Small Vehicles, Big Impact: Evaluating, Designing, and Managing for Shared Micro-mobility

John Cock, Alta Planning + Design
Vivian Coleman, Charlotte DOT
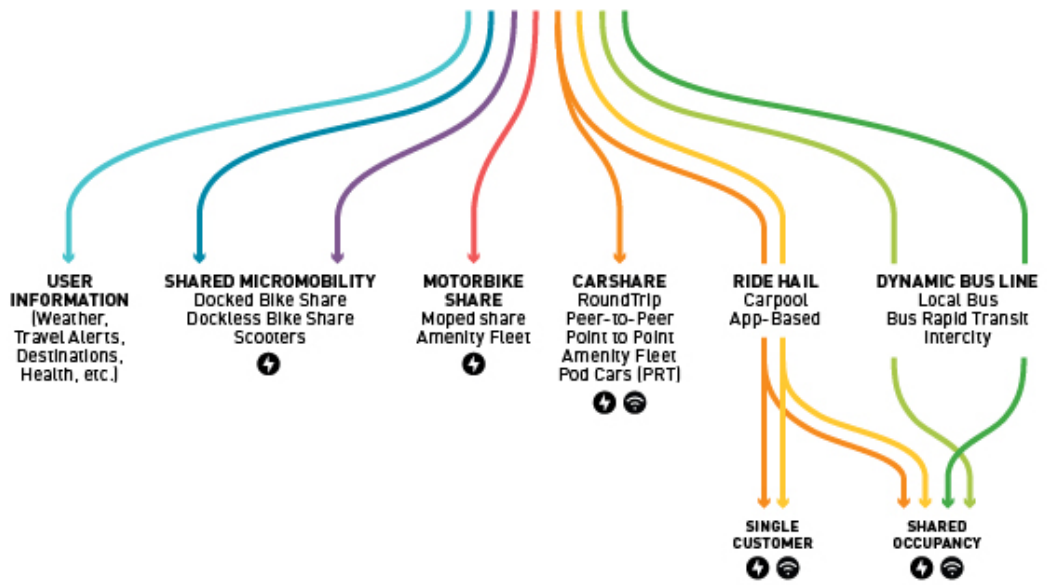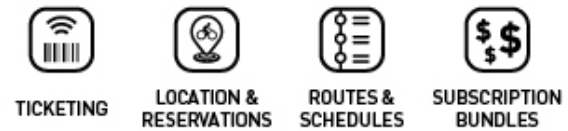**Dianna Ward, Charlotte Bcycle; NABSA,**

NCAMPO CONFERENCE
APRIL 2019

WALK BIKE RIDEABLES MOTORBIKES SOV TAXI SHUTTLE TRANSIT

MOBILITY-AS-A-SERVICE

TICKETING

LOCATION &
RESERVATIONS

ROUTES &
SCHEDULES

SUBSCRIPTION
BUNDLES

**USER
INFORMATION**
(Weather,
Travel Alerts,
Destinations,
Health, etc.)

SHARED MICROMOBILITY
Docked Bike Share
Dockless Bike Share
Scooters

**MOTORBIKE
SHARE**
Moped share
Amenity Fleet

CARSHARE
RoundTrip
Peer-to-Peer
Point to Point
Amenity Fleet
Pod Cars (PRT)

RIDE HAIL
Carpool
App-Based

DYNAMIC BUS LINE
Local Bus
Bus Rapid Transit
Intercity

**SINGLE
CUSTOMER**

**SHARED
OCCUPANCY**

◔ Electric Models

◉ Autonomous Models

alta
PLANNING + DESIGN

2017+
Dockless

2018+
Expanding the Suite

Multimodal Private Sector

Uber is piloting a bike-sharing service with JUMP

Posted Jan 31, 2018 by *Megan Rose Dickey* (*@meganrosedickey*)
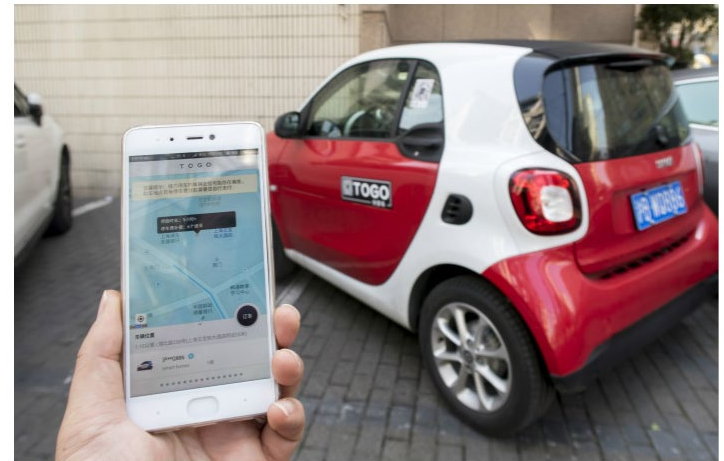
Next Story

