

POLICY SERIES

FRONTIER CENTRE FOR PUBLIC POLICY • POLICY SERIES NO. 105 • MAY 2011



The End of Taxi Regulation

**Why GPS-enabled smartphones
will send traditional taxi regulation
the way of the dodo**

By David Seymour



About the Author

David Seymour directs the Centre's Saskatchewan office. He holds degrees in Electrical Engineering and Philosophy from the University of Auckland, where he also tutored Economics. After working as an engineer in New Zealand, he is applying his passion for sound policy analysis to policy issues on the Prairies. In four years working for the Frontier Centre, David has carried out extensive media work, presenting policy analysis through local and national television, newspapers, and radio. His policy columns have been published in newspapers in every province as well as the *Globe and Mail* and the *National Post*. David has produced policy research papers on telecommunications privatization, education, environmental policy, fiscal policy, poverty, and taxi deregulation. However, his major project with the Frontier Centre is the annual Local Government Performance Index (LGPI). The inaugural LGPI was released in November 2007 and comes at a time when municipal accounting standards in Canada must improve if the municipal government sector is to reach its potential as an economic growth engine for Canada.



www.fcpp.org

Email: newideas@fcpp.org

MB: 203-2727 Portage Avenue,
Winnipeg, Manitoba Canada R3J 0R2
Tel: 204-957-1567

SK: 2353 McIntyre Street,
Regina, Saskatchewan Canada S4P 2S3
Tel: 306-352-2915

AB: Ste. 1280-300, 5th Avenue SW
Calgary, Alberta Canada T2P 3C4
Tel: 403-995-9916

The Frontier Centre for Public Policy is an independent, non-profit organization that undertakes research and education in support of economic growth and social outcomes that will enhance the quality of life in our communities. Through a variety of publications and public forums, the Centre explores policy innovations required to make the prairies region a winner in the open economy. It also provides new insights into solving important issues facing our cities, towns and provinces. These include improving the performance of public expenditures in important areas like local government, education, health and social policy. The author of this study has worked independently and the opinions expressed are therefore their own, and do not necessarily reflect the opinions of the board of the Frontier Centre for Public Policy.

Copyright © MMXI by the Frontier Centre for Public Policy.

Date of First Issue: May 2011.

Reproduced here with permission of the author. Any errors or omissions and the accuracy and completeness of this paper remain the responsibility of the author.

ISSN 1491-78

FCPP Policy Series No. 105 • May 2011

The End of Taxi Regulation

Why GPS-enabled smartphones will send traditional taxi regulation the way of the dodo

By David Seymour

Table of Contents

Title	Page
Executive summary	4
Introduction: The deadlocked debate over taxi deregulation	6
The technological change: Smartphones become ubiquitous	8
Deregulation Objection One: The oversupply of cabs in deregulated markets	10
Deregulation Objection Two: The lack of consumer information	12
Deregulation Objection Three: The dispatch tragedy of the commons	13
Other Practical Objections: Taxation, phone use and critical mass	14
The inevitability of policy reform	16
Conclusion	17

Note to reader: Some words in this document may appear in blue and underlined. Clicking on these words will direct the reader to relevant sites or documents using your associated web-browser.

Executive summary

- The taxi industry is one of the most regulated in the Canadian economy. In fact, with governments placing strict controls on the number of providers in the market and the prices they can charge, it rivals the supply management policy in agriculture.
- Some argue that the current regulations solve these three problems:
 - Without a cap on numbers, there would be an oversupply of cabs in the market, leading to cabs being empty much of the time and drivers needing to charge more or offer poorer service.
 - As a practical matter, consumers cannot shop around in the taxi market as easily as they can elsewhere, so normal competitive pressures cannot keep prices down and quality up as they can in other markets.
 - Without regulation, too many drivers will ply the streets looking for business and too few will subscribe to telephone dispatch systems, meaning the phone-order market will be undersupplied. This would be compounded by drivers who do subscribe being less able to supplement their income with hail and rank fares.
- The Frontier Centre has argued that the case for regulation is overstated, mainly by incumbents who stand to benefit by keeping the market closed and thereby protecting themselves from competition. The market failures they point to are small when compared with the regulatory failures that stifle competition and so motivate them to claim there are market failures in the first place. The experiences of a number of countries that have deregulated prove the point.
- Rapid changes in the availability of technology may soon make the entire debate on taxi regulation as we know it irrelevant. As GPS-enabled smartphones follow the path of traditional cellphones to ubiquity, people will be able to order cabs directly from drivers based on their real-time location.
- The problem of “an oversupply of cabs” will be solved to some extent, as cab drivers gain better information about the true demand for their services. More important, the more discreet ordering system of a smartphone co-ordinated taxi industry will make it much harder for authorities to enforce the monopoly currently given to plate holders, making this “solution” to oversupply impractical.
- The problem of consumer information will be solved, as smartphone applications allow routes and prices to be agreed upon ahead of time, passengers to select from multiple offers when requesting a route and the reputation of each driver and passenger to be built up over time through electronic feedback mechanisms.
- The problem of dispatch will be solved, because the smartphone network will replace telephone dispatch.

