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Effectively Managing Connected Mobility Marketplaces

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Mobility and the Connected City

Effectively Managing Connected Mobility Marketplaces

Stephen Goldsmith and Matt Leger

February 2020



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CONTENTS

Executive Summary	1
Introduction	1
The Role of Government: Regulatory Levers for Managing a Mobility Marketplace	6
Public-Private Partnerships: A Unified Vision for Connected Mobility	12
Conclusion	17

EXECUTIVE SUMMARY

As new innovations in mobility have entered the marketplace, local government leaders have struggled to adapt their regulatory framework to adequately address new challenges or the needs of the consumers of these new services. The good news is that the technology driving this rapid change also provides the means for regulating it: real-time data. It is the responsibility of cities to establish rules and incentives that ensure proper behavior on the part of mobility providers while steering service delivery towards creating better public outcomes. Cities must use the levers at their disposal to ensure an equitable mobility marketplace and utilize real-time data sharing to enforce compliance. These include investing in and leveraging physical and digital infrastructure, regulating and licensing business conducted in public space, establishing and enforcing rules around public safety, rethinking zoning and land use planning to be transit-oriented, and regulating the digital realm to protect data integrity.

INTRODUCTION

Over the last decade, public officials and mobility advocates have increasingly pursued the goals of “connected mobility”: to build an ‘on-demand’ set of transportation options that brings together the best of transit, bikes, shared cars, scooters, and other modes to reduce congestion, improve air quality, and increase equitable access to transportation.¹

To date, however, local officials have struggled to apply existing planning and regulatory approaches to new disruptive mobility solutions like ride-sharing and dockless scooters. As discussed in the first piece of this series, “Prioritizing Public Value in the Changing Mobility Landscape,”² local governments have faced challenges in their

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1 Shannon Bouton, Eric Hannon, Stefan Knupfer, and Surya Ramkumar, “The Future(s) of Mobility: How Cities Can Benefit,” McKinsey & Co., June 2017, <https://www.mckinsey.com/business-functions/sustainability/our-insights/the-futures-of-mobility-how-cities-can-benefit>.

2 Stephen Goldsmith and Betsy Gardner, “Mobility and the Connected City: Prioritizing Public Value in the Changing Mobility Landscape” (policy brief, Ash Center for Democratic Governance and Innovation, Harvard Kennedy School, January 2020), https://ash.harvard.edu/files/ash/files/ash_mobility_goldsmith_gardner_final_.pdf.

attempt to manage shifts in urban landscapes, consumer choices, and technologies that have impacted mobility. These issues include:

1. The Impact of Connectivity on Mobility

Connectivity has affected both the supply of and demand for transit solutions. Ubiquitous mobile devices, coupled with social media platforms, IoT deployment, 4G and 5G internet speeds, transportation network companies, other shared vehicles, and advanced analytics have put stresses on antiquated city operating systems.

2. Return to Cities, Gentrification; Movement Away from Jobs

As companies move their jobs into cities to be closer to a larger talent pool, suburban low-wage workers face even longer commutes. This has led to an increase in demand for better public transit and micromobility, as well as last-mile solutions to ease commutes for workers.

3. E-Commerce and Delivery

The explosion of e-commerce and the emergence of new delivery systems such as Uber Eats and grocery delivery have significantly disrupted mobility in recent years; so much so, in fact, that a *New York Times* analysis found that households in New York City “now receive more shipments than businesses.”³ This delivery economy presents major implications for residential areas that were not designed for truck traffic and are absent loading zones for commercial activity.

4. Effect of Digital Maps

We take them for granted now, but the dependency on digital maps has arguably had a greater impact than any other single factor on transit behaviors. These digital twins of a city’s infrastructure control where people drive, route trucks, and even walk. Commuters are now dependent on apps like Waze, which uses crowdsourcing to communicate road conditions among drivers to help them navigate through cities, and yet the private-sector entities that are responsible for maintaining these maps have been able to operate with little to no oversight. As a consequence, contributors to the

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3 Matt Haag and Winnie Hu, “1.5 Million Packages a Day: The Internet Brings Chaos to NY Streets,” *New York Times*, October 27, 2019, <https://www.nytimes.com/2019/10/27/nyregion/nyc-amazon-delivery.html>.

