

City of Ottawa

Taxi and Limousine Regulations and Service Review

Taxi Economics – Old and New

October 10, 2015

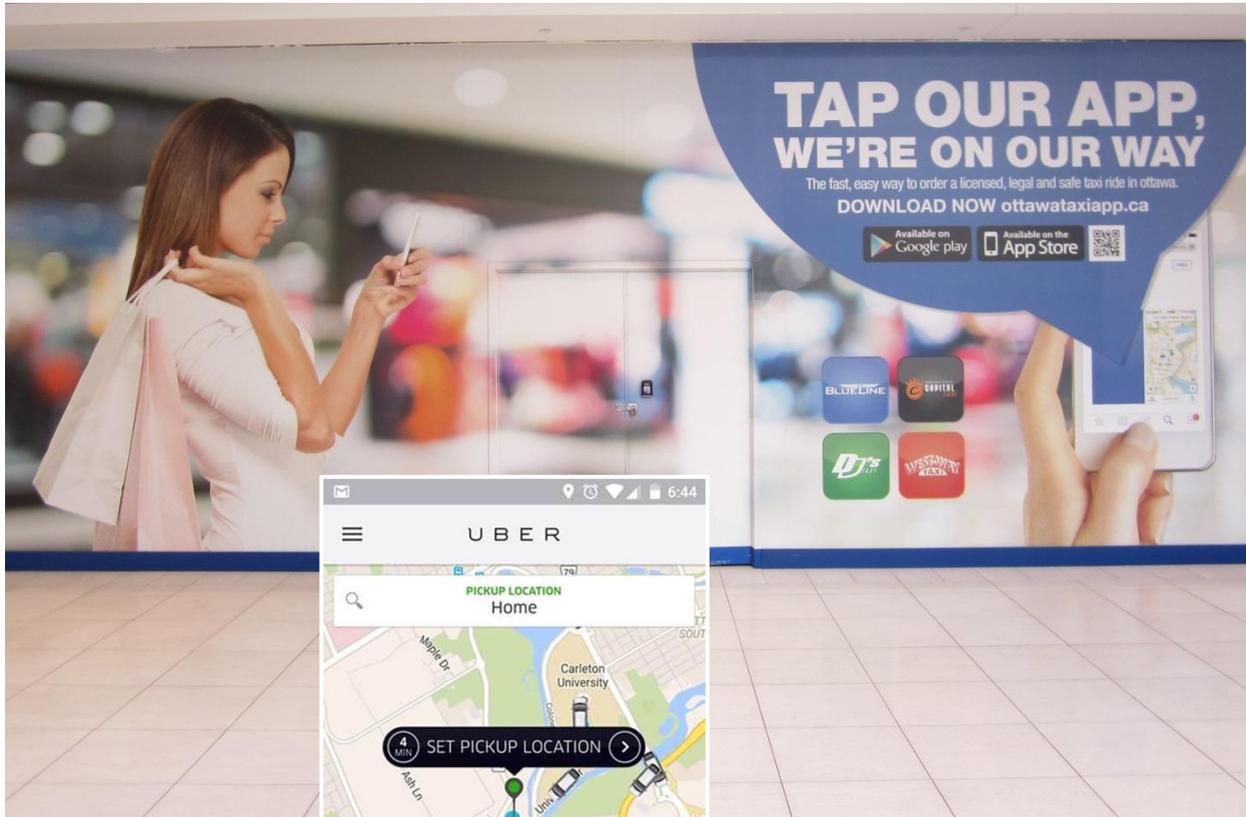


Table of Contents

- 1 Limiting the Number of Taxis: History and Rationale2
- 2 Origin and Consequences of High Plate Value..... 4
- 3 Why Drivers Protest – Driver Income in the Short and Long-Run 7
- 4 Uber Operations & Impact 10
- 5 Uber, Taxis and the Sharing Economy 21
- 6 Choices in Entry Management 23
- 7 Summary: Key Considerations 27

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Taxi Economics – Old and New

This background paper is part of a comprehensive review of the City of Ottawa’s taxi and limousine industry. It is intended to explain the economics of regulatory issues surrounding the industry, and the impact of App Based Service Models (ABSMS) like Uber, and Lyft.

Topics include why municipalities have commonly limited the number of taxis permitted to operate, taxi plate values, driver incomes, and the business models of the new companies. Alternatives to limiting the number of taxis are also discussed.

1 Limiting the Number of Taxis: History and Rationale

Why it Matters

Ottawa limits the number of taxis to one taxi for every 784 Ottawa residents. The Ontario Municipal Act makes specific provision for this municipal power. It is a common regulatory practice around the world. “Plate limits” is a Canadian term for the practice, based on the taxicab licence plate issued by cities.

Plate limits are associated with “plate value”, where the plate holder rights are transferred between private parties for amounts in the hundreds of thousands of dollars. Those who paid the full price of entry into the industry, including some individual Ottawa taxi drivers, have a large stake in the continuing effectiveness of plate limits. The value of their investment is threatened by unlimited competition from a new source: Uber in Ottawa now, and other ABSMS in the future.

To understand Ottawa’s policy choices today, it is helpful to understand the reasons behind plate limits, and the relationship to plate value and driver income.

The Reason for Plate Limits – Excess Entry in Recessions

The taxi industry experiences economic recessions differently from other industries. In most industries, supply will tend to contract along with demand during a recession.¹ In the taxi industry, supply expands during a recession, even as demand for taxis shrinks. In the absence of regulation, the industry is easy to enter for anyone with a vehicle. The result is a flood

of entrants. Income for each taxi falls as more vehicles share less revenue. The following 1933 editorial from the *Washington Post* illustrates civic reaction to the increase in taxis caused by the great depression:

“Cut throat competition in business of this kind always produces chaos. Drivers are working as long as sixteen hours per day, in their desperate attempt to eke out a living. Cabs are allowed to go unrepaired

Together with the rise in the accident rate there has been a sharp decline in the financial responsibility of taxicab operators. Too frequently the victims of taxicab accidents must bear the loss because the operator has no resources of his own and no liability insurance. There is no excuse for a city exposing its peoples to such dangers.”²

In an otherwise well regulated environment, the immediate threats to public safety described in the *Washington Post* editorial may not occur. However, a decline in service quality will be felt by customers, and there will be a sharp decrease in income for drivers. Taxi drivers usually collect their income as a residual of revenue minus their gas and fixed expenses. A 20% decline in gross revenue per taxi can mean an even larger decline in net personal income. Income pressure will cause drivers to drive longer hours—exacerbating the excess supply from new entrants. This misery will find representation before the regulator and before elected representatives—resulting in the caps on taxi numbers seen in most jurisdictions today.

This story has been repeated in recent times. Calgary, Edmonton and Halifax have all adopted taxi plate limits in the last thirty years. Halifax was the most recent in 1994. In each case, there was an economic recession, and the City Council was faced with large numbers of taxi drivers protesting low incomes and excess numbers of taxis.

The relationship between capping taxi numbers and excess entry is generally recognized. *The Economist*, a news magazine generally favouring open markets, had this to say in reviewing regulatory reforms in 2012 “... *On paper, competition should flourish. But low barriers to entry create the risk of having too many drivers on the road...*”³

Risk Applies Equally to Uber

Excessive entry of new operators during an economic recession applies equally to all vehicles-for-hire, including Uber and other ABSMs. If all that is needed to enter is a personal vehicle and a smartphone, then an economic recession will find many trying their hand at being a vehicle-for-hire.

For example, consider the option of issuing unlimited licences to ABSMs. During the next serious recession, there is the likelihood that City Councils would face demands to close the industry from large numbers of Uber drivers – like the taxi drivers before them.

