curbFlow

### **FINDINGS REPORT**

June 2020

# LOADING MANAGEMENT ZONES



### OVERVIEW - PILOT TO MANAGE GROWING CURB DEMAND

The City of Columbus and curbFlow entered into a six-month pilot from November 2019 - May 2020 to counter increasing congestion, as the rapid growth of commercial, passenger, and delivery service operators created significant demand for access to the city's limited curbside spaces.

Despite rapidly rising demand, the supply of the city's curbs is largely fixed, creating a supply/demand imbalance that was leading to increased congestion and unsafe operating environments.

The City of Columbus, winner of the U.S. Department of Transportation Smart City Challenge in 2016, sought to utilize innovative digital curb man-





City leader Robert Ferrin, Assistant Director for Parking Services, City of Columbus, and Ali Vahabzadeh, curb-Flow Founder & CEO, at the launch event

agement tools to address this growing issue. The City partnered with curbFlow, which has pioneered digital curb management, in a first-of-its-kind pilot. The objectives of the pilot were to:

Test an on-demand and curbside reservation-based mobile application to make streets and curbs **SAFER FOR PEDESTRIANS, BICY-CLISTS, TRANSIT RIDERS AND DELIVERY DRIVERS** 

Improve overall EFFICIENCY, operations and experience for neighborhood businesses and streets Better serve and understand the operational needs of **COMMERCIAL AND ON-DEMAND OPERATORS** 



A FedEx vehicle checks in to an LMZ



A Grubhub delivery driver checks into an LMZ using the curbFlow curb reservation app



A delivery driver checking into an LMZ using the curbFlow curb reservation app

## PILOT METHODOLOGY AND PROCESS

curbFlow managed the day-to-day operations of the six-month pilot at 8 locations in the Downtown and University District areas and along the North High Street corridor. The locations were identified, screened, and selected based on the incidences where commercial loading and on-demand pickups and drop-offs often led to dangerous double parking that blocked crosswalks, travel, bicycle and bus lanes.

curbFlow and the City used the following methodology to choose the locations:

### STEP 1

curbFlow collected operator data and anonymized and aggregated it to create curbFlow's proprietary "Pickup / Dropoff (PUDO) Activity Index (PAI)



A snapshot of curbFlow's PUDO Activity Index shows a high amount of pickup / drop-off activity in the University District

### STEP 2

curbFlow and the City "ground truthed" the top locations from the PAI, visiting the streets and working with local stakeholders (e.g., Special & Business Improvement Districts and merchants) to find the best locations based on curb/ street rules and local needs



Two commercial vehicles checked in and legally using a LMZ



To clearly signify the LMZ, each location had signage and a combination of white thermos strips, barricade banners at the front and back, and bollards at the curb

This resulted in the creation of Loading Management Zones ("LMZs") that were clearly marked for use by commercial vehicles and private vehicles operating in a commercial manner, such as for ride-hailing, online food delivery service, and other online platforms.



In addition to coordinating and managing the locations, curbFlow provided additional services to the safe and effective operation of the pilot including:

### App Creation & Operator / Driver Onboarding

Drivers could simply check in and check out of LMZs using curbFlow's free app. curb-Flow coordinated all driver onboarding to ensure they knew how to use the app and identify and reserve the LMZs for safe operation and optimal performance



#### **Enforcement support**

curbFlow created an Enforcement Companion App, which was embedded in Parking Enforcement Android devices, allowing for proactive enforcement in real time



### **Data collection**

curbFlow produced real-time and summary dashboards for the City

## **KEY DATA FINDINGS**

### Key pilot findings include:

Strong adoption by commercial and on-demand drivers, with more than 2,400 registered on the curbFlow Columbus App



- A diverse range of ~100 fleets/companies participated, including:
  - **Commercial** Mix of large multinational, regional, and local providers (example: UPS, FedEx, Amazon, Gordon etc)

