



# Automotive Industry Labour Market Analysis: Production Mandates and Impact on Labour Market Forecasts

The project is a collaboration of the Canadian Skills Training and Employment Coalition, Prism Economics and Analysis, and the Automotive Policy Research Centre.

November 2019

Funded by the  
Government  
of Canada | **Canada** 

This report was prepared for the Auto Labour Market Information (LMI) Project.

The goal of the Auto LMI project is to help stakeholders better understand the automotive labour market. The Project will create industry-validated, regional, occupational supply and demand analyses and forecasts and skill profiles for skilled trades and other key skilled occupations in the broader automotive sector including vehicle assemblers, parts manufacturers and technology companies that supply the industry. The project will also examine various labour market trends in the sector and facilitate discussions among stakeholders about how to address any forecasted skills shortages and other labour market challenges. The planned outcome of the project is enhanced regional LMI that will support colleges, employers, policy makers and other stakeholders in taking practical steps to address skills shortages and other labour market challenges in the automotive sector.

This project is funded by the Government of Canada's Sectoral Initiatives Program. The opinions and interpretations in this publication are those of the author(s) and do not necessarily reflect those of the Government of Canada.

Canadian Skills Training and Employment Coalition, [cstec.ca](http://cstec.ca)

Prism Economics and Analysis, [prismeconomics.com](http://prismeconomics.com)

Automotive Policy Research Centre, [automotivepolicy.ca](http://automotivepolicy.ca)

November 2019

# Table of Contents

- Introduction ..... 3
- Context for winning production mandates ..... 5
- Factors impacting production investments in Canada..... 8
  - Government incentives for investments ..... 9
  - Well-developed transport infrastructure and transports costs..... 10
  - Market proximity, trade relations and border policy ..... 10
  - Supplier network and existing production facilities ..... 11
  - Attractive regulatory environment ..... 11
  - Skilled workforce – education and training ..... 11
  - R&D Investments and commercializing innovation..... 12
  - Macroeconomic and political stability ..... 13
- Assumptions for Baseline, Growth and Contraction Labour Market Forecasts..... 13
- References ..... 15

## Introduction

This report summarizes what industry stakeholders and researchers have indicated helps automotive manufacturers win production mandates and explains the context for the variable demand side of the labour market forecasts we will produce in the later part of the project. Of course, many other factors will influence the demand for labour in this sector including the introduction of new technologies, changing consumer preferences, and economic cycles. However, corporate decisions that relate to allocating the production of specific vehicles to specific locations within North America are central to determining the share of North American production that occurs in Canada. These corporate decisions will therefore have a critical impact on the demand for labour within the sector.

The report is also part of a collaborative effort of the Canadian Skills Training and Employment Coalition (CSTEC), Prism Economics (Prism) and the Automotive Policy Research Centre (APRC) to help better understand the broader automotive sector labour market. Our collaborative project is funded by the Government of Canada and will achieve a number of objectives, as follows:

- In order to illustrate the economic importance of the sector, we define the industry broadly to include its extensive and complex supply chain, and identify its contribution to innovation in manufacturing technologies, mobile connectivity and alternative propulsion;
- Build an economic model of the broadly defined sector's workforce and forecast supply and demand for key occupations, including baseline forecasts assuming Canada's share of North American production remains consistent, and variable demand forecasts that assume an increased share and a decreased share of North American production;
- Identify and examine key labour market trends – including trends related to wages – so stakeholders and policy makers and job seekers can better understand labour market developments, challenges and opportunities for the sector;

- Engage the Industry in consultations and respond to its recommendations and concerns in order to ensure our research is relevant; and,
- Summarize our findings and disseminate the information that we produce as widely as possible to stakeholders and users of information related to the automotive sector. Our initial reports are now available and our final reports will be made public before the end of 2021.

At the time this report is released, our team is working on how to define the sector and measure the size of the workforce. We do know that the industry has an extensive and complex supply chain. Our preliminary research indicates that in Canada between 177,000 and 188,000 people are employed in the broadly defined automotive sector, and that the economic output of automotive assembly and exported automotive parts is well over \$83 B per year. Included in the total jobs provided by the sector are over 20,000 skilled trades jobs and over 28,000 senior management, engineering and other technically oriented jobs. Thus, the automotive industry is a key driver of economic activity in Canada.

