



The Big Shift

Changes in Canadian
Manufacturing Employment,
2003–2018

Executive
Summary



Partners



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Introduction

Our questions for this report were straightforward:

- > How did Canadian regions fare during the manufacturing employment decline of 2003-2009?
- > Were manufacturing jobs replaced by comparable jobs or by different jobs, thus marking a permanent shift in the nature of employment?

In broad strokes, our answers to these questions are as follows:

In 2003, employment in the manufacturing sector across Canada went into decline due to a combination of automation, enhanced overseas competition (the China Shock), and a Canadian dollar that was rising in value. Employment in manufacturing fell by 12% between 2003 and 2008, before the Great Recession of 2008-2009, with Quebec and Ontario hit particularly hard. This trend accelerated during the Great Recession, but employment rates in the sector have flattened since that time.

The Great Recession and pre-recession manufacturing disemployment disproportionately impacted workers without post-secondary credentials. In big cities and the communities close to them, these types

of workers were able to adjust by finding new jobs in infrastructure construction, homebuilding, trucking, and warehousing. In other manufacturing communities further from large metropolitan centres, the availability of these jobs grew more slowly, and as a result, we saw reduced employment and earnings growth below the rate of inflation.

In Canada, employment in manufacturing fell by over 500,000 positions between 2003 and 2009, with over 300,000 of those positions lost before the financial crisis of 2008-2009. Looking beyond the crisis, between 2009 and 2018, there has been almost no employment growth in the sector, as shown in Table 1. This brings up important questions: Who are these missing workers, where did they go, and what happened to the communities in which they had been employed? Did the manufacturing communities of Ontario and Quebec, which were impacted so heavily by this disemployment, ever fully recover?

Our full report, *The Big Shift: Changes in Canadian Manufacturing Employment, 2003 to 2018*, seeks to explore and offer answers to these questions using data from Canada's Labour Force Survey. It examines disemployment through both an industry and an occupational lens. It determines

TABLE 1**Canadian Manufacturing Employment: Four Eras**

| Period | Years | Net Employment Change (Positions) |
|-----------------|--------------|--|
| NAFTA Boom | 1993-2003 | 498,200 |
| China Shock | 2004-2008 | -350,200 |
| Great Recession | 2008-2009 | -182,100 |
| Post-Recession | 2009-2018 | -16,700 |

Source: Author's calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada's Real Time Remote Access (RTRA) system (2020b).

which manufacturing sector industries and occupations lost workers and explores those which may have absorbed those workers. It examines which demographic groups were particularly affected by disemployment, and whether those groups experienced worsened labour market outcomes (in terms of either employment or earnings) than the general population. Further, the report investigates the impact of manufacturing disemployment on communities across Canada to understand the relative effects of these changes.

Manufacturing jobs are not evenly distributed across Canada, instead clustering across a handful of communities. Our results interestingly indicate that there is a shift to higher-skilled occupations within the manufacturing sector. Skills training, both on the job and in the classroom, is crucial to ensure workers are qualified for those jobs in construction and manufacturing. Decreasing commuting time due to infrastructure investments can improve interconnectedness between large and medium-sized cities, creating opportunities in manufacturing communities that have been left behind.

We examine employment trends by industry and note that manufacturing disemployment is isolated to a handful of industries, particularly those relating to automotive, apparel, and pulp-and-paper companies. At the same time, other manufacturing industries were able to recover jobs lost between 2003 and 2009 by the year 2018. Similar trends were observed at an occupational level, with large declines among industrial sewing machine operators and motor vehicle assemblers. By 2018, other manufacturing industries, including aerospace products and parts manufacturing, meat product manufacturing, and pharmaceutical and medicine manufacturing, had recovered the jobs lost between 2003 and 2009.

The report further breaks down this wave of disemployment by demographics and notes that disemployment had a particularly severe impact on young workers without post-secondary education. In the 2003-2008 period, prior to the Great Recession, these workers were able to replace lost manufacturing jobs with jobs in construction, trucking, and warehousing. However, this did not occur during the Great Recession, leaving a deeper impact on the employment rate for young workers, particularly women.



Workers in or near large cities were better able to navigate the new reality, likely due to ***higher rates of job creation in construction, trucking, and warehousing.***

Finally, we investigate the impact that this employment transition had at a regional level. We find that workers in or near large cities were better able to navigate the new reality, likely due to higher rates of job creation in construction, trucking, and warehousing. We note the public policy implications, particularly in skills and training, to ensure that workers have the skills needed to find jobs in growing industries and in a manufacturing sector that has increasingly stringent skill demands.

This executive summary report is only a short summary of a much more detailed report commissioned by the Future Skills Centre. For additional data and details, please refer to the full report.



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Canadian Manufacturing Employment: The China Shock, the Great Recession, and then a Decade of Stability

Most of the decline in manufacturing employment occurred in the pre-recession period between 2003 and 2008, when manufacturing employment declined by nearly 20% in both Ontario and Quebec. Ontario's manufacturing sector was more heavily impacted by the Great Recession, experiencing a 12% drop in employment between 2008 and 2009, compared to a 3% drop in Quebec. From the end of 2009 through to 2018, both provinces experienced almost no change in employment levels in the sector.

