Congestion Charges

Volume 1

THE PROBLEM OF URBAN CONGESTION IN CANADA

The recent CAA study *Grinding to a Halt: Evaluating Canada's Worst Bottlenecks* took a new perspective on a problem that Canadians know all too well: urban congestion is a growing strain on our economy and well-being. Canada's worst traffic bottlenecks are almost as bad as bottlenecks in Chicago, Los Angeles and New York. Bottlenecks affect Canadians in every major urban area, increasing commute times by as much as 50%.

This CAA briefing on investments in active transportation is one in a series that explore potential solutions to the problem of urban congestion in Canada. These briefings delve into solutions not only to highway congestion, but also to congestion on urban streets. Taken together the solutions explored in these briefings represent a toolkit to address this problem. The objective is to inform policy makers and the public about options to reduce congestion and key considerations for when and where a particular solution might be the right fit.

Congestion charges are direct charges to road users and include traditional tolls, cordon charges and mobility charges (charges based on distance travelled). Congestion charges reduce congestion if they are set high enough to encourage drivers to take an alternate route, carpool, take transit, cycle, walk or forego their trips. Generally, the higher the charge, the greater the reduction in congestion. However, congestion charges can create some challenges:

- They can be politically difficult to implement, because there can be winners and losers.
- Low-income road users in particular might be affected, raising equity concerns.
- Depending on how they are applied, congestion charges can displace more than reduce congestion.

New technology and approaches are changing how congestion charges can be implemented:

- New technology such as electronic sensors and on-vehicle communications equipment can make collecting charges easier and less costly.
- Congestion charges can be designed to be revenue neutral, returning all charges collected to road users.
- Charges that vary by time of day and in response to congestion are now feasible and can have a much bigger impact on congestion than a flat rate charge.

The type of congestion charge applied and how it is implemented makes a difference. Next, three typical urban congestion problems are explored in terms of the congestion charge most suitable to addressing each.

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PROBLEM: CONGESTION ON SPECIFIC ROUTES

POTENTIAL SOLUTION: TRADITIONAL TOLLS

How does is work & what are the benefits? Charge for using a route or a segment of a route.
Examples: Highway 407 ETR (Ontario), Autoroute 30 (Quebec), high occupancy toll (HOT) lanes in Ontario.

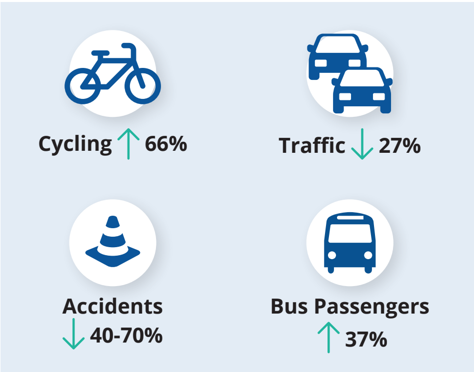
CONSIDERATIONS:

- Most applicable when congestion occurs along a particular route.
- If alternative fee routes exist, congestion could spill-over and overall congestion in an urban area might not be reduced.
- There is a potential challenge because people, particularly those on low incomes, have chosen where to live and work expecting a certain cost of transportation. Now they could pay more to use the same route.
- HOT lanes can be a good compromise when there is political resistance to congestion charging. They can relieve congestion in both the HOT lane and the un-tolled lanes, while leaving road users with an untolled option.

PROBLEM: CONGESTION IN A SPECIFIC AREA

POTENTIAL SOLUTION: CORDON CHARGES

How does is work & what are the benefits? Charge to drive in a specific area, typically the downtown core of a city. **Examples:** London (UK) Congestion Charge and associated investments led to...



CONSIDERATIONS:

- Works best when congestion is relatively concetrated in a small geographical area, such as a downtown core.
- Can be costly and complicated to implement. One-third of the revenue from the London Congestion Charge is used in operating the scheme.
- Designed not to allow people to avoid them by taking alternate routes. Those travelling in the congestion charging zone would pay more if they continue to drive. This cost could be an added burden, particularly to low-income earners.
- Potentially less costly for zones with few entry and exit points like islands and peninsulas.

