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AVIN INSIGHTS
Skills and Talent Series

Smart Mobility & the Future of Transportation Planning Careers

Introduction

As technological advances (ex. autonomous driving and connectivity) and new modes (ex. shared mobility) continue to emerge over the next decade, transportation can improve; in its safety, efficiency, affordability and overall accessibility. Better transportation systems and services mean better mobility and potentially more usage. This will catalyze more investments to develop and deploy new and advanced systems and services.

These changes in mobility are resulting in changes to job structures and requirements; current and emerging. New types of management, technical and operational jobs will emerge, and existing jobs will experience a shift in the skills they entail, and the way tasks are performed.

This transition will be gradual and will require organizations and workers to adjust to meet the needs of the sector outlook. As it is important to make appropriate infrastructure, policy and regulatory modifications to enable the transition, it is equally (if not more) important to invest in skills development to ensure that we have the competent talent needed for these technologies and modes to be effectively implemented.

Predicting the level of influence the transition in mobility will have on current and future careers is not easy. It is especially challenging for strategic and responsive careers like those related to transportation planning.

Transportation planning professionals need to look beyond new technologies and their short-term implications and understand:

- The trends and society needs driving the transition in mobility offerings (i.e. "why?");
- How emerging technologies can respond to these trends and society needs (i.e. "how?"); and
- How all of these will influence current and future careers (i.e. "so what?").

Sources:
[1] https://community-planning.extension.org/what-are-the-differences-between-mobility-accessibility-and-connectivity-in-transportation-planning/
[2] https://www.ite.org/technical-resources/topics/transportation-planning/

Transportation

The act of moving stuff and people.

Mobility

The ability and level of ease of moving stuff and people [1].

Transportation Planning

"A collaborative process involving agencies, organizations and the public to comprehensively look at national, state/ provincial, regional and community needs. It relies on examining demographic characteristics and travel patterns for a given area and how they will change over a given period to evaluate alternative improvements for the transportation system" [2].

Related Occupations

Examples

1) Transport Planner
2) City/Urban Planner
3) Transport/Traffic Engineer

Drivers of Change

The drivers of change in mobility extend across a wide spectrum of social, environmental, technological, economic, and political trends.

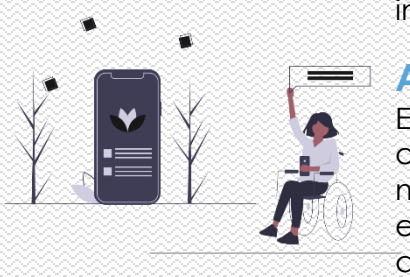
They drive the continued efforts to find new ways of moving goods and people.

Defining these trends helps in forecasting the technological transformation, and the emergence of new mobility modes and service models.

Some of the key drivers of change include safety, accessibility, environmental footprint and efficiency.

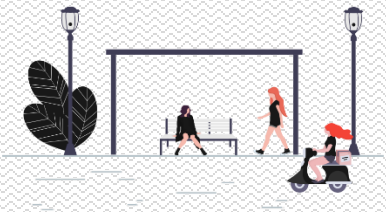
Safety

Safety is one of the key drivers of change, if not the number one driver, in the automotive and mobility space. Future mobility advancements should focus on increasing safety and reducing mobility-related injury and fatality rates.



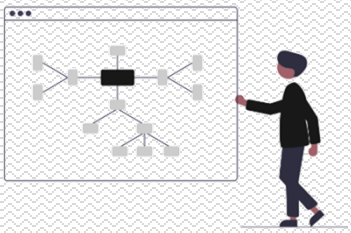
Accessibility

Equity must be at the core of any existing and new mobility offerings to ensure equitable access to mobility and to create a wider variety of options for people that meet their needs.



Environmental Footprint

Encouraging the development and deployment of clean mobility options will help in reducing the adverse impacts on the environment and support healthier cities and communities.



Efficiency

Finding more efficient forms of moving people and goods will help in reducing road congestion and minimizing time, cost, and energy in building, operating and maintaining transportation systems and services.

Emerging Technologies

Adopting smart technologies and solutions is crucial in responding to the drivers of change in mobility. They can pave the way to a safer, more equitable, cleaner and more sustainable mobility that can bring considerable benefits to society and enhance our quality of life.

It is important to identify the key emerging technologies and understand their impact on the mobility offering and subsequently on the future of work.

Autonomy

The accurate detection, recognition, anticipation, and response that comes with autonomy could improve safety, reduce cost of transportation, and enhance access to mobility services.

Connected Mobility

Through connectivity (with other vehicles, infrastructure, and road users), vehicles can be better aware of their surroundings. This allows for more efficient traffic operations, better driving experiences and environmental impacts.

Electrification

Electric Vehicles (EVs) are increasingly becoming more efficient, delivering higher speeds and are more affordable especially with the advancements in battery and charging technologies. They allow for reduced fuel costs, fuel consumption, and tailpipe emissions.

