

# Historical Trends in Niagara's Manufacturing Sector, 2001 to 2022

## Introduction

Manufacturing is the largest sector in this study. No other sector demonstrates the fluid boundaries among industries of the economy like manufacturing. According to the North American Industry Classification System (NAICS),<sup>1</sup> the sector "comprises establishments primarily engaged in the chemical, mechanical or physical transformation of materials or substances into new products." These products may be finished, meaning that they are ready to be used or consumed. They could be semi-finished, in the sense of being used as raw materials for further manufacturing. They could be deployed in related activities, such as the assembly of the component parts of manufactured goods, the blending of materials, and the finishing of other manufactured products.

The multiple uses of products and activities classified as manufacturing are further complicated by the vast range of establishments engaging in such activities, including a variety of trade designations such as plants, factories or mills. NAICS further notes that "certain activities involving the transformation of goods are classified in other sectors." For example, some activities classified under manufacturing intersect with post-harvest activities of agricultural establishments. This means that some activities listed under the manufacturing sector are also listed under the agribusiness sector.

The manufacturing sector thus encompasses a vast array of industrial and occupational activities that intersect and overlap with most other sectors. A general way of thinking about manufacturing is that it is a secondary sector of the economy, distinct from primary activities like agriculture or resource extraction on the one hand, and tertiary activities like services on the other. However, the sector is best seen

as largely consisting of intermediate processes linking primary, secondary and tertiary activities and processes in a range of other economic sectors, including age-old ones like agriculture and more recent ones in service-based sectors like ICT.

It generally applies to most activities that involve the deployment of machinery and equipment to create or produce goods and deliver services. The generic nature of this construct means that any mechanical, chemical or biological processing or formulation deployed to create or add value to a widget or service can legitimately constitute manufacturing. This leaves the term applicable to a range of human activity, from handicraft to high-tech. For our present purpose, the focus is on industrial activities by which raw materials from the primary sector are transformed into some form of finished product or semi-finished goods and services.

## Research Methods

The data was sourced from Lightcast's Labor Market Analytics and consists of two distinct sets that serve as prisms for analyzing trends in manufacturing, namely, jobs by industry and jobs by occupation. For the purposes of data analysis, and consistent with our definition of the sector, we focus on a set of industries and occupations listed under the four-digit NAICS and National Occupation Classification (NOC) codes. The reason for including both NAICS and NOC codes in the analysis is that while the distribution of jobs by industry (represented in NAICS codes) gives us a good picture of current trends across Niagara's manufacturing sector, the distribution of jobs by occupation provides another equally importance lens. It sheds light on the human and talent dimensions of the manufacturing sector, providing insights into the nature of skillsets or expertise required.

<sup>1</sup> North American Industry Classification System. *Manufacturing: The Sector as a Whole*. <https://bit.ly/3G1n7ok>

NOC codes can help track changes in the *types* of jobs required within a sector or industry that NAICS cannot. They supply a framework to understand the composition, skill requirements, labour market trends, and other characteristics of economic sectors. The NOC codes facilitate the identification of emerging job sectors and the decline of traditional occupations. This information in turn allows us to make inferences about the region’s existing talent pool, its implications for innovation, adaptability and resilience of the manufacturing sector, and thus allows for effective policy responses.

Given the vast size of the sector, we did not list the industries and occupations in this introductory section. Instead, we provide a full list of such industries and occupations in the tables that accompany the analysis below. The data cover a 20-year period (2001 to 2022) and consist of absolute and percentage changes over time.

This paper also includes analysis of industry and occupational location quotients (LQs). LQ scores indicate

an area’s level of specialization in each industry. Specifically in this case, it allows us to compare a region’s job concentration in its manufacturing sector relative to total jobs concentration in Canada’s manufacturing sector. An LQ of 1.0 or higher shows a level of concentration above the standardized national average. A score of 1.5 or higher shows a high degree of specialization.

The data largely focuses on Niagara.<sup>2</sup> However, for comparative reasons, it also includes provincial and national figures and trends for the same period as well as data from a select number of Census Metropolitan Areas (CMA) within Ontario that have sizeable manufacturing sectors. We chose mid-sized regions as comparators because in addition to their demographic characteristic as mid-sized CMAs, they have identified the sector in their economic development strategies as one of their lead economic drivers, have natural endowments favorable to the sector, have built facilities to leverage the potentials of the sector, and have undertaken active promotional activities as part of their economic development strategies.

## SECTION 1: CHANGES IN NIAGARA’S MANUFACTURING SECTOR, RELATIVE TO ONTARIO AND CANADA

In this section, we examine changes in Niagara’s manufacturing sector, comparing trends in the region with those of the province of Ontario, and Canada as a whole. The analysis covers both NAICS and NOC data, examining changes in jobs by industry and occupation. The discussion starts with NAICS data on industry trends and then proceeds to the NOC data on changes in occupation.

