

OntarioTraffic

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MAGAZINE
WINTER 2022/23 EDITION

A BRAVE NEW ROAD: A.I. AND THE FUTURE OF CITY MODELLING

OTM BOOK 7
TRAINING

FEDERAL AND PROVINCIAL
FUNDING OPPORTUNITIES

2022 OTC ANNUAL CONFERENCE
AND SUPPLIER SHOWCASE

ROAD
TO ZERO



Ontario Traffic Council
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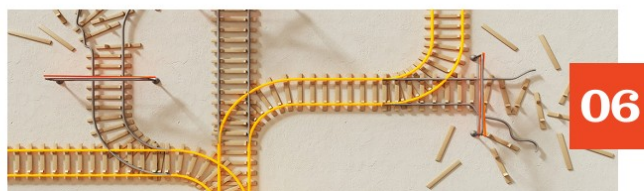
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PRESIDENT'S MESSAGE

President's Message

Adam Bell
OTC President



Our organization has been evolving since its inception 72 years ago. We started out as a group of like-minded individuals with a passion for traffic, be it operations, engineering, or policing. This early board managed all technical and administrative components of the organization. Over the ensuing years we have grown from a purely volunteer organization to a sophisticated not-for-profit with an Executive Director, an Events and Education Coordinator, and now a Membership and Communications Coordinator – and we don't plan to stop now!

Building on our strategic plan, our membership and influence has grown steadily. For example, our training programs have grown significantly in recent years. Demand for programs like our Book 7, Book 18 continues to increase and soon we will be offering Provincial Offenses Officer training for automated offences. Our leadership in the development of the Vision Zero, Restaurant Patio, School Crossing Guard, and Hostile Vehicle Mitigation guides has provided much-needed guidance for those in our profession. Our work with emerging systems like Automated Speed Enforcement, Automated School Bus Cameras, and the Administrative Monetary Penalty System (AMPS) has placed us at the forefront of technological change in the Province.

The Board recently approved a Research Committee which will focus on research and pilots involving multi-modal transportation. We are hoping to bring together subject matter experts from our membership and expanding out to academia, other associations, and businesses.

A particular source of pride for me is our role in improving road safety in this province. Starting with our Vision Zero Guide, we are carrying forward the notion that loss of life is not acceptable on our roadways, and we are sharing information on how other communities have been successful in reducing serious injuries and road deaths. Our work with Parachute Canada and other key stakeholders in creating a Vision Zero Alliance for Ontario has brought together the best in engineering, planning, research, academia, enforcement, politics, etc. to make our streets safer.

PRESIDENT'S MESSAGE

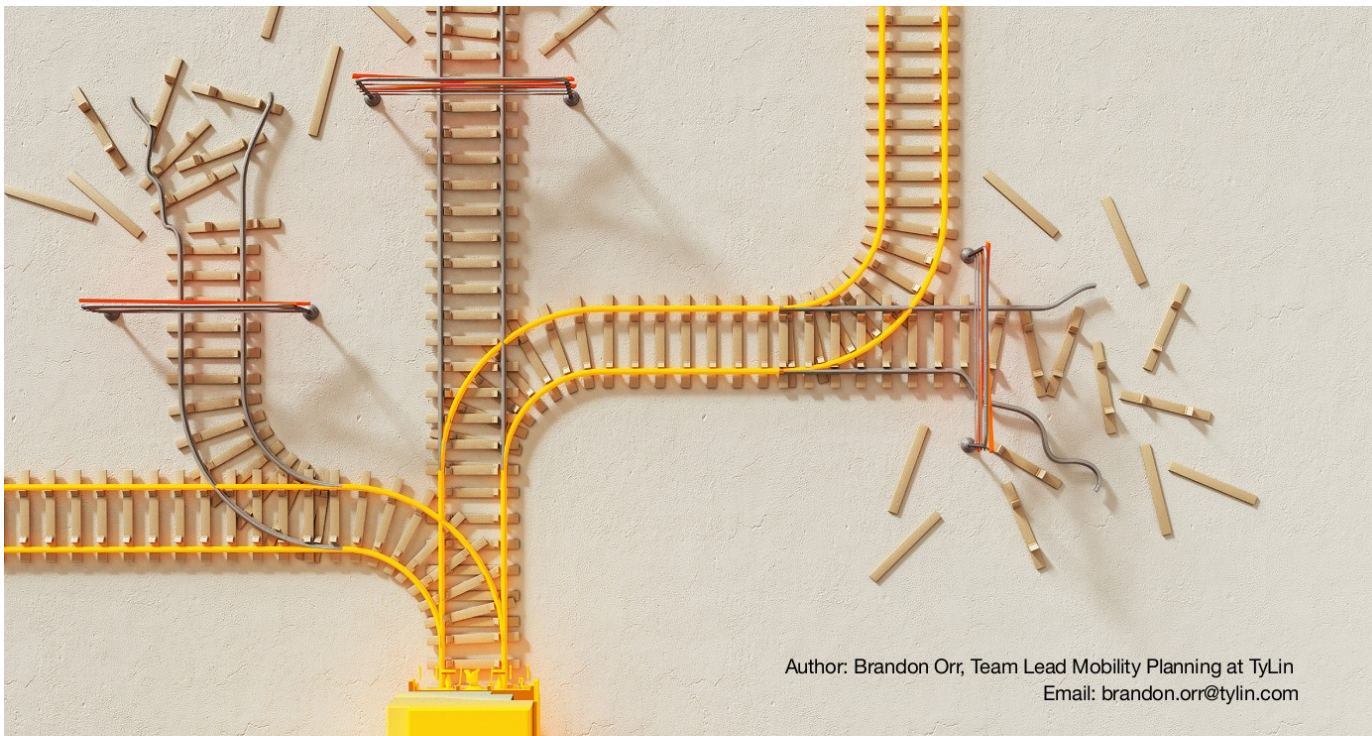
I would like to thank my fellow OTC Board Directors for their dedication, support, and commitment over the past year. Nelson Cadete, Sheyda Saneinejad, Heide Schlegl, Manoj Dilwaria, and John Crass – thank you. I would also like to thank Peter Sejrup and Jeffrey Smart who have retired from the Board this past September. Their service is very much appreciated and will be greatly missed. I'm excited to see the number of members who have stepped forward to accept nominations for Director positions helping to steer the OTC forward.

Congratulations to Joe Rocca from the City of Sudbury and Chris Day from the City of Hamilton for being elected to the OTC Board. I would like to send a shout out to OTC staff Geoff Wilkinson, Aswathy Prathap, and Nicole Vlanich and a thank you to our hundred and twenty or so active and engaged committee members under the leadership of David McLaughlin, Emmett Proulx, Steve MacRae, George Johnstone, Sidra Rahimzada, Ryan Snow, Julie Ellis, and Mehemed Delibasic. And thank you, our membership, for your continued support.

