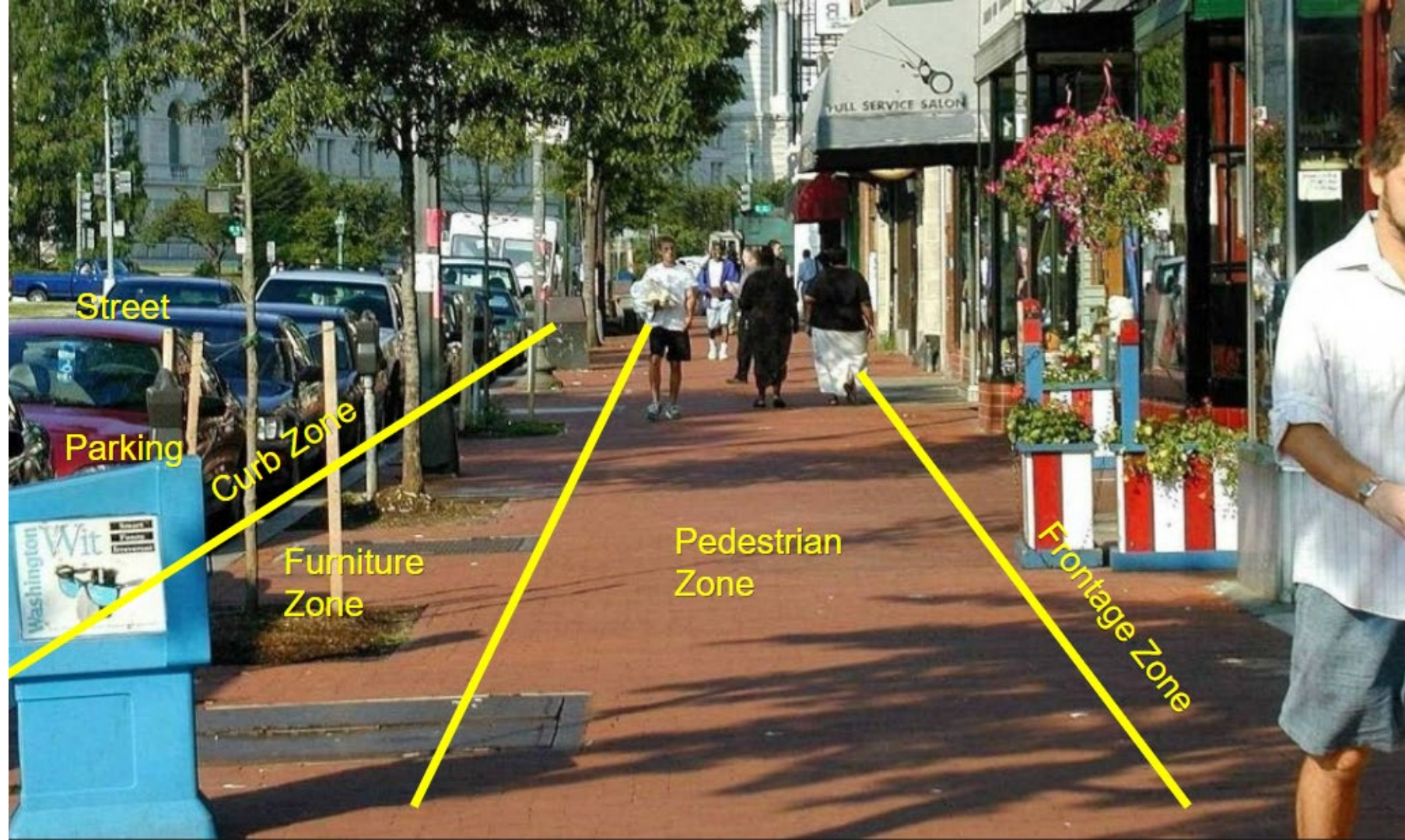


# Curbside Management

Becca Kiriazes



Street

Parking

Curb Zone

Furniture  
Zone

Pedestrian  
Zone

Frontage Zone

# Curb / Flex Zone / Parking Lane Functions

**Access for Commerce:** Goods and services reach their market

**Access for People:** People arrive at destinations

**Storage:** Provides storage for vehicles or equipment

**Mobility:** Moves people and goods

**Greening:** Enhances aesthetics and environmental health

**Activation:** Offers vibrant social spaces

# Who Wants a Piece of the Curb?



Drivers, both TNC and non-TNC



Parked vehicles and electric vehicle (EV) charging



