AVIN SPECIALIZED REPORTS

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THE AUTO SECTOR AND THE COVID-19 PANDEMIC

Recovery Support and Opportunities

Where Next Happens

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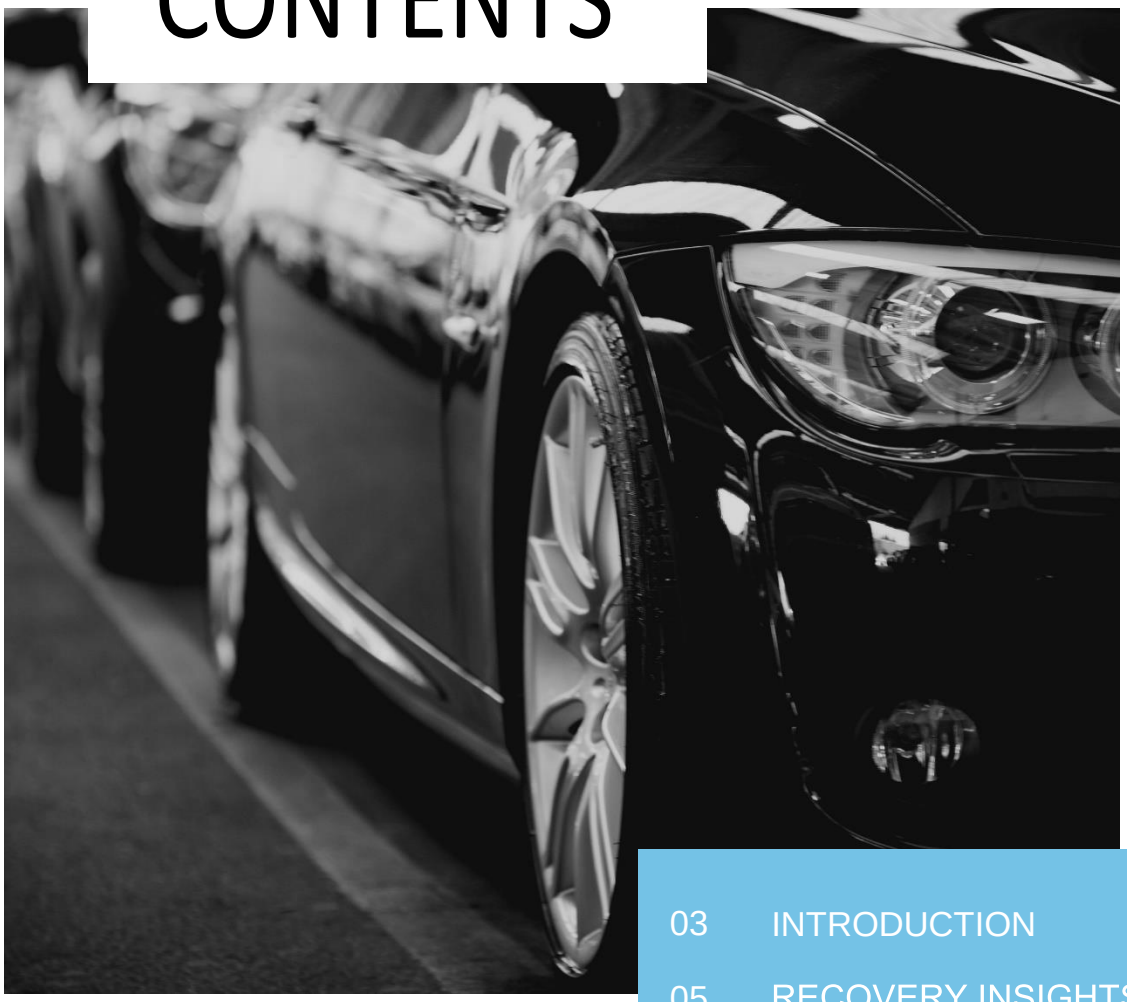

INTRODUCTION

With the impacts that the COVID-19 pandemic continues to have on people, finances, and resources, the major priority of most firms, including automotive and mobility companies, is currently **less about expansion and more about recovery**.