Table 1 shows the overall change in manufacturing job numbers between 2001 and 2022, comparing Niagara with provincial (Ontario) and national trends. As the table indicates, Niagara has seen an overall decline of 53 per cent in sector jobs over the past two decades, worse than the provincial average decline of 27 per cent and national average jobs decrease of 22 per cent.

**Table 1:** Change in manufacturing job numbers, 2001–2022; Niagara, Ontario and Canada compared

Region	2001 Jobs	2022 Jobs	Change	Percentage Change
Niagara	28,787	13,539	(15,248)	(53%)
Ontario	956,241	700,451	(255,790)	(27%)
Canada	2,072,447	1,615,213	(457,234)	(22%)

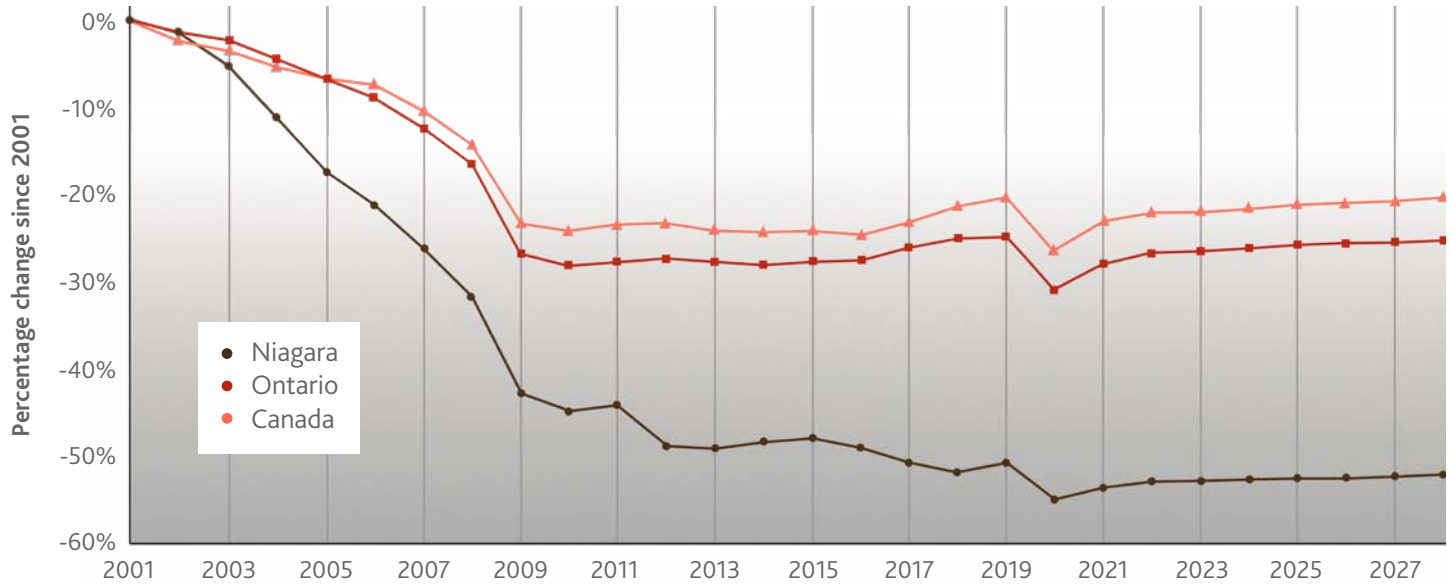
<sup>2</sup> It is important to note that for this study, we used the geographical area of the St. Catharines-Niagara CMA, which does not include Grimsby and West Lincoln. This was necessary to be able to compare the local sector to other CMAs (the geographic unit of economic analysis) in Ontario.

Figure 1a illustrates that the general pattern of Niagara’s decline in manufacturing jobs generally follows the trends in Ontario and Canada though at a much greater intensity. This pattern is reflective of broad structural shifts in manufacturing towards greater automation as a function of industrial productivity. However, greater productivity through increasing automation and digitization comes at the expense of jobs and is cold comfort for a region like Niagara. That loss of income also means a loss of tax

revenue for governments, leading to a decline in prosperity for the individual and for the community.

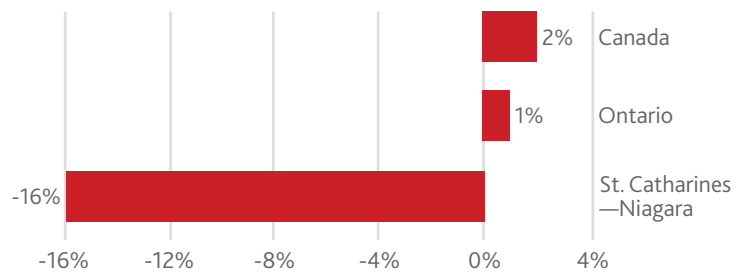
Similarly, fewer people employed means fewer residents making decent wages to afford homes that can translate into property taxes for municipalities. Notwithstanding the general trend of decline in manufacturing, Figure 1a illustrates that recent years dating back to 2020 saw a shift to modest growth. The next five years are projected to continue this upward trend.