Bicycles and bicycle infrastructure



Pedestrians and crossing infrastructure



Couriers and delivery vehicles



Local businesses



Mobile vendors



Transit and transit infrastructure



ADA access



Emergency services



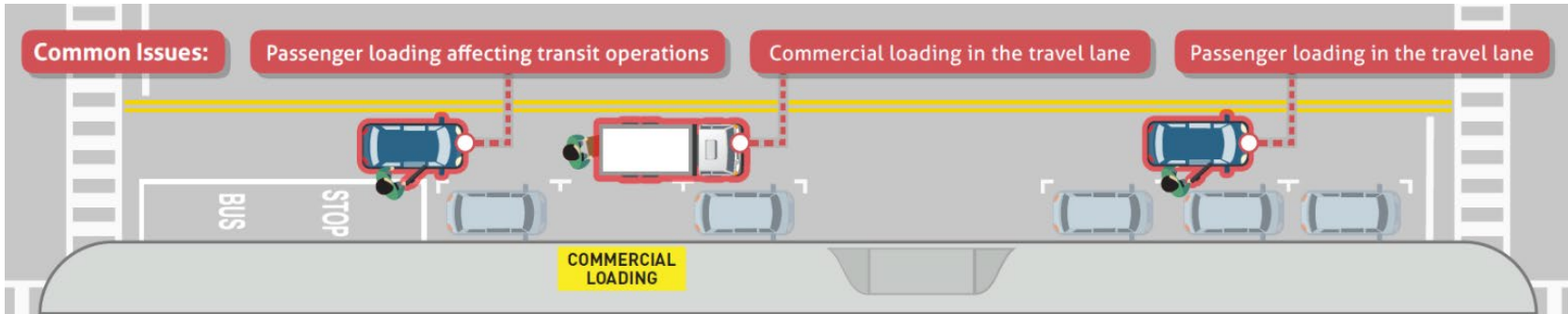
Taxis, transportation network companies (TNCs), and shuttles



Parklets and streetscape

# Importance of Managing the Curb

**Current System:** *Unorganized streets with lots of friction and reliability issues*

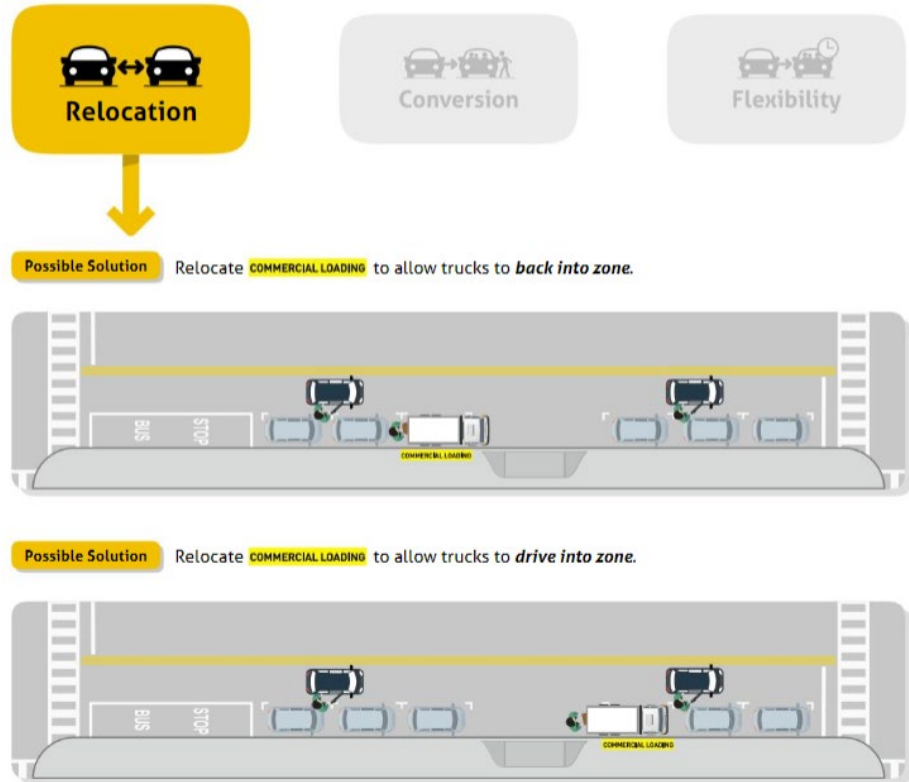


1. More modes competing for curbside
2. Increasing urbanization
3. E-commerce boom = increases delivery vehicles
4. Ride-hailing