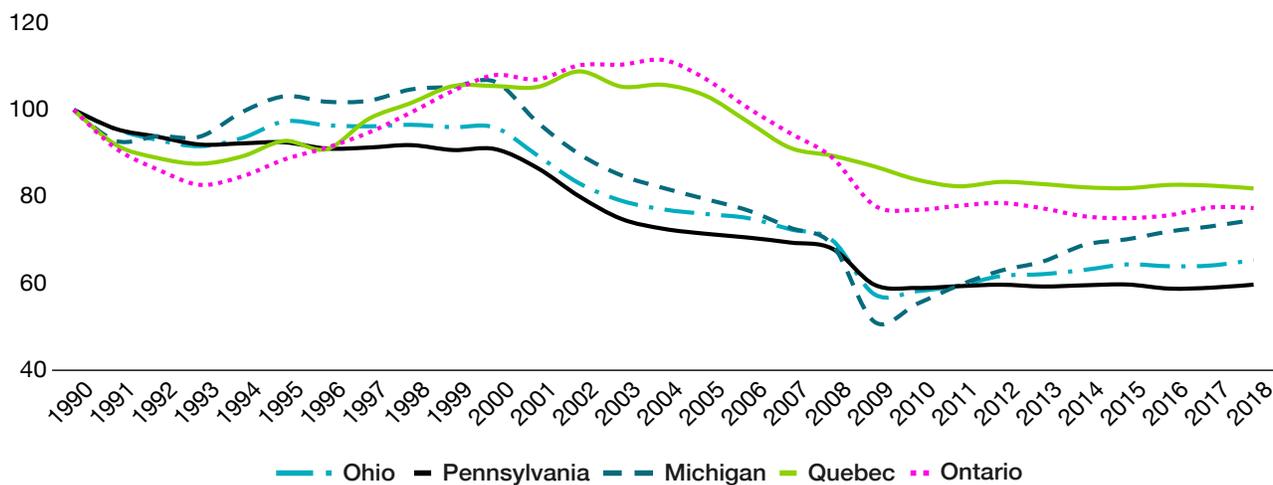
By 2008, manufacturing employment levels had fallen by over 15% in both Ontario and Quebec, by over 25% in Pennsylvania and Ohio, and by over 35% in Michigan (relative to 2000 levels). All this was before the Great Recession had begun (refer to Figure 1). Since the end of the Great Recession, neither Quebec, Ontario, nor Pennsylvania have experienced any recovery in manufacturing employment. On the other hand, Ohio and Michigan, which were hit particularly hard by the Great Recession, have experienced a recovery.



*Between 2003 and 2008, manufacturing employment levels **fell by nearly 20%** in both Ontario and Quebec.*

Looking at manufacturing employment as a whole obfuscates a number of important trends. When data is broken down by manufacturing industry,¹ we see that between 2009 and 2018, many manufacturing industries did regain the jobs lost during and prior to the Great Recession, which we examine in the next section.

¹ The Labour Force Survey tracks 86 different manufacturing industries that make up the manufacturing sector.

FIGURE 1**Manufacturing Employment Levels for Five Great Lake Jurisdictions (1990 = 100)**

Source: Author's calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada's Real Time Remote Access (RTRA) system (2020b); Federal Reserve Bank of St. Louis (2020a; 2020b; 2020c).

TABLE 2**Key Events Related to Canadian Manufacturing Employment, 1989-2018**

| Event | Date |
|--|------------------------|
| Canada-U.S. Free Trade Agreement goes into effect | Jan. 1, 1989 |
| Early 90s recession (Canada) | March 1990 – May 1992 |
| NAFTA goes into effect | Jan. 1, 1994 |
| U.S. dot-com recession | March 2001 – Nov. 2001 |
| China joins WTO | Dec. 11, 2001 |
| Canadian dollar hits all-time low (61.989 cents USD) | Jan. 18, 2002 |
| Canadian dollar tops 80 cents USD | Oct. 20, 2004 |
| Canadian dollar tops 90 cents USD | May 2, 2006 |
| Canadian dollar tops \$1.00 USD | Sep. 28, 2007 |
| Great Recession (Canada) | Oct. 2008 – May 2009 |
| CETA goes into effect | Sep. 21, 2017 |
| CPTPP goes into effect | Dec. 30, 2018 |

Source: Author's calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada's Real Time Remote Access (RTRA) system (2020b).

A Tale of Two Types of Manufacturing Industries: Wilting vs. Rebounding

The 2003-2009 disemployment in manufacturing was felt unevenly throughout the sector, with only 35 of 86 manufacturing industries (referred to as “wilting industries”) experiencing substantial employment decline since 2003. These include motor vehicle parts manufacturing, cut and sew clothing, and printing and related support activities, as shown in Table 3. There is little obvious difference between wilting manufacturing industries and other manufacturing industries (referred to as “rebounding industries”), though wilting industries did have a higher proportion

of individuals without a post-secondary certification (diploma, degree, or trades certificate) in 2003 (55.2% vs. 50.9%, with an average of 35.1% for all industries). In both types of manufacturing industries, over 70% of workers were male.

During the manufacturing disemployment of 2003-2009, the workforce in the sector became substantially older and better educated, with almost all of the net job loss occurring among workers without post-secondary education. In the pre-recession period between 2003 and 2008, the number of manufacturing workers under the age

TABLE 3

Wilting Manufacturing Industries that Lost 15,000 or More Jobs, 2003-2008

| Wilting Manufacturing Industries | Job Change 2003-2008 |
|---|----------------------|
| Cut and sew clothing manufacturing | -43,400 |
| Motor vehicle parts manufacturing | -39,700 |
| Sawmills and wood preservation | -38,100 |
| Motor vehicle manufacturing | -24,600 |
| Pulp, paper, and paperboard mills | -17,300 |
| Printing and related support activities | -17,200 |

Source: Author’s calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada’s Real Time Remote Access (RTRA) system (2020b).

of 45 without post-secondary education declined by 200,000, falling by another 80,000 during the Great Recession. There were 965,600 of these workers in the manufacturing sector in 2003; in just six years their numbers had fallen by 30%. This was somewhat offset by an increase of 100,000 jobs between 2003 and 2008 for workers under the age of 45 without post-secondary education in booming industries such as trucking, warehousing, and construction.

This employment decline was not experienced equally throughout the manufacturing sector, as the decline in employment in wilting manufacturing industries was particularly sharp. In these industries, the number of workers under the age of 45 without post-secondary education fell from nearly 500,000 in 2003 to under 300,000 in 2009. Some of this decrease was due to a composition effect; younger workers have, on average, higher levels of education than older workers, so as older workers retire, they are replaced by younger workers, who happen to be more educated. But much of the decrease can likely be attributed to lower-skilled manufacturing tasks being offshored to low-wage jurisdictions.

Changes in employment in the two types of manufacturing industries are detailed in Table 4. Wilting manufacturing industries experienced a net loss of over 400,000 positions between 2003 and 2009 (equivalent to 37% of the total employment in 2003), and continued to shrink after the Great Recession through 2018. Wilting industries had, on average, higher levels of workers without post-secondary education than rebounding manufacturing industries and shed a greater proportion of positions held by women. Rebounding manufacturing industries saw an increase in employment of nearly 10% of the total employment in 2003 (around 108,200 positions) from 2009 to 2018, nearly erasing the job loss of 123,400 positions from 2003 to 2009.