U.S. Experiments with Deregulation

The 1970's saw widespread support for deregulation in a number of industries. Taxis were no exception. Ten U.S. cities deregulated in a well-documented case.⁴ In addition to removing limits to the number of taxis, controls over meter-rates were typically eliminated, and other regulations, such as extra vehicle inspections and driver testing, were also relaxed.

The results of these taxi deregulation experiments were mixed at best. Although the supply of taxis expanded dramatically, fares often went up instead of down, and total cab usage often went down, which reduced incomes for companies and drivers. Long cab lines usually emerged at major sites like airports, frustrating drivers. Most re-regulated. Six of the ten also restored limits to the number of taxis.⁵

Learning from failed U.S. experiences in the 1970s, the American cities of Minneapolis and Indianapolis removed caps on taxi permits while retaining meter rate regulation and other requirements.⁶ The city of Washington, D.C. had also been an open-entry regulated environment for many decades up until a freeze on plates in 2014.

2 Origin and Consequences of High Plate Value

Despite its valid policy origins, limiting taxi numbers as a concept has a poor reputation. As cities grow, the limit is rarely increased fast enough to keep pace with demand. The limited taxis become busier and more profitable; creating and increasing a market value for the rights to the vehicle permit itself (termed *plate*, *medallion*, *licence*, or *roof light* depending on the jurisdiction).

While each taxi may be busier and more efficient in the technical sense, this is not a social gain. Either customers must wait longer for these busy taxis or, the regulator must let meter rates rise to reduce demand to available capacity. In either case, the market for taxi services is constrained and customers end up with poorer and/or more expensive service.

High plate values can also signal deeper problems related to an undersupply of taxis:

- **Poor Service in Peak Hours.** Cities may experience a shortage of taxis when the city needs them most, such as holiday periods or weekend nights. Before a taxi industry is closed with plate limits, most vehicles are single-shifted. This is convenient for drivers, who don't have to meet another driver to swap cars, and who may prefer not to share their work-space (the vehicle). The result is that drivers are free to choose their hours and will tend to work when the demand is highest and the most money is to be made.

When plate values climb, it is a sign that plate numbers are not keeping up with demand. To make use of the limited number of vehicles, more and more are double-shifted until double-shifting is the norm. The problem is not double-shifting itself, but the fact that the fleet is unable to expand enough to meet demand at peak periods. This is a consequence of the regulator falling behind in expanding the number of plates.

- **Underserved Areas and Collapse of Suburban Markets.** If plate restrictions fall far enough behind demand, service to certain areas of the city will recede. The limited numbers of taxis will focus on where demand is highest, such as downtown. A negative feedback process begins. Suburban customers cannot count on dispatch taxi service, and cease to use the service. With few customers, taxis will tend not to serve the area, and suburban service will decline further.

San Francisco, the birthplace of Uber and Lyft, is a well-documented example of this problem. The lack of taxis made dispatch service unreliable outside of the city's core, creating the market niche that Uber and Lyft began to fill.

In these circumstances it is possible for the number taxis to be expanded, and for plate values to rise rather than fall. Boston is a potential example. Plates were expanded by 20% in 1999 to 2003.

Plate values (medallions) fell initially, but more than recovered, rising from \$184 thousand in 2000 to \$437 thousand by 2011.⁷

- **Lower Public Transit Use.** The increased cost of taxi service and the poor service levels can make car ownership more of a requirement, reducing the use of transit.

Going back is Not Easy

Once high plate values are established in the market, they are not easy to reverse. It is simple to issue more plates – the issue that arises is one of fairness.

Plate values will fall as the fleet is expanded to meet demand. The plate holders will experience losses. Many of these will be individuals who bought into the industry at full market price, purchasing plates from other individuals rather than receiving a plate from the City at nominal cost. In particular, there will be taxi drivers who saved for many years to purchase their own plate and commit to the business. These individuals may see their life's savings, and retirement plan, threatened. Ottawa will have some cases like this. Of Ottawa's 1,188 taxi plates, more than half (667) are held singly by individuals. However 187 of these did purchase the accessible plates when issued by the City at nominal value, and many others purchased their plates from the larger fleet owners at below market prices that reflected the terms of the union agreements. It is not known how many acquired plates at or near the peak market value.

The same issue of fairness exists if Uber and ABSMs are allowed to enter the market in unlimited numbers – a decline in taxi plate value.

History: Impact of Regionalization in Ottawa

Ottawa has faced similar issues in the past. When the municipalities in the region were merged into the new City of Ottawa, the taxi jurisdictions were also merged. During the merger, a task force was struck to consider the taxi merger. Prior to merger, the old Ottawa plate values were valued more highly than those of the other municipalities. A merger was anticipated to create significant losses for Ottawa plate holders, and corresponding gains for the others.

The final merger took the simplest path and merged the taxis into a single operating zone. As anticipated, old Ottawa plate values fell, while the value of other plates rose. In all cases, plate holders still held substantial value.

3 Why Drivers Protest – Driver Income in the Short and Long-Run

Taxi driver protest is a recurrent theme in news coverage of the industry. Driver protests are currently widespread concerning Uber and ABSMs. . In June of this year, Paris taxi drivers burnt tires in the street, creating gridlock.⁸ In September, 200 drivers disrupted Edmonton City Council over a new Bylaw to license Uber.⁹

The strength of driver feeling is rooted in the impact on their incomes. The story has more than one level, and not all drivers are affected in the same way.

Short-run: All Drivers Lose

When more taxis enter the business, or when Uber begins to compete, the gross revenue by each taxi declines immediately. Financial arrangements within the industry mean that the driver bears almost this entire burden. The plate holder and dispatch company are insulated from impact, at least in the short-run.

A taxi driver earns money by collecting fares from customers, and paying expenses. Aside from gas, most of these expenses are fixed in the case of Ottawa. There is a fixed rental on the car (if rented), a given insurance premium, and a fixed amount paid to the dispatch fee for service. This is a typical arrangement.

The driver keeps what's left after expenses are paid. This is one explanation for the long hours worked by drivers. The last dollars earned are the dollars the driver gets to keep. Similarly, if gross revenue falls – that money comes out of the driver's pocket. Proportionately, if revenue per taxi falls 10%, the driver's income may have fallen 20%.

Longer-run: Plate Holders and Some Drivers Continue to Lose

In most cities, the burden of lost revenue will eventually be transferred to plate holders. Plate holders collect fees from drivers for the lease of a plate. If lease fees are too high, drivers will turn to other industries for a living, or switch and drive for Uber themselves. Thus plate lease fees eventually drop to reflect the lower revenue, restoring many drivers to their original position (but not compensating what they lost during the adjustment period). The lower lease fees also results in lower plate values.

There are three categories of drivers who continue to experience long-run losses:

- **Owner-drivers.** Drivers who are also plate holders will continue to bear the loss through their plate-holding role. This group will tend to be the most experienced drivers, and the most committed to the industry as a career.
- **Skilled Drivers.** Not all drivers earn the same amount. Although the phenomena of low-income taxi drivers is well documented, drivers who are skilled may consistently earn more. In one study, based on GPS tracking and monitoring of taxi meters, it was found that top drivers consistently grossed 50% more than the average driver. Since many expenses are fixed, the difference in net income would have been higher.¹⁰

It can be shown that skilled drivers are affected by a decline in plate value, even if they are not plate-holders themselves. When taxis are limited in supply, the skill in being able to use the scarce taxi effectively commands higher returns.

- **Union Drivers.** If unions have been successful in negotiating plate lease rates for their members, then these gains are placed at risk. First, the plate lease rates previously negotiated may continue until the contract expires. Then the union is confronted with negotiating the plate lease values down to recapture the benefits they had previously won.

