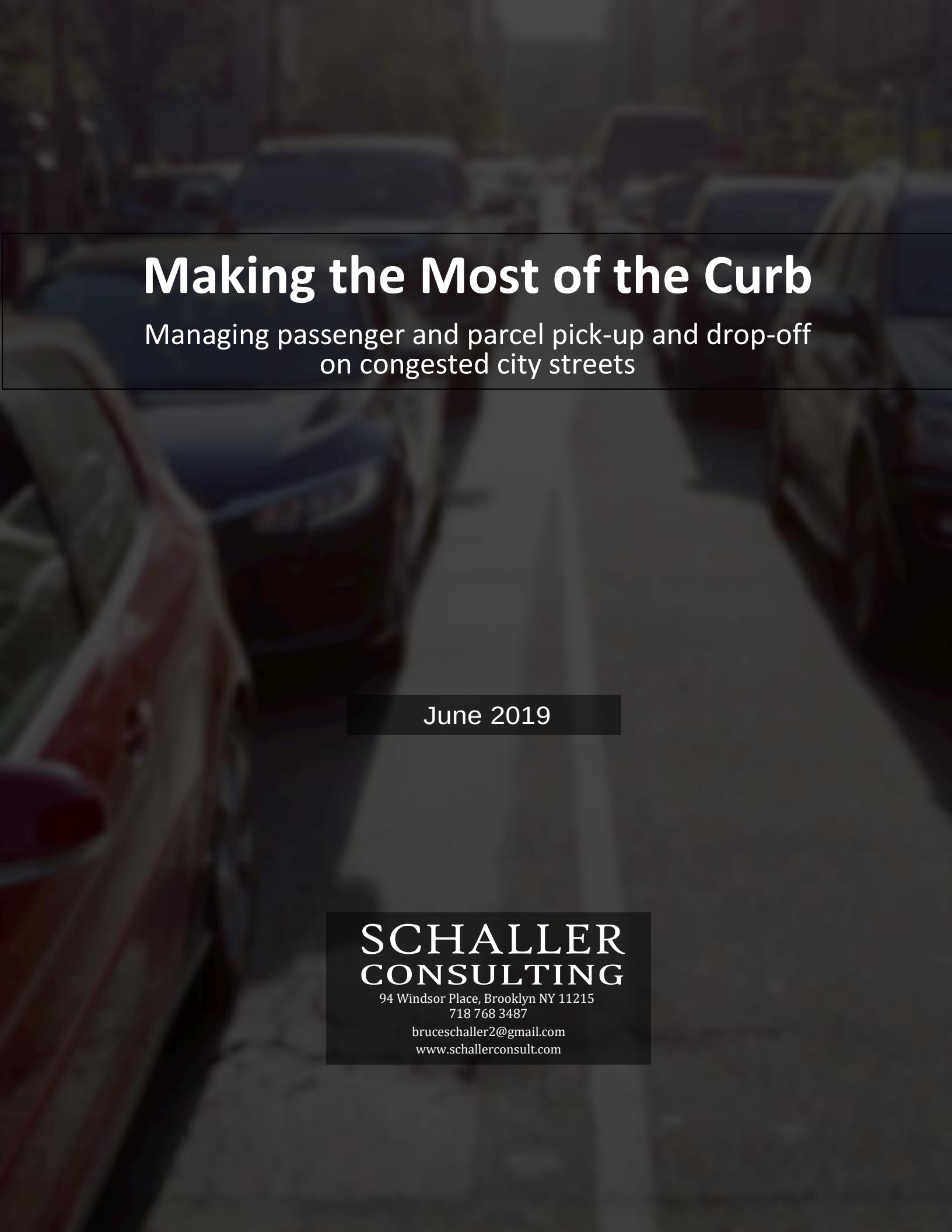

Making the Most of the Curb

Managing passenger and parcel pick-up and drop-off on congested city streets

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Summary

Cities are increasingly confronted with the consequences of their own success. Their booming popularity has brought more residents, workers, shoppers and traffic to their Downtowns and centrally located neighborhoods. The rapid growth of ride services like Uber and Lyft and the rise of e-commerce and on-demand deliveries has further strained urban streets.

Nowhere is this more intensively seen than at the curb, a place where supply is fixed while the number of prospective users and uses is ever expanding. Everyone from merchants to pedestrians and bike riders to neighborhood groups and city officials are recognizing that something must be done to stem the resulting chaos.