I would like to thank the OTC Board of Directors for their confidence in nominating me for a further term as President. I look forward to the continued momentum we have had on advancing our strategic priorities. Congratulations to Manoj Dilwaria for his appointment to Vice-President, Nelson Cadete as Treasurer and Chris Day as Secretary.

As we look towards 2023, I would remind you to participate in OTC workshops, training, symposiums, and our conference. With this in mind, please visit www.otc.org/events for a full listing of our 2023 events. It was wonderful to see many of our members in-person at the OTC Conference in Collingwood in September. The OTC team is continuing to promote in-person events with a complement of a select number of virtual seats. This edition of OTMagazine features a recap of the OTC conference. I look forward to seeing you in-person at one of the remaining 2022 symposiums and at one of the many 2023 events.

As always, I am available to talk to you about any issues, challenges, or opportunities you may have. I can be reached at adambell@otc.org.



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A BRAVE NEW ROAD: A.I. AND THE FUTURE OF CITY MODELLING

New forms of computing such as Artificial Intelligence (A.I.) and machine learning, in tandem with Big Data present exciting opportunities to address some of the most complex infrastructure challenges within our communities, but there are still several unknowns about how they will influence infrastructure policy. This article explores the history of A.I., some of the limitations of existing city-modeling technologies, lessons learned from the introduction of computing in the late 20th century, and some potential applications for A.I. in the coming years.

WHERE IT STARTED

In 1935 Alan Turing described an abstract computing machine operating on, modifying, and improving, its own program; later to be known as the universal Turing Machine to which virtually all modern computers can trace their roots¹.

The shift to computing, sometimes referred to as the “Information Revolution”, would go on to change the course of how we measure and interact with the physical world. What once required many humans to conduct manual calculations, was now being replaced by a device that could consistently produce accurate results at a fraction of the cost and time.

Since their conception, city officials have been exploring how computers could allow complex city systems to be quantified at scale. Traffic Planners, for instance, presented the ‘Fundamental Diagram’ to the Highway Research Board in 1934, which conceptualized a schematic for traffic flow simulation; showing the relationship between vehicle spacing and speed to quantify volumes based on one unit length of road².

Since the 1930’s virtually all engineering and city planning disciplines have incorporated computer modeling to one extent or another to aid in the planning and design of infrastructure. However, their adoption and cost-effectiveness have been constrained by a variety of existing limitations.

¹ Encyclopaedia Britannica. (2022, September 27). Alan Turing and the beginning of AI.

² Transportation Research Board. (2015). Traffic and Transportation Simulation - Looking Back and Looking Ahead: Celebrating 50 Years of Traffic Flow Theory.

TODAY'S MODELING LIMITATIONS & CHALLENGES

Computing Limits

Many of the city models today are not 'real-time' in the sense that they can continuously run and update as new data comes in automatically. Most are based on static data and developed through a lengthy process that requires highly trained experts to manually clean, process, and validate data to simulate real-world conditions.

Beyond labor constraints, computing capabilities are limited in how many calculations can be performed and how quickly, particularly given the amount of data that modern city models process. These limitations have led to a spectrum of modeling solutions that can match computing requirements to the scale of a study to cut down on processing time. For instance, in traffic modeling, the following modeling types are generally used:

- **MACROSCOPIC MODELS:** Assesses large complex networks as a whole; taking a view of aggregated data across an entire region allowing large volumes of data to be distilled into fewer net calculations that can be computed at scale. *I.e. Regional Plan.*
- **MESOSCOPIC MODELS:** Assesses precinct-sized areas to understand general traffic flows, with added intersection-level, or link level detail to inform conceptual designs. This is possible due to analyzing a smaller sub-area of a community so detail and aggregation can be balanced. *I.e. Precinct Plan.*
- **MICROSCOPIC MODELS:** Meant to take a detailed assessment of intersections and corridors to inform detailed design solutions that can be built. These models are typically used for smaller study areas where higher amounts of detailed data can be used due to the scale of the study boundaries. *I.e. Corridor Study, Traffic Impact Study.*

Despite the various layers of modeling, the number of calculations that are processed in a model can range from minutes to hours to days of processing time to output results. The high costs of this make modeling inaccessible to

communities with tighter budgets and reduces the scenarios in which modeling makes financial sense to use. These use cases are often limited to high-value projects while failing to be a competitive solution for the higher number of smaller projects that, when aggregated, could have just as many net impacts on a community.

New decentralized options like cloud computing models can provide some efficiencies by distributing processing power across various machines to reduce costs and turnaround time, but these approaches are also accompanied with their own barriers that will continue to present a challenge for city modeling as a cost-effective and scalable tool in the near future.

Digital is Physical

As our ability to model the real world has improved, so has our ability to collect larger quantities of data with low-cost sensors. According to Forbes 90% of the world's data has been created in the last few years alone with 2.5 quintillion bytes of data being created every day in 2018; a figure that is expected to double every two years³.

We often fail to recognize that although much of our modern computing leverages decentralized cloud processing, these systems still have a physical impact and cost on our world. According to the MIT Press Reader, the growth in data content creation, and the associated storage needs, has resulted in Cloud computing surpassing the airline industry in terms of its carbon footprint.

A single data center can consume the equivalent electricity of 50,000 homes. Much of this power consumption is in the form of cooling, however data centers also have several layers of redundancies to ensure continued operation. This results in some cases where only 6 to 12 percent of energy consumed is devoted to active computational processes⁴. Their financial competitiveness is largely impacted by energy costs; a dependence that presents a vulnerability in today's world with the ongoing conflict in Ukraine and pinched energy supplies.

³ Forbes. (2018, May 21). How Much Data Do We Create Every Day?

⁴ The MIT Press Reader. (2022, February 14). The Staggering Ecological Impacts of Computation and the Cloud.

A BRAVE NEW ROAD

“...estimates [suggest] 60% to 73% of enterprise data goes unused for analytics.”

- Forbes. (2022, February 25). Eight Trends Predicted to Define Data Analytics in 2022

The inefficiencies are also present on the usage side as well with estimates suggesting 60% to 73% of enterprise data goes unused for analytics; meaning we are collecting more data than we use⁵. Many have suggested we have reached ‘data saturation’ where organizations had previously collected data because it was easy but have now become overwhelmed by the quantity and cannot make use of it.

This presents an inconvenient truth in technology: the amount of data keeps growing exponentially, while the increases in the power of computers are slowing down⁶. All this to say that as content creation continues to outpace the rate at which we can process it, we will require new tools to manage, maintain, store, and analyze it.

Fragmented Data

Many city models are based on sparse data samples because of the high costs of data collection. In transportation planning, for instance, most of the data collection requires a person to setup and dismount a count device whose added costs reduce a community’s ability to accommodate frequent count programs for transport studies. This presents a risk to municipal budgets and long-term debt because it can result in communities being unable to adapt to changing market conditions in a timely manner.

While some cities have permanent sensors that reduce the cost of obtaining data, they are often limited in scope, under-maintained, and in many cases comprised of several different providers that provide outputs in different formats which creates fragmentation and adds to processing costs.