Waze platform sometimes incorporate inaccurate or intentionally misreported road closures, which have had a significant impact on traffic conditions.⁴

5. Recognition of High Cost of Parking and the Value of the Curb

New mobility solutions are changing how much parking one needs and are also turning commercial curb space from a liability to be maintained to an asset to be managed. Ride-share cars do not typically need parking, but they do need curb space to load and unload passengers. Docked bike-share systems, and dockless bikes and scooters, meanwhile, utilize space on sidewalks. These changes are forcing cities to completely rethink curb planning and regulations.

Connected mobility solutions and the real-time analytics capabilities they present provide a whole new set of opportunities for local government. The factors set out above, coupled with the current lack of equitable and sustainable transit options, provide the mandate for change and the tools with which to manage that change.

The Challenge: 19th-Century Regulatory Frameworks Meet 21st-Century Options

Public officials taking on the job of configuring and regulating transit face daunting obstacles. They need to see the future and regulate in a dynamic way, while at the same time harvesting the benefits of what technology promises and restricting the dangers and abuses it can engender.

For too long, municipal government regulated transit with multiple, siloed agencies using insufficient and fragmented data, with a focus too often on the vendor (taxi owners) and not the rider (urban residents). The ostensible purpose of regulation—to protect public health and safety—often became coopted by the regulated companies who used those goals as an excuse to erect barriers to entry to others (e.g., limiting medallions).

Local leaders have begun to experiment with different forms of regulation in recent years, but for the most part, government regulations—crafted decades ago in many cases—have not been designed to account for connected mobility options or

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⁴ Jonathan Littman, “Waze Hijacked LA in the Name of Convenience. Can Anyone Put the Genie Back in the Bottle,” *Los Angeles Magazine*, August 20, 2019, <https://www.lamag.com/citythinkblog/waze-los-angeles-neighborhoods/>.

their impacts on urban life. So as cities work to curb the negative externalities of new mobility options like ride share (e.g., increased traffic congestion), officials fall back on traditional regulations that are often agency- or mode-specific (e.g., placing caps on vehicles), often arguing for or relying disproportionately on expensive and bureaucratic forms of compliance like reporting. As a result, cities react too slowly, preoccupied with managing transit suppliers and ultimately bypassing the larger network and system opportunities; this negatively impacts residents in terms of reduced competition, limited access, and increased transportation costs measured in time and money.

To realize the benefits of connected mobility, cities must think more broadly about their regulatory framework, repositioning to focus on the end users of these emerging mobility options (i.e., city residents), while ensuring a competitive, non-oligopolistic marketplace. However, there has been insufficient collaboration among cities and mobility service providers concerning the balance between legitimate oversight and aggressive expansion of transit opportunities. For cities, some key questions remain unanswered around how such a ‘marketplace for mobility’ would be managed in practice, and around how they can transition from serving as builders and maintainers of infrastructure or operators of transit, to establishing the rules, regulations, and incentives that allow connected mobility marketplaces that are responsive to residents to flourish. In addition, city officials need to find the right balance that helps them respond quickly to the illegal actions of commercial transportation providers that utilize publicly maintained rights-of-way without compliance, without restricting the creativity and innovation of companies with new solutions.

The Opportunity: Data-Driven Regulation and Enforcement

The normal regulatory process for the last century involved identifying a public safety issue, holding hearings, and establishing rules (while rarely altering the basic foundational rules that were in place already). Identifying noncompliance was largely dependent on the observations of a safety officer or citizen. Today, new opportunities exist as the same technology breakthroughs that prove so disruptive to the urban transportation market also provide to public officials the tools necessary for proper enforcement. Data is the new regulatory currency involving such things as ride share, e-scooters, and dockless bikes. The data produced allows government to evaluate utilization, access, equity, proper parking locations, and more in real time and without human intervention. As city residents increase their dependence on these services, cities must leverage the data to develop new regulatory frameworks that encourage usage, while also steering connected mobility providers to develop business models invested in generating better public outcomes.