**Figure 1a:** Industry job growth in manufacturing, 2001–2022; Niagara, Ontario and Canada compared



To shed light on more current trends in the sector, Figure 1b presents the change in manufacturing jobs over the past decade (between 2011 and 2022), comparing Niagara with provincial (Ontario) and national trends. While Canada and Ontario have posted slightly positive trends in recent years, Niagara still shows an overall decline of 16 per cent over the past decade, though less steep of a decrease than earlier years. This shows that the trajectory is changing, even if not fast enough, to counter the weight of the past 20 years. In other words, the decline slowed.

**Figure 1b:** Industry job growth in manufacturing, 2011–2022; Niagara, Ontario and Canada compared



To focus even closer, Figure 1c illustrates changes in manufacturing jobs over the past two years (between 2020 and 2022), comparing Niagara with provincial (Ontario) and national trends. Along with the country and province, Niagara has seen growth these past two years. To be more precise, Niagara’s five-per-cent increase means that the region has added 613 new manufacturing jobs since 2020, raising the total number of jobs in the sector from 12,926 in 2020 to 13,539 jobs in 2022.

**Figure 1c:** Industry job growth in manufacturing, 2020–2022; Niagara, Ontario and Canada compared

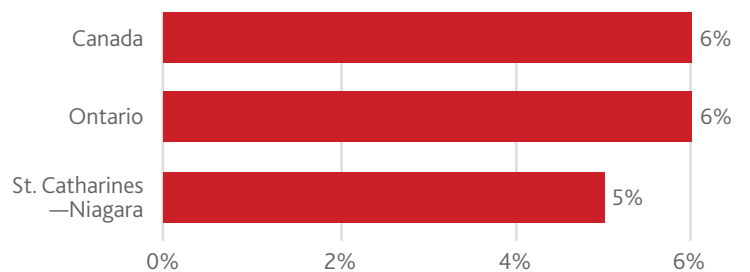


Table 2 and Figure 2 show percentage changes in manufacturing jobs between 2001 and 2022. While the preceding table and figures painted a broad pattern of decline, a few industries within the sector point to significant and promising trajectories of change. In particular, “Pesticide, fertilizer and other agricultural chemical manufacturing” reports an increase of 865 per cent and “Other general-purpose machinery manufacturing” shows a massive spike of 448 per cent.

Other top performers are: “Other chemical product manufacturing” (277 per cent), “Industrial machinery manufacturing” (260 per cent), “Glass and glass product manufacturing” (219 per cent), “Computer and peripheral equipment manufacturing” (201 per cent), “Converted paper product manufacturing” (144 per cent), “Other food manufacturing” (107 per cent), “Beverage manufacturing” (95 per cent), “Dairy product manufacturing” (92 per cent), “Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing” (83 per cent), and “Electric lighting equipment manufacturing” (75 per cent).

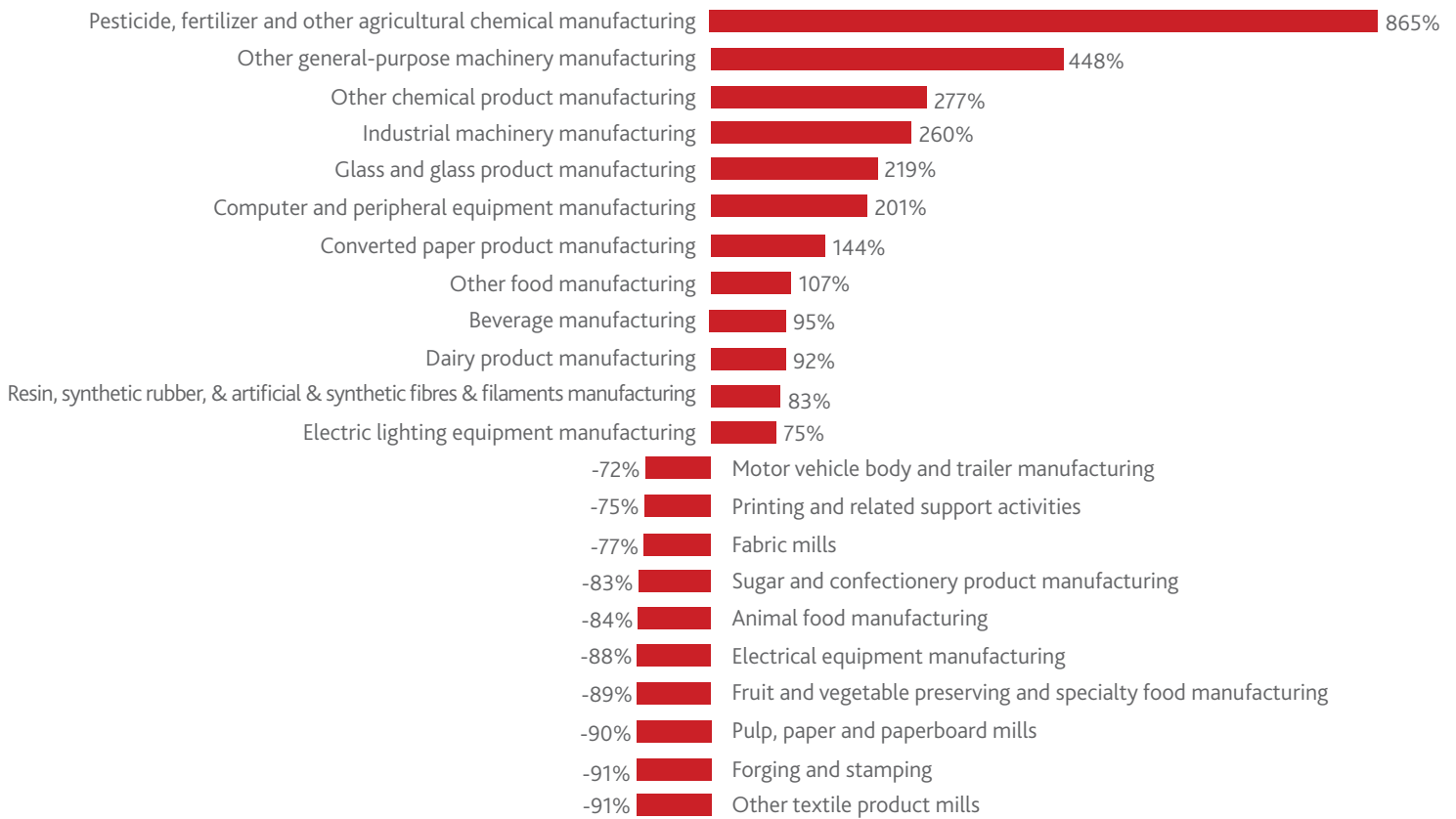
**Table 2:** Percentage change in manufacturing jobs by industry, 2001–2022; Niagara, Ontario and Canada compared