PROBLEM: WIDESPREAD CONGESTION

POTENTIAL SOLUTION: MOBILITY CHARGE (DISTANCE-BASED CHARGE)

How does is work & what are the benefits? Charge based on distance driven within a large geographical area such as a region or province. To be most effective the charge would increase in areas of greater congestion. **Example:** The OReGo (Oregon), German Truck Toll. OReGO (pilot project) is the first mobility charge in North America. It is revenue neutral. Drivers get a credit against fuel tax for mobile charges paid. Charges are about $0.01 per kilometer driven.

CONSIDERATIONS:

- Most applicable when congestion is widespread, beyond a particular route or geographical area such as a downtown core.
- Political challenges from unanticipated increase in cost to drivers, a particular burden on low-income drivers and those driving longer distances.
- Fairer if a mobility chage were to replace other road user charges like gas taxes and vehicle registration fees.
- Could better align how much road users pay with how much they use the roads, particularly important as fuel tax revenue declines with increasing fuel efficiency and electric vehicles.
- Can be costly and complicated to implement. Technology is develping quickly, but experience is limited.
- With vehicle location tracking, pricacy can be a concern
- If such a scheme were to cover multiple jurisdictions, coordination could be a challenge, but a large base of users means costs can be shared.

HOW CONGESTION CHARGING CAN HELP TO REDUCE CONGESTION

All three types of congestion charge described above can be used to reduce congestion. Beyond the level of charge, there are three key features of congestion charges that impact congestion.

Variable vs. Fixed Charges

In Canada most congestion occurs in the peak period, so variable and dynamic charges are most applicable. Variable charges are generally more effective at reducing congestion than fixed charges. Road users with flexibility to travel at a different time of day have less incentive to do so with a flat daily rate.[1] Variable charges can be targeted specifically to reduce congestion during busy periods. They are most effective when they vary dynamically based on traffic conditions – rather than just a "peak" and "off-peak" charge – to avoid gluts of traffic immediately before the charge increases. One solution to such gluts is to increase prices in small increments, as was done in Singapore, where the Land Transport Authority introduced graduated fee pricing over five-minute intervals.[2]

Coverage and Inclusiveness

Generally, the more roads and highways covered by a congestion charge, the more effective it will be at reducing congestion. For example, a cordon charge which applies to all vehicles will have more impact on congestion than a toll on a single road into a congested area, as many drivers will take alternative routes, which in turn may become more congested. Similarly, if parallel highways, bridges or tunnels exist, tolling one can add to congestion on the alternative routes. Tolling all parallel routes is much more effective at reducing overall congestion.

It is also possible to exempt or offer reduced rates to certain types of vehicles for reasons of public policy, including low- or no-emissions or commercial vehicles. However, there is a trade-off between congestion reduction and achieving other objectives by providing such exemptions.

Mobility Charge Considerations

A mobility charge encourages drivers to limit distance travelled, encouraging use of the shortest route to a destination. These factors may not, however, reduce congestion if the shortest route is through the city centre, for example.[3] To be most effective at reducing congestion, a mobility charge needs to include time and location information (not just distance travelled), so that pricing can be targeted to influence travel patterns during congested times, in congested areas.

[1] *King et al. (2007)*
[2] *Chew (2009)*
[3] *Umwelt Bundes Amt (2010)*

EXAMPLES

Traditional Tolls: High Occupancy Toll (HOT) Lanes

HOT lanes impose a charge to use a specific lane. HOT lanes are typically free for vehicles with multiple occupants, buses and low-emission vehicles. Other users must pay the fee to use the HOT lane, or have the option of using the free, un-tolled lanes.

HOT lanes were first implemented in California in 1995. By 2013 in the United States, there were 470 km in operation and another 260 km under construction.[4] Ontario is the first jurisdiction in Canada to test HOT lanes, with a pilot project that has converted 16.5 km of existing high occupancy vehicle lanes on the Queen Elizabeth Way (QEW). In the Ontario pilot drivers wishing to use the HOT lanes in a single-occupant vehicle must purchase a permit for a three-month period. Permits are issued via a draw. Electronic tolling technology is also suitable for use on HOT lanes.

Generally, HOT lanes exhibit some of the same congestion reduction benefits as traditional tolls, though to a lesser degree. HOT lane users receive a direct benefit from shorter and more reliable travel times at free-flow speeds. Evidence from Minnesota even showed a 6% increase in the speed of un-tolled lanes adjacent to HOT lanes. [5]

Traditional Tolls: The 407 Express Toll Route

The 407 Express Toll Route (ETR) runs 108 km across the Greater Toronto Area. When it opened in 1997, it was the world's first all-electronic, barrier-free toll highway. Tolls for a passenger vehicle are between $0.23 and $0.51 per kilometre, depending on the section of highway used, time, day and direction of travel, in addition to a flat $1 per trip charge.