Modelling and Simulation

While used for a long time now, transportation modelling and simulation tools are expected to be able to handle more robust data and become more complex as modes, choices, and behaviours grow more versatile and interconnected.

Information Dissemination

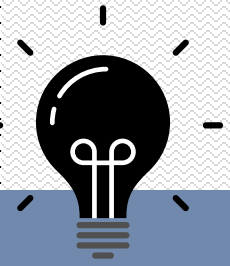
There is demand for new and advanced ways to collect and disseminate data and information that is easily accessible, clear and simple and at the same time robust and comprehensive.

Mobility Models

The changes in mobility offerings vary in quantity, nature and projected timeline and are not solely a result of new technologies.

New mobility models are emerging, and existing models are reshaping to respond to the overall shift in our needs and preferences.

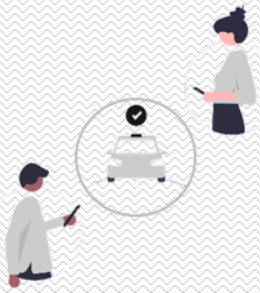
The social and technological trends are imperatively converging to ensure an efficient mobility system.



Mobility Models
The various forms of offering and using mobility services.

Multimodal Mobility

Mobility can only work efficiently to respond to travel needs if it relies on multimodal systems that can offer alternative travel choices and provide seamless connections between different modes.



Shared Mobility

Shared mobility has shifted user preferences away from car ownership toward alternative forms of transportation and sometimes complimented existing modes through improved connections and access especially for first and last mile travel.

Mobility Management

Developing strategies and adopting innovative mobility solutions to encourage a more efficient use of transportation resources will also help in optimizing and diversifying travel options and improving accessibility for a wide range of users.

Mobility as a Service (MaaS)

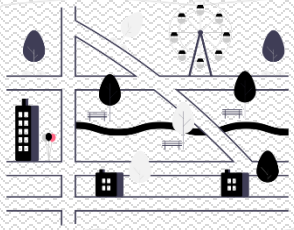
To integrate the various forms of mobility services, technologies and models and optimize their usage, Mobility as a Service (MaaS) has the potential to offer an umbrella to accessing on-demand, real-time, and shared mobility.

Planning Principles & Standards

The future of smart mobility signifies that more human talent will be needed not only to build the technology but to also build the infrastructure that is needed to enable it. For transportation planning professionals, this means planning for and building future cities and communities that can efficiently adopt and deploy these new technologies and mobility models.

Technological changes and emerging mobility models will have significant impacts on the overall mobility offering.

Many of the planning and design standards that form the basis of transportation planning are expected to remain unchanged.

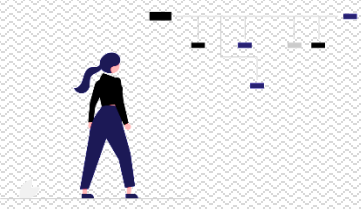


Sustainable Development

Planning for and building cities and communities that are human-centric, resource efficient and that are capable of supporting economic vitality and growth.

Demand Management

Understanding how people move and how they are expected to move in the future as a result of ongoing and future transformations, while managing this demand. In parallel, considering other factors such as economic and demographic shifts and changing user preferences.



Operational Efficiency

Planning and building transportation systems and services to operate efficiently through optimized service level and frequency and providing the necessary facilities and infrastructure.

Technical Knowledge

New and advanced knowledge in technical areas is expected to be needed for planning professionals to be able to plan and deliver systems that can efficiently adopt these new technologies and models.

Planning and operational design of new mobility modes

Understanding how these technologies and models work and how they impact user preferences helps in refining traditional travel behaviours and demand patterns. This is needed to design transportation systems that can incorporate them efficiently.

New data collection and processing methods

Mobility systems collect and share large amounts of data and this is expected to grow with technological advancements and new mobility models. Dealing with data that is more accurate, granular and real-time, and learning how to analyze this data might require learning new data analytics, visualization and reporting tools.

Also understanding data outcomes and how to use these to make strategic decisions to inform more optimized operations and plan for future systems.

Developing and using new design standards

New and/or enhanced design standards may be required to guide a safe, efficient and standardized deployment of the new mobility modes and identify technical requirements for their associated infrastructure.

Impact on infrastructure

Identifying the infrastructure and supporting facilities that will be required for new technologies to be deployed. Also, understanding their impact on existing infrastructure such as signals and signs, roads, parking and other elements of the urban environment.

Transportation modelling and simulation tools

New simulation and modelling tools are emerging, and existing tools are being modified to account for the changes in mobility offerings and travel behaviours and patterns.

Transportation planning professionals will need to keep up with the emerging modelling and simulation tools and upskill in the operational aspects of new mobility to be able to forecast future transportation conditions and inform planning decisions.

