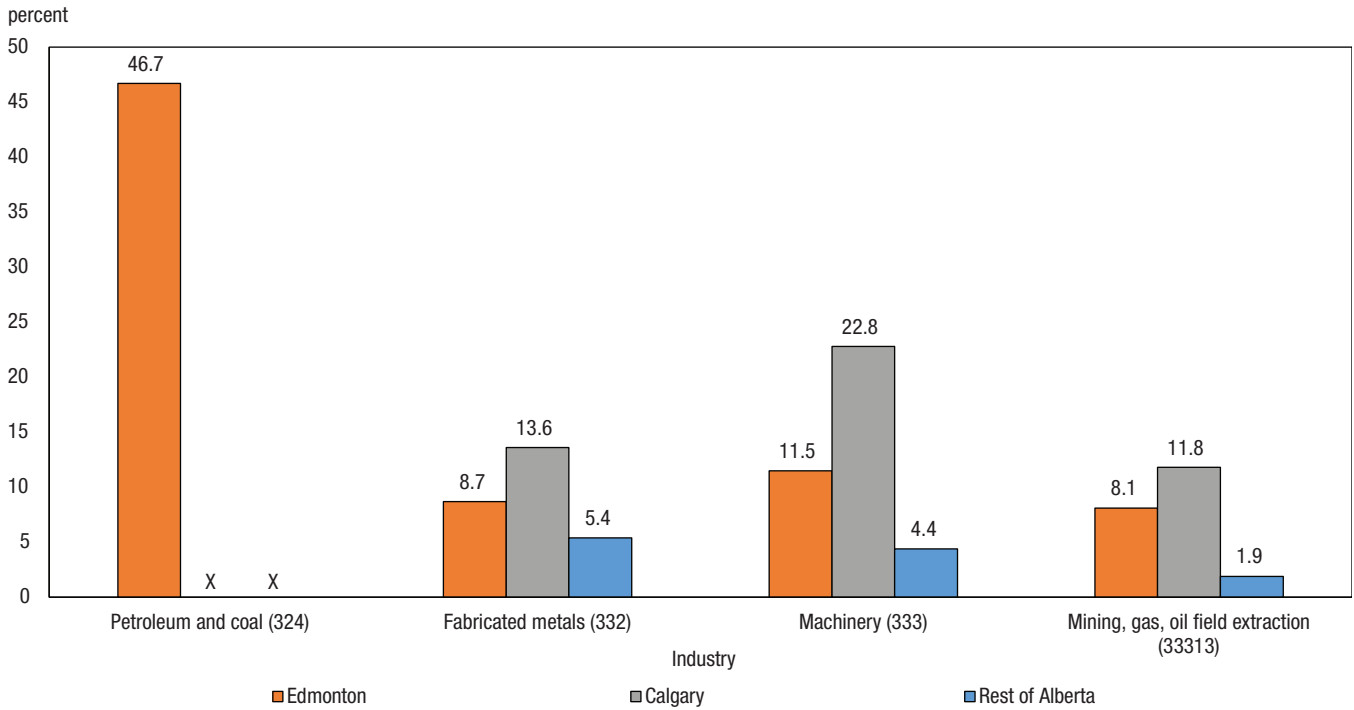
Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.8
Manufacturing employment for selected areas of Alberta



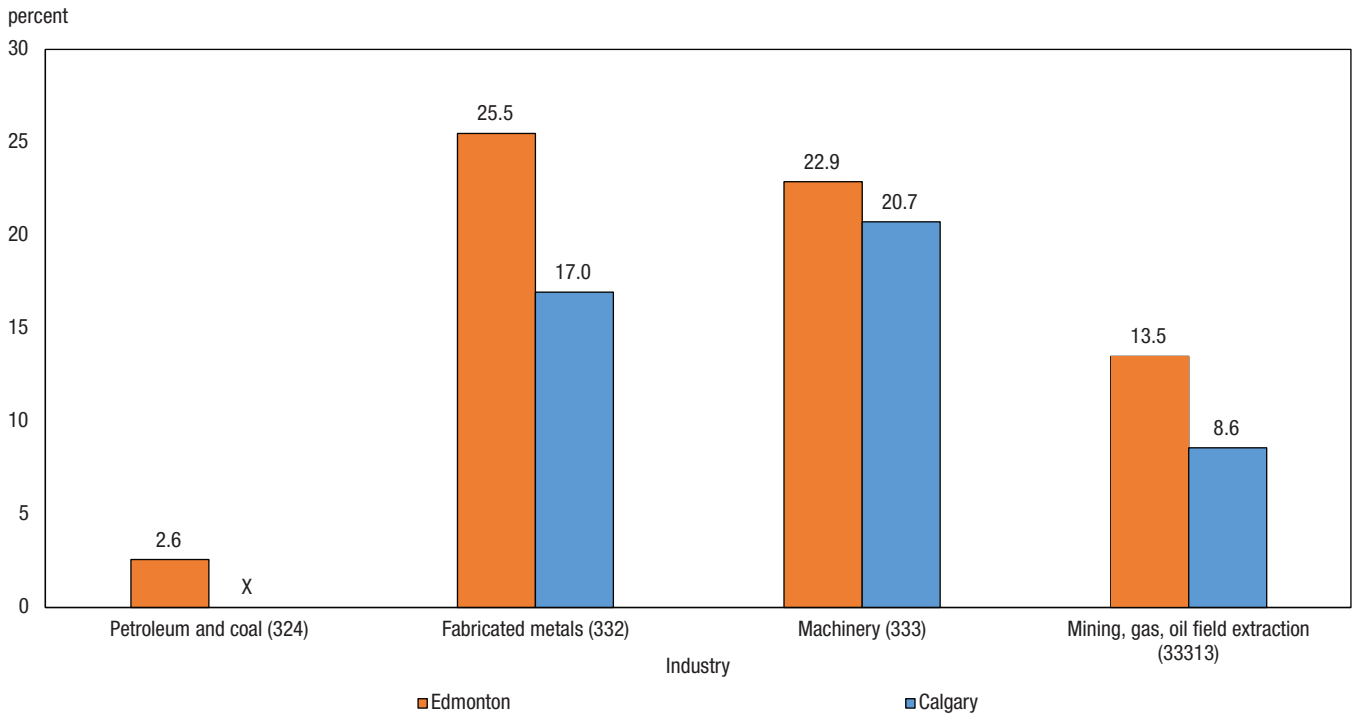
Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.9
Share of petroleum-related industries in total manufacturing sales for Alberta CMAs in 2012



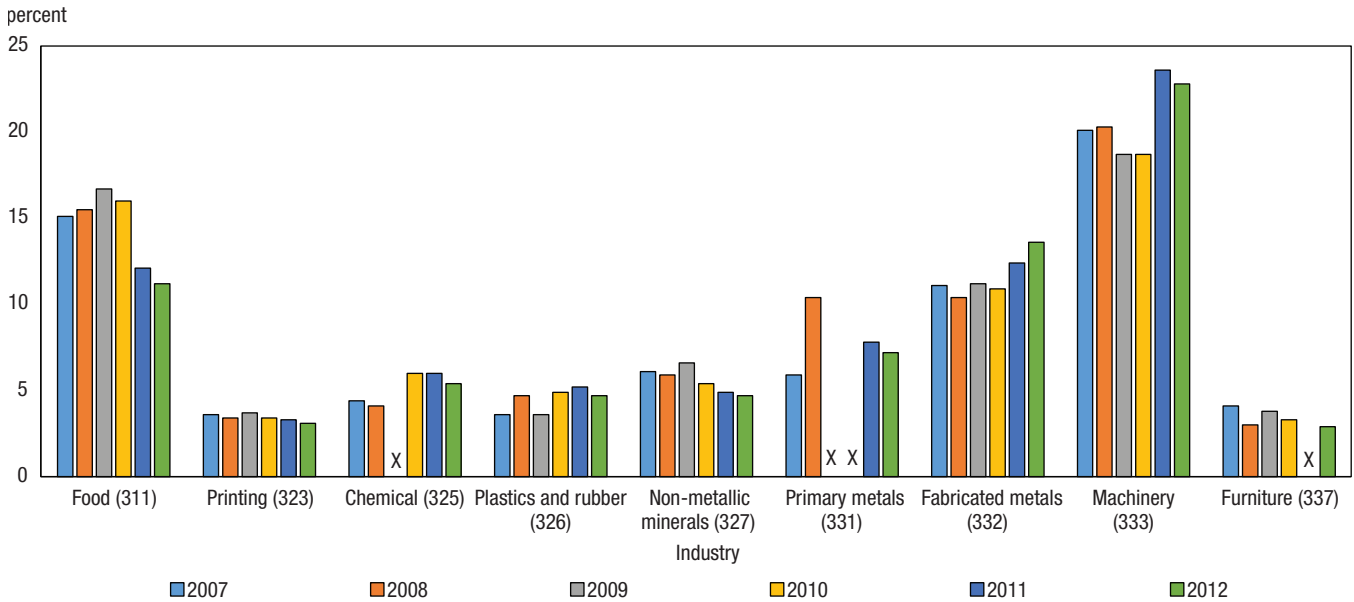
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Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.10
Share of CMAs in Alberta in manufacturing employment by oil-related industry in 2012



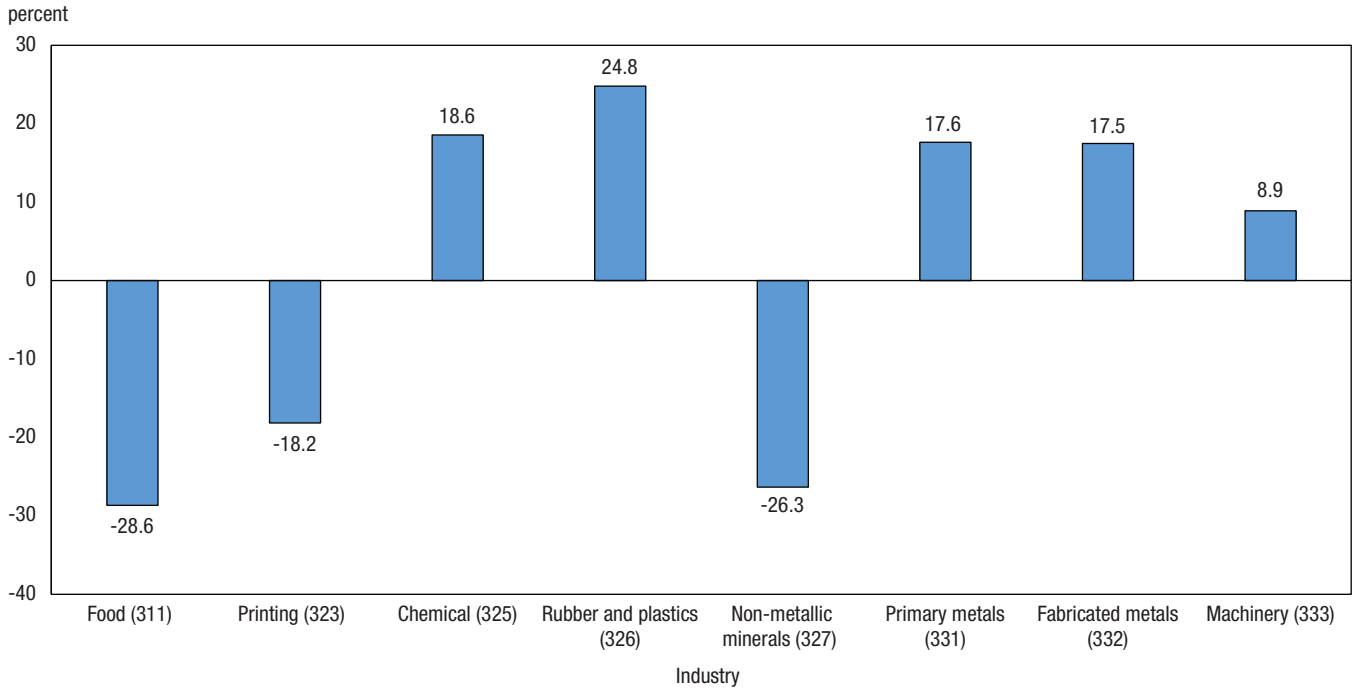
X suppressed to meet the confidentiality requirements of the *Statistics Act*
Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.11
Share of selected industries in total manufacturing sales in Calgary