Evidence suggests that 407 ETR has saved drivers 18%-36% of their travel time, with the highest time savings realized in peak hours, including improved predictability of travel times, meaning that drivers saved time previously set aside as a "buffer" to guarantee on-time arrival.[6]

Highway 407 ETR runs parallel to Highway 401, Canada's most congested highway and the fourth largest highway bottleneck in North America.[7] A sense of the impact of tolls on congestion can be seen by comparing delays on Highway 407 ETR with those on Highway 401. As illustrated in the figure below, drivers on Highway 407 ETR encounter virtually no delay, while drivers on Highway 401 suffer extensive delays.[8]

[4] Urban Land Institute (2013)

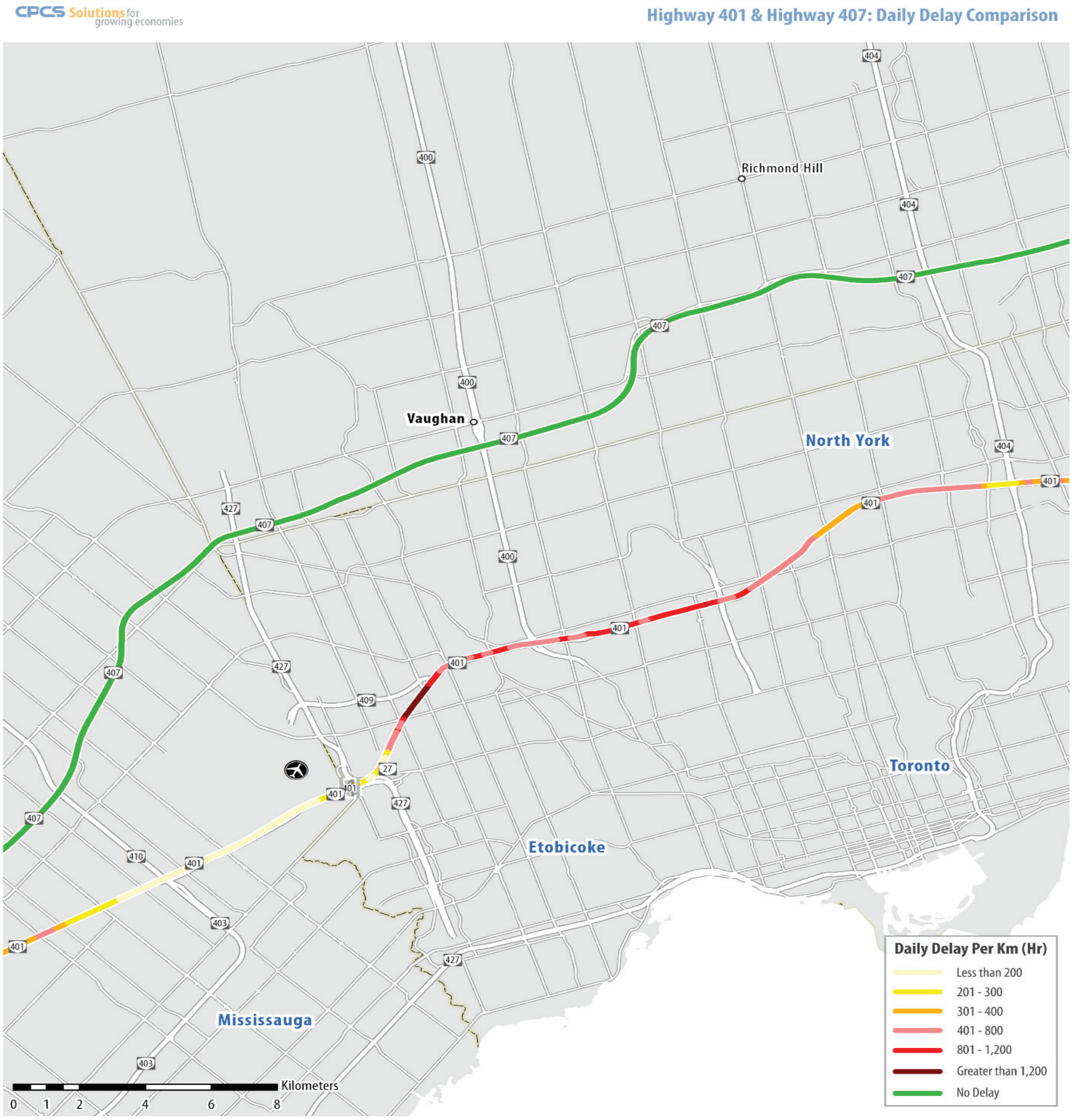
[5] Canada's EcoFiscal Commission (2015)