The expansion of IoT data sources, so long as they are accompanied by appropriate data privacy protections, furthers a broad range of enforcement reforms. Instead of requiring observation by an enforcement agent, data allows fees and fines to be levied based on locational data and IoT sensors. In this expanded enforcement framework, a scooter dropped in the wrong place or a TNC (transportation network company) driver caught on camera running a red light or endangering a pedestrian can trigger a fee automatically.

The bottom line is that connected mobility ecosystems, when leveraged and managed effectively by cities, produce cross-agency and public-private collaboration that enable cities to move from static, single-agency or -use regulation to a dynamic regulatory system that allows for modifications and enforcement of rules and regulations in real time. The availability of high-quality real-time data cascades through the many options available to the public.

THE ROLE OF GOVERNMENT: REGULATORY LEVERS FOR MANAGING A MOBILITY MARKETPLACE

Codified in city charters, state constitutions, and laws across the United States is the fundamental responsibility of cities and public entities to ensure safe passage on rights-of-way to protect public health, safety and welfare—and to govern commerce in the public right-of-way. Typically applied to commercial vehicles—e.g., “No Trucks Allowed”—this authority could be expanded to include the regulation of other for-hire vehicles.

In addition to the shaping of public values around connected mobility, government takes on other roles as it seeks ensure that the mobility marketplace operates correctly. As noted by Seleta Reynolds, general manager of the Los Angeles Department of Transportation, the role of government is to take the lead on planning and investing in infrastructure with an emphasis on ensuring competitiveness in the marketplace and equity in transportation. She noted that government must “put rules in place to prevent walled gardens or monopolies . . . and ensure that there is some public accountability once people grow dependent on those services.”⁵ She went on to assert that government must regulate and enforce rules around safety and accountability, and that data was key to fulfilling these roles.

For government to succeed in these areas, it must establish and enforce incentives that encourage responsible behavior on the parts of both the connected mobility providers and the consumers of such services. Keith Chen, Professor of Behavioral Economics at UCLA, reinforced this point, saying, “city managers . . . have to put the right incentives in place for mobility providers so that they behave responsibly rather than just pursue profits.”⁶ Governmental authorities can explicitly adapt a broad range of regulatory levers to more effectively manage connected mobility marketplaces while at the same time leveraging the data from these modes to inform public service

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5 Betsy Gardner, “Moving Beyond Mobility as a Service: Interview with Seleta Reynolds,” Data-Smart City Solutions, December 18, 2019, <https://datasmart.ash.harvard.edu/news/article/moving-beyond-mobility-service-interview-seleta-reynolds-o>.

6 Keith Chen (professor of Behavioral Economics, UCLA), in telephone interview with Betsy Gardner, November 12, 2019.

delivery and improve public outcomes (e.g., using trip data from dockless scooters to inform bus route planning and improve transit access).

Investing in Physical and Digital Infrastructure

Beyond regulating mobility providers to ensure that the public benefits from their services and the benefits they yield, government has a huge role to play in ensuring public infrastructure is built to further bolster those benefits. This includes programs such as Complete Streets and Vision Zero, which are designed to build roads and sidewalks in a way that ensures that streets are safe and accessible to everyone, regardless of their mode of travel. For solutions such as bike and scooter shares, protected bike lanes and dedicated parking (and no parking) zones are necessary for their safe and efficient use and the prevention of negative externalities from their use such as blocked sidewalks and illegal parking or dumping. To avoid leaning entirely on taxpayer money to build out this infrastructure, cities can leverage their infrastructure in negotiations with mobility providers to develop a revenue sharing agreement, where revenue from each individual ride can be shared with the city in exchange for helping build out the infrastructure that mobility providers need to facilitate and scale their solutions.