X suppressed to meet the confidentiality requirements of the *Statistics Act*
 Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

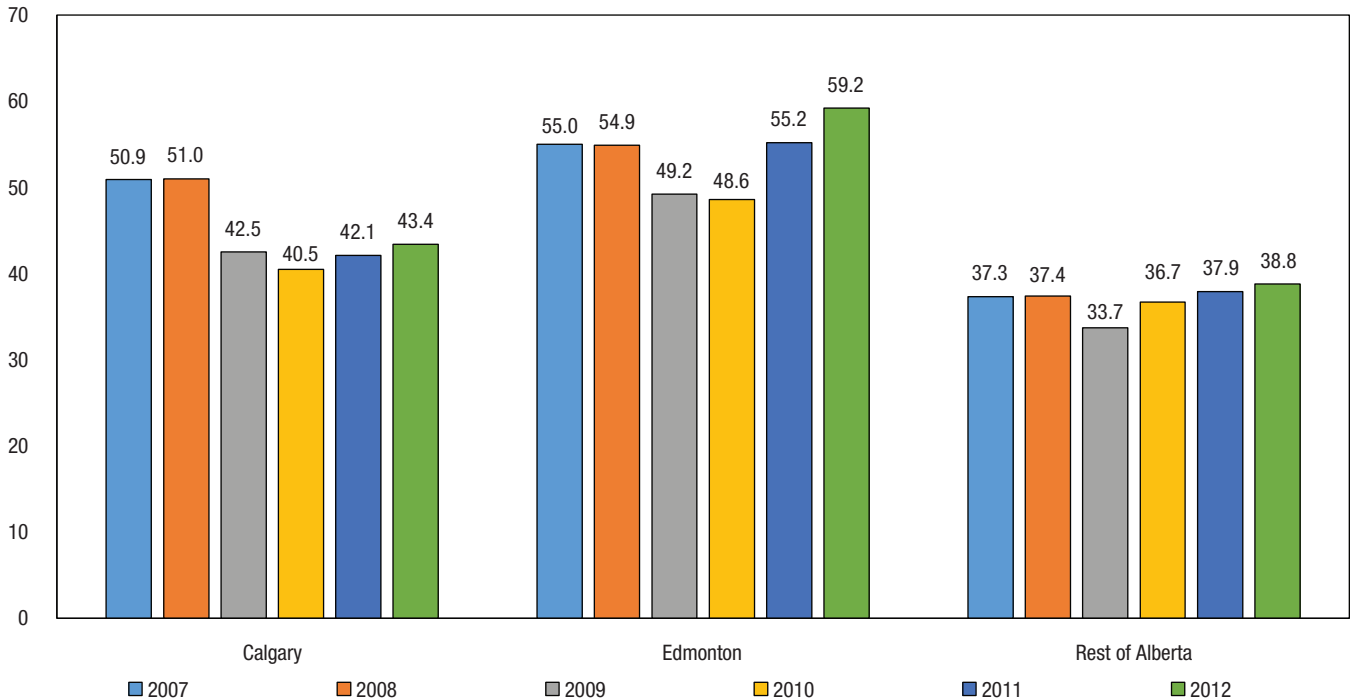
Chart 3.12
Growth rate of manufacturing sales by industry in Calgary in 2007-2012



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.13
Manufacturing employment for selected cities in Alberta

thousands of persons



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

3.3 Manitoba and Saskatchewan

Manitoba is the easternmost Prairie province, with 13.6% of Canada's population. Real estate and rental and leasing, and manufacturing were the largest industries in Manitoba in 2012. Manitoba was responsible for 3.4% of manufacturing GDP in Canada and contributed 3.3% to the total Canadian GDP for all economic sectors in 2012.

For confidentiality reasons, local manufacturing data are not publishable for many industries in Manitoba. However, the publishable data show that manufacturing sectors in the three largest cities in Manitoba and Saskatchewan performed differently during 2007-2012 when compared with each other.

Manufacturing sales in Winnipeg followed the same trend as the total manufacturing sales in Manitoba, staying relatively flat between 2007 and 2010, before rising significantly in 2011 and 2012.

Transportation equipment is the largest manufacturing sector in Winnipeg followed by the food industry. Sales in the CMA of Winnipeg fell, but remained an important core of the CMA's manufacturing sector. The share of Winnipeg's transportation equipment industry in total Winnipeg manufacturing sales decreased from 24.3% in 2007 to 19.3% in 2012. During the same period, the share of food in total manufacturing sales fell from 17.1% in 2007 to 15.9% in 2012.

Some manufacturing growth between 2007 and 2012 in Winnipeg came from the industrial machinery sub-industry (3331), which is a part of the machinery industry. In particular, sales in the machinery industry increased by 88% from \$690 million in 2007 to \$1.3 billion in 2012, largely on the strength of the industrial machinery sub-industry.

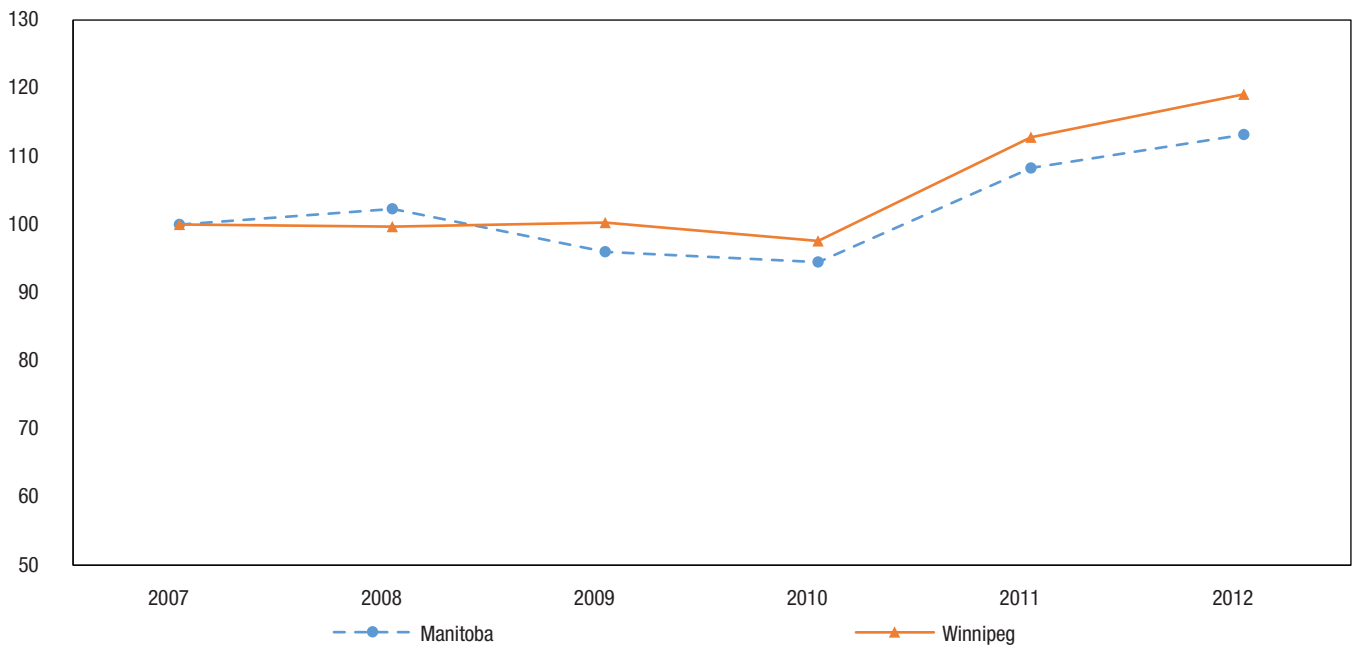
Saskatchewan is home to 3.2% of the Canadian population. The largest economic sectors in Saskatchewan in 2012 were mining, quarrying, oil and gas extraction, and construction. In 2012, manufacturing was the fifth-largest sector in Saskatchewan. Saskatchewan's manufacturing sector contributed 2.6% to the total manufacturing GDP of Canada and had strong growth in 2008, 2011 and 2012, while it experienced a very sharp decline in 2009.

Manufacturing sales in Regina followed the same trend as total manufacturing sales in the province, except in 2008 where the sales growth rate in Regina was higher than in Saskatchewan. Saskatoon in contrast showed a divergence from the provincial trend in 2008 and 2009, with sales increasing slightly each year.

In Regina, manufacturing sales rose from \$5.0 billion in 2007 to \$6.5 billion in 2012. As illustrated in the chart below, just under half of all manufacturing sales in Saskatchewan are concentrated in Regina. The CMA's share of the province's total manufacturing sales was on a constant, although slow decline from 2008 to 2012. Meanwhile, Saskatoon's manufacturing sales went up from \$3.1 billion in 2007 to \$4.1 billion in 2012. However, the share of Saskatoon in total manufacturing sales of the province remained unchanged for most years (except 2008) at about 27.0%.

Chart 3.14
Manufacturing sales for Winnipeg and Manitoba

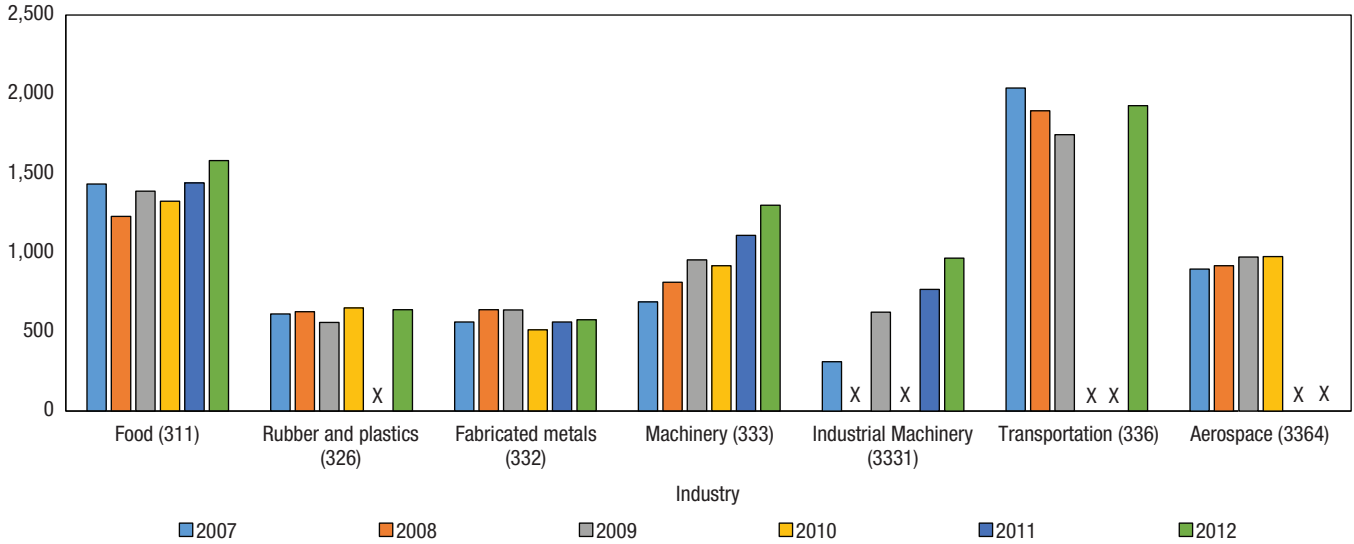
2007=100



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.15
Manufacturing sales in Winnipeg for selected industries