- Some will object that such a system would be unfair for the poor or elderly who cannot access or use smartphones. Whatever may be true of this, specialist dispatch companies unrelated to the existing industry could act as an interface between the smartphone network and traditional users.
- The current monopoly enjoyed by licensed drivers is enforceable because non-licensed drivers cannot openly communicate that they are offering a taxi service, and they find it difficult to reassure passengers that they are trustworthy. Technological changes will solve these problems for non-licensed drivers, making enforcement of the monopoly nearly impossible.
- Some will object that the ban on the use of mobile phones in moving vehicles will make it impractical for drivers to operate on the kind of network described here. However, it is not clear that using such a network would be more distracting than using legal devices such as hands-free phones, GPS navigators or current dispatch radios.
- Some will object that such a system could never reach the required critical mass. However, the zero marginal cost of entering the system makes it likely that people will enter it even if it initially offers little benefit.
- Smart municipalities stand to gain much by planning to deregulate cabs in the next five years. Those that do will gain large efficiencies in their cab industries; those that do not will find themselves stranded as the rest of the world adopts better technology.

As GPS-enabled smartphones follow the path of traditional cellphones to ubiquity, people will be able to order cabs directly from drivers based on their real-time location.

Introduction: The deadlocked debate over taxi deregulation

Across Canada, the taxi industry remains the most regulated industry outside of supply managed poultry and dairy products. Almost every major municipality regulates the quality of taxi services and the number of cabs operating in its jurisdiction as well as the fares that drivers are able to charge.

This regulatory approach has created absurdities. Powerful lobby groups have sprung up to protect incumbent operators from newcomers who would like to enter the market as competitors. Calgary, for example, has had the same number of regular cabs since 1986 despite the city's workforce having doubled since then. Winnipeg has had the same number of cabs since World War II. This protection from competition is worth a lot of money to incumbents. The price of a taxi plate, essentially a piece of paper that allows a driver to operate in a city, has gotten as high as \$500,000 in Vancouver and is over \$100,000 in most cities for which data is available.¹ Econometric analysis shows that when regulators increase fares, the increased revenue is simply captured by plate holders and plate values rise in relation to fare increases.² In short, municipalities across Canada have a taxi regulation regime that favours plate holders at the expense of consumers and would-be drivers.

The same people who benefit from this regime have argued on various occasions that the restrictions are necessary, because a deregulated market would be worse for consumers and drivers. They argue that a deregulated market would create an oversupply of cabs, thus reducing quality and increasing fare rates as too

many cabs chase too few fares. They argue that because consumers often do not know what kind of cab they are getting into, it is important for regulators to set a standard price and service level. They also argue that if drivers were not required to belong to a brokerage with a telephone-dispatch service, sufficient dispatch services would no longer be funded, as drivers seek to avoid the cost of a dispatch fees and instead pursue fares by queuing at ranks and cruising the streets for "hail" fares. In other words, they argue that any benefits regulation delivers to incumbents are smaller than what market failures would cost consumers.

Over the past two years, the Frontier Centre has argued that concerns over market failures are overstated.³ We have argued that the market failures to which the proponents of regulation point simply have not emerged in countries that have deregulated. New Zealand and Ireland are examples. We have argued, in the words of one New Zealand economist who studied the deregulation experience in his country, that

...deregulation (the removal of quantity and price controls) with appropriate (re)introduction of quality standards can bring about a restructuring of the industry in a way that benefits both consumers and suppliers alike. Far from being an industry apart, ungovernable without stringent regulation, the removal of entry and fare restrictions has released forces which have led to a new and considerably more vibrant local taxi industry.⁴

The Organisation for Economic Co-operation and Development (OECD), which concluded a study of 17 countries' experiences of deregulation, has echoed this finding.