In summary, the loss of 549,700 manufacturing jobs between 2003 and 2018,² was largely isolated to a set of wilting industries, and the biggest declines were experienced by men without post-secondary credentials (though the employment levels of women were also substantially reduced).

2 Wilting industries lost 534,500 jobs (408,200 between 2003 and 2009, and 126,300 between 2009 and 2018), whereas rebounding industries lost only 15,200 jobs (123,400 lost between 2003 and 2009, offset by 108,200 jobs gained between 2009 and 2018) for a total job loss of 549,700 across both sets of industries.

TABLE 4

By the Numbers: Wilting and Rebounding Manufacturing Industries, 2003-2018

| | Wilting Manufacturing Industries | Rebounding Manufacturing Industries |
|--|---|--|
| Total employment in 2003 | 1,090,200 | 1,186,200 |
| Jobs gained/lost, 2003-2009 | -408,200 | -123,400 |
| Jobs gained/lost, 2009-2018 | -126,300 | 108,200 |
| Percentage of 2003 workforce without post-secondary credentials | 55.2% | 50.9% |
| Percentage of 2003-2009 job loss experienced by those without post-secondary credentials | 67.2% | 100% |
| Percentage of 2003 workforce who were women | 29.5% | 28.7% |
| Percentage of 2003-2009 job loss experienced by women | 33.3% | 26.3% |

Source: Author’s calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada’s Real Time Remote Access (RTRA) system (2020b).

Where did all the young men go?

Prior to the Great Recession, much of the employment decline had been due to a lack of hiring rather than layoffs. During the pre-recession period, the economy-wide employment rate for men 15 to 44 years old without post-secondary education declined only slightly, despite the manufacturing sector experiencing a net loss of nearly 200,000 of these workers. It appears that many of these men—who historically would have worked in manufacturing—found jobs in other industries. We identify 25 industries (termed the 2003-2008 gainer industries) that may have absorbed these workers. The five industries that saw the greatest increase in these workers were residential building construction; foundation, structure, and building exterior contractors; building



*The **five industries** that saw the greatest increase in **lost manufacturing workers***

- > residential building construction
- > foundation, structure, and building exterior contractors
- > building equipment contractors
- > clothing stores
- > support activities for mining and oil and gas extraction

TABLE 5**Gainer Industries: Grew by 50,000 or More Jobs, 2003-2008**

| 2003-2008 Gainer Industries | Job Change 2003-2008 |
|--|-----------------------------|
| Residential building construction | 116,500 |
| Building equipment contractors | 87,200 |
| Foundation, structure, and building exterior contractors | 65,100 |
| Architectural, engineering, and related services | 59,200 |

Source: Author's calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada's Real Time Remote Access (RTRA) system (2020b).

equipment contractors; clothing stores; and support activities for mining and oil and gas extraction (refer to Table 5).

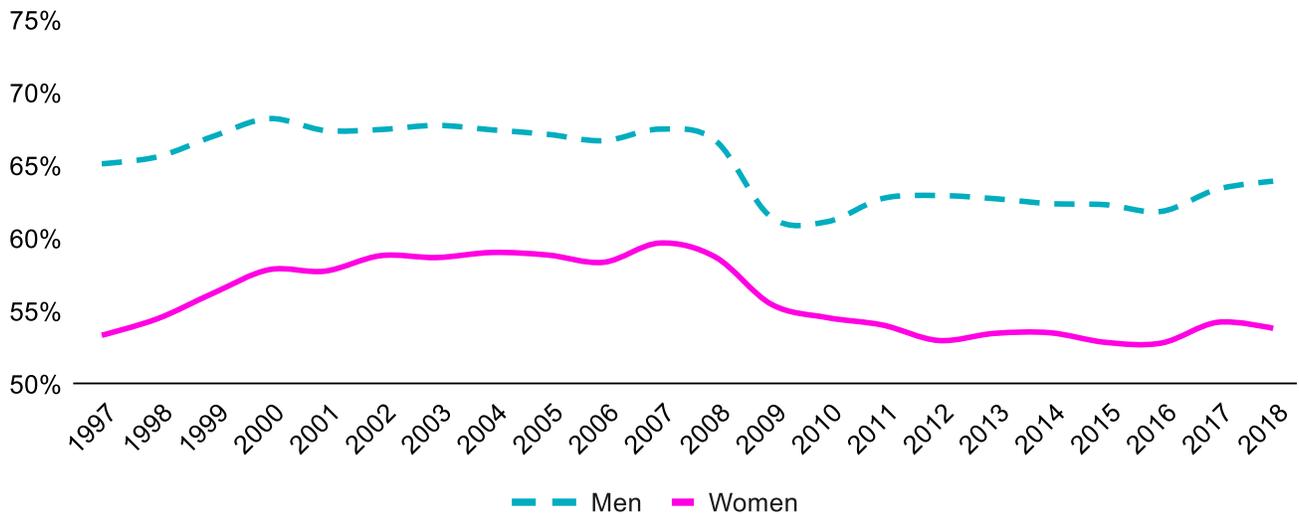
The shift does not appear to be due to manufacturing workers taking advantage of more lucrative opportunities elsewhere. There was little difference, on average, between average weekly earnings for young workers without post-secondary credentials in gainer industries and those of young workers in manufacturing industries, with some (e.g., oil and gas) paying higher wages and others (e.g., retail) paying lower wages. There is little evidence to suggest that young workers without a post-secondary education were passing up manufacturing jobs for higher-paid jobs elsewhere. The more likely explanation is that there was a lack of job opportunities for young workers in the manufacturing sector.

The Great Recession altered these dynamics, with growing industries no longer able to absorb the workers displaced by a reduction in manufacturing jobs. In the next section we show how employment rates for these workers were still below 2008 levels by 2018.



