TRILLIUM NETWORK
FOR ADVANCED MANUFACTURING

Canada's Automotive Industry: A Decade In Review

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Introduction

Canada's automotive industry faced an uncertain future following the 2008-09 recession. The industry partially recovered following substantial government intervention and persistent attention from policy-makers and industry stakeholders, although it is markedly different in size and structure than the Canadian automotive industry of the 1990s and early 2000s. Today, Canada's automotive industry finds itself in another crisis, this one related to the COVID-19 pandemic. While the causes of these crises are distinct, they are similar in they have profound impacts on vehicle sales, which reduce production, revenue, and employment. The latest crisis also revives questions about the future of Canada's automotive industry.

The purpose of this report, which is based on data presented to the Ontario Auto Mayors in November, 2019, is to examine the evolution of Canada's automotive industry as it emerged from the recession of 2008-2009 until the eve of the COVID-19 pandemic that began in early 2020. In so doing, the report reinforces the economic importance of the automotive industry to Canada and especially to southwestern Ontario. The report also serves as a notice to industry stakeholders and policy-makers of shifts in several once-taken-for-granted metrics that raise questions about the industry's future.

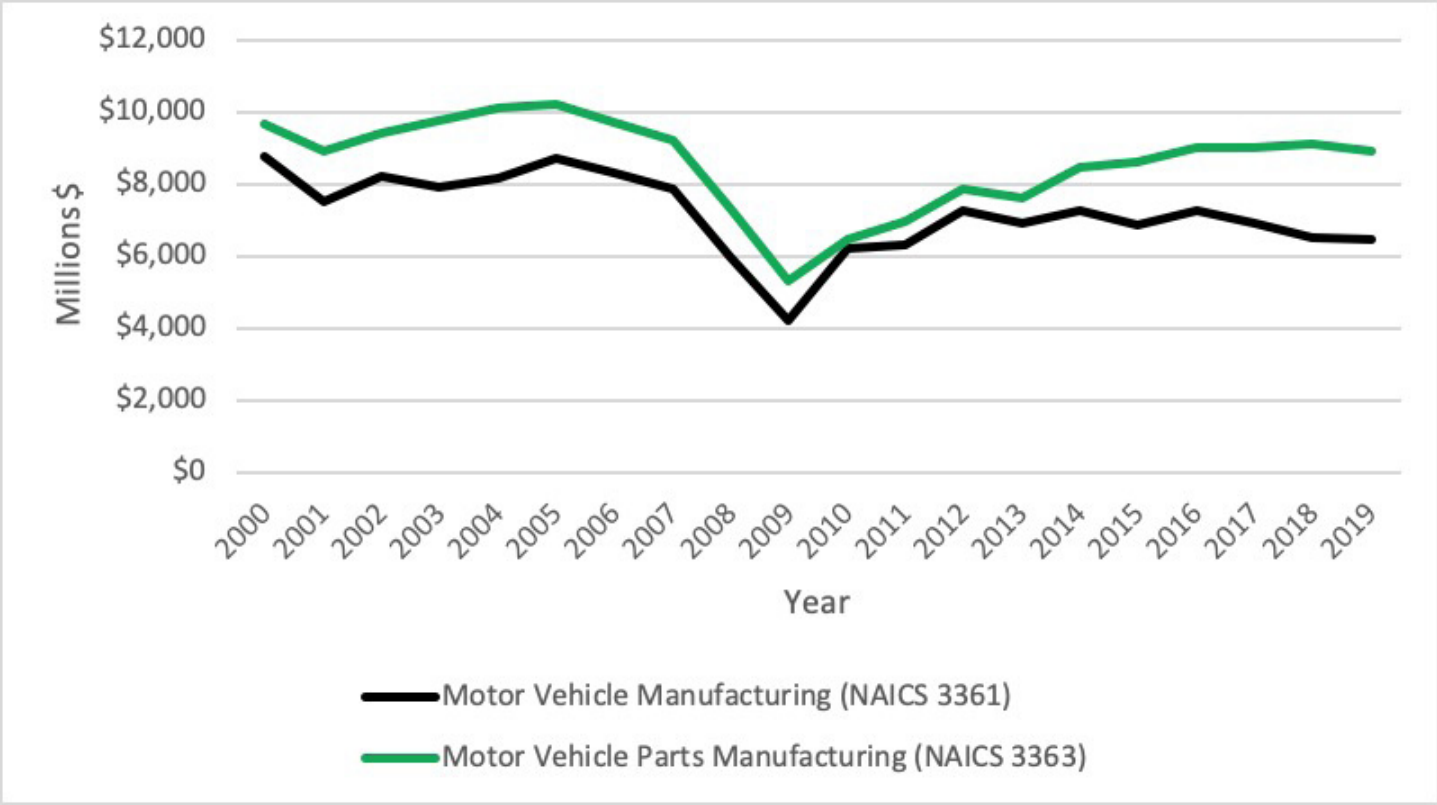
This is the first in a series of Trillium Network for Advanced Manufacturing reports that examine the evolution of Canadian manufacturing over the past decade. These reports may prove especially important in helping industry stakeholders and policy-makers assess the current state and trajectory of manufacturing as Canada emerges from the COVID-19 crisis.

Image Credit - AdobeStock

Economic Contributions, 2000-2019

The combined contribution of motor vehicle and motor vehicle parts manufacturing to Canadian GDP grew throughout the 1990s and early 2000s, peaking at more than $18.9 billion in 2005. That contribution subsequently fell to $9.4 billion in 2009. As Canada's automotive industry recovered following the recession of 2008-2009, contributions to GDP increased, reaching $16.26 billion in 2016. The automotive industry's contributions to GDP have fallen since then, however, totaling $15.37 billion in 2019 (see Figure 1).