In summary, the drivers who are the most experienced and committed to the industry will experience long-term losses of income from increased competition and reduced plate values – even if they do not possess a plate.

In addition, drivers in a union city like Ottawa also risk losing ground they had gained in previous collective bargaining.

Owner/Driver Cities and Protest of Uber

In response to historical issues of low driver income and high plate values, many cities have adopted the strategy of promoting owner-drivers – where the plate is held by the principal working driver. In addition to putting the benefits of plate holding with the person who is working it, there are also perceived benefits to customer service. Owner-drivers are thought to stay in the industry longer and provide more experienced service.

Cities where this strategy has been successful are now among cities where driver protest against unregulated operation by Uber is strongest.

Edmonton, cited above, is one such city. Some years ago, Edmonton had forced patriation of taxi plates to the beneficial owners of the vehicles – largely working drivers.¹¹

Ottawa may also be among these cities. Only about 26% of drivers also own their own plates, but 56% of plates are held by single individuals.¹²

Even where drivers do not hold plates, the negotiated rights to favourable plate leases under the collective agreements give Ottawa drivers an equivalent stake in the plate limit system.

Uber Driver Incomes

Do ABSM's like Uber create the opportunity for higher driver incomes?

Uber has published comparisons suggesting this hypothesis. Uber Toronto representatives cite an average hourly earnings of \$23.00 for Toronto UberX drivers, certainly well above minimum wage.¹³ In a more formal paper, Uber has reported U.S. hourly earnings averaging around \$6.00 per hour greater than the taxi driver hourly earnings.¹⁴

Unfortunately, the above numbers are not directly comparable. The earnings per hour for Uber are reported net of Uber's fees, but before the expenses for fuel, the vehicle, insurance, or HST. The U.S. hourly earnings for taxi drivers are wages only.¹⁵ Adjusting the Uber numbers for expenses results in much lower hourly earnings - cutting the \$23.00 in half to \$11.50 per hour according to one media calculation.¹⁶

A war of numbers can be avoided by looking at the underlying labour market conditions. UberX and traditional taxi driving are both vehicles-for-hire. They also draw upon similar labour markets.¹⁷ Any taxi driver with a personal vehicle and a smartphone can also driver for UberX. When UberX began in San Francisco – many taxi drivers did move, creating a shortage of drivers. Some ran UberX, Lyft, and Sidecar simultaneously through their phones. There are some additional barriers moving from Uber driver to taxi driver, but particularly for full time drivers, they are not major.

When potential workers can work in two different places – hourly returns will tend to be the same. For example, if Uber hourly returns are higher, drivers can shift to Uber, diluting the earnings of each Uber vehicle until they are again comparable in net earnings. The same is true in a broader

sense. Taxi plate holders (or Uber) need only leave enough earning power on the table to attract drivers from other potential occupations.

ABSM drivers and taxi drivers share a common reality. Incomes will vary by skill in positioning themselves at the right time and place to get rides. The low end of income will correspond to the low end of other service sector jobs, while some drivers will do better. The total range of wages will tend be comparable as they draw on the same skill sets, require similar equipment, and drivers are free to move between the two areas.

The principal differences in income are for those who have advantages in the current taxi system – such as taxi drivers who hold their own taxi plate. Conversely, it is more difficult to work part time in the taxi industry, while the ABSM systems accommodate part time work, for example to supplement income in another profession.

4 Uber Operations & Impact

Origin of UberX

Uber originated in San Francisco partly in response to a significant shortage of taxis. The smartphone app dispatched licensed limousines, a service now marketed as UberBlack, “the original Uber”. Uber was shortly challenged by other new firms in San Francisco, notably Lyft and SideCar. Lyft and SideCar used private vehicles instead of limousines, and were able to charge less. Uber responded with its own private vehicle service, UberX. A separate service, UberTaxi, was also launched using licensed taxis. UberTaxi’s impact was limited due to the shortage of taxis.

It is the UberX service that is active in Ottawa, and that operates outside of the regulatory structure.

UberX Service

Uber and other ABSMs have demonstrated new service features that generate significant customer enthusiasm. These include:

- **Knowing your ride is coming.** The apps let you see the location of available cars on a map, relative to your own location. After booking, you may also see the car approach as the map refreshes. If the vehicle drops out – you will know. No more asking the telephone taxi dispatch how long it will be, while knowing the operator can only give a vague answer.

- **Connecting on the street.** It is difficult to call a traditional taxi from a public location because the driver will need to identify you, and cannot be sure you will still be there when they arrive. In the Uber app, your good faith is guaranteed by your credit card, and information can be exchanged with the driver over the phone (e.g. “I am wearing a red hat”). The passenger also gets a picture of the driver and the licence plate.
- **Ease of payment.** Passengers can pay without getting out their wallet —just get in and get out, the fee is automatically and charged to the credit card, and a receipt is e-mailed to you. There is no struggle to get a driver to accept a credit card.
- **Rating and feedback.** Buyer and seller ratings have revolutionized commerce over the internet. Customers are happy to be able to rate their Uber drivers, and don’t mind that Uber drivers also rate customers. While some complain the rating system creates the opportunity for racial and ethnic bias, most customers feel that it results in better service. Young customers especially feel that is more effective than tipping. Tipping is often seen as obligatory.

Surge Pricing

Surge pricing is an Uber innovation, where the price varies according to demand. When there is a shortage of Uber vehicles to answer calls (a “surge” in demand) the price rises. The higher price solves the problem through its effect on both drivers and customer behaviour:

- **Drivers supply more.** The surge pricing can be specific to certain areas, such as downtown entertainment districts. In the short run, uber drivers already active will be attracted to the busy area by the higher price paid to them. In the long run, Uber drivers will learn where and when peak demand triggers higher prices, and will organize themselves to be there (e.g. in Ottawa, Byward market at closing time).
- **Customers demand less.** As price rises, fewer customers follow-through on Uber requests. In the long run, Uber users become aware of the predictable surge price times. They are either willing to pay the price that attracts enough drivers, or they make alternative plans.

The surge pricing is not a fixed amount. It varies according to the gap between demand and supply at that moment.

For customers, surge pricing is a source of irritation, but also a benefit. Surge pricing means that service is reliably available, provided you are willing to pay the premium during busy periods. However, the higher price is a different experience from a taxi – where the price is the same at all times (in Ottawa).

Surge pricing can catch customers by surprise, although the Uber app states when surge pricing is in effect, and the multiplier that is being applied to regular rates “to get more Uber drivers on the road”.¹⁸ In 2014, the California Better Business Bureau rated Uber an “F” due to unresolved surge pricing complaints.¹⁹

Surge pricing also raises ethical issues. Natural disasters or public emergencies can drive Uber’s surge pricing to very high levels. For example, public ire has been expressed for Uber’s high pricing in New York during hurricane Sandy, and more recently in Sydney Australia during a terrorist hostage taking.

Uber’s Business Model Created by Plate Limits

Uber’s focus on UberX is a direct result of plate limits in taxi jurisdictions around the world. The principle features in Uber’s app can, in theory, be offered by taxi companies. Uber does itself through UberTaxi, and taxi companies in Ottawa and elsewhere are developing parallel apps.

However, Uber’s opportunities are strongest where taxis are in short supply due to excessive regulatory restrictions. Equally important: How does an innovator enter the taxi industry at an efficient scale? Under plate limited regimes, a new company needs an existing operator (a competitor) to agree to sell or transfer the plates. This can be even more difficult in an owner-driver regime where plate control is dispersed.

Multiply this problem by many cities – and the attraction of operating outside taxi regulations with new drivers and vehicles becomes apparent.