SAMSUNG

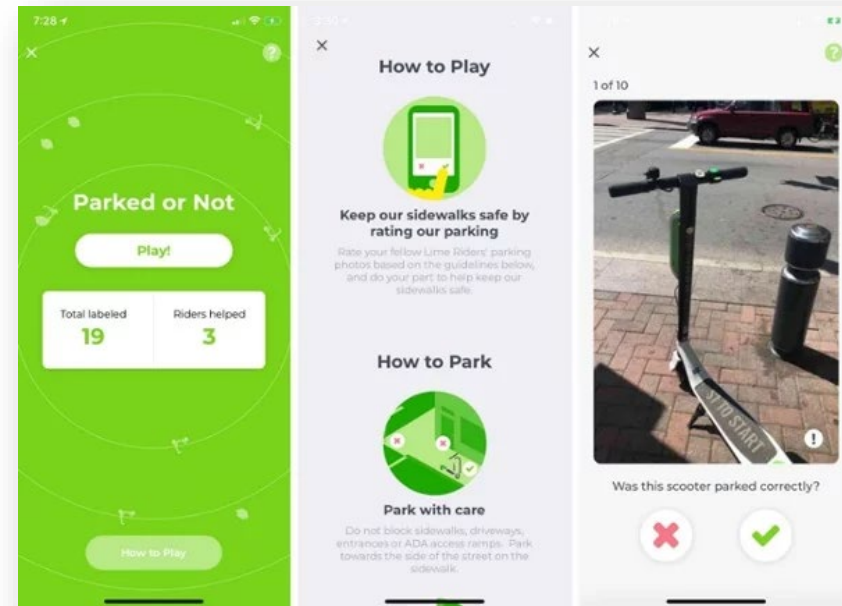Nov 07, 2017 02:55 AM   BUSINESS & TECH

Mobike Pedals Into Car-Sharing

By Mo Yelin

Dockless Permits: Trends

- Tension among caps, coverage rules and response times
- Aggregation for Mobility-as-a-Service
- Sponsored infrastructure upgrades
- Use of in-app education and rider engagement

Dockless Permits: Trends

Dockless Permits: Trends

Dockless Permits: Trends

- Proactive compliance & enforcement

- Increase in # vehicles

- Parking strategies

- Caps on number of companies

- Enhanced equity requirements

- Increase usage for first/last mile

- Funding for program management (net zero cost to city)

On the Horizon…or here!

- E-bike share
- Continued integration with transit
- Continued expansion to underserved neighborhoods
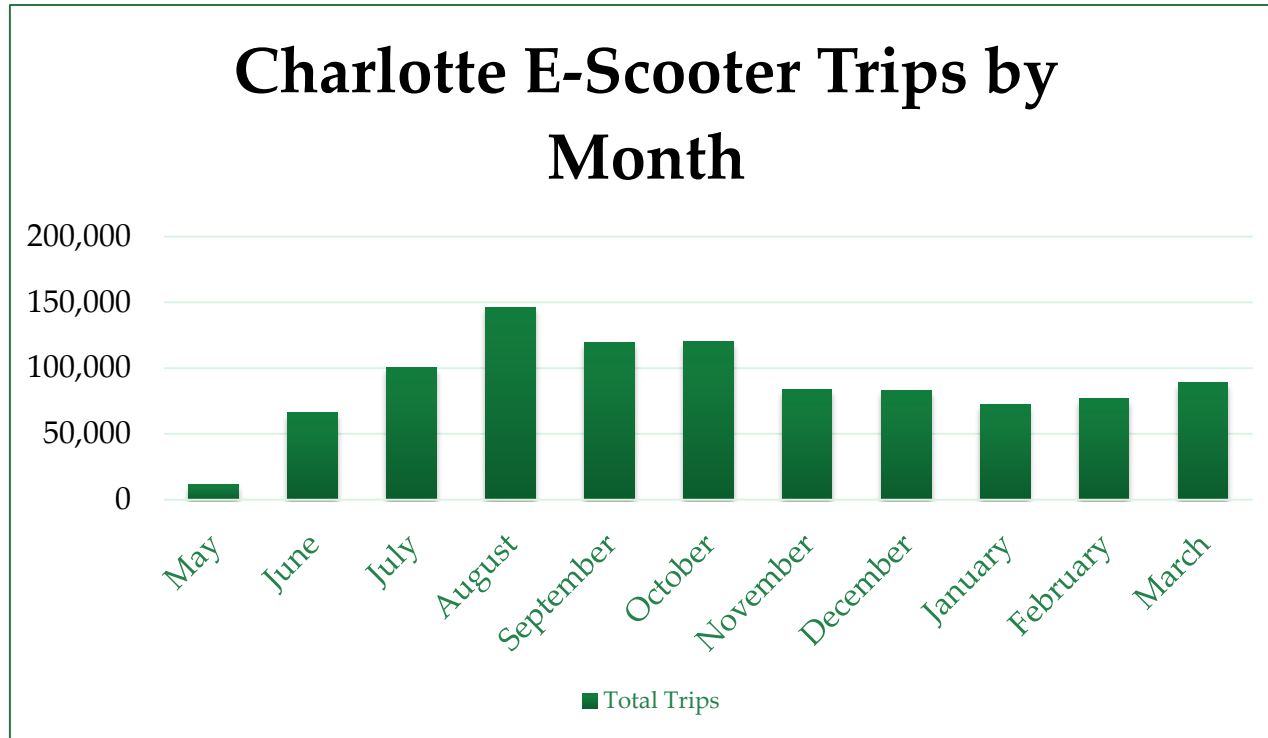- Meaningful data and data specifications
- New financial models

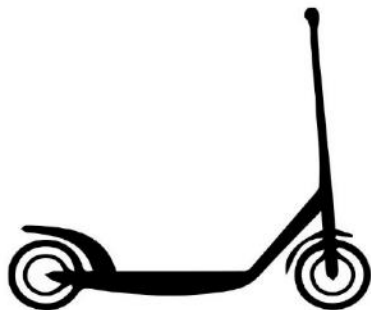# E-scooters in Charlotte
April 25th, 2019

Charlotte E-Scooter Trips by Month

Bar chart showing Total Trips by month:
- May: ~12,000
- June: ~67,000
- July: ~100,000
- August: ~145,000
- September: ~120,000
- October: ~122,000
- November: ~85,000
- December: ~83,000
- January: ~73,000
- February: ~77,000
- March: ~90,000