Increasing numbers of OECD countries have removed or loosened supply restrictions on taxis. The results of these reforms have been strongly positive, with reduced waiting times, increased consumer satisfaction and, in many cases, falling prices being observed.⁵

A meta study of 28 studies of taxi regulation by professional economists found that 19 favoured deregulation, two were equivocal and the remaining seven supported regulation.⁶

Despite this weight of evidence, city halls across the country have been unwilling to seriously question why they are trying to regulate the number of cabs and the fares that drivers can charge. For example, the Frontier Centre gained considerable media coverage including news articles, newspaper op-eds and radio and television interviews when it made the case for taxi deregulation in Calgary, Regina, Saskatoon and Winnipeg in 2009. Regina, Saskatoon and Winnipeg commissioned outside studies into taxi regulation in the past two years, yet the results avoided the question of deregulation. The two Saskatchewan cities commissioned a report from a consultant in 2009. Earlier that year, he delivered a report that was prima facie dismissive of deregulation for Winnipeg. Predictably, he wrote almost identical reports for his Saskatchewan clients.⁷

The reason for the entrenchment of regulation is easy to see. The Calgary report explained that while deregulation might be desirable, it was not acceptable to open up competition, because it would reduce the value of taxi plates. "[Deregulation] would reduce or eliminate plate values, with significant disruption to current stakeholders in the industry.

...city halls across the country have been unwilling to seriously question why they are trying to regulate the number of cabs and the fares that drivers can charge.

Owner-drivers would see their incomes fall and a cherished asset disappear in value."⁸ Calgary taxi plates trade for approximately \$150,000 each, and they can be rented to drivers for approximately \$200 per week. Collectively, the 1,411 Calgary plates, half of which are owned by fewer than five individuals, are a \$200-million plus asset that brings in weekly revenues of approximately \$300,000 to their current holders. With so much to lose, incumbent holders in Calgary have hired powerful lobbyists such as Wayne Bill Communications to plead their case in the public sphere and elsewhere.⁹

The current debate is deadlocked. On one side is the weight of academic and practical evidence in favour of taxi deregulation. On the other are those who would lose millions of dollars if their protection from competition were removed. They will do almost anything to safeguard their interests.

This paper, however, describes an imminent technological disruption to the industry that no one has the power to stop. It argues that the coming ubiquity of GPS-enabled smartphones will change the debate in two ways. In the first place, such phones will remove any remaining uncertainty over whether current taxi regulations are desirable. Secondly, they will make it much more difficult for the authorities to police who is offering paid rides in cars. In effect, the industry faces de facto deregulation regardless of what the authorities choose to do.

The technological change: Smartphones become ubiquitous

As the Frontier Centre has argued elsewhere, a world where anyone with a smartphone can effectively be a taxi driver is already a technological possibility.

Several months ago at a conference for the Association of Commuter Transportation (ACT), ridesharing went viral and reached a critical mass. The conference hotel was in a remote location in California but many delegates were without their cars, so they pooled the vehicles that were available using an iPhone application called Avego Driver.

270 delegates organised 529 shared trips over three days, saving an estimated \$43 each, and reducing total carbon emissions by around four tonnes (for perspective, a group of 270 average Canadians would normally emit about 37 tonnes every three days)...

The real revolution is the GPS capability of more and more mobile phones. Because the phone 'knows' your location, and because your destination can be entered with one touch, all of the matching can be done instantaneously without clunky web forms or manual invitations.

... [Both driver and passenger] get a picture and details of the other person and (for drivers) their car. [An] eBay parallel is the use of feedback ratings to encourage good behaviour. Get a few bad ratings on eBay and nobody will trade with you, so people behave well...

It would be easy to dismiss this technology if it was some sort of hippy-esque exercise in idealism, but it incorporates market incentives well. The software automatically transfers real money from

the rider's account to the driver's based on the distance calculated by the GPS. Again, it's a technological breakthrough that allows a previously impractical market transaction to occur with zero effort.¹⁰

Avego Driver, therefore, has the potential to replace all of the functions that the currently regulated cab industry performs. Passengers could request taxis by selecting destinations on their phones. Multiple drivers in the area could respond by offering a ride. Passengers could accept their offers based on pick-up time, price and driver reputation. The application could facilitate payment at a rate that both parties clearly understand. It can ensure quality by building a profile of each driver's performance and—for the first time—give drivers reliable information on how civilized a passenger might be. Providing this information has the additional benefit that once drivers and passengers know it will be available to others in the future, they actually have an incentive to behave better.

In addition, the GPS tracking of customers and drivers would give both parties a constantly updated estimated time of arrival, removing the anxiety associated with waiting for a cab.

This technology makes it possible to imagine a completely decentralized taxi industry. There would be no need for telephone-dispatch services when fares could be ordered directly from nearby drivers. There would be no need for companies to invest in building brands when a profile of an individual driver would be available before his or her services are commissioned.