The first step has been to better understand exactly what is happening at the curb. Over the past year, curb activity has been quantified through careful field studies in cities ranging from New York to Santa Monica to Seattle. Results from these studies are summarized in this report.

The second step is to move from observation to action. Three major reports have recently laid out visions for better curb management. The reports recommended that cities set aside space for pick-up and drop-off of passengers and freight, actively manage and enforce these changes and collect before-and-after data for planning and evaluation.

Several cities have recently cleared curb space for pick-up and drop-off of passengers and goods to test new approaches to managing and optimizing curb use. The most prominent example is in the Dupont Circle section of Washington DC, where the District piloted nighttime pick-up and drop-off zones to minimize dangerous travel patterns and allow for safer loading and unloading of passengers using ride services and cabs. This report discusses the experience with the District pilot and similar programs in New York City, Boston and Cambridge, Massachusetts.

Putting all these pieces together – data, planning expertise and experience – the report concludes with what is needed. The first is prioritizing the pick-up and drop-off activity over less productive uses like parking. Second, scaling up pilots to comprehensive programs. Third, active management and enforcement of curb regulations. And fourth, data collection to track curb usage and program effectiveness.

1. Introduction

Until roughly 200 years ago, streets were open to all types of users and uses. Pedestrians, horses, children playing – all mixed freely on a common right of way.

Curbs are now such a familiar sight that they are taken for granted as the simple, unobtrusive way to demark the boundary between motor vehicle and pedestrian movements. Their initial purpose, however, was not to make streets safer or more efficient. They were installed to protect public health – to prevent wastewater dumped from buildings from flowing back into buildings. The advent of underground sewers made curbs unnecessary for this purpose. But curbs continue to this day to channel rainfall into stormwater sewer systems and to store water during heavy downpours.

Curbs' water management function means that moving the curb is expensive; not only the curb but also catch basins and connections to the sewer system have to be dug up and moved. But while it is expensive and time-consuming to move a curb, changing the use of the curb lane is relatively cheap. With just "paint" (actually, thermoplastic) for markings and signage, cities can replace curb parking with bus lanes, bike lanes or truck delivery or passenger pick-up and drop-off zones. Add bike racks and the curb lane can be used for bike parking.

While curb regulations can easily be changed, actually changing how that valuable space is used may not be so easy. Signage and markings can be honored more in the breach than in the observance. This is for two reasons.

First, curb space is often heavily oversubscribed. The result can be blocking of fire hydrants, bus stops and truck loading zones. Heavy demand for a space to stop can also lead to double-parking. That in turn may block travel lanes and bike lanes and create blind spots between drivers, pedestrians and cyclists.

Demands on the curb have become more acute with the rapid growth of for-hire services like Uber and Lyft, which have generated more demand for picking up and dropping off passengers. The fixed supply of curb space is further strained by the growth of e-commerce package delivery.

The second reason that curb regulations are often flouted is that people want to be right in front of a particular address rather than an open parking spot down the street. Thus, they may take up curb space designated for a different user or block a supposedly moving traffic lane.

Cities are increasingly recognizing that organizing the curb, reserving it for the most valuable uses, and actively managing this space can help achieve a number of important goals. These include traffic safety, reduced congestion and making neighborhoods walkable and livable. City officials are thus increasingly focused on getting the most value out of curb space for businesses and residents who depend on them as the vital interface between movement and arrival. Doing so requires understanding how they are currently used and misused, how they might be better used, and how to ensure that actual use aligns with intended use.

2. Curbs Today: Oversubscribed and Misused

The first step toward making the most of curb space is understanding the current situation. A number of studies have very recently been completed that greatly expand understanding of curb use in high-activity areas of U.S. cities.

The majority of recent studies come from California, which combines high reliance on motor vehicle travel, congested streets and an influx of ride-hail and food, parcel and other delivery activity. Combined, these can create chaotic and unsafe street conditions that call for attention from city authorities.

The study with the greatest geographic coverage was sponsored by the California Department of Transportation (Caltrans) and conducted by the consulting firm Cambridge Systematics.[1] Researchers manually recorded curb usage on designated blocks in Los Angeles, Santa Monica, Irvine, Oakland and Berkeley. Observations covered a range of urban contexts – downtown, congested commercial corridors, and suburban. Observations were made on selected weekdays during daytime hours between December 2017 and March 2018. The study focused on parking at the curb, not passenger pick-up or drop-off.

