Freight Day V Symposium

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Parking Enforcement Policies for Commercial Vehicles

Mehdi Nourinejad

- In 2014, 691,240 tickets were issued to commercial vehicles in Toronto, almost a quarter of the total number of parking tickets.
- This research tries to find the optimal parking enforcement policy while taking into account the reactive behavior of commercial vehicles to the imposed policies.
- The maximum profit from illegal parking is obtained when the inspection technology is neither too advanced (e.g., camera inspection) nor too inefficient (e.g., on-foot inspection).
- We show that contrary to common belief, intensive parking inspection does not necessarily lead to better social welfare.
- Maximizing social welfare, as opposed to maximizing profits, stipulates charging a higher citation fine.

Impacts of Illegal Parking on CBD Congestion

Ahmed Ramadan

- 35,000 illegal parking activities are recorded every year during the AM peak period in Toronto.
- Illegal on-street parking during rush hour reduces traffic flow and increases driver delay, resulting in congestion and thousands of hours lost in traffic.
- Traditionally, traffic microsimulation does not account for illegal parking.
- Microsimulation can be used to quantify the effect of illegal parking on the level of congestion on the links where illegal parking is encountered as well as in the surrounding area

Investigation of Commercial Vehicle Parking Permits in Toronto

James Lamers

- 90% of all parking tickets issued to courier vehicles in Canada are issued in downtown Toronto; most companies choose to park illegally and accept the fines as a cost of doing business.
- Illegally parked courier vehicles cause traffic delay during peak hours and high costs for enforcement and ticket cancellation in court.
- Toronto should expand its pilot program of courier-specific parking spaces in specific downtown locations to provide additional, convenient, legal parking for courier vehicles.
- A courier parking permit costing less than $500 per vehicle would legitimize the current parking behaviour, reduce parking enforcement costs for the city, and replace the city's revenue from parking fines.

Modelling Firm Growth and Outsourcing

Toka Mostafa

- Agent-based microsimulations of freight systems determine freight flows by representing the decisions and interactions of individual agents.
- The interacting agents in a freight system are firms, including carriers, shippers and logistics service providers.
- The "Firmographic Engine of Canada", a microsimulation platform, has underlying models of firm growth and freight outsourcing activities.
- Firm dynamics (e.g., growth) and other operational strategies (e.g., outsourcing of freight-related activities) directly influence the economy, job market, land use and transportation networks.
- Models were estimated using Statistics Canada data for Canadian firms.

Life Cycle Emissions and Cost Analysis of Medium Duty Alternative Vehicle Fuels

Taylor Zhou

- The life-cycle GHG emissions and life-time ownership costs for medium-duty diesel trucks and equivalent battery-electric trucks differ in city and freeway driving conditions.
- Compared to diesel trucks, battery-electric trucks consume less energy and produce fewer GHG emissions, especially in city driving conditions and in warm weather.
- The lifetime cost of battery-electric trucks is 10% less than that of diesel trucks while the 5-year total cost of ownership is 18% more.
- The lifecycle cost of GHG abatement using battery-electric trucks is up to $170 per tonne CO_2 equivalent GHGs but can result in savings of $335.

Plug-in Hybrid Electric Vehicle Problem

Mehdi Nourinejad

- Hybrid and plugin hybrid trucks are especially important in electrifying the nation's fleet because they fulfill regulations without sacrificing driving range.
- Developing routing models for parallel PHEVs is complex because they are propelled by two sources of energy – electricity and gasoline.
- This study develops a routing model for PHEVs, finds the optimal fleet composition and investigates the impact of infrastructure (charging stations) on fleet composition.
- Fleets should comprise more electric vehicles than PHEVs when charging stations are abundant and travel distances between customers are short.
- Whereas Type I chargers do not influence fleet composition, Type II and Type III chargers justify acquiring more electric vehicles than PHEVs.