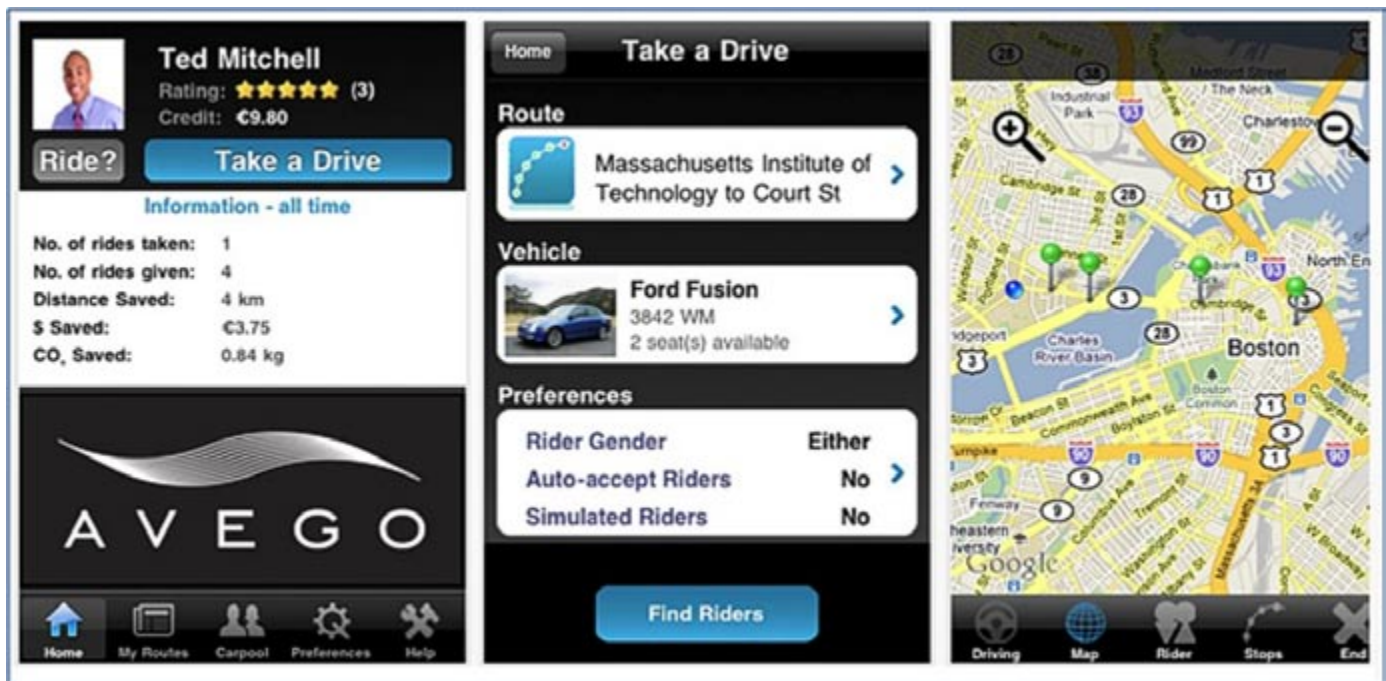


Figure 1. Screen shots of the Avego Driver application, showing (l-r) a passenger's view, a driver's view, and a route map with potential passengers.

Avego Driver may or may not become a major commercial success. A decade ago, there were a large number of Internet search engines vying to become the search engine of choice. Most, including Lycos, Alta Vista, Dogpile, and Yahoo, are nearly forgotten while Google has succeeded. The important point is that, like those original search engines, Avego Driver is an application that represents a new wave of technological possibility.

The search engine became viable because the number of websites got to a point where people needed to type in specific terms to filter the information that they wanted for a specific task. In turn, the number of websites grew because the cost of being online dropped dramatically throughout the 1990s, as did the skills required to create a website. GPS-based ride-sharing applications like Avego Driver will become widespread and viable for similar reasons. The most important trend will be the growing ubiquity of smart mobile phones. The evidence for their increasing pervasiveness comes from the precedent set by the growth of conventional mobile

phones and the actual current trajectory of smartphones.

A smartphone is a mobile phone capable of running software programs or applications that are not included in its original package, so it is able to take on new functions beyond those for which it was originally programmed (including applications for ordering taxis). It also has the ability to connect to the Internet through mobile data networks or local wireless networks, so it can communicate in real time. Finally, a growing number of smartphones are equipped with GPS receivers, which allow them to know and transmit their location on Earth within metres.