*The time to reimagine the curbside space is **now!***

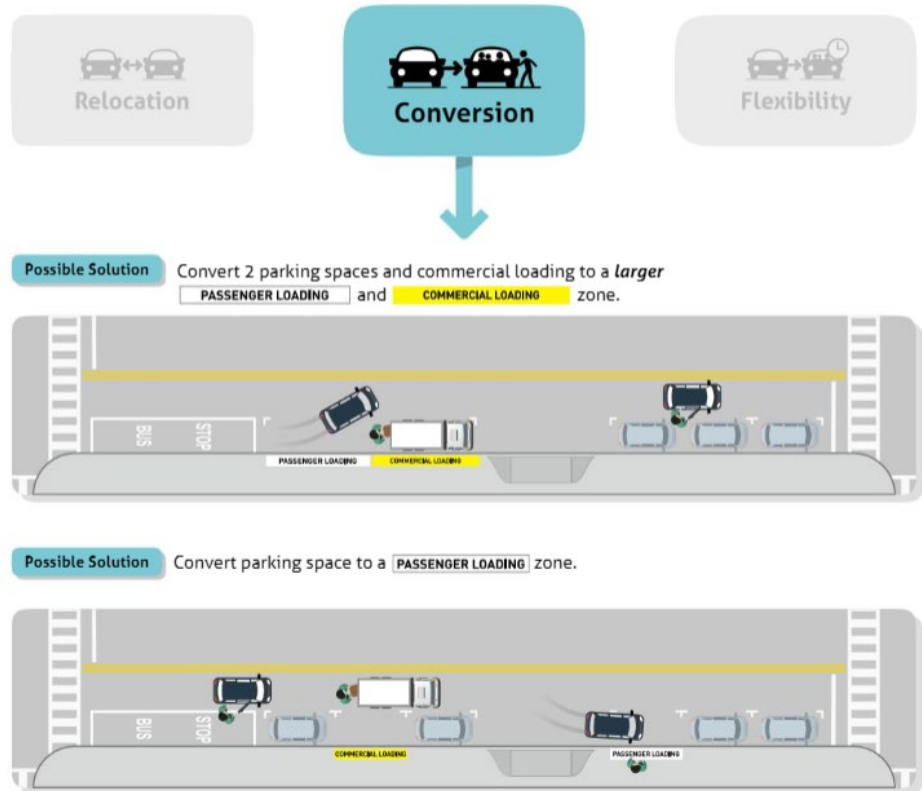
# Curbside Treatment: Relocation

- **Reallocating** the distribution of space of the curb while keeping the overall space for each mode constant
- Relocate curb space to **better utilize** the curb zone based on surrounding needs