Like other industries, the automotive and mobility sector is currently experiencing serious economic and operational challenges[1,2]. Due to the lockdowns, social distancing, and travel restrictions amid the COVID-19 pandemic, auto markets have been experiencing a dramatic decline in new vehicle sales, some by more than 80% at peak exposure[3]. Public transit, along with ride hailing, car sharing, and micromobility services, have all been experiencing severe declines in ridership as well. Many auto and mobility technology companies have also had to suspend some of their planned product testing/launch operations[4].

On the response and recovery side, some companies have already learned from previous downturns they encountered

[1] **Boston Consulting Group. (2020). COVID-19's Impact on the Automotive Industry. Retrieved from** https://www.bcg.com/en-ca/publications/2020/covid-automotive-industry-forecasting-scenarios.aspx

[2] **McKinsey & Company. (2020). The impact of COVID-19 on future mobility solutions. Retrieved from** https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-impact-of-covid-19-on-future-mobility-solutions

[3] **Boston Consulting Group. (2020). Auto Companies Will Outlast COVID-19 and Come Out Stronger. Retrieved from** https://www.bcg.com/en-ca/publications/2020/auto-companies-will-outlast-and-thrive-post-covid-19.aspx

[4] **Vengattil, M. (2020). Self-driving technology companies suspend testing on virus fears. Retrieved from** https://www.reuters.com/article/us-health-coronavirus-waymo/self-driving-technology-companies-suspend-testing-on-virus-fears-idUSKBN2143MO

before and prepared for similar crises. Yet, other companies had not experienced such challenging times and are all open for guidance and support to navigate through and recover. **In this report, we present recovery insights that can help companies, especially the small- and medium-sized ones, navigate these challenging times. We also highlight some of the economic support programs offered by the Governments of Ontario and Canada to assist businesses of all sizes counter the economic impacts of COVID-19.**

On the positive side, the COVID-19 impacts and challenges have also brought opportunities to transform and excel the auto and mobility sector. Many automotive manufacturers and suppliers have succeeded in pivoting their production lines and producing health care essentials. Other companies have focused on offering their smart mobility technologies to solve some of the current COVID-19 challenges and transform them into opportunities to boost public acceptance and demand for these technologies. **The report also discusses some of these opportunities that have been brought by and for the auto and mobility sector in Ontario and worldwide amid the COVID-19 pandemic.**

There is no doubt that the challenges forced upon auto and mobility companies right now can, with a resilient and innovative vision, yield success stories and profitable business models. There is a reward to be gained for the future in the lessons that companies are learning today.

RECOVERY INSIGHTS FOR SMES

The province of Ontario has 250+ small- and medium-sized enterprises (SMEs) operating in the auto and mobility sector. Their developments span over multiple scopes of the sector technologies, including advanced manufacturing, auto electronics and software, artificial intelligence, autonomous and connected vehicle technologies, mobility services, data analytics, cybersecurity, among others. Lessons from the past have taught us that economic downturns hit SMEs the hardest[5]. SMEs mainly depend on their operating working capital to run their businesses, as opposed to the large enterprises that normally lean on some credit and cash reserves in their balance sheets. During economic challenges and lockdowns, SMEs struggle with maintaining cash flows, working capital, and seamless access to supply chain, leading to serious challenges with keeping their businesses running. Nevertheless, these economic challenges and operational difficulties do not mean that SMEs must give up and prepare to lose their businesses amid an economic downturn.

