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Modeling Truck Freight Network Robustness and Criticality in Ontario, Canada

It is well-established that disruptive events on a road network can severely impact economic productivity. A reliable transportation system is essential to maintaining and growing the economy. This research applies the Network Robustness Index (NRI) in combination with economic measures to explore the potential criticalities that arise in the freight transportation network servicing the multi-regional, economically-active province of Ontario, Canada. A significant economic contributor and generator of freight trips, Ontario relies on its transportation system for the movement of goods. Major trade routes, including the Montreal-Windsor corridor along Highway 401 and highways leading to major border crossings with the United States, as well as highways in the Toronto region and links to northern Ontario consistently appear critical in the analysis. The research proposes a framework for assessing the impacts of proposed infrastructure improvements to inform policy and prioritization decisions.



Georgiana Vani is a doctoral graduate researcher in transportation engineering with the Cross Border Institute. Her research interests include freight transportation, travel demand modeling and analysis, and network robustness research. Georgiana has completed both a Bachelor and Master of Applied Science in Civil Engineering at the University of Windsor. Her experience includes federal transportation data analysis as a Freight Transportation Analyst at Statistics Canada and municipal infrastructure while working in the Infrastructure Division within the Engineering Department at the City of Windsor.

Canadian Institute of Transportation Engineers (CITE) – Windsor Chapter
MS Teams Webinar



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