



Understanding the Impacts of Ride-hailing Vehicles on Congestion and the City of Vancouver's Climate Emergency Response

Executive Summary

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August, 2020

This report was produced as part of the Greenest City Scholars (GCS) Program, a partnership between the City of Vancouver and The University of British Columbia, in support of the Greenest City Action Plan.

This GCS project was conducted under the mentorship of City staff. The opinions and recommendations in this report, and any errors, are those of the author, and do not necessarily reflect the views of the City of Vancouver or The University of British Columbia.

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About the Author

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Acknowledgments

I would like to thank Karen Taylor and Tina Barisky for providing support to the Greenest City Scholars program, Billy Dong for mentorship throughout this project, and Danielle Barkley and Brad Badelt for offering career advising workshops.

Executive Summary

Ride-hailing is to secure a ride from on-demand ride service providers via an app-based system, from which riders can reserve, pay, and send customer feedback for a trip. Market leaders include Uber, Lyft, Gett, Didi, Grab, etc.. Other names for ride-hailing include ride-sourcing, ride-sharing, e-hailing, ride-booking, and Transportation Network Companies (TNCs). Ride-hailing companies gain ridership with targeted riders and collaborate with public sectors. In their early days, Uber and Lyft rapidly increased ridership by targeting young, educated, and affluent passengers who lived in urban areas with quick and convenient services. The targeted market also includes high-density regions where parking is heavily restricted. Collaborations with public sectors include linked mobile apps, guaranteed ride home programs, and first- and last-mile partnerships. These partnerships aim to promote ride-hailing services and facilitate public transit service use.

Ride-hailing service could bring benefits, such as reducing car ownership, increasing use of public transit, achieving reasonable travel time, and changing the traditional practices in land use. As the critical policy objective changes from travel time minimization to reasonable travel time, ride-hailing should position itself as one part of the robust mobility networks and the backbone of an integrated, multimodal transportation system. For land use, since less parking is required for the same number of traveled car kilometers, city governments should consider taking away the parking and using it for something different to get the most benefit of ride-hailing service. However, ride-hailing service could also bring adverse outcomes, such as generating more car traffic, producing greenhouse gas (GHG) emissions, oversubscribing curb spaces, and increasing alcohol consumption.

B.C.'s Passenger Transportation Board approved the operation of two ride-hailing companies (Lyft and Uber) in Metro Vancouver on January 23, 2019. Since then, another 15 ride-hailing companies have been allowed to operate in Metro Vancouver. The impact of these ride-hailing vehicles should not contradict the City's Climate Emergency Response. Two Big Moves in the Climate Emergency Response report that correspond to ride-hailing services are: 1) Big Move #2: Accelerate the existing sustainable transportation target by 10 years. Two-thirds of trips in Vancouver will be active transportation and transit by 2030. 2) Big Move #3: Call for pollution-free cars, trucks, and buses. 50% of the kilometers driven on Vancouver's roads will be by zero-emission vehicles by 2030.

To mitigate the negative impacts of ride-hailing services in Vancouver, the City staff have proposed a series of on-street management policy recommendations, including congestion management pricing, passenger zones, and geofencing, some of which are enacted now. For

instance, a Congestion and Curbside Management Permit (CCMP) fee at a rate of \$0.30 (CAD) per pick-up and \$0.30 (CAD) per drop-off are required for ride-hailing vehicles that enter Vancouver's Metro Core between 7 AM and 7 PM. Zero-emission and wheelchair accessible vehicles have a discount of 50% and 100% respectively.

This project is used to monitor the early stages of how ride-hailing impacts Vancouver in terms of congestion and climate change. Although ride-hailing services have many advantages, such as increasing travel options, providing first- and last-mile connections to transit, reducing impaired driving and contributing to car-free and car-light lifestyles, they also bring problems such as increasing vehicle trips and congestion, declining transit ridership and reducing walking, cycling and transit trips. These undesirable outcomes directly contradict the City's Congestion Management Strategy and Climate Emergency Response goals. We aim to recommend policies that the City should consider implementing/adopting to improve curbside management and reduce traffic congestion by quantifying at a high level the early stages of ride-hailing impacts. There are two methodologies used for this project. The first is to use qualitative research methodologies and implementations. The second is to make visualizations by using 4-month (from 2020 January to 2020 April) data from Lyft.

Findings from qualitative research include three categories: 1) curb management, 2) congestion pricing and 3) electric vehicles. The lack of curb regulation for ride-hailing vehicles tends to cause double parking and traffic congestion. To manage the curb, leading cities have implemented different programs, including dynamic geofencing (San Francisco), Pick-up/Drop-off (PUDO) Zone (Washington D.C. & Seattle), and "Clear Curbs" (New York City). The City has planned on using geofencing as a tool to optimize pick-up and drop-off activities in high demand areas. As for PUDO Zone, nearly 270 PUDO Zones are allocated adjacent to hotels, theatres, night clubs, and community halls within the city of Vancouver, among which 200 are located in Vancouver Metro Core. The City has planned to install approximately 30 more PUDO Zones before 2019.

Congestion pricing is an approach to traffic congestion reduction through market power. Rush-hour travels are shifted to other transportation modes or off-peak hours through congestion pricing. Leading policies/strategies include Congestion Zone Tolling (New York City), Ground Transportation Tax (Chicago, Seattle, New Orleans, & Portland), Special Zone Assess fee (San Francisco, & Chicago), and Traffic Congestion Mitigation Tax (San Francisco, Washington, D.C. & Philadelphia). Electric vehicles are highly related to greenhouse gas (GHG) emissions and climate change issues. Ride-hailing companies such as Lyft and Uber have announced commitments to upgrade all gasoline-powered vehicles into low- and zero-emission ones. Initiatives and pilot programs include Green Mode (Seattle, Portland, Denver), Clean Air Fee (London), EV Champions Initiative (Austin, Los Angeles, Montreal, Sacramento, San Diego, San Francisco, Seattle,

Pittsburgh, & Portland), Building and parking requirements (San Francisco, London, Oslo), and Utility partnerships (New York City, Los Angeles, San Diego, San Francisco, & San Jose).

There are several recommendations for future researchers, including:

- City-level policies
 - Investigate to what extent should Vancouver migrate the policies/strategies from other cities due to different contexts
 - Investigate why certain policies/strategies fail
- Role of ride-hailing in the integrated transit system
 - Monitor the proportion of ride-hailing services use among the overall transit system through data provided by ride-hailing companies or through interim user surveys
- Congestion Management Pricing
 - Increase CCMP fee on weekday mornings and evenings, and expand CCMP fee to weekend midnights
 - Consider a dynamic CCMP charge based on locations
 - Observe and evaluate the effect of zero-emission vehicles incentivization
- Data collection
 - Require ride-hailing companies to provide vehicle speeds and the number of passengers