In addition to physical infrastructure like streets and sidewalks, government must also invest in digital infrastructure like mobile apps to help integrate these solutions in a way that builds a holistic transit network for all residents. For example, as discussed later in this report, cities across the country are working with public and private mobility providers in their cities to integrate all modes into a single app so that residents can streamline their travel options and pay on one platform with a single account. These efforts are critical to ensuring all residents have access to these modes of transportation and that all mobility solutions are utilized to their full potential.

Regulating and Licensing

To date, much of the new regulatory controversy has focused on the battle between incumbent mobility providers (e.g., taxis) and new mobility providers (e.g., TNCs). In many cities, these battles involve a TNC or micromobility provider ignoring or attempting to circumvent local law in order to scale more quickly, and an incumbent taxi service claiming that new mobility providers have an unfair market advantage due to lack of

regulation and oversight.⁷ New mobility providers ultimately complain that the regulators appear more interested in protecting incumbent providers than in helping consumers, and incumbent providers claim that the local government is failing to enforce the same rules that they have been required to operate under for decades. This has led to introduction of rules and regulations that attempt to address the concerns of these two sets of parties, rather than the end users of the services that need them most.

In this paper, we argue that government needs to embrace new mobility solutions but that it should also have a right to regulate as long as the companies depend on taxpayer-funded infrastructure like streets, curb space, and sidewalks. This regulatory approach includes reasonable conditions on the exchange of data; however, we do not explicitly advocate for specific types, categories, or forms of data, as jurisdictions could define their data requirements in differing ways according to their unique purposes and community.

Although mobility transactions are completed through an app, the provision of services occurs on public streets. Government's obligation to protect public health and safety, and to provide services to those without access to a car, gives it the general authority as spelled out by state law to condition the use of its streets. Unlike older forms of regulation, these efforts should be nuanced; for example, caps on the number of vehicles should depend on factors such as the level of utilization and time of the year (i.e., seasonal caps), and caps should fluctuate with compliance with these regulations. Additionally, vehicle safety efforts should be complemented and informed by sensor data and customer reports of safety concerns.

Some of the public's goals can be accomplished through simple rulemaking, such as not allowing taxis to be driven with faulty exhaust systems or brakes or letting TNC drivers drop off passengers in the middle of the street. Other goals require a more comprehensive licensing regime—for instance, those that require real-time data feeds to regulators. In addition, an evolving set of questions, first devised in Indianapolis for regulatory review purposes, can help city leaders assess new modes of regulating mobility marketplaces:

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7 Miranda Katz, "Why Are New York Taxi Drivers Killing Themselves?" *Wired*, March 28, 2018, <https://www.wired.com/story/why-are-new-york-taxi-drivers-committing-suicide/>.

- How and why is a restriction on a transaction or a business imposed?
- How can regulations be as simple, fair, and enforceable as possible?
- Is the cost of regulation greater than the benefit it creates for the community?
- How are existing regulations assessed or evaluated for continued relevance?
- Is existing regulation lacking or excessive in some manner?
- Do regulations increase quality of life and provide public value?⁸

These questions keep the focus on the benefit to the public, helping avoid the risk of preemption by any one vendor.

Public Safety

Most major cities participate in Vision Zero to bolster street safety efforts based on “the ethical belief that everyone has the right to move safely in their communities, and that system designers and policy makers share the responsibility to ensure safe systems for travel.”⁹ Despite the substantial gains from these initiatives, too rarely do local officials working on these programs address the basic safety questions around scooters dropped on sidewalks, and TNCs and delivery trucks double-parked in congested traffic lanes.