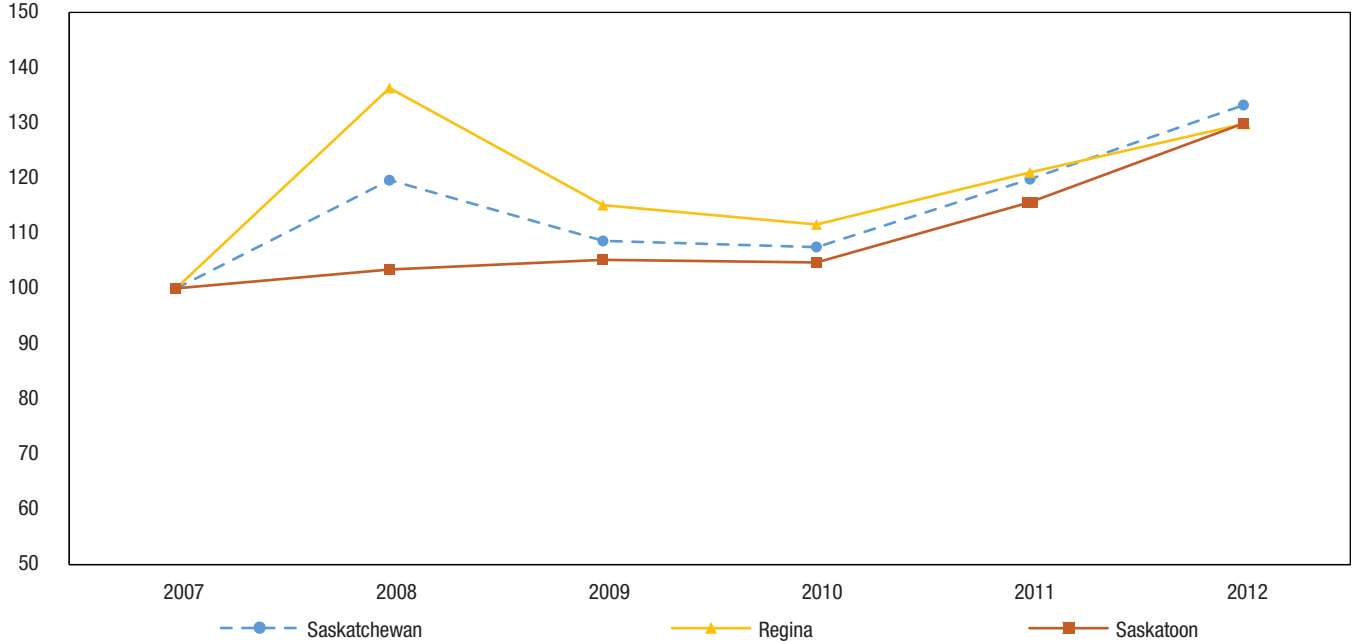
millions of dollars



X suppressed to meet the confidentiality requirements of the *Statistics Act*
Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

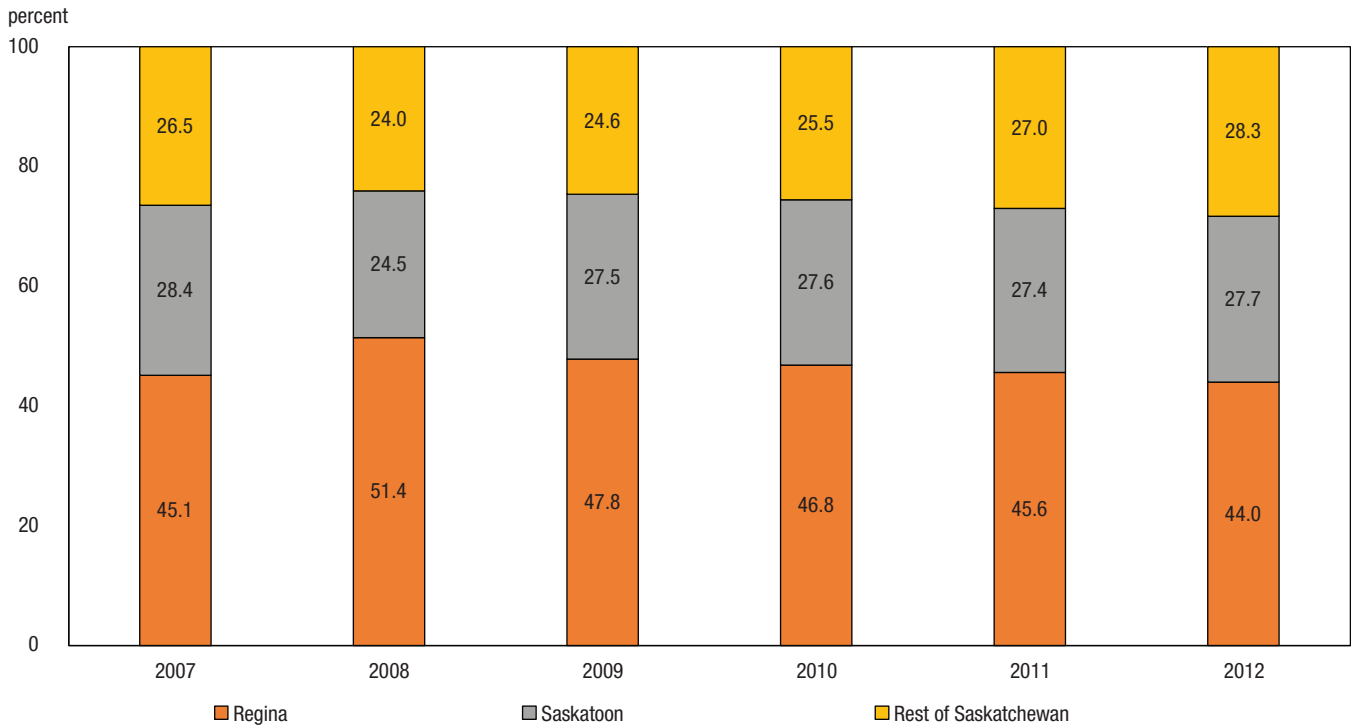
Chart 3.16
Manufacturing sales for selected areas of Saskatchewan

2007=100



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.17
Share of CMAs in Saskatchewan in total manufacturing sales



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

3.4 Ontario

Manufacturing was the second-largest economic sector in Ontario in 2012. About 44% of total manufacturing GDP in Canada is produced in Ontario, the highest share of all provinces. The total economy of Ontario contributed 37.4% to Canada's GDP in 2012.

Total manufacturing sales in Ontario dropped from \$289.7 billion in 2007 to \$266.4 billion in 2012. At the same time, Toronto's share of Ontario's manufacturing sales slightly increased from 36.5% in 2007 to 36.9% in 2012. Still, the majority (56.3% in 2007 and 2012) of manufacturing activities in Ontario occur outside of Toronto, Ottawa-Gatineau and Hamilton Toronto's industries are diverse, while other Ontario CMAs are home to fewer industries. As can be seen in the graph below, the trends of manufacturing sales in Ontario's three largest selected CMAs sometimes diverge from the provincial trend. Such is the case of Ottawa-Gatineau's slight increase in 2009 and sharp decrease in 2012⁸. Hamilton, in turn, had a sharp dip in sales in 2008 and a more pronounced recovery after 2009.

However, total manufacturing sales in the province are highly influenced by manufacturing activities in Toronto. Toronto's manufacturing sector is the largest of all CMAs in Canada, and quite diverse. The largest manufacturing industry in Toronto, by far, is the transportation equipment industry, part of which is composed of automotive industry, automobile parts and aerospace products manufacturing. The food manufacturing is the second largest industry in Toronto and play a significant role in its manufacturing sector. Toronto also produces chemicals, fabricated metals, and rubber and plastics.

A few manufacturing industries in Toronto grew between 2007 and 2012. Sales in the food industry increased from \$11.9 billion in 2007 to \$14.5 billion in 2012, an absolute growth rate of 21.7% during the 2007-2012 period. In 2012, the chemical industry was the third-largest manufacturing sector of Toronto, with growth coming from the

⁸ For the purpose of the analysis and due to confidentiality requirements the author didn't separate the Ontario part of the Ottawa-Gatineau CMA from the Québec part.

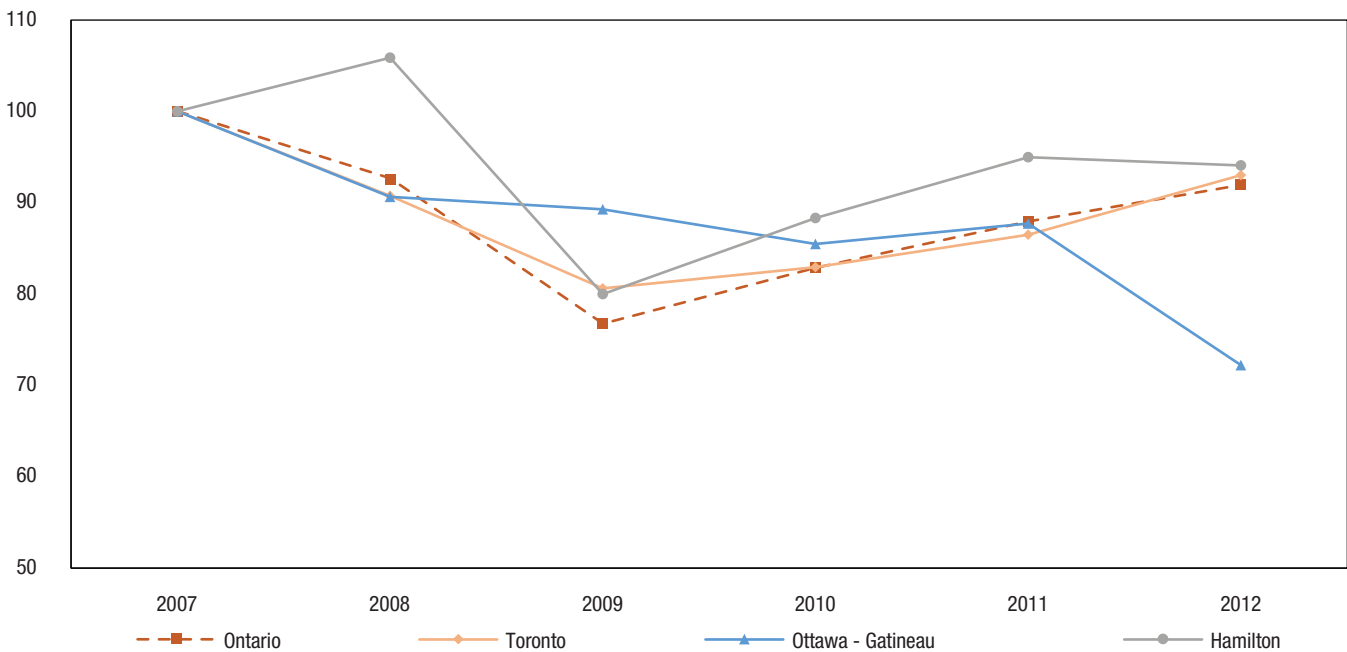
pharmaceutical (3254) and basic chemical sub-industries (3251). Sales of chemical products in Toronto rose 10.4% between 2007 and 2012.

Although sales in the transportation equipment manufacturing industry declined from \$31.6 billion in 2007 to \$29.7 billion in 2012, the share of transportation equipment industry in total manufacturing sales in Toronto actually increased from 29.9% in 2007 to 30.2% in 2012. Despite the small decrease in total sales in transportation equipment in Toronto between 2007 and 2012, the relative share of the aerospace industry and auto parts in Toronto's total manufacturing sales of transportation equipment remained steady.

In Toronto, the food manufacturing industry is the second largest industry in terms of sales. The main components include rendering and meat processing (311614), sugar and confectionery products (3113), and bread and bakery products (31181), and other food manufacturing activities (3119).