The most recent available sales figures show that approximately 1.2 billion mobile phones (not necessarily smartphones) were shipped to end users in both 2008 and 2009. If the average lifetime of these phones is two years, then 2.4 billion people, or one out of three people on Earth, has a mobile phone. Statistics Canada reports that three-quarters of Canadian households had at least one

cellphone by 2007.¹¹ Of global shipments to end users, around one in seven, or 172 million, was a smartphone, up 24 per cent from 139 million in 2008.¹² Gartner, an industry research firm, predicts that U.S. smartphone sales will be 95 million units in 2011, up from 67 million units in 2010.¹³ Twenty years ago, mobile phones were a curious novelty, yet today there are so many that there are serious debates among parents over whether it is appropriate to buy one for a nine year old, for example. The proportion of these smartphones is rapidly rising, and it seems reasonable that in a wealthy country like Canada, all phones sold will have the functionality of a current iPhone (multiple applications, data connectivity and GPS) within five years.

When ubiquitous smartphones become a reality in Canada, consumers and drivers operating a taxi service without any need for conventional taxi infrastructure will also become a reality. The Internet will add this infrastructure to its list of victims that includes travel agents, bookstores and bank tellers. The remainder of this paper examines how these potential changes will affect taxi regulation, showing that the arguments for taxi regulation are irrelevant and that even if the stakeholders are able to keep the regulations in place, they will become almost impossible to enforce. Either way, taxi deregulation is about to become a reality.

Deregulation Objection One: The oversupply of cabs in deregulated markets

Advocates of continued regulation in taxi markets have argued that removing the restriction on the number of cabs would lead to an oversupply of cabs. They reason that there is an optimal number of cabs in any given market that will balance the two competing factors of wait time and price. If there are too many cabs, then there will be many cabs available quickly, but because the cabs spend so much time sitting empty, the drivers will need to charge more per kilometre when they do get a fare. If there are not enough cabs, then fares will be low because the taxis will be busy much of the time; however, it will take longer before any given passenger can get one.

Regulation advocates argue that without regulation the number of cabs will not be optimized to this balance and will respond to the wider labour market. As long as there are potential workers in the economy who could earn more in the taxi market than elsewhere, these workers will continue to enter the market. As each one does, the proportion of time that each taxi is in service will decrease. In turn, the decrease in service time will either increase fares or decrease driver income. What is more, some argue, this increased competition will lead to uncivil behaviour, as drivers fight over fares, and will ultimately drag down the quality of service.

In the conventional debate, there are two answers to these arguments. The first is that keeping people out of the market in order to improve taxi service is unfair to would-be drivers. To optimize the welfare of everyone in the economy, everyone should be able to take the best opportunity available at any given time without being blocked by regulations designed to protect the interests of a few at the expense of others. The second is that even if all agree that regulators should try to optimize the number of cabs in the interest of taxi service, it is likely that the cultivation of stakeholders (as discussed in the introduction to this paper) will make it impossible for regulators to act impartially. They will instead be pressured to overcompensate in favour of incumbent plate (permit) holders by setting the number of plates too low. A low number of plate holders is detrimental to customers.

A taxi industry that is co-ordinated by a network of smartphones will not find the balance that regulation advocates seek any better than a conventional industry will. It will, however, make it almost pointless for them to continue to seek it. Presently, it is very easy for authorities to enforce caps on the number of cabs allowed to operate. Rogue operators face insurmountable challenges when competing with licensed operators, because they have to advertise their services to consumers. This practice is as detectable as it is effective, because authorities can spot it as easily as potential customers can. Without advertising, rogue operators cannot build up a brand. With no brand, they have no reputation to lose and therefore customers have no reassurance that the operators have an ongoing interest in providing a quality service.

In a world where taxis are ordered and supplied by a decentralized network of smartphones, rogue operators will be able to solve these problems in ways that are difficult to detect.

Trying to control rogue operators who use online networks to place orders and assure the quality of their service through previous customer feedback will be a challenge akin to controlling media piracy and pornography on the Internet. When one application is shut down, another will spring up.

Trying to control rogue operators who use online networks to place orders and assure the quality of their service through previous customer feedback will be a challenge akin to controlling media piracy and pornography on the Internet. When one application is shut down, another will spring up. National governments are failing at their challenges in this area; the small departments of Canadian municipalities currently responsible for taxi regulation will have no hope whatsoever of controlling such a rogue taxi market.

Deregulation Objection Two: The lack of consumer information

Advocates of taxi regulation argue that the number of cabs and the fares drivers are able to charge must be regulated, because there is insufficient competition in the market for consumers to shop around and bring competitive pressure to bear on drivers. In the case of a stationary provider, such as a supermarket, consumers can easily remember the price and quality they received when purchasing a particular good. In the case of a taxi, they will rarely be able to identify the same driver twice, they will usually be purchasing what is effectively a different product, because routes and traffic conditions vary, and they are often visitors to a city and have no prior knowledge of the local taxi market.

For these reasons, regulation advocates argue, it is desirable to limit the number of drivers so that unreliable or opportunistic drivers will be less likely to enter the market. Further, they argue, it is desirable to enforce regulations that state that drivers must be affiliated with a reputable taxi company so that consumers will have some idea of the quality associated with a brand. They also argue that regulations on price are necessary so that passengers will not need to worry about the price a particular driver is offering.

