

ALY 6980: Capstone



## Capstone Project

**ALY 6980: Capstone**

College of Professional Studies  
Northeastern University - Vancouver

## REPRESENTATIVES

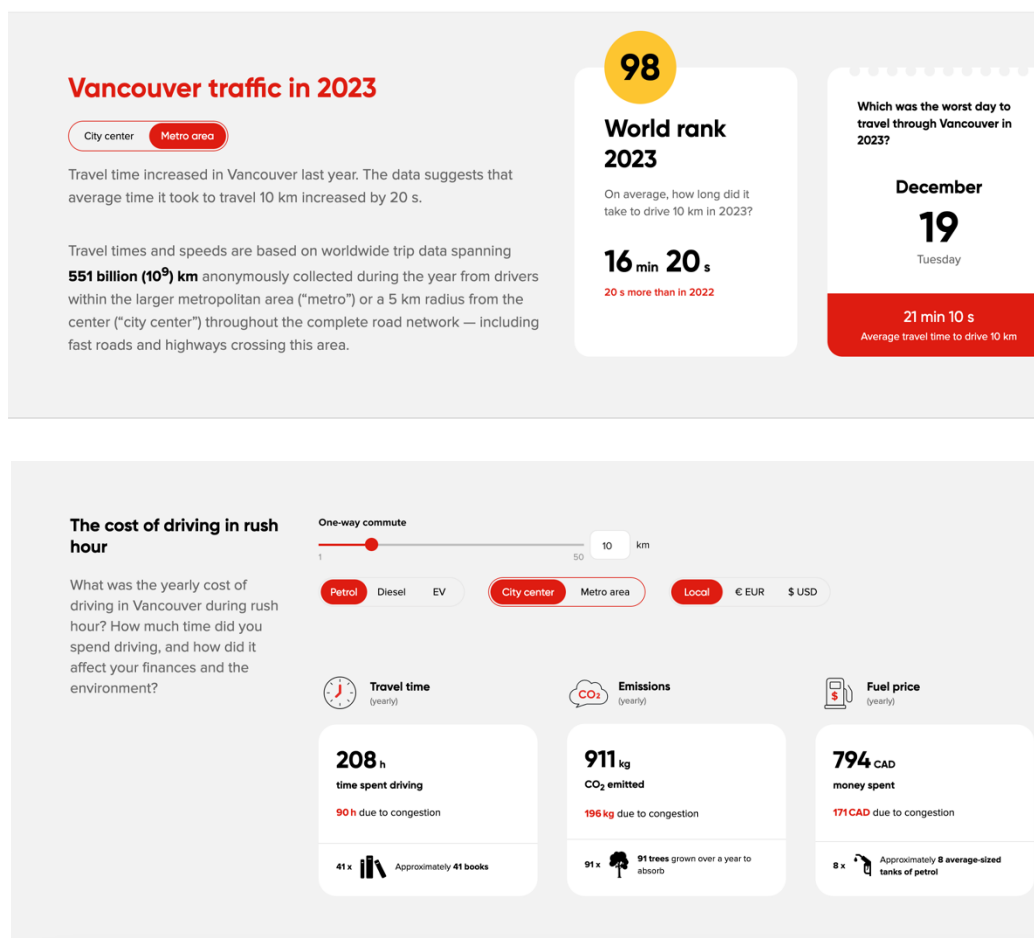
Murtaza Vora  
Abhilash Dikshit  
Gunjan Paladiya  
Milan Prajapati

# “Smart Mobility Solution: Addressing Congestion and Enhancing Public Transport Vehicle Tracking Accuracy in Vancouver”.

## Introduction: -

The persistent challenges posed by traffic congestion in Vancouver necessitate innovative solutions that go beyond conventional approaches. This project explores the integration of data and advanced technologies to tackle congestion issues and enhance the accuracy of public transport vehicle tracking. As Canada's economic landscape is intricately linked to immigration, especially in metropolitan hubs like Vancouver, the need for an automated public transport system becomes evident. This system aims not only to alleviate congestion-related productivity losses but also to provide a seamless, efficient, and responsive public transportation experience for residents and newcomers alike. The following sections delve into the objectives, methodology, and technology stack employed in achieving these goals.

## Productivity loss due to congestion:



The substantial financial and environmental repercussions resulting from traffic congestion in Vancouver underscore the urgent requirement for a system that can alleviate this issue. Considering Canada's significant reliance on immigration, with an estimated 485,000 immigrants, many of whom choose metropolitan areas like Vancouver as their destination, the demand for an automated public transport system becomes particularly critical.

## **Problem Statement: -**

Vancouver's persistent traffic congestion demands innovative solutions integrating data and advanced technologies to improve public transport efficiency, crucial for a seamless urban experience and economic vitality driven by immigration.

## **Objective: -**

1. Develop solutions to alleviate congestion in Vancouver using Reinforcement Learning.
2. Increase the accuracy of public transport vehicle tracking.
3. Improve overall public transport efficiency.
4. Enhance the passenger experience with real-time information.

## **Methodology: -**

### **A. Data Collection**

1. Sources of traffic and congestion data (City of Vancouver, Translink)
2. Public transport vehicle tracking data (Translink)

### **B. Analysis Techniques**

1. Machine learning algorithms for congestion prediction
2. Enhancement of vehicle tracking algorithms

### **C. Implementation Plan**

1. Develop a prototype or simulation environment
2. Testing and validation procedures

## **Technology Stack.**

1. Machine Learning Frameworks
2. Geographic Information System (GIS) tools
3. Real-time Data Processing Technologies
4. Communication Protocols for Vehicle Tracking

## **Outcomes: -**

1. Reduction in congestion during peak hours
2. Improved accuracy in public transport vehicle tracking
3. Enhanced passenger satisfaction and experience

**Conclusion: -**

In conclusion, the "Smart Mobility Solution" project addresses Vancouver's congestion challenges by deploying cutting-edge technologies. With a focus on Reinforcement Learning for congestion reduction and improved vehicle tracking accuracy, the project aims to transform urban mobility. The proposed methodology involves data collection from key sources, machine learning algorithms, and a robust implementation plan. The envisioned technology stack, comprising machine learning frameworks and real-time data processing tools, promises an efficient and responsive public transport system. The successful execution of this project is poised to not only alleviate congestion-related issues but also establish a sustainable, automated transport infrastructure, enhancing the overall urban experience for residents and newcomers in Vancouver.