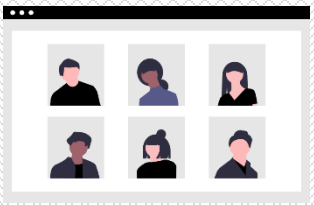
Policy and regulatory requirements

Identifying the key benefits, challenges and impacts of emerging smart mobility options is valuable for informing the development of policy and regulation, and can help decision makers to make more informed decisions that can maximize societal benefits.

Non-technical Skills

A cornerstone to success is also possessing the non-technical skills (i.e. soft and human skills) and abilities that are in demand by employers in the sector.

Communication



Problem Solving

Leadership

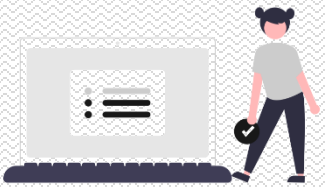
Visionary and Creative Thinking

Eagerness to Learn

Adaptability and Flexibility

Workplace Transformation

In addition to deploying new technologies to improve mobility, these technologies can also help workers improve the way they do their work. As such, there is great potential for improved productivity and efficiency in the workplace.



Productivity

The adoptions of new technologies will allow for the automation of some predictable and repetitive activities such as reports, surveys, data collection and analysis. This will in turn increase productivity and efficiency.

Flexibility

Employers will be looking for a more flexible and adaptable workforce that can rapidly learn new skills and behaviours in response to changing circumstances. This will allow workers to respond effectively to changes in working conditions.

Digital Skills

A workforce with advanced digital skills can better respond to digital and technological adoption and impacts on their work (such as using tools to enhance the way they perform their tasks).

Through computerization, there is an opportunity for transport planning professionals to learn new skills and work on more exciting and thoughtful tasks.

Stay ahead!

Futureproofing transportation planning careers requires a collaborative effort between industry, government and academia and the workforce itself. Some of the key considerations for transportation planning professionals to stay ahead of this transition include:

Checkout the AVIN Insights

Subscribe to the AVIN Newsletter

Keeping informed of changes and their impacts

It's always important to know what mobility trends are emerging and to continuously think about their potential implications, even if they're not quite around the corner yet. For instance, you can sign-up to receive latest news, research and insights from professional organizations and associations.

Identifying available resources for continuous learning

Always be in the look out for new learning opportunities. Whether course-based, on the job training or through mentoring and job shadowing. These are all great ways to continue to learn and advance your skills.

Exploring new learning methods

Keep exploring new learning methods that work for you. There is a continuous growth in micro-credentials (ex. smart mobility, smart cities, the future of cities, introductory courses on autonomous vehicles, big data and data analytics) that can provide focused, industry -driven opportunities to learn and grow within the personal capabilities of the learners (time, cost, etc.).

Maintaining connections with the ecosystem

Maintain a strong ecosystem network and engage regularly with colleagues across the sector for a glimpse into the projects they are working on and what skills they are looking to acquire.

Also, consider finding a mentor, attending industry events, joining professional membership organizations and engaging on social media (ex. Twitter and/or LinkedIn).

AVIN Skills and Talent Strategy

Ontario's Autonomous Vehicle Innovation Network (AVIN) is undertaking work on skills and talent, which is focusing 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.

This report is part of the Skills and Talent Series of the AVIN Insights. Visit the AVIN Hub to access these insights and other regular updates on this work and more.

About AVIN

The Autonomous Vehicle Innovation Network (AVIN) is a key component of Driving Prosperity, the Government of Ontario's initiative to ensure the automotive sector remains competitive and continues to grow and thrive. The Government of Ontario has committed $85 million in innovative programming to support research and development (R&D) funding, talent development, technology acceleration, business and technical supports, and testing and demonstration sites.

These programs support small- and medium-sized enterprises (SMEs) to develop, test and commercialize new automotive and transportation products and technologies, and cultivate the capacity of a province-wide network to drive future mobility solutions, reinforcing Ontario's position as a global leader.

The AVIN Central Hub is the driving force behind the programming, province-wide coordination of activities and resources, and Ontario's push to lead in the future of the automotive and mobility sector globally. Led by a dedicated team, the Central Hub is the focal point for all stakeholders across the province, a bridge for collaborative partnerships between industry, post-secondary institutions, broader public sector agencies, municipalities and the government, all while serving as a concierge for new entrants into Ontario's thriving ecosystem.

The Central Hub drives public education, research, analysis, and thought leadership activities, convenes stakeholder groups, and raises awareness around the potential of these technologies, the opportunities for Ontario and for its partners.

AVIN, led by the Ontario Centre of Innovation (OCI), is supported by the Government of Ontario's Ministry of Economic Development, Job Creation and Trade (MEDJCT), Ministry of Transportation (MTO) and Ministry of Labour, Training and Skills Development (MLTSD).

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Technology Spotlight

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DRIVING THE FUTURE OF AUTOMOTIVE AND SMART MOBILITY

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Where Next Happens