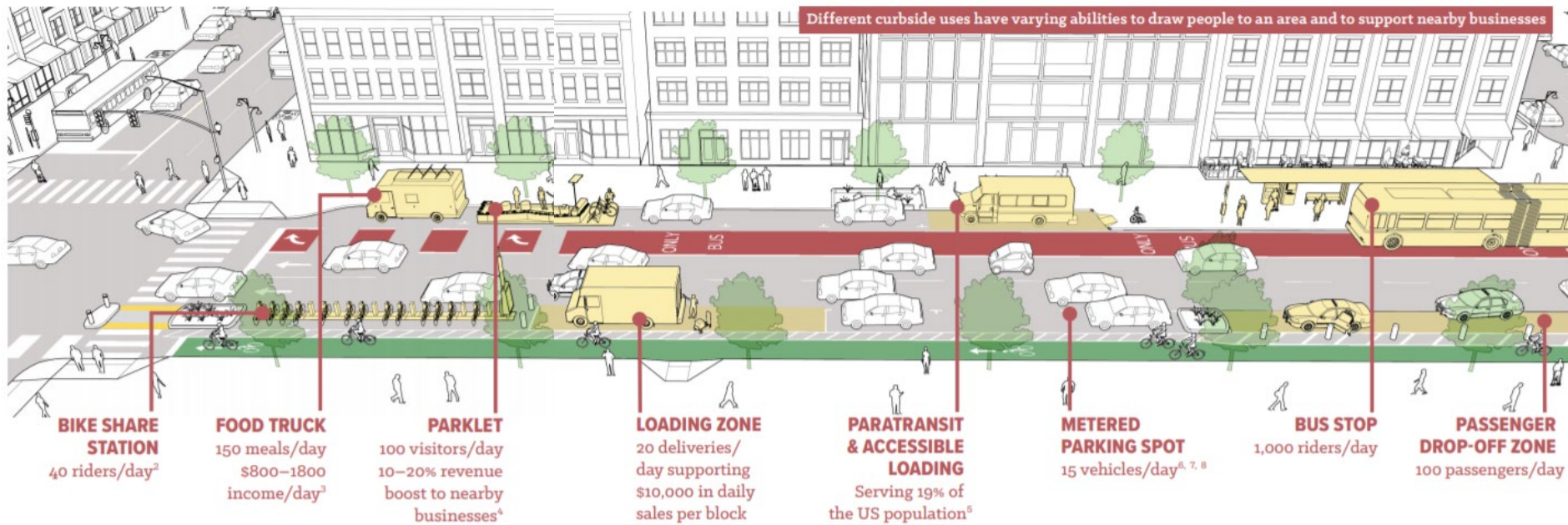
# Curbside Treatment: Conversion

- Convert curb space to different uses to better utilize the curb zone
- Understanding current / future curb demand





# Curbside Treatment: Conversion



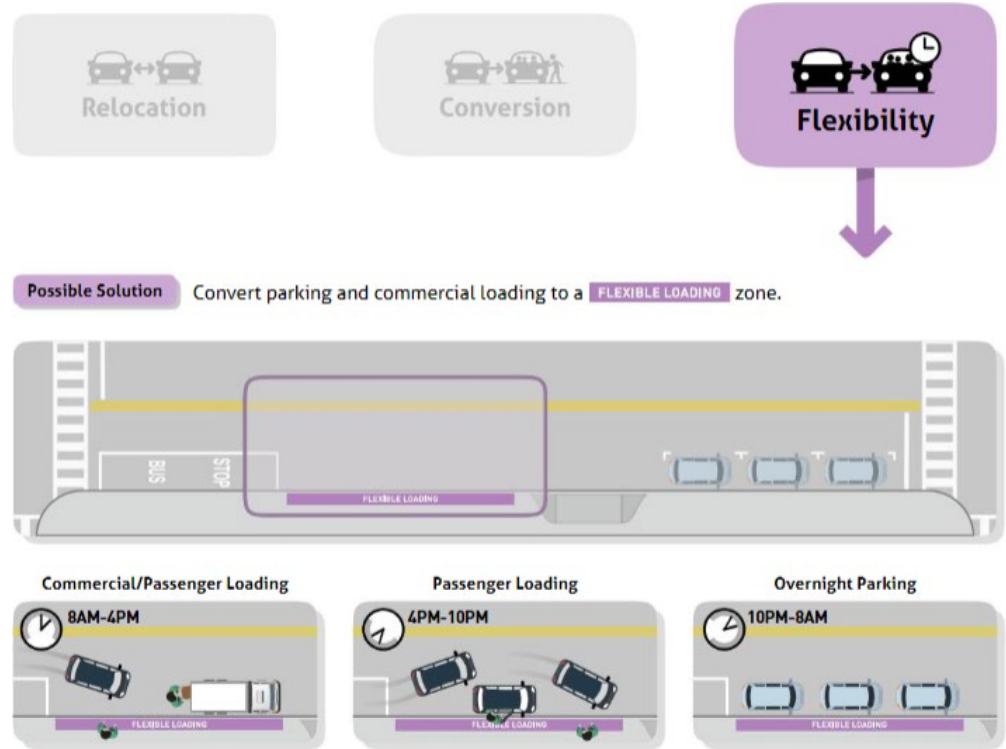
## Alternative Curbside Uses

- Bus Lanes
- Traffic Calming
- Shared-Micro Mobility Corral (Bird Cages)
- Bike Lanes
- Delivery Hub Locker
- Transportation Network Company (TNC) Drop-Off Zone



# Curbside Treatment: Flexibility

- Convert curb space to **flexible time of day zones** to meet demand-based uses throughout the day.
- Convert curbspace, implement technology, and modify infrastructure.
- Effective in mixed-use land scenarios where there are **overlapping demands** for space
- Performance based pricing