**On Demand Driver (ODD) Services** All of the major providers were represented (e.g., DoorDash, Grubhub, Postmates, UberEats)



Registered drivers legally used LMZs ~19,000 times over the 6-month period (>105 times / day)

Adoption by ODD drivers was very high, representing >90% of drivers and check-ins



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· Average Dwell Time, by Segment (November 18, 2019 - May 15, 2020)

The average dwell time at the curb was ~5 minutes, with freight and parcel dwelling longer than ODD, but with ODD accounting for >90% of usage



• # of Check-Ins By Hour of the Day All LMZ's (November 18, 2019 - May 15, 2020)

The peak demand for curb space use was mainly during the lunch and dinner rush, due to the significant use by ODD drivers



# LMZ USE SHOWED SEASONALITY, WITH DIPS DURING THE OHIO STATE UNIVERSITY WINTER BREAK AND THE COVID-19 PANDEMIC



Check Ins by Week, by Location (November 18 - May 15)

MERCHANTS NEAR LMZS EXPERIENCED FASTER PICKUPS AND DROP-OFFS. IN A SURVEY OF 63 REGISTERED DRIVERS, 83% INDICATED THEY SAVED 2+ MIN-UTES PER PICKUP / DROP-OFF.

> On average, how much time did you save per pickup and drop-off each time you used a Loading Management Zone? Driver Survey (n = 63 respondents)

LMZS PREVENTED A SIGNIFICANT NUMBER OF ILLEGAL OR DOUBLE PARKINGS. A MAJORITY OF SURVEYED REGISTERED DRIVERS INDICATED THEY WOULD HAVE ILLEGALLY OR DOUBLE PARKED WITHOUT THE LMZ. EXTRAP-OLATING THE SURVEY DATA TO THE ~19,000 CHECK-INS RESULTS IN AN ES-TIMATED ~9,700 PREVENTED DOUBLE OR ILLEGAL PARKINGS.

> What % of the time when you used a LMZ would you have illegally or double parked if it weren't there? Driver Survey (n=63 respondents)

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### **PILOT SUCCESSES**

### The six-month pilot was largely positive. Key successes included:

 High promotion and success from ODD, the "modern-day commercial driver", with >1,430 ODD drivers registered for use of the app

> In a survey of registered drivers, 58 of 63 were promoters (rating a '9' or '10' on likelihood to recommend, and only 3 were detractors (rating '6' or below), for a Net Promoter Score (NPS) of 87

Click <u>HERE</u> to see Richard, a DoorDash dasher, use the LMZs



- High satisfaction and support from the ODD companies, as well as >10 Freight and Parcel fleet/company partnerships including multinational providers as well as local freight and distributors
- Strong support from the restaurant and merchant community who experienced improvement in delivering pickups and receiving goods.
- Strong partnership between the City and curbFlow. This pilot would not have been successful without the mutual collaboration. Both worked hard to keep open lines of communication, proactively reach out and provide assistance in a timely manner

One example of this partnership was how the City and curbFlow adapted to underperformance at one early LMZ location. Data was showing the location was not performing well and, after meeting with local stakeholders and understanding they were unhappy with the lost parking spaces, the City and curbFlow worked quickly to revert the curb to its original metered parking spaces.







# Gdr

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> "This (curbFlow/ city partnership) has been an absolute blessing for me, knowing that space is available. I do this full time and support my family doing it."

Stacey

Uber Eats and RicePo Driver High Street, Columbus, OH December 2019 "I think (curbFlow) is an amazing convenience. I am thankful for it every day."

Click <u>HERE</u> for a video of Craig using the LMZ's

#### Craig

Owner and Manager Pita Plt Columbus, OH

## **LESSONS LEARNED**

The pilot was successful but also provided valuable lessons. A few specific findings to inform future efforts include:

#### More locations would result in better performance

• Some freight and parcel operators did not participate as they did not want to change company policy or driver behavior for just 8 LMZ locations

"My biggest feedback	
is get more zones"	

Local freight driver

"..."Our drivers are usually required to access by rear or side entrances, where current CLZs are located. There were only 8 LMZs provide access to just storefronts..."

