



WORKFORCE TRANSFORMATION

Realities and Future Outlook for the Automotive and Mobility Sector

What is Changing?

The automotive and mobility sector is experiencing a significant transformation. Rapid technological advancements, continuous changes in consumer behaviours, and the emergence of new business models are bringing major opportunities in the form of greater financial and operational efficiencies, more efficient movement of people and goods, and cleaner and more sustainable infrastructure.

Over the last decade, Ontario has experienced a rapid growth in its tech sector, which has become a major economic driver for the province. Accelerating the adoption of technological disruptions such as artificial intelligence (AI), advanced robotics, 3D printing and cleaner energy technologies will influence almost all industries¹ such as automotive manufacturing, transport and warehousing, healthcare, and more. This will inevitably influence the future of work, reshaping many jobs, and facilitating the emergence of new roles which require new and more advanced skillsets.

The convergence of industries through the adoption of new technologies brings about another set of opportunities and challenges for the automotive and mobility sector. Increased demand for highly technical skills represents a positive shift towards high quality jobs, but also results in an increase in competition for talent from other industries and geographies, tightening Ontario's labour supply. This impact is exacerbated by shifting demographics in Canada that are yielding a rapidly aging workforce and are shrinking the working-age talent pool.

When coupled with the adoption of new business models and economic uncertainty induced by the pandemic, these workforce supply and demand dynamics will continue to experience significant shifts. There is a pressing need for workers and businesses to be more flexible and adaptable, work on fostering digital skills and developing tools for innovative learning opportunities to break spatial barriers and open doors to diversifying our workforce and improving access to jobs and other opportunities.

To address these challenges, future proof our workforce, and maintain our sector's global competitiveness, more efforts are being focused on responding to the sector's workforce demands, advancing talent development strategies, and attracting and retaining top talent.

<p>Technological Transformation</p> <p>The global automotive and mobility sector is experiencing immense transformation with the rise of CASE (connected, autonomous, shared, electric) mobility.</p>	<p>Workforce Changes and Competition</p> <p>With an aging workforce, competition over talent from other sectors and geographies, the skill gap is expanding and demand for advanced skills in the automotive and mobility sector is growing and becoming more pressing.</p>	<p>Convergence of Industries</p> <p>The convergence of industries means competition for talent between them. The primary competition (55%) for occupations in auto manufacturing in Ontario comes from other manufacturing employers².</p>	<p>Unforeseeable Disruptions</p> <p>Mobility services were heavily disrupted by COVID-19 impacting a large cohort of mobility sector workers such as transit drivers, inspectors, and other transit workers.</p>

The Evolution of Skills

Many efforts have been focused on quantifying how these advanced technologies, largely that of automation will influence the future workforce. There is a division of opinion on the changes these trends will bring to the workforce, ranging from the evolution of current skills to the emergence of new skills and roles, and from increased workforce productivity to broadened skills gaps.

Despite this uncertainty, there is consensus that the future of the workforce will face a major transformation. A study by RBC suggests that 50 percent of occupations will undergo a significant skills overhaul³ over the coming decade. The level of change will vary for different sectors, roles, skillsets and across geographies depending on the strategies put forward to manage it.

In order to implement the most effective tools to support workforce development, a well-rounded understanding of the existing realities and future outlook is imperative. Recognizing, prioritizing, and addressing ongoing challenges and needs can pave the way to streamlined strategies that can support in futureproofing the sector's workforce.

Addressing the elephant in the room

As a result of the unprecedented impact of the COVID-19 pandemic, the labour market has experienced major disruption which has affected millions of workers across the Province. Ontario's unemployment rate jumped to a record high of 13.6 percent in May 2020, with slightly over a million unemployed persons⁴. Between February and May of this year, almost 57 percent of the job losses were concentrated in four sectors, including manufacturing⁵.

With the gradual re-opening of businesses and the corresponding recovery of jobs over the past few months, Ontario's unemployment rate decreased to 9.1 percent in November 2020. The majority of industries recorded recent job gains, and some even reported employment numbers above pre-COVID (February 2020) levels, including manufacturing (+1.7%). However, there were still job losses in a few sectors including transportation and warehousing (-14.2%) compared to pre-COVID levels⁶.

