

Transportation Network Companies and the Future of Shared Mobility

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1. Introduction

Ride-hailing services like Uber and Lyft were born out of a push toward the possibility of a sharing economy empowered by technological advances such as the Internet and the smartphone. The sharing economy is defined as a system that facilitates the transaction of services or resources (Rosenblat 2017). This concept, which has also led to the founding of other web-based application services such as Airbnb, is superseded by another concept—the gig economy, which is defined as an online platform where work is what is being transacted (Rosenblat 2017). This informal, temporary labor force is what has allowed ride-hailing companies like Uber and Lyft to grow exponentially, with Uber operating in 84 countries at 1 million rides a day as of 2017 (Uber 2017).

As ride-hailing companies become more ubiquitous and integrated into the day-to-day lives of citizens, municipalities have been forced to adapt, employing different methods of regulation with varying rates of success. These methods address different types of problems that we have categorized as first generation or second generation according to the increased pervasiveness of ride-hailing and its evolving relationship with users and government over time. The first generation refers to issues with governance that arose in the advent of the app-based shared economy, as cities grappled with how to govern a technology company that had a physical stake in the built environment. These first-generation issues include: state preemption of market entry, defining TNCs and determining how they should be regulated. The second generation refers to new issues of governance and regulation that have evolved as Uber and Lyft transcend their role as market disruptors and come to dominate the market. These issues are: labor rights, integration and replacement of transportation networks with TNCs, and public safety. In this paper, we analyze these second-generation issues with ride-hailing applications—specifically Uber and Lyft—and the effectiveness of the innovative policies that municipalities and states have put in place. We do

so through the lens of four case studies: responding to state preemption of local regulatory authority in Austin, Texas; a market cap and congestion surcharge in New York City; replacing and supplementing existing transit networks; and a labor lawsuit in California.

2. Methodology

In this paper we establish a framework for TNC policy analysis that places different policy issues into two chronological categories: first-generation and second-generation issues. We do so in order to ground current TNC policy innovation in an understanding of previous regulation implementation and in a timeline of TNC's evolving market role. The two categories are defined as follows:

- **First Generation:** First-generation issues center around the introduction of ride-hailing services and the barriers to their integration. These include state preemption of market entry, defining TNCs and determining how they should be regulated.
- **Second-Generation:** Second-generation issues are challenges that cities and governments are currently facing and center around labor rights, integration and replacement of transportation networks with TNCs, and public safety.

To support our research, we gathered policy insights through interviews with practitioners, comparing and contrasting a sample of local policies and programs, and summarizing lawsuits and legal decisions that have influenced how TNCs operate today.

3. History

Starting in 2009, Uber and other TNC's emerged as highly disruptive market players, which remains the case today. States and municipalities did not know how to respond to the emergence of TNC's when they were first introduced, but recognized their disruptive potential. Thus, governments quickly relied on the power of regulation, and 41 states responded by passing restrictive preemption laws at the advent of TNC's (DuPuis 2017). These defensive preemption laws against TNCs sought to protect traditional taxicabs and taxi medallions, whose market share has been in jeopardy since the emergence of TNC's.

Uber's seamless customer experience to hail, track and pay for a ride through a smartphone contrasts with local taxi companies, which are often local monopolies that lack the incentives to offer competitive service. While Uber's rating system and broad user base ensures a level of accountability, some municipalities do not impose background check requirements on Uber drivers as they do on taxicabs. Uber rides frequently undercut traditional taxi fares, but are also liable to algorithmically-determined "surge pricing" during peak hours, which can make them more expensive.

Emerging "Second-Generation" Issues

Many studies have explored these first-generation issues, and we have now entered a "second-generation" where Uber and other TNC's are well-established throughout much of the United States and have more influence over city officials, corporate interests, and transit operators than when they were first introduced.

Scholars agree that the growth of Transportation Network Companies (TNCs), the catchall term for ride-hailing services such as Uber and Lyft, has not alleviated congestion issues (Cramton

et. al 2018). Schaller Consulting’s 2018 report on “The New Automobility: Lyft, Uber and the Future of American Cities” shows that the incidence of TNC services has increased traffic congestion in major metropolises, and survey data reveals that around 60% of TNC users would not have made their trip, or would have utilized public transportation, walking or biking had TNC service not been available (Schaller 2018). Executives at both Uber and Lyft have voiced their support for congestion pricing—which tolls vehicles in a city’s central business district—as a method to reduce congestion and improve traffic flow in major cities (Cramton et. al 2018). TNC’s support of congestion pricing is unsurprising as it would ensure they can retain or expand their market share as personal vehicle trips become discouraged. Autonomous vehicles are expected to similarly increase congestion.