FIGURE 2

Employment Rates for Young Workers (Aged 15-44) Without Post-Secondary Education, 1997-2018



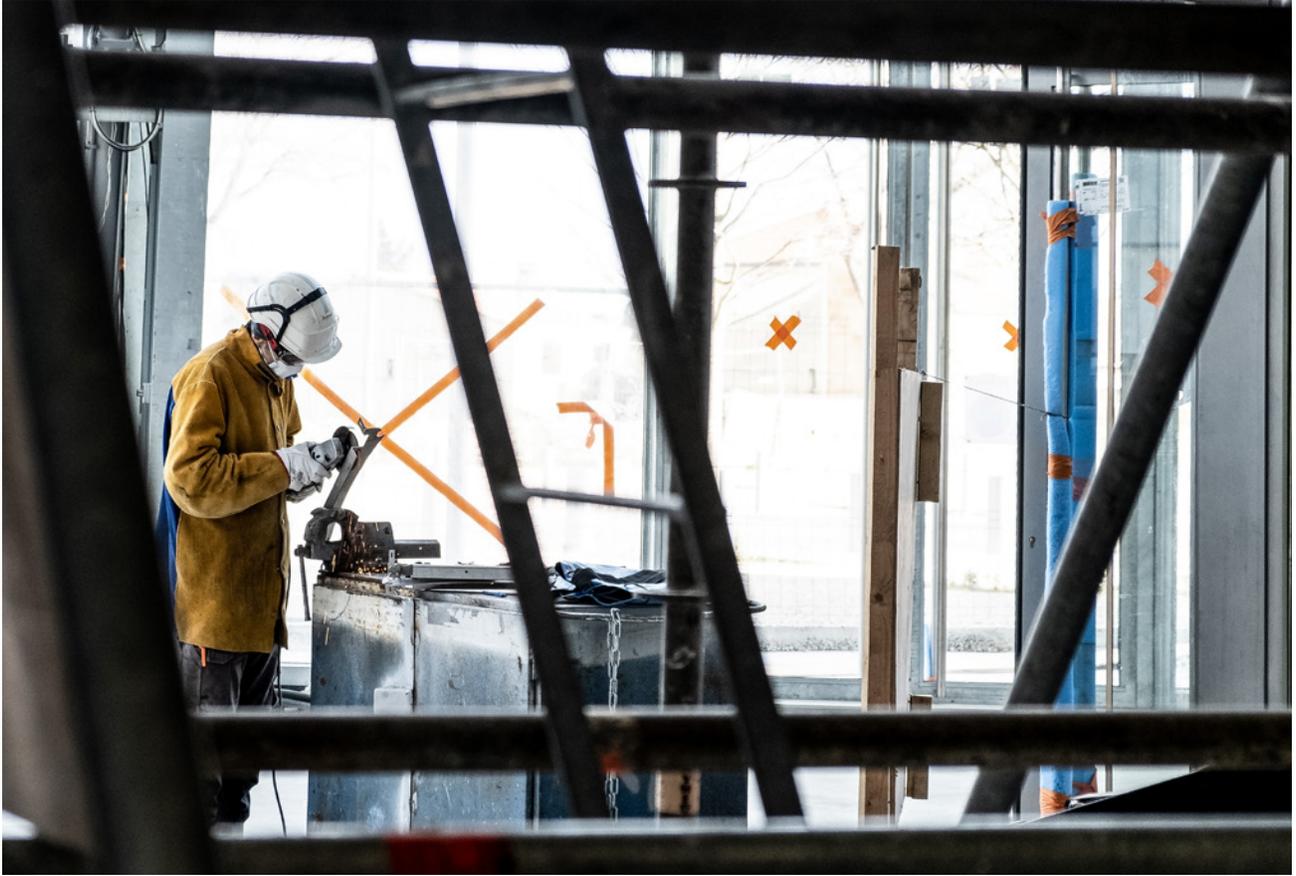
Source: Author's calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada's Real Time Remote Access (RTRA) system (2020b).

Young workers without post-secondary education never recovered from the great recession

Employment dynamics changed during the Great Recession, with the bulk of the net employment reduction coming through involuntary job loss rather than attrition. As illustrated in Figure 2, young men without post-secondary credentials were particularly impacted by the Great Recession, as the employment rate for men between 15 and 44 years of age fell from 67% in 2008 to 62% in 2009. The Great Recession had a scarring effect on the employment rate for these men, which has only somewhat recovered in the decade since the financial crisis, reaching 64% in 2018. The overall number of these

men working in jobs related to construction, oil and gas, trucking, and warehousing has risen since 2009, but by 2018 it had not fully offset the damage caused by the Great Recession. Please note that many of these jobs require some level of post-secondary training that may not be captured in the category of "post-secondary completion."

Young women without post-secondary credentials have experienced an even more significant scarring effect from the Great Recession, with their employment rates falling from 59% in 2008 to 54% in 2018 (5 percentage points, as compared to 3 percentage points for young men). Other groups, such as older workers and those who are more educated, have seen their employment rates fully recover since the financial crisis.



While this analysis is illuminating, it only examines where people worked, not what they did. By examining occupations, we can get a better sense of where those workers might have gone, as some occupational skills are transferrable between industries. For example, a welder could be employed by a manufacturer, construction firm, or mining company. As well, many workers in the manufacturing industry, such as

accountants, might not be what we traditionally think of as a “manufacturing worker.” These workers may have an easier time transitioning into a different industry, as their skills are more transferrable. As we will see in the next section, manufacturing occupation workers were, in fact, impacted particularly severely.

Taking an Occupational Viewpoint

We can gain additional insight by examining employment through an occupational lens, instead of by industry. From this perspective, there were only one million workers associated with manufacturing occupations in 2003, as many of the workers employed by manufacturing companies work in sales, research and development, and administration, and do not work in the actual manufacturing of the product.

Using a similar methodology to the industry analysis, we identify 16 manufacturing occupations that suffered substantial employment declines, which are termed “deteriorating manufacturing occupations.” Table 6 lists those with the largest employment losses between 2003 and 2008. In contrast to the industry perspective, we see significant employment decline in these occupations in the 1997-2003 period, as well as in subsequent periods. The remaining manufacturing occupations (which

TABLE 6

Deteriorating Manufacturing Occupations (Lost 6,000 or More Jobs), 2003-2008

| Occupation | Job Change 2003-2008 |
|--|----------------------|
| Industrial sewing machine operators | -23,000 |
| Textile fibre and yarn, hide and pelt processing machine operators and workers | -9,400 |
| Motor vehicle assemblers, inspectors, and testers | -8,900 |
| Machining tool operators | -7,700 |
| Sawmill machine operators | -7,200 |
| Electronics assemblers, fabricators, inspectors, and testers | -6,500 |

Source: Author’s calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada’s Real Time Remote Access (RTRA) system (2020b).