Figure 1: Automotive Industry Contributions to GDP, 2000-2019



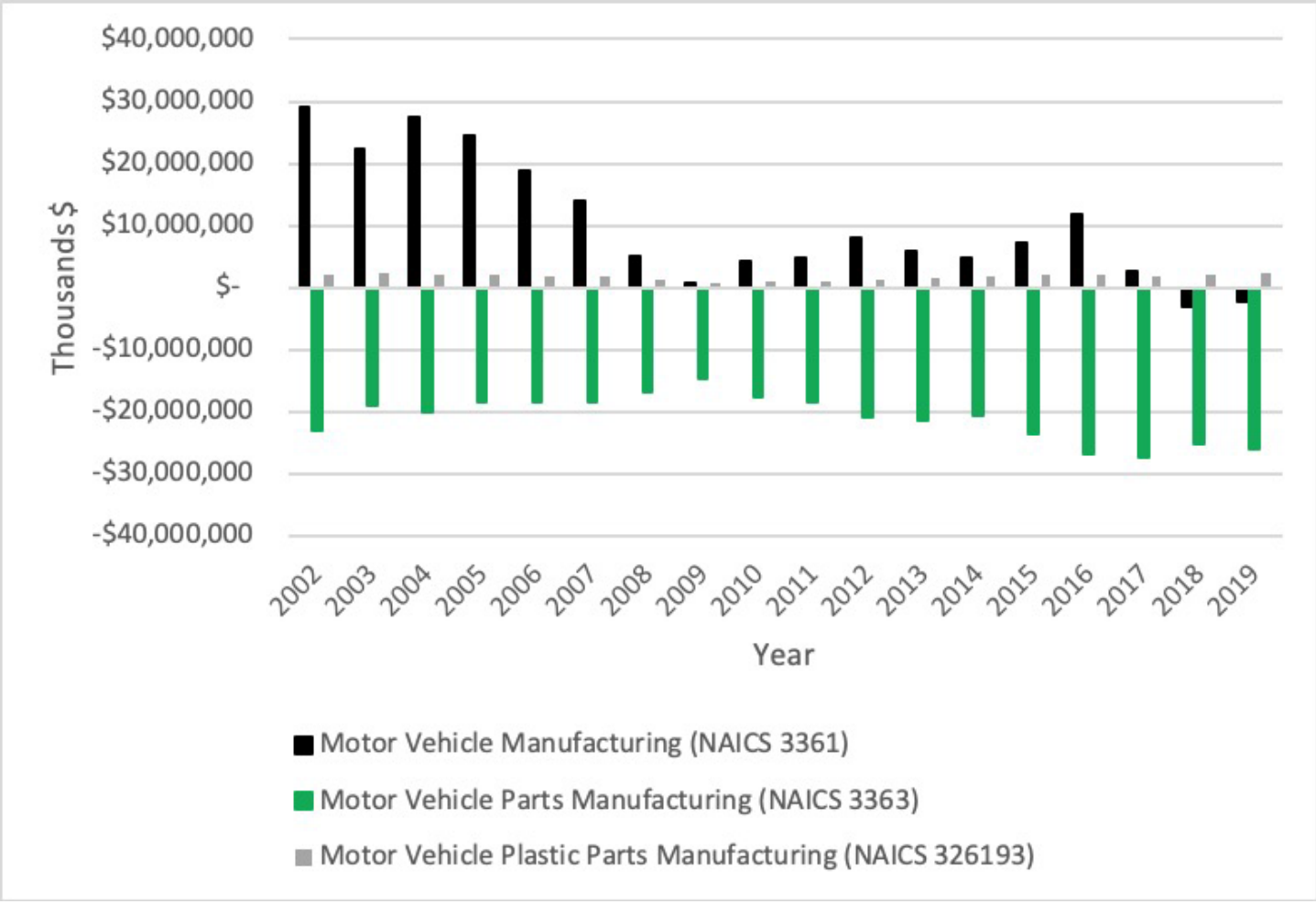
Data Source - Statistics Canada, 2020; Tables 36-10-0402-01, 36-10-0434-01

Motor vehicle manufacturing's contributions to Canadian GDP increased from $6.2 billion in 2010 to $7.25 billion in 2016, then decreased to $6.46 billion by 2019. This is related to a decrease in Canadian vehicle production caused partly by General Motors ceasing vehicle assembly at its Oshawa, Ontario complex. Motor vehicle parts manufacturing's contributions to GDP, on the other hand, increased from $6.5 billion in 2010 to $9.02 billion in 2016 and have stabilized at around $9 billion annually since. This is due in part to the production of metal and plastic components for export to vehicle assembly plants in Michigan and other nearby states.

From a Trade Surplus to a Trade Deficit

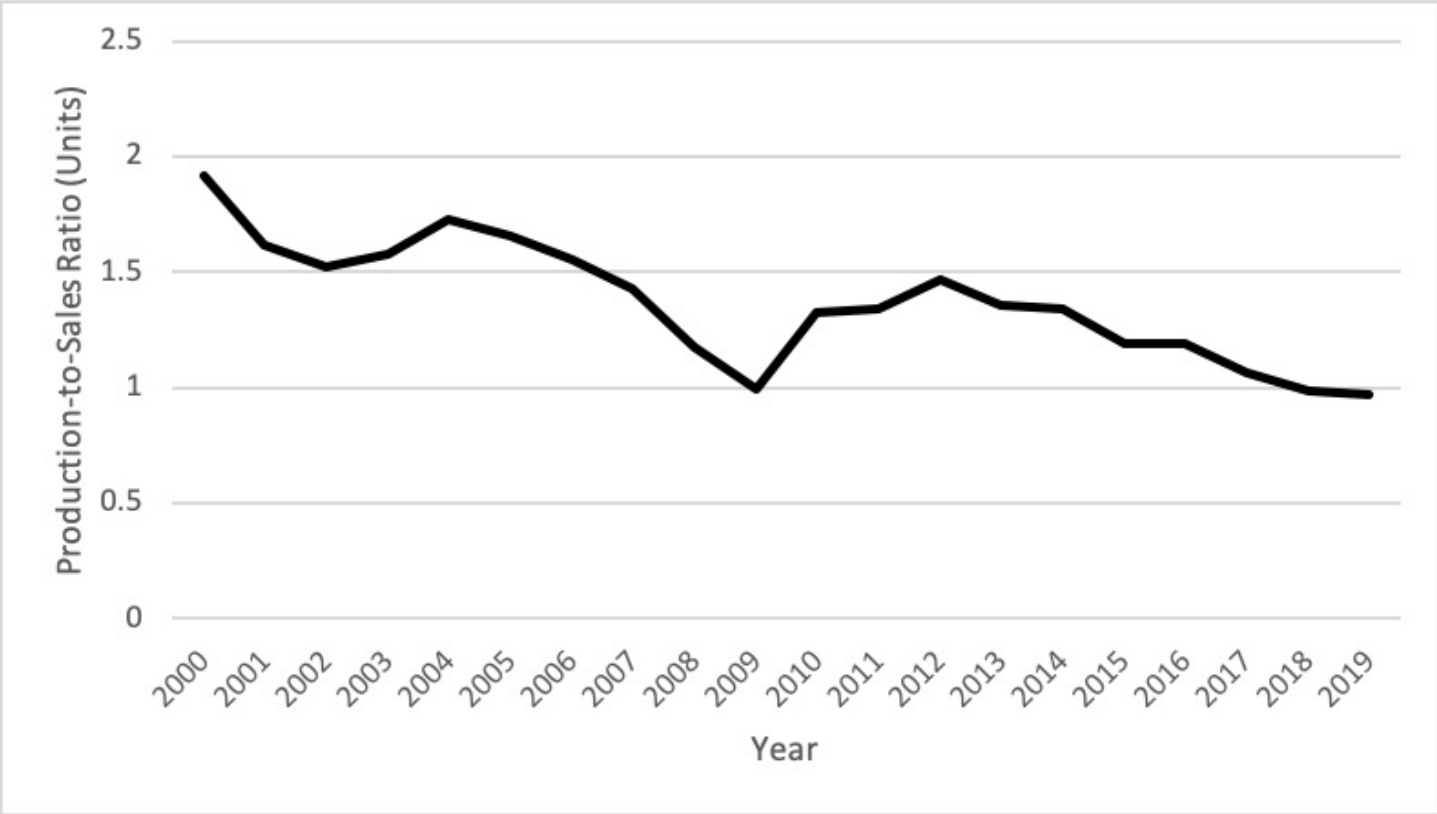
Canada's automotive industry is export-oriented, with approximately 85 percent of vehicles assembled in Canada destined for the United States. Historically, Canada had a surplus in the trade of motor vehicles and a deficit in the trade of motor vehicle parts. From at least the early 1970s until the mid-2000s, the surplus in the trade of motor vehicles exceeded the deficit in the trade of motor vehicle parts, creating a positive balance of trade in automotive products. Between 2007 and 2017, however, the deficit in trade of motor vehicle parts exceeded the surplus in trade of motor vehicles, leading to an overall deficit in automotive trade (see Holmes, 2016). More recently, Canada experienced a deficit in the trade of both motor vehicles and motor vehicle parts (Figure 2). This is related to reduced Canadian vehicle production (and subsequently vehicle exports) and an increase in vehicle imports from the United States, Mexico, and the European Union. Similarly, the years 2018 and 2019 marked the first time in several decades that Canadians bought more vehicles than were manufactured in this country (with the exception of 2009). (Figure 3). The shift from a trade surplus in vehicles to a trade deficit is likely a reality for the foreseeable future. That said, Canada maintains small trade surpluses in two specific segments of motor vehicle parts manufacturing: metal stampings (NAICS 336370) and plastic parts (NAICS 326193).