4. Case Studies

Several case studies demonstrate how Uber and other TNC's are now generating second generation issues related to labor rights for drivers, public safety, integration with and replacement of conventional public transportation, and expansion into other markets including bike-sharing, rental cars and food delivery. Governments are now contending with these second-generation issues surrounding TNC's. This paper seeks to help local government officials understand what other cities are doing to incorporate, support, or limit TNC's.

Case Study: Responding to Preemption in Austin, Texas

As TNCs continue to grow and expand their presence across the country and the world, the need to regulate has become a priority for municipalities. Since Uber and Lyft were launched in 2010 and 2012 respectively, municipalities have struggled with regulation because of the companies' duality as a location-based communication platform and transportation entity. When municipalities have attempted to regulate the companies as well as their labor force, Uber and Lyft have employed preemption as a strategy, using state law to override local law.

In 2015, one year after Uber and Lyft illegally began operations in Austin, Texas, municipal lawmakers agreed to pass laws that would require TNC drivers to undergo fingerprint background checks after a string of Uber-related sexual assault cases (Parker, 2016). In response, Uber and Lyft launched a campaign, placing a proposition on a special election ballot in 2016, that would eliminate fingerprinting for background checks. Despite the fact that Uber and Lyft had collectively contributed \$8 million to campaigning and lobbying, citizens of Austin decided against the proposition (Borkholder, Montgomery, Chen, Smith, 2018). Leading up to the campaign, the TNCs had employed various tactics that culminated in a threat to pull out of the city

if the proposition wasn't passed. In an interview with Denise Davis, an Austin lobbyist who has worked for market disruptors similar to Lyft and Uber, she referenced the tech companies' hubris, and their underestimation of traditional taxicabs' clout with local government as established community service providers. "They thought their convenience and cool product was worth more to locals than it was, failing to understand that their businesses directly impact local businesses: mom and pop taxi and limo services, people that we know and that are part of our communities, who also have lobby representation in government" (Davis, 2018). Following through on their promises, both Uber and Lyft pulled out of the city after the proposition failed to pass, instead focusing their energies on the state legislature. Within a year, state lawmakers had passed a law, HB100, that lifted fingerprint background checks and overruled laws made to regulate TNCs in several Texas cities (*House Bill 100*, 2017).

Uber and Lyft adamantly campaigned against labor regulations because it would formalize their previously flexible operations, which blur the boundary between independent contractor and employee. This would create a further restriction on the expansion of their gig-economy driven business model. Uber and Lyft have employed this same strategy of pulling out of cities and using preemption and state interference to override city regulatory powers across the country in [Florida](#), [Washington](#) and [Pennsylvania](#).

Case Study: Market Cap and Congestion Surcharge in New York City

Uber was first introduced to New York City in 2011 and has since taken over significant market share of the city's for-hire vehicles. A Todd Schneider study analyzing over one billion New York City taxi and TNC trips found that ride hailing apps made 65% more monthly pickups than taxis in December 2017 (Schneider 2018). In 2013 and 2014, the cost to purchase a New York

City taxi medallion peaked at \$1.3 million—a significant investment to enter the taxi-driving market which might require incurring debt or saving money for an extended period of time. That price has crashed over the last half-decade with the rise of for-hire vehicles and currently sits at around \$160,000 (Walker 2018). Due to this dramatic depreciation, many taxi drivers incurred a significant financial loss over time from ownership of taxi medallions. The discussion of taxi drivers' financial hardship has gained traction as several drivers committed suicide in 2018, reportedly from difficulty earning a living due to low wages and the abundance of for-hire vehicles on the road (Fitzsimmons 2018).

