TABLE 2: Metrics for Evaluating Curb Performance

Metric	Description	Collection Method	Examples of companies/agencies collecting the data	Goal	Examples of cities having used the metric in pilot evaluations
Dwell time	Time vehicles spend at the curb	Parking occupancy sensors (in-ground or pole-mounted)	Streetline, Conduent	Dwell times match not exceeding allowed parking times set by authorities	Boston, Washington, DC, Seattle, Bellevue, San Francisco, Boise, Columbus
		Cameras	Numina, IDAX		
		TNC operator data	Shared Streets, Populus		
Parking turnover	Average number of vehicles per space or block	Cameras	Numina, IDAX	Turnover that results in 80% occupancy	Boston, Washington, DC, Seattle, Bellevue, San Francisco, Boise, Columbus
		Parking occupancy sensors	Streetline, Conduent		
Occupancy rate	Percentage of available parking or loading spaces occupied by vehicles (can exceed 100% in cases of double parking)	Parking occupancy sensors	Streetline, Conduent	Around 80% (1-2 empty spaces per block at all times)	Boston, Washington, DC, Seattle, Bellevue, San Francisco, New York City, Boise, Columbus
		Cameras (pole-mounted or smartphone app)	Numina		
		Parking meter data	IDAX, Allvision, Coord, Public agencies		
Economic data	Data on the performance of local businesses, such as foot traffic, or monthly sales	Surveys, Economic census, Sales data from nearby businesses (Sales volume per square mile), pedestrian counts	Census Bureau, Public agencies	Increase in foot traffic and/or sales at nearby businesses	Boston, New York City
Vehicle type	Type of vehicles using the space, such as commercial (service and delivery), TNC, and passenger vehicle	Parking occupancy sensors	Streetline	Vehicle types match curb regulations (i.e. a commercial truck in a CVLZ and a TNC in a PUDO zone)	Seattle, Boston, New York City, Columbus
		Cameras	Numina, Coord, Allvision		
Curb productivity	Number of passengers picked up/ dropped off per hour per foot of space or vehicle length	Shared mobility operator data	Populus, Coord, Remix	Increase in number of people/goods per hour, without violating regulations	San Francisco, Boston, Seattle
		In-person observations	IDAX, Public agencies		
Coord curb index*	Composite measure of proximity of amenities (bus stops, bike racks, etc.) to loading areas. Blockfaces are assigned a score based on the number of desired	GIS data	Public agencies	Planners set individual targets for three scores: Access for People, Access for Commerce, and Access to Curbside Amenities	None
		Linearly referenced curb features	Coord, Shared Streets		

	amenities within a specified radius.				
Mode share distributions	Percentage of people walking, taking transit, biking, driving or using other modes along the corridor	Travel surveys, on-street observations (i.e. bike or pedestrian counts)	Public agencies or MPOs	Higher percentage of people walking, biking, and taking transit, and decrease in driving alone (exact % depends on city's mode share goals)	Portland, Seattle
Illegal parking	Instances of double parking, fully or partially blocking the travel lane, overstaying time limits, or failing to pay meters	Parking violations / summons, Parking meter data	Public agencies	Drop in the number of tickets or violations	Boston, Seattle, Los Angeles, New York City, Columbus
Corridor speed	Average speed of vehicles travelling along the corridor where curb changes are applied	Navigation apps such as Waze or Google Maps	INRIX, Public agencies	Average speeds align with speed limit on the corridor	Boston, Seattle
Parking cruising time	Time vehicles spend moving around the area in search for a parking space	GPS data, On-site observations	Private commercial or mobility companies, Consultants	Decrease in parking cruising time and vehicle miles traveled (VMT) after curb improvements are installed	San Francisco, Washington, DC

*Source: Coord, What's Your Curb Index?, 2020 *(11).*

4. CONCLUSIONS

Regardless of city size or location, staff at most agencies reported similar challenges and goals for their curbspace. Nearly all of the cities in the study lacked measurable, citywide policy goals for curbspace performance. Staff at cities nationwide described their curb management processes as "disjointed," decentralized," "ad hoc," "reactive," "complaint-based," and replete with "competing interests" and "tension", and noted challenges with integrating the goals and functions of the myriad departments that manage the curb. Every city in the study struggled to provide consistent enforcement, limiting the effectiveness of pilot programs. Cities faced similar perceived threats to their parking meter revenue from replacing on-street parking spaces with flexible curb uses. Some wished to resolve this issue through enforcing automated payments for short loading and unloading events. As curbspace grows more dynamic, with rules changing weekly or even hourly, cities expressed needs for continuously updated digital inventory and real-time communication with operators. We observed great diversity in the technological sophistication and regulatory flexibility of each jurisdiction.

While real-time curb management technologies are undergoing rapid prototyping and development, the majority of cities still manage their curbs through traditional methods, such as manual data collection, ticketing, and periodic surveys. The majority of staff with whom we spoke viewed the present offerings of curb technology companies as inaccurate, prohibitively expensive, or unfit from a legal or procurement standpoint. There are also legal barriers; for example, some cities, including Seattle and Minnesota, maintain prohibitions against camera technology or license plate recognition. However,