■ Total Trips

IN FEBRUARY, THE AVERAGE E-SCOOTER USER...
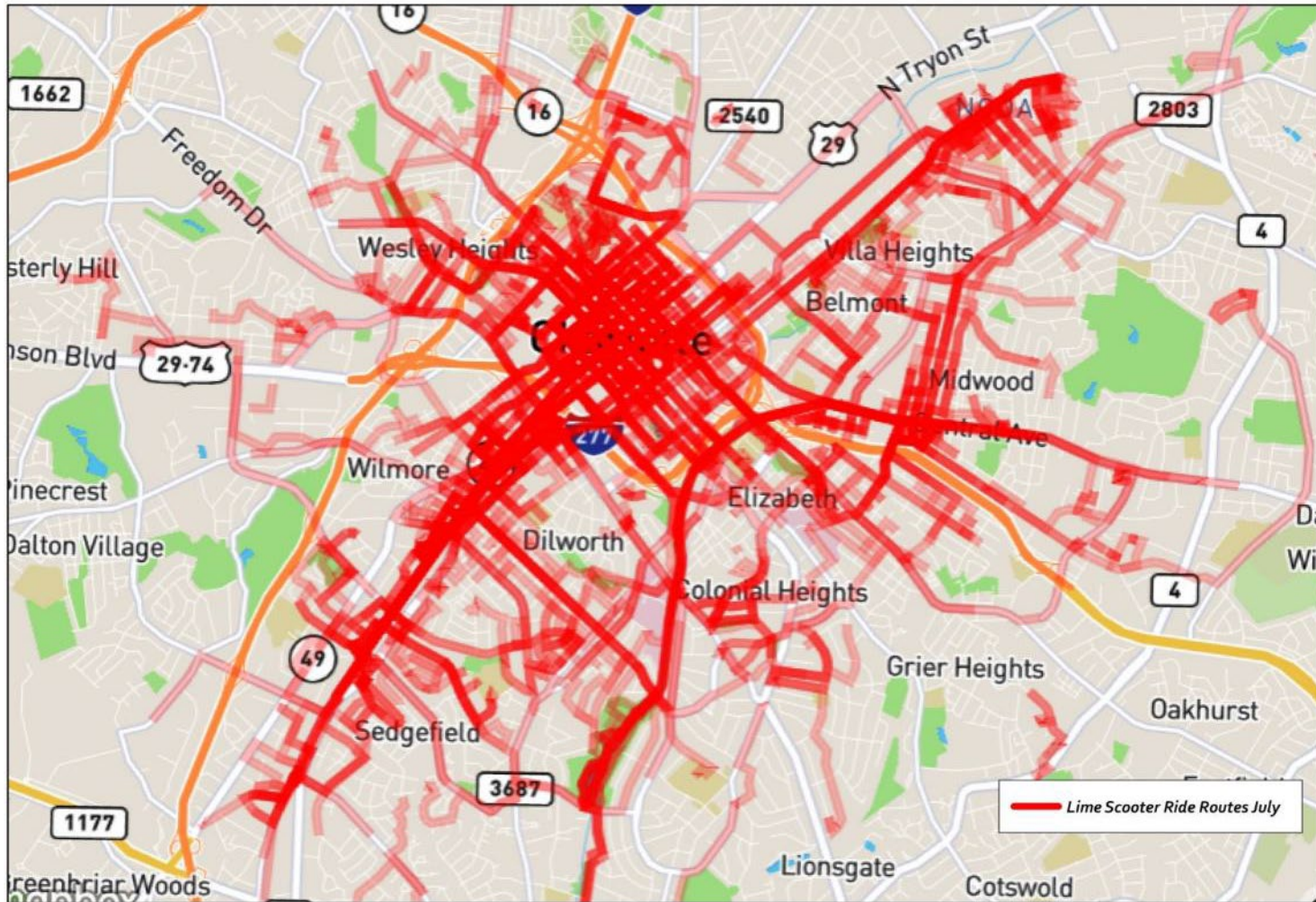
Took **1-3 trips**

Traveled **1.7 miles** per trip

Spent **12 minutes** scooting per trip

Since May 2018

- **963,903 trips**
- **1,133,594 miles**

Lime Scooter Ride Routes July

Expanding Cycling Infrastructure

The first appearance of e-scooters in the United States was in Santa Monica, CA in late 2017. They soon showed up in other California cities like San Francisco and San Diego, and they quickly spread to other cities around the country, including Charlotte in May 2018. Currently e-scooter services are operating in over 30 states around the country.

○ Lime
● Bird

E-SCOOTERS IN CHARLOTTE

TIMELINE

Dockless bikes first appeared in **August 2017**

One-year dockless bike Pilot Program in **November 2017**

City amended Pilot Program to accommodate **e-scooters** in **May 2018**

Amended City Code **January 2019**

PILOT PROGRAM – DEVELOPMENT

Working group included:

- CDOT – Planning

- CDOT – ADA

  - Metrolina Association for the Blind

- CDOT – ROW

- CATS

- Mecklenburg County Parks

- Charlotte Planning Department
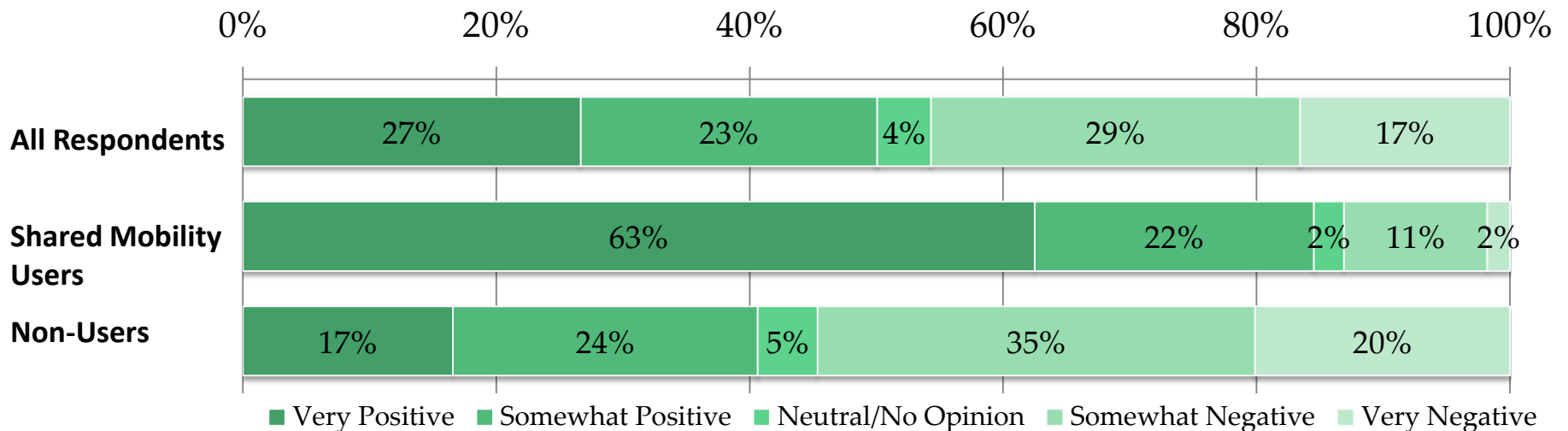
- CMPD

- Charlotte Center City Partners

NACTO Policy 2018

Guidelines for the Regulation and Management of Shared Active Transportation

Version 1: July 2018

NACTO

https://nacto.org/wp-content/uploads/2018/07/NACTO-Shared-Active-Transportation-Guidelines.pdf

OPINIONS OF SHARED MOBILITY

50%
of all respondents have somewhat positive or very positive opinions towards shared mobility

The majority of people who have used shared mobility (85%) have positive opinions…
…but the majority of those who haven't
used it (55%) have negative opinions.

| | 0% | 20% | 40% | 60% | 80% | 100% |

All Respondents: 27% | 23% | 4% | 29% | 17%

Shared Mobility Users: 63% | 22% | 2% | 11% | 2%

Non-Users: 17% | 24% | 5% | 35% | 20%

■ Very Positive ■ Somewhat Positive ■ Neutral/No Opinion ■ Somewhat Negative ■ Very Negative

- Partnered with Vendors

- "Street Team" engaged with riders

- Provided ride credit to those who engaged

- Qualitative data collection

Always Be Careful
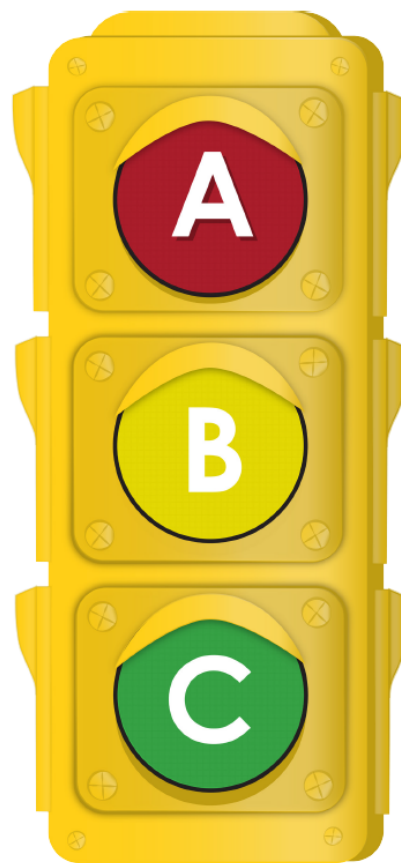
ALWAYS obey vehicle traffic rules and always ride solo.
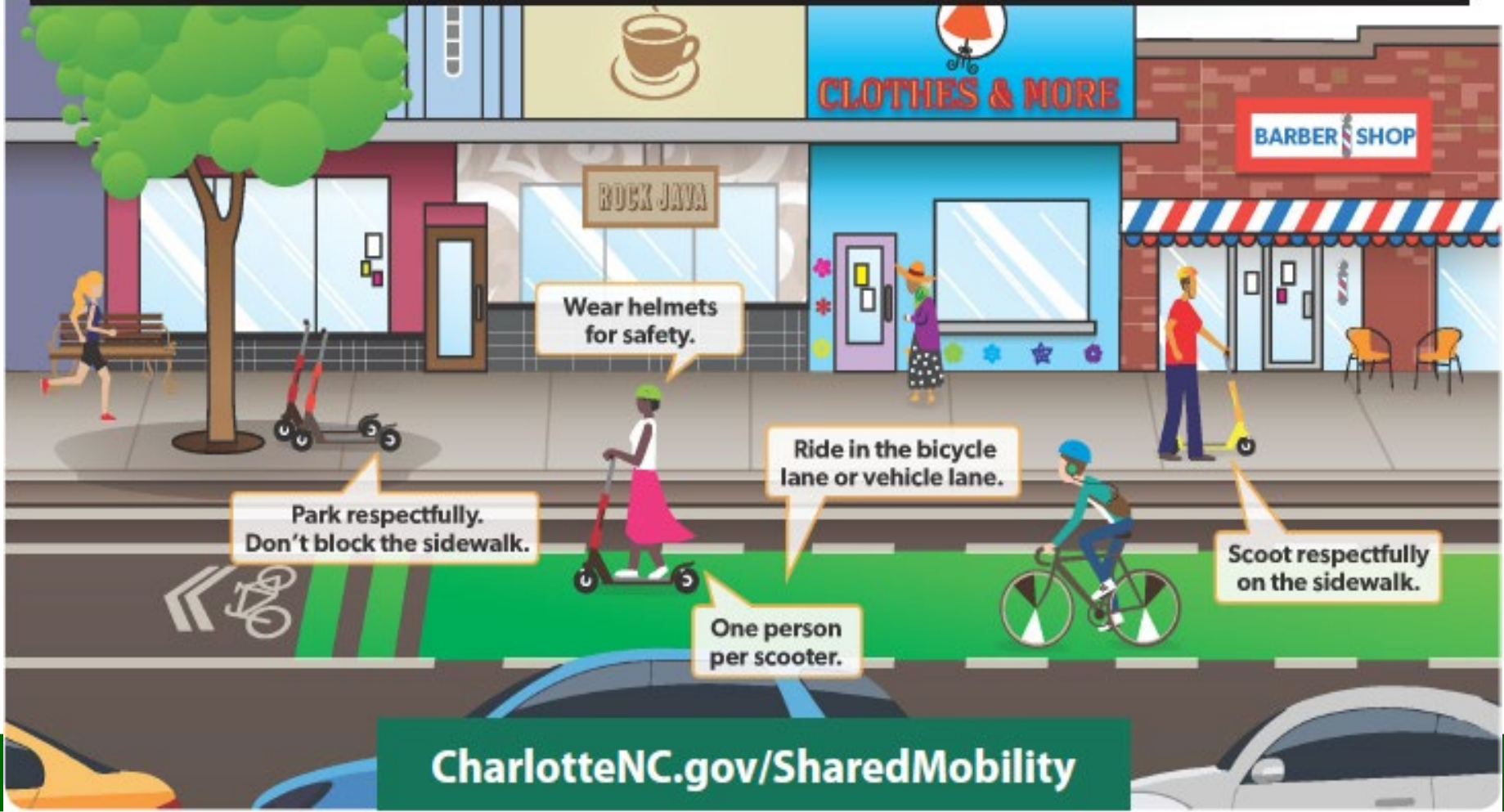
BE VISIBLE, courteous and yield to pedestrians at all times.