In August 2018, New York City became the first major American city to stop providing new vehicle licenses for ride-hailing services such as Uber. The amount of for-hire vehicles permitted in the city is now capped at its current number of around 100,000 while the city further studies the industry and begins setting a minimum pay rate for drivers of \$17.22/hour. Mayor Bill de Blasio's office said the cap will help ease traffic congestion and improve low driver wages (Fitzsimmons 2018). In February 2019, New York City enacted a congestion surcharge of \$2.75 per trip (\$2.50 for yellow taxis) on ride-hailing vehicles below 96th Street in Manhattan, with all generated revenue going to the Metropolitan Transit Authority (Hu 2019). The MTA cites the rise of TNC's as a reason for a recent decline in subway ridership (Mays 2018). The City is exploring a similar congestion pricing model for all vehicles in parts of Manhattan (McKinley & Hu 2019).

[A Center for New York City Affairs study on the need for and effects of a minimum driver pay standard](#) estimated that \$17.22/hour pay rate would increase driver earnings by 22.5% on average. However, an individual earning \$17.22/hour still does not make enough money to live affordably—to spend one third of their income on rent—in New York City's cheapest neighborhoods. Nearly two thirds of New York City drivers working for ride-hailing services are

full-time employees, approximately 80% of them purchased vehicles specifically to make a living driving them, and approximately 54% are the main provider of their family's income (Parrot & Reich 2018).

Uber fought against New York City's cap on for-hire vehicles, arguing that it will produce higher prices and longer wait times for passengers as the company may not be able to keep up with growing demand for ride-hailing services (Fitzsimmons 2018). It enlisted civil rights leaders to assist their campaign, characterizing the cap as a civil rights issue that will affect the ability of residents in New York City's periphery to access transit (Mays 2018). There could be some traction to this argument, that the cap will affect peripheral residents' ability to access transit, as the Schneider study also found that there are now 10 times more TNC vehicles than taxis in New York City's outer boroughs (Schneider 2018). Uber said it would reach out to and recruit for-hire vehicle owners who are already licensed but also work for other car services in New York City. It is worth noting that the legislation allows for the New York City's Taxi and Limousine Commission (TLC) to add more for-hire vehicle licenses if there is a clear need for vehicles in some neighborhoods (Fitzsimmons 2018). The twelve-month cap was enacted in August 2018, and the city plans to study the industry to support future policy during this time (Fleishman 2018). Thus, it remains to be seen how these recent policy shifts will impact for-hire vehicles and drivers in New York City.

Case Studies: Replacing and Supplementing Existing Transit Networks

The emergence and rapid growth of Transportation Network Companies has redefined mobility in various contexts, and has forced many traditional ("legacy") public transportation agencies to change their services. The convenience and comfort of TNCs has caused them to become an established trip choice – frequent Uber and Lyft riders in major cities spend \$75-100

per month (\$900-1,200 per year) on rides, while AAA quotes an average annual cost of car ownership at \$8,469 per year (Mobility Lab 2018). TNCs encourage regular transit riders to divert their trips, including up to 30% of TNC riders in New York City and San Francisco (Polzin et al. 2018). Scholars expect autonomous vehicle technology to severely aggravate TNC's detrimental impacts on transit agencies. Shared autonomous vehicles would likely be able to charge riders competitively with legacy transit fares, and could attract riders who would otherwise use transit (Polzin et al. 2018).

Some municipalities have decided to forego establishing or expanding legacy transit service, in favor of subsidizing TNC rides. When Innisfil, Ontario, a rapidly growing rural town north of Toronto, contemplated establishing a fixed-route bus service, officials decided to offer all residents subsidized Uber rides, or accessible taxicab rides for disabled passengers, instead (Polzin et al. 2018). The town is said to have spent \$8 million less than it would have on a fixed-route bus system since the program's May 2017 inauguration (Mobility Lab 2018). It has been successful, causing a 1500% increase in Uber ridership, and many local residents have been employed as drivers (Mobility Lab 2018).

Two sprawling California cities, Dublin and Monrovia, similarly opted to subsidize Uber to a flat-fare price rather than expand bus service (Schwieterman et al. 2018). Dublin's program addressed one of the primary equity issues with TNC's, their interconnection with smartphone ownership, by subsidizing a local taxi company in addition to Uber and Lyft, allowing residents without smartphones to call for rides and pay in cash (Schwieterman et al. 2018). Arlington, Texas, a large, car-oriented city between Dallas and Fort Worth, replaced its bus system with a fleet of vans from Via, a "microtransit" operator that loosely mimics bus service by charging flat fares for on-demand shared rides along fixed corridors. Via now competes with Uber and Lyft in New York,

Chicago and Washington, D.C., offering flat-fare rides that are more convenient than public transportation and less expensive than point-to-point Uber and Lyft rides. Uber and Lyft have attempted to mimic Via's shared rides by initiating three-passenger "shared" or "pooled" rides, where riders walk to a nearby intersection that is convenient to the aggregate route in exchange for a lower fare. This also frequently competes with public transportation.