Figure 2: Automotive Industry Trade Balance, 2002-2019



Data Source - ISED Canada Trade Data Online, 2020

Figure 3: Canadian Motor Vehicle Production-to-Sales Ratio, 2010-2019

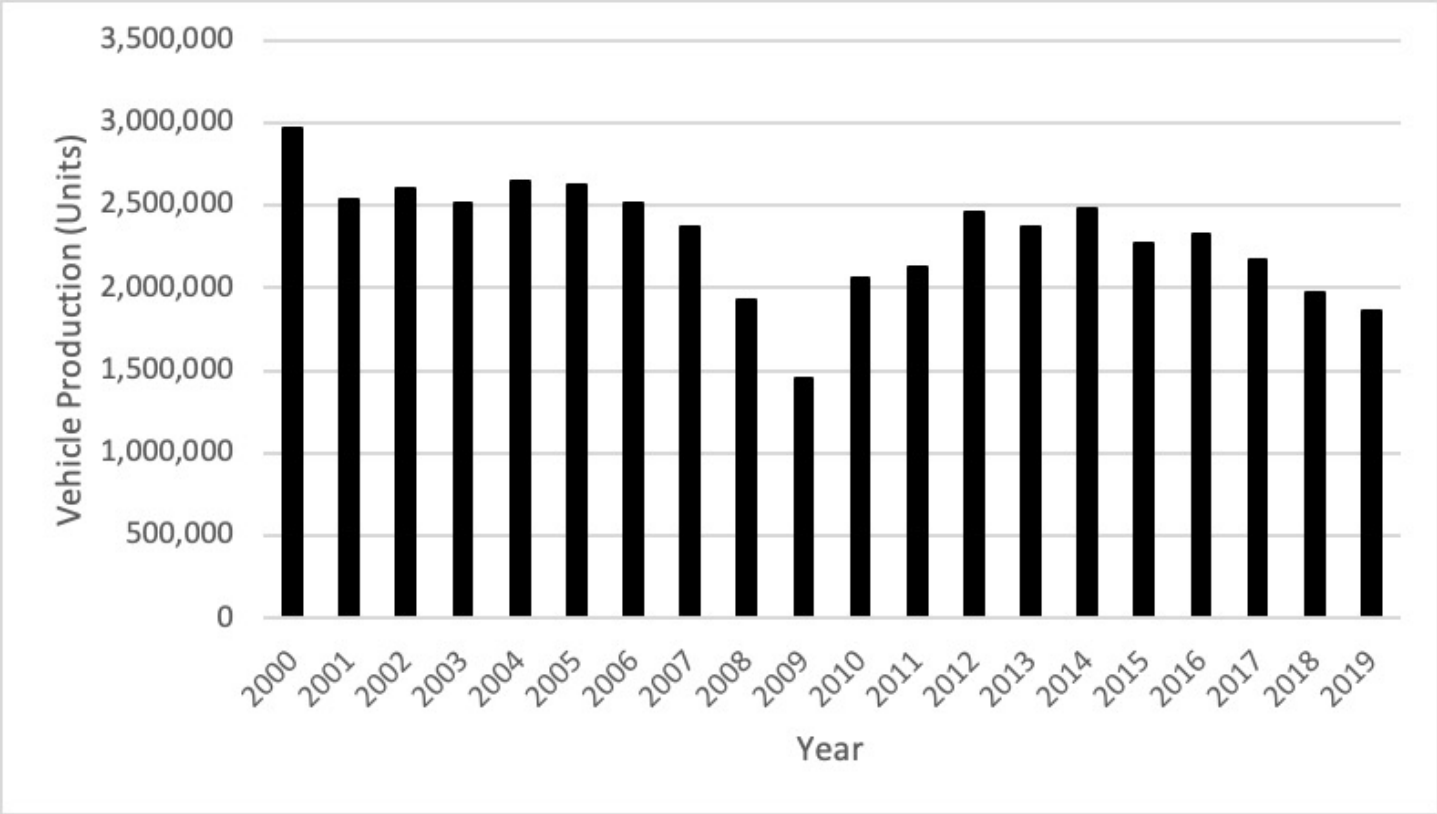


- Data Source - Automotive News, Various Years

Lower Vehicle Production and Employment

Canadian vehicle production peaked at more than 3 million units in 1999. Vehicle production subsequently decreased in every year between 2000 and 2009, increased between 2010 and 2014 and then fell in every year but one since (Figure 4). While the production of about 2.4 million vehicles annually was commonplace in the recent past, the 'new normal' for Canadian vehicle production is between 1.7 and 1.8 million units annually (although the impact of COVID-19 on vehicle production in 2020 is yet to be determined – and likely to be substantial).