**CURB** and park your scooter appropriately.

CITY OF CHARLOTTE #ScooterSafety

CLT 250

- Minimum 6' clear zone (sidewalks)

- 24-hour customer service

- Rebalance scooters each evening

  – Midday rebalance

- Scooters are shut off ~9pm

- In app safety messaging

- Data share with the city each month

Shared Mobility
E-Scooter Plan

City of Charlotte
Department of Transportation
CHARLOTTE.
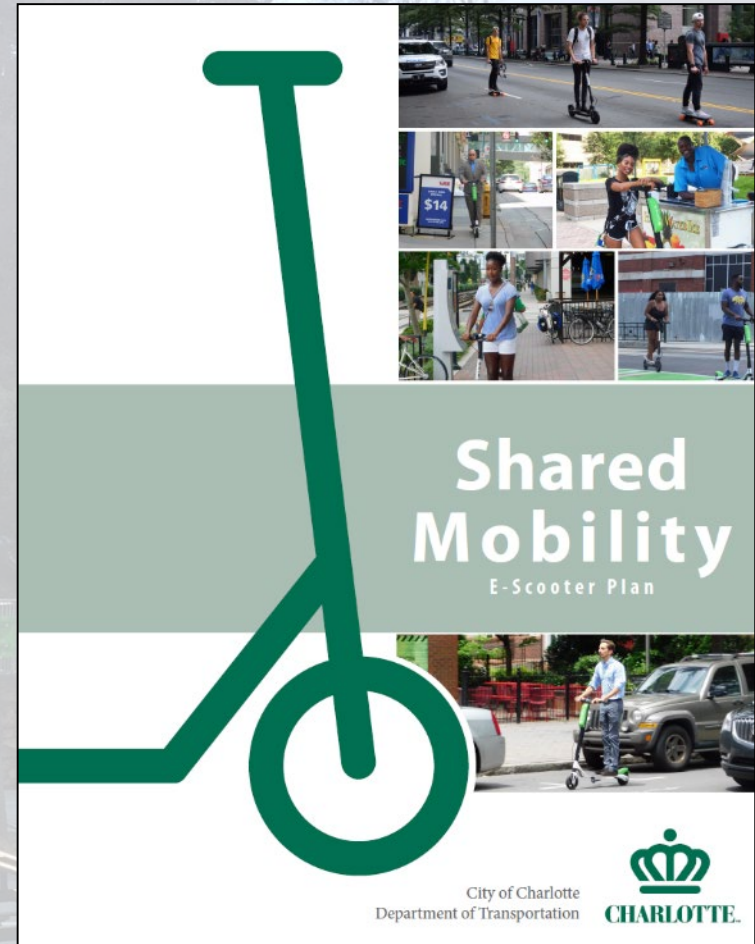
Data required

- ## Trips
  - *Total*
  - *Total Distance*
  - *Average Trip (duration and distance)*