Uber's Pricing Strategy – Low Sometimes, Higher Other Times

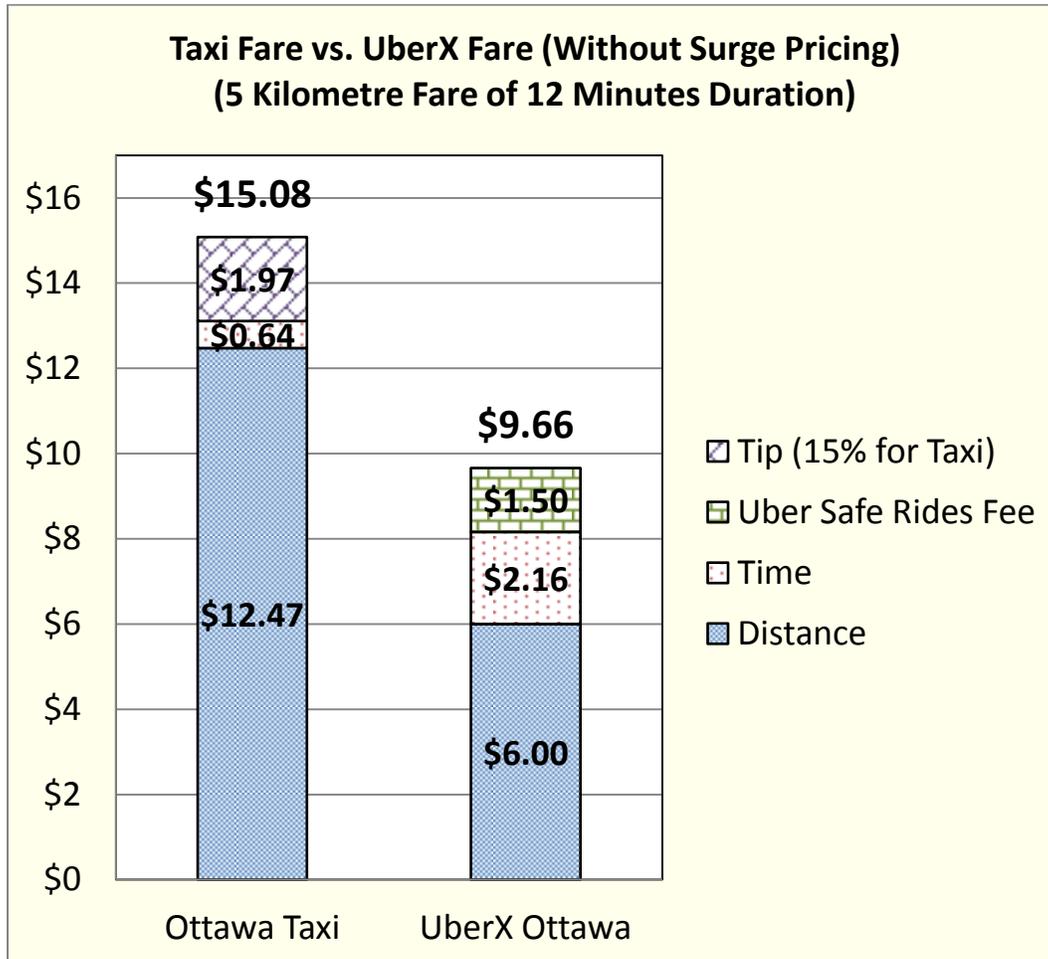
Another feature that has attracted users to Uber is the low prices when surge pricing is not in effect. The table below shows the rates applied to taxis and by Uber.

Rate Schedule Ottawa – Taxis and Uber, October 2015

Service	Initial Charge	Distance (per Kilometre)	Time (Per Minute)
Ottawa Taxis	\$3.45 for the first 150 meters	\$1.86	\$0.16
UberX Ottawa (w/o surge)	\$2.00 plus \$1.50 Safe Rides Fee (no initial distance included)	\$0.80	\$0.18

The graph below compares a typical Ottawa taxi fare for five kilometres to the equivalent Uber fare (without surge pricing). Five kilometers is a common standard for comparing rates between cities, and close to the average fare cited by Ottawa industry stakeholders in previous public consultations. The comparison is based on rates in effect as of October 10, 2015 (as above). Uber varies its prices by city.

**Taxi Fare vs. UberX Fare (Without Surge Pricing)
(5 Kilometre Fare of 12 Minutes Duration)**



Fare Component	Ottawa Taxi	UberX Ottawa
Distance	\$12.47	\$6.00
Time	\$0.64	\$2.16
Uber Safe Rides Fee	\$0.00	\$1.50
Tip (15% for Taxi)	\$1.97	\$0.00
Total	\$15.08	\$9.66

The UberX Ottawa fare is \$9.66, 36% less than the estimated \$15.08 for a taxi. The method of charging is different as well:

- **Time charges – UberX is higher.** Uber charges more for time at \$2.16 vs. an estimated 0.64 for the taxi. The difference is largely because Uber charges for every minute of the trip, while a taximeter charges either time, or distance, but not both at the same time. The

estimate assumes a 12 minute total trip time, of which 4 minutes the taxi is stopped or travelling at a low enough speed to switch to time-based billing.

The taximeter approach creates an incentive for drivers to take the quickest route. One reason Uber and ABSMs charge differently is the technical challenge of monitoring moment-by-moment changes in vehicle speed with smartphones that are not connected to the vehicle.

- **Tipping – Taxis are Higher.** The example assumes a 15% tip for the taxi driver, and zero for Uber. This may underestimate the Uber fare, since some customers do tip and may even feel obligated to do so to protect their passenger rating.

Uber advises its clients that tipping is not necessary. The system actively discourages tipping since charges are automatic without it. The 20% collected by UberX is retained by Uber. It does not include a tip. A customer must pay any tip separately. Cash must be used unless the Uber driver has their own credit card device (e.g. via Square – another smartphone app).

Most Uber customers do not tip, but there is substantial debate in the media and internet forums over the issue. Uber drivers' rate customers, and can see a customer rating before accepting a call. Some Uber drivers have stated they rate non-tippers poorly.²⁰

The non-tipping approach is specific to UberX. Competitor Lyft does include tipping in its system. Users of UberTaxi may program a default tip into their account profile.

- **Uber Safe Rides Fee.** Recently, UberX has begun adding this fixed charge per trip, marketed as a fee to support Uber's activities for safer rides. This fee is retained by Uber, along with 20% of the rest of the fare. The fee varies by city and is charged on all fares – it is not linked to an extra service.

In some cities, the initial charge for distance was dropped a partial or equivalent amount. In Ottawa, the initial distance charge was dropped from \$3.50 to \$2.00 – leaving the passenger's initial charge unchanged at \$3.50 total. Uber drivers lost \$1.20 per trip (80% of the \$1.50 distance charge that was previously paid to them).