Chart 3.18
Manufacturing sales for selected areas of Ontario

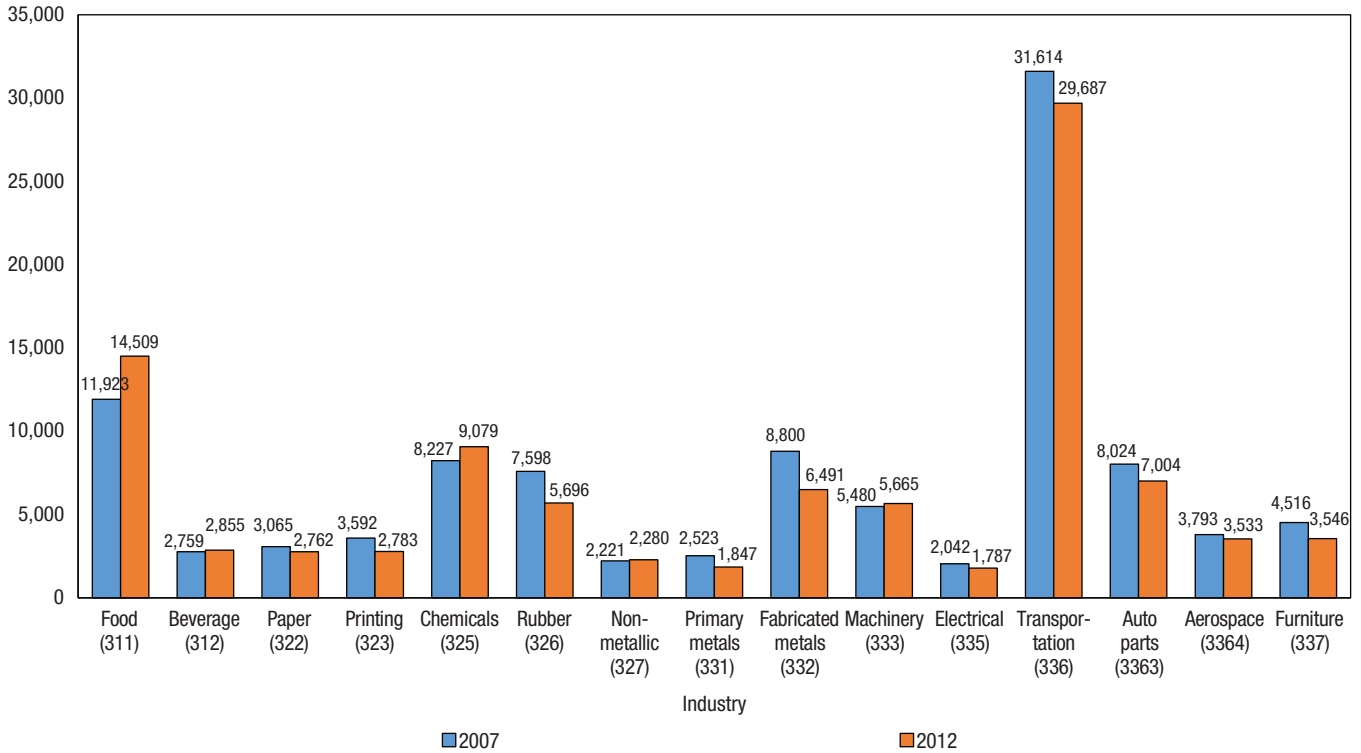
2007=100



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.19
Manufacturing sales in Toronto by industry

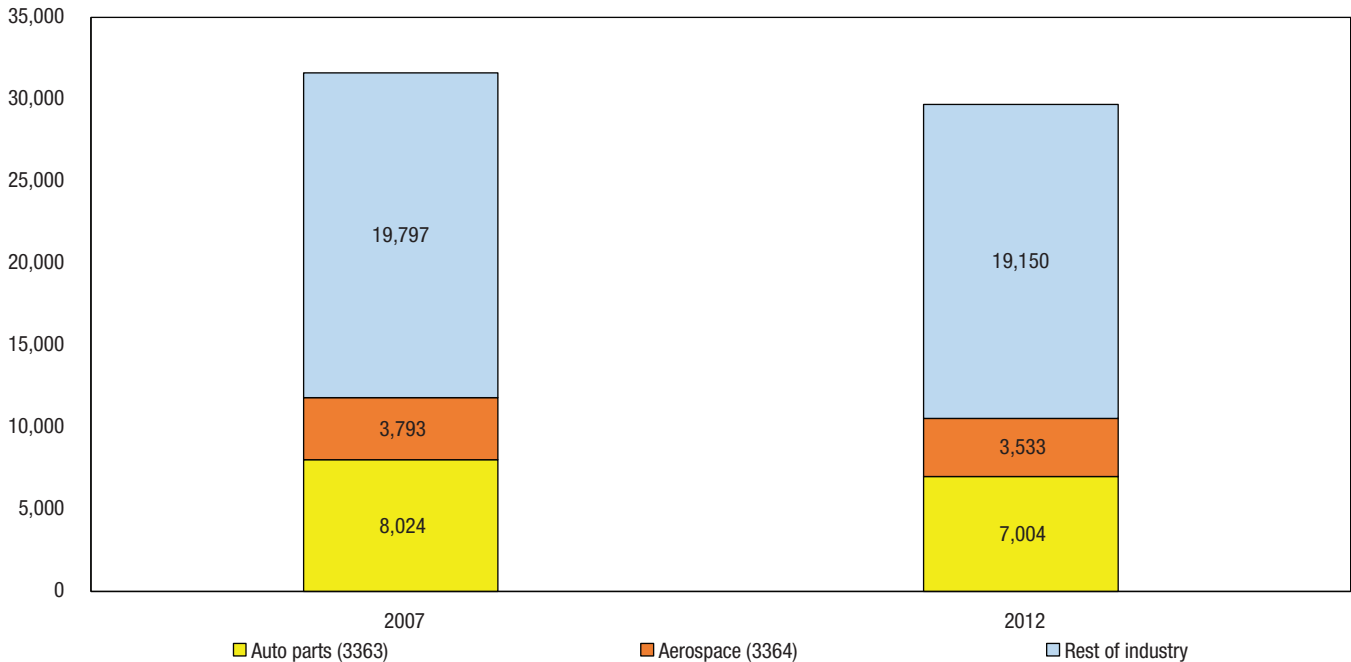
millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.20
Manufacturing sales in transportation sub-industries in Toronto

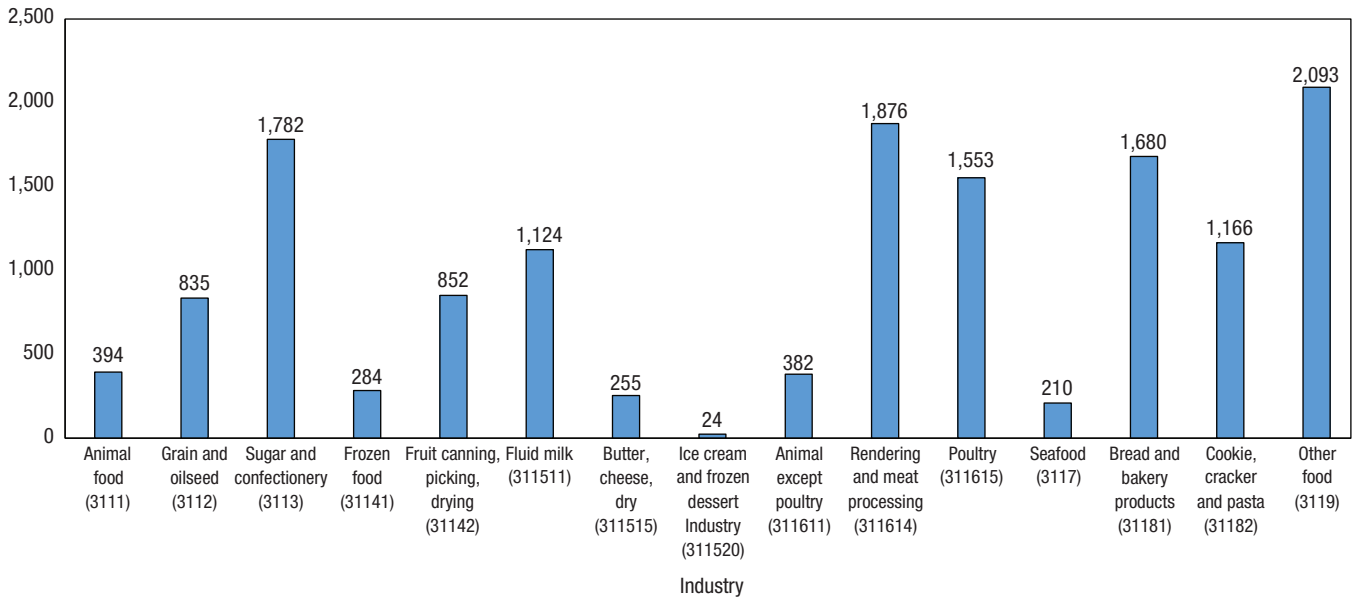
millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.21
Manufacturing sales in Toronto's food industry in 2012

millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Ottawa-Gatineau

In Ottawa-Gatineau⁹, the size of the computer and electronics industry fell 67.8% between 2007 and 2012. This decline was a major contributor to the overall decrease in the CMA's manufacturing sales shown on Graph 3.22.

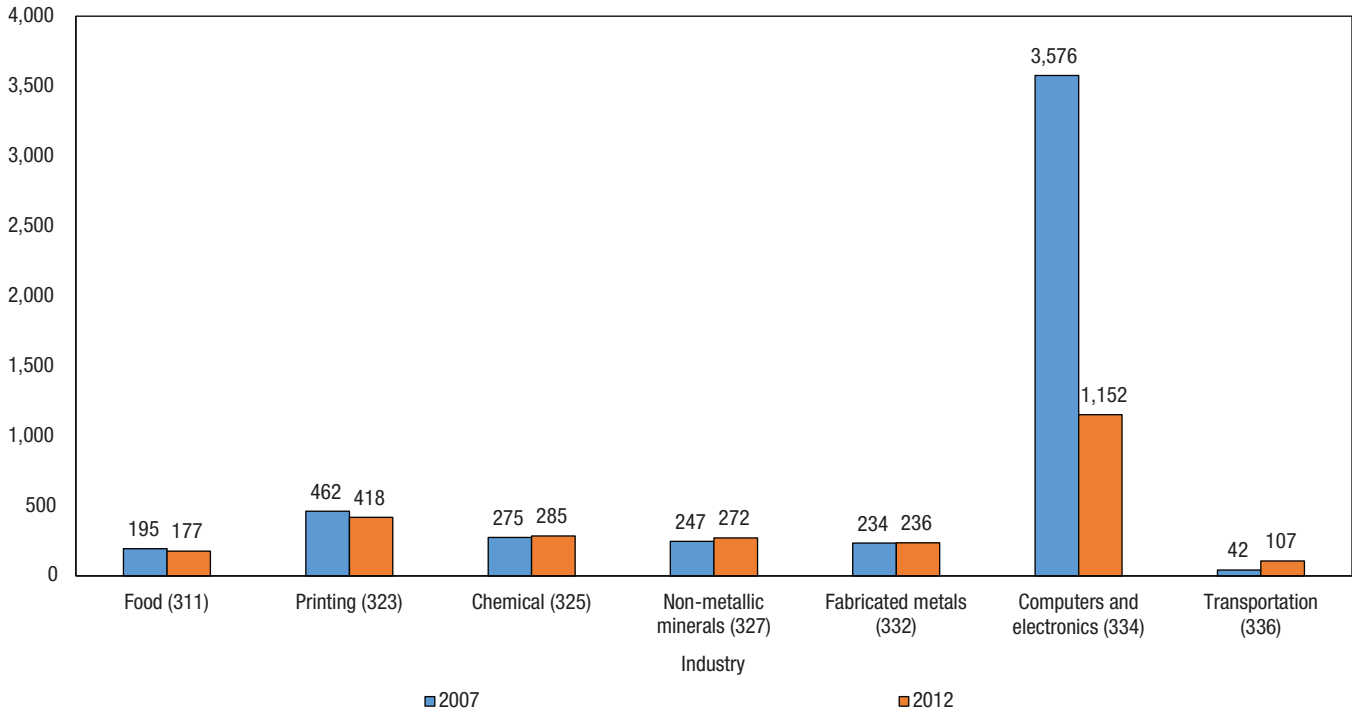
The significant drop in the share of computer and electronic industry in Ottawa-Gatineau area came from lower sales in the communications equipment industry and lower sales of computer and peripheral products.