⁵ Forbes. (2022, February 25). Eight Trends Predicted to Define Data Analytics in 2022

⁶ Newsweek. (2014, August 1). Data is Growing Faster Than Computing Power.

⁷ Wikipedia. (2022, September 27). GTFS.

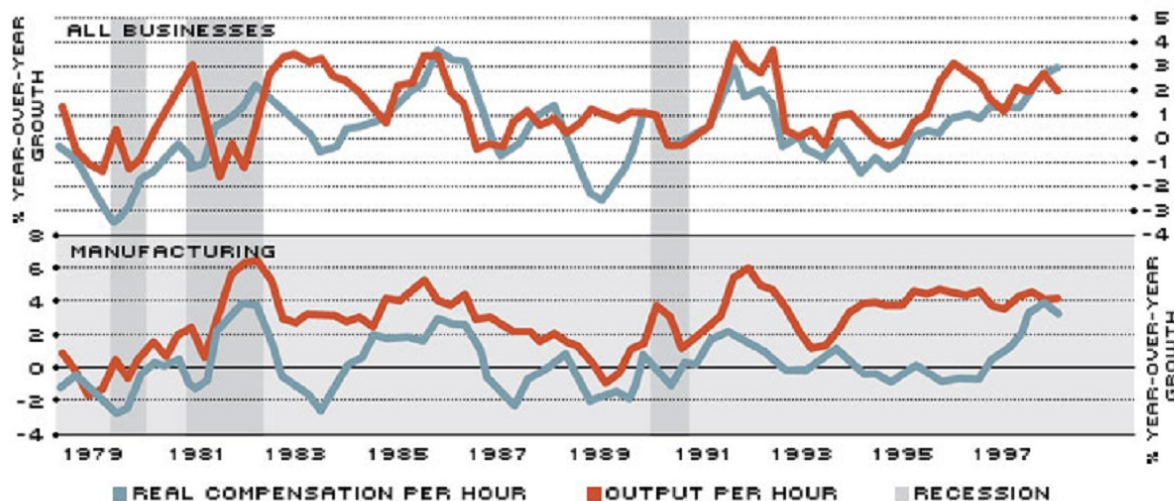
There is a need to provide a unified data architecture for city infrastructure that serves as an integrated layer connecting data endpoints and processes. It can make critical data more accessible and sharable across an organization.

Many communities have spent significant effort towards developing design standards, but few have invested in developing community data and privacy standards which is an ever-increasing concern among residents and a barrier to usability.

In 2005 Chris Harrelson, a Google employee, recognized this issue specifically with transit data. He noticed that it was difficult for programmers to integrate transit schedules into their applications because of the bespoke nature in which transit agencies provided their schedules. This made it costly to incorporate transit information at scale across many jurisdictions because it required manually adjusting code for each community. Chris went on to develop the General Transit Feed Specification (GTFS) which would standardize the way transit schedules were shared; a benefit that has led to the standard’s growth and ubiquity within the industry today⁷.

There are other examples of similar initiatives that are working to standardize road curbside and sidewalk data such as ISO 4448 being developed by the Urban Robotics Foundation in Toronto. However, generally data lakes for cities are still relatively non-standardized which can present a barrier towards leveraging automation and A.I.

THE PRODUCTIVITY PARADOX



Source: Federal Reserve Bank of St. Louis, 1998

PAST LESSONS

When trying to envision how A.I. might emerge within our communities, there is benefit in looking at how the introduction of personal computers affected work productivity in the late 20th century. According to the St. Louis U.S. Federal Reserve, between the 1980s and late 1990's, a period when personal computers began to proliferate as a primary tool for businesses, economic data revealed only limited productivity gains with their introduction; a fact that would later be referred to as the "productivity paradox"⁸.

Basically, the paradox was that while the individuals at companies were seeing firsthand the benefits of computing, the official statistics had not borne out the productivity improvements expected from the technology. A major blind spot for economists during this time was the ability to effectively quantify the benefits of disruptive technology on productivity.

For example, some economists such as Zvi Griliches suggested that the gains in computing were being reflected in 'unmeasurable sectors' leading to invisible gains, whereas others such as Paul David compared their introduction to the advent of electricity, which took a substantially longer-time to reflect impacts on productivity.

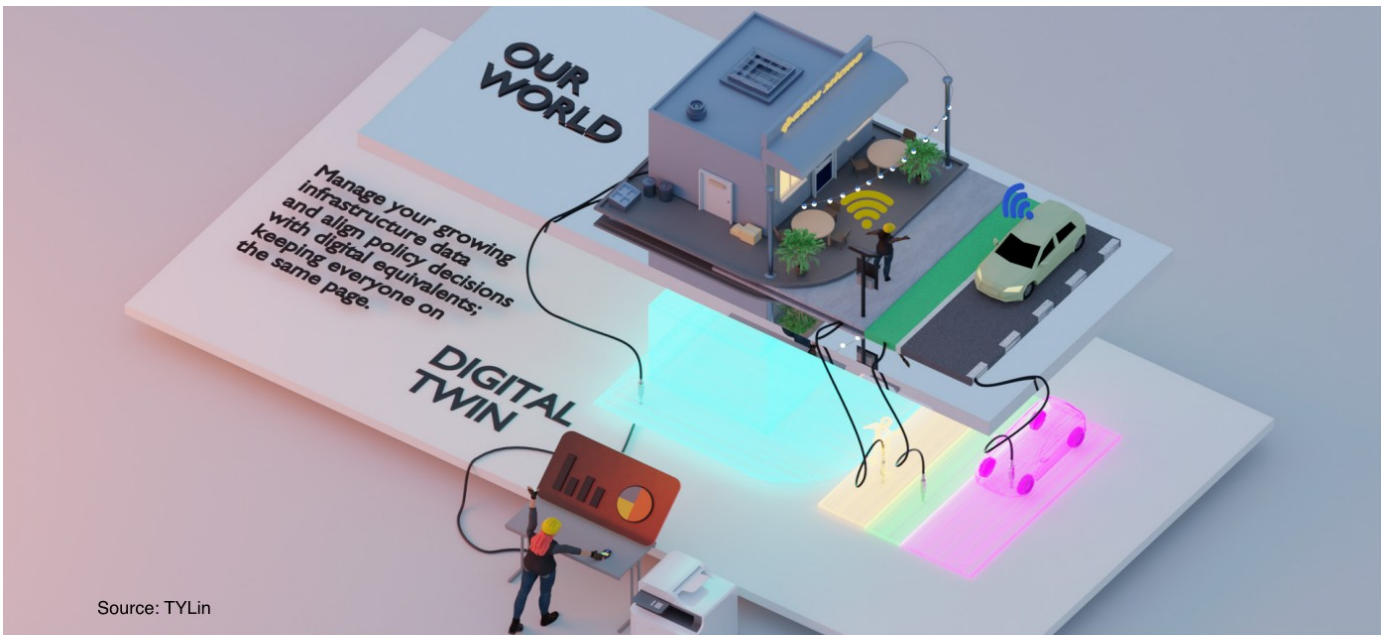
⁸ St. Louis Federal Reserve. (1998, October 1). Have Computers Made Us More Productive? A Puzzle.