- ## Number of units

- ## Active Users
  - *Users by trip level*

- ## Complaints
  - *By complaint type*

E-SCOOTER TRIPS BY WEEK

Week 1 2/1-2/3
Week 2 2/4-2/10
Week 3 2/11-2/17
Week 4 2/18-2/24
Week 5 2/25-2/28
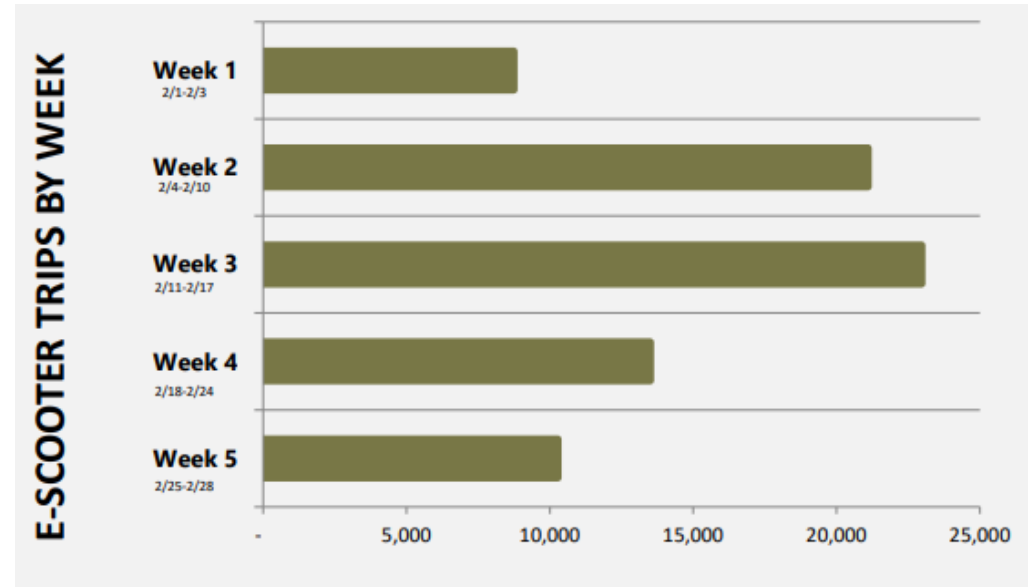
March 2019

- **89,004 trips**
- **74,073 miles**

Key elements of ordinance

- Defines e-scooters and e-bikes (NOT motor vehicles)

- Speed capped at 15mph

- Weight capped at 50lbs.

- Solo riding only

- Designated area in Center City with no sidewalk riding

Shared
Mobility
E-Scooter Plan

City of Charlotte
Department of Transportation

CHARLOTTE.

Electric Standup Scooter

- 12in or smaller wheels

- Electric Motor with no assist needed

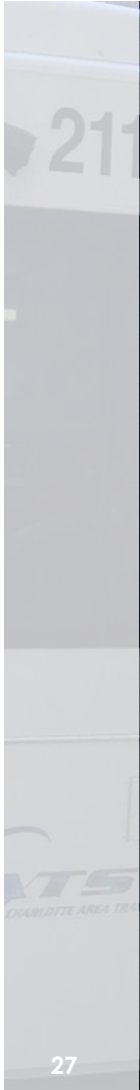- No greater than 15mph on a paved level surface
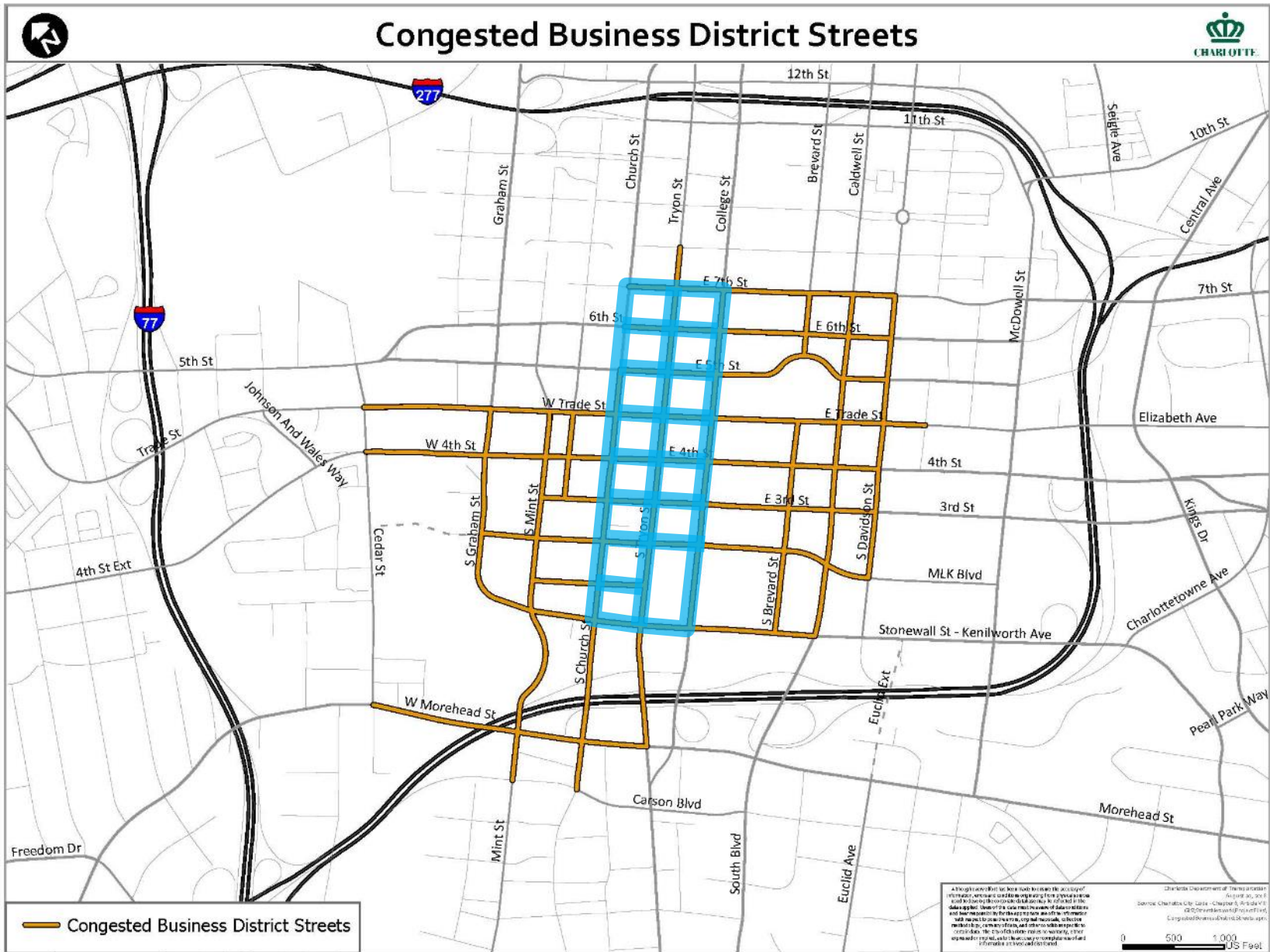
- No more than 50lbs