Although still small when compared with the other industries in Ottawa-Gatineau, the transportation industry's sales almost tripled in the 2007-2012 period.

9. Manufacturing activities from Gatineau were excluded from Ottawa-Gatineau CMA to remain coherent with the Ontario Manufacturing total

Chart 3.22
Manufacturing sales in Ottawa-Gatineau for selected industries

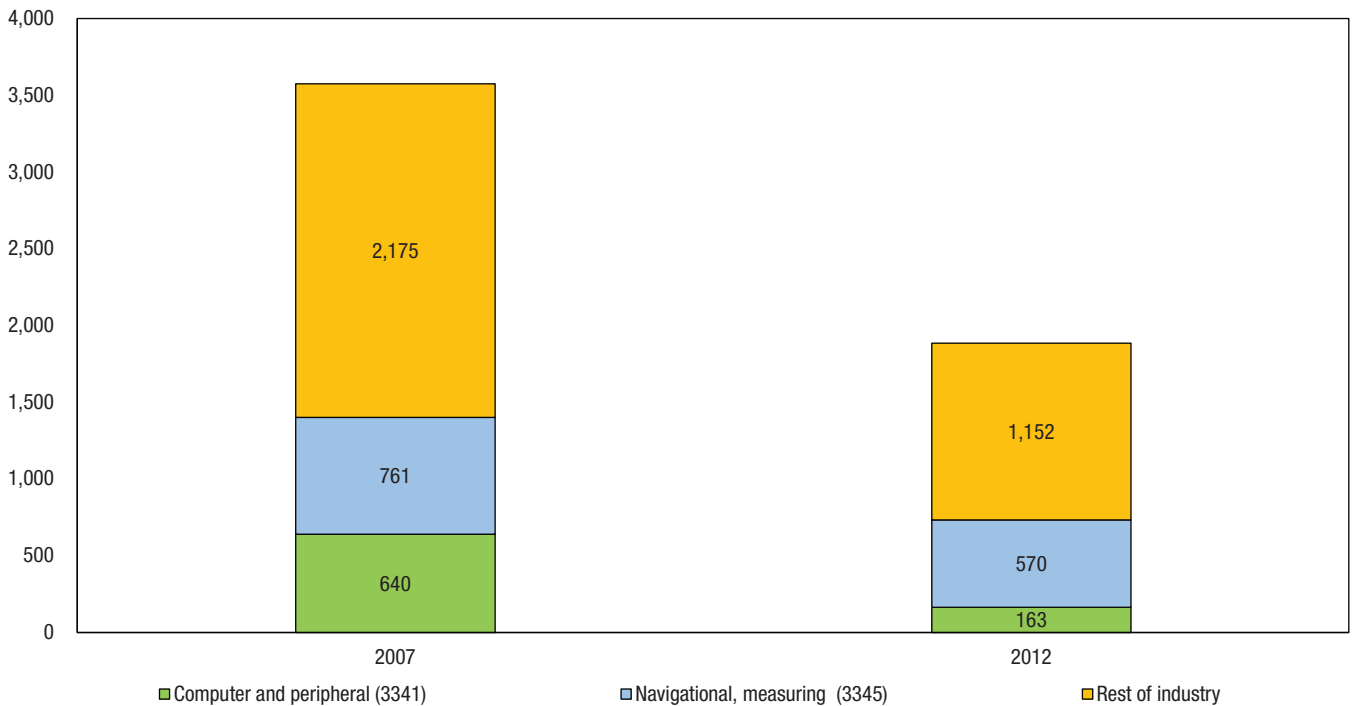
millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.23
Manufacturing sales in computer and electronic sub-industries in Ottawa-Gatineau

millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

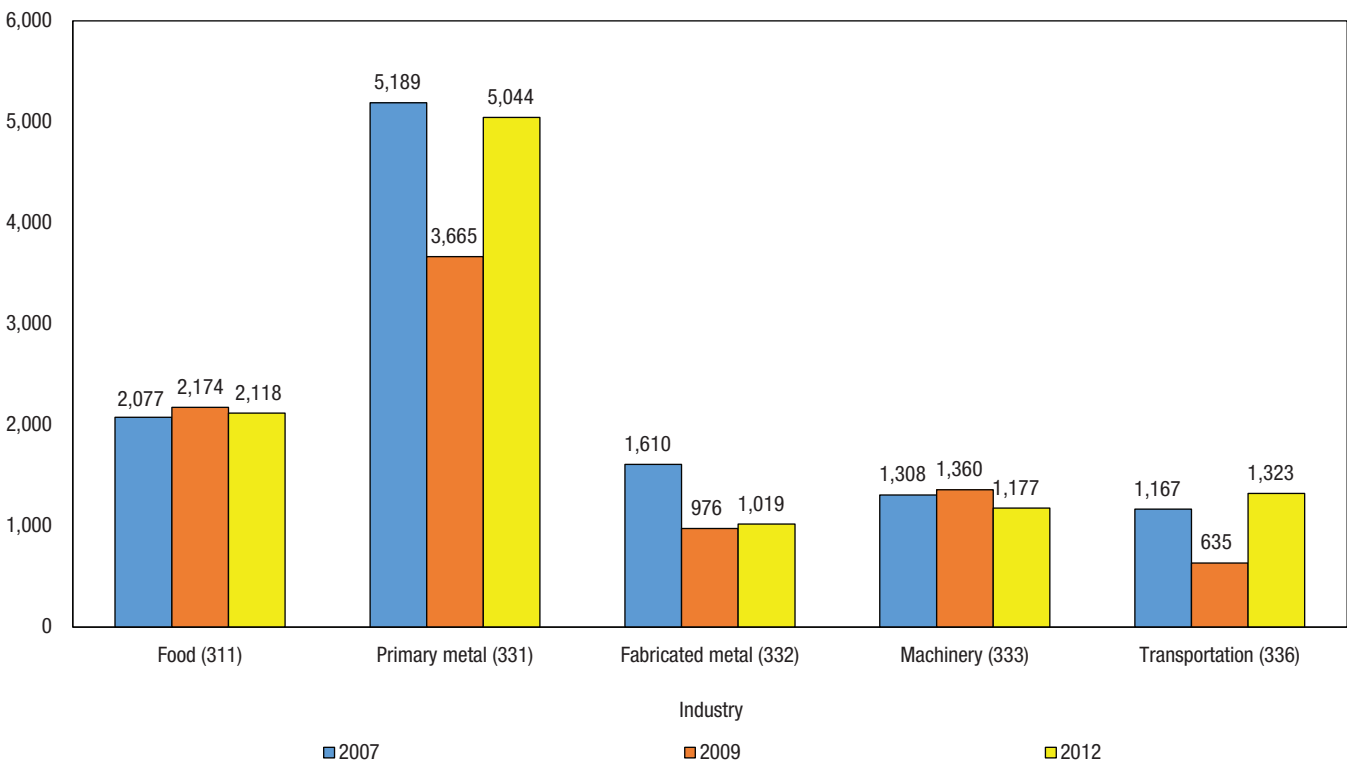
Hamilton

In Hamilton, the primary metal industry is the largest manufacturing industry. Most of the manufacturing activity in the CMA is comprised of metal industries, food, machinery, and transportation. Between 2007 and 2009, manufacturing sales in primary metals, fabricated metals, and transportation equipment industries all declined sharply. Between 2009 and 2012, in turn, primary metals and transportation recovered, but fabricated metals did not, increasing just 4.4% over that time.

Shares of manufacturing sales among Ontario's CMAs were very stable over 2007 to 2012. When the shares for sales are compared with those of employment, Toronto is shown to have a larger share of manufacturing jobs than it has a share of manufacturing sales. The shares of both sales and jobs declined in Ottawa-Gatineau, while those of the other CMAs have remained stable.

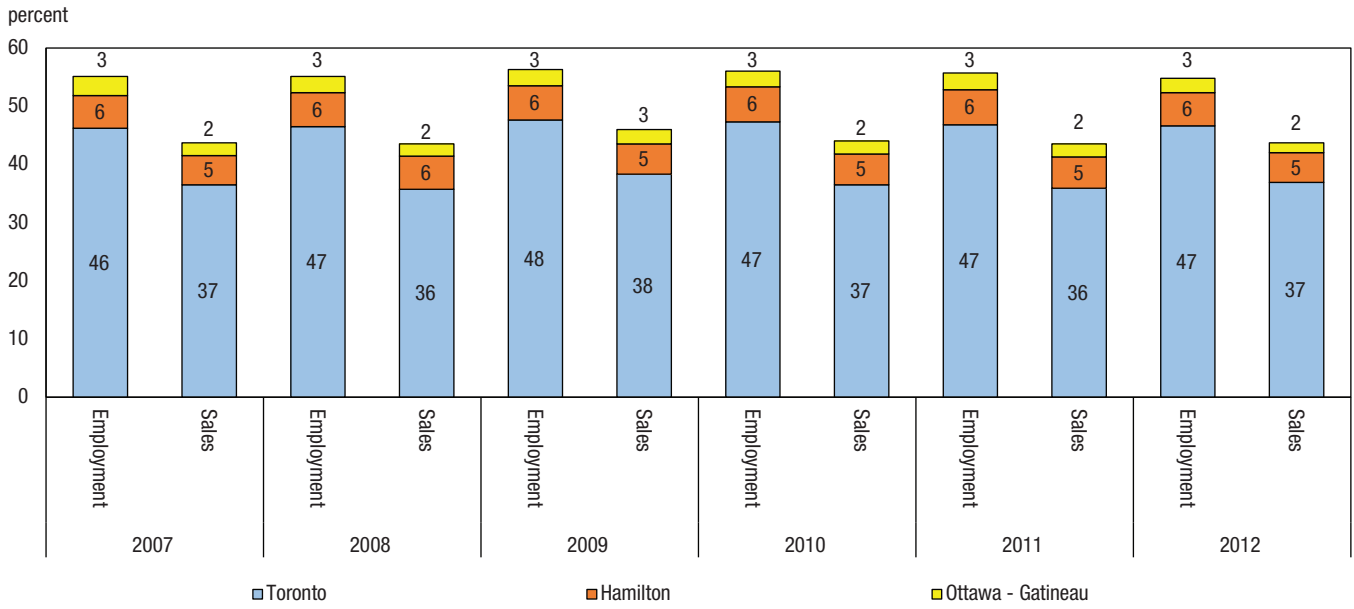
Chart 3.24
Manufacturing sales for selected Hamilton industries

millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.25
Share of CMAs in Ontario by total manufacturing sales and employment



