BUILDING THE CASE FOR PERFORMANCE-BASED PRICING IN TRANSPORTATION - THE RATIONALE FOR USER COST PRICING ON ROADS AND TRANSIT IN METRO VANCOUVER[1]

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Introduction

The purpose of regional transportation systems is to provide access to opportunities, both for people and goods.There are a number of ways to improve access to opportunities, such as development of transport and transit infrastructure, greater coordination between land use and transportation services, and more recently through the arrival of Transportation Network Companies (TNCs) such as Uber and Lyft. However, these examples only cover what can be achieved on the supply-side. Demand will need to be managed too or else we risk greater congestion. Excess congestion reduces theperformance of the transport system and ultimately results inless access to opportunities.

Pricing is a powerful tool to manage how we get around andpotentially improve access to opportunities. Pricing is currently used in many ways within the transportation sector such as fuel costs and taxes, transit fares, taxi and ride-hailing fares, vehicle insurance costs, and road and bridge tolls.However, often these forms of pricing are only loosely based on usage through poor proxies,some of which are eroding over time. Fuel tax revenues are being undermined by newer highly efficient and electric vehicles; downtown parking charges are being circumvented by car share options and ride-hailing services; the costs for riding many transit systems is often only loosely based on usage;while vehicle insurance costs are nota reflection of actual distances driven.

Pricing is rarely geared towards performance of the system. Transit often experiences significant crowding during peak times and directionsresulting in displaced users and a negative user experience. This is apparent on roads and bridges too where the prices – such as fuel taxes and/or bridge tolls – only partially reflect user costs, but not the costs imposed on other users. This results in regular traffic congestion, which impacts the performance of the system as well as the transit system, impinging upon access to opportunities.
Performance-based pricing offers an opportunity to manage demand and maximize accessibility from the transportation network. There is precedent for this elsewhere, such as public utility companiesthatchargemore for peak electricity when it is more expensive to produce. Performance-based pricing is sometimes used in a transportation context. Higher costs to park at peak times help manage demand and ensure there are less vehicles circling in search of a free spot (which would impact the performance of the road network). However, there are many more opportunities to exploit performance-based pricing within the transportation system, which would require a transformation of how we currently pay for roads and transit.

TNCs are likely to play a disruptive role on the current pricing regimes and on congestion levels. Personal automobile use in dense areas istempered somewhat by the high cost of parking, limiting the demand for road space and congestion. TNCs are not subject to parking fees and have the potential to increase vehicle kilometers travelled in dense areas considerably. Autonomous vehicles may lower the time and opportunity cost of driving, particularly in the case of zero-occupant vehicles. This, too, is likely to

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increase the equilibrium level of congestion without demand-side interventions. These influences have already been realized to some degree in select major cities, and they lend a sense of urgency to these important policy considerations. Therefore,while the impending arrival of TNCs in Vancouver has potential to improve access in the short term, increased congestion is inevitable without the implementation of performance-based pricing to manage demand.

In the past year, the region of Metro Vancouver undertook two separate large-scale projects related to transportation pricing. The Mobility Pricing Independent Commission (MPIC) explored opportunities for road usage charging, while TransLink's Fare Policy Reviewexplored pricing of the transit system.It's worth exploring what these studies revealed in terms of the need to adopt performance-based pricing.

Mobility Pricing Independent Commission Study

Following 10 months of intensive technical research and engagement, the MPIC (2018)identified a number of principles and recommendationsto guide the development of regional road usage charges for Metro Vancouver. The objectives of this analysis were to reduce congestion, promote fairness, and support transportation investments. These principles are outlined in Table 1.

Table 1 MPIC Principles

Theme	**Principle**
Congestion	Deliver meaningful reductions in traffic congestion
	Ensure everyone pays a fair share
	Coordinate all the ways we pay for mobility, including new and emerging services
Fairness	Be consistent and explainable
	Support equity
	Align prices for road use with access to transit
Support investment	Ensure accountability in the way revenues are used
	Not have raising revenue as its primary aim
Other considerations	Deliver positive economic benefits
	Protect individual privacy
	Be predictable, but adaptable
	Support goals for regional growth, climate change, and the environment
	Continue to be explored with the public and stakeholders

Two illustrative pricing concepts were proposed with two different charging structures that were capable of meeting these principles. These concepts had the potential to reduce congestion by up to 25% while improving travel time reliability by a similar magnitude.They could raise up to $1.6bn in annual net revenue, and there were significant opportunities to promote fairness byusing this revenue to address concerns about equity and affordability.

The Commission's recommendations align well with and reinforce the need for performance-based pricing. Reduction of traffic congestion is directly tied to the performance of the road network. However, performance-based fees do not necessarily result in positive equity and affordability outcomes and may exacerbate some aspects for certain households.Fortunately, there is an opportunity to address equity and affordability in tandem with performance-based fees through the use of the revenue that is collected.