Pinellas County, Florida, similarly utilized Uber to close gaps in its transit network after the public rejected a tax increase in 2014. Riders along two decommissioned Pinellas Suncoast Transportation Authority (PSTA) bus routes could make their trips with half-off Uber rides, which cost PSTA 25% of the prior cost to run the bus routes (Polzin et al. 2018). PSTA's expansion of the program sought to address equity issues in the county's network by offering free Uber rides to low income residents after bus service ended at 9 PM (Polzin et al. 2018). This expansion also encouraged transit ridership by subsidizing rides to various transit stops. This practice has been used to alleviate parking concerns at rail stations in Summit, New Jersey, Centennial, Colorado and Miami, Florida (Polzin et al. 2018).

Cities have also turned to TNCs to reduce a costly expense: federally mandated "demand response" paratransit service. Paratransit is extremely expensive to operate – a 2016 study from the New York State Citizens Budget Commission shows that paratransit trips cost the administering agency an average of \$77.42 per ride (Gibbs et. al 2016). In 2016, the Brookings Institution determined that transit operators could save up to \$2.2 billion each year by subsidizing TNC rides for paratransit users instead of providing fixed vehicles (Kane et al. 2016). Urged by mobility advocates, Boston and Las Vegas have instituted subsidized Uber rides for paratransit after very successful pilot programs (Polzin et al. 2018).

TNC's have been seen to offer vastly improved demand response service and immediate trip scheduling with far higher marginal savings than dial-a-ride services (Kane et al. 2016). However, TNC's are not presently equipped to provide Federally mandated ADA Complementary Paratransit services, forcing local governments to continue to operate traditional paratransit service (Rodman 2017). The primary gaps between TNC services and ADA-compliant paratransit are the inability to hail and pay for a TNC without a smartphone or credit card, which violates non-discrimination clauses in Title VI, TNC's lack of supplementary paratransit insurance, and a lack of accessible vehicles (Kinney 2016). Furthermore, not all TNC drivers are trained in assisting passengers from "door-to-door", as is required for paratransit services to receive Medicaid funding (Kinney 2016).

While Uber and Lyft have added Wheelchair Accessible Vehicles (WAVs), and are allowed to add WAV's without restrictions in New York City during its TNC cap, WAV's are available, on average, only 26% of the time that non-accessible TNC's are (Hawkins 2018). Furthermore, the increase in non-ADA compliant WAV's continues to drive traditional taxicabs out of business, reversing hard-fought gains of 50% fleet accessibility in cities like New York (Perry 2018).

Despite these complications and incongruences with ADA, the aforementioned cities' pilot programs are hoping TNC services will offer a convenient option for riders that do not need ADA-compliant service, defraying their overall paratransit costs (Rodman 2017).

Case Study: Labor Lawsuit in California

Since Uber entered the market in 2009, the company has faced many lawsuits from governments, competitors, passengers and drivers concerning labor practices, theft of intellectual

property, price discrimination, failure to conduct safety and background checks. Labor lawsuits have contained the most serious allegations against Uber. The ride-hailing companies, including Uber Technology, build their business models on pairing customers with services and products through a smart phone application, and often avoid many traditional costs of employers. According to a UCLA Labor and Employment study, almost half of Uber and Lyft drivers in Los Angeles drive full time (Tracy 2018). Many full-time drivers struggle to pay for expenses such as gas, insurance, maintenance cost, and loan payments, especially for those who lease their vehicles from the ridesharing company itself (Tracy 2018).