An alternative explanation by Jack Triplett referred to the nature of the technology as a possible explanation, suggesting that, unlike steam or coal power which remained an unchanged source of power for the industrial revolution, computing technology iterated and made previous technology obsolete at a much quicker pace.

The "productivity paradox" presents a cautionary tale that reminds us that it may not be possible to quantify the benefits of tomorrow's technology based on yesterday's metrics. Communities will need to be proactive about emerging technology so they can define how they would like A.I. to serve them and adapt economic measures to fairly assess their benefits.

A BRAVE NEW ROAD

There are a variety of "unknown, unknowns" with regards to Artificial Intelligence that are currently being researched by academia, but there is no consensus on how or where the technology will emerge. Within this context, the following are some of the more promising trends that paint toward where A.I. could potentially emerge in the near-term.



Source: TYLin

Data-as-a-Utility

Data-as-a-Utility refers to a concept where cities recognize that infrastructure data holds a similar public value and importance to a community as traditional utilities like electricity and water. There is a growing opinion that residents and cities should have greater control over how city data is used and managed.

The Sidewalk Labs Quayside Master Plan in Toronto faced a variety of skepticism from the local community with regards to how planned data collection measures would serve the public's best interest. Many consider this to be a response to the expanding role in which data is rampantly used within consumer products.

New data providers like Urban SDK are trying to help cities overcome these barriers with new data platforms that allow data to be processed and validated in publicly accessible dashboards that disaggregate data based on population densities to mitigate privacy concerns. This allows communities to fairly balance their local data access needs and privacy concerns.

The ongoing emergence of 5G cellular technologies are further reducing the cost of sensors that can be placed around a community, while also enhancing the accuracy and speed at which data can be collected to inform city

operations. In the long-term A.I. can learn from collected data to reduce costs; being able to infer trends to accurately estimate values within a given accuracy. A.I. also has the ability to learn to identify issues or generate reports that dynamically change as trends within the community change.

This points to a growing demand for more city data, but also for greater scrutiny around data protection and regulation. If A.I. is to become a viable solution for city modeling it will need to be trained on a large volume of data, which will require advanced collection methods, and a greater expectation for cities to protect and provide transparency in how it flows into A.I.-assisted models.

A 2019 article from TIME Magazine by computer scientist Joy Buolamwini describes her research into A.I. systems that discovered hidden racial and gender biases that affected how A.I. performed their duties at several organizations. This fundamentally challenged previous notions that A.I. intelligence is naturally neutral. This emphasizes the need for community stakeholders to be involved in how A.I.-assisted city models are programmed to ensure solutions reflect local needs⁹.

⁹ TIMES Magazine. (2019, February 7). Artificial Intelligence Has a Problem With Gender and Racial Bias. Here's How to Solve It.

A.I.-GENERATED VISUALS



"An inter-modal transit hub with good pedestrian and cyclist access, and connections between trains, buses, and rapid transportation."

- Dall-E - A.I. Generated Images, August 2022

Procedural Design & Digital Twins

City data is increasingly being used to represent more elements within our communities. Digital Twins is a term that is used to refer to city data that can be represented in a digital format. This can range from a simple spreadsheet of culvert coordinates within a community, to 3D point cloud data that represents elevation and buildings.

Digital twins are serving a growing role managing and maintaining infrastructure. The company CurbIQ, for instance, provides a platform for translating complex street curb policies into usable digital equivalents to assist cities in managing and planning curb usage.

According to Vantage Market Research the global digital twins market size was valued at \$6.5 B USD in 2021 and is projected to grow to surpass \$53.5B by 2028¹⁰. This growth is anticipated to be spurred by a need for predictive maintenance and procedural design applications that are predicted to reduce operating costs.

The better we can reflect our physical world in a digital sense; the better we will be able to leverage A.I. to help predict and develop new designs procedurally. New design software such as Houdini by SideFx are opening new ways to integrate procedural design flows into Game Development and Animation. There are possible applications for these workflows to

extend into civil engineering and architecture; providing a benefit by increasing the number of solutions that can be affordably evaluated through the conceptual planning stage.

Procedural designs can also combine different types of information such as image, string, and numeric data together to measure city data in novel ways. The University of Waterloo's Institute for A.I., for instance, is training a neural network to measure and model snow which could help reduce the cost of municipal snow removal operations; a municipal service that is among the costliest for rural communities to provide across Canada¹¹. At a more localized level, procedural designs could help to develop more efficient parking lot layouts or building floor plans based on a given set of criteria that are developed with stakeholder input.

New A.I.-assisted art generators like OpenAI's Dall-E, shown above, are quickly changing the way content is being created. Artists are learning to delegate and direct A.I. to create great pieces of art rather than physically drawing the art themselves.

One could possibly envision a world in where city planners and engineers spend their time delegating A.I. in creative ways to develop new solutions, reducing the manual tasks associated with design. ***I'd like that.***

¹⁰ Vantage Market Research. (2022, August 26). Global Digital Twin Market Size & Share to Surpass USD 53.5 Billion by 2028 at a CAGR 42.1%.

¹¹ University of Waterloo. (2022, August 31). What deep learning algorithms can teach us about snow.



OTM BOOK 7 TRAINING

The Ontario Traffic Council (OTC) is dedicated to leveraging their knowledge and expertise, while collaborating with members and industry experts, to provide relevant learning experiences. The training and education programs offered through the OTC are meant to engage all persons in the field of multi-modal transportation, engineering, planning, enforcement, parking and traffic and road safety, in Ontario.

In this edition of OT Magazine, we want to highlight the importance of Ontario Traffic Manual Book 7 training for field staff and for consultants. Completion of these training programs protects individuals and companies.

The Ontario Traffic Manual (OTM) is a series of traffic engineering and traffic control reference manuals produced by the Ministry of Transportation of Ontario for use by Ontario municipalities. **“The purpose of the OTM Book 7 is to provide information and guidance and promote uniformity of treatment in the design, application and operation of traffic control devices and systems across Ontario.”** The OTM’s objectives are to promote safe driving behaviours accomplished by establishing a predictable road environment through consistency. The guidelines are consistent with

the Highway Traffic Act and provide information needed for road authorities to update or create their own guidelines and best practices.