Industry	St. Catharines —Niagara	Ontario	Canada
Pesticide, fertilizer and other agricultural chemical manufacturing	865%	11%	45%
Other general-purpose machinery manufacturing	448%	(16%)	(4%)
Other chemical product manufacturing	277%	(46%)	(20%)
Industrial machinery manufacturing	260%	8%	2%
Glass and glass product manufacturing	219%	(53%)	(42%)
Computer and peripheral equipment manufacturing	201%	(75%)	(72%)
Converted paper product manufacturing	144%	(40%)	(33%)
Other food manufacturing	107%	52%	81%
Beverage manufacturing	95%	66%	69%
Dairy product manufacturing	92%	43%	32%
Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing	83%	(33%)	(27%)
Electric lighting equipment manufacturing	75%	(54%)	(25%)
Motor vehicle body and trailer manufacturing	(72%)	(28%)	(8%)
Printing and related support activities	(75%)	(40%)	(46%)
Fabric mills	(77%)	(58%)	(77%)
Sugar and confectionery product manufacturing	(83%)	(31%)	(6%)
Animal food manufacturing	(84%)	(14%)	(5%)
Electrical equipment manufacturing	(88%)	(24%)	(12%)
Fruit and vegetable preserving and specialty food manufacturing	(89%)	(48%)	(11%)
Pulp, paper and paperboard mills	(90%)	(80%)	(66%)
Forging and stamping	(91%)	(66%)	(59%)
Other textile product mills	(91%)	(40%)	(35%)

Equally important, Niagara’s growth trends in these industries outpaced both the provincial and national rates. However, several industries saw a greater decline in Niagara than elsewhere: “Motor vehicle body and trailer manufacturing”, “Animal food manufacturing”, “Electrical equipment

manufacturing”, and “Fruit and vegetable preserving and specialty food manufacturing” among a host of others. It is worth noting that the table above did not include the full list of manufacturing jobs by industry since the aim was to highlight those with the larger percentage changes upward or downward.

**Figure 2: Niagara’s percentage growth in manufacturing jobs by industry; 2001–2022**



### Competitiveness (Location Quotient Scores)

Another lens through which we can understand the current state of manufacturing in Niagara is the location quotients (LQs) of jobs in the respective industries that make up the sector. The LQ scores indicate an area’s level of specialization in specific industries, with a score above 1.5 indicating a significant degree of specialization compared to other regions in the country.

For a picture of Niagara’s current state of competitiveness in the manufacturing sector, Table 3<sup>3</sup> arranges the LQ scores of the respective industries from highest to lowest. As the table indicates, relative to other regions across Canada, Niagara

boasts a strong showing in several areas such as: “Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing” (4.27), “Grain and oilseed milling” (3.51), “Steel product manufacturing from purchased steel” (3.20), and “Beverage manufacturing” (3.14). The region also registered strong competencies in “Cannabis product manufacturing” (2.84), “Boiler, tank and shipping container manufacturing” (2.71), “Motor vehicle manufacturing” (2.68), “Clay product and refractory manufacturing” (2.55), “Other general-purpose machinery manufacturing” (2.54), “Audio and video equipment manufacturing” (2.12), “Iron and steel mills and ferro-alloy manufacturing” (2.10), “Other chemical product manufacturing” (2.06), and “Pesticide, fertilizer and other agricultural chemical manufacturing” (1.81).