Just like other arguments made by taxi regulation advocates, it is possible to dismiss these as spurious. As discussed in the introduction, there are good examples of deregulated markets all over the world where these concerns simply have not materialized in practice. However, rather than continue the conventional debate that has been addressed elsewhere,

it is worth considering how a smartphone co-ordinated taxi service would make these objections irrelevant.

In the first instance, the problem of price would be solved immediately. There is no practical reason why a smartphone application could not offer the option of pre-agreed pricing for a route requested by a passenger and offered by a driver. With the phone already cognisant of his or her location, a passenger could request such a route by touching his or her destination on a map. Further, there is no reason why multiple drivers offering their prices for the route might not answer a request.

In the second instance, feedback from the driver's previous passengers would solve the reputation problem. This individualized feedback would be far more useful to passengers than the reputation of the company with which the driver is affiliated. Precedents already exist in websites such as eBay and Amazon. They use feedback from previous transactions to inform future ones. On these sites, people put considerable trust in others they have never met based on feedback ratings. If a bookseller on Amazon, or a trader on eBay has more than a few exceptional negative feedback ratings, the likelihood of anyone trading with them diminishes rapidly. This not only helps people avoid bad trades, but it also gives incentive to all traders to perform well.

Deregulation Objection Three: The dispatch tragedy of the commons

A final objection to deregulation is that in a deregulated market there would be something of a tragedy of the commons for dispatch services. Some argue that if drivers were not required to subscribe to a dispatch service, few would. The incentive for drivers would be to abandon dispatch services and try their hand at getting rides from taxi ranks, airports and street hails. Those who continued to subscribe would face higher costs and lose many of the incidental fares from street hails and ranks that would have otherwise supplemented their incomes. Ultimately, phone dispatch services would be underprovided, or even completely non-viable. The picture painted is of a classic tragedy of the commons where every driver acts in his or her own immediate best interest but the aggregate result is pleasing to no one.

As usual, the conventional argument is unsatisfying. When the New Zealand city of Wellington deregulated taxis, the number of dispatch services expanded.¹⁴ Let us turn to examining how the disruptive technology of smartphone co-ordinated taxi networks would make this argument irrelevant.

In this final case, the answer is very clear. A taxi industry co-ordinated by a network of smartphones would have no need for telephone dispatch to the extent that passengers have smartphones and the ability to use them. The smartphone network would be a dispatch system in its own right, albeit one that is much more

efficient due to its GPS capability, its ability to create mini auctions between drivers set to serve a particular passenger, and its built-in feedback regarding the quality of the drivers' service and the passengers' civility. It would also come at zero marginal cost to drivers, most of whom already have cellphones, so there would be no incentive not to have one.

In the end, everyone will be a smartphone user in the same way that everyone is now a user of conventional telephones, televisions and other home appliances. In the short term, however, there will be some people (particularly the elderly) who cannot or will not use smartphones to order taxis. This might seem to be an unanswerable objection to a taxi network co-ordinated by smartphones. However, it takes little imagination to see a simple way around this problem. There is no reason why a new kind of taxi dispatch company would not spring up to manage this problem. Such a company would take a conventional phone call and use a smartphone to request a ride, accept an offer and then relay the details to the customer by phone. Such a company need not have any formal relationship with the customer or any taxi driver; it could take payment electronically either from the customer's telephone account or a commission from the driver. Either possibility could be achieved by software programming.

Other Practical Objections: Taxation, phone use and critical mass

Could a decentralized network of smart-phones really replace conventional taxi infrastructure? So far we have argued that the technology exists, will soon become ubiquitous and will have inherent advantages over traditional taxi infrastructure. However, some might argue that the Canada Revenue Agency's ruthless pursuit of taxes on all transactions, the municipal and provincial bans on mobile phone use in moving vehicles and the need to reach a critical mass would mean the paradigm envisioned in this paper never quite becomes real.

The advent of a taxi dispatch system where online payments are made to a myriad of individual traders would make it more difficult for the tax department to collect revenue from individuals than from a small number of firms. This would be a problem for the CRA rather than for the taxi industry, unless the CRA became aggressive at prosecuting operators accused of tax evasion.

In such a scenario, drivers might have an incentive to flock back to conventional firms that offer an umbrella from CRA prosecution. It is difficult to predict whether this scenario would play out and to what extent. Perhaps the best evidence we have is that, as a practical matter, tax departments have not been able to disrupt the growth of similar micro e-commerce activities such as those taking place on eBay and Amazon. This objection is an important one, but it is not necessarily fatal to the emergence of a smartphone co-ordinated taxi network.