The study found that delivery vehicles were frequently parked at fire hydrants, "red zones" where stopping, standing and parking are not allowed, and in spaces designated for handicapped vehicles. Observations showed the highest rates of unauthorized parking in Los Angeles' Koreatown (51% of vehicles parking in authorized spaces), downtown L.A. (39%) and Santa Monica (37%). Rates of illegal parking were lower in downtown Oakland (12%) and three sections of Berkeley (15%).

The vehicles illegally using these spaces were primarily FedEx and UPS single-unit trucks and USPS vans. Across all observations, only 40% of FedEx, UPS and USPS vehicles were in loading zones or other authorized spaces.

The study recommended regular collection of curb use data for assessing parking demand and documenting the excess demand due to increased e-commerce activity. It also recommended designing parking management strategies for delivery vehicles so that they don't hinder oncoming and through traffic in the urban core.

Similar levels of unauthorized parking activity were found by a study in Seattle. Three researchers from the University of Washington observed curb activity at five downtown Seattle locations on weekdays during the business day.[2] They found that 40% of commercial vehicles were in bus lanes, tow-away zones, no-parking zones and passenger zones. As in the Caltrans study, delivery vehicles comprised the biggest share of unauthorized users.

The report concluded that inadequate space for loading – whether on-street or off-street – force commercial drivers to park in unauthorized spaces. The result is risk to traffic safety, additional congestion and inconvenience to pedestrians. The study also notes that due to the "heterogeneity and complexity of the urban freight system," policies and initiatives to improve curb management must be developed based on site-specific data.

A third study focused on double-parking during nightlife hours in Santa Monica, California. Observations were made on Friday and Saturday evenings between 7 p.m. and 11 p.m. by a researcher from UCLA.[3] The study found that 44% of vehicles stopping were double-parked – primarily ride service vehicles (e.g., Uber and Lyft). Drivers stopped for only a minute or two, or sometimes less, for each pick-up or drop-off. But the high volume of stopping meant that ride service vehicles were double-parked for an average of 37 minutes per hour on each of the block faces observed. The study estimated that double-parking reduced hourly traffic flow by 58%.

The study recommended that passenger pick-up and drop-off should be given priority over parking, based on the notion that passenger transport serves more people per hour – and thus is a more productive use of the space -- than vehicle storage. Priority for passenger loading might also initiate a "virtuous cycle" of discouraging personal auto use. Less auto use could in turn relieve the demand for curb parking and thus help make room for other uses of the space ranging from "parklets" to street furniture and bicycle parking.

Finally, a study conducted for Uber by the consulting firm Fehr & Peers observed loading and unloading activity (both passenger and goods) at five locations in San Francisco.[4] Block fronts were videotaped over a 12-hour period on weekdays. The video and also still camera images taken intermittently were later analyzed. Locations were in the downtown office district, at a commuter rail station and on commercial corridors in residential districts.

The study found that "none of the locations had adequate curb space to accommodate observed passenger loading demand." The result was frequent double-parking and unauthorized use

of curb space. The severity of the shortage and impacts varied by location. Ride service vehicles picked up and dropped off passengers in a travel lane 75% of the time at one downtown location (Clay St.) and 25% of the time at the second downtown location studied (Second St.). On commercial corridors with retail shops and restaurants, ride service drivers picked up and dropped off passengers in a travel lane 40% of the time at one location (Hayes St.) and less than 10% of the time at another location (Polk St.).

This study also sought to assess curb productivity. It defined productivity as "the importance, worth, or usefulness of a specific curbside designation in delivering people to/from the curb via a vehicle." As with the Santa Monica study, the Uber-sponsored study measured productivity based on the number of people picked up and dropped off and how much curb space was used and for how long. From these observations, the study calculated the number of passengers served per hour per 20 feet of curb space (the length of a motor vehicle).

The study acknowledged that changes to curb space should be based on "the objectives and priorities of the local agency and affected community." The report's recommendations for reallocating curb space prioritized bus stops based on San Francisco's "Transit First" policy. For passenger vehicles, the study recommended steps to reduce parking and designate more space as needed for taxi and for-hire pick-up and drop-off.

3. Reducing Chaos: Lessons from Experience

Reducing chaos at the curb, clearing lanes for motor vehicles and bikes, and ensuring pedestrian safety is easier said than done. Everyone wants to claim the space that best suits their convenience and accessibility. Experience with several recent pilot curb management programs bear this out, with details varying by location.