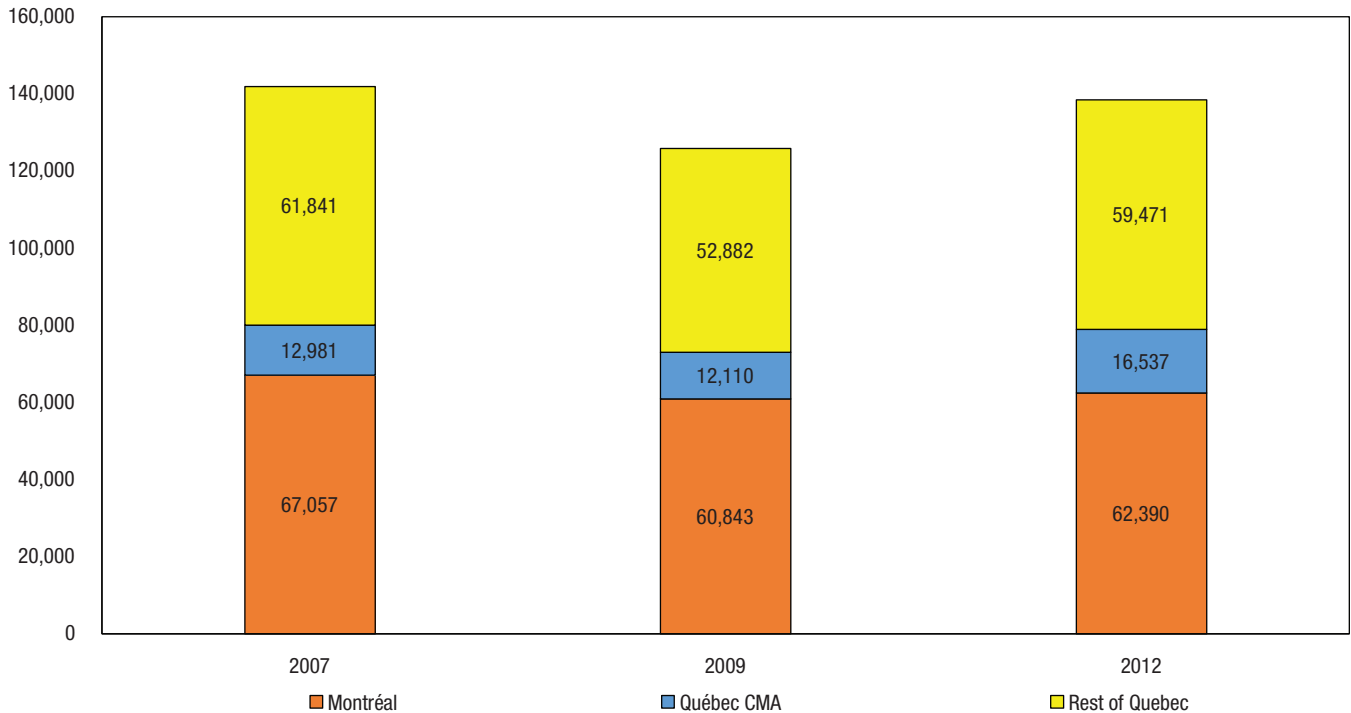
Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

3.5 Quebec

Manufacturing is the largest economic sector in Quebec. In 2012, the Quebec manufacturing sector contributed 24.9% towards total Canadian manufacturing GDP. The distribution of manufacturing sales in Quebec changed slightly during the 2007-to-2012 period. Manufacturing sales in the Montréal and Québec CMAs, as well as those in the rest of the province declined between 2007 and 2009. Yet during the recovery from 2009 to 2012, sales in the Québec CMA recovered more strongly and surpassed their 2007 level by 2010. Sales in the rest of the province decreased from \$61.8 billion to \$52.9 billion and then increased to \$59.5 billion in 2012. Sales in Montréal, however, recovered the least, and were still well-below pre-recession levels at \$62.4 billion.

Chart 3.26
Manufacturing sales of major Quebec CMAs

millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Montréal

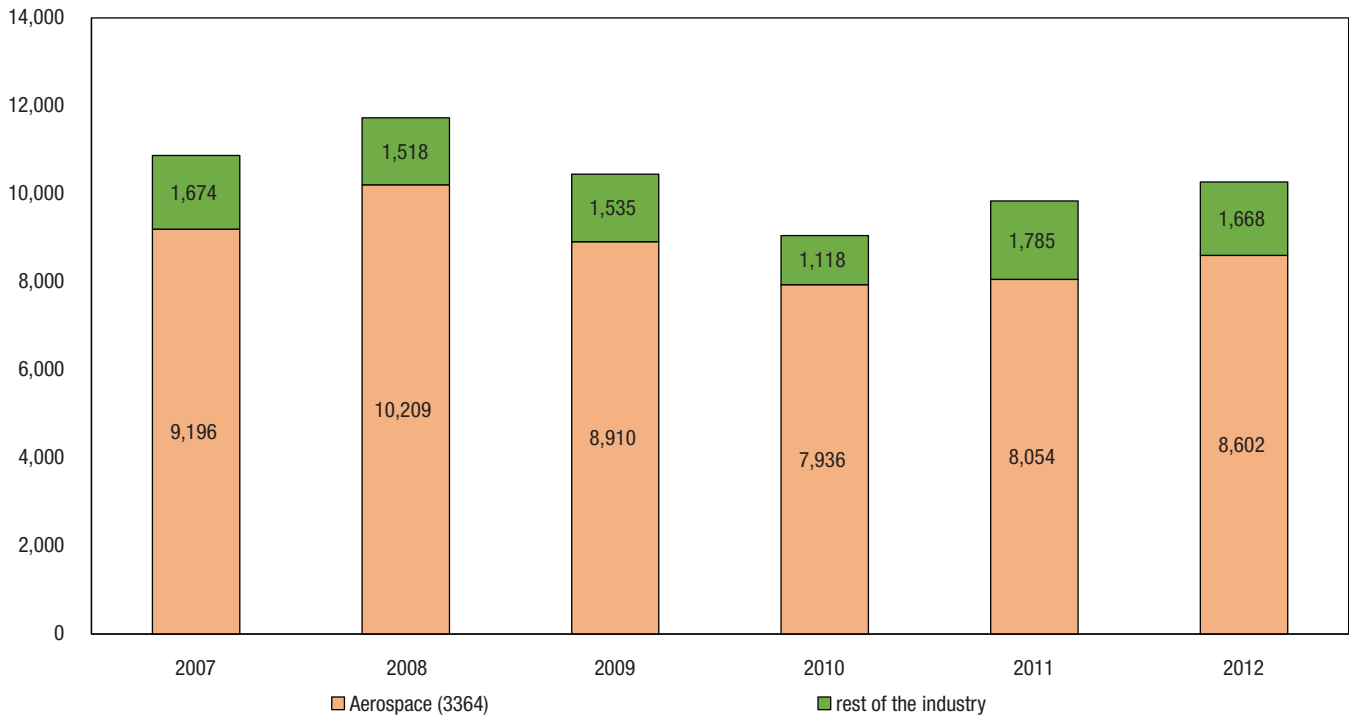
Transportation equipment industry (336) is the largest manufacturing sector in Montréal with over \$10 billion sales in 2012 (Table 6.2.20). The aerospace industry (3364) is the largest sub-industry of transportation equipment industry in Montréal. Sales of aerospace products contributed 13.9% to total manufacturing sales in Montréal between 2007 and 2012. The contribution of the aerospace sub-industry to total sales in transportation equipment in Montréal was 84.6% in 2007 and 83.8% in 2012.

As Table 6.2.20 shows, the chemical industry in 2007 and food industry in 2012 were the second and third-largest manufacturing industries in Montréal after the transportation equipment industry. The chemical industry in Montréal is mainly composed of basic chemical and pharmaceutical manufacturing. The share of basic chemical products in total chemical industry increased from 31.9% in 2007 to 40.4% in 2012, while the share of pharmaceutical products went up slightly, from 30.9% in 2007 to 31.8% in 2012.

Food manufacturing sales in Montréal increased from \$6.2 billion in 2007 to \$7.3 billion in 2012, showing 17.4% increase over 2007-2012. However, the share of food industry in total manufacturing sales in Quebec as a whole increased 26.2% during the same period (from 9.2% in 2007 to 11.6% in 2012).

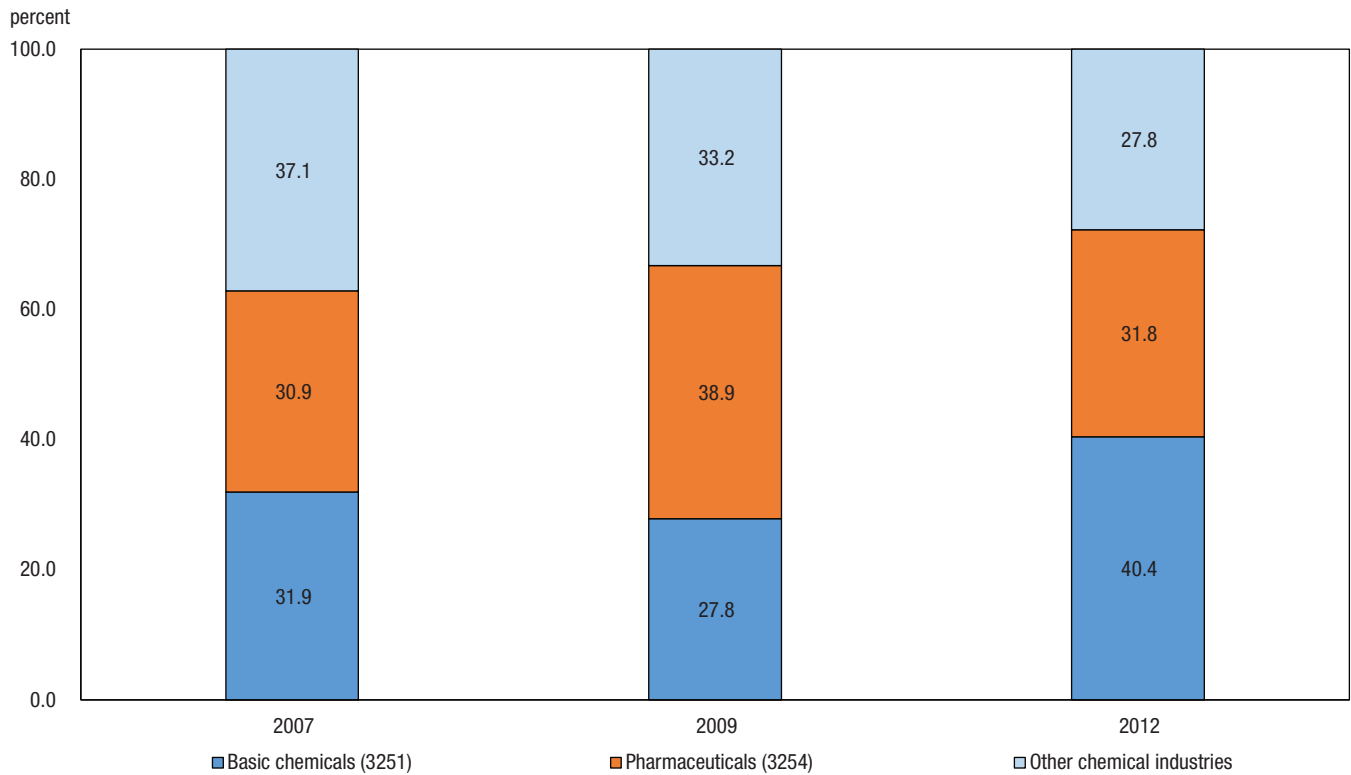
Chart 3.27
Manufacturing sales of transportation equipment in Montréal

millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.28
Share of sub-industries in manufacturing sales of chemical products in Montréal