For the past 20 years, the OTC has provided one of the most comprehensive and affordable Ontario Traffic Manual (OTM) Book 7 training courses to individuals working in temporary conditions on Ontario roads and highways. OTC provides training on the basic uniform requirements for traffic control in work zones during roadway or utility construction and maintenance opportunities on or adjacent to public highways, including ramps and municipal roads and streets. Neglecting health and safety policies, processes and training can be costly for companies. The safety of workers and motorists is of the highest priority and the purpose of OTM Book 7 training is to provide basic guidelines for traffic control to be used during construction, maintenance and utility work on any street or highway open to the public, in the province of Ontario. The latest Ministry of Labour Occupational Health and Safety Act (OHSA) and construction regulations for traffic control and worker protection have been in effect since 2000 and have been carried forward in OTM Book 7 editions. These regulations require that employers train workers

exposed to traffic hazards or construction vehicles and require the development of traffic protection plans for workers who may be exposed to hazards.

One of the OTC’s OTM Book 7 training is a one-day course for individuals primarily working on non-freeways. The course provides training in topics such as OHSA provisions and regulations related to traffic control maintenance and construction, work zones and worker and employer responsibilities, human factors and positive guidance and their application to work zone traffic control, speed control in work zones, pedestrian, and cyclist traffic control and how to reduce risk and liability. The OTM Book 7 was last updated in 2022 and was previously updated in 2013 and **“addresses the application of traffic control devices in temporary work zones that result from construction, planning, surveying, maintenance, utility, unplanned event response or other work within a public road allowance”.**

OTC also offers a half day course designed for consultants working within temporary conditions not responsible for the setup of traffic plans but



who need to be aware of health and safety requirements within their work area. OTC also offers a half day course designed for consultants and traffic and multi-modal transportation engineers, planners, designers, and technologists. working within temporary conditions not responsible for the setup of traffic plans but who need to be aware of health and safety requirements within their work area. This half day virtual or in-person training course is available to groups of 15 to 30 employees and will cover topics including: Introduction to Traffic Control, Manuals and Standards, Standardization, OTM Book 7, OHSA, Traffic Protection Plan, Road Work Duration, Temporary Traffic Control Zone, Traffic Control Devices, Markers, Spacing and Requirements, Installation and Removal of the Traffic Control System and Pedestrian Concerns.

Joe Richards, OTC Book 7 Trainer, had this to say about OTM Book 7 training and its importance **“Training ensures that traffic control will be installed in a consistent manner leading to increased safety for all road users ensuring higher compliance from motorists, pedestrians and cyclists approaching traffic control systems”**. He also pointed out that training is required **“to be a competent**

worker” according to the Ministry of Labour, Immigration, Trades and Skills Development, although different types of training are required for different types of traffic control work. Industry changes occur and it's important to stay on top of these. Things like Ministry of Labour legislated the use of crash trucks to protect freeway workers, the use of Automated Flagging Assistance Devices for flagging operations and Early Queue Warning Systems.

Book 7 has received several revisions since its inception. Joe pointed out that there have been significant changes in the 2022 revisions to OTM Book 7. **“For example, users often refer to Section 6 (Layouts and Tables) as this is the genesis for traffic control plans and represents the product on the roadways and this section saw the biggest changes. The drawings have been organized and grouped together in a more user-friendly fashion and the corresponding table of values have been included right on the drawing eliminating the possibility of using the wrong table. Values for non-freeway work have changed substantially creating for a safer traffic control zone, however, have led to increased difficulties in installing the closures in urban areas due to**

intersections, driveways, and other obstructions. To offset this, the revised Book 7 also offers guidance in how to adjust your traffic control plan to meet the needs of protecting the road users, while still following traffic control fundamentals”.

Joe also points out that public consultations have led to a new work duration (Intermittent Duration or ID), as well as additional accommodations for pedestrians and cyclist traffic control. Requests from the Ministry of Transportation, additionally incorporating Coroner's Inquest recommendations, increased consistency with the Federal MUTCD, incorporating information from the TC-64 Manual and ensuring that the revised manual reflected the changes to the Highway Traffic Act and the other updated books in the Ontario Traffic Manual have led to the major changes to the revised Book 7.

The OTC is proud of its history and continued dedication to the training of field experts and encouraged safety and training through available Ontario Traffic Manuals. We continue to collaborate with partners and experts to ensure access to the most up-to-date and relevant information is available. Please direct any questions regarding OTM training to traffic@otc.org



Federal and Provincial Funding Opportunities

THE FEDERAL AND PROVINCIAL
GOVERNMENTS CONTINUE TO OFFER
FUNDING TO VARIOUS PROJECTS
THROUGHOUT ONTARIO.

THE ONTARIO TRAFFIC COUNCIL IS
DEDICATED TO PROVIDING THE MOST
UP-TO-DATE AND RELEVANT INFORMATION
TO ITS MEMBERS, INCLUDING
INFORMATION REGARDING FUNDING
OPPORTUNITIES.

INVESTING IN CANADA INFRASTRUCTURE PROGRAM

The Investing in Canada Infrastructure Program is delivered through the Investing in Canada Plan and provides long-term, stable funding delivered by Infrastructure Canada to:

- Help communities reduce air and water pollution, provide clean water, increase resilience to climate change and create a clean-growth economy;
- Build strong, dynamic and inclusive communities; and
- Ensure Canadian families have access to modern, reliable services that improve their quality of life.

Funding through this program is delivered through bilateral agreements between Infrastructure Canada and each of the provinces and territories.

Investments in infrastructure are being made through targeted funding streams, of which the details of 2 of the streams are as follows:

Public Transit Stream includes investments in construction, expansion and improvement of public transit infrastructure, for projects that: improve the capacity of public transit infrastructure, improve the quality or safety of existing or future transit systems; and improve access to a public transit system. Applications for the Public Transit Stream must be submitted before March 28, 2024.

Green Infrastructure Stream includes three sub-streams, investments under this stream support green infrastructure projects with outcomes across three crucial areas: Climate Change Mitigation (better capacity to manage more renewable energy; improved access to clean energy transportation; more energy efficient buildings; and, improved production of clean energy), Adaptation, Resilience and Disaster Mitigation (increased structural or natural capacity to adapt to climate change impacts, natural disasters or extreme weather

FEDERAL AND PROVINCIAL FUNDING OPPORTUNITIES

events) and Environmental Quality. Projects within the Green Infrastructure Stream must be submitted by November 29, 2022.

Projects that are funded through the Public Transit and Green Infrastructure streams are under integrated bilateral agreements where Canada will invest up to:

- 40% of municipal projects
- 50% of provincial projects
- 75% for projects with Indigenous partners
- Provinces will cost-share on municipal projects at a minimum of **33.33%** of eligible costs

*For Public Transit, Canada will provide up to 50% for rehabilitation projects and up to 40% for new public transit construction and expansion projects.

Part of the bilateral agreement requires certain projects to be assessed on environmental outcomes through a climate lens. This assessment will judge how a project might impact the environment and hold up to the effects of climate change. This aims to:

- Build climate-smart infrastructure that will help combat climate change
- Reduce energy costs; and
- Provide Canadians with safer and more resilient communities.