In Washington DC, the District government piloted curbside pick-up/drop-off ("PUDO") zones in the DuPont Circle neighborhood. The pilot operated on Thursday, Friday and Saturday on Connecticut Avenue and 18th Street during nightlife hours (10 p.m. to 7 a.m.). The aim was to clear the curb for a steady and often heavy flow of Uber, Lyft and taxi drop-offs and pick-ups and ensure that travel lanes remained clear. Ride service companies were encouraged to inform drivers to use these newly established curb locations, although it is not clear whether they did so.

Overall results were encouraging and led to plans for program expansion. It was also clear that the zones would benefit from active management in combination with data collection and ongoing monitoring. Driver compliance with the requirement to move to the curb to drop-off and pick-up was mixed, in part because other vehicles were sometimes parked in the PUDO spaces. This parking activity may be due to the novelty of a late-night parking ban, as compliance seems to be better with rush hour parking bans on major arterials. As the District expands the program, it intends to convert PUDO spaces to 24/7 operation so that curb regulations are simple and clear and reduce the frequency of illegal parking.[5]

New York City experience also showed the signal importance of active management. In response to growing congestion, the City implemented a "Clear Curbs" program in early 2018. Commercial loading was prohibited during the morning and afternoon rush hour in an effort to improve traffic flow. The program was conducted as a pilot on congested commercial streets in Midtown Manhattan, Queens and Brooklyn.

Researchers from the City College of New York and Ecole Nationale des Travaux Publics de l'Etat in France observed traffic conditions in the morning peak (7 a.m. to 10 a.m.) on West 46th Street in Midtown Manhattan.[6] They found that a "substantial volume" of delivery activity continued to occur despite bans on deliveries during those hours. The study also found while some operators shifted to delivering at non-peak times, parcel delivery tended to continue during the peak hour ban.

Other PUDOs have been established in the Boston area, including on Boylston Street in the Fenway section of Boston and in Cambridge on Massachusetts Avenue adjacent to MIT. The PUDOs replaced metered street parking for the most part. City officials in Cambridge and Boston perceive that their projects are working reasonably well. Boston staff are collecting data for a formal program evaluation. Cambridge staff note that compliance of drivers getting fully to the curb can be mixed.[7]

Although not working directly with city agencies, in response to concerns about cyclist safety on San Francisco's Valencia Street, a busy commercial street in the Mission District, Lyft geofenced a several block portion of and instructed drivers to use side streets for pick-up and drop-off instead.[8]

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4. Optimizing and Managing the Curb: Consensus Among Professionals

Several recent reports reflect a consensus among leading policymakers and transportation professionals on the need to better manage congested urban curbs. The benchmark report was released in November 2017 by the National Association of City Transportation Officials (NACTO), which represents a cross-section of major U.S. cities. The report, "Curb Appeal: Curbside Management Strategies for Improving Transit Reliability," laid out curb management strategies that can be tailored to the particular activity along a street. Although focused on improving bus speeds and reliability, all of the strategies discussed in the report also serve the broader purpose of better organizing both curb and traffic lanes.

The report recommended that cities adjust curb regulations over the course of the day to reflect changing needs. Buses may need dedicated curb space during congested peak periods; delivery vehicles midday; taxi and ride service vehicles during nightlife hours, and so forth. Examples of this strategy include Washington DC's pilot on in DuPont Circle, with the PUDO zone going into effect at 10 p.m., and widespread time-of-day variation in curb regulations on commercial streets throughout New York City. The complexity from time-of-day variations needs to be evaluated against legibility, however, given Washington DC's experience with compliance that caused the District to make PUDO zones effective 24/7.

Another strategy is to move passenger or commercial loading to nearby streets in order to free up the curb lane for bus operations. An example is Lyft's use of side streets in lieu of Valencia Street.

Another key strategy is to combine demand-based parking pricing and occupancy targets, with the goal of ensuring that curb space is available when needed for pick-ups and drop-offs. Washington DC, New York, San Francisco, Los Angeles, Seattle and other major cities have raised on-street parking fees in congested, high-demand areas. Program evaluations have shown increased parking availability and fewer vehicles blocking traffic. This strategy is most effective when there are vacant spaces within a short walk and smartphone apps that help direct drivers to them.[9]

Finally, the NACTO report emphasizes the importance of automated enforcement to successful implementation and of data collection in planning and evaluation of curb strategies.

Two reports covering much the same ground were released after and partly relied on the NACTO report. The International Transport Forum (ITF), a unit of the Organization for Economic Co-operation and Development, released "The Shared-Use City: Managing the Curb," in February 2018. The report was based on a roundtable discussion among subject matter experts held in Karlesruhe, Germany in September 2017.