<sup>3</sup> Due to the substantial number of industries that make up the manufacturing sector, industries for which Niagara’s LQ score is below .50 were deleted.

**Table 3:** Niagara’s national location quotient for manufacturing jobs by industry—2022 (sorted by highest to lowest)

Industry	Niagara
Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing	4.27
Grain and oilseed milling	3.51
Steel product manufacturing from purchased steel	3.20
Beverage manufacturing	3.14
Cannabis product manufacturing	2.84
Boiler, tank and shipping container manufacturing	2.71
Motor vehicle manufacturing	2.68
Clay product and refractory manufacturing	2.55
Other general-purpose machinery manufacturing	2.54
Audio and video equipment manufacturing	2.12
Iron and steel mills and ferro-alloy manufacturing	2.10
Other chemical product manufacturing	2.06
Pesticide, fertilizer and other agricultural chemical manufacturing	1.81
Non-ferrous metal (except aluminum) production and processing	1.72
Foundries	1.56
Electric lighting equipment manufacturing	1.54
Machine shops, turned product, and screw, nut and bolt manufacturing	1.41
Bakeries and tortilla manufacturing	1.41
Basic chemical manufacturing	1.41
Engine, turbine and power transmission equipment manufacturing	1.34
Forging and stamping	1.23
Other non-metallic mineral product manufacturing	1.21
Railroad rolling stock manufacturing	1.17
Architectural and structural metals manufacturing	1.14
Other fabricated metal product manufacturing	1.08
Coating, engraving, cold and heat treating and allied activities	1.06
Other miscellaneous manufacturing	1.01
Cement and concrete product manufacturing	0.99
Other furniture-related product manufacturing	0.93
Computer and peripheral equipment manufacturing	0.92
Paint, coating and adhesive manufacturing	0.90
Metalworking machinery manufacturing	0.88
Fabric mills	0.88
Household and institutional furniture and kitchen cabinet manufacturing	0.84
Other wood product manufacturing	0.82
Ventilation, heating, air-conditioning and commercial refrigeration equipment manufacturing	0.82
Glass and glass product manufacturing	0.70
Medical equipment and supplies manufacturing	0.70
Industrial machinery manufacturing	0.63
Dairy product manufacturing	0.63
Aerospace product and parts manufacturing	0.56
Printing and related support activities	0.52
Pharmaceutical and medicine manufacturing	0.50
Plastic product manufacturing	0.50

As Table 4 indicates, Niagara has registered a mixture of growth and decline in competitiveness across a range of jobs by industry over the past two decades. It is thus a mixed story of change with respect to the sector's general jobs competencies. For instance, the region has seen reduced competitiveness in "Aerospace product and parts manufacturing" (a decline from 1.46 to 0.56)

and "Agricultural, construction and mining machinery manufacturing" (from 3.74 to .06). On the other hand, the region has gained greater competitiveness in "Beverage manufacturing" (from 2.26 to 3.14) and a spike in "Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing" (from 1.42 to 4.27).

**Table 4:** Niagara's national location quotient in manufacturing jobs by industry—2001 vs 2022 (alphabetical order)

Industry	2021	2022
Aerospace product and parts manufacturing	1.46	0.56
Agricultural, construction and mining machinery manufacturing	3.74	0.06
Alumina and aluminum production and processing	0.01	0.00
Animal food manufacturing	0.91	0.18
Architectural and structural metals manufacturing	1.39	1.14
Beverage manufacturing	2.26	3.14
Boiler, tank and shipping container manufacturing	1.89	2.71
Cannabis product manufacturing	0.00	2.84
Cement and concrete product manufacturing	0.86	0.99
Clay product and refractory manufacturing	1.59	2.55
Coating, engraving, cold and heat treating and allied activities	1.36	1.06
Commercial and service industry machinery manufacturing	0.10	0.14
Computer and peripheral equipment manufacturing	0.07	0.92
Converted paper product manufacturing	0.05	0.22
Cut and sew clothing manufacturing	0.12	0.45
Cutlery and hand tool manufacturing	1.88	0.08
Dairy product manufacturing	0.36	0.63
Electric lighting equipment manufacturing	0.55	1.54
Electrical equipment manufacturing	1.37	0.22
Engine, turbine and power transmission equipment manufacturing	0.52	1.34
Fabric mills	0.75	0.88
Fibre, yarn and thread mills	0.03	0.00
Footwear manufacturing	0.48	0.00
Forging and stamping	4.61	1.23
Foundries	1.93	1.56
Fruit and vegetable preserving and specialty food manufacturing	1.25	0.19
Glass and glass product manufacturing	0.11	0.70
Grain and oilseed milling	3.81	3.51
Hardware manufacturing	3.45	0.14
Household and institutional furniture and kitchen cabinet manufacturing	0.59	0.84
Household appliance manufacturing	2.47	0.09
Industrial machinery manufacturing	0.15	0.63
Iron and steel mills and ferro-alloy manufacturing	2.95	2.10
Leather and hide tanning and finishing	0.00	0.00
Lime and gypsum product manufacturing	0.00	0.00