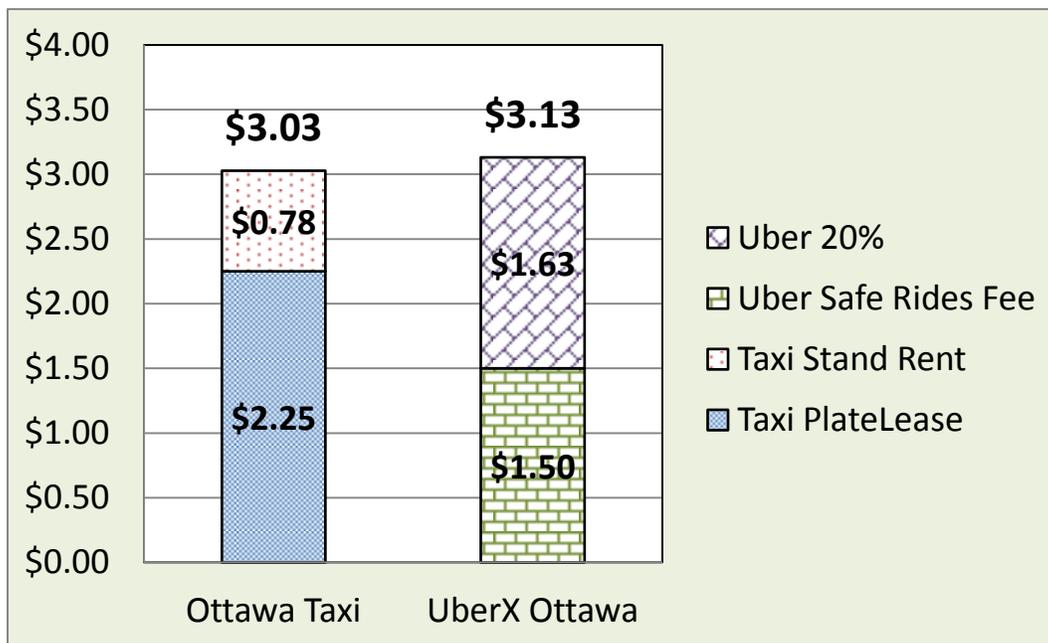
What Accounts for Uber’s Low Price? – Not Taxi Plate Leases

An initial assumption might be that the price difference between Uber’s advertised rates and taxi rates is due to the monopolization of the taxi system through limited taxi plates and the fees taxi drivers must pay to rent the plates. A check of the numbers tells a different story.

The table below estimates the fees paid per trip for two equivalent drivers: an UberX driver providing their own vehicle, gas, and insurance, and a taxi driver providing their own vehicle, gas, and insurance.

Comparison of Driver Fees & Deductions For a 5 kilometer Fare

(Vehicle & Equipment Driver Owned)



Expense	Ottawa Taxi	UberX Ottawa
Taxi Plate Lease	\$2.25	\$0.00
Taxi Stand Rent	\$0.78	\$0.00
Uber Safe Rides Fee	\$0.00	\$1.50
Uber 20%	\$0.00	\$1.63
Total	\$3.03	\$3.13

The taxi driver receives the whole fare. In addition to their own expenses,

the driver pays “stand rent” for dispatch (approx. \$430/month)²¹ and pays a plate holder a plate lease for the right to operate a taxi (approx. \$1300/month).²² Dividing these monthly rates by the number of trips per taxi (approx. 1,857)²³, yields an average fee per trip \$3.03.

The Uber driver pays based on each trip. The driver receives the whole fare, less the Safe Rides Fee and 20% of the balance of the fee. For a five kilometre fee is approximately \$3.13.

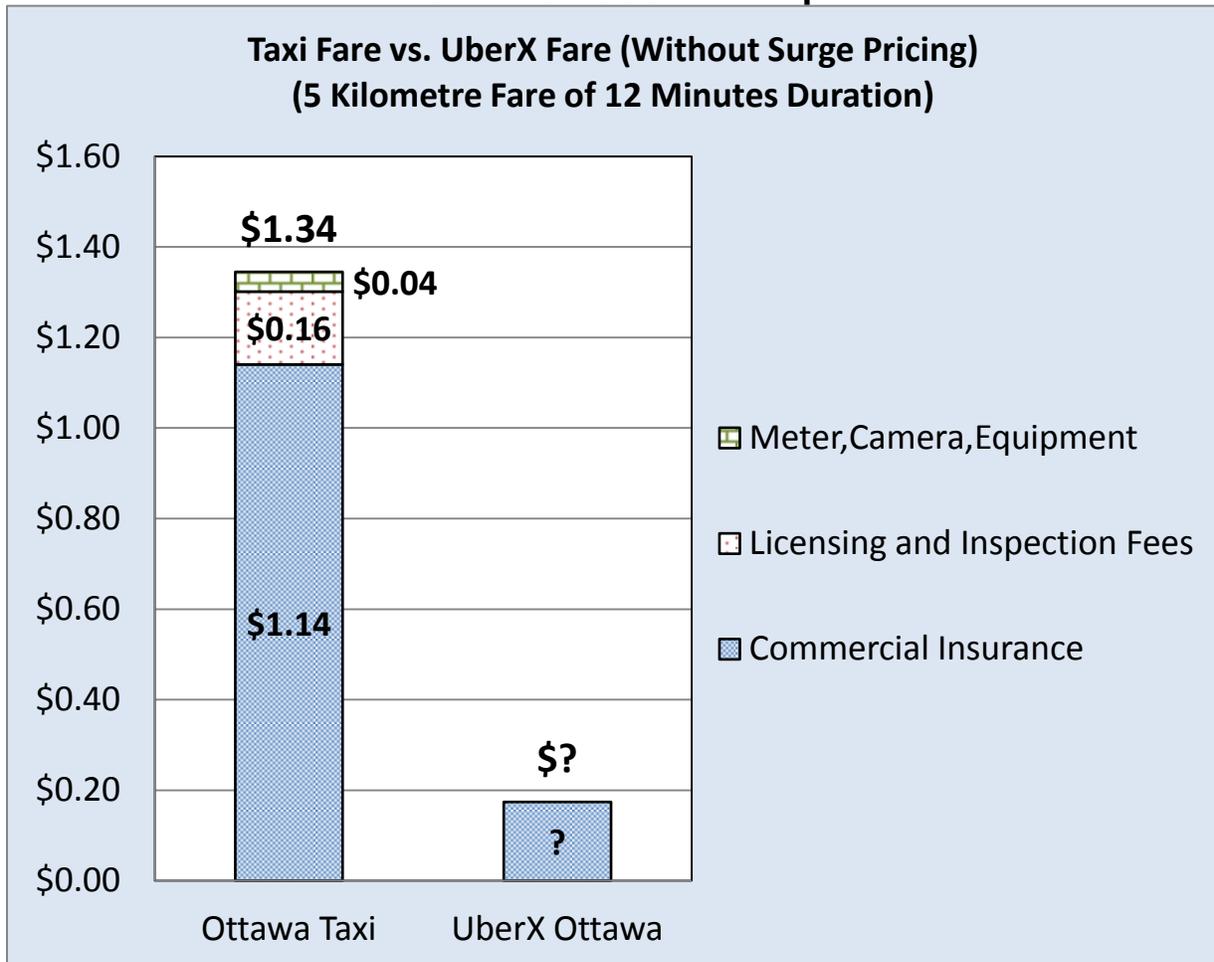
At \$3.03 vs. \$3.13, the fees taken out of the fare by Uber are roughly the same as the fees taken out the taxi fare by the taxi company and plate holder. Thus the difference in Uber prices has little to do plate value.

Difference in Costs of Insurance and Regulatory Compliance

UberX drivers operate outside of the regulatory system at present. They do not have to pay taxi licence fees or inspection fees. They do not have to pay for meters, cameras, or dispatch equipment. Most significantly, there is an open question on the level of insurance carried by UberX drivers. Personal insurance does not cover commercial operations, but the cost of commercial insurance is much higher. Uber itself publicizes its own coverage of up to \$5 million, but this is not primary coverage of passengers or third parties. The terms of Uber’s insurance are not public. Uber has announced it is working with Intact Insurance to develop insurance coverage, but no details have been released. The Alberta Commissioner of Insurance has reviewed the issue and issued a caution to Albertans regarding Uber.²⁴

How much of the above would account for differences in pricing between taxis and UberX? Of the estimated difference of \$5.42 on the cost of a five kilometer fare, up to \$1.34 is explained by higher taxi insurance costs, regulatory fees, and equipment (Figure 2). Assuming a taxi is shared between two drivers with good driving record, commercial insurance in Ottawa costs approximately \$7,900 annually, or \$1.14 per trip.²⁵ Annual licensing and vehicle inspection fees cost an additional sixteen cents. Cameras, meters and other equipment are significant cost, but last five years or more. Divided over the large number of taxi trips, special equipment amounts to less than five cents per trip.