The legal arrangement of workers in the gig economy is especially pertinent as Federal courts begin to make rulings on the gig economy. In particular, class action labor lawsuits filed against Uber in San Francisco's Northern District since 2013, claim that the company is withholding tips from drivers (Bowe 2013). Uber's website tells riders there is "no need to tip", and drivers are prohibited from accepting tips in cash. Shannon Liss-Riordan, a prominent class action attorney with the Boston-based firm Lichten & Liss-Riordan, believes that by denying drivers of (potential) tips, "Uber is artificially trying to make the total price look lower – and in doing so, they are hurting the drivers" (Bowe 2013). The lawsuit also encompasses price discrimination. Uber uses upfront pricing that provides passengers with the cost of their ride before they get paired with a driver, but it is not visible to the driver until the ride is complete, when Uber takes approximately 25% of the total fare charged from riders (Rubin 2017). Additionally, drivers claim that the company failed to pay them minimum wage and overtime in violation of the Fair Labor Standard Act, which only applies to employees but not independent contractors. Uber argues that drivers are in business for themselves as independent contractors, and that they have enough control over their working lives due to Uber's flexible work hours.

In 2015, Uber failed to convince the U.S. District Court of Northern California that their drivers are independent contractors rather than employees (McCormick 2015). If such lawsuits succeed, it could damage one of the principles of ride-hailing companies' business model, including Lyft and Sidecar. Ride-hailing companies define themselves as a technology platform rather than a transportation company, which often exempts them from laws and regulations that govern conventional taxi services.

Two U.S. District Court of Northern California judges deemed that ride-sharing company drivers were technically employees based on legal precedents, but were unable to make a binding ruling on Uber, citing its new employment model and its incongruence with California labor laws (McCormick 2015).

Furthermore, the ruling did not discourage plaintiffs, and was succeeded by thirteen class action lawsuits (Cyrus 2016). Shannon Riordan-Liss, an accomplished Boston class action attorney who is informally known as Uber's "worst nightmare", launched a class-action lawsuit on how application-based companies, including Uber and Lyft, classify and pay their workers. Over 100,000 drivers joined her lawsuit, *O'Connor v. Uber Technologies, Inc.*, as it gained traction (Rosenblat 2017).

These cases served as a major wake up call for gig economy employers. If the case against Uber succeeds, "Uber's newfound employees would be entitled to a number of benefits under federal law. Those perks would include, among others, unemployment benefits, workers' compensation, the right to unionize, and most importantly, the right to seek reimbursement for mileage and tips. Those added expenses would certainly factor into Uber's estimated valuation of \$63 billion" (Cyrus 2016).

However, in September of 2018, the U.S. District Court of Northern California in San Francisco ruled that drivers for ride hailing companies are independent contractors, sparing the ridesharing companies of additional expenses obligated to full-time employees (Rosenblat 2018). The decision closely follows one made in May by the Federal appeals court in San Francisco, which forced employees to pursue arbitration instead of class-action lawsuits (Rosenblat 2018).

5. The Future of “Shared” Mobility Services in the App-Based Marketplace

As Uber and Lyft continue to evolve and gain market share, they seek to assert dominance over the ever-expanding cadre of app-based mobility services by integrating information on public transportation, bike sharing, car sharing and more in their applications. Many transit agencies have been eager to integrate ride-hailing into their technology to enable seamless multimodal trips, recognizing the necessity of versatility within a trip (Polzin et al. 2018). Dallas, Atlanta, and Portland, Oregon have all enabled users to request and pay for rides in their public transit agency’s application (Polzin et al. 2018). Uber and Lyft are both attempting to strengthen their foothold in bike, scooter and car sharing services. Lyft’s acquisition of Motivate, the largest bike share operator in the United States, and its integration of transit times in its application in Los Angeles (Bliss 2018), cements its interest in becoming a one-stop “middleman” for transportation. Regardless of whether these attempts are genuine or are attempts to increase market share under the veil of social responsibility, the lines between public and private transportation services are becoming increasingly blurred as TNC’s become integrated with, and in some cases, mimic fixed transit operations.

Uber and Lyft, along with nearly a dozen other industry-leading shared mobility companies, are signatories to the [“Shared Mobility Principles for Livable Cities”](#), an agreement orchestrated by Zipcar founder Robin Chase for an international coalition of NGOs and over 600 mayors at 2017’s Ecomobility World Festival (Coca 2018). The Principles urge signatories to:

- Integrate mobility planning and urban design.
- Prioritize people over vehicles, through integrated transportation networks.
- Encourage efficient land use and minimize parking requirements.
- Engage with stakeholders and promote equity concerns.

- Support zero-emission vehicles, renewable energy and shared-fleet autonomous vehicles.
- Institute fair user fees for infrastructure and natural resources.
- Make data available for public benefit.