[6] Conference Board of Canada (2013)

[7] CAA (2017)

[8] The graphic shows the average time lost daily due to traffic congestion on Highway 401 compared to Highway 407 ETR. Delay is calculated as the time difference between maximum-throughput speed (MTS) and actual observed GPS travel speeds throughout the day, multiplied by the number of vehicles. MTS, which is a lower threshold than free-flow speed, is the speed attainable under conditions of maximum traffic flow. Delay is expressed on a per-kilometre basis so as to show how the intensity of delay varies along the corridors.

Hours of Delay on Highway 407 ETR (traditional toll) and Highway 401 (no congestion charge)



Source: CPCS analysis of GPS data provided by HERE for CAA (2017) and provincial data sources

Traditional Tolls: Port Mann Bridge (Toll Removed as of September 1, 2017)

Completed in 2012, the Port Mann Bridge over the Fraser River in Metro Vancouver provides 10 lanes of traffic, including a high-occupancy vehicle lane, on Highway 1. The bridge was tolled electronically using radio-frequency identification and license plate photo technologies. Tolls were $3.15 per crossing for small vehicles and $9.45 per crossing for large trucks.

The Port Mann Bridge offered an example of a challenge of traditional tolling where a toll on a single route can result in greater congestion on alternative, un-tolled routes. Since the new bridge opened, traffic congestion on the Pattulo Bridge, an alternative crossing a few kilometers away, had worsened. There was an increase of 25% in heavy trucks using the Pattulo Bridge and residents perceived greater congestion in the area.[9]

A further challenge posed by competing infrastructure is financial. The Port Mann Bridge had experienced lower than expected toll revenue, at least in part due to the existence of alternative un-tolled options.[10]

Following the 2017 provincial election in British Columbia, the new government removed tolls from the Port Mann and Golden Ears bridges.

Cordon Charges: The London Congestion Charge

In the United Kingdom, a cordon charge was implemented in 2003, covering 22 square km of central London. The current charge for driving a vehicle within the zone is £11.50 daily ($20) (up from £5 initially), between 7 am and 6 pm, Monday to Friday. There are no barriers or toll booths; cameras read a vehicle's licence plate as it enters, leaves or drives within the zone and checks it against a database to see if the driver has paid the charge for the day.

London Congestion Charge

Source: iStock Photo

The explicit objective of the scheme was congestion reduction and greater use of transit, leading to environmental and safety improvements. By law, net revenue must be spent on further improvements to transport across London. In the decade to 2014, roughly £1.2 billion ($2 billion) in net revenue was re-spent on transportation infrastructure, of which 80% was spent on bus network improvements.[11]

Traffic levels have declined and transit use has increased since the scheme was implemented. There was a 37% increase in the number of passengers entering the zone by bus within the first year of operation. Traffic entering the zone in 2014 was 27% lower than in pre-charge 2002.[12] There have been 40%-70% fewer accidents[13] within the zone and cycling is up by 66%.[14] In spite of concerns raised before implementation, congestion on roads surrounding the zone did not increase over the first few years of the scheme.[15]

[9] *Canada's EcoFiscal Commission (2015)*
[10] *Shaw (2017)*
[11] *Transport for London (2014)*
[12] *Transport for London (2017)*
[13] *Centre for Public Impact (2016)*
[14] *Transport for London (2017)*
[15] *Transport for London (2008)*

Assessing the direct, causal impact on congestion of the introduction of the charge is not straightforward as numerous other complementary policies were adopted at the same time, including: increased use of traffic control and safety-related measures to slow traffic, dedicating some lanes to buses only, greater investment in public transit (largely buses), and more space allocated for bike lanes and pedestrians. These factors reduced the effective capacity of the roads.