**Insurance other Regulatory Requirements
Estimated Cost Per Trip**



Expense Category	Ottawa Taxi	UberX Ottawa
Insurance	\$1.14	\$0.17
Licensing and Inspection Fees	\$0.16	\$0.00
Meter, Camera, Equipment	\$0.04	\$0.00
Total	\$1.34	\$0.17

It should be noted that regardless of how the price difference is allocated, customers are benefiting from the lower fares offered by Uber at the moment, and for some customers, the difference is material. It allows them to take trips they would otherwise avoid, or to use a vehicle for hire rather than their own vehicle.

The Strategic Picture on Pricing

Uber's lower price per trip during non-surge periods is explained primarily by the fact that UberX drivers receive less money per trip. Part of the difference is explained by insurance and licence fee differences. Up to \$.75 may be accounted for if the UberX driver is not remitting HST.²⁶ (The Canada Revenue Agency requires every self-employed taxi or limousine driver to register for, and remit, HST, but defines a taxi as having regulated fees, so it is understood most Uber drivers do not remit HST unless their earnings exceed \$30,000 per year). However, the balance of the gap is the lower driver fee per trip.

This can be made up by the driver performing more trips per hour. Performing more trips per hour than a taxi is possible during off-peak periods when business is slow. A lower UberX price may attract rides away from the taxi market.

In this, the low base fares and surge pricing are two sides of the same strategic coin. Uber is able to take advantage of its pricing flexibility to take market share from taxis, whose rates are the same all the time (in Ottawa). During off-peak – Uber can under-cut and reallocate business to its drivers from taxis. During peaks, Uber can charge higher prices and still attract customers, as there is more business than vehicles available.

This does mean that driving for UberX is a rewarding experience when the baseline rates are in effect. The discounted baseline rates are quite low. This may explain why the majority of the impact of Uber is reported to be at night by taxi industry stakeholders – more Uber drivers may be coming out when surge pricing is more likely to be in effect.

The fixed nature of meter rates is a problem that pre-existed Uber. Some cities, such as Edmonton, had earlier tackled their night-time shortages with a peak-period surcharge on the taxi-meter, combined with multi-passenger fare structure that encouraged vans to be licenced as taxis to serve entertainment areas.

Does Uber Create New Jobs/Trips?

How does one measure job creation? One cannot just count the number of Uber drivers. If a new Uber driver displaces a traditional taxi driver – this is not a new job in aggregate. A more relevant question is whether Uber

creates new customer trips. More new vehicle-for-hire trips overall means more new jobs.

Uber and other ABSM's unquestionably generate more trips by vehicles for hire. There are three principle effects:

- **More Customers from New Features.** When a product adds new features, there will be new customers. Uber and the other ABSMs offer service with significant improvements. These improvements are popular, as reflected by the development of parallel apps in response by taxi companies.
- **More Customers from Lower Off-peak Pricing.** When UberX baseline prices are in effect, the lower pricing will attract users who were not taking taxi trips during these times.
- **More Customers at Peak from Additional Supply.** The fixed number of taxi plates may have meant insufficient taxis on weekend nights and other peak demand periods. By operating outside the regulatory system, Uber has been free to add capacity that when demand is busiest. Meeting the previously unmet demand means more trips.

How much of Uber's ridership is new ridership, and how much is taken from traditional taxi companies? Data to answer this question is located in taxi company trip volume records, and in Uber trip volume records, for cities where UberX has entered the market. Unfortunately, there is not a consistent publicly accessible data source for either.

Some data is available from an analysis of New York's market published by the Economist.²⁷ The analysis combined trip volume data published by New York's regulator with trip data released by Uber. Uber offers its UberX equivalent as a licensed operator within New York's system.

The article suggests that 65% of Uber's trip's came from trips that would otherwise have been in yellow taxis – with consequent negative impacts on the value of New York yellow taxi medallions (e.g. plate value). The article warns that the analysis is a simple one. For example, it assumes that all change in trip volumes was due to Uber.

The remaining 35% is attributed to new rides, according to the article, however the analysis overlooked that New York allows an unlimited number of dispatch vehicle-for-hire licenses.²⁸ UberX operates under a

dispatch licence and competes directly with these other services. Trips taken from other dispatch services were not included. A good portion of the remaining 35% of trips may have come from these companies, leaving a smaller net increase in total rides.

Once adjusted, the New York numbers suggest quite a small percentage of UberX trips were new trips. However, New York is not a good comparison for Ottawa or other cities where taxi plates are limited overall. Uber's impact these cities will be greater because it adds capacity to periods of peak demand.

Until more data is publicly available, the conclusion that can be drawn on new trips is limited to this:

- Yes, Uber takes significant trip volume from traditional taxi services, markedly reducing business per taxi and associated plate values.
- Yes, Uber also creates new trips through its innovative service features, its addition of capacity at peak demand periods, and its lower pricing during off-peaks when Uber surge pricing is not in effect.

5 Uber, Taxis and the Sharing Economy

Uber, Lyft, and others market themselves as *ride sharing services*, an enablement of the sharing economy. This perspective is important to understanding the success of their business models, as well as the social legitimation that persuades many that operating outside the regulatory system is a right and revolutionary thing to do.

The sharing economy has generated a great deal of public attention. There are many points of view on what it is. One theme is collaborative work, enabled through the internet (e.g. the development of the Linux). The sharing of customer/supplier reviews are another (e.g. success of eBay). Then there is the sharing of physical assets that might otherwise have gone unused (e.g. Airbnb).

What parts of Uber and other ABSMs is sharing economy? Answers come at different levels.

- **Shared trip.** If you have to go shopping downtown, why not take someone else with you so that the two trips are combined? This saves green-house gas emissions, and recovers expenses at the same time. Uber and Lyft platforms enable this, but it is not a

common practice. Another San Francisco company, SideCar, attempted to make this form of sharing its principal model. That company has since shifted its focus to parcel delivery.

Uber has also experimented in other cities, offering customers a reduced rate if they agree to share a trip with others. Traditional taxis are capable of offering this kind of shared ride, if regulations allow. Washington DC historically has allowed taxis to act as multi-passenger jitneys during rush hours. Madison, Wisconsin, has for many years offered dispatched shared rides with lower fares based on a zone system.

- **Shared vehicle.** You have a vehicle for personal use. You have time to spare during which you would like to earn money. Why not share your vehicle and get paid? Isn't this a more efficient use of society's resources—of both the vehicle and yourself?

This sharing is clearer when the UberX driver is part-time. When the driver is full-time, there is not that much to distinguish an UberX driver from a traditional taxi driver. For example, in single-shifted jurisdictions, the marked taxi may also be the taxi driver's personal vehicle once the top-light is turned off or removed. Thus, if one driver works 50 hours a week cruising for Uber, and another works a licensed taxi for the same hours, there is little distinction between the two except for adherence to taxi regulations.

The City of Seattle once considered a limit of 16 hours per week for drivers who registered themselves under ABSMs. This hourly limit is no longer part of posted regulations.

- **Shared experience data.** The collaborative aspects of the driver and passenger rating system are part of the sharing economy. It is a collaborative process between users and drivers, although Uber uses the results itself to terminate its relationship with some drivers.