The pandemic has also played a role in accelerating the transition to automation⁷. Some technologies have gained momentum in light of social distancing measures - specifically in logistics and distribution, such as in the case of delivery bots. Moreover, companies that face workplace closures and enforced measures may start looking into utilizing new technologies for a broader range of tasks that require creativity and social interaction such as problem solving and sales.

Future outlook

Workforce transformation driven by automation and digitization will affect in-demand skills in almost all occupations specifically in operationally intensive sectors, such as manufacturing, transportation, and operations-aligned occupations like maintenance⁸. Some of the predictable and repetitive activities within these sectors may become automated in the future.

For the automotive and mobility sector, this is not new. If we look at auto manufacturing, automation has been adopted for some time. Robots working along side human workers are bringing flexible, safer and more efficient operations. In Canada, companies have been taking gradual steps to adopt new technologies compared to other international counterparts⁹ which decelerated automation's impact on the workforce over the past decade.

Continuously, more efforts are being focused on supporting the adoption of new technologies and advanced manufacturing processes in the sector while cognisant of the opportunities and challenges that this will bring to the workforce. In this space, the Ontario government launched its [Automotive Modernization Program \(O-AMP\)](#). The program provides support to automotive suppliers in the province to adopt advanced manufacturing technologies and lean techniques for the purpose of improving processes and enhancing the sector's competitiveness.

These advanced manufacturing technologies and more intelligent operations are also increasingly being adopted in more progressive work activities that require judgment and experience¹⁰. Similarly, the projected growth in autonomous driving is expected to transform many related jobs such as truck and transit drivers, mechanics, technicians, inspectors, and other vehicle operators, which opens the door to reskilling and redeployment into this new automotive space.

In Ontario, this shift to more intelligent operations is also influenced by a persisting labour shortage in the skilled trades. The province's automotive workforce is also expected to experience a significant exit of workers from older age cohorts that currently make up higher than average proportions of the industry's workforce¹¹. These workers will need to be replaced by new talents with the advanced skills that are in-demand by the sector.

Tasks with the potential for automation

In an effort to obtain a more realistic representation of the potential for automation and how it will reshape these occupations or their relevant skills, many studies have looked at the impact on specific tasks within occupation groups. A study by McKinsey found that in about 60 percent of all occupations, close to one third of activities are technically automatable¹².

Focusing on automotive manufacturing, a study by the Future Canadian Automotive Labourforce initiative projected that future changes in skilled trades occupations in automotive manufacturing will vary widely¹³. The majority of tasks will remain unaffected or will require some skills upgrades. While 50 percent of the tasks are projected to be influenced by the technologies of Industry 4.0, only 18.2 percent of tasks may face a more significant transformation.



of the tasks of skilled trades in automotive manufacturing will be influenced by the technologies of Industry 4.0 systems

To keep up with job requirements in a digital era, the future workforce is increasingly required to have advanced technological skills (ex. data analytics and programming) in addition to the basic digital skills (ex. work with spreadsheets and word processing software) that are currently foundational for almost all occupations. Conversely, the demand for physical and manual skills including general equipment operation is expected to decline. A recent study by McKinsey showed that demand for repeatable and predictable tasks (in US and Europe) is expected to decline by nearly 30 percent over the next decade¹⁴. Moreover, activities including data collection and processing are among the most readily automatable activities¹⁵.

The Opportunity

The complexity of challenges for future skills brought by automation depends on the angle we choose to look at across this wide spectrum of possibilities. Some sectors and occupations will experience a positive transformation, bringing benefits like an increase in productivity, efficiency, and safety. Others may not be as fortunate. But what makes this issue even more complex is the fact that any transformation of skills will most likely be experienced by all applicable sectors, thereby limiting the opportunities for talent to be transferred between these sectors.

What is really going to happen?

It is unclear what these changes will actually mean in terms of shifts in roles. There is a great deal of speculation around the susceptibility of a skill being automated and the actual automation of sector tasks¹⁶. The likelihood depends on the feasibility and cost of adopting technology for automation at any point of time. Moreover, automation can only move forward if policy and regulatory frameworks and public acceptance are in place to support such a transformation.