Unlike services or industries that must operate in Canada and cannot be moved to other jurisdictions, such as construction and utilities, the automotive sector is subject to international competitive pressure. The demand for key occupations in the sector in Canada is therefore subject to Canadian producers maintaining or increasing the current share of North American production. The key to maintaining, increasing, or decreasing Canada's share of North American production mandates is the ability of domestic producers to continue to win production mandates. Industry leaders have commented on what factors make a particular jurisdiction attractive for investment and these comments are summarized in various reports including those produced by the Canadian Automotive Partnership Council (CAPC) and the Automotive Advisor to the Minister of Innovation, Science and Economic Development and to the Ontario Minister of Economic Development and Growth. Researchers associated with the Automotive Policy Research Centre (APRC) have also made significant contributions to the literature describing what factors attract capital investment and production mandates.

In the following pages we summarize the commentary we have reviewed on attracting capital investment and winning production mandates, and provide a preliminary explanation of how and why we are going to use variable demand side assumptions in our labour market forecasts.

## Context for winning production mandates

In 1999, Canada was the fifth largest producer of motor vehicles globally. By 2017, it fell to 11th place. New production related investments in North America have gone to Mexico and the Southern US States. While smaller vehicles have been manufactured in Mexico for some time, Mexico is now also attracting luxury automakers which “highlights the need for a renewed strategy going forward by governments and others involved in automotive investment attraction in Canada.” (Yates, 2015) The importance of maintaining and growing the Canadian automotive industry and the dangers of losing it to competitors has been raised by many in the sector due to the employment it provides and the economic activity and R&D it generates. (Yates, 2015 citing Stanford, 2014, p.8). Jurisdictions must be competitive in order to attract investment in this sector. Foreign direct investment (FDI) is portable and automotive assemblers have many choices and options when choosing investment locations. (CAPC, 2013) Canada has to develop strategies and implement actions to sell its value proposition to investors, with people, infrastructure and technology as pillars, through a comprehensive plan. (Tanguay, 2018)

Canada produces good quality product and there have been important productivity improvements, but trends in production, capital spending, R&D, and trade balances over the last few years suggest a need for renewed efforts to maintain and grow the sector. (CAPC, 2016; Sweeney, 2019).

- **Vehicle assembly**

Canada still has a critical mass of motor vehicle manufacturing activity. Five Original Equipment Manufacturers assemble light vehicles at Canada’s 11

auto assembly plants at 8 locations (including GM Oshawa), all located in Ontario. Canadian vehicle assembly built just over 2 million vehicles in 2018. Production fluctuated over the last 10 years, ranging from 1.5 million units in 2009 (during the Great Recession) to 2.5 million units in 2012.

- **Parts production**

In addition, Canada has a critical mass of motor vehicle parts manufacturing activity. Even when parts suppliers without the NAICs code 3363 are excluded, total production is over \$30 B per year for parts suppliers, and \$19 B of that production is exported.

- **Capital spending**

However, while we have the current critical mass of production capacity, Canadian automotive manufacturing capital expenditures have dropped from the highs of the 1990s and 2000s back to 1980s levels. Between 2002-2017, annual capital expenditures in assembly (NAICS 3361) and parts (NAICS 3363) went from \$3.3 billion in 2002 to a peak of just over \$4 billion in 2007 before the Great Recession, and then dropped to just under \$1.9 billion in 2017. Most capital expenditures went towards upgrading existing facilities. The declines will make productivity improvements difficult to sustain, making the industry less competitive. (CAPC, 2013)

- **R&D spending**

R&D facilities are located throughout the country. Canadian automotive OEMs and parts manufacturing firms spent \$330 million on business enterprise R&D in 2018. (Statistics Canada, 2019) Current automotive business enterprise R&D expenditures remain far lower than in the mid-2000s, when the Governments of Canada and Ontario introduced policies and programs that encouraged and incentivized automotive R&D in Canada. Expenditures for the 10-year period 2009 - 2018 ranged from \$216 million in 2015 to over \$300 million in 2010 and again in 2017 and 2018. These numbers are low compared to \$657 million in 2004.

- **Trade volumes and balance of trade**

Trade volumes and balances fluctuate in NAICS 3361 (assembly) and 3363 and 326193 (parts). The majority (85%) of vehicles built in Canada are exported with 96% of vehicles going to the US. The United States is the largest source of Canadian vehicle (60%) and automotive parts (67%) imports. Mexico is the second largest source of vehicle (15%) and automotive parts (15%) imports. Japan (8%), Germany (6%), and Korea (5%) are also sources of vehicle imports, while China (6%) and Japan (3.5%) are sources of automotive parts imports.