Continued on next page

Continued from previous page

Industry	2021	2022
Machine shops, turned product, and screw, nut and bolt manufacturing	1.26	1.41
Manufacturing and reproducing magnetic and optical media	0.00	0.33
Meat product manufacturing	0.81	0.40
Medical equipment and supplies manufacturing	0.56	0.70
Metalworking machinery manufacturing	0.96	0.88
Motor vehicle body and trailer manufacturing	0.21	0.08
Motor vehicle manufacturing	1.07	2.68
Motor vehicle parts manufacturing	6.19	0.16
Navigational, measuring, medical and control instruments manufacturing	0.32	0.48
Non-ferrous metal (except aluminum) production and processing	1.47	1.72
Office furniture (including fixtures) manufacturing	0.10	0.16
Other chemical product manufacturing	0.36	2.06
Other electrical equipment and component manufacturing	0.21	0.21
Other fabricated metal product manufacturing	0.91	1.08
Other food manufacturing	0.29	0.40
Other furniture-related product manufacturing	0.25	0.93
Other general-purpose machinery manufacturing	0.37	2.54
Other leather and allied product manufacturing	1.36	0.00
Other miscellaneous manufacturing	1.12	1.01
Other non-metallic mineral product manufacturing	2.29	1.21
Other textile product mills	1.63	0.27
Other transportation equipment manufacturing	0.04	0.27
Other wood product manufacturing	0.66	0.82
Paint, coating and adhesive manufacturing	0.79	0.90
Pesticide, fertilizer and other agricultural chemical manufacturing	0.23	1.81
Petroleum and coal product manufacturing	0.26	0.20
Pharmaceutical and medicine manufacturing	1.37	0.50
Plastic product manufacturing	0.54	0.50
Printing and related support activities	0.93	0.52
Pulp, paper and paperboard mills	1.29	0.45
Railroad rolling stock manufacturing	0.58	1.17
Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing	1.42	4.27
Rubber product manufacturing	2.52	0.31
Sawmills and wood preservation	0.07	0.01
Seafood product preparation and packaging	0.06	0.01
Semiconductor and other electronic component manufacturing	0.26	0.30
Ship and boat building	3.33	0.03
Soap, cleaning compound and toilet preparation manufacturing	0.10	0.01
Spring and wire product manufacturing	1.63	0.03
Steel product manufacturing from purchased steel	4.59	3.20
Sugar and confectionery product manufacturing	1.40	0.30
Textile and fabric finishing and fabric coating	0.13	0.00
Textile furnishings mills	0.26	0.36
Tobacco manufacturing	0.00	0.00
Veneer, plywood and engineered wood product manufacturing	0.15	0.10
Ventilation, heating, air-conditioning and commercial refrigeration equipment manufacturing	0.80	0.82



## Occupations in Manufacturing

While the distribution of jobs by industry gives us a good picture of current trends in Niagara’s manufacturing sector, another lens through which we can view such trends is the distribution of jobs by occupation. The importance of this lens is that it shows us the *types* of jobs people hold in the sector, shedding light on the human and talent dimensions of the manufacturing sector, providing insights into the nature of skillsets or expertise required. This information in turn allows us to make inferences about the region’s existing talent pool and its implications for innovation, adaptability and resilience of the manufacturing sector.

Table 5 provides a summary of changes in Niagara’s top manufacturing occupations, comparing those in 2001

with those in 2022. In 2001, “Motor vehicle assemblers, inspectors and testers” led the pack with 2,030 jobs. By 2022, “Construction millwrights and industrial mechanics” was at the top of the list with 570 jobs. Note the depth of decimation in the sector, evident in the fact that the top occupation now commands fewer than 1,000 jobs, about only a quarter of what the top occupation was in 2001. The combined total of jobs in the five top occupations in 2001 was 6,387. By 2022, there were only 1,947 jobs.

As a further mark of the depth of decline in the sector, all of Niagara’s top performing occupations in 2022, indicated in Table 6, have witnessed a massive decline from what they used to be in 2001. However, as Table 6 also shows, the story is largely the same for Ontario and all of Canada.