"... I'm concerned about there being only 8 zones..."

Local parcel delivery driver

Commercial Fleet Manager

#### Even more automation is key

• An impediment to commercial driver adoption was the requirement to use the curb-Flow app to check in and out of LMZs. Some drivers and fleet managers were resistant to change, with one or all of the following reasons cited:

Did not want drivers to download and use 3rd party software

Did not want drivers to use a mobile device while working, either for safety and/or efficiency protocols

Did not provide drivers devices and did not want them using personal devices for work use

#### **Even greater enforcement**

• Understandably, the City's parking enforcement has been hesitant to ticket commercial vehicles for illegal parking. Because drivers rarely received tickets outside LMZs for illegal parking, they were not incentivized to start using LMZs and checking in/out with an app

### **Payment processing**

• The pilot never transitioned to a pay-per-use period, but two challenges should be considered for future partnerships:

A 'pay per use' model involving credit card fees would be suboptimal, as the credit card transaction fees would be higher than the revenue generated on nearly every occasion

An invoicing-per-month agreement would require careful planning with the City, as there are strict rules regarding who is the merchant of record and the flow of funds

#### More data collected outside of an app

• An app can only collect so much data. Privacy-protected computer vision would help provide more accuracy and more data on usage, safety, and emissions. An effective computer vision platform could also auto check-in/out vehicles by use of license plate recognition and/or logo detection.





# CONCLUSIONS AND RECOMMENDATIONS

curbFlow and the city learned from this pilot, a first-of-its-kind public/private partnership at this level of innovation.

Moving forward, curbFlow recommends a transition from limited loading zones to an overarching, city-wide "Digital Loading Zone" (DLZ) program that digitizes all aspects of loading zones and commercial permitting.

### A DLZ program should have the following characteristics:

- Online-only permit application and approval process
- Primary data-based approach to location selection and location changes
- Commercial vehicles digitally check-in/check-out of DLZs, without the need for a mobile device onboard to promote equity, improve safety, and reduce operator costs
- Computer vision-aided devices integrated with local parking enforcement
- Actionable data collected on an ongoing basis to measure usage, productivity, and safety
- Demand-responsive pricing to better balance supply and demand of space and better optimize municipal revenue collection
- Accessible to anyone driving for commercial purposes, including non-commercially DMV licensed operators, such as the on-demand segment whose drivers operate their own vehicles

We look forward to working with Columbus and other cities to provide our expertise making our streets safer, greener, and more efficient.

To request a copy of our white paper, "Part II: Instituting a Digital Loading Zone Program", please contact us at hello@curbflow.com.

# **DEEP DIVE** INDIVIDUAL LOADING MANAGEMENT ZONES

### DEEP DIVE INDIVIDUAL LMZs

LMZ LOCATION	TOTAL CHECK INS	MEDIAN DWELL TIME (MINUTES)
2165 North High Street	4,237	4
1988 North High Street	3,793	5
1708 North High Street	3,218	4
1607 North High Street	2,400	5
1510 North High Street	2,148	4
477 Park Street	1,218	4
965 North High Street	1,009	5
15 Vine Street	797	4
GRAND TOTALS	18,820	5



# LMZ #1: 2165 N HIGH ST

2165 N High St (LMZ #1) was the highest performing LMZ and was frequently used by ODD drivers (>90% usage) since it was located near a number of restaurants, including Buffalo Wild Wings, Cottage Inn, Chop Shop, Domino's, and Insomnia Cookies, that were popular with students at The Ohio State University (OSU).

There were two notable dips in LMZ #1 use, consistent with other LMZs: (1) food pickup and deliveries were low during the OSU winter break, and (2) during the COVID-19 pandemic, curbside parking was plentiful and many OSU students left Columbus, resulting in significantly reduced LMZ check-ins.