Many jurisdictions are banning the use of mobile phones in moving vehicles. Nevertheless, they continue to allow the use of hands-free mobile phones, GPS devices, taxi fare meters and taxi dispatch radios. The use of a mobile phone with a touch screen mounted on a dashboard would be more akin to these allowable devices than to the making of calls on a mobile phone. To take further pressure off drivers in motion, per kilometre prices and willingness to travel to get a fare could be pre-set. Software programmed to take account of their location and whether they are in service would make these calculations dynamic. This would not be much different from currency trading software where traders set automatic price points to buy and sell. The software could even offer rides without the drivers' case-by-case permission, essentially becoming an intelligent, location-aware scheduler. The technology described in this paper need not be a prohibitive disruption to the driving of a vehicle.

Finally, some might object that the system would never reach a critical mass. A network with few drivers would be useless to passengers, and a network with few passengers would be useless to drivers. How would such a network cross the divide from zero use to a critical mass?

Several possible scenarios could solve this problem.

One would involve drivers using the service and encouraging favoured customers to use it as well. This would not be too different from the current practice of drivers giving their personal cellphone numbers to favoured customers in order to short

circuit the conventional dispatch in order to get desirable fares. Over time, the quicker feedback and response of the smartphone system would undermine the telephone dispatch system, allowing it to gain a critical mass where it would be in everyone's interest to use it.

A second scenario is that people outside the taxi industry would begin to use smartphone networks to co-ordinate ride sharing. The Frontier Centre has argued elsewhere that, quite apart from the taxi industry, this may become a reality across major cities.¹⁵ (An excerpt of this argument appears in the section *The Technological Change: Smartphones become ubiquitous*, pg. 8.) People who are not necessarily taxi drivers or passengers would begin to offer each other taxi-like services, perhaps beginning with programs promoted on university campuses or by other community groups such as churches. As the use of ride-sharing applications became more widespread, conventional taxi drivers would be motivated to enter this market.

Perhaps most important, any such service would come at zero marginal cost. Much like getting a free Hotmail account in the 1990s, the new user would pay nothing for the service other than five minutes of entering personal data. With no cost to join the service, there would still be an incentive for people to join even in the early stages when the lack of users makes its benefits very small.

Over time, the quicker feedback and response of the smartphone system would undermine the telephone dispatch system, allowing it to gain a critical mass where it would be in everyone's interest to use it.

The inevitability of policy reform

To the extent that the predictions of technological development laid out in this paper materialize, a fundamental restructuring of the taxi industry will be inevitable. There will be a better way of doing things in the taxi industry. The current infrastructure of in-car radios, telephone banks and municipal regulatory bodies looks set to become redundant, as passengers and drivers can request, offer and accept rides, negotiate prices, assure each other of their reputations and transfer payment without the need for any external infrastructure.

Municipal regulators should realize that the future value of a taxi plate is much less than current holders think it is. A plate in Calgary, for example, trades for \$150,000 and returns \$200 per week or \$10,000 per year in rental fees. Even without discounting for inflation or the cost of borrowing, it would take 15 years to realize a return on a Calgary plate. Well within that period, plate values will likely reduce to zero, as de facto deregulation takes place.

Given such a future, Canadian municipalities that currently regulate the number of cabs allowed to operate in their jurisdiction and the fares they are allowed to charge face two broad choices. Both will result in a taxi market that is essentially beyond the control of municipal regulators, and both will be difficult in the transition phase. One will be politically easy in the immediate term but will lead to considerable discord and law breaking five years down the road. The other will be “clean” and legal but will require considerable political courage in the immediate term.

The first is the do-nothing approach. It will avoid political conflict with the stakeholders who currently have a considerable investment in taxi plates by allowing them to retain their nominal monopoly indefinitely. This approach may also result in considerable strife, as smartphone co-ordinated taxi networks become a reality. It will become increasingly difficult to enforce the current regulations, as rogue taxi drivers will find it increasingly easy to do business without detection by authorities. Incumbents will still lose their monopoly, but they will become increasingly angry as rogue operators entering the market erode the value of their plates.

The second is the proactive approach. Municipalities should realize that their current regulation is designed for an economic order that will likely go the way of travel agents, newspaper classified ads, and brick and mortar bookstores; all destroyed by a more efficient online network. Municipalities should call the incumbent operators’ bluff on the value of plates and begin to open up the industry by continually increasing the number of plates and simultaneously lifting fare regulations. If they take this route, they will not only avoid the discord that would result from rogue operators having to operate outside the law, but they would also increase competitive pressure and hasten the adoption of the kinds of technology discussed in this paper.