TABLE 7**By the Numbers: Deteriorating and Recovering Manufacturing Occupations, 2003-2018**

| | Deteriorating Manufacturing Occupations | Recovering Manufacturing Occupations |
|--|--|---|
| Total employment in 2003 | 312,700 | 866,800 |
| Jobs gained/lost, 2003-2009 | -146,700 | -233,100 |
| Jobs gained/lost, 2009-2018 | -21,300 | 82,900 |
| Percentage of 2003 workforce without post-secondary credentials | 71.8% | 64.4% |
| Percentage of 2003-2009 job loss experienced by those without post-secondary credentials | 80.0% | 81.6% |
| Percentage of 2003 workforce who were women | 41.9% | 26.2% |
| Percentage of 2003-2009 job loss experienced by women | 46.8% | 24.2% |

Source: Author's calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada's Real Time Remote Access (RTRA) system (2020b).

we refer to as “recovering manufacturing occupations”) saw a tremendous rise then fall in employment, with 2009 employment levels approaching those of 1997. Between 2009 and 2018, employment increased by nearly 100,000 workers, though it has not fully returned to the levels seen in the early 2000s.

This occupational viewpoint is valuable, as it shows that nearly half (42%) of all net job loss in deteriorating manufacturing occupations was suffered by women. Also notable is the substantial net job loss felt by workers without post-secondary education (Table 7). This reduction in female employment in manufacturing, for example, is largely due to the reduction in the number of industrial sewing machine operators.

The decline in industrial sewing machine operators and other deteriorating manufacturing occupations does not

appear to be entirely due to job loss through attrition, as there were substantial levels of involuntary job loss both during and before the Great Recession. The impact of manufacturing disemployment on women, particularly women without post-secondary credentials, warrants further attention.

Disemployment in these occupations created an available pool of workers, made up of those who were either laid off from these jobs or were unable to find work in the relevant industries. We know from the previous section that between 2003 and 2008, other industries absorbed young workers without post-secondary education and those who were disproportionately affected by the reduction in manufacturing employment. So, if they were not working in manufacturing occupations, what were they doing? As the next section shows, we can find our answer in other forms of blue-collar employment.

TABLE 8

Gainer Occupations: Grew by 8,000 or More Jobs, 2003-2008

| 2003-2008 Gainer Occupations | Job Change 2003-2008 |
|---|-------------------------|
| Food counter attendants, kitchen helpers, and related support occupations | 23,400 |
| Carpenters | 13,100 |
| Electricians (except industrial and power system) | 12,600 |
| User support technicians | 11,300 |
| Residential and commercial installers and servicers | 11,000 |
| Maîtres d'hôtel and hosts/hostesses | 10,800 |
| Construction trades helpers and labourers | 9,100 |
| Heavy equipment operators (except crane) | 8,800 |
| Material handlers | 8,100 |

Source: Author's calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada's Real Time Remote Access (RTRA) system (2020b).

Which occupations saw a rise in young workers without post-secondary education?

We identified 27 different occupations (termed the 2003-2008 gainer occupations) that may have benefited from the reduced demand for workers between the ages of 15 and 44 without post-secondary credentials between 2003 and 2008. The five occupations that saw the greatest increase were food counter attendants, carpenters, electricians, user support technicians, and residential and commercial installers and services (Table 8). The list is particularly heavy with construction activities, as well as a few occupations related to oil and gas. This is suggestive that the 2003-2008

period saw a transition of employment out of manufacturing and into construction jobs. Interestingly, many of the occupations that saw a rise in the number of young workers without post-secondary credentials normally require those credentials. It may be that some of these individuals were working while earning those credentials. It may also be the case that employers reduced the qualifications needed due to skills shortages.

What caused young workers without post-secondary credentials to switch occupations? Were they pushed out of manufacturing due to a lack of available jobs in the sector, or were they pulled into other occupations because they paid better than manufacturing? In the next section, we answer that question by examining wage data.



What happened to the earnings of young workers without post-secondary between 2003 and 2018?

The data is inconclusive, but evidence suggests the transition was not beneficial for young workers without post-secondary education. The average weekly earnings among occupations that saw an employment rise between 2003 and 2008 were typically lower than wages in manufacturing, so there is not a great deal of evidence to support the argument that workers who would have historically worked in manufacturing took these jobs instead because they paid better. In other words, they were pushed out of manufacturing, not pulled into other occupations.

From 2003 to 2018, weekly earnings grew by 48% for workers as a whole and 44% for workers without post-secondary credentials. Given sample size issues and rounding in the Labour Force Survey, we cannot conclude whether there was a significant difference in earnings growth for workers without post-secondary credentials relative to the rest of the population.

Between 2003 and 2018, average weekly earnings grew at a slightly slower rate for both types of manufacturing occupations (recovering and deteriorating) and both types of manufacturing industries (rebounding and wilting) relative to the Canadian average.

Now we know what happened to workers in manufacturing industries, occupations, and their wages, we can summarize the experience of the last two decades at the individual level in the following section.

Summarizing the individual experience of the pre-recession decline in manufacturing employment and the tepid post-recession recovery

Manufacturing's Canadian employment footprint declined by 350,000 jobs before the financial crisis, and by another nearly 200,000 during the Great Recession. The reductions were primarily experienced by younger workers, without post-secondary credentials, and by mostly male workers, though there was a significant reduction in female manufacturing employment as well, due to a rapid decline of the apparel manufacturing industry. Pre-recession losses were offset by gains in the construction, trucking, and warehousing industries. However, the Great Recession had a scarring effect on employment for workers under the age of 45 without post-secondary completion. In particular, the employment rate for women matching this profile, as of 2018, remained unchanged since 2009. The men in this group saw their employment rate rise somewhat from 2009 to 2018, despite no net increase in manufacturing jobs.