Figure 4: Canadian Motor Vehicle Production (Units), 2000-2019

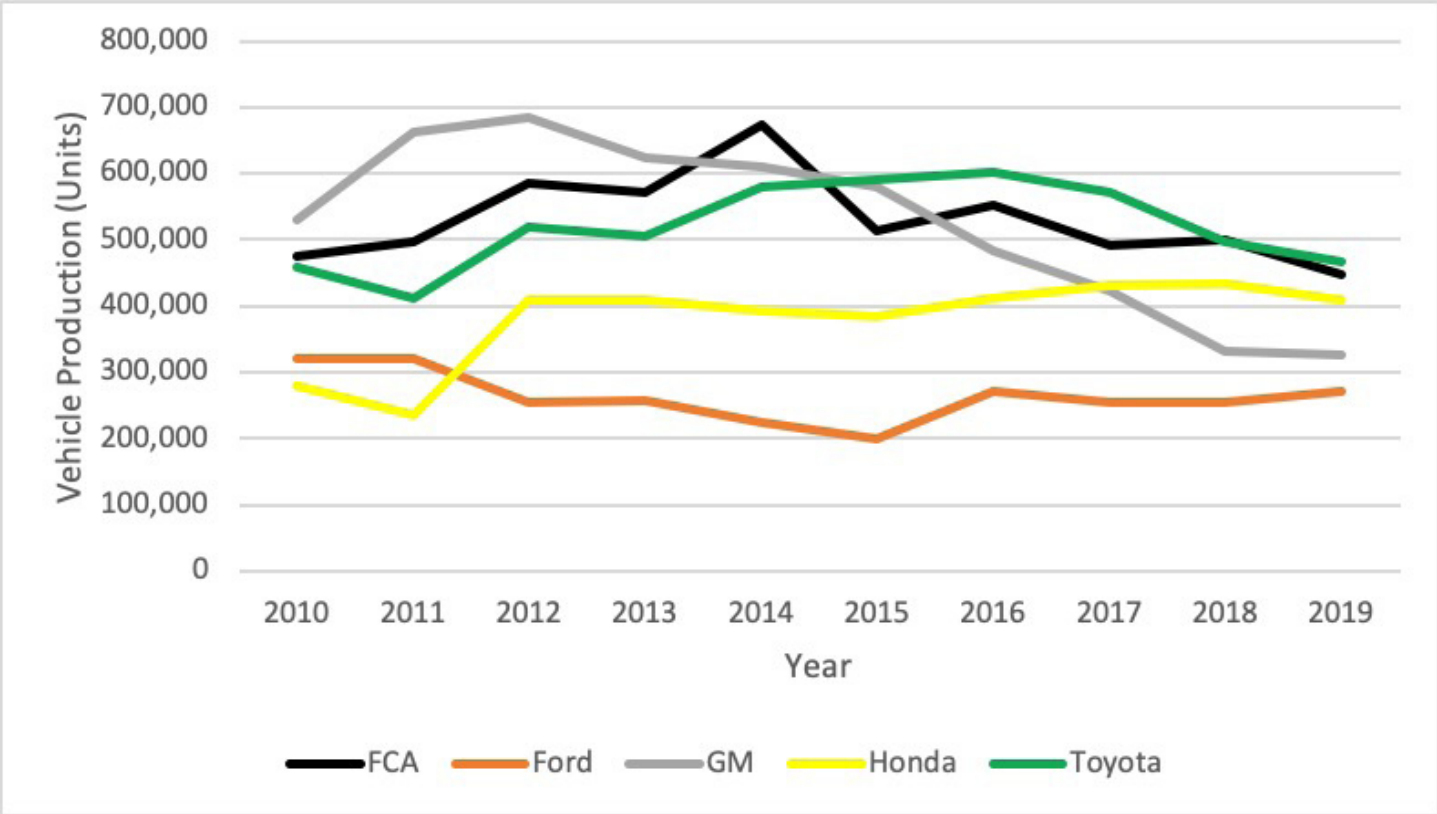


Data Source - Automotive News, Various Years

A re-ordering of the output and production capacity of the five Original Equipment Manufacturers (OEMs) that build cars and light-duty trucks in Canada (FCA, Ford, General Motors, Honda, and Toyota) occurred alongside changes to overall vehicle production. While General Motors once assembled the most vehicles in Canada, it currently operates only one assembly plant--in Ingersoll, Ontario--and an engine and transmission manufacturing facility in St. Catharines, Ontario. As such, General Motors is poised to assemble the fewest vehicles among the five OEMs with Canadian assembly plants. Toyota's Canadian vehicle production, which takes place in Cambridge and Woodstock, Ontario, increased substantially over the past 20 years. The company assembled the most vehicles in Canada in 2015, 2016, 2017, and 2019. Toyota also manufactures aluminum wheels in Delta, British Columbia. FCA assembled the most vehicles in Canada in 2018 (and the second most in 2019) at assembly plants in Brampton and Windsor, Ontario. FCA also operates parts manufacturing facilities in the Ontario communities of Port Hope, Etobicoke, Guelph, Corbyville, and Strathroy. The number of vehicles FCA manufactures in Canada is expected to decrease when the company cancels the third shift at their Windsor minivan plant. Honda produced the

fewest vehicles of the five OEMs at the outset of the previous decade but produced the third most in 2019 because of stable production at its Alliston, Ontario, facilities (where it also manufactures engines). Ford operates an assembly plant in Oakville, Ontario, and two engine manufacturing facilities in Windsor.