Compliance with safety rules can be secured through basic mechanisms like traffic fines, of course, but also through pricing that encourages better behavior from providers and users alike. For example, how small vehicles are parked on public property falls under public health and safety, and dockless scooters and bikes are at the forefront of this debate. If commercial companies utilize public sidewalks and streets, like bike and scooter share companies do, then public officials have the right to set rules around where the vehicles stop or park. While cities can utilize designated drop-off and pick-up zones, institute curbside management rules and technologies, and enforce lane violations (e.g., fining a driver of a commuter vehicle for using a bus/bike lane to cut through traffic) with traffic cameras and police enforcement, these approaches are dependent on local government enforcement. Instead, city leaders should be working

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8 “Origination of a Regulation,” Data-Smart City Solutions, February 18, 2015, <https://datasmart.ash.harvard.edu/news/article/origination-of-a-regulation-598>.

9 “What is Vision Zero?,” Vision Zero Network, <https://visionzeronetwork.org/about/what-is-vision-zero/>.

alongside mobility providers to leverage location and ride data to enforce these rules. For example, scooter companies currently require riders to take a picture of their parking job when they have completed their trip to ensure they are parked properly. However, this method is mostly used as a social tool to encourage better behavior on the part of users and is not currently used to enforce parking rules. As noted by Professor Chen of UCLA, local leaders should work to incentivize scooter providers to spur the adoption of tools like artificial intelligence that can identify improper parking jobs and flag them so the company can levy a fine on that user.

Zoning and Land-Use Planning

In this paper, we do not argue for a defined set of regulatory solutions but rather we maintain that cities have a broad array of tools and interconnected levers already in place that they can utilize to manage new forms of transportation. For example, land-use planning and curb management can be viewed as different doors into a common area. Through land-use planning, one can see the critical role that sidewalks, curbs, and roads play in the life of the community and how planning needs to address these uses as new mobility solutions disrupt everyday life. Alternatively, a transportation engineer considering new parking and road diet designs for use by micromobility solutions will soon find themselves affecting the feasible use of the land.

Additionally, zoning that encourages transit-oriented development will reduce the amount of parking required of a real estate developer but increase the TNC drop-off zones in the area as the best use of the curb. Traditionally, cities have instituted fixed ratios of parking to numbers of new units, bedrooms, or spaces per linear feet of curb on developers looking to build housing units in a city; however, this method presents an obsolete, slow-to-adapt process that is incapable of keeping up with modern changes in mobility. Alternatively, establishing rules that allow for the constant reallocation of curbside usage, and charging fees for those uses, allow for a more dynamic way of managing changes in mobility marketplaces. Unlike previous planning efforts that set specific parking zones and fees, newer curb management models that use dynamic pricing and decision-making will make the most of scarce urban infrastructure.

Regulating the Digital Realm

Whether they are guiding a commuter away from traffic on the way to work, directing a TNC driver on the best way to a drop-off destination, or supporting the sophisticated logistics of a delivery truck route, digital maps control the flow of traffic in cities today. While maps can be very powerful tools for moving people around, there can be negative consequences for their widespread use. Los Angeles city council member David Ryu has been pushing the city to pursue legal action against Waze for several years, citing that the app directs vehicles through residential neighborhoods in his district, which are now overrun by rush hour traffic, damaging street infrastructure,¹⁰ while others insist that individuals hack into Waze to intentionally mischaracterize a road as closed¹¹ to prevent the very use about which Ryu complains.

To the authors, these two scenarios differ in that the former takes advantage of private information to suggest better routes for cars. In the latter, someone is intentionally putting out misleading information. We include this challenge under the section on levers government must take control of in mobility marketplaces to draw attention to the parameters for such services. After all, a Waze notification of a road closure or of a quick detour around congestion has far more influence today over the flow of traffic than any road sign or smart traffic light that cities are utilizing.

Example: Using Levers to Advance Transit Equity Goals

We can see how these various levers can be combined to advance public policy goals. For example, most major cities are working to address major inequities in access to public services, particularly around public transit. Long commute times disproportionately punish low-wage workers who either do not have personal vehicles or who are forced to live far outside of cities due to their high cost of living. However, when new mobility services like those for scooters, bikes, and cars are introduced, they often predominantly go to upscale communities with more disposable income rather than to neighborhoods that need these solutions most, like those just mentioned.