**Table 5:** Niagara’s top manufacturing occupations by job numbers, 2001 vs 2022

Occupations	2001
Motor vehicle assemblers, inspectors and testers	2,030
Construction millwrights and industrial mechanics	1,194
Welders and related machine operators	1,098
Machining tool operators	1,045
Metalworking and forging machine operators	1,020
Occupations	2022
Construction millwrights and industrial mechanics	570
Motor vehicle assemblers, inspectors and testers	531
Welders and related machine operators	420
Metalworking and forging machine operators	297
Machining tool operators	129

**Table 6:** Niagara’s top occupations in manufacturing, percentage change in jobs, 2001–2022; Niagara, Ontario and Canada compared

Occupations	Niagara	Ontario	Canada
Construction millwrights and industrial mechanics	(52%)	(18%)	(14%)
Welders and related machine operators	(62%)	(31%)	(19%)
Metalworking and forging machine operators	(71%)	(22%)	(25%)
Motor vehicle assemblers, inspectors and testers	(74%)	(48%)	(49%)
Machining tool operators	(88%)	(65%)	(49%)

## SECTION 2: CHANGES IN MANUFACTURING, NIAGARA AND OTHER ONTARIO MIDSIZED REGIONS COMPARED

In this section, we examine changes in Niagara's manufacturing sector, compared to trends in a select number of midsized regions. These regions were selected due their relative strength in the manufacturing sector as well as their demographic similarity to Niagara, also a midsized region. For simplicity, the analysis focuses on NAICS data, examining changes in jobs by industry.

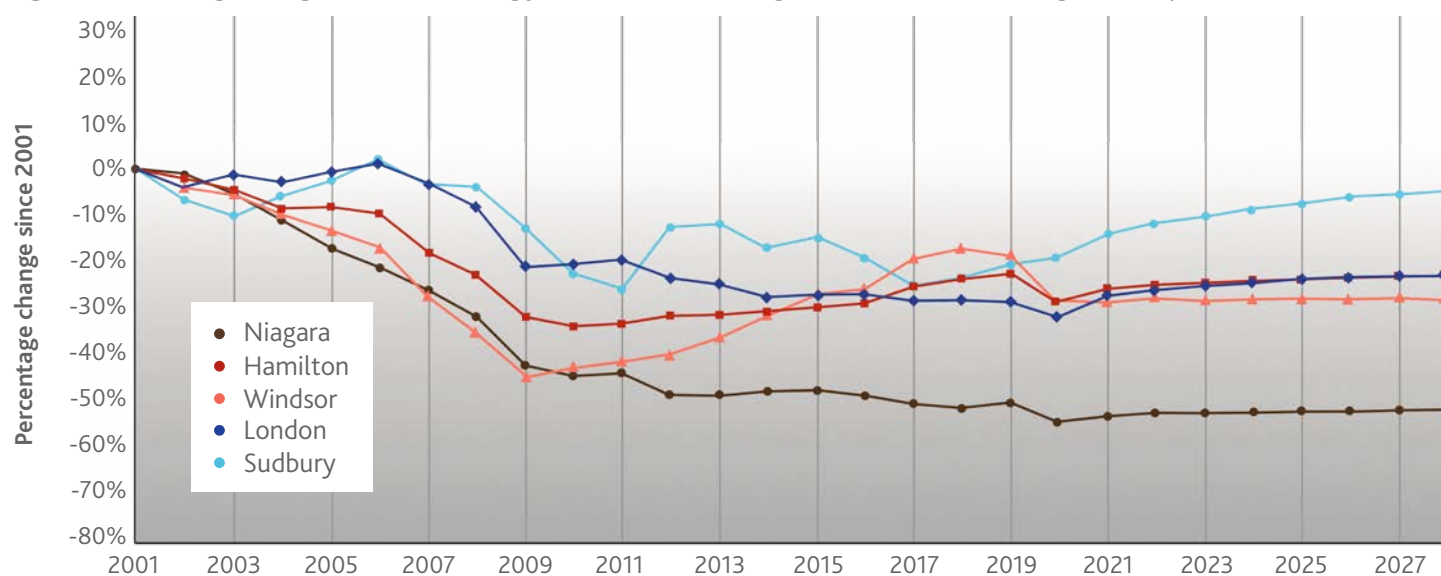
In Table 7, we see the change in manufacturing job numbers over 20 years, comparing Niagara with Hamilton, Windsor, London, and Greater Sudbury. While all of these regions have witnessed an overall decline, Niagara registers the largest rate of decrease at 53 per cent. But as Figure 3 illustrates, there seems to be a modest rebound across all regions dating back to 2020, suggesting shifts in macroeconomic trends that could be translating to positive growth.

**Table 7:** Change in manufacturing jobs,<sup>4</sup> 2001–2022; Niagara and other Ontario regions compared

Region	2001 Jobs	2022 Jobs	Change	Percentage Change
St. Catharines—Niagara	28,787	13,539	(15,248)	(53%)
Hamilton	57,060	42,799	(14,261)	(25%)
Windsor	46,361	33,326	(13,034)	(28%)
London	36,185	26,758	(9,427)	(26%)
Greater Sudbury	5,277	4,635	(642)	(12%)

Figure 3 offers a visual portrait of the job trends throughout the sector over the past two decades, with Niagara stabilizing, though at the bottom of the pack.