Figure 5: Motor Vehicle Production (Units) by OEM, 2010-2019

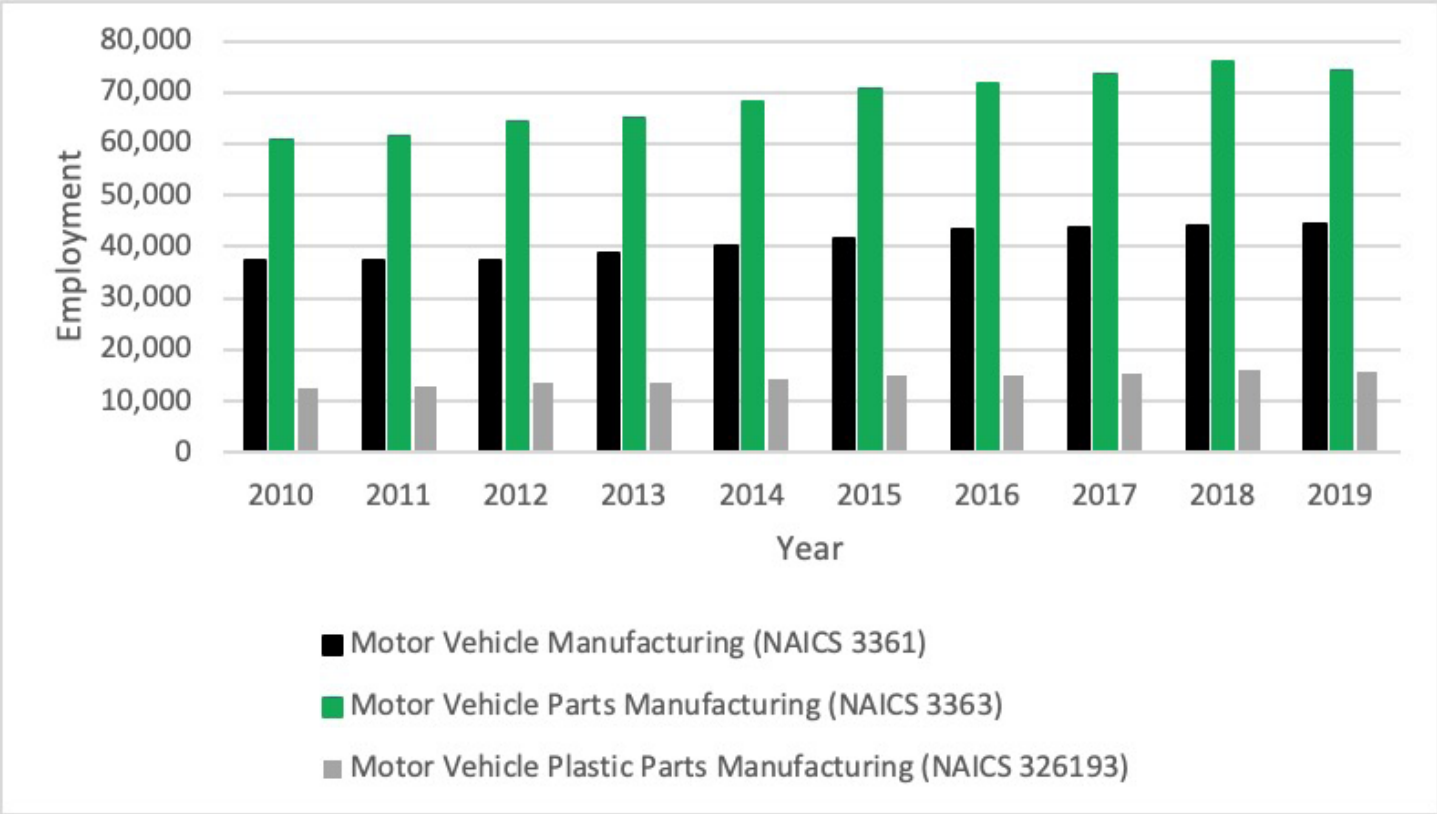


Data Source - Author's Calculations, Automotive News, Various Years; CVMA, 2020

At its peak in the late 1990s, Canada's automotive industry directly employed over 175,000 people. The number of persons employed in the automotive industry decreased by over 20,000 between 2000 and 2007, and fell to less than 125,000 during the 2008-09 recession. Motor vehicle manufacturing and motor vehicle parts manufacturing employment subsequently increased in almost every year between 2010 and 2018, but fell slightly in 2019 (Figure 6). In 2019, more than 44,000 people were employed in Canadian motor vehicle assembly plants and more than 89,000 people were employed in motor vehicle parts and motor vehicle plastic parts manufacturing facilities.

There are several important considerations when analyzing automotive industry employment. First, a large majority (approximately 90 per cent) of Canadian automotive industry employees work and live in southern Ontario. The majority of those outside of Ontario manufacture motor vehicle parts, buses, or heavy trucks in Québec. Buses are also assembled in Manitoba. Second, a substantial number of employees – perhaps upwards of 30 per cent of the industry total – work in facilities classified as manufacturers of something other than motor vehicle parts (e.g. rubber, plastics, glass, aluminum, foundry products) but that supply the automotive industry exclusively. As such, they are not easily captured in government statistics (see Sweeney and Mordue, 2016). Third, changes in employment seldom move in lockstep with changes in production and output. Rather, commensurate changes in employment tend to lag changes in vehicle production and output by between 12 and 18 months.

Figure 6: Automotive Manufacturing Employment, 2010-2019

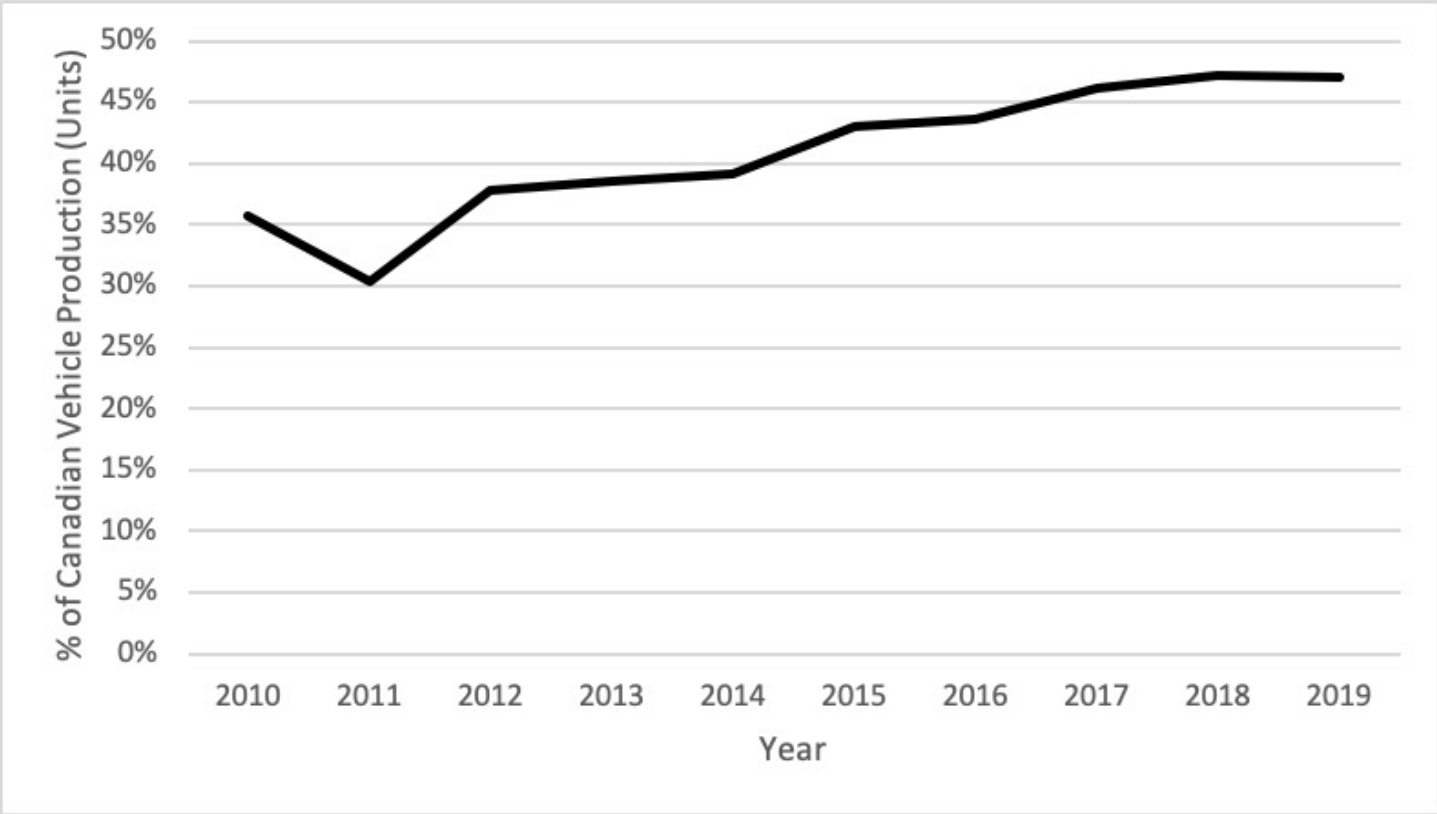


- Data Source - Author's Calculations, Statistics Canada, 2020; Tables 14-10-0202-01, 16-10-0038-01

Increased Japanese Production, Strong Parts Industry, and Geographic Concentration

Several important structural changes to Canada's automotive industry occurred over the past decade. One of the most notable is that Japanese-owned OEMs and automotive parts manufacturers account for an increasing proportion of output and employment (see Mordue and Sweeney, 2019). In 2002, Toyota and Honda accounted for 22 per cent of Canadian vehicle production. That proportion increased to 36 per cent in 2010, 47 per cent in 2019, and could potentially surpass 50 per cent in the first half of the 2020s (Figure 7).