Between 2003 and 2018, average weekly earnings grew at a slightly slower rate for both types of manufacturing occupations and both types of manufacturing industries relative to the Canadian average.

But what happened to the communities that lost a disproportionate number of manufacturing jobs? Did they see a disproportionate increase in construction, trucking, and warehousing jobs? Or was the employment effect felt unevenly across the country, with the new jobs not necessarily emerging where manufacturing jobs had disappeared? As we will see in the next section, some traditional centres fared better than others as economic activity shifted toward large cities.



What Happened to the Communities that Lost Manufacturing Jobs?

Manufacturing is not spread evenly throughout the country. Instead, it is concentrated in a few dozen communities, mostly in Quebec and Ontario. As such, a decline in the sector's employment has a disproportionate impact on some communities. Of the 65 census metropolitan areas (CMAs) and census agglomerations (CAs) we have data for, we identified 25 that experienced manufacturing employment decline (as a percentage of total employment in 2003) above the Canadian average. These 25 communities were identified as manufacturing communities, with the other 40 categorized as non-manufacturing communities (identified as "Other CMAs/CAs" in Tables, 9, 10, and 11 and Figure 3 below).

Research from the United States and Europe suggests that communities that are proximate to large economic centres may be more resilient to negative employment shocks (Bolton & Hildreth, 2013). Commuting data from Statistics Canada (2018) was used to determine the connectedness of CMAs/CAs; the data suggests a substantial drop in

workers commuting to a major metropolitan area if their CMA/CA is more than 120 km away. We defined Toronto, Vancouver, and Montreal as major metros and then divided our CMAs and CAs among those that are connected to a major metro (which we refer to as "connected") and those that are not (which we refer to as "isolated"). We identified eight connected manufacturing communities, including one near Montreal, six near Toronto, and Toronto itself, and 17 isolated manufacturing communities. Many of these isolated manufacturing communities are located in Southwestern Ontario and include Windsor, London, St. Catharines-Niagara, Chatham-Kent, and Sarnia. Like in other developed countries, our more isolated manufacturing communities struggled to recover through 2018 and beyond. In the next few sections, we will investigate the trajectory of manufacturing employment by era, starting with the 2003-2008 pre-recession period.

TABLE 9**Components of Employment Growth, All Workers, 2003-2008**

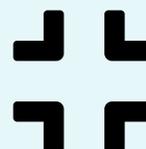
| Community Type | Total | Non-Manufacturing Industries in Decline | All Other Industries | Wilting Manufacturing Industries | Rebounding Manufacturing Industries | 2003-2008 Gainer Industries |
|-------------------------------------|--------------|--|-----------------------------|---|--|------------------------------------|
| Isolated Manufacturing Communities | 2.9% | -0.1% | 6.0% | -3.9% | -1.8% | 2.6% |
| Connected Manufacturing Communities | 7.7% | 0.1% | 7.3% | -2.2% | -1.4% | 4.0% |
| Other CMAs/CAs | 11.1% | -0.7% | 7.8% | -1.1% | 0.2% | 4.9% |

Note: The percentage growth for each cell is relative to the overall employment levels at the beginning of the period, not relative to employment in that sector.

Source: Author’s calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada’s Real Time Remote Access (RTRA) system (2020b).

Slow growth in manufacturing communities before the great recession

During the 2003-2008 pre-recession decline period, manufacturing employment decline was significantly larger in isolated manufacturing communities than connected manufacturing communities (Table 9). This was in part due to those communities having larger manufacturing footprints to begin with. We also saw significantly higher growth in our 2003-2008 gainer industries (which were heavy with construction-related industries) in connected manufacturing communities compared to isolated manufacturing communities. This trend would continue through the Great Recession, as we see in the next section.



*During the 2003-2008 pre-recession decline period, manufacturing **employment decline was significantly larger in isolated manufacturing communities** than connected manufacturing communities.*

TABLE 10

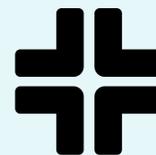
Components of Employment Growth, All Workers, 2008-2009

| Community Type | Total | Non-Manufacturing Industries in Decline | All Other Industries | Wilting Manufacturing Industries | Rebounding Manufacturing Industries | 2003-2008 Gainer Industries |
|-------------------------------------|-------|---|----------------------|----------------------------------|-------------------------------------|-----------------------------|
| Isolated Manufacturing Communities | -5.1% | 0.1% | -2.9% | -1.3% | -0.7% | -0.3% |
| Connected Manufacturing Communities | -1.7% | -0.5% | 1.2% | -1.1% | -0.6% | -0.6% |
| Other CMAs/CAs | -1.1% | -0.1% | 0.3% | -0.4% | -0.2% | -0.7% |

Source: Author’s calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada’s Real Time Remote Access (RTRA) system (2020b)

Isolated manufacturing communities particularly impacted by the great recession

Isolated manufacturing centres fared far worse in the Great Recession (in terms of disemployment) than other centres (refer to Table 10), though much of the decline came from outside the manufacturing sector. In connected manufacturing CMAs, job growth was effectively neutral outside of the manufacturing sector. Isolated manufacturing communities would continue to struggle after the Great Recession through to 2018, while connected manufacturing communities flourished.



In connected manufacturing CMAs, job growth was effectively neutral outside of the manufacturing sector.

TABLE 11**Components of Employment Growth, All Workers, 2009-2018**

| Community Type | Total | Non-Manufacturing Industries in Decline | All Other Industries | Wilting Manufacturing Industries | Rebounding Manufacturing Industries | 2003-2008 Gainer Industries |
|-------------------------------------|--------------|--|-----------------------------|---|--|------------------------------------|
| Isolated Manufacturing Communities | 5.3% | -1.8% | 3.3% | 0.6% | 1.2% | 2.0% |
| Connected Manufacturing Communities | 18.0% | -0.9% | 14.8% | -1.1% | 1.0% | 4.0% |
| Other CMAs/CAs | 14.8% | -1.0% | 11.9% | -0.6% | 0.6% | 3.9% |

Source: Author's calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada's Real Time Remote Access (RTRA) system (2020b).