**Figure 3:** Percentage change in manufacturing jobs,<sup>5</sup> 2001–2022; Niagara and other Ontario regions compared



<sup>4</sup> NAICS codes

<sup>5</sup> Ibid

## Competitiveness (Location Quotient Scores)

For an even clearer picture of how Niagara is faring in each of the manufacturing industries compared to other regions in Ontario, we juxtapose Niagara's LQ scores with the same midsize regions. Table 8 provides the industry LQ scores of these regions. Relative to these other regions, Niagara reported the highest LQ scores in "Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing" (4.27), "Grain and oilseed milling" (3.51), "Beverage manufacturing" (3.14), "Cannabis product manufacturing" (2.84), "Boiler,

tank and shipping container manufacturing" (2.71), "Audio and video equipment manufacturing" (2.12), and "Other chemical product manufacturing" (2.06).

It also had relatively high LQ scores in "Steel product manufacturing from purchased steel" (3.20), "Clay product and refractory manufacturing" (2.55), and "Iron and steel mills and ferro-alloy manufacturing" (2.10) which were all second only to Hamilton. LQ scores in "Motor vehicle manufacturing" (2.68) and "Other general-purpose machinery manufacturing" (2.54) were second only to Windsor.

**Table 8:** Manufacturing national location quotient by industry, 2022; Niagara and other Ontario regions compared

Industry	Niagara	Hamilton	Windsor	London	Sudbury
Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing	4.27	1.20	0.40	1.01	0.00
Grain and oilseed milling	3.51	0.94	2.54	0.64	0.00
Steel product manufacturing from purchased steel	3.20	8.28	0.92	0.92	2.01
Beverage manufacturing	3.14	0.77	2.16	1.49	0.29
Cannabis product manufacturing	2.84	0.75	2.14	1.37	0.28
Boiler, tank and shipping container manufacturing	2.71	0.71	0.76	1.59	0.00
Motor vehicle manufacturing	2.68	0.35	17.06	0.92	0.12
Clay product and refractory manufacturing	2.55	8.51	0.00	0.86	0.00
Other general-purpose machinery manufacturing	2.54	2.39	4.00	0.80	1.04
Audio and video equipment manufacturing	2.12	0.82	0.00	0.00	0.00
Iron and steel mills and ferro-alloy manufacturing	2.10	17.09	1.11	0.34	1.06
Other chemical product manufacturing	2.06	1.12	1.66	0.80	0.66
Pesticide, fertilizer and other agricultural chemical manufacturing	1.81	0.15	0.37	0.47	0.00
Non-ferrous metal (except aluminum) production and processing	1.72	0.20	0.00	4.40	26.38
Foundries	1.56	0.39	4.15	2.98	0.09
Electric lighting equipment manufacturing	1.54	0.34	0.58	0.06	0.00
Machine shops, turned product, and screw, nut and bolt manufacturing	1.41	1.92	3.61	0.87	1.10
Bakeries and tortilla manufacturing	1.41	2.21	0.58	0.99	0.81
Basic chemical manufacturing	1.41	1.81	0.37	0.64	0.62
Engine, turbine and power transmission equipment manufacturing	1.34	0.44	3.36	0.00	0.40
Forging and stamping	1.23	2.26	5.72	1.59	0.00
Other non-metallic mineral product manufacturing	1.21	1.40	0.94	1.46	1.00
Railroad rolling stock manufacturing	1.17	23.41	0.00	0.29	0.68
Architectural and structural metals manufacturing	1.14	1.33	1.81	0.80	0.53
Other fabricated metal product manufacturing	1.08	1.17	1.63	5.05	0.82
Coating, engraving, cold and heat treating and allied activities	1.06	1.65	2.23	1.31	0.55
Other miscellaneous manufacturing	1.01	1.16	1.13	0.88	0.43

## Wages

Another lens for determining the vitality of Niagara's manufacturing sector is comparing its industrial wage distribution to those of similar regions. As indicated in Figure 4, Niagara reported the lowest median income of \$60,555. Niagara's performance is cause for concern since it reflects a general pattern in which key sectors in the region register lower pay scales for residents compared to their counterparts in other regions. While these wage differences seem somewhat small, they account for some of the talent outmigration that could plague the long-term prospects of the region especially as it seeks to build on manufacturing as one of its areas of specialization and competitive advantage over the next decade.

On the positive side, Niagara's lower median average in the sector could be pitched as a competitive advantage in the race among regions to attract potential investors. In a similar vein, Niagara's lower median wage within the mosaic of the global technology landscape in a complex network of value chains and trade interdependencies could be leveraged in addition to its industry specializations discussed above.

However, suppressed wages in the region's manufacturing sector has ethical and industrial relations implications for employers and employees. Such issues could adversely affect the social trust and functional integrity of the region's manufacturing ecosystem. Most importantly, issues of wage distribution and industry specialization should form critical components of the region's smart specialization strategy in any potential mega-tech cluster with its immediate neighbours.

**Figure 4:** Manufacturing median annual income, Niagara and other Ontario regions compared