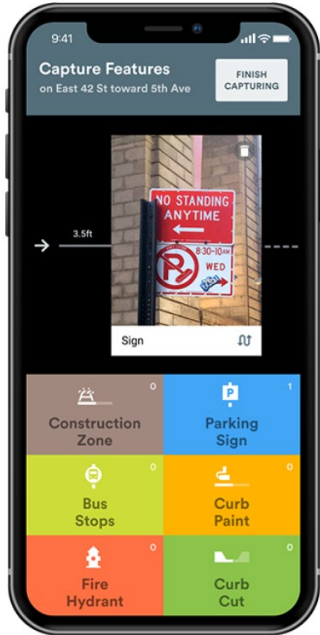


# Treatment Selection Process

1. Inventory **Existing Conditions**
2. Identify Land Use and Activity Considerations to **Develop Modal Priority**
3. Identify Appropriate Treatment **Alternatives**
4. Assess and Present Alternatives for **Public Feedback**
5. Refine and **Implement** Treatments

# Treatment Selection Process: Existing Conditions

## *Data Collection*



- Large number and variety of data points collected
  - More complicated than simply capturing how many vehicles use a space in a day
  - Lack of standardization across agencies
- **Occupancy Data:** parking occupancy by block
- **Vehicle Data:** type of vehicle, license plate state and number, and the display of residential/visitor parking permits
- Technology makes the process more efficient

# Treatment Selection Process: Modal Priority

## HOW WE USE THE STREET



Residential

Commercial & Mixed Use

Industrial

1	Support for Modal Plan Priorities	Support for Modal Plan Priorities	Support for Modal Plan Priorities
2	Access for People	Access for Commerce	Access for Commerce
3	Access for Commerce	Access for People	Access for People
4	Greening	Activation	Storage
5	Storage	Greening	Activation
6	Activation	Storage	Greening

- **SharedStreets** is a standard way to store and share essential curb information
- Overlay with maps to determine the adjacent context (pedestrian realm and vehicular travelway)

# Treatment Selection Process: Alternatives

## *Curb Productivity*

- **Curb Productivity Index** takes into account vehicle activity, occupancy, size, and dwell time to provide a relative utility of a given curb space.

$$\text{Vehicle Curb Productivity} = \frac{\text{Vehicle Activity}}{\text{Total Dwell Time} \times \text{Curb Space Needed Per Vehicle}}$$

# Your Turn!

## *Curb Productivity Example* s

1. If a **car** carrying two people is **parked** in an on-street parking space for two hours, how productive is that **20 ft**?
2. If in two hours a bus drops off and picks up **100 passengers**, all bus loading events combined take **12.5 minutes** (i.e. 30 buses each dwelling for an average of 25 seconds), and the buses are **60 ft long**, how productive is that curb?

$$\text{Vehicle Curb Productivity} = \frac{\text{Vehicle Activity}}{\text{Total Dwell Time} \times \text{Curb Space Needed Per Vehicle}}$$



# Treatment Selection Process: Alternatives

## *Curb Productivity Example 1*

If a **car** carrying two people is **parked** in an on-street parking space for two hours, that space served **2 passengers** in **2 hour** for those **20 ft**.

$$\frac{2 \text{ passengers}}{2 \text{ hours} \times 20 \text{ feet}} = 0.05 \frac{\text{passengers}}{\text{hour-feet}}$$

*To put this into units that are more applicable to street configuration, convert the space unit to the number of people per hour that would be served for every **20 feet of space**.*

$$0.05 \frac{\text{passengers}}{\text{hours-feet}} \times 20 \text{ feet} = 1 \text{ passenger served per hour per 20 feet of curb}$$