In theory, taxi apps could provide the same functionality. However, the ability of taxi brokers to use the information may be more limited. In plate limited regimes, it is the plate holder who is in charge. The plate holder (who may be the driver) is the one who is paying the taxi broker, and is not so easily terminated.²⁹

- How we view the sharing economy role of ABSMs affects whether or not there is a need to accommodate a separate class of providers or

to simply regard them as an alternative dispatch system for the same service.

6 Choices in Entry Management

As discussed earlier, entry management is as relevant to the new ABSMs as it is to the traditional taxi industry.

Setting aside the issues of impact on plate value, both taxis and their ABSM equivalents are vulnerable to excess entry during economic recessions. This is the underlying reason why it is so common for cities to limit the numbers of taxis.

Cities that de-regulate tend to find themselves re-regulating after a few years, as per the U.S. deregulation experiments in the 1970s. Cities who keep regulations, but drop entry restrictions, experience excessive numbers of vehicles and drivers in the next recession. The drop in income this causes results in protesting drivers (potentially including Uber and Lyft drivers) demanding protection for the industry.

Rather than embarking on a process that may come full circle, it may be useful to consider alternative methods of entry management that do not rely on setting an explicit number of plates or licenses for vehicles-for-hire.

Two alternatives to explicit plate limits have recently received attention.

Entry Management by Service Standard

Rather than setting a particular number of taxis, the jurisdiction manages the number of vehicles against a performance standard. If service is too slow – more licenses are issued. Computer dispatch systems have made performance measurable and easily recorded. The City of Calgary has moved in this direction through its monthly collection of trip and performance data from taxi companies. The results are used to guide the advice of the advisory committee to Council.

The advantage of this approach is that it is results based, and keeps vehicle numbers tied to actual need. This process can apply to individual licence classes. If part-time vehicles are licensed, then their impact on peak demand performance can be monitored until numbers are sufficient. Similarly, the quality of accessible taxi service can be monitored separately.

Unfortunately, this approach does not fully answer the questions of innovation and competitive entry. It is still difficult for a new entrant to enter

at scale. Additional disadvantages, are the administrative investment in processing and monitoring the data. Modern dispatch and ABSM systems collect the data and can easily share it with regulators. However the regulator has to invest in the analytic capacity to use the data reports.

Entry Management using Licence Fees

This approach was recommended by the Taxi Industry Inquiry of the Australian state of Victoria. The Inquiry was of interest for the international scope of its research, and because the state government appointed the former head of their competition authority (the equivalent of Canada's Competition Bureau).

Under this approach, the jurisdiction no longer sets a fixed number of plates, but guards against excessive entry to the industry by setting a significant annual licence fee for new plates issued. Older licenses are allowed to continue renewing at the older fee levels.

Advantages cited for this approach are:

- **It allows the city to choose the level of profitability in the industry that it wishes to protect.** If the desire is protect current plate value levels, then the annual fee would be set to the equivalent to the current plate lease rate. In Ottawa this would be from in the order of \$9,000 per year to \$15,000, depending on whether the city wished to protect the union negotiated rates, or market rates. A lesser value might also be chosen, lowering plate values too much would require considering the impact on accessible taxi service.
- **It allows competitive entry.** Anyone who thinks they can do better than the present providers can take out licenses directly from the city, rather than having to negotiate purchase of the plates from existing holders.
- **It lets drivers acquire their own license.** When an individual driver wishes to commit to the industry, they too can acquire it from the regulator instead of seeking someone who wishes to sell. Even where drivers prefer to lease or purchase from old plate holders, the bargaining relationship is more balanced, as the driver always has the alternative of obtaining a new plate for the city.
- **Current plate holders are protected.** Through this process, the regulator effectively sets a ceiling on plate leases on older plates,

since no driver would pay more than what they could pay the regulator for a new plate. In exchange, the plate holders receive a regime that recognizes and legitimates the level of revenue to plates.

- **Vehicle-for-hire numbers are driven by passenger demand.** The regulator no longer has to determine a number of plates. When demand increases, industry members will find it profitable to take out additional plates. The number adjusts automatically to market conditions, as in other markets.
- **Potential revenue can be used to improve service or enforcement.** Initially revenues from new plates may be quite low. However, as the jurisdiction grows, more new plates are taken out. The revenue can be used to pay costs of bylaw enforcement, or put back into programs, such as incentives to provide accessible taxi service.

The principal disadvantage of this approach is:

- **No current examples.** Although a well-known solution in other regulatory frameworks³⁰, the regulation through licence fees is not a current practice in taxi regulation. The Victorian Inquiry recommended a fee that would effectively have reduced plate value to half its previous level. The Victoria government, after reviewing a second time, endorsed the original recommendation. However, the controversy over the plate value reduction, combined with a change of government, has delayed implementation of this recommendation.
- **May require change to Ontario's Municipal Act.** The collection of fees for this purpose may be viewed as a tax outside municipal authority. The Municipal Act does provide specific authority for municipalities to limit the number of taxis, but not for the use of fees as an alternative tool.

As a result, any city that implements this approach would be in the position of an innovator. The licence fee approach should not be confused with auctioning licence plates, which some American cities do. Although both practices involve raising revenue, the setting of an annual fee without putting out a specific number of licenses is different, and unlikely to raise much revenue in the short run.

Applying this approach to ABSMs would depend on whether one is considering a separate regime with different driver and vehicle requirements, or licensing ABSMs under a consolidated taxi regime.

- **Two regimes.** A separate licence fee level would be set, so that entry is managed in both taxis and ABSMs, protecting both forms of vehicles-for-hire from excess entry in recessions, and preserving their profitability.
- **One Regime.** ABSMs are treated as an alternative dispatch method for taxis. They are free to enter the industry and provide service if they meet the same core safety requirements, but must take out the new licenses for their vehicles (this may include different fees for part-time licenses as opposed to full time licenses).

The net result of entry management using licence fees is entry is open to new competitors, but only makes sense if the new entrant can preserve the same level of profitability that the city has chosen to protect for the existing industry. Both new and old operators are protected from excessive market entry during recessions by the significant fee for new licenses.

Entry Management by Fee per Trip

A third alternative for managing entry suggests itself from the analysis of ABSM pricing structure. A charge per trip, paid to the city, can have a significant cumulative impact – the equivalent of restricting plates. For example, if an Uber driver worked full time and drove the equivalent volume of monthly trips as an Ottawa taxi, then 1\$ per trip would be approximately \$575 per month. This is close to the \$750 per month that taxi plates are leased for under Ottawa’s collective agreements.

Another virtue of the fee per trip is that it charges less to part-time drivers. Scaling by level of activity is automatic.

The fixed fee, one dollar or other number, could be charged to the ABSMs. As noted in the financial analysis, Uber is already collecting the equivalent of taxi plate lease rental from its Ottawa drivers at present, including a \$1.50 Safe Rides fee recently instituted per trip.

Uber’s ability to pass on any fee would be constrained by competition. Under this form of entry management – Lyft and other ABSMs have a lawful niche to enter. There would be no explicit limit on vehicles preventing additional competitors to Uber from entering the Ottawa market. However,

the fee can create a sufficient cumulative barrier to meet the other policy objective: deterring excessive entry.

The technical feasibility of collecting a fee per trip using modern technology has been demonstrated in Washington D.C. Since 2014, the DC Taxicab Commission is funded by a 25 cent fee per trip. The funds are collected automatically electronically. The Commission required all taxis to acquire a modern meter that could accept credit cards, along with required affiliation to either a Payment Services Provider (e.g. VeriFone, Creative Mobile Technologies), or a Digital Dispatch Service (e.g. Uber Taxi). Both PPS and DDS operators also require a licence from the Commission. Fees are collected electronically for all fares (not just credit card fares) and deposited in the Commission accounts.³¹ The system is automatic and paperless.