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

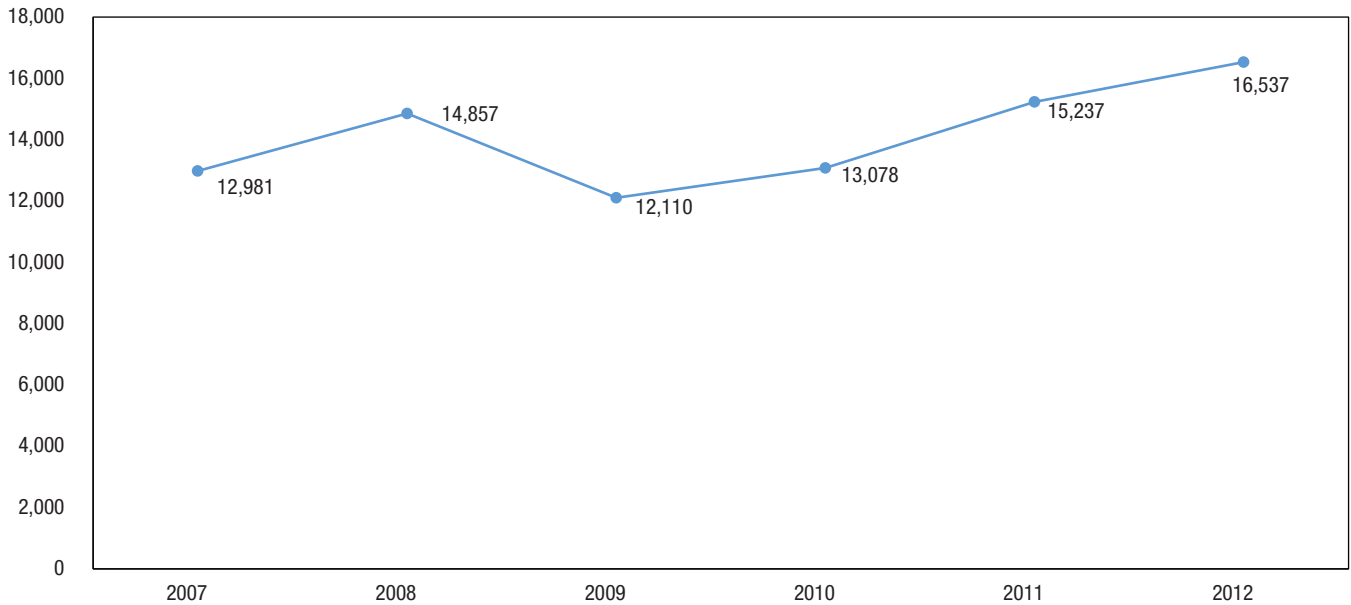
Québec

Québec CMA experienced strong growth after 2009. Total manufacturing sales in this CMA increased from \$12.1 billion in 2009 to \$16.5 billion in 2012. Strong sales in food manufacturing were partly responsible for the growth in the Québec CMA after 2009.

Manufacturing employment in Quebec decreased 9.7% between 2007 and 2012. Montréal, with a 12.0% decrease in manufacturing employment, was largely responsible for the overall drop in total manufacturing employment in the province. The decline was slightly offset by an increase in manufacturing employment in Québec CMA. In this CMA, employment went up from 27.8 thousand in 2007 to 27.9 in 2012.

Chart 3.29
Manufacturing sales in the Québec CMA

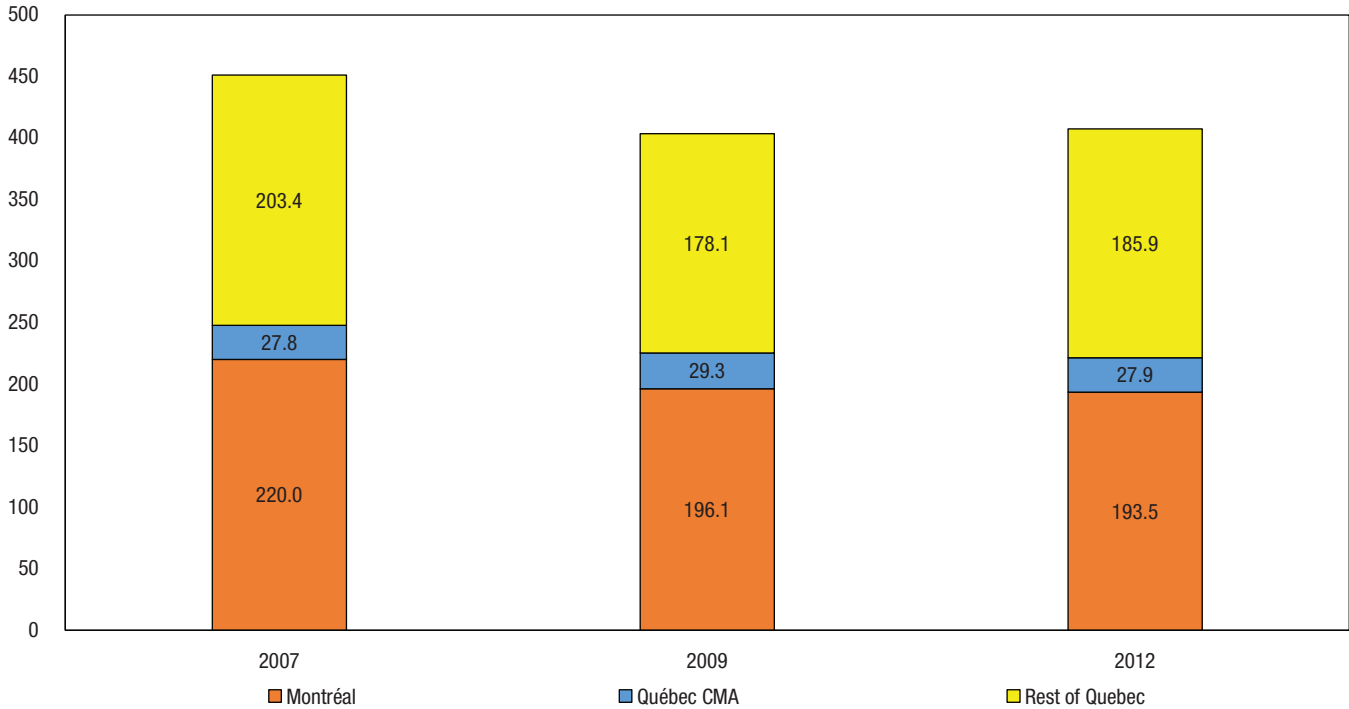
millions of dollars



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Chart 3.30
Manufacturing employment in Quebec

thousands of persons



Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

4. Conclusion

Local manufacturing data indicates that manufacturing sales of the Prairie provinces' CMAs and those of the Québec CMA grew between 2007 and 2012. The refining of petroleum and the manufacturing of fabricated metals and machinery were the key to the growth in sales in Alberta. Manufacturing sales in the other CMAs appeared to decrease between 2007 and 2009, and then returned to 2007 levels.

As a final note, the data in this study should be regarded as experimental in nature. The local data developed here may not follow trends seen in other data sources, such as the Survey of Employment, Payroll and Hours (SEPH). The main reason for considering these data as experimental is because the ASML for reference years 2007 through 2012 was not designed to compile data by CMA. Hence, the methodology used in this study extends the limits of the ASML survey design.

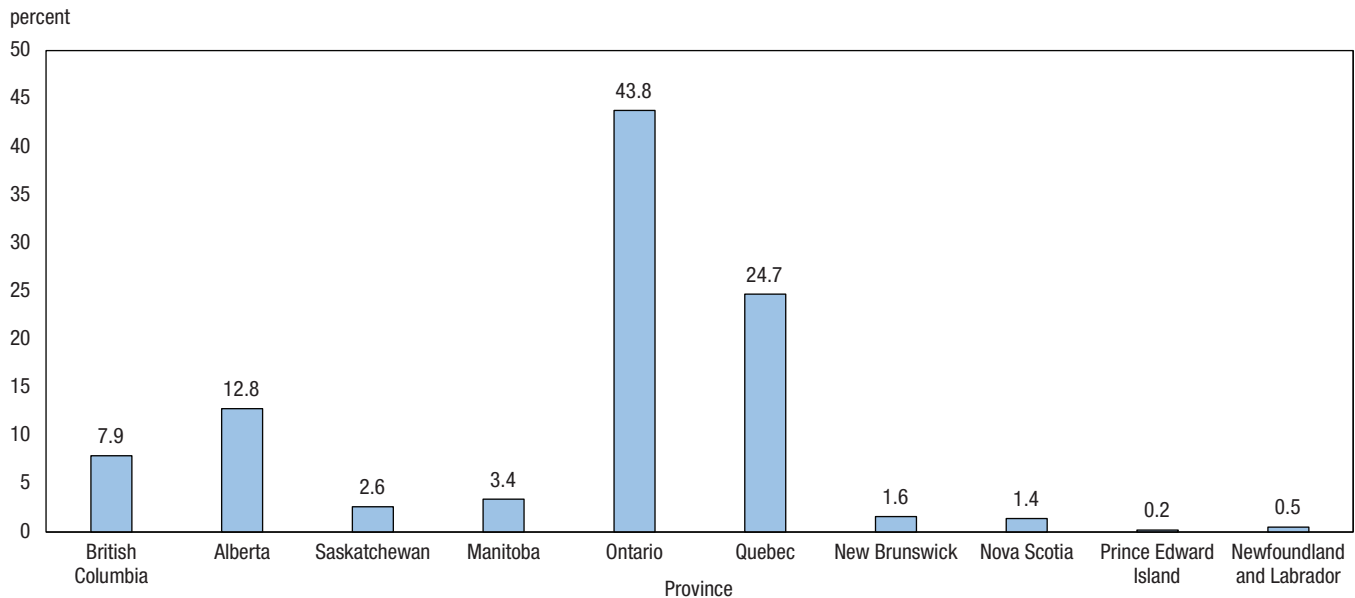
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6. Appendix: Provincial indicators and tables

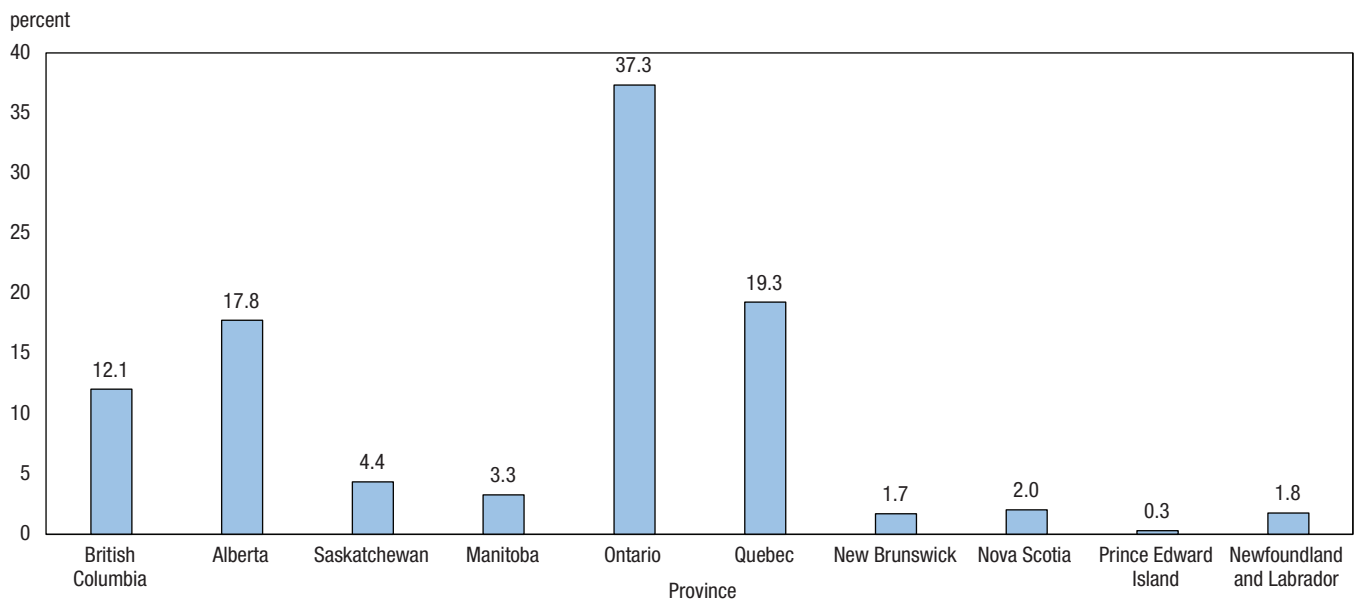
6.1 Provincial indicators

Chart 6.1.1
Share in manufacturing GDP at basic prices by province in 2012



Sources: Statistics Canada, Gross domestic product (GDP) at basic prices.