Since the impacts of COVID-19 have become tangible, many business experts, entrepreneurs, and SME founders that have survived previous economic downturns have been sharing lessons and insights from the past to help SMEs navigate through these challenging times[5,6,7]. Their number

[5] **Enterprise League. (2020). A Business guide: How to survive a recession and thrive afterward. Retrieved from** https://enterpriseleague.com/blog/a-business-guide-how-to-survive-a-recession-and-thrive-afterward/

[6] **SME Magazine Asia. (2020). Lessons Learnt From the 2008 Recession: Looking back at previous economic catastrophes can help SMEs prepare for the coming storm. Retrieved from** https://sme.asia/lessons-learnt-from-the-2008-recession/

[7] **Business in Vancouver. (2020). B.C. companies can learn from top 20% of firms who survived last recession, report says. Retrieved from** https://biv.com/article/2020/03/bc-companies-can-learn-top-20-firms-who-survived-last-recession-report-says

one rule critically calls for ***"hoping for the best, while expecting the worst and resiliently preparing for it."*** The major recommendations have been mostly revolving around the following insights:

Adjusting Inventory and Repurposing Production

During economic crises, customer interest and demand start to fluctuate due to the change in priorities and needs. It is critical for companies to closely observe such changes and adapt the company's inventory and production lines, accordingly. When companies notice a decline in consumer demand of specific products, it would be more effective to start reducing the inventory of those products and buy related supplies less frequently. This is all while investing the saved costs to repurpose manufacturing capacity through, for example, retooling production lines to supply products that are in much more need during these times.

These tactics are important for SMEs, as such shifts in inventory and production can have a significant impact on the company's working capital, which is the most critical asset for small companies. Also, being considerate and supportive by supplying products in need during tough times may help these companies qualify for tax reliefs and government support[7].

Taking Care of Employees

Running a business during challenging times is reliant on supporting and taking care of employees. In times with critical health concerns, as with COVID-19, keeping employees safe and healthy should come at the forefront by, for example, adapting work policies and providing needed protective supplies, in accordance with local public health advice.

On another note, the uncertainty faced particularly by SMEs during these times certainly affects their employees both professionally and personally. One of the critical acts needed from the leaders of SMEs is to counter such negative impacts on their workforce. Business leaders should give high priority to communicating transparency and optimism to their employees and making sure that the tough situation is not severely affecting either their productivity or mental health.

Upskilling and Self-development

During times of crises and lockdowns, dedicating some time for learning, upskilling, and self-development is one of the best investments. Business leaders can

work with their employees on identifying areas for self-development and acquiring new skills. This is even a bigger opportunity for start-ups that have limited workforce and are willing to expand their talent resources and assets.

All employees from junior levels up to executive levels can certainly find opportunities for upskilling, especially with the wide availability of online learning platforms that we can easily access today. As an example, business owners and marketing employees can invest time in learning new marketing and business development strategies suitable for the current work style forced by the economic challenges, lockdowns, and travel prohibitions.

Leveraging Support Programs

Governments and financial institutions give a supporting hand to businesses, especially SMEs, through grants, business loans, tax support, etc. In the following section, we highlight the major role governments and financial institutions play to help businesses of different sizes counter economic challenges and overcome financial downturns.

HELPING HAND

During and after economic crises, governments play a key role to keep businesses running through financial support programs. Emergency loan programs and low interest rates from financial institutions are also prime sources of support for companies to quickly counter the economic slowdown.

The **Government of Ontario** has historically supported auto companies in the province during crises, and it has promptly stepped in again to help companies of all sectors amid this COVID-19 pandemic. On March 25, 2020, the provincial government announced the **Ontario's Action Plan: Responding to COVID-19**; a one-year action plan outlining the government's $17 billion response to ensure that the health care system, communities, and economy are well positioned to counter the COVID-19 challenges[8]. As a part of this plan, $10 billion have been offered in support for people and businesses, through tax and other deferrals, to improve their cash flow and protect jobs and household budgets.

The Ontario government also announced the **Interest and Penalty Relief for**

[8] **Ministry of Finance. (2020). Ontario's Action Plan: Responding to COVID-19. Retrieved from** https://budget.ontario.ca/2020/marchupdate/index.html

Businesses[9]. This is a five-month relief period for Ontario businesses that are unable to file or remit select provincial taxes on time due to the impacts of COVID-19. Between April 1, 2020 and August 31, 2020, the province would not apply any penalty or interest on any late filed returns or late tax payments under select provincially administered taxes[10].