The principal drawback of a fee per trip is that changes might be required to Ontario's Municipal Act. Like entry management using license fees, the approach might be contested as a form of tax outside municipal powers, rather than a fee.

7 Summary: Key Considerations

From the preceding analysis, the following are key considerations for the review of Ottawa's vehicle-for hire industry.

- Entry management is an important consideration for both taxis and any new class of vehicles-for-hire for ABSMs like Uber. The unique role of vehicles-for-hire as a residual employer means that economic recessions may cause excessive new entrants, unsustainably low driver incomes, public protest, poor service, and risk to public safety. Without entry management, the excess entry risks will result in pressure to close the industry again, both from traditional taxi drivers and new ABSM drivers.
- Plate limits have proved a historically cumbersome way of managing entry that risks supply falling behind a city's need, and rising plate values. Rising plate values signal poorer and more expensive service to customers, and inability to meet peak period demand.
- Alternate methods of entry management are available. Some of the most advantageous may require clarification or amendment of municipal powers under Ontario's Municipal Act, especially with respect to the use of fees to regulate market entry.

- Ottawa's current substantive taxi plate values create a fairness issue when adding new supply to the industry, especially if there are no limits to the new supply. Ottawa plates are widely held, with many single plate holders, including some drivers, some of whom may have paid the peak market price for a plate.
- Uber and other ABSMs offer new and valuable service enhancements to customers, and a flexible supply that addresses vehicle-for-hire shortages during peak load hours. Most, but not all, features can potentially be offered by traditional taxi companies offering parallel apps. To be able to match flexible supply, part-time taxis would have to be considered.
- The role of part-time drivers and part-time supply affects the degree to which Uber and others are part of the sharing economy, or another dispatch method for taxi equivalents.
- The price difference between taxis and Uber's low baseline is not caused by the extra cost of taxi plate leases, since Uber draws comparable amounts from its drivers through its pricing structure. Costs of meeting regulations, including insurance costs, account for only part of the difference between Uber base fares and taxi fares.
- UberX's low pricing is part of a package pricing strategy, along with surge pricing. It takes advantage of the fixed nature of meter rates, charging less than taxis at off-peak and collecting premium fares during busy periods when surge pricing is in effect.
- For traditional taxi companies to compete effectively with ABSMs, more fare flexibility would be needed, particularly in charging different rates during peak and off-peak periods.
- Lower off peak rates from any safe provider are a benefit to customers. Higher peak rates are mixed blessing for customers, in that they also attract more supply to the times and places where it is needed.

References

¹ By definition, this is a recession; industries contract production in response to lower demand, laying off workers in the process.

² Taxicab Chaos. *Washington Post*, Jan. 25, 1933. Via Dempsey *Supra*

³ A fare fight. *The Economist*. Feb. 11, 2012. Pg. 76

⁴ Teal, Roger F., and Berglund, Mary, "The Impacts of Taxicab Deregulation in the USA," *Journal of Transport Economics and Policy*, January, 1987, pp. 37-56.

⁵ Of the ten cities identified by Teal and Berglund, the majority (six) have returned to closed systems as of 2013. The re-regulated US cities include San Diego, Seattle, Sacramento (recent freeze in 2011), Kansas City, Oakland, and Portland.

⁶ Taxicab Regulation in North America. Hara and Mallory (2012).

⁷ Boston Police Department records of plate transfer values.

⁸ <http://www.wsj.com/articles/uber-meets-its-match-in-france-1442592333>

⁹ <http://news.nationalpost.com/news/canada/edmonton-taxi-drivers-protest-uber-shouting-and-tearing-off-their-shirts-at-city-council-meeting>

¹⁰ Liu, Liang, Clio Andris, Assaf Biderman and Carlo Ratti. "Revealing Taxi Driver's Mobility Intelligence through His Trace." *Movement-Aware Applications for Sustainable Mobility: Technologies and Approaches*. IGI Global, 2010. 105-120. Web. 30 Jul. 2012. doi:10.4018/978-1-61520-769-5.ch007

¹¹ The term beneficial owner refers to the practice, for insurance purposes, of drivers registering vehicle title in the name of the dispatch company.

¹² The high number of single plate holders may also reflect sale or transfer of plates to seek exemptions from the collective agreements for single plate-holders.

¹³ <http://www.metronews.ca/news/toronto/2015/09/15/think-youll-get-rich-driving-uberx-in-toronto-think-again.html>

¹⁴ https://s3.amazonaws.com/uber-static/comms/PDF/Uber_Driver-Partners_Hall_Kreuger_2015.pdf, Table 6, page 23

¹⁵ Based on the less common situation where taxi drivers are employed by the taxi company on wage basis.

¹⁶ Metronews, *supra*.

¹⁷ There are demographic differences since Uber is a newer company – but the occupation is still driving a vehicle for hire. Some differences are difficult to identify since the averages reported for Uber mix the full-time Uber driver with the high turnover group of those trying it out.

¹⁸ See sample screen in <http://o.canada.com/technology/uber-surge-pricing-toronto>

¹⁹ <http://www.businessinsider.com/uber-gets-an-f-from-better-business-bureau-2014-10>

²⁰ See <http://www.cnet.com/news/to-tip-or-not-to-tip-drivers-that-is-ubers-question/> ; <https://www.thezebra.com/insurance-news/1074/should-you-tip-your-uber-driver/>

²¹ May vary by collective agreement for BlueLine, Capital, and West-Way.

²² Plate leases that are under the collective agreements were \$750 per month, however not all plates are under an agreement. Open market price for the lease of a plate from a

single plate owner is reported to be around \$1300 by industry stakeholders. For this calculation, the higher number is more conservative, and was used.

²³ Based on City of Ottawa estimated range of 20,000 to 25,000 trips per taxi per year. The figure uses the mid-point of 22,500 trips annually.

²⁴ <http://www.finance.alberta.ca/publications/insurance/Superintendent-of-Insurance-Bulletin-02-2015.pdf>

²⁵ Based on information gathered during stakeholder consultations. Insurance rates vary by city. Ottawa's taxi industry has been able to maintain competitive rates. Rates in other Ontario municipalities have been reported high as \$14,000 per year.

²⁶ Net Uber driver HST is less than the amount due on the fare, since an Uber driver who files HST can also claim HST credits on gasoline purchases and other inputs.

²⁷ <http://www.economist.com/blogs/graphicdetail/2015/08/taxis-v-uber> (full article is requires paid access).

²⁸ The article works with published numbers for Uber, for New York's Yellow taxis, and for the new Boro taxis licensed for street-hail outside the yellow taxi traditional downtown service area. New York Black Cars and other dispatch services were not included in the analysis.

²⁹ A taxi owner-driver receives money from passengers, and chooses which company (broker) to hire for dispatch services. If one company terminates, they can move their scarce plate to another company. In contrast, passengers pay Uber directly, and Uber then passes part of the money over to the driver.

³⁰ In economic terms, the principal is *duality*. Anything a regulator wishes to accomplish in quantity terms can be accomplished by an equivalent measure focused on price. Both can get you to the same point on consumer demand. Application ranges from international trade quotas to regulating money supply. The approach is particularly useful when you are unsure of the quantity required, but have greater clarity on the price.

³¹ In practical terms, drivers have their credit card trips deposited directly in their accounts. They also owe 25 cents per trip for all trips – as tracked by the system link to the meter. The cumulative per trip fee is deducted from the amount they are owed on credit card charges.