The Investing in Canada Infrastructure Program provides long-term, stable funding to:

- Help communities reduce air and water pollution, provide clean water, increase resilience to climate change and create a clean-growth economy
- Build strong, dynamic and inclusive communities, and
- Ensure Canadian families have access to modern, reliable services that improve their quality of life

Public Transit Infrastructure

Funding for the new construction, expansion, improvement and rehabilitation of public transit infrastructure that transform the way Canadians live, move and work.

Green Infrastructure

Funding for green infrastructure projects that reduce greenhouse gas (GHG) emissions, enable greater adaptation and resilience to the impacts of climate change, provide climate-related disaster mitigation, and ensure clean air and safe drinking water for residents.

More information can be found **HERE: Investing in Canada Infrastructure Program**

ONTARIO COMMUNITY INFRASTRUCTURE FUND

Through the Ontario Community Infrastructure Fund, the province will distribute approximately \$400 million to 424 communities across Ontario, in 2022.

Communities do not need to apply for the funding, but must provide planning and reporting documents to the government to receive the grants.

Eligible recipients:

Receive annual allocation notices specifying OCIF funding for the year

May accumulate annual formula-based grants for up to five years to address larger infrastructure projects

Are guaranteed to receive a minimum of \$100,000 per year.

Ontario municipalities that are eligible include, small municipalities with a population less than 100,000, northern municipalities and rural municipalities. The population is determined by the 2016 census.

Eligible capital expenditures on core infrastructure projects (such as roads and bridges) that are part of an asset management plan are eligible. Eligible expenditures for the development, updating and

improvement of asset management plans for any asset type include, asset management software, planning, third-party assessments and consultants. Municipalities are eligible to allocate 40% or \$80,000 (whichever is less) of their formula funding, per year, to hours worked by municipal staff who responsibilities include: asset management planning and/or Composite Correction Program implementation while receiving third-party comprehensive technical assistance.

To receive funding, through the Ontario Community Infrastructure Fund, eligible municipalities must submit the following to the Ministry of Infrastructure periodically, as requested:

A comprehensive asset management plan

Information on how the allocation was or will be used on eligible expenditures

Other reporting requested by ministry

Applications for the Ontario Community Infrastructure Fund must be submitted by December 30, 2022.

More information can be found **HERE: Ontario Community Infrastructure Fund**

GREEN MUNICIPAL FUND: TRANSPORTATION AND COMMUTING OPTIONS

The Green Municipal fund helps local governments switch to sustainable practices faster, through funding, resources and training to implement innovative and proven sustainability practices. The Transportation and Commuting Options funding opportunity is offered to municipalities to improve local transportation systems by switching to less polluting commute options. With a maximum award of \$500,000, municipal governments and their partners can apply for pilot project initiatives that reduce pollution in Canadian communities by encouraging less polluting transportation methods.

Funding for the Green Municipal Fund is allocated year round, until all funding is distributed.

More information can be found **HERE: Green Municipal Fund**

2022 OTC

Annual Conference and Supplier Showcase

In September, the Ontario Traffic Council held their 2022 Annual Conference and Supplier Showcase in Collingwood, Ontario at the Georgian Bay Hotel and Conference Centre with the theme 'The Road to a New Multi-Modal Transportation'. The first in-person event since 2019, the conference was offered as a hybrid event to accommodate virtual and in-person attendees and presenters. In-person attendees left with a copy of one of the keynote speakers, Charles Marohn's book, **"Confessions of a Recovering Engineer: Transportation for a Strong Town"** and had the opportunity to participate in over 15 hours of networking and connecting with peers.

The conference kicked off on Sunday, September 18th with the President's Reception where attendees and exhibitors met, some for the first time in-person in over 2 years, and heard from the OTC's President, Adam Bell. The reception was an exciting event to kick-off the 3-day conference.

On Monday, September 19th, the day started with breakfast

as exhibitors finished setting up and preparing for the showcase portion of the event. The exhibitors included: ATS Traffic, Black & McDonald, Conduent Transportation, Develotech, Econolite Canada, Electromega, Fortran, GGI Road & Traffic, Jenoptik, Kalitec, Precise Parklink, Stinson ITS, Tacel Ltd. and The Personal. The first day of the conference started off the impressive list of educational and informative speakers who spoke about many topics related to multi-modal transportation, as well as presentations by the exhibitors.

The Project of the Year Award nominees presented their projects and included **"Vision for Transit"** by the City of Barrie, **"Moving Guelph Forward: 2022 Transportation Master Plan"** by the City of Guelph, **"Moffatt Street Secondary Access Municipal Class EA (C) Study"** by CIMA+, **"City of Toronto Cycling Network Plan"** by the City of Toronto, **"City of Kitchener Vision Zero Strategy 2022-2024"** by the City of Kitchener, **"City of Vaughan Transportation Demand Management (TDM) Guideline"** by the City of Vaughan,

"City of Ottawa Protected Intersection Design Guide" by Alta Planning and Design Canada and **"Complete Streets Design Manual and Guideline"** by the Regional Municipality of Niagara.

Monday's luncheon was sponsored by Paradigm Transportation and gave attendees the opportunity to connect with industry peers and visit the supplier showcase, while enjoying a delicious meal prepared by the Gustav restaurant, the in-house restaurant at the Georgian Bay Hotel and Conference Centre. After an overview of the Technical Cycling Tour, presented by Justin Jones of WSP, attendees left the first day of the conference with Justin, Stuart West, Peggy Slama, and some of her Collingwood transportation staff to cycle through Collingwood, the 2021 recipient of the Silver Bicycle Friendly Community Award. Many attendees arrived with their bicycles anticipating the Technical Tour, others were able to access bicycle rentals to participate. The Town of Collingwood had done an excellent job of connecting their many trail networks with their cycling facilities while also

2022 OTC ANNUAL CONFERENCE AND SUPPLIER SHOWCASE

utilizing the waterfront trails and other landmarks throughout the Town. The day ended with the Conference Dinner, in the outdoor dining area, and drinks at the in-house bar where attendees were able to spend some time together catching up, meeting new peers, and enjoying each other's company.

Tuesday, September 20th, began with the Ontario Traffic Council's Annual General Meeting (AGM) and voting for Board of Directors. Congratulations to the OTC Board of Directors elected at the AGM: Nelson Cadete (3-year term), Manoj Dilwaria (3-year term), Heide Schlegl (3-year term), Chris Day (1-year term) and Joe Rocca (1-year term), as well as the directors who are continuing existing terms: Adam Bell (2-year term), John Crass (2-year term) and Sheyda Saneinejad (2-year term).

After the AGM, attendees heard a virtual message from the Minister of Transportation of Ontario, Honourable Caroline Mulroney, and an update from the Ministry of Transportation's Sheri Graham which was followed by the morning coffee break sponsored by Intact Public Entities. Sheilagh Stewart, of Stewart Solutions,

and Geoff Wilkinson, Executive Director of the OTC, presented the 'Understanding the new AMPS (Administrative Monetary Penalty System) for Ontario Municipalities' presentation and Alireza Hadayeghi of CIMA+ presented the New Vision Zero Guidelines that the OTC worked on with the OTC, which will be released later this year.