TransLink Fare Review

TransLink undertook a major review of the Transit Fare Policy from 2016 to 2018 (TransLink, 2018) that included extensive public engagement and outreach. The goal of the review was to promote an exceptional customer experience where paying for transit is simple, fair, affordable, grows ridership and improves service by reducing overcrowding. A key principleof the review was that any proposed changes should remainrevenue neutral.

The review made several recommendations that would align fares more closely with the user pay principle. Whereas TransLink's transit system currently operates undera zone system that provides a rudimentary proxy for distance, the recommendation was to move to distance-based pricing on rapid transit to more closely match fares with the amount of service used.The reviewalso recommended some limited applications of performance-based pricing. For example, the review recommended targeted discounts to incentivize peak travellers to shift their travel outside of the peak.

Affordability presents a significant hurdle to implementing performance-based pricing on the transit system. A key motivation for the provision of public transit is to provide at least a minimum level of low-cost accessibility to vulnerable populations, including those who are unable todrive and those who cannot afford to drive. Ensuring servicesare financially accessible to these groupsoften results in very limited ability to increase or adjust fares. This limits the potential for rigorous performance-based pricing, as the perception is that some key groups may be priced off the system that is supposed to support them. This concern led, in part, to the recommendation of targeted off-peak discounts instead of premium fares at peak times.

Comparisons and Barriers to Performance-Based Pricing

Many common themes emerged from the parallel MPIC and Transit Fare Review processes related to performance-based pricing, revenue objectives, and equity and affordability. Both the MPIC study and the Transit Fare Review recognised the opportunities provided by changing the way we pay for roads and transit. Specifically, the MPIC study recommended that all road users should pay for using the roads (user pay principle), and those that contribute towards congestion should pay more (user cost principle). The Transit Fare Review made recommendations to align rapid transit more closely with the user pay principle through the introduction of distance-based pricing, while the user cost principle was addressedin part through targeted discounts to incentivize travel outside of peak times. Effective performance-based pricing requires a combination of user pay and user cost principles.

Both the MPIC study and the Transit Fare Review identified the influence of the status quo and affordability concerns in changing the transportation pricing policies. Transportation accounts for a significant portion of household budgets and naturallydraws considerable attention from both the public and decision makers. There is a perception that the status quo represents a 'fair' allocation, and that any changes to the status quo are often seen as unfair. This makes change, and in particular performance-based pricing, difficult to implement.

Transportation costs create affordability concerns for many under the existing status quo that can be improved through changes to the transit fare structure or road usage charges. However, affordability concerns of those who are potentially negatively affected by change often receive significantly more attention. For example, trip diary data and transportation models suggested that low income residents take a greater proportion of their trips in the off-peak and would therefore benefit as a group from revenue neutral premium peak and discounted off-peak transit fares. Nonetheless, changes to the status quo and affordability concerns for low-income riders were central rationale for not implementing more rigorous time-of-day pricing.

The MPIC study revealed that while higher income households are more likely to contribute more to a congestion charge (because they tend to drive more), lower income households would pay a higher proportion of their income, therefore generating a range of equity concerns about mobility pricing.

The concerns over affordability also limits the ability to use transit fares to increase revenue for the transit agency. There is a relatively high willingness to pay for long trips that are well served by rapid transit, particularly those culminating in dense urban centres during peak periods. This value is not being captured by the transit agency in large part due to affordability concerns. Metro Vancouver has seen very

high growth in housing costs in recent years, with concerns that increasing home values has pushed many middle- and lower-income residents to more suburban areas. Increasing transit fares for these customers already perceived to be facing affordability concerns is a difficult proposition.

Coordinated pricing and distribution of the revenue from vehicular-focused mobility pricing and transit fares have the potential to improve overall accessibility and equity in the transportation system. The concepts outlined in the MPIC report raise revenue that could be used in part to support accessibility for low-income and vulnerable populations, possibly in the form of a direct subsidy or a mobility account for use across the transportation network. With the needs of low-income populations addressed, transit fares could move towards more performance-based pricing that improves accessibility outcomes overall.

Conclusion

If properly implementedand coordinated across roads,transit,TNCs, and new mobility options, performance-based pricingcould offer a significant opportunity to manage demand and ensure greater access to opportunities is achieved across the transportation system. There is a continuing need to explore how performance-based pricing can become more mainstream amongst regional transportation pricing policies. It is clear that the largest barrier lies with how to address concerns associated with equity and affordability. The first step should be to explore how these terms are defined and measured, as well as what an equitable pricing policy looks like.

References

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