If efforts continue to be focused on developing a strong talent pool with sufficient supply for the labour force, workers will be able to compete with technologies as the most feasible option. Even with automation, a shortage of labour may be more likely than a surplus especially in light with the existing skills gap and continued growth in the sector.

A positive outlook

With all these uncertainties come considerable opportunities. The automation of redundant and repetitive tasks brings the opportunity for workers to learn new skills and work on more exciting and thoughtful tasks. This could open the door for more advanced and human-centric roles that can work more efficiently with technology to produce results, ultimately increasing our competitive advantage and contributing to our economic growth down the line.

Moreover, with the rise of new industries such as additive manufacturing, cloud-computing and cyber security, new high-value job opportunities and new roles are arising in the sector.

Supporting a Resilient and Adaptable Workforce

Current efforts are underway to support the resilience and adaptability of the automotive and mobility sector's workforce of tomorrow. In August 2020, the Ontario government announced an investment of over \$9 million in 11 new projects to train and retrain approximately 2,000 people for employment in Ontario's automotive and advanced manufacturing sectors¹⁷. These efforts, along with a number of other initiatives to develop the sector's workforce, are aligned with the province's [Driving Prosperity Plan](#) to support the future of the automotive sector which includes talent development as a key priority.

Significant and collaborative efforts will continue to be needed to raise awareness of technological changes, shifting market dynamics and their influence on the workforce. Moreover, workers need to be given access to the tools and resources to be able to advance their skillsets. To ensure these tools are accessible to all, and to ensure equal opportunity to participate in the workforce¹⁸, a strong digital infrastructure and enhanced connectivity are increasingly becoming a focal point for government strategies.

Additionally, collaboration within the industry as well as across related industries is key to bridging the skills gaps, facilitating skills transfer, and supporting skills development. It is also imperative to accurately portray the automotive sector as a continuously growing, tech-driven and innovative sector to allow a shift in mindset and to attract top talent.

To support in developing a resilient and adaptable workforce, we summarize below some of the high-level opportunities in four key areas of focus for the industry.

 Workforce Awareness	 New Learning Experiences	 Reskilling and Redeployment	 Cross-sector Collaboration
<ul style="list-style-type: none"> → Workers and businesses should understand how automation and digitization will affect their future skills needs. → Increased access to information about the sector and possible learning and career opportunities focusing on under-represented groups who currently have limited access/knowledge about the sector. → Improved organizational capacity to identify relevant workforce development solutions and develop internal strategies to address potential skills gaps. 	<ul style="list-style-type: none"> → Focusing on new and emerging learning methods for the efficient and timely development of required skills. → Expanding co-op education opportunities and work integrated learning programs. → Capitalizing on mentorships, job shadowing and networking to facilitate entry to the sector and improve talent attraction. → Building on the knowledge and lessons learned of early adopters of new and emerging learning methods in the sector and other sectors. 	<ul style="list-style-type: none"> → Designing upskilling and reskilling strategies to support in redefining and advancing future work tasks and skills. → Focusing on developing cognitive skills, enhancing digital skills and skills that are most difficult to automate. → Engaging K-12 to support early development of skills required for the future of the sector. → Rapid and prioritized development of education and training tools based on the emerging and forecasted needs. → Support businesses in developing upskilling and reskilling programs as part of their future workforce planning strategies. 	<ul style="list-style-type: none"> → Facilitating the development of transferable skills and supporting workers as they transition from one set of activities to another. → Industry collaboration to enable redeployment of talent into other segments and/or sectors that experience a decline in demand for the same skills. → Cross-sector collaboration to feed into skills development resources for workers and businesses focusing on upskilling and reskilling through focused, adaptable, and stackable learning (ex. micro-credentials).

Skills and Talent for the Automotive and Mobility Sector

Ontario's [Autonomous Vehicle Innovation Network \(AVIN\)](#) is undertaking work on skills and talent, which focuses on ensuring the sector's workforce is prepared to meet the needs of the future and maintain its global competitiveness.

Through this work, AVIN aims to support the futureproofing of the automotive and mobility sector's workforce, drive collaboration between industry, educational and post-secondary institutions and government, and support an approach to strengthening and diversifying the next generation talent pipeline and building capacity within all regions of Ontario.

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