Figure 7: Toyota and Honda Output as a Proportion of Canadian Vehicle Production, 2010-2019



Data Source - Source: Mordue and Sweeney, 2019

Several important changes specific to the structure of the motor vehicle parts manufacturing industry also occurred over the past decade. Canadian-owned companies account for just over half of parts output and employment. Within this category, larger firms such as Magna (Canada's largest manufacturing employer), Linamar, Martinrea, Multimatic, Woodbridge Foam, AGS Automotive, and Mitchell Plastics account for a large majority of output and employment. Japanese-owned suppliers, most of which supply Toyota and Honda's Canadian and U.S. assembly plants, increased their manufacturing footprint and account for upwards of 20 per cent of vehicle parts manufacturing output and employment. Other large internationally-owned firms such as Flex-n-Gate, ABC Technologies, Stackpole (Johnson Electric), and Cooper-Standard account for much of the remainder of Canada's motor vehicle parts manufacturing output and employment.

Finally, Canada's automotive industry became increasingly concentrated in southwestern Ontario. Following the end

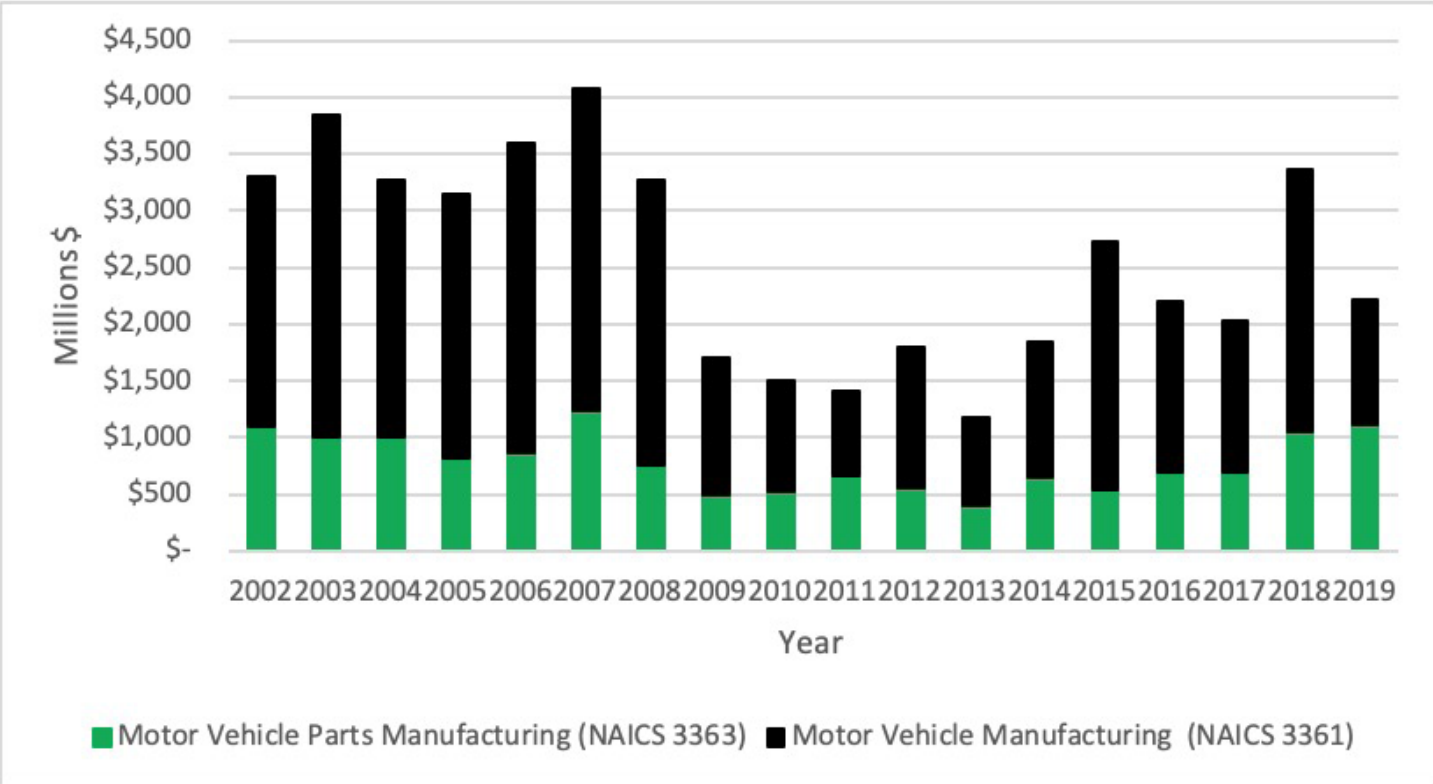
of vehicle production at General Motors' Oshawa facility, virtually all Canadian passenger car and light-duty truck production takes place within a 400-kilometre corridor located between Windsor and Alliston. At the same time, an increasing proportion of motor vehicle parts production is concentrated between Windsor and Toronto. These changes are consistent with a general shift away from motor vehicle and motor vehicle parts production in Québec, eastern Ontario, and northern Ontario that began in the 1990s.

Image Credit - TMMC Media

Low Rates of Capital Expenditures are Concerning

Canadian automotive industry capital expenditures averaged $2.08 billion annually between 2010 and 2019 (Figure 8). This is substantially lower than capital expenditures between 2000 and 2009, which averaged $3.28 billion annually. Virtually all the manufacturing investments made by automotive OEMs in the past decade were related to upgrading existing facilities. Moreover, the past decade marked the first since World War II during which an automotive OEM did not make a greenfield investment in Canada. And while some motor vehicle parts suppliers (e.g. Multimatic, Linamar) increased their footprint in Canada over the past decade, several have disinvested. These relatively low rates of capital expenditures, especially in new facilities, are an ongoing concern for policy-makers and industry stakeholders, as it could imply that some manufacturers are not investing in new production technologies to the extent that those in other jurisdictions are.