Stagnant employment growth in isolated manufacturing communities, 2009-2018

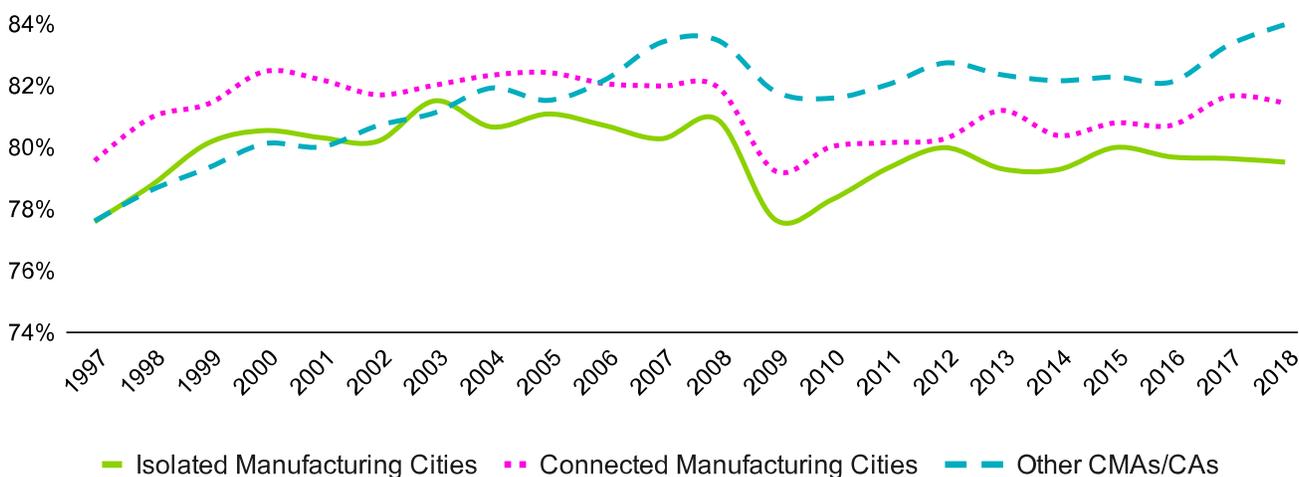
From the end of the Great Recession in 2009 until 2018, employment growth in isolated manufacturing CMAs/CAs remained less than half that of other CMAs (Table 11). Employment growth in connected manufacturing CMAs/CAs has been above that in non-manufacturing CMAs/CAs, which could indicate that other industries in those CMAs absorbed the types of workers who historically would have worked in manufacturing. If that was the case, it does not appear to be in the industries that had significant employment growth from 2003 to 2008.

Overall, we saw significant declines in manufacturing employment among both types of manufacturing communities in both the pre-recession and Great Recession periods. However, connected communities were able to create jobs in other industries at a significantly higher rate. Since the end of the Great Recession, these connected communities have been able to create jobs at a rate higher than the rest of the country. Interestingly, their rate of manufacturing job creation has been lower than that of isolated manufacturing communities. In other words, connected manufacturing communities have been able to create jobs in other industries to offset lost manufacturing jobs, while isolated manufacturing communities have not.

The slow employment growth in isolated manufacturing communities is not simply a function of slower population growth, as employment rates for workers aged 25

FIGURE 3

Employment Rates for 25- to 54-Year-Olds by CMA Type, 1997-2018



Source: Author's calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada's Real Time Remote Access (RTRA) system (2020b).

to 54 ("prime age" workers) lags behind those of other CMAs/CAs and have not fully recovered from the Great Recession, as shown in Figure 3.

If our two types of manufacturing communities had identical employment rates for 25- to 54-year-olds compared to all other CMAs/CAs, there would be an additional 38,000 Canadians employed in isolated manufacturing centres, and an additional 98,000 employed in connected manufacturing centres.

One reason why isolated communities lag behind in employment growth is that they have not fully offset reductions in manufacturing jobs with gains in construction, trucking, and warehousing. Table 12 compares manufacturing job losses between 2003 and 2018 to employment gains in the construction, trucking, and warehousing sectors over the same time for the 13 CMAs where the manufacturing

sector represented 15% or more of all jobs in 2003. Most of the communities on the list created about as many jobs in the growing sectors as they lost in manufacturing, with Barrie (proximate to Toronto) creating substantially more. Five communities lost far more jobs in manufacturing than they gained in other sectors, four of which are isolated communities (three in Southwestern Ontario, one in Quebec) along with Hamilton, which is proximate to Toronto.

We have two simultaneous problems: sluggish job growth in isolated manufacturing communities (particularly for workers without post-secondary credentials), and demand for construction, trucking, and warehousing workers in Canada's biggest cities (and the areas closest to them) outstripping supply. These are problems that can be addressed through smart public policy, with a particularly focus on skills policy, as discussed in the next section.

TABLE 12

Job Gains/Losses in the Manufacturing and the Construction, Transportation, and Warehousing Sectors by CMA, 2003-2018

| CMA | Manufacturing | Construction, Transportation, and Warehousing | Ratio |
|------------------------------|---------------|---|-------|
| Barrie | -2,100 | 6,000 | 2.86 |
| Brantford | -2,200 | 2,500 | 1.14 |
| Montreal | -60,700 | 67,900 | 1.12 |
| Guelph | -1,900 | 2,000 | 1.05 |
| Kitchener-Cambridge-Waterloo | -8,400 | 8,600 | 1.02 |
| Toronto | -146,300 | 143,800 | 0.98 |
| Oshawa | -14,100 | 13,500 | 0.96 |
| Trois-Rivières | -1,300 | 1,200 | 0.92 |
| London | -10,000 | 5,300 | 0.53 |
| Hamilton | -27,300 | 12,600 | 0.46 |
| St. Catharines-Niagara | -12,500 | 4,500 | 0.36 |
| Sherbrooke | -6,700 | 2,200 | 0.33 |
| Windsor | -8,600 | 2,300 | 0.27 |

Source: Author's calculations using data from the Labour Force Survey (Statistics Canada, 2020a); accessed via Statistics Canada's Real Time Remote Access (RTRA) system (2020b).