On March 26, 2020, the Government of Ontario also announced $1.9 billion in relief for employers through the **Workplace Safety and Insurance Board (WSIB)**[11]. This financial relief package allows businesses to defer premium reporting and payments until August 31, 2020. All employers covered by the WSIB's workplace insurance are automatically eligible for this financial relief package.

To provide companies with temporary, immediate **relief on their electricity bills**, the Ontario government has passed an Emergency Order[12] on May 1, 2020, deferring a portion of Global Adjustment charges for industrial and commercial electricity consumers that do not participate in the Regulated Price Plan. This initiative is intended to provide companies with relief on their electricity bills in April, May, and June 2020. On June 1, Ontario also announced $8 million for the COVID-19 **Energy Assistance Program for Small Business (CEAP-SB)** to provide support to businesses struggling with bill payments[13].

Businesses in Ontario have also been leveraging further financial support through Ontario's federal partners. Under its **COVID-19 Economic Response Plan**[14], the **Government of Canada** has been providing support for businesses to have access to capital during COVID-19. As a part of this support, the federal government has established the **Business Credit Availability Program (BCAP)**. This financing initiative includes a series of support programs through the Business Development Bank of Canada (BDC) and Export Development Canada (EDC):

[9] **Ministry of Finance. (2020). Interest and Penalty Relief for Businesses. Retrieved from** https://budget.ontario.ca/2020/marchupdate/relief-measures.html
[10] **Government of Ontario. (2020). COVID-19: Support for businesses. Retrieved from** https://www.ontario.ca/page/covid-19-support-businesses
[11] **Workplace Safety and Insurance Board. (2020). Businesses: WSIB financial relief package. Retrieved from** https://www.wsib.ca/en/financialrelief
[12] **Government of Ontario. (2020). Ontario Providing Support for Industrial and Commercial Electricity Consumers During COVID-19. Retrieved from** https://news.ontario.ca/mndmf/en/2020/05/ontario-providing-support-for-industrial-and-commercial-electricity-consumers-during-covid-19.html
[13] **Government of Ontario. (2020). Ontari o Supports Those Struggling with Electricity Bills during COVID-19. Retrieved from** https://news.ontario.ca/opo/en/2020/06/ontario-supports-those-struggling-with-electricity-bills-during-covid-19.html
[14] **Government of Canada. (2020). Canada's COVID-19 Economic Response Plan. Retrieved from** https://www.canada.ca/en/department-finance/economic-response-plan.html#businesses

Loan Guarantee for Small and Medium-Sized Enterprises

Through this program, EDC is providing funding to financial institutions to issue new operating credit and cash flow term loans of up to $6.25 million to eligible SMEs. EDC provides an 80% guarantee to financial institutions on the borrowed money, encouraging them to increase companies' access to credits[15].

Co-Lending Program for Small and Medium-Sized Enterprises

BDC is partnering with financial institutions to co-lend term loans to support SMEs' operational cash flow requirements. The program enables up to $40 billion in lending. Eligible SMEs may obtain incremental credit amounts of up to $6.25 million, 80% of which would be provided by BDC, with the remaining 20% by their financial institution[16,17]. This support is available until or before September 30, 2020.

BDC Mid-Market Financing Program

This financing program, managed by BDC and financial institutions, will provide commercial loans ranging between $12.5 million and $60 million to medium-sized businesses, to support operational liquidity needs and business continuity[18]. BDC anticipates that qualifying companies would have annual revenues in excess of approximately $100 million.

EDC's Mid-Market Guarantee and Financing Program

This program will bring liquidity to companies who tend to have revenues of between $50 million and $300 million, to sustain their operations during this challenging period. EDC will continue to work with financial institutions to guarantee 75% of new operating credit and cash-flow loans, ranging from $16.75 million to $80 million. These expanded guarantees are available to exporters, international investors and businesses that sell their products or services within Canada[19].