The long-term impact of this collaboration between nonprofit advocates, private industry and policymakers remains to be seen, but to date, they have shaped policies governing TNC's in New York, Boston, Chicago and Washington, D.C. (Coca 2018). As cities and states begin to contend with first-generation issues and state preemption local regulation of bike and scooter sharing systems, policymakers and shared mobility corporations alike will look to the regulatory challenges that TNCs faced, and the solutions they implement, to help structure services and overcome policy hurdles.

The ongoing Uber labor lawsuits challenge the gig economy companies' employment structure. According to the Portland Press Herald, the gig economy may not be reshaping the workforce to become the workforce of the future (Lien 2017). Over the years, pay for gig economy workers has significantly dropped, and "drivers for Uber, Lyft and other transportation services, now collectively earn only about half as much each month as they did five years ago" (Christopher 2018). Research from JPMorgan has found that "in any given month, one in six workers on the online platform are new – and more than half will have left the gig economy a year after entering it." People who have experimented with gig work have likely landed traditional jobs as the economy has improved (Christopher 2018).

6. Policy Recommendations

Existing regulations may have less influence on the sharing economy's business models than on traditional industries. The sharing economy's growth continues to escalate, and leverages technology such as the Internet and smartphones to do so on a broad scale. One of the most noticeable issues with ride-hailing companies are regulatory conflicts with traditional transportation providers. We need an institutional framework to support the stable growth of the shared economy, and require new and flexible policy approaches to the unique issues it raises as a market disruptor. Nonetheless, to curtail these conflicts between market disruptors and existing taxicab companies and now with public transit providers, government can establish regulation that allows ride sharing and existing transportation companies to compete on a level playing field.

Cities strive to protect drivers and rider safety, ensure fairness within the industry, and reduce congestion. We explored some emerging methods that service providers could consider for collaborative work with cities. According to "How Uber and the Sharing Economy can Win Over Regulators" in the *Harvard Business Review* (Cannon et al. 2014), shared economy firms need to nurture collaborative relationships with city officials to maximize growth potential and consumer access while avoiding contention and regulatory hurdles. The following are some suggested tactics that service providers could consider:

- Be more engaged with regulators and explain your business model to accommodate regulations on existing industries (Cannon et al. 2014).
- Be responsive to regulators' legitimate concerns such as user safety, ensuring fairness within the industry and reducing congestion (Cannon et al. 2014).
- Form coalitions and industry associations to represent shared concerns to regulators rather than dealing separately with cities (Cannon et al. 2014).

- Make well-researched cases for the value provided by the firm instead of relying on claims regarding the usefulness of advanced technology (Cannon et al. 2014).
- Find the best regulation that suits with your business model and others need to share with the regulators (Cannon et al. 2014).

Moreover, in “Government Policy for the Stable Growth of the Sharing Economy”, Min Jung Kim, a fellow at the Korea Development Institute, suggests that “to strengthen the effectiveness of volume-based transaction regulations, certain obligations must be imposed on sharing platforms” (Kim, 2017). Given the lack of incentives to accurately report transactions, and the detailed transaction data that TNCs collect, policymakers may seek to obligate TNCs to regularly submit relevant transaction information to the government. Increased transparency and data sharing will equip regulators and transit agencies to better assess TNC’s impacts on urban mobility, and this will encourage more informed policy decisions.

Additionally, the World Economic Forum suggests that policymakers build an understanding of the nuances of the issue, prioritizing inclusivity and diversity in decision-making (World Economic Forum 2017). Sharing platforms contain an implicit bias, due to the design of the product and who they are designed for. As these platforms continue to be integrated in the public arena and even used as a tool by local governments, it is important to hold such services to the same standards and provide balanced regulations that are valued throughout the rest of the city.

7. Conclusion

Within the application-based market technology, companies are constantly evolving, changing their services and optimizing how they can better serve consumers. Uber and Lyft have shown that TNCs will remain an integral transportation service in the foreseeable future. However, governments must implement policy that is as adaptable and innovative as the companies they regulate. We argue that regulation is essential, especially with ride-hailing apps that have a physical stake in, and impact on, public infrastructure. This sort of regulation requires a higher level of technology literacy from state and local policymakers and cooperation and self-reflection on the part of technology companies. Ride-hailing can enrich the urban experience, however, without strict regulation and consensus with public input, Uber and Lyft can have a disastrous impact on local economies, consumers and themselves.

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