The Awards Lunch also took place on Tuesday, where the OTC presented a number of annual awards. The OTC proudly present the OTC Honourary Life Member Award to Mr. Jeffrey Smart. Jeffrey recently retired as Vice-President of Tacel Ltd. where he was employed since 1984. Jeffrey sat on the OTC's Board of Directors since 1992 and was President from 2014-2015. He was also on the Board of Directors at ITS Canada for over 12 years and was the President of the Ontario Chapter of the International Municipal Signal Association (IMSA) in 1993. The OTC also presented Roger De Gannes with the OTC Honourary Member Award. Roger has been a professional engineer for over 35 years with experience in traffic and transportation engineering in the public and private sector. Roger was with the MTO for

over 30 years in various areas of traffic, planning & design and corridor management and is now Senior Engineer with the City of Toronto's Traffic Operations Unit. He has also been a member of the OTC's Traffic Engineering Committee for 12 years and was a member of the Active Transportation Committee where he worked alongside the OTC to develop the first OTM Book 18. Roger has also delivered training for OTC's Technical Traffic Operations Course.

The OTC presented the Top Student Award for the 2022 Technical Traffic Operations Course to Shirin Ashtari of the City of Toronto and the OTC Top Student Award for the 2022 Police Traffic Officer Course to Marco D'Annibale of Woodstock Police Services.

Mehemed Delibasic, Transportation Planning Committee Chair, presented the 2022 Transportation Planning Project of the Year Award to Alta Planning and Design Canada and Kalle Hakala accepted the award virtually on behalf of all whom participated in their project.

The OTC would like to congratulate all award winners and their dedication to their fields and their participation

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and dedication to the Ontario Traffic Council.

Tuesday ended with three shuttle bus trips to Blue Mountain, which was sponsored by TNS Group, where attendees were able to connect, dine and enjoy the free time in the beautiful Blue Mountain Village.

Wednesday, September 21, was the final day of the 2022 OTC Annual Conference and Supplier Showcase and after breakfast attendees heard from Dr. Blair Feltmate, of the University of Waterloo, who discussed "Weather Gone Wild: Preparing for Flooding, Wildfire and Extreme Heat" a presentation on the impacts of climate change. Dr Feltmate challenged the OTC to have our Committees reflect on the effects of climate change and discuss ways to mitigate these in the work we do. Jeffrey Suggett of CIMA+ discussed 'How to set up your Restaurant Patio Program for 2023' and Michelle McElligott, of the City of Ottawa, and Sam Roberts, of the Ottawa Police Services, discussed 'Heavy Vehicle Mitigation and Insight into the Trucker Convoy, City of Ottawa' where members heard how the City of Ottawa and the Ottawa Police Services managed the trucker convoy disruption in the winter of 2022.



The conference wrapped up with prize draws and closing remarks and lunch, as attendees said goodbye to their peers. The OTC thanks everyone who was in attendance, both virtually and in-person, all speakers, exhibitors, and sponsors, and congratulates the 2022 award winners. Please be sure to check our events calendar, www.otc.org/events, as we have many upcoming events, and we hope to see you at the 2023 OTC Annual Conference and Supplier Showcase at a venue in the Toronto area May 18-31st.

RoadtoZero

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Vision Zero. The Road to Zero. The Safe System Approach. It's a global traffic safety initiative with many names. Still, the goal remains the same: to leverage engineering solutions, innovative concepts, and human-centered design toward eliminating fatalities and severe injuries caused by road traffic accidents.

Originating from Sweden in 1994, Vision Zero was born out of the fundamental truth that drivers make mistakes. As such, protecting their safety, and that of others on the road, takes a transportation system designed and operated to accommodate this inevitability and lessen the potential impacts of a collision.

"As humans, we all make mistakes," says *Dr. Ali Hadayeghi*, Partner, Vice President of Transportation, CIMA+, and one of OTC's go-to experts on Vision Zero. "That's why the goal of Vision Zero is to say, 'if the mistakes happen, instead of a collision becoming a fatality, what can we do to have it become less and less severe?'"

In essence, he adds, the idea is to approach road traffic safety from a more humanistic angle, one in which prevention measures and collision mitigation strategies are designed with human behaviours and vulnerabilities at the core. Moreover, Vision Zero calls for a shared, systems-based approach that holds all road safety stakeholders responsible for keeping drivers and pedestrians safe. That includes system designers and engineers, who create safer roads and road processes; policymakers, who champion road safety initiatives; law enforcement, who uphold road traffic safety rules fairly and without falter; and all road users, who must follow the rules, systems, and safety practices every time they are on the road.



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A GLOBAL VISION

Two decades later, Vision Zero is gaining momentum. Organizations worldwide have adopted the tenets of the safe system approach to inform traffic-safety initiatives with the same goals, while the World Health Organization itself identified Vision Zero as an effective policy to prevent road traffic injury in 2004.

Promisingly, the global uptick of Vision Zero has made quantifiable results. According to Parachute Canada, a national injury prevention organization, Sweden itself has seen a 68% drop in traffic deaths per 100,000 between 2000 and 2019¹, while countries across the EU have applied Vision Zero methodologies to reduce fatalities by traffic incidents by nearly half².

New Zealand is another country leading the charge on Vision Zero. Under the moniker Te Ara Ki te Ora (aka Road to Zero), it has launched a ten-year initiative to reduce deaths and serious injuries from traffic accidents by 40% through adopting safer road safety practices, designs, and technologies by 2029. Since its launch, the program has seen over 61km of median barriers and 7,030km of speed treatments completed, while new policies and safety awareness campaigns have been launched to reduce its numbers³.

“Road to Zero is not about any single initiative but about how we develop a Safe System that includes safe vehicles, safe speeds, safe road users and safe roads,” states the *New Zealand Ministry of Transport*. **“A safe system approach means looking at all aspects of the transport system and making evidence-based interventions across a wide range of activities to make a difference.”**

Surely, no matter the name, examples of Vision Zero successes are mounting worldwide. Stats from 2021 show various jurisdictions around the world have leveraged their own Vision Zero strategies to reduce deaths to zero for the years, including jurisdictions around the globe Outside of Europe: Oxnard (California, USA), Red Deer (Alberta, Canada),

Buenavista (Mexico), Cerro Navia (Chile), Suzuka (Japan), and Campbelltown (New South Wales, Australia)⁴.

“The evidence from towns and cities without traffic deaths has shown that multiple stakeholders are responsible for this success,”

Stan Zurkiewicz, a board member and chief operating officer of DEKRA told Forbes. **“Decades of work are now bearing fruit – the work of many parties in traffic planning, vehicle development, politics and administration, emergency services, road safety volunteer organizations, media, vehicle inspection organizations, and many more.”**

BUILDING MOMENTUM IN THE WEST

Vision Zero may be relatively younger in North America, but it is moving the needle. In the US, organizations like Vision Zero Network (visionzeronetwork.org) are working to promote and support a patchwork of Vision Zero strategies in various states, while launching initiatives like its World Day of Remembrance for Road Traffic Victims⁵ continue to fight against the rise of preventable roadway deaths⁶.