The report describes the growing competition for curb space with the rise of ride services like Uber and Lyft and the growth in urban goods delivery, including fulfillment of Amazon orders. As with the NACTO report, the ITF roundtable experts discussed the potential to shift curb use away from street parking to passenger pick-up and drop-off and freight. The report presented results from a quantitative model of possible benefits. It concluded that over time, "a greater diversity of transport choices should in most cases decrease pressure stemming from single car use."

The report recommended that cities undertake a strategic approach toward the allocation of curb and other public space rather than addressing hotspots in a piecemeal fashion. It emphasized basing planning on inventories of curb space allocation and noted that "most of the up-to-date knowledge base is held by the private sector."

Finally, the Institute of Transportation Engineers (ITE) released "Curbside Management Practitioners Guide," in November 2018. The ITE guide was written in response to the proliferation of shared mobility options like bike-share, ride-hail and e-commerce package deliveries and conflicts between these activities and safe biking and walking.

The ITE guide was intended as a decision-making framework for cities to use in designing and optimizing the use of curb space. It recommended design treatments and pricing strategies that largely overlapped with those in NACTO report. In particular, the report cited automated enforcement as a key to discourage blockage of transit facilities.

5. Conclusion: What's Needed

Several major U.S. cities have moved from discussion to action in responding to the rapid growth of passenger and freight delivery in already-congested downtown and core urban neighborhoods. Their experience to date shows both the potential benefits and potential pitfalls of dedicated pick-up and drop-off (PUDO) zones.

The good news is that cities have the authority and capability to identify key hot spots and a robust curb management toolkit. Discussion with city staff as well as press reports also show that they have political and public support, including from local merchants who have sometimes resisted removal of metered parking for bus lanes, bike lanes and other purposes.

There are challenges to scaling up pilots into a comprehensive program, however. Although an impressive amount of data has been collected on some curb management initiatives, cities often lack the resources to inventory curb use, collect post-implementation data and analyze results. Without sufficient data, they tend to rely on spot visits and the impressions of merchants and other local observers. These sources may suffice in some cases but not in others.

Another key issue is active management and enforcement. This is particularly important in dense, high-demand locations that also most need effective PUDO zones. Experience in Washington DC and New York City show the vital importance of active management and enforcement to make PUDO zones achieve their potential in minimizing dangerous travel patterns and facilitating a safe and comfortable transfer between vehicle and sidewalk.

Another important point is the importance of driver awareness of the PUDO zones. Awareness can be problematic for the general public as well as commercial and for-hire drivers. Washington DC found that personal autos were sometimes left parked in the PUDO spaces beyond the 10 p.m. start time of the PUDO regulation. The District and other cities have also found that for-hire drivers may not use the PUDO space even when available. This is particularly an issue for drop-offs, where drivers are likely to honor the request of passengers to be dropped off in front of a particular address rather than a nearby PUDO curb space.

Compliance may thus require sustained enforcement, either in-person or through automated enforcement (cameras). Either approach requires staff time and other resources. Automated enforcement may also require legislative authorization.

The experience of these cities also show that curb management needs to be carefully framed within larger policy goals. Allocating this valuable space is not simply a matter of matching the volume of each activity to linear feet of curb. Allocation of space and time must factor in traffic safety, "Transit First" and anti-congestion goals, and balance time and other resources spent on PUDO-related efforts with overall priorities, particularly for enforcement.

An effective set of policies, curb regulation provisions and enforcement and monitoring can, however, make better use of this valuable public resource, particularly in the nation's densest and most congested commercial and office districts. It is thus well worth the time and attention of city policy-makers and managers to make the most of the curb, through their direct efforts, in coordination with curb users, and using third parties that may be able to bring management and technological expertise and capability to this important task.

Endnotes

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[4] Fehr & Peers, "San Francisco Curb Study," Prepared for Uber Technologies, September 2018, Revised October 19, 2018.

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[7] Source: City websites; City of Boston and City of Cambridge staff.

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[9] See "SFPark Pilot Evaluation," http://sfpark.org/about-the-project/pilot-evaluation/; and "Multimodal Value Pricing Pilot for Metered Curbside Parking -- Penn Quarter/Chinatown," https://ddot.dc.gov/page/multimodal-value-pricing-pilot-metered-curbside-parking-penn-quarterchinatown.