

## The future of transit is ride sharing and driverless cars

The arrival in Canada of ride-sharing company Lyft marks a milestone in urban transit and auto ownership.



A self-driving bus being tested in Helsinki, Finland, Sept. 15, 2016. Across Europe, some fledgling driverless projects are focused on utilitarian self-driving vehicles for mass transit that barely exceed walking pace. (UGRI TOUKO TAPANI HUJANEN / NYT)

By Bern Grush  
Mon., Nov. 20, 2017

Lyft is coming to the GTA. While that means ride-hailing rival Uber will face more competition, it also means the stakes for mainstream mobility options — buses, taxis and household vehicles — are higher.

Adding another ride-hailing provider means more traffic, trips and congestion for the GTA. This happens in every city with a significant degree of ride-hailing — Boston, New York, San Francisco. Toronto will follow this pattern.

Lyft's introduction will eat into transit ridership — an often overlooked, but unintended consequence of ride-hailing services. Last month, University of California, Davis published a study showing 49-61 per cent of ride-hailed trips — generally Lyft and Uber — in major U.S. cities would have otherwise been made by transit, walking, biking or not at all.

But the real game-changer is that Lyft is venturing out of the U.S. for the first time. This matters because Lyft and Uber are fierce competitors and are the vanguard for the driverless car business coming in the early 2020s.

Lyft president John Zimmer says only 0.4 per cent of kilometres in the U.S. are from Lyft and Uber, but that ride-hailing services eventually will peak between 40 and 80 per cent when driverless technology matures.

Everything about your mobility choice will change.

Imagine it's 2035 and you are in your personal vehicle. The cars in front, behind and beside you will be mostly driverless taxis, acting as pace cars for your trip. Will you still want one?

If you're a TTC user, most of the transit authority's buses will be replaced by robo-shuttles by 2030 — whether operated by the TTC or by a ride-hailing company.

What does that mean for the TTC's plan to convert its fleet to emission-free buses by 2040? That fleet would have to be smaller, driverless, with more flexible routes and lean more toward on-demand. If the TTC doesn't provide this service, then ridepooling services like Lyft Line and uberPOOL will fill the gap.

Coupled with robo-taxis, robo-shuttles are the means to how ride-hailing will disrupt our bus systems. Uber, Lyft, Ford, Waymo and GM easily could supply significant driverless, controlled-route, on-demand micro-transit during the 2020s.

Early robo-vehicles in commercial operation will be "geofenced," limited in range and speed. Because of weather, we can expect robo-services to be initially more limited in Toronto than in, say, San Francisco.

Ride-hailing apps will determine first whether your request can be fulfilled without a driver. For example, Lyft could send a driverless Ford.

If your request was outside of a driverless geofence, you would be provided a human-driven car. As service areas expand and demand rises, both driverless and driver-in cars will be needed with driverless ride-hailing overtaking driver-in services only gradually. Meanwhile, Lyft and Uber will need a growing number of drivers.

As this new transit era dawns, there are two ways GTA transit authorities can avoid being blindsided even worse than our taxi industry was when Uber arrived in 2012.

The first is staged deployments of driverless micro-transit systems to reinvent our current bus systems. If these are planned to achieve more frequent and more extensive services funnelling riders into our rail systems, then we can reach a degree of social equity we desire.

The second way is to ensure that robo-trips from commercial providers are integrated into our transit system — even into payment systems via apps.

Robo-vehicle ride-hailing soon will play a dominant role in Toronto — even outflanking privately owned vehicles, according to Zimmer. But long before that, our current bus system will be decimated.

Will the way robo-vehicles interface with public transit be the outcome of laissez-faire competition between Lyft and Uber, or should this be determined by our decision-makers?

***Bern Grush** is a Toronto-based systems engineer, futurist and author of *Ontario Must Prepare for Vehicle Automation, Parts I and II*.*