London Congestion Charge Zone

A recent analysis concluded that congestion in central London has returned to pre-charging levels, but that the effectiveness of the congestion charge in reducing traffic volumes means that conditions would be even worse without it.[16] Indeed, the key criticism of the congestion charge is that congestion persists. In January 2017, the Transport Committee of the London Assembly called for a mobility charge targeted at areas and times when congestion occurs to potentially replace the congestion charge.[17]

The congestion charge has been costly to implement, in part because there are 174 crossing points.[18] In fact, the charge had to be raised about 18 months after implementation, because it was generating less revenue and costing more to operate than anticipated.[19] Costs of operating the congestion charge are currently around one-third of revenue.[20] Opinions on its overall economic value vary. Some research has suggested that the economic gains resulting from lower congestion were exceeded by the costs of collecting revenues, at least in the first two years of operation.[21] However, other research has pointed to positive economic benefits, in the order of £55 million ($96 million) per year by the fourth year of operation.[22] A 2007 analysis estimated benefits exceeded operating costs by 50% with the initial £5 charge and by 70% with the £8 charge introduced in 2005.[23]

16 *Transport for London (2014)*
17 *London Assembly (2017)*
18 *Santos, G. and B. Shaffer (2004)*
19 *Marston, P. (2004)*
20 *Transport for London (2017a)*
21 *Prud'homme R. and J.P. Bocajero, (2005)*
22 *Transport for London (2007)*
23 *Transport for London (2007a)*

Mobility Charges: LKW-Maut (Truck Toll)

The truck toll was introduced in Germany in 2005. It charges trucks to use German highways based on the distance driven, the number of axles, and the emissions category of the vehicle. Truck operators who travel frequently on German highways can purchase an on-board GPS tracking system which automatically determines the distance travelled, and bills operators accordingly. A manual option is also available for trucks that use the system less frequently. Enforcement is based on sensors that track vehicles entering the network based on licence plate recognition. The primary impact has been more efficient use of truck fleets by companies that run fewer empty or partially loaded trucks.[24] The program has also contributed significantly to funding for transportation; revenues are the single largest source of revenue for the German Federal Ministry of Transportation.[25]

German Truck Toll System

Source: Toll Collect GmbH

Mobility Charges: OReGO

In 2015 the State of Oregon launched the first mobility charge in North America, OReGO, with the primary objective of creating an alternative source of revenue to fuel taxes to fund transportation projects. The program is voluntary and currently limited to 5,000 cars and light-duty commercial vehicles. OReGO volunteers pay a flat rate of roughly $0.01 Canadian per km, and get a full credit on their fuel tax paid at the pump. OReGO was designed to not generate any more revenue than the reduction in fuel tax for which it is a substitute. Drivers are refunded for miles driven on private roads or outside of Oregon.[26]

The current program was established after two similar pilot schemes in 2007 and 2013.[27] An evaluation of the 2007 pilot, which included variable and fixed pricing components, noted that charging a higher fee for driving in congested conditions motivated drivers to reduce their vehicle miles traveled more than a flat rate. In addition, drivers subject to the variable rate did not simply shift their vehicle miles traveled to off-peak times; they actually reduced their overall vehicles miles travelled.[28] Given that the existing program is based on a flat rate structure, the impact on congestion – as opposed to revenue generation – may be more muted.

Privacy was a key concern coming out of the 2007 pilot, which involved tracking vehicle location.[29] Since vehicle location information is necessary to use a mobility price to effectively manage congestion, privacy concerns can be a significant challenge.

[24] *Transport & Environment (2017)*

[25] *Transport & Environment (2017)*

[26] *Oregon Department of Transportation (2017)*

[27] *www.myorego.org*

[28] *The 2007 pilot program tested two structures: some participants were charged a flat rate (1.2 cents/mile), while others were charged variable rates for peak and off-peak travel in the region's congested zone (between 0.43 cents and 10 cents/mile). (Guo, Zet al., 2011)*

[29] *Oregon Department of Transportation (2017)*

IMPLEMENTATION CONSIDERATIONS

TECHNICAL FEASIBILITY AND COST

The technical feasibility and cost of congestion charges are closely related and have largely been driven by the development of technology. Traditionally, congestion charges have been limited to road tolls collected at toll booths. This approach involved significant labour (toll collectors) and infrastructure, including having sufficient space to construct large toll plazas. These relatively high costs meant it was only feasible to collect tolls on roads with few access points like bridges and expressways, high volumes of traffic and sufficient space to construct toll plazas. Moreover, for drivers, the process of paying tolls could lead to slower and less reliable trips due to the need to slow down and sometimes wait in line to pay.