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10 City of Los Angeles, "Councilmember Ryu Calls on City of Los Angeles to Consider Legal Action Against Waze," news release, April 17, 2018, http://davidryu.lacity.org/press_release_waze.

11 Jonathan Littman, "Waze Hijacked LA in the Name of Convenience. Can Anyone Put the Genie Back in the Bottle," *Los Angeles Magazine*, August 20, 2019, <https://www.lamag.com/citythinkblog/waze-los-angeles-neighborhoods/>.

To combat this, city officials could require a fairer distribution of scooters as a condition of operating in the city, and they can monitor their location in real time through GPS data sharing. To ensure compliance, Professor Chen explains that cities must utilize what he calls “smart caps” and also find the right incentives.¹² For example, cities can institute various charges or discounts when scooter providers comply with equitable service delivery. This is exactly what Detroit’s Smart Mobility Strategist Justin Snowden and the city’s Office of Mobility Innovation have sought to do in their pilot program with scooter companies. As a condition of earning and maintaining an operating license, Detroit is working with scooter providers to ensure residents outside of the downtown area have access by requiring a 70/30 split: 70 percent of scooters can operate in the downtown area, while 30 percent must go to the outer areas of the city, with an emphasis on placing scooters in areas underserved by public transit. In exchange for compliance, scooter providers receive a higher fleet cap.

City officials can set aside capital dollars to provide safe, well-lit and dry areas to park shared vehicles or to let out TNC passengers near transit locations. Similarly, just as housing planners have allowed developers to construct larger buildings with more units if they also yield an increase in affordable units, here, planners can work hand in hand with transportation and community advisors to reward service that is more equitable.

PUBLIC-PRIVATE PARTNERSHIPS: A UNIFIED VISION FOR CONNECTED MOBILITY

Connected mobility needs definitions. A TNC or scooter company providing rides in a city is not a partner of the city; rather it occupies the place of regulated industry. When the city chooses a parking app that it authorizes motorists to use, and negotiates a contract with terms and conditions, that is a public-private partnership (P3). Cities negotiate arrangements with entities that occupy both categories; an example

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¹² Betsy Gardner, “Beyond Carrots and Sticks: Behaviorally-Smart Approaches to Micro-Mobility,” Data-Smart City Solutions, December 12, 2019, <https://datasmart.ash.harvard.edu/news/article/beyond-carrots-and-sticks-behaviorally-smart-approaches-micro-mobility>.

is Via, a company that both provides commercial services and contracts with cities to manage rides.

What complicates the P3 framework for cities with respect to connected mobility is the need for planning and regulation that strings together intentional, contracted P3s and regulated commercial interests in a fashion that accomplishes the broader public values discussed above. As cities look to regulate and manage connected mobility marketplaces, they need to clearly define the goals they wish to achieve (e.g., sustainability, transportation equity) and how they can align those goals with those of the mobility providers while also supporting the needs of residents that use the services.

The following are three major areas where connected mobility providers and local governments can work together to create mutually beneficial outcomes.

1. Mobility Data Sharing and Real-Time Analytics

Shared data is the gold of connected mobility. Utilizing the authority of the city to require data sharing as a condition of operating in the city supports improved data-driven policy and decision-making on the parts of the city and the mobility provider. In outlining data-sharing requirements, however, it is important that cities are cognizant of data privacy and protection for end users, and that only the data that is absolutely necessary for planning purposes is required by the agreement. The following is an example of how New York City leveraged mobility data sharing in their negotiations with Lyft in 2014 to improve transportation outcomes for residents and enforce rules and regulations.