Canada historically had a surplus in the trade of vehicles until 2017, and a deficit in the trade of automotive parts. The vehicle trade surplus exceeded the automotive parts trade deficit until 2007. However, Canada had a deficit in the trade of both vehicles and automotive parts of \$24.6 billion in 2018 because of strong consumer demand for vehicles and relatively low vehicle production in Canada. Despite the negative trade balance, the auto sector continues to be Canada's #1 manufactured export, accounting for 13.4%<sup>1</sup> of all Canadian exports in 2018, and Canada's #2 overall export behind oil.

- **Quality**

The Canadian automotive industry has a well-deserved reputation for quality. Ontario assembly plants have won about one-third of all J.D. Power plant quality awards for North America since 1990. Over the same period, Canadian plants have earned approximately two-thirds of the J.D. Power Gold Quality Awards for vehicles. TMMC Cambridge recently won the PLATINUM JD Power Award, which is best in world. This has occurred even though Canada has had only about 16 % of the total assembly plant capacity. (CAPC, 2013)

---

<sup>1</sup> 2018- <https://tradingeconomics.com/canada/exports>

- **Productivity**

The automotive sector has demonstrated greater productivity gains than the manufacturing sector overall with labour productivity growing by 22.5% between 2009 and 2012, post-recession. (CAPC, 2013)

In this context, we believe it is prudent to include baseline, growth and contraction assumptions in our labour market forecasts. Our baseline forecasts will assume that there is not a material shift in Canada's share of North American production. We will produce baseline forecasts of the supply and demand for key occupations in the broader automotive sector for Ontario, Quebec and eight economic regions including: Windsor/Sarnia; London/Stratford; Kitchener/Waterloo/Barrie; the Golden Horseshoe; Eastern Ontario; Montreal; Winnipeg; and Vancouver.

Since fluctuations in production levels, capital investment, R&D spending and trade flows suggest that it is possible that Canada's share of North American production will change over time, we will also produce growth forecasts for Ontario and Quebec assuming demand for key occupations is greater than the baseline because Canada could increase its share of North American production. We will also produce contraction forecasts for Ontario and Quebec assuming demand for these key occupations is lower than the baseline because Canada's production could contract. If increases or decreases because of these variables, demand for key occupations such as millwrights, electricians and engineers could fluctuate.

## Factors impacting production investments in Canada

Because capital investment, productivity improvements, and R&D spending will play an important role determining what share of North American production occurs in Canada, it is important to understand what factors influence investment decisions. Industry leaders and stakeholders have spoken on what factors make a country attractive to automotive investors and we summarize those factors below. Canada scores well in some, less well in others.

When looking at investment OEMs and most global suppliers focus on two distinct areas: (i) automotive manufacturing - assembly and parts; and (ii) automotive engineering and research and development. Different factors influence investments in each of these activities. Relative cost and quality of labour, energy costs, transportation infrastructure, logistics and other input costs, trade agreements and government financial incentives influence the location of manufacturing investment. Attracting R&D investment is dependent on factors such as engineering talent, alliances with postsecondary institutions, intellectual property policy, financial supports for company-based innovation and other innovation policy enablers. (Yates & Holmes, 2019) Competitor jurisdictions (U.S. and Mexico) offer cash incentives, tax breaks to automotive OEMs, infrastructure support (e.g. improved access to roads, railways, and utilities), land, and training for workers in the sector. (APRC, 2016) Canada offers an attractive proposition for the automotive sector to maintain and grow production in several of these areas but there are also opportunities for improvement that require the support of government.

### *Government incentives for investments*

Governments around the world offer incentives to automotive companies to attract capital investment, especially for new assembly operations. The level of partnership that the governments of Canada and Ontario have developed to attract automotive investment has been recognized by the sector. Industry and researchers have indicated that if Canada wants to secure significant new automotive investment, it needs to continue to offer financial incentives to automotive companies, focusing on sustaining and perhaps expanding Canada's OEM assembly operations. Manufacturing that has shifted to the Southern U.S. and Mexico has done so at least in part because of the relative cost advantage. The cost differential between Canada and the Southern U.S. and Mexico has to be overcome to bring new investments.

The industry has made a number of observations about government incentives. Government incentives must be competitive with other competing jurisdictions.