TraditionalTolling

Source: iStock Photo

A major advance has been electronic toll collection, which makes use of a combination of overhead gantries that either communicate with a transponder in a vehicle or photograph license plates. This technology is now common on large toll roads. It allows charging by distance as vehicles pass gantries when entering and leaving toll roads. Even with current technology, however, charging by distance is still more complex and expensive to implement than flat rate charging.[30]

Overhead Cameras and Sensors on Highway 407 ETR

Source: 407 ETR

This technology has also been used for cordon charges. The feasibility and cost of using electronic toll collection depends on the number of cordon crossing points to be monitored and the volume of traffic. For example, the cost of running London's congestion charge is one-third of revenues,[31] partly because of the costs associated with tracking entry into the zone at so many points. Variable cordon pricing systems are also more technologically complex and administratively burdensome to implement. Both of these issues are, however, becoming less of a barrier with advances in technology. Areas that have limited access points for geographical reasons, such as islands or peninsulas, can also make cordon charges more cost effective.

Mobility charging based on distance and location is becoming more feasible and cost effective with the increasing use of satellite and other communications technology, as available in many new vehicles. Using such systems – subject to permissions and privacy concerns (discussed below) – simplifies tracking of vehicle use.

[30] *The City of Toronto (2015) recently estimated the cost of tolling the Gardiner Expressway and Don Valley Parkway to be $27.5 million in capital costs and $30.9 million per year for a flat charge and $47.5 million in capital costs and $36.6 million per year for a distance-based charge.*

[31] *Transport for London (2017a)*

POLITICAL CHALLENGES AND EQUITY

Congestion charges, particularly when applied to existing infrastructure, can create winners and losers. Many features of congestion charges can have equity effects, though most can be mitigated. The key political and equity issues are discussed below.

Low Income Issues

One of the most commonly cited issues is the impact of congestion charges on road users with low incomes, for whom charges might be a greater burden than for higher income users. Critics argue that HOT lanes are "Lexus Lanes" only accessible to high income drivers who can afford to pay.[32] However, there is some evidence that HOT lanes may even improve the performance of adjacent un-tolled lanes.[33]

Cordon charges can have a particularly high impact on low-income workers with inflexible schedules and where transit alternatives are limited. However, when equity concerns are addressed by exempting some road users from paying or by leaving some roads toll/charge-free, the impact on congestion reduction will be less.

Overall, the impact of congestion charges on low-income equity depends on the details of the congestion charge (type, coverage, exemptions, rates, which infrastructure is affected), how the revenues are used (see below) and complementary policies adopted, such as increased transit or carpool lanes.

Geographical Issues

Another key political and equity consideration in applying a congestion charge to existing infrastructure is the variability of the impact by geography. People choose where to live, and indeed real estate prices vary, in part based on the cost, speed and reliability of going about one's daily activities. If congestion charges are applied to existing infrastructure, then people may face an unexpected increase in their cost of living, something few welcome. These increased costs may be easier to accept if a congestion charge successfully makes travel faster and more reliable or if alternatives exist, such as public transit. The introduction of the London Congestion Charge described above offers a good example of complementary policies that mitigated geographical equity and political impacts.

Another aspect of geographical equity is how congestion charges allow a jurisdiction to directly charge road users from elsewhere for use of local infrastructure. This feature can improve equity as non-resident users now no longer receive a benefit without paying directly. This consideration was prominent in recent discussions in Toronto around tolling the Gardiner Expressway and Don Valley Parkway and in the establishment of Germany's truck toll. This issue is of greater significance where the proportion of non-resident road users is greatest.

Congestion Charge Evasion

Another form of inequity that can exist with congestion charges is evasion. If it is comparatively easy to avoid paying, some users will do so, enjoying the benefits of using the infrastructure without paying the charge. Evasion can be mitigated at the cost of more investment in enforcement. Fraud is typically a larger problem with vehicles from other jurisdictions or when enforcement is not rigorous.

32 *Hall (2017)*

33 *Canada's EcoFiscal Commission (2015)*

Use of Revenue

To the extent revenues raised from a congestion charge exceed costs, how net revenue is used is also a key equity issue and may also have additional impacts on congestion.