In 2006, Mayor Bloomberg required all taxis in New York City be equipped with GPS so that the city could oversee how taxi services were being utilized. Equipping all taxis with GPS allowed the city's Department of Transportation (DOT) to analyze data on pick-up and drop-off locations, fares, taxi numbers, and time stamps, and also allowed them to monitor vehicle locations every 30 seconds. This gave the DOT the opportunity to monitor traffic speeds and congestion, as well as alter signal timing to help keep traffic flowing.¹³ Beyond traffic, former commissioner of NYC's Taxi and

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¹³ Stefanie Le, "How NYC Learned to Stop Worrying about Ride-Hailing Services and Utilize Data," Data-Smart City Solutions, November 25, 2019, <https://datasmart.ash.harvard.edu/news/article/how-nyc-learned-stop-worrying-about-ride-hailing-services-and-utilize-data>.

Limousine Commission (TLC) Meera Joshi acknowledged that the data also helped improve pay for drivers by setting caps and fares based on demand. In addition, the data proved invaluable in making the case that the yellow cabs barely served boroughs outside of Manhattan, which was critical in the debate concerning adding outer borough green cabs in 2012.

When ride-share companies entered the NYC market, city officials already had a data standard in place and understood the critical value of ride-hailing data. When Lyft first tried to enter the market in July 2014, it sought to circumvent TLC rules that required all drivers for ride-hailing services be vetted by TLC.¹⁴ The ride-share company also wanted to deploy as many vehicles as possible and they wanted their drivers to be able to drive at their leisure—a standard that the incumbent ride-hailing services vehemently opposed. In exchange for the ability to let Lyft drivers work flexibly, the TLC asked that Lyft share with it data about trips taken using their services so that they could monitor usage while also providing a tool for accountability and safety. For example, the city used red light cameras to take pictures of the license plates of vehicles that ran red lights and required that Lyft share drivers' contact information to facilitate collecting penalties. They also set caps on the number of hours drivers could ride with a passenger on board to cut down on fatigue, and penalized drivers who went over the limit.¹⁵

As providers continue to proliferate and data-mining tools get more sophisticated, the importance of data sharing will only increase, as will the number of challenges. Here are just a few of the many questions city leaders will have to answer:

- How can enough locational data be shared in a way that is meaningful without violating the privacy of consumers, and how can the parties protect against reidentification?
- How can cities protect the legitimate proprietary interests of a private company when a competitor can in most cases make a freedom of information request for a competitor's data?

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¹⁴ Christine Lagorio-Chafkin, "Lyft in New York City: Let's Try This One More Time," *Inc.*, July 25, 2014. <https://www.inc.com/christine-lagorio/lyft-another-nyc-launch-attempt.html>.

¹⁵ Stefanie Le, "How NYC Learned to Stop Worrying about Ride-Hailing Services and Utilize Data," Data-Smart City Solutions, November 25, 2019, <https://datasmart.ash.harvard.edu/news/article/how-nyc-learned-stop-worrying-about-ride-hailing-services-and-utilize-data>.

- How does a city provide an API or platform layer against which any commercial user of the curb or sidewalk can secure real-time information on pricing and availability?
- What health and safety verification information should the city demand vendors produce to prove compliance with regulations?

2. Public Engagement and Business Model Alignment

While connected mobility companies, like all other private-sector companies, are under no obligation to serve the public's interest in terms of addressing public issues like transportation inequity, many of them want to do so if they can still maintain a business model that ensures profitability. At the same time, cities have much to gain from the addition of connected mobility solutions but must not forget the needs and concerns of residents as they look to allow connected mobility solutions onto public streets. Achieving this goal requires that companies and local governments gain a better understanding of the public's needs. Finding an agreed upon solution that addresses everyone's concerns requires engaging with the public directly.

As several scooter-share companies moved to enter the market in Detroit, Justin Snowden wanted to ensure that the companies shared the city's concerns about equitable service delivery. In understanding that "transit equity" and "equal access" can mean different things to different people, Snowden emphasized the importance of "diligent customer discovery" where the city and mobility providers must "engage with residents to understand their needs and then translate those needs to outcomes that benefit them." Snowden set up a roundtable discussion among residents and the scooter providers to ensure the residents' concerns were communicated directly to both the city and the service provider.