Figure 8: Canadian Automotive Industry Capital Expenditures, 2002-2019



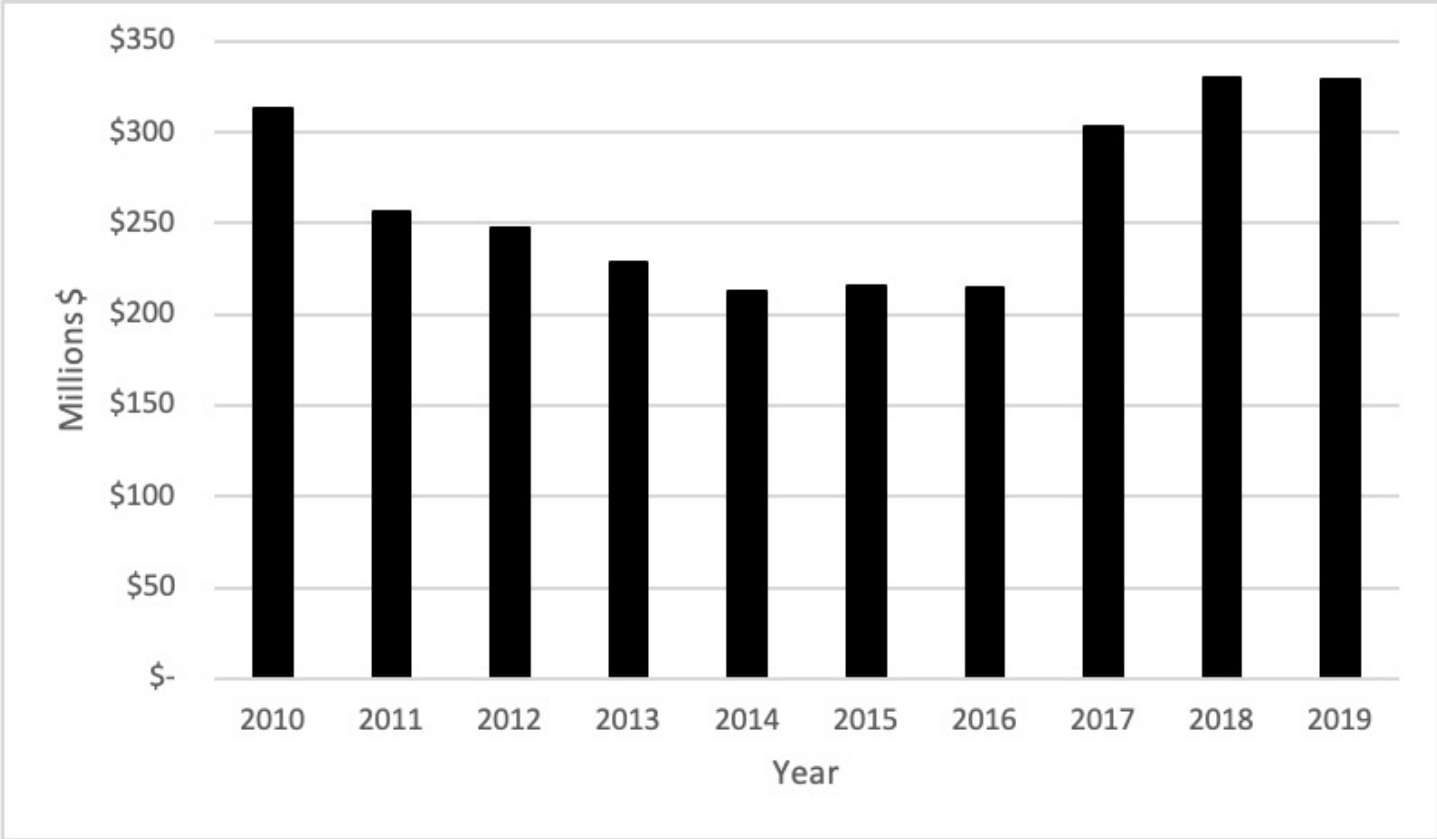
Data Source - Statistics Canada, 2020; Table 34-10-0035-01

Most capital investments in both existing and new facilities were supported by incentives from federal and provincial governments. These incentives include non-repayable contributions (e.g. cash) and repayable contributions (e.g. low-interest loans). Governments also introduced targeted programs to help employers access skilled workers, address labour shortages, expedite the adoption of new production technologies (such as those associated with Industry 4.0), and generally improve productivity and competitiveness. These include the Ontario Automotive Modernization Program (O-AMP) and the Automotive Supplier Competitiveness Improvement Program (ASCIP).

As the industry evolved, policy-makers sought to promote Canada as a location for automotive R&D. These initiatives were underpinned by Canada's highly educated work force, the high quality of Canada's publicly-funded research and

educational institutions, and existing tax credits and incentives for manufacturing R&D. These efforts have been met with some success, as annual automotive R&D spending increased from $213 million in 2014 to $329 million in 2019 (Figure 9). These activities, some of which take place at recently opened software R&D facilities operated by General Motors and Ford, employ more than 3,000 people, primarily in well-paying professional occupations. Yet it is important to note that while R&D activities represent an important component of Canada's automotive industry, they are unlikely to supplant vehicle assembly and parts manufacturing as the industry's most important economic drivers.