While incentive packages certainly differ across jurisdictions, in some cases investment incentives in the United States have been more generous, covering a greater percentage of the total investment cost than Canadian packages. Industry has also observed that dealing with multiple levels of government and the challenge of submitting funding applications to more than one agency is a disadvantage for Canada. Interest free loans are not as attractive as cash incentives because most large corporations already have low borrowing costs in current low interest rate environments. Finally, industry has indicated that packages can be too complex and it can too long for approval, thus making planning more difficult.

### *Well-developed transport infrastructure and transports costs*

Quality and cost of transportation infrastructure are important factors in attracting investment the automotive industry. Canada's public infrastructure contributes to its competitiveness. The industry has recognized the strengths of Canada's transportation infrastructure but also indicated that it is important to address certain shortcomings in existing infrastructure, as well as continue to maintain and build on what is working. In addition, changes will have to be made to accommodate a changing industry (i.e. charging stations for EVs)

### *Market proximity, trade relations and border policy*

Canada's proximity to the U.S. gives it an advantage as OEMs like to produce vehicles close to major markets. Canada's automotive industry is export dependent, with 97% of automotive exports going to the USA. (Yates, 2015, citing Holmes, 2014; Sweeney). Good market access and seamless integration into the Great Lakes automotive manufacturing cluster are very important. But it is critical that Canada has the trade agreements and border crossing practices that not only allow vehicles and parts to cross the Canada/U.S. border tariff free, but also utilize pre-inspections and new technologies to streamline the border crossing process and make the delivery of product more efficient.

### *Supplier network and existing production facilities*

Canada has a well-developed auto parts supply network to support OEMs. Many of the world's top parts manufacturers have operations in Ontario with the majority being Canadian owned (52%) and a few owned by multinational corporations. (Sweeney & Mordue, 2017). This network is important in attracting OEM investment.

### *Attractive regulatory environment*

Industry frequently indicates that the burden of regulation can be costly and policy makers must ensure regulations align with other auto manufacturing jurisdictions in North America, considering the costs and associated benefits.

### *Skilled workforce – education and training*

In 2017, Canada had the highest tertiary education attainment among OECD and partner countries (56.7% of 25-64-year olds). The high quality, low turnover, highly skilled, disciplined and educated Canadian workforce continues to be seen by automotive companies as a competitive advantage and is a key part of Canada's value proposition for investors. (Tanguay, 2018)

Ontario's extensive network of publicly-funded community colleges and universities support the supply of high-quality labour to the automotive industry. Publicly funded community colleges have developed relationships with and training programs for automotive assemblers that require less cash incentive to establish than is required in the U.S. The public investment in the colleges and universities system should be factored into the value Canada brings to the sector. (Yates & Lewchuk, 2017)

Digitization or Industry 4.0, and evolving trends in product design and technology is shifting labour demand from semi-skilled labour to more technically skilled employees with a heavy emphasis on engineering, computer science and data analytics skills. Countries and industries that do not invest in such integrated

communication-based technologies will be left behind in terms of productivity, investment and, ultimately, jobs. Canada has to plan for this labour adjustment and labour policy needs to work with economic policy and industry shifts to re-train/upskill workers, recruit highly-skilled immigrants, as well as engage education institutions to keep the workforce relevant.

While we have a highly educated workforce that works to our advantage, success in the automotive sector will depend on productivity growth and innovative capacity. That means firms and government must aggressively invest in capital equipment and in the adoption of new technologies and they must invest both current and future workforces. Greater levels of productivity in the automotive sector in Canada may mitigate the effects of high relative labour costs.

### *R&D Investments and commercializing innovation*

The Canadian automotive industry has made some investments in Canadian research infrastructure but these have been inconsistent across segments and companies. Automotive R&D and product engineering remain relatively low as major vehicle design, R&D and product engineering, as well as R&D in parts tend to stay geographically close to OEM headquarters.

Winning R&D investment does not guarantee that assembly or parts production will increase. The components within these innovations can certainly be produced elsewhere. However, the economic activity associated with innovation is growing. To compete with low-cost jurisdictions, producers have to apply advanced technologies to their production, logistics and distribution systems including autonomous robotics and data analysis systems. The pursuit of lower vehicle emissions and vehicle connectivity is driving change in the design and production of the automobile and the automotive industry, with significant social, economic and infrastructural effects. These changes will impact suppliers, demand for vehicles and demand for skilled labour. Canada has the opportunity to be proactive and lead research and innovation, but we have to encourage R&D investments. We have the

skilled workforce and Ontario has one of the largest technology hubs in North American, but tax incentives or tax credit programs or other means to encourage R&D should be considered. Industry has called for a national strategy to assist manufacturers to transition to new manufacturing systems, and to help smaller Canadian innovators commercialize their products.