Conclusion

In its short life, the Internet has claimed many victims. Once upon a time, travel agents, newspapers specializing in classified advertisements, brick and mortar bookstores and hardcover encyclopaedias were seen as indispensable parts of the economy. Today, they are going if not already gone, swept away by Expedia, eBay, Amazon and Wikipedia, respectively. In each case, the relentless growth in computer power, communication bandwidth and the networks they support, have provided better services at a fraction of the cost.

Today, the taxi industry, with its firms, government regulators, telephone dispatch systems and brands, seems just as essential as all of the above industries did 10 years ago. However, the convergence of compatible software, ubiquitous connectivity, GPS's and mobility have the potential to do to the taxi industry in a very short time what similar disruptive technologies did to other industries.

Because of the unusually heavy role that government plays in regulating the taxi industry compared with other industries, the coming disruption to the taxi industry is not only a matter of technological curiosity but of public policy. If municipal regulators do not act quickly, they will find themselves implicated in a messy technological disruption sooner than they think.

...the coming disruption to the taxi industry is not only a matter of technological curiosity but of public policy.

Endnotes

1. Hara Associates Inc. (2010), "Taxi Supply Demand Ratio for the City of Calgary, Phase I: Assessment of Current Service," Appendix B, p. 2. Available online at http://www.calgary.ca/docgallery/bu/taxi_commission/2010/Draft%20Calgary%2051.pdf.
2. Prentice, B. (2009), "Submission to the Manitoba Taxi Board regarding the application for a fare increase December 2, 2009," pp. 8-11.
3. Seymour, D. (2009), "The Case for Taxi Deregulation." Available online at <http://www.fcpp.org/publication.php/2615>, and Seymour, D. (2009), "Who Owns Taxi Licenses?" Available online at <http://www.fcpp.org/publication.php/2925>.
4. Morrison P. S. (1997), "Restructuring Effects of Deregulation: The Case of the New Zealand Taxi Industry." *Environment and Planning A* 29(5), p. 926.
5. OECD (2008), "Taxi Services Regulation and Competition," p. 8.
6. Moore, A. and Balaker, T. (2006), "Do Economists Reach a Conclusion on Taxi Regulation?" *Econ Journal Watch*, Volume 3, Number 1, January 2006, pp. 109-132.
7. See this op-ed published in the Saskatoon Star Phoenix, September 24, 2009, for a refutation of the Saskatchewan studies. Available online at <http://www.fcpp.org/publication.php/3433>.
8. Hara Associates Inc. (2010), "Taxi Supply Demand Ratio for the City of Calgary, Phase I: Assessment of Current Service," Section 3-2. Available online at http://www.calgary.ca/docgallery/bu/taxi_commission/2010/Draft%20Calgary%2051.pdf.
9. Wayne Bill showed up at a Frontier Centre policy event on taxi deregulation with the apparent purpose of derailing it and is quoted as an industry stakeholder in Hara Associates Inc. (2010), "Taxi Supply Demand Ratio for the City of Calgary Phase I: Assessment of Current Service," Appendix A, p. 1. Available online at http://www.calgary.ca/docgallery/bu/taxi_commission/2010/Draft%20Calgary%2051.pdf.
10. Seymour, D. (2010), "I've Seen the Future and the Private Car is Alive and Well," Frontier Centre for Public Policy. Available online at <http://www.fcpp.org/publication.php/3504>.
11. Statistics Canada (2009), "Residential Telephone Service Survey," *The Daily*, June 15, 2009. Available online at <http://www.statcan.gc.ca/daily-quotidien/090615/dq090615c-eng.htm>.
12. Schonfeld, E. (2010), "Smartphone Sales Up 24 Percent, iPhone's Share Nearly Doubled Last Year," Techcrunch. Available online at <http://techcrunch.com/2010/02/23/smartphone-iphone-sales-2009-gartner/>.
13. Gartner (2011), "Gartner Survey Shows U.S. Consumers More Likely to Purchase a Smartphone Than Other Consumer Devices in 2011." Available online at <http://www.gartner.com/it/page.jsp?id=1550814>.
14. Morrison P. S. (1997), "Restructuring Effects of Deregulation: The Case of the New Zealand Taxi Industry," *Environment and Planning A* 29(5), p. 918.
15. Seymour, D. (2010), "I've Seen the Future and the Private Car is Alive and Well," Frontier Centre for Public Policy. Available online at <http://www.fcpp.org/publication.php/3504>.

Further Reading

September 2009

Who Owns Taxi Licences?

<http://www.fcpp.org/publication.php/2925>

February 2009

The Case for Taxi Deregulation

<http://www.fcpp.org/publication.php/2615>

For more see

www.fcpp.org