Figure 9: Canadian Automotive R&D Expenditures, 2010-2019



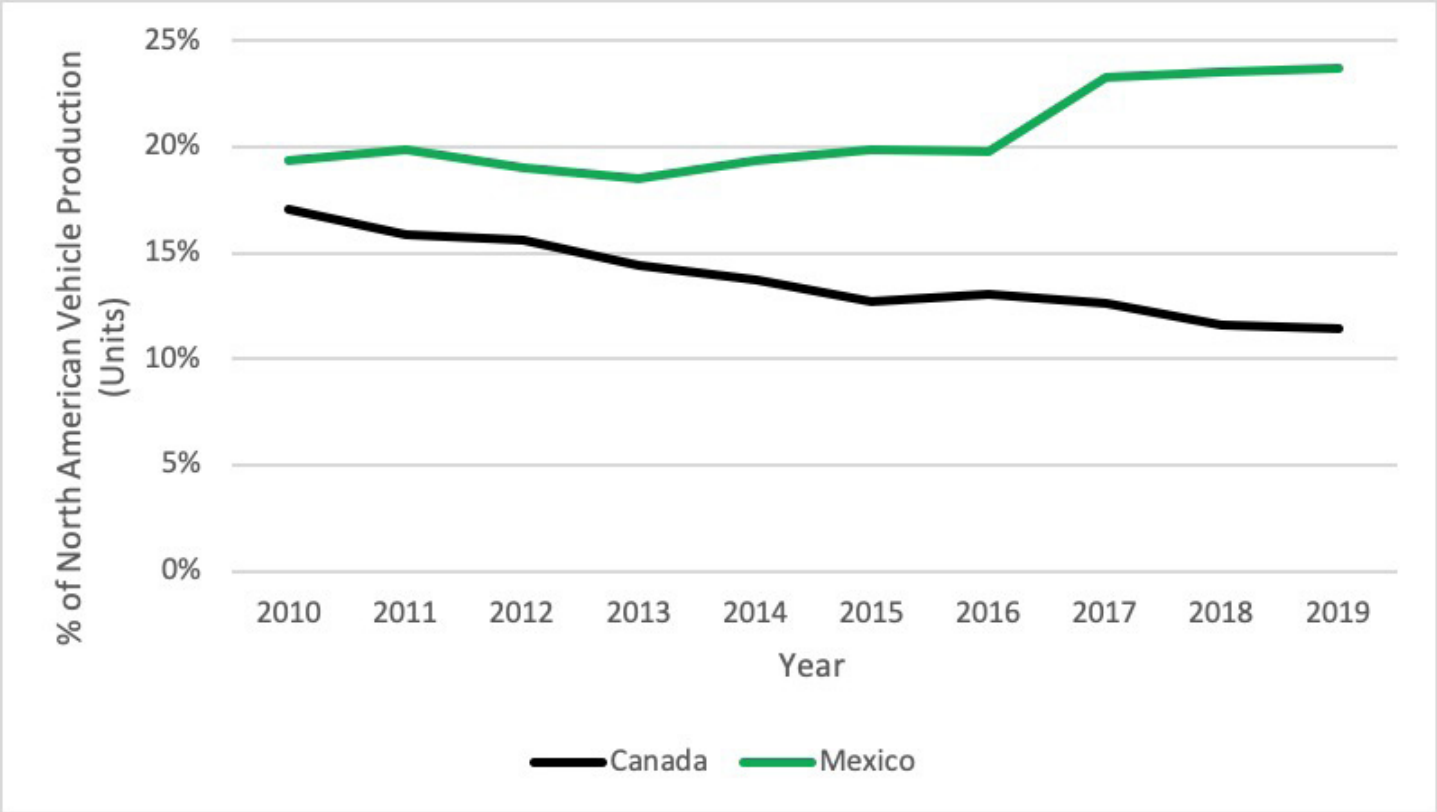
Data Source - Statistics Canada, 2020; Tables 27-10-0001-01, 27-10-0002-01, 27-10-0333-01

Canada in a North American Perspective: Is High Quality Enough?

Canada accounted for more than 17 per cent of North American motor vehicle production in 2010. In 2019, Canadian vehicle production represented less that 12 per cent of North American output (Figure 10). This has much to do with the growth of the automotive industry in Mexico, which produced more than twice as many vehicles as Canada in 2019. Over the past decade, industry stakeholders and policy-makers have faced challenges defining Canada's competitive advantages.

Canadian-based manufacturers cannot compete with Mexico on the basis of wages and Canada lacks a domestic OEM to anchor investment. Canada's highly educated workforce and Canadian assembly plants' reputation for quality are valuable, but it appears they alone are not enough to ensure future investment. Identifying and articulating Canada's suite of competitive advantages in order to secure existing assembly plants and attract further investment is a priority.

Figure 10: Canadian and Mexican Vehicle Production as a % of North American Vehicle Production, 2010-2019



Data Source - Author's Calculations, OICA, Various Years

Towards Another Decade of Uncertainty?

This report identifies several important changes to Canada's automotive industry over the past decade. These include a shrinking manufacturing footprint, changes to several important metrics such as trade balance and production-to-sales ratios, and the restructuring of OEMs within Canada. The report also raises uncertainty about the future of the industry and the challenges Canadian industry stakeholders and policy-makers face in articulating competitive advantages vis-à-vis the United States and Mexico. Such uncertainty is not new. Rather, these questions are frequent subjects of conversation among industry stakeholders and policy-makers. This report is intended to help inform these conversations as the latter parties resume their efforts to improve industry competitiveness and attract investment following the COVID-19 pandemic.

While the report makes some comment on employment levels, it has not commented on other, potentially deeper, changes to work in the automotive industry, notably those that occur alongside the adoption of new production technologies associated with the digitization of manufacturing (i.e. Industry 4.0). At what rate manufacturers will adopt these technologies and their eventual impacts on employment and competitiveness remains unclear (and are the subject of other Trillium Network for Advanced Manufacturing initiatives, see Boothe et al., 2019), although there is a growing consensus that the competitiveness and productivity of those companies that do not adopt such technologies will suffer.

It is no surprise that the adoption of new production technologies is a concern for many. Other equally important concerns include those related to manufacturers' ability to recruit, develop, and retain the talent necessary to improve industry competitiveness and what role Canada will play in developing and manufacturing the vehicles and vehicle technologies of the future. These technologies include those related to advanced (i.e. lightweight) materials, vehicle connectivity, advanced driver-assistance systems (ADAS), and electrified vehicles.

Canadian-based companies have demonstrated their competencies in developing and manufacturing components using advanced materials such as high-strength steel, plastics, composites, carbon fibre, aluminum and magnesium. Canadian companies have also proven they can competitively develop vehicle connectivity and ADAS technologies. OEMs and suppliers have located such activities in Canada; the question moving forward is more closely related to mobilizing the talent necessary to secure further investment.

Ultimately, and in addition to securing production mandates for existing assembly plants, perhaps the most important question about the future pertains to Canada's role in developing and manufacturing electrified vehicles and related technologies. On this note, there are important distinctions to be made between 1) producing electrified vehicles in existing assembly plants, 2) attracting investment from a non-traditional or niche electrified vehicle manufacturer (e.g. Tesla), and 3) attracting investments to develop and manufacture electrified vehicle components and systems (e.g. batteries, motor cores). In relation to the first point it is worth noting that assembly plants in Windsor, Woodstock, and Cambridge and bus manufacturing facilities in Québec produce electrified vehicles such as the Chrysler Pacifica Hybrid, the Toyota RAV4 Hybrid, the Lexus RX 450h, and the Nova Bus fully electric LFSe+. In short, the capability to manufacture electrified vehicles exists in Canada, it is simply a question of securing those mandates.

To the second point, it is worth encouraging policy-makers and industry stakeholders who are intent on growing Canada's automotive industry to continue to aggressively pursue these opportunities as they emerge, and to develop innovative policies and programs (no matter how unconventional) to encourage such investment. To the third point, it will be important to demonstrate the existing capabilities and expertise of Canadian companies and research institutions as they relate to developing and manufacturing electrified vehicle technologies. This is the focus of the Automotive Parts Manufacturers' Association's Project Arrow, a technology demonstration program being carried out in collaboration with industry, government, and research institutions (see Guglielmo, 2020).

At the time of writing, industry and government efforts are appropriately being directed toward the COVID-19 pandemic. If nothing else, these efforts underline the capacity for manufacturing innovation that exists in Canada, the power of collaboration between stakeholders (including manufacturers, government, research institutions, and industry associations – all of which should be commended for their efforts), and, critically, the importance of a competitive automotive industry to Canada moving forward.

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