Chart 6.1.2
Share in national GDP at basic prices by province in 2012



Sources: Statistics Canada, Gross domestic product (GDP) at basic prices.

6.2 Tables

Table 6.2.1
Manufacturing sales in British Columbia

Industry	British Columbia		Vancouver		Rest of British Columbia	
	2007	2012	2007	2012	2007	2012
	\$ millions					
All Manufacturing	43,143	40,700	21,468	20,949	21,675	19,751
311 Food	5,251	6,504	3,744	4,287	1,507	2,218
312 Beverage and tobacco	1,287	1,349	628	593	659	756
321 Wood	9,235	7,612	2,084	1,566	7,151	6,046
322 Paper	5,705	4,441	x	723	x	3,718
323 Printing	976	x	789	x	187	x
325 Chemicals	x	1,618	984	1,206	x	412
326 Plastics and rubber	1,225	1,086	958	x	267	x
327 Non-metallic minerals	2,006	x	1,277	985	729	x
332 Fabricated metals	x	2,147	1,883	1,477	x	669
333 Machinery	2,244	2,113	1,658	1,545	586	568
334 Computers and electronics	1,331	x	1,121	1,051	209	x
335 Electrical equipment	x	628	423	536	x	92
336 Transportation	1,584	1,880	914	1,059	x	822
337 Furniture	1,010	821	709	600	301	221
339 Miscellaneous	1,051	1,123	810	914	241	209

x suppressed to meet the confidentiality requirements of the *Statistics Act*

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.2
Manufacturing sales in British Columbia excluding Vancouver

Industry	2007	2008	2009	2010	2011	2012
	\$ millions					
	All manufacturing	21,675	19,405	15,683	17,307	18,928
311 Food	1,507	1,533	1,687	1,743	2,016	2,218
321 Wood	7,151	5,603	4,331	5,046	5,436	6,046
322 Paper	x	4,642	x	4,070	4,158	3,718

x suppressed to meet the confidentiality requirements of the *Statistics Act*

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.3
Manufacturing sales in Vancouver

Industry	2007	2008	2009	2010	2011	2012
	\$ millions					
	All manufacturing	21,468	21,218	18,579	19,253	19,740
311 Food	3,744	3,920	3,986	4,110	4,265	4,287
321 Wood	2,084	1,861	1,520	1,577	1,505	1,566
322 Paper	x	668	x	685	740	723
325 Chemicals	984	979	931	965	956	1,206
327 Non-metallic minerals	1,277	1,115	994	918	939	985
332 Fabricated metals	1,883	1,825	1,464	1,314	1,500	1,477
333 Machinery	1,658	1,428	1,207	1,183	1,359	1,545
334 Computers and electronics	1,121	1,165	911	1,083	1,034	1,051
336 Transportation	914	933	732	782	854	1,059

x suppressed to meet the confidentiality requirements of the *Statistics Act*

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.4
Share of industries in total manufacturing employment in Vancouver

Industry	2007	2008	2009	2010	2011	2012
	%					
All manufacturing	100	100	100	100	100	100
311 Food	16.4	17.4	20.0	20.8	20.5	20.2
321 Wood	8.3	8.0	7.6	8.0	7.5	6.8
322 Paper	x	2.6	x	2.9	3.2	2.9
325 Chemicals	3.7	4.5	4.4	4.3	4.0	4.7
327 Non-metallic minerals	4.2	3.9	4.0	3.7	4.0	4.0
332 Fabricated metals	10.1	10.5	10.1	9.6	10.2	9.9
333 Machinery	9.3	8.2	7.6	7.1	7.6	8.2
334 Computers and electronics	6.5	6.8	5.1	6.2	4.8	5.3
336 Transportation	5.0	5.6	4.7	4.3	4.7	5.2

x suppressed to meet the confidentiality requirements of the *Statistics Act*

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.5
Manufacturing sales in selected areas of Alberta

Geography	2007	2008	2009	2010	2011	2012
	\$ millions					
Alberta	64,926	69,052	53,893	59,366	69,305	71,694
Calgary	12,714	13,350	10,363	10,748	11,465	12,182
Edmonton	31,885	34,166	26,402	29,106	36,705	37,957
Rest of Alberta	20,327	21,536	17,129	19,513	21,136	21,555

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.6
Manufacturing employment in selected areas of Alberta

Geography	2007	2008	2009	2010	2011	2012
	persons					
Alberta	143,164	143,411	125,447	125,777	135,173	141,362
Calgary	50,869	51,021	42,472	40,542	42,125	43,431
Edmonton	55,001	54,946	49,238	48,576	55,151	59,164
Rest of Alberta	37,294	37,444	33,736	36,659	37,898	38,767

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.7
Manufacturing sales in oil-related industries in 2012

Industry	Alberta	Edmonton	Calgary
	\$ millions		
All manufacturing	71,694	37,957	12,182
324 Petroleum and coal	19,143	17,711	x
332 Fabricated metals	6,135	3,321	1,654
333 Machinery	8,094	4,364	2,778
33313 Mining, gas, oil field extraction	4,911	3,065	1,433

x suppressed to meet the confidentiality requirements of the *Statistics Act*

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.8
Manufacturing employment in oil-related industries in 2012

Industry	Alberta Edmonton		Calgary
	persons		
All manufacturing	141,362	59,164	43,431
324 Petroleum and coal	2,048	1,525	x
332 Fabricated metals	27,862	15,079	7,366
333 Machinery	26,712	13,542	9,007
33313 Mining, gas, oil field extraction	13,609	7,987	3,731

x suppressed to meet the confidentiality requirements of the *Statistics Act*

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.9
Manufacturing sales in selected industries in Calgary

Industry	2007	2008	2009	2010	2011	2012
	\$ millions					
All manufacturing	12,714	13,350	10,363	10,748	11,465	12,182
311 Food	1,920	2,071	1,735	1,724	1,388	1,370
323 Printing	457	455	380	362	384	374
325 Chemicals	555	549	x	650	690	658
326 Plastics and rubber	460	631	378	528	597	574
327 Non-metallic minerals	771	781	686	585	562	568
331 Primary metals	749	1,382	x	x	896	881
332 Fabricated metals	1,408	1,383	1,162	1,176	1,422	1,654
333 Machinery	2,551	2,713	1,941	2,015	2,707	2,778
337 Furniture	525	398	391	351	x	355

x suppressed to meet the confidentiality requirements of the *Statistics Act*

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.10
Manufacturing sales in Manitoba and Saskatchewan

Geography	2007	2008	2009	2010	2011	2012
	\$ millions					
Manitoba	16,060	16,428	15,412	15,170	17,385	18,175
Winnipeg	8,375	8,351	8,400	8,170	9,447	9,976
Saskatchewan	11,061	13,228	12,007	11,893	13,246	14,729
Regina	4,991	6,801	5,744	5,568	6,041	6,479
Saskatoon	3,140	3,246	3,304	3,288	3,630	4,080

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.11
Manufacturing sales in selected industries in Winnipeg

Industry	2007	2008	2009	2010	2011	2012
	\$ millions					
All manufacturing	8,375	8,351	8,400	8,170	9,447	9,976
311 Food	1,434	1,229	1,388	1,325	1,440	1,582
326 Plastics and rubber	614	627	560	651	x	640
332 Fabricated metals	563	640	639	513	563	577
333 Machinery	690	813	954	918	1,110	1,299
3331 Industrial machinery	312	x	625	x	769	965
336 Transportation	2,039	1,895	1,745	x	x	1,928
3364 Aerospace	897	918	973	975	x	x
339 Miscellaneous	328	421	557	598	x	x

x suppressed to meet the confidentiality requirements of the *Statistics Act*

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.12
Manufacturing sales in Ontario

	2007	2008	2009	2010	2011	2012
Geography	\$ millions					
Ontario	289,712	268,447	222,411	240,082	254,795	266,367
Ottawa - Gatineau	6,250	5,665	5,580	5,342	5,483	4,514
Toronto	105,742	95,957	85,237	87,708	91,456	98,357
Hamilton	14,513	15,364	11,610	12,819	13,783	13,653
Rest of Ontario	163,207	151,461	119,984	134,213	144,073	149,843

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.13
Manufacturing sales in selected industries in Toronto

	2007	2012
Industry	\$ millions	
All manufacturing	105,742	98,357
311 Food	11,923	14,509
312 Beverage and tobacco	2,759	2,855
322 Paper	3,065	2,762
323 Printing	3,592	2,783
325 Chemicals	8,227	9,079
326 Plastics and rubber	7,598	5,696
327 Non-metallic minerals	2,221	2,280
331 Primary metals	2,523	1,847
332 Fabricated metals	8,800	6,491
333 Machinery	5,480	5,665
335 Electrical equipment	2,042	1,787
336 Transportation	31,614	29,687
3363 Auto parts	8,024	7,004
3364 Aerospace	3,793	3,533
337 Furniture	4,516	3,546

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.14
Manufacturing sales in food industry in Toronto in 2012

	2012
Industry	\$ millions
311 Food	14,509
3111 Animal food	394
3112 Grain and oilseed	835
3113 Sugar and confectionery	1,782
31141 Frozen food	284
31142 Fruit and vegetable canning, picking, drying	852
311511 Fluid milk	1,124
311515 Butter, cheese, dry/condensed dairy	255
311520 Ice cream and frozen dessert	24
311611 Animal except poultry	382
311614 Rendering and meat processing	1,876
311615 Poultry	1,553
3117 Seafood	210
31181 Bread and bakery products	1,680
31182 Cookie, cracker and pasta	1,166
3119 Other food	2,093

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.19
Manufacturing sales in Quebec

	2007	2009	2012
Geography	\$ millions		
Quebec Province	141,880	125,835	138,398
Quebec CMA	12,981	12,110	16,537
Montréal	67,057	60,843	62,390
Rest of Quebec	61,841	52,882	59,471

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.20
Manufacturing sales in selected industries in Montréal

	2007	2008	2009	2010	2011	2012
Industry	\$ millions					
All manufacturing	67,057	68,487	60,843	60,730	61,908	62,390
311 Food	6,182	6,627	7,299	6,971	7,530	7,260
325 Chemicals	6,883	6,396	5,432	5,798	6,427	6,719
3251 Basic chemicals	2,199	2,243	1,511	1,987	2,629	2,715
3254 Pharmaceuticals	2,128	1,910	2,115	x	2,043	2,139
331 Primary metals	6,404	6,586	4,383	6,045	6,927	6,452
336 Transportation	10,870	11,727	10,445	9,054	9,839	10,270
3364 Aerospace	9,196	10,209	8,910	7,936	8,054	8,602

x suppressed to meet the confidentiality requirements of the *Statistics Act*

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.21
Manufacturing sales in Québec CMA

	2007	2008	2009	2010	2011	2012
Industry	\$ millions					
All manufacturing	12,981	14,857	12,110	13,078	15,237	16,537

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.22
Manufacturing sales in Quebec excluding Montréal

	2007	2008	2009	2010	2011	2012
Industry	\$ millions					
All manufacturing	74,823	75,648	64,992	69,458	75,418	76,008
311 Food	10,478	10,838	11,113	11,414	11,929	11,958
322 Paper	7,900	7,918	6,687	6,733	6,478	6,283
331 Primary metals	14,232	14,632	10,564	13,502	15,088	13,733

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).

Table 6.2.23
Manufacturing employment in Quebec

	2007	2009	2012
Geography	persons		
Quebec Province	451,125	403,489	407,326
Quebec CMA	27,758	29,268	27,903
Montréal	219,966	196,135	193,543
Rest of Quebec	203,401	178,086	185,880

Source: Statistics Canada, Annual Survey of Manufacturing and Logging (ASML).