### *Macroeconomic and political stability*

Canada's political stability and safety is an asset in attracting investors and should not be underestimated by investors in site selection. The Canadian economy has achieved one of the best performances of the G7 both leading into and coming out of the 2008/2009 global financial crisis. Canada has led the recovery among G7 countries, the first to return its GDP to pre-recession levels. Inflation is low and Canada has the lowest total government net debt-to-GDP ratio among G7 countries.<sup>2</sup>

## Assumptions for Baseline, Growth and Contraction Labour Market Forecasts

Considering the number of factors that influence capital spending and the ability of producers to win production mandates, we believe it is prudent to forecast the demand for key occupations with different assumptions. Our baseline assumptions will assume that Canada's share of North American production will remain fairly stable at current levels. We will consult industry before finalizing the production assumptions, but may take the average levels for the past two or three years, taking into account what we know about General Motors plans for Oshawa. We make some basic assumptions about historic productivity improvements continuing, and look closely at the demographics of the industry. Assuming employees retire at historically consistent ages and rates, and new entrants to the automotive labour market join at historically consistent rates, we will be able to project both the

---

<sup>2</sup>See <https://www.fin.gc.ca/n18/18-044-eng.asp> and [Budget 2019, www.budget.gc.ca/2019/docs/plan/overview-apercu-en.html](https://www.budget.gc.ca/2019/docs/plan/overview-apercu-en.html)

supply and demand for key occupations. These baseline forecasts will clearly indicate the impact of an aging workforce on the industry.

Since production has varied from roughly 1.5 million vehicles produced in 2009 during the financial crisis to roughly 2.5 million vehicles produced in 2012, and since approximately 2 million vehicles were produced in 2018, we think it is reasonable for the growth forecast to assume Canada produces 20% more vehicles than our baseline forecast. Our contraction forecast will assume Canada produces 20% fewer vehicles than is assumed in our baseline forecast. This range is consistent with recent movement in levels of production.

Since Canadian parts producers export approximately 63% of their production, we note that parts production would not necessarily fall 20% just because assembly falls 20%. In fact, it is possible that Canadian producers would replace some or all of the 37% of their lost Canadian business with other business. But for this exercise we are going to assume that if Canada struggles to attract capital investment by OEMs, it will struggle to attract investment by parts producers. So in our contraction forecast, we will assume parts production also falls by 20%. Conversely, in our growth forecast, we will assume 20% more parts production than we assume in our baseline forecasts.

## References

Automotive Policy Research Centre (2016, July 21). APRC Briefing Note for the Ontario Auto Mayors: *Provincial Incentives for Automotive Manufacturing*. Ontario.

A Call for Action: II. A Report by the Manufacturing Competitiveness Committee of the Canadian Automotive Partnership Council (CAPC). Retrieved from <http://capcinfo.ca/en/mcwgreport.html>

Piecyk, A. & Yates & Mordue, G.D. (2016) *One-Stop Shopping for Investment Attraction: Does the ProMexico Model Work for Canada? The Case of the Automotive Industry*, Automotive Policy Research Centre (APRC).

Statistics Canada. (2019) Table 27-10-0333-01 Business enterprise in-house research and development expenditures, by industry group based on the North American Industry Classification System (NAICS), country of control and expenditure types (x 1,000,000)

Sweeney, B. (2019, March). *Canadian Automotive Industry Profile*, CSTEC and Automotive Policy Research Centre (APRC).

Sweeney, B. & Mordue, G. D., (2017 January) *The Restructuring of Canada's Automotive Industry, 2005–2014*. Canadian Public Policy.

Tanguay, R. (2018, January). *Drive To Win*. Automotive Advisor Report to the Minister of Innovation, Science and Economic Development and the Ontario Minister of Economic Development and Growth. Retrieved from [http://capcinfo.ca/images/PDF/CAPC\\_Automotive%20Report-en.pdf](http://capcinfo.ca/images/PDF/CAPC_Automotive%20Report-en.pdf)

Yates, C. & Holmes, J. (2019, February). *The Future of the Canadian Auto Industry*. Canadian Centre for Policy Alternatives.

Yates, C. & Lewchuk, H. (2017). *What Shapes Automotive Investment Decisions in a Contemporary Global Economy?* Canadian Public Policy. Volume 43 Issue S1, January 2017, pp. S16-S29. Retrieved from <https://doi.org/10.3138/cpp.2016-043>