Policy implications of uneven post-recession employment growth

Employment growth was incredibly uneven across Canada from the end of the Great Recession to 2018, with much faster employment growth in big cities and their surrounding areas than in the rest of the country. Differences in demographics can explain only a small portion of these differences. Employment rates also explain very little of this phenomenon, with the employment rate gap between

these communities and the rest of Canada remaining similar. Almost all of the gap is due to differences in population growth due to migration. Large cities receive the bulk of international immigrants. Between 2018 and 2019, there were nearly 500,000 immigrants and net new non-permanent residents relocating to Canada, with 56% of those living in one of Canada's three largest CMAs: Toronto, Montreal, or Vancouver. Mid-sized CMAs proximate to those CMAs, in particular Barrie and Oshawa, saw substantial population growth due to internal migration, despite having international immigration-based population growth rates significantly

below the national average. Their migration population growth came primarily from families seeking to be within commuting distance to the economic opportunities those big cities provide while being able to afford housing, which they cannot within Toronto CMA.

These fast-growing big CMAs and proximate CMAs continue to generate substantial jobs in the construction, warehousing, and trucking industries, which employ workers of a similar profile of those who once worked in manufacturing. Many of these jobs have significant skill requirements, so policy makers must ensure that workers, particularly furloughed ex-manufacturing workers, are able to access the training they need to take these positions. Despite some stereotypes, many of the former manufacturing workers have been women, so policy makers must also ensure that those training programs are inclusive for women and other historically marginalized groups.

For our less-proximate manufacturing communities, skills training is still vital, as the manufacturing jobs that remain require, on average, more skills than the manufacturing jobs of 2003. If Canada is going to retain the manufacturing jobs we have now, grow our burgeoning cleantech manufacturing sector, and attract new facilities, these communities must have a robust pool of skilled labour. Such training programs include the Excellence in Manufacturing Consortium's Manufacturing Essentials Certification (MEC), Manitoba's Connecting Aboriginals to Manufacturing program, and experiential learning opportunities offered through colleges and



*Policy makers must ensure that workers, particularly furloughed ex-manufacturing workers, are able to **access the training they need to take positions in the construction, warehousing, and trucking industries.***

universities. Given the wave of retirements about to hit the sector as baby boomers retire, a focus on training young workers to enter the sector is particularly important. The Ontario Manufacturing Learning Consortium (2020), a group of manufacturing firms and industry associations, has created a program for workers under the age of 30 to train as structural airframe assemblers, which includes both classroom and on-the-job training. Industry, academia, and governments must work together to ensure that Canadians have the skills needed to excel in today's manufacturing sector.

Finally, although we cannot change the physical proximity between cities, we can reduce commuting-time proximity through smart transit investments. Increased linkages between CMAs can better spread economic (and employment) opportunity throughout a region.

Conclusion

If policymakers are to ensure the prosperity of manufacturing communities and their workers, knowledge of what happened to those workers and their communities is essential. A number of folk stories have emerged over the years, but a deeper dive into the Labour Force Survey provides a more nuanced picture. In summary, policy makers and the general public should understand the following about manufacturing employment, at both a community and individual level:

- > **Manufacturing disemployment is not a made-in-Canada phenomenon**
Manufacturing employment trends in Ontario and Quebec are similar, though not identical to, those in Michigan, Ohio, and Pennsylvania.
- > **Manufacturing disemployment is, in part, driven by automation and globalization**
The China Shock that hit U.S. manufacturing did not spare Canada. Murray (2017) estimates that between 2001 and 2011, 105,000 manufacturing jobs were lost in Canada due to the China Shock. Some of job loss occurred as companies automated in order to lower their cost to compete with competition from China.
- > **The Canadian dollar, however, does play a role in manufacturing disemployment**
U.S. Great Lake states lost large numbers of manufacturing jobs from 2001 to 2003, whereas Ontario and Quebec were spared these losses (and even gained positions) thanks, in part, to a low Canadian dollar. When the loonie began to rise in late 2002, fueled by higher oil prices, the currency became a liability rather than an asset, and manufacturing employment levels began to decline in late 2003.
- > **Manufacturing disemployment is not simply a recession-related phenomenon**
While the financial crisis did have a disastrous impact on Canadian manufacturing, the bulk of the net decline in employment occurred prior to the Great Recession.
- > **Manufacturing disemployment is not evenly spread across the sector**
Some industries were hit particularly hard between 2003 and 2009, including motor vehicle parts manufacturing and cut and sew clothing manufacturing. The apparel industry was among the hardest hit, causing substantial drops in the number of women employed in manufacturing.

- > **Employment in the Canadian manufacturing sector has experienced an unprecedented level of stability since the end of the Great Recession**

Manufacturing employment levels saw little change between 2009 and 2018.

- > **Manufacturing employment continues to evolve at an industry level, and skills requirements are on the rise**

Although sectoral employment has not changed significantly since 2009, this masks changes occurring at the industry level. Some manufacturing industries have continued to experience employment declines since the end of the Great Recession, while others (the rebounding industries) are experiencing job growth. The manufacturing industries that are creating net new jobs have, on average, higher skills requirements than those that are not.

- > **Other industries have, in part, absorbed the types of workers that historically would have worked in manufacturing**

In particular, the trucking, warehousing, and construction industries have experienced substantial increases in employment since 2003, in particular with younger workers without post-secondary credentials who have historically made up a significant portion of the manufacturing sector. It does not appear that these workers were attracted to these industries because they paid better than the manufacturing sector.



Manufacturing employment continues to evolve at an industry level, and skills requirements are on the rise.

- > **There is a mismatch between the locations of new jobs created and jobs lost**

Large cities, and communities proximate to large cities, are able to create new employment to offset reduced job opportunities in manufacturing. More isolated manufacturing communities, however, are not. The trucking, warehousing, and construction jobs created in 2003 were a by-product of booming local economies, particularly in the Greater Toronto Area. In these communities, between 2003 and 2018, there was approximately one new job created in construction, trucking, or warehousing for every manufacturing job lost. In communities further away from Toronto (such as Windsor and London), this was not the case; the number of manufacturing jobs lost in these communities far exceeded those created in booming industries. This is not unique to Canada, rather it is part of a global pattern of economic activity shifting away from small and mid-sized communities to larger centres.

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