Canada has also made its share of gains. Since Edmonton, Alberta became the first Canadian city to adopt Vision Zero in 2015, the City of Edmonton has reported a 50% drop in traffic-related fatalities and a 32% decline in serious injuries.

¹Parachute Canada, Vision Zero, September 2022: <https://parachute.ca/en/program/vision-zero/#:~:text=Built%20on%20a%20system%2Dbased,this%20commitment%20in%20all%20policies.>

²FEVR We Live Vision Zero: <http://www.welivevisionzero.com/statistics-and-national-programs/>

³New Zealand Ministry of Transport, Road to Zero quarterly insights report March 2022: <https://www.transport.govt.nz/assets/Uploads/Road-to-Zero-quarterly-insights-report-March-2022-v2.pdf>

⁴Forbes.com, Zero Traffic Deaths? An Interactive Global Map Shows Where: <https://www.forbes.com/sites/tanyamohn/2021/06/27/zero-traffic-deaths-an-interactive-global-map-shows-where/?sh=813f34f5f8d3>

⁵Vision Zero Network: <https://visionzeronetwork.org/world-day-of-remembrance-events/>

⁶US National Highway Traffic Safety Administration, August 2022: <https://www.nhtsa.gov/press-releases/early-estimates-first-quarter-2022>

ROAD TO ZERO

Elsewhere, Ottawa and Toronto have gone forward with multiple iterations of Vision Zero, each of which aims to refine their approaches to various success. In Toronto, for example, keeps a running tally of its initiatives and outcomes since adopting a Vision Zero Plan in 2016 at its Vision Zero Dashboard⁷. At last count in mid-2021, the City has created:

| |
|---|
| 1,118 Community Safety Zones |
| 161 Traffic Signals & Pedestrian Crossovers |
| 1,004 pedestrian head start signals |
| 238 red light cameras |
| 398 accessible pedestrian signals |
| 34 LED black-out signs |

These initiatives and more have contributed to a decline in traffic-related injuries and deaths. In a September 2022 interview with Wheels.ca, for example, City of Toronto spokesperson *Hannah Stewart* noted: **“Injuries and fatalities have decreased where red-light cameras were installed. As a percentage, injuries were reduced by 23 per cent and fatalities by 40 per cent.”**⁸

“As part of the city’s Vision Zero Road Safety plan, it is critical that the city continues to take action to eliminate fatalities and serious injuries at signalized intersections by implementing and maintaining existing safety countermeasures,” she added.

Dr. Hadayeghi is quick to point to these numbers as an indication that Vision Zero is making a difference. He is also happy to highlight jurisdictions where a shared systems approach has borne fruit.

Case in point, he notes, **“Red light cameras, smart right turn channels, automated traffic enforcement – we’re seeing all these treatments become proven countermeasures in London and other Canadian jurisdictions. The City of London is a good example of how successful they were, in terms of reducing the number of fatalities by implementing these engineering countermeasures along with public awareness**

and education campaigns to bring down the number of fatalities and injuries from collisions.”

Overall, *Hadayeghi* says Canada has come a long way in the short time in which Vision Zero has been adopted and promoted by top urban destinations. Now, however, is no time to rest on early wins: **“Certainly, we see the improvement, and the number of fatalities and serious injuries is reducing for some areas. That being the case, we’ve still got a long way to go because it’s not just about changing the engineering or improving the engineering countermeasures or programs; it’s also changing the culture around how people travel considering road safety.”**

“After a certain amount of time, you achieve all the low-hanging fruit, and then it becomes harder,” he continues. **“Now, to achieve the goal of Vision Zero, we need deeper buy-in from our politicians and ongoing commitment from everyone responsible for keeping our roads safe.”**

OTC is part of the solution, as are its members and allies, who each play their own role in seeing Canada’s Vision Zero progress through. And as OTC and its partners push ahead in promoting this road traffic safety movement, it will rely on their own networks to do the same.

“We all need to be part of the solution,” says *Hadayeghi*. **“That means taking the time to understand Vision Zero, understand what it’s trying to accomplish, and promoting it in your piece of the industry.”**

“We have a long way to go, but we just started, and I think we are going in the right path,” he adds.

⁷City of Toronto: Vision Zero Dashboard:
<https://www.toronto.ca/services-payments/streets-parking-transportation/road-safety/vision-zero/vision-zero-dashboard/>
⁸Wheels.ca: Red-light and Speed Cameras are Helping Keep Toronto Safe
<https://www.wheels.ca/news/cameras-on-the-road-dont-impact-drivers-equally>

OTC, IRAP, PARACHUTE, ONTARIO VISION ZERO ALLIANCE

Vision Zero is being championed by organizations across the globe.

In Canada, for example, the Ontario Traffic Council, Parachute, Ontario Vision Zero Alliance. The Ontario Traffic Council has a working group representing municipalities sharing information and best practices on Vision Zero. The OTC has developed an Ontario Vision Zero Guideline available later this year to provide those municipalities looking for information and direction on implementing a Vision Zero Program and for those with Programs – information and best practices to continuously improve.

Parachute Canada has taken a national lead in promoting Vision Zero. They create and disseminate evidence-based Vision Zero resources and best practices in road safety, support urban and rural jurisdictions in their understanding and adoption of Vision Zero, and connect key road safety stakeholders to increase the overall awareness and effectiveness of the Vision Zero approach, while supporting data-driven approaches to road safety.

The Ontario Vision Zero Alliance founding partners the Ontario Traffic Council and Parachute Canada are bringing together like-minded individuals and organizations focussed on Vision Zero. The purpose of the Alliance is, as a thought leadership forum, identify and advise on emerging issues, gaps, and opportunities related to Vision Zero in Ontario, to act upon, influence or support and to provide a platform to share best practices, information, tools, and resources.

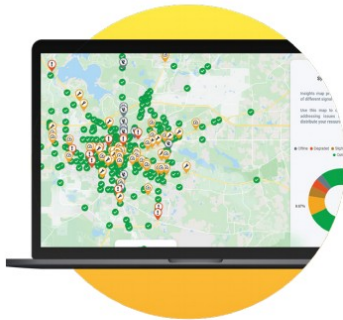
Internationally, iRap's Decade of Action for Road Safety Initiative has rallied partners across the private and public sectors to ensure roads worldwide are built to higher safety standards.

By the end of the first Decade of Action, iRAP and its partners in more than **100 countries** have Star Rated more than **1.1 million kilometres** of existing roads and designs and Risk Mapped **1.5 million kilometres. 670 schools in 40 countries** have been assessed using the Star Rating for Schools application (SR4S), **132 suppliers** have been accredited and over **28,000 people trained** to make their roads safer. In the Decade ahead, they aim to work with our partners to eliminate high-risk roads on a scale that matters.

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