Check-ins per week at LMZ #1: 2165 N High St



Hourly check-ins at LMZ #1 coincided with the lunch and dinner time rush due to the proximity to OSU campus.





# LMZ #2: 1988 N HIGH ST

LMZ #2 was also popular given its proximity to OSU and nearby restaurants, including Pita Pit and Charley's.



Unlike LMZ #1, check-ins were more prevalent during the lunch period than dinner.



Average Check-ins per day at LMZ #2: 1988 N High St 11/18/19 - 5/17/20



# LMZ #3: 1708 N HIGH ST

In close proximity to fast casual and takeout options like Blaze Pizza, Chipotle, and Waffle House, the 1708 N High St LMZ ("LMZ #3") saw the third highest level of usage.



Check-ins at LMZ #3 were highest during the dinner rush, with weekends (Fri - Sun) the most frequent days of the week for use.



Average Check-ins per day at LMZ #3: 1708 N High St 11/18/19 - 5/17/20



# LMZ #4: 1607 N HIGH ST

Near Aracri Pizzeria, Five Guys, and Raising Cane's Chicken Fingers, as well as retailers like AT&T and Gamestop, the 1607 N High St LMZ ("LMZ #4") exhibited similar patterns to other LMZs week-to-week, with a relatively smaller decline for the winter break holiday.



Check-ins per week at LMZ #4: 1607 N High St 11/18/19 - 5/17/20

Check-ins at LMZ #4 were highest during the lunch rush.



Average Check-ins per day at LMZ #4: 1607 N High St 11/18/19 - 5/17/20



# LMZ #5: 1510 N HIGH ST

1510 N High St LMZ ("LMZ #5") was near a diverse range of food options, including Popeyes Louisiana Chicken and Knobu Sushi, as well as mixed-use locations including residential buildings.



Check-ins at LMZ #5 never again reached the January peak, likely due to fewer drivers legally checking in (i.e., usage remained high but fewer drivers checked in).



Average Check-ins per day at LMZ #5: 1510 N High St 11/18/19 - 5/17/20



### LMZ #6: 477 PARK ST

Across the street from North Market, the 477 Park St LMZ ("LMZ #6") did not perform as strongly as the High Street locations, and was barely legally used at all during the COVID-19 pandemic. However, interviews and observational sampling suggest the zone was used regularly, including by ridehail and taxis, but without them checking in.



Check-ins at LMZ #6 were much higher during the lunch period than dinner.



Average Check-ins per day at LMZ #6: 477 Park St 11/18/19 - 5/17/20



### LMZ #7: 965 N HIGH ST

The 965 N High St LMZ ("LMZ #7") was in front of an Orangetheory and residential building, and performed worse than it likely would have if it were across the street (an option evaluated during location selection but struck down in the ground truthing stage due to lack of support by the nearest merchants), as many drivers heading north towards OSU likely would have used it when picking up from restaurants on the east side of the street.



LMZ #7 was a highly pronounced "dinner time" zone.



Average Check-ins per day at LMZ #7: 965 N High St 11/18/19 - 5/17/20



# LMZ #8: 15 VINE ST

The 15 Vine St LMZ ("LMZ #8"), an off-High St side location, had the fewest check-ins of the 8 LMZs, attributed to:

- $\cdot$  Was on a side street and the least visible of the 8 LMZs
- $\cdot$  Not directly in front of any restaurants popular that ODD drivers pick up from
- Was the farthest south LMZ (i.e., farthest from the OSU campus)
- Had freight, parcel, and ridehail use often, but did not check in on the app (i.e., noncompliance was an issue at this side-street LMZ)



### Check-ins per week at LMZ #8: 15 Vine St 11/18/19 - 5/17/20



Average Check-ins per day at LMZ #8: 15 Vine St 11/18/19 - 5/17/20



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