[15] **EDC. (2020). EDC Business Credit Availability Program (BCAP) Guarantee. Retrieved from** https://www.edc.ca/en/solutions/working-capital/bcap-guarantee.html
[16] **BDC. (2020). Is your business impacted by COVID-19? Retrieved from** https://www.bdc.ca/en/pages/special-support.aspx?special-initiative=covid19
[17] **BDC. (2020). New Small and Medium-sized Enterprise Loan and Guarantee program to help ease access to credit for entrepreneurs impacted by COVID-19. Retrieved from** https://tinyurl.com/ycze6aaq
[18] **BDC. (2020). BDC to provide new support for medium-sized companies to help navigate COVID-19 as part of Government of Canada's Business Credit Availability Program (BCAP). Retrieved from** https://tinyurl.com/ybsvqdmt
[19] **EDC. (2020). EDC announces expanded support for more Canadian companies to help navigate COVID-19 crisis. Retrieved from** https://www.edc.ca/en/about-us/newsroom/edc-coronavirus-medium-sized-support.html

Apart from BCAP, the Government of Canada has launched the **Canada Emergency Business Account (CEBA)** program[20], which has been implemented by many financial institutions in cooperation with EDC. This $25 billion program provides interest-free loans of up to $40,000 to small businesses and not-for-profits to help support their operating costs. The government has also launched the **Regional Relief and Recovery Fund (RRRF)** that devotes nearly $1 billion in support to affected businesses and communities[21]. This initiative is implemented by the six regional development agencies (RDA)[22].

The federal government has also introduced the **Canada Emergency Wage Subsidy (CEWS)** program to support eligible employers that are hardest hit by the pandemic and help businesses keep Canadians in their jobs. The CEWS program provides a subsidy of 75% of employee wages. Employers across all sectors, with specific exceptions including the public sector, who have experienced an eligible reduction in revenue would be eligible to apply for the CEWS[23]. The government has also introduced the **Canada Emergency Commercial Rent Assistance (CECRA)** for small businesses, which lowers rent by 75% for eligible small businesses[24].

Supporting large businesses, the government has recently announced establishing the **Large Employer Emergency Financing Facility (LEEFF)** to provide bridge financing to Canada's largest employers in order to keep their operations going and position them for a rapid economic recovery. The LEEFF program will be open to large businesses with annual revenues in the order of $300 million or higher. To qualify, eligible businesses must be seeking financing of about $60 million or more and have significant operations or workforce in Canada. This program will be delivered by the Canada Development Investment Corporation (CDEV), in cooperation with Innovation, Science and Economic Development Canada and the Department of Finance[25].

[20] **Government of Canada. (2020). Canada Emergency Business Account (CEBA). Retrieved from** https://ceba-cuec.ca/
[21] **Government of Canada. (2020). Regional Relief and Recovery Fund: COVID-19. Retrieved from** https://www.ic.gc.ca/eic/site/icgc.nsf/eng/h_07682.html
[22] **Government of Canada. (2020). Canada's Regional Development Agencies. Retrieved from** https://www.ic.gc.ca/eic/site/icgc.nsf/eng/h_07662.html
[23] **Government of Canada. (2020). Canada Emergency Wage Subsidy (CEWS). Retrieved from** https://www.canada.ca/en/revenue-agency/services/subsidy/emergency-wage-subsidy.html
[24] **Canada Mortgage and Housing Corporation. (2020). COVID–19: CECRA for small businesses. Retrieved from** https://www.cmhc-schl.gc.ca/en/finance-and-investing/covid19-cecra-small-business
[25] **Canada Development Investment Corporation. (2020). Canada Enterprise Emergency Funding Corporation (CEEFC). Retrieved from** https://www.cdev.gc.ca/home-ceefc/

SECTOR OPPORTUNITIES

Auto and mobility companies have mobilized to help in these challenging times. This has uncovered potential business opportunities. Many companies have been focusing on pivoting and retooling their production lines to produce health care essentials. Others have been focusing on doubling down on their innovative technologies to solve the current public challenges. Below, we walk through some of the initiatives and opportunities brought forward by, and for, the auto and mobility sector in Ontario and worldwide amid the COVID-19 pandemic.