Electric Assist Bicycle

- Two or Three wheels

- Seated

- Max speed 20mph
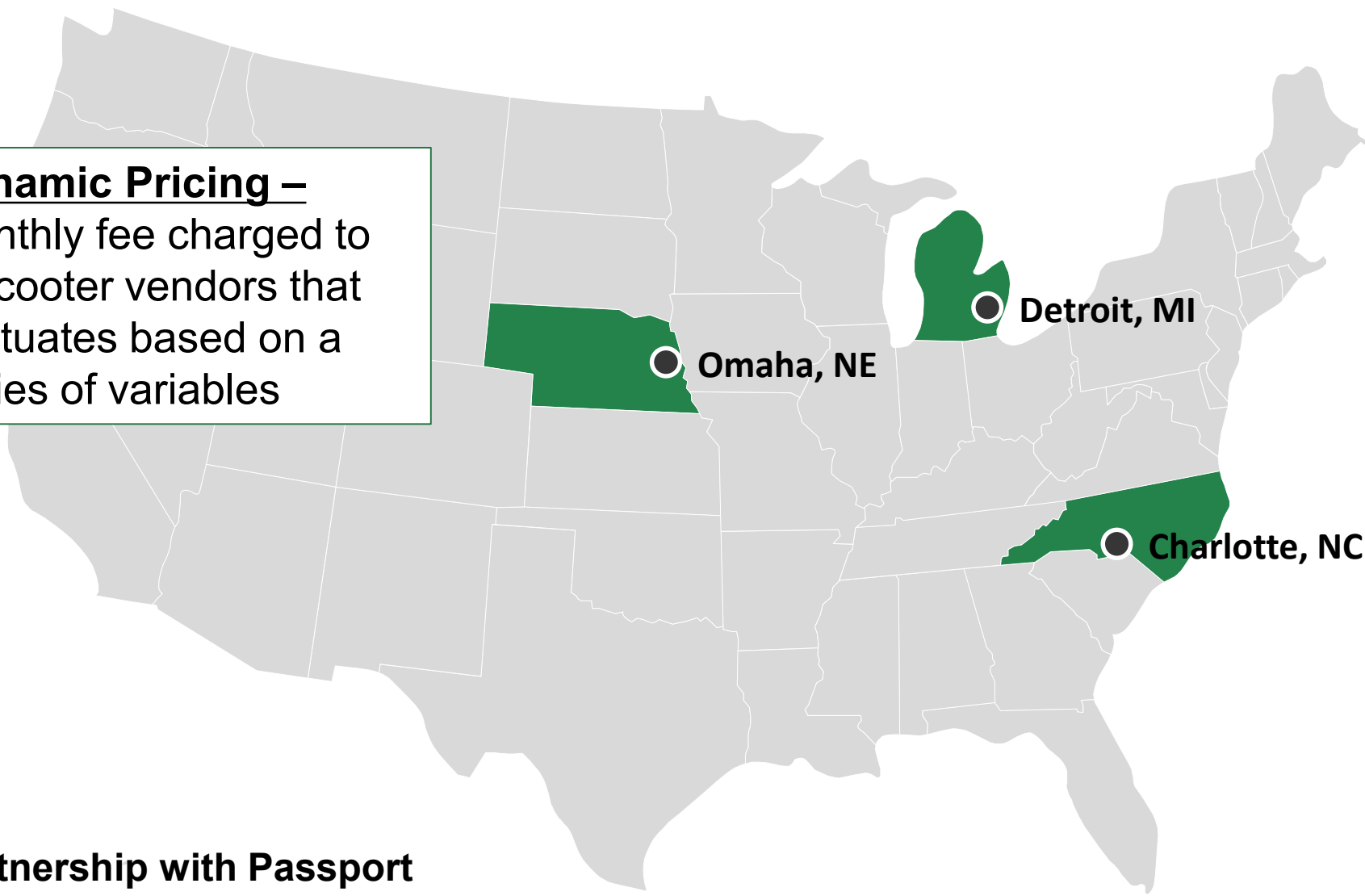
- Based on current NC Statue

  Definition

DEFINITIONS

Congested Business District Streets

DYNAMIC PRICING - PILOT CITIES

Dynamic Pricing – monthly fee charged to e-scooter vendors that fluctuates based on a series of variables

Detroit, MI

Omaha, NE

Charlotte, NC

Partnership with Passport

THANK YOU!

charlottenc.gov

QUESTIONS
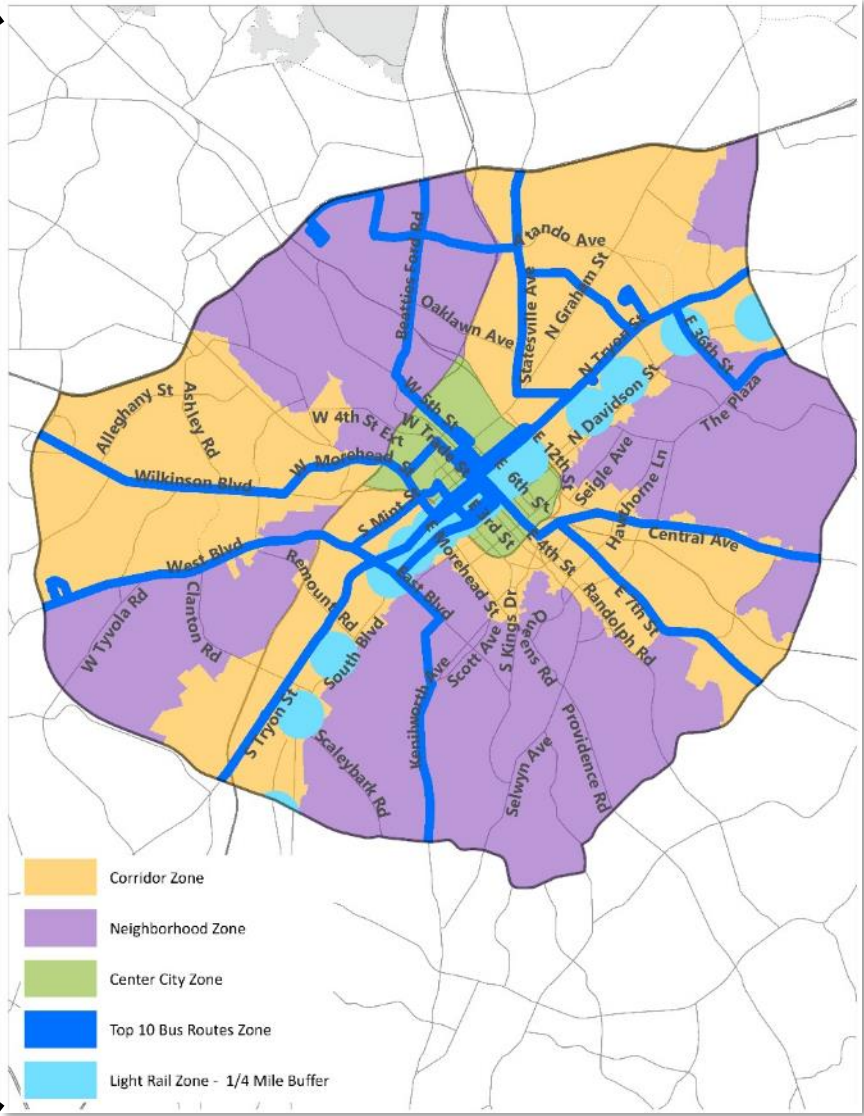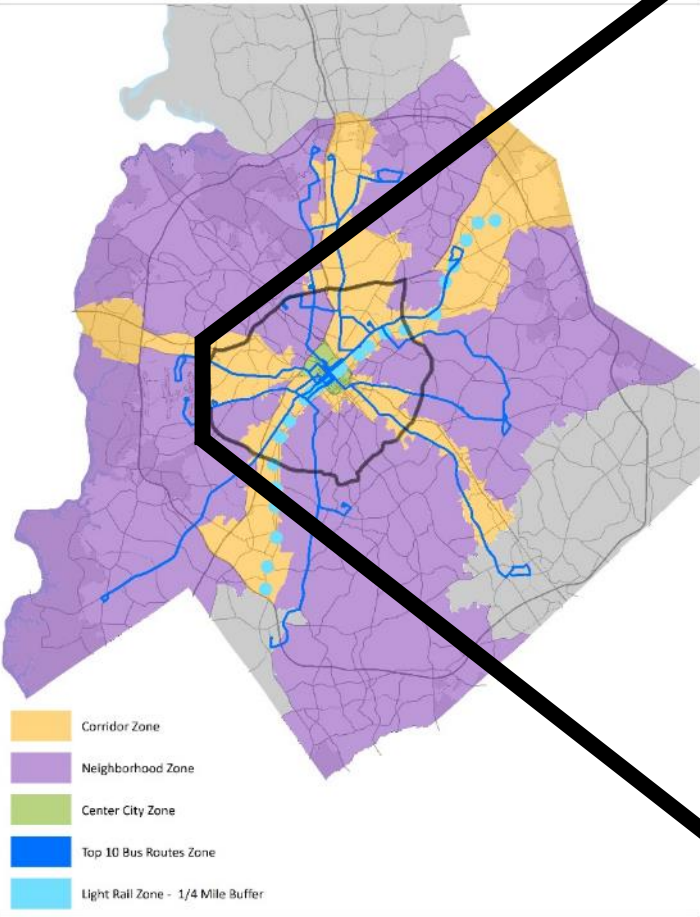
<u>INCENTIVES</u> given to vendors/users for:

- **Safety**

  - **Parking without blocking sidewalks**

  - **Helmet usage**

- **First/Last Mile - Transit**

- **Fee varies by:**

  - **Amount of time scooter is parked**

  - **Parking zone (5 zones)**

PARKING FEES CHANGE BY ZONE

Did not wear a helmet, parked in a high pedestrian area, blocked sidewalk, and scooter was parked for 4 hours

User wore a helmet, parked near transit, not blocking sidewalk, and scooter parked for less than 1 hour