# Treatment Selection Process: Alternatives

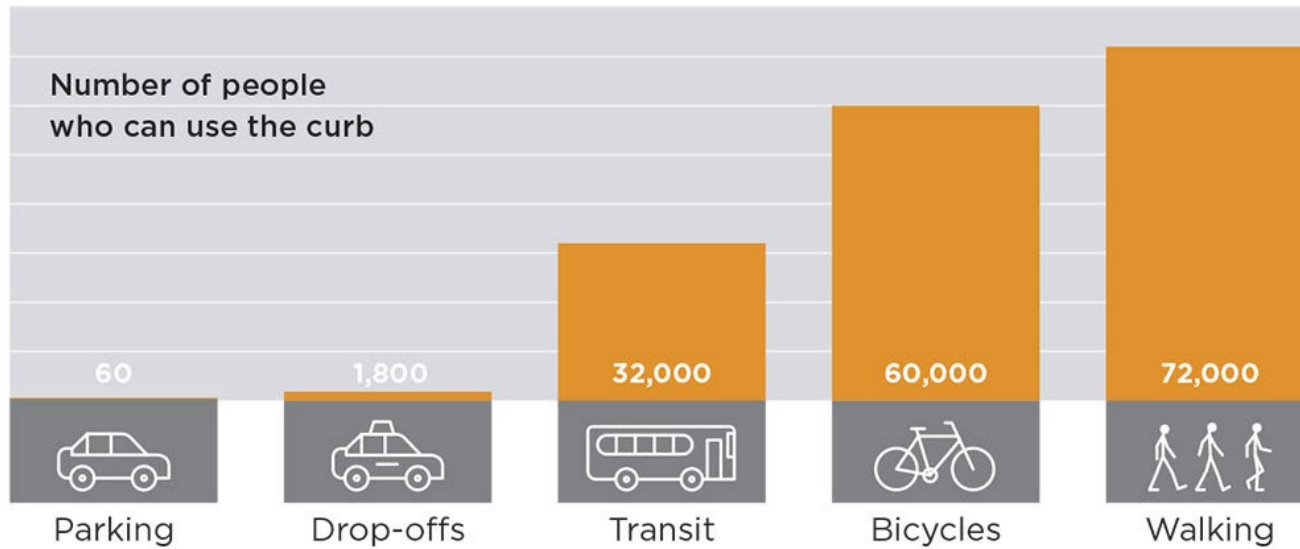
## *Curb Productivity Example 2*

If in two hours a bus drops off and picks up **100 passengers**, all bus loading events combined takes **12.5 minutes** (i.e. 30 buses each dwelling for an average of 25 seconds), and the bus is **60 ft long**, the curb productivity would be:

$$\frac{100 \text{ passengers}}{12.5 \text{ minutes} ( 1 \text{ hour} / 60 \text{ minutes} ) \times 60 \text{ ft}} = 8 \text{ passengers} / \text{hour-ft}$$
$$= 160 \text{ passengers} / \text{hour-20ft}$$

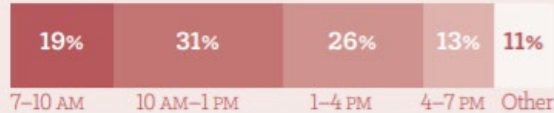
# Treatment Selection Process: Alternatives