Following this engagement, city officials then collaborated with the scooter providers to help them align their business model with residents' needs. These discussions surfaced the significance of overcoming the problems of residents who do not have access to smartphones with data plans or the credit necessary to pay for services. To increase access for this demographic, the scooter companies declared that they would upgrade their system to support alternative payment options and sign a revenue-sharing agreement in exchange for investments in infrastructure like bike

lanes. The scooter providers also offered trip data as part of their negotiations for the right to operate in the city.

As noted by Meera Joshi during the Future of Connected Mobility conference¹⁶, data used for public policy initiatives like ride share must “always be gut-checked with residents” because “while community meetings can be painful . . . some practical reality is missing from those data analyses and you miss an opportunity to make good policy if you don’t combine those two.”

3. Interoperability

In many cities across the US, moving from one mode of public transit to another has traditionally required separate payments or passes that produce major pain points for riders, particularly those who rely on public transit to get around or out-of-town visitors attempting to figure out a new payment system.¹⁷ What once seemed like a breakthrough in the use of a card instead of cash, or an app to pay for parking, now seems like an obstacle to transportation planning and use. It has become increasingly imperative for cities in a region and their regional transit entities to collaborate on APIs and other protocols necessary to ease the process for the customer and to facilitate the exchange of data.

In recent years, several cities across the United States including San Francisco; Washington, DC; and Los Angeles have announced plans to streamline transit payments and integrate app solutions. Others, such as Atlanta, have supported “multi-tenancy” so that drivers can use various authorized applications to pay for curbside parking. Seleta Reynolds of the Los Angeles DOT believes the next step is creating a solution that helps commuters map out their entire trips with multi-modal transit. A more ambitious goal for Reynolds is moving towards an end goal she coined “Universal Basic Mobility” (UBM) where residents who cannot afford

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¹⁶ Meera Joshi (outgoing Commissioner, New York City Taxi and Limousine Commission), in discussion at Future of Connected Mobility Conference, Harvard Kennedy School, October 2019. For more insights from this conference, see the first paper in this series: “Mobility and the Connected City: Prioritizing Public Value in the Changing Mobility Landscape,” https://ash.harvard.edu/files/ash/files/ash_mobility_goldsmith_gardner_final_.pdf.

¹⁷ Matt Blanks and Will Judge, “Inclusive Mobility: Four Insights to Ensure Your City’s Transit Infrastructure Works for Everyone,” November 2011, City Possible, MasterCard Transit Solutions, <https://citypossible.com/wp-content/uploads/2019/11/Making-Tech-Work-for-People-Inclusive-Mobility.pdf>.

typical transit fares can gain access to a “mobility wallet” that includes a budget for different transit options.

CONCLUSION

There are three major changes occurring simultaneously in transportation and mobility that city leaders are being forced to grapple with: 1) technology is rapidly changing the way people move around cities; 2) new mobility solutions are proliferating, adding to the breadth and complexity of the mobility marketplace; and 3) on-demand e-commerce and other delivery services are emerging. While these major changes occur, people and jobs are moving to cities at greater rates than ever, putting increased pressure on city operating systems to make large-scale change.

Cities with slow-moving city regulatory systems oriented around traditional modes of transit struggle to adapt with the major changes listed above. Alternatively, regulatory systems designed with the consumer or resident at the center, and that leverage the power of data analytics, will be better equipped to effectively manage a rapidly changing mobility marketplace. Short-term issues of refereeing one provider versus another can drown out more important issues such as traffic congestion, sustainability, equity, and access in the face of these arguments, thwarting true progress. Nevertheless, cities possess new means of regulating these complex marketplaces, especially when residents are intentionally included both in the planning and in the evaluating of the quality of service. Cities must rethink how they approach mobility, as old-school regulatory modes are no longer effective in today’s world.



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