Producing Health Care Essentials

As a rapid response to COVID-19, many auto companies have managed to pivot their production to support the health care sector by making ventilators and personal protection equipment (PPE). In Canada, for instance, Magna International, Linamar, and Martinrea International, along with the Automotive Parts Manufacturers Association (APMA), reached an agreement with the Province of Ontario in late March 2020 to team up with other companies to build ventilators[26]. Cavalier Tool and Manufacturing, a Windsor-based company that normally produces tools and moulds for large equipment for the automotive industry, has also lent a hand to produce needed medical supplies. The company has managed to pivot its production capacity and focus on designing, manufacturing and

[26] **Guglielmo, V. (2020). Canadian auto parts makers team up to build ventilators with three companies. Retrieved from** https://apma.ca/canadian-auto-parts-makers-team-up-to-build-ventilators-with-three-companies/

testing the tools and moulds needed to build wall-mounted hand sanitizers[27].

Responding to the shortage of PPE, the Woodbridge Group, an auto supplier with a manufacturing facility in Vaughan, Ontario, has promptly stepped in and produced the first made-in-Ontario, medical-grade face masks. To design and manufacture the masks, Woodbridge Group has worked in close collaboration with other partners including INOAC Corp., APMA, Hematite Inc., and McMaster University[28]. Ford's Engine Plant in Windsor, Ontario, has also delivered thousands of face shields to front-line workers across the Windsor-Essex region[29]. GM Canada has been using portions of its Oshawa plant to produce face masks, based on the GM production model already working in Michigan. This production is under a contract with the federal government to produce 10 million face masks[30].

Eclipse Automation, a leader in building automated manufacturing solutions for industries including transportation, is another example of an Ontario company that has stepped up to support health care by retooling their operations to create medical supplies. Eclipse has signed an agreement with Harmontronics Automation in China to manufacture, sell, and distribute its automated N95 mask production line system in North America. As well, Eclipse has signed an agreement with Irema Ireland to access its N95 and FFP2 mask production technology and manufacturing process for exclusive use in Canada[31].

Driverless Vehicles

Driverless delivery vehicles have experienced demand surge amid the pandemic. In China, vans from mobility start-ups, such as the Beijing-based Neolix, have been used for contactless, autonomous delivery of medical supplies in hospitals. These autonomous vehicles have also been used to disinfect streets and

[27] **Waddell, D. (2020). Cavalier Tool lending a hand building sanitizer dispensers. Retrieved from** https://windsorstar.com/news/local-news/cavalier-tool-lending-a-hand-building-sanitizer-dispensers

[28] **CBC News. (2020). First Ontario-made medical masks ready for use, says premier. Retrieved from** https://www.cbc.ca/news/canada/hamilton/woodbridge-mcmaster-ford-masks-1.5524762

[29] **CBC News. (2020). Windsor Ford plant has already shipped more than 3,700 face shields to front-line workers across the region. Retrieved from** https://www.cbc.ca/news/canada/windsor/windsor-ford-plant-shipped-3700-face-shields-across-region-1.5525355

[30] **Snowdon, F. (2020). Oshawa, Ont., General Motors plant ready for mass production of surgical masks. Retrieved from** https://globalnews.ca/news/6994939/oshawa-gm-plant-surgical-masks/

[31] **Eclipse Automation Inc. (2020). Collaboration key in retooling to join COVID-19 fight. Retrieved from** https://www.eclipseautomation.com/collaboration-key/

deliver food to people who are working on the front lines[32].

In the U.S., consumer interest in autonomous vehicle deployments has grown as well, due to the critical benefits these technologies have brought to the society amid this pandemic. For instance, driverless delivery vehicles from Nuro, a Silicon Valley mobility start-up, have been used to haul critical supplies for medical staff and patients in Sacramento, California[33]. In Florida, the Jacksonville Transportation Authority has partnered with Beep and NAVYA to use autonomous vehicles to safely move COVID-19 tests collected at off-site test locations to Mayo Clinic[34]. In Ann Arbor, Michigan, the restaurant food delivery service from Refraction AI has also seen demand increase by four times since the beginning of the COVID-19 lockdown, and the company is working avidly to expand its fleet of three-wheeled delivery robots to meet the surged demand. The company has also installed UV sterilizing lights in the robot's food compartment and switched to no-touch access authorization[35].

In Canada, Tiny Mile, a Toronto-based start-up, is developing a made-in-Ontario sidewalk delivery robot that effectively brings driverless delivery to reality; hence, helping reduce potential of contamination. In March 2020, the company announced a partnership with foodora to provide on-demand contactless delivery in Canada. Initial plans are to pilot the delivery robots in Toronto and expand later to other locations in Canada[36].

Other homegrown Ontario SMEs are also currently developing mobility technologies that have great potential for solving some of the service challenges faced today due to the pandemic. Examples include Synkar[37] and Top Hat Robotics[38] that have built automated sidewalk robots that can be used for a variety of daily tasks, including

[32] **Bloomberg News. (2020). Driverless Delivery Van Startup Sees Demand Surge Amid Outbreak. Retrieved from** https://www.bloomberg.com/news/articles/2020-03-08/they-won-t-catch-the-virus-so-chinese-robovan-maker-s-sales-jump

[33] **Ohnsman, A. (2020). Nuro Driverless Vehicles Become Robot Pack Mules for California COVID-19 Medical Centers. Retrieved from** https://tinyurl.com/ycfz2dpb

[34] **Ford, T. (2020). Autonomous shuttles help transport COVID-19 tests at Mayo Clinic in Florida. Retrieved from** https://newsnetwork.mayoclinic.org/discussion/autonomous-shuttles-help-transport-covid-19-tests-at-mayo-clinic-in-jacksonville/

[35] **Payne, H. (2020). Robots on the rise in the COVID-19 economy. Retrieved from** https://tinyurl.com/yd34zrr4

[36] **The Robot Report. (2020). Tiny Mile teams with foodora for robotic food delivery in Toronto. Retrieved from** https://www.therobotreport.com/tiny-mile-teams-with-foodora-for-robotic-food-delivery-in-toronto/

[37] **Synkar. Retrieved from** https://www.synkar.com/

[38] **Top Hat Robotics. Retrieved from** https://www.tophatrobotics.com/

delivery. OTTO Motors[39] has also developed a robotic solution to automate moving and handling materials for warehousing.

Gatik, an autonomous vehicle start-up operating out of Toronto and Palo Alto, is developing autonomous delivery trucks that can be used by retailers to move goods from distribution centres to retail stores[40]. Their technology is capable of solving COVID-imposed delivery constraint by offering driverless delivery capabilities that can reduce potential contamination and operate on a 24/7 basis.

As more of these autonomous delivery vehicles spread out to deliver food, medicine, and goods, communities will get accustomed to their presence and the public acceptance of these technologies will become mainstream.

On-Demand Transit

With the severe decline in ridership of public transit amid the spread of COVID-19, 'on-demand transit' solutions have been experiencing a surge in both operator and consumer interest. A prominent example has been set by Pantonium, a technology company based in Toronto, Ontario. The company provides an AI-based scheduling and routing platform for public transit, which has been helping municipalities, such as the city of Belleville, effectively manage supply of on-demand transit service for its constituents. Amid the COVID-19 operational challenges, Pantonium's technology has helped the city of Belleville adjust the transit service daily to ensure it runs at a capacity that maintains social distancing but also remains efficient[41].

RideShark[42] is another homegrown Ontario SME that is currently developing mobility solutions that could also help transit amid the pandemic. The company provides software solutions for multi-modal mobility management, trip logging, incentive management, and parking solutions, all to support people to choose sustainable travel options.

[39] **OTTO Motors. Retrieved from** https://ottomotors.com/

[40] **Korosec, K. (2020). Gatik adds autonomous box trucks to its 'middle mile' game plan. Retrieved from** https://techcrunch.com/2020/05/06/gatik-adds-autonomous-box-trucks-to-its-middle-mile-game-plan/

[41] **Pantonium Inc. (2020). Using On-Demand Transit to Mitigate COVID-19. Retrieved from** https://pantonium.com/using-on-demand-transit-to-mitigate-covid-19/

[42] **RideShark. Retrieved from** http://www.rideshark.com/

CONCLUSIONS

There is no doubt that the COVID-19 pandemic has been imposing severe economic challenges on the auto sector. In this report, we have gone through some recovery insights that can help small- and medium-sized enterprises navigate the economic downturn currently experienced due to COVID-19. We have also highlighted some of the financial support programs offered by the Governments of Ontario and Canada to help businesses improve their cash flow, protect jobs, and be better positioned for a rapid economic recovery.

In addition to the financial support available to all businesses, regardless of their sector, investments and funds dedicated particularly to the auto sector are substantially needed, now more than ever before. As an integral part of the global economy, given its scale and scope, thriving and advancing the auto sector has a key impact on the global economic recovery and is a major enabler to boost the upturn of all other vital sectors.

On a different note, today's challenges have also offered opportunities for the auto sector to transform and excel. Many auto companies have managed to retool their production lines and produce health care equipment. Furthermore, future mobility technologies have been showing significant impacts and major opportunities amid the challenging times of COVID-19, resulting in a noticeable jump in the consumer interest and demand for these smart technologies.

With the currently boosted demand for future mobility technologies and the major impact of the overall auto sector on the global economy, along with the wide-ranging support from governments, there is much confidence that auto and mobility companies of all sizes will safely and quickly navigate obstacles imposed by COVID-19, and that Ontario will continue to be a global leader in the auto, mobility, and technology sectors - it is all about swift actions, resilience, and innovation.

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ABOUT AVIN

The **Autonomous Vehicle Innovation Network (AVIN)** initiative is funded by the Government of Ontario to support Ontario's competitive advantage in the automotive sector and to reinforce its position as a North American leader in advanced automotive and mobility technologies, including transportation and infrastructure systems.

This initiative capitalizes on the economic potential of connected and autonomous vehicle (CAV) technologies by supporting the commercialization of best-in-class, made-in-Ontario solutions that create jobs, drive economic growth and enhance global competitiveness. AVIN also helps Ontario's transportation systems and infrastructure adapt to these emerging technologies.

AREAS OF FOCUS

AVIN programs focus on supporting the development and demonstration of CAV technologies in light vehicles (e.g., cars, trucks and vans), heavy-duty vehicles (commercial vehicles, trucks, buses and RVs), transportation infrastructure, intelligent transportation systems (ITS) and transit-supportive systems.

AVIN is administered on behalf of the Government of Ontario by OCE. The initiative comprises five distinct programs and a central hub. The AVIN programs are:

- AV Research and Development Partnership Fund
- WinterTech
- Talent Development
- Demonstration Zone
- Regional Technology Development Sites

The AVIN Central Hub is a dedicated team that supports the delivery and administration of AVIN programming and provides the following key functions:

- A focal point for all stakeholders in the area of CAVs, connecting and convening stakeholders including industry, academia, government and the public;
- Providing thought leadership and identifying opportunities to bridge technology and policy; and
- Awareness and education of AVIN programs and Ontario's growing CAV community, prioritizing focus areas and driving Ontario's global leadership in the automotive and mobility sector.

AVIN has five Objectives:

We would like to thank the Government of Ontario for supporting AVIN programs and activities.

We would also like to thank the partner organizations that work with OCE to deliver AVIN programs, including the Regional Technology Development Sites and the Demonstration Zone.