## *Curb Productivity*

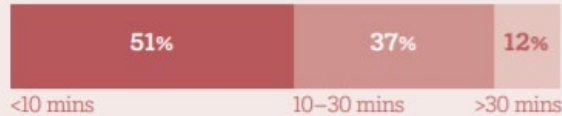


# Treatment Selection Process: Feedback

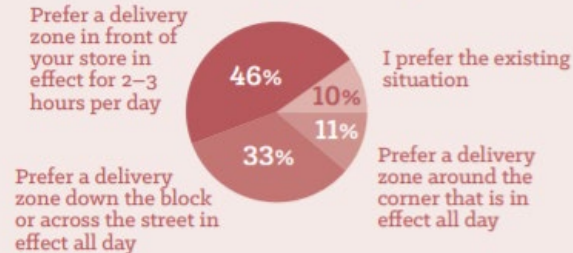
## Timing of merchant deliveries



## Delivery duration on Nostrand Ave



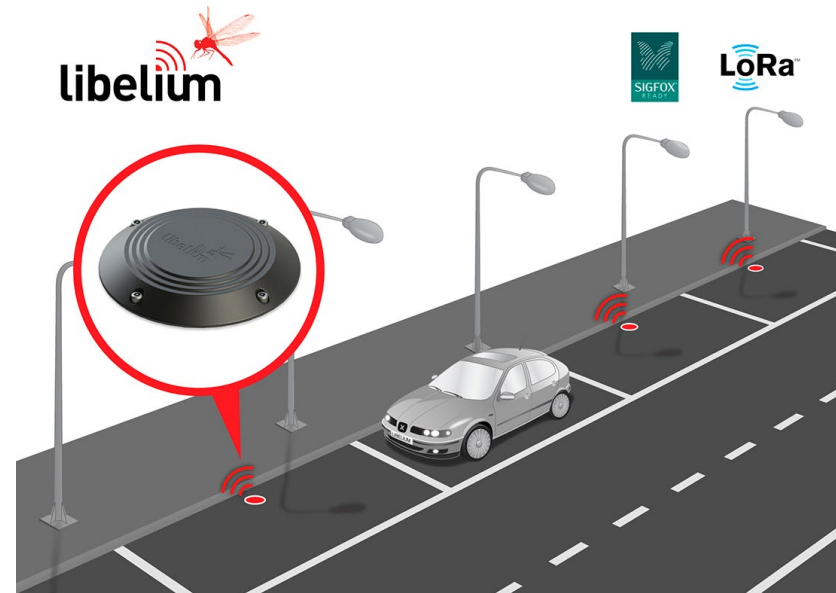
## Nostrand Ave delivery zone requests



**Example:** NYC DOT surveyed Nostrand Ave merchants to ask where they would prefer loading zones with varying levels of restrictions

# Treatment Selection Process: Implement *Monitor, Communicate, and Enforce the Rules*

- “What gets measured gets managed”
- Technology to actively monitor, communicate, and manage use
  - Mobile payment technology
  - On street parking sensors



# Looking to the Future: Challenges



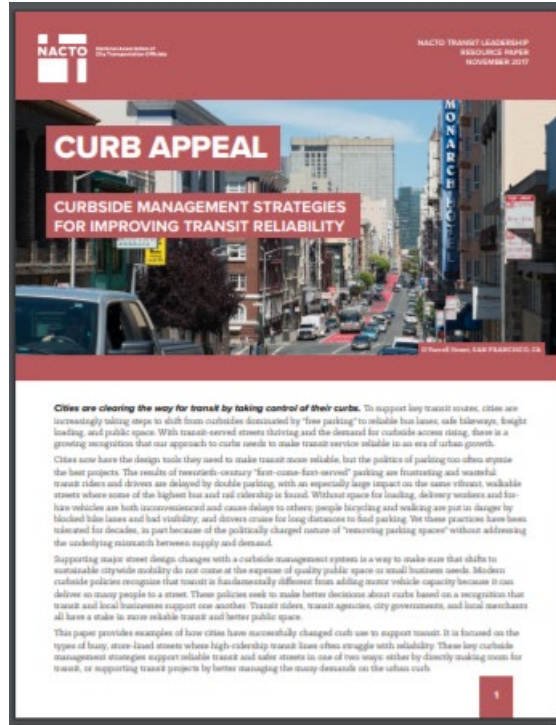
*“Ultimately, cities need to go curb by curb, street by street to determine priorities and policies. A data-driven approach to reconfiguring curbside space will reduce conflicts between modes and identify the most productive uses of space in each corridor”*



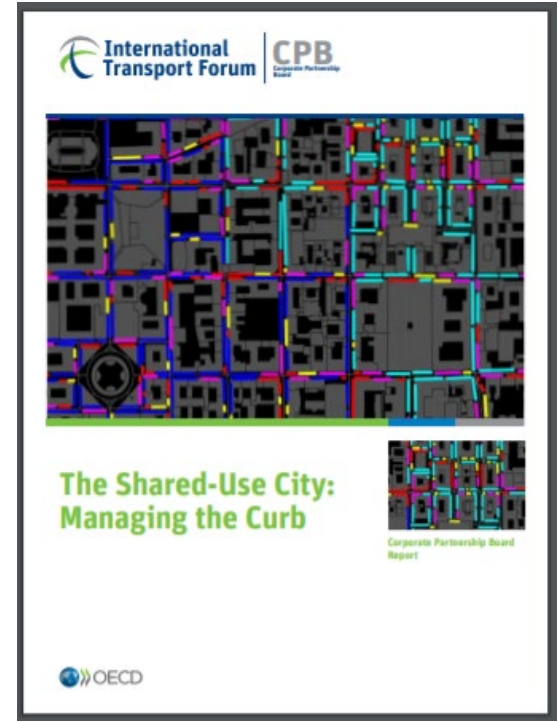
# Want to Know More?



<https://www.ite.org/pub/?id=C75A6B8B-E210-5EB3-F4A6-A2FD8AE4AA>



<https://nacto.org/tsdg/curb-appeal-whitepaper/>



[https://www.itf-oecd.org/sites/default/files/docs/share-d-use-city-managing-curb\\_3.pdf](https://www.itf-oecd.org/sites/default/files/docs/share-d-use-city-managing-curb_3.pdf)