USE OF REVENUE	EQUITY ISSUES	IMPACT ON CONGESTION
Improving infrastructure for which charges were paid	Equitable in that those paying receive the benefit.	Potential reduction in congestion if improvements to infrastructure reduce congestion.
Reducing road-user related taxes/fees (e.g. fuel taxes)	With traditional tolls and cordon charges those paying receive some of the benefit. More equitable with mobility pricing applied to all road users.	None or possibly more congestion if lower fuel taxes, for example, encourage more driving.
General government spending or tax reductions	Transfer from road users to the general public.	None.[1]
Improvement to complementary public transit services	Benefit to road users who switch to transit and those remaining on the road, if congestion is reduced.	Possible reduction if transit spending is effective.

JURISDICTIONAL AND GOVERNANCE ISSUES

A congestion charge is more difficult to implement when more than one government is involved. For example, mobility charges are best implemented through a single large area that may potentially affect municipal, provincial and possibly federal jurisdictions. Whereas a province may much more easily implement traditional tolls on a specific highway or bridge. Toronto provides a recent example of the challenges. In 2016 the City of Toronto proposed implementing a toll on the Gardiner Expressway and Don Valley Parkway, two major and heavily congested thoroughfares. In early 2017, the Ontario government rejected this request.

Another aspect of jurisdictional issues is the compatibility of charging equipment across jurisdictions, particularly on-vehicle equipment. If equipment standards vary, vehicles may require multiple sets of equipment, increasing costs and hassles for users. The enforcement of charges across jurisdictions may also depend on interjurisdictional agreements. In Europe, difficulties enforcing free-flow tolling have limited its development.[34]

PRIVACY ISSUES

With more advanced congestion charging, particularly mobility charging, where vehicle movement is tracked, privacy is a concern. In traditional tolling, particularly when there is no record tying use to specific individuals or vehicles, privacy issues are less significant.

[34] *European Commission (2015)*

TRENDS AFFECTING THE COSTS AND **BENEFITS OF CONGESTION CHARGES**

A number of major trends, largely enabled by technological developments, are converging with the potential to dramatically alter the costs and benefits of congestion charging schemes. While it is impossible to predict the timing of such developments, the magnitude of the impact is likely to be significant.

TREND	WHAT IS IT	POTENTIAL IMPACT ON CONGESTION CHARGES
Falling cost of congestion charging	The costs of collecting and enforcing congestion charges are falling with new technology.	Congestion charges become less costly to implement both in terms of funding required and land area needed for infrastructure (e.g. large toll plazas no longer required).
Automated-electric vehicles (AEVs) and transportation-as-a-service (TaaS)	If the shift from individually owned internal combustion engine vehicles to shared/ on-demand and (e.g. Uber, Lyft are early versions) battery-electric vehicles occurs, it could lead to a significant: • reduction in transportation cost as AEV TaaS would likely have much lower per-km cost than individually owned internal combustion vehicles • reduction in the number of vehicles registered as a result of TaaS (shared vehicles would likely be used much more intensively than individually owned vehicles) • increase in distance travelled (in response to falling costs).[2]	A drop in transportation cost, including for transit, could reduce equity issues associated with congestion charges. Automated vehicles require communications with other vehicles and infrastructure, potentially reducing infrastructure requirements for congestion charging. Fall in fuel tax and vehicle registration revenue could push governments to seek alternative sources of funding for roads and highways, for example based on distance travelled rather than fuel used. Indeed falling fuel tax revenue was the impetus for the OReGO mobility charge discussed above.[3]
Increased spending on public transit	Governments across Canada are spending more on public transit.	Reduces equity issues associated with congestion charges as alternatives to driving become increasingly available.

CONCLUSION

While it is very challenging to predict how these trends may evolve, and even more challenging to predict how they might interact, it seems likely that on balance:

- The **costs of implementing** all types of **congestion charging will fall**.
- Real-time information on traffic conditions will improve allowing for **more targeted varying of congestion charges** to reduce congestion at lower total cost to road users.
- Governments will face significant pressure to **replace declining revenues** from vehicle registration and fuel taxes, encouraging the **adoption of congestion charges**.
- **Equity issues** around congestion charging **will be reduced** as public transit is improved with recent increases in spending and the emergence of transportation-as-a-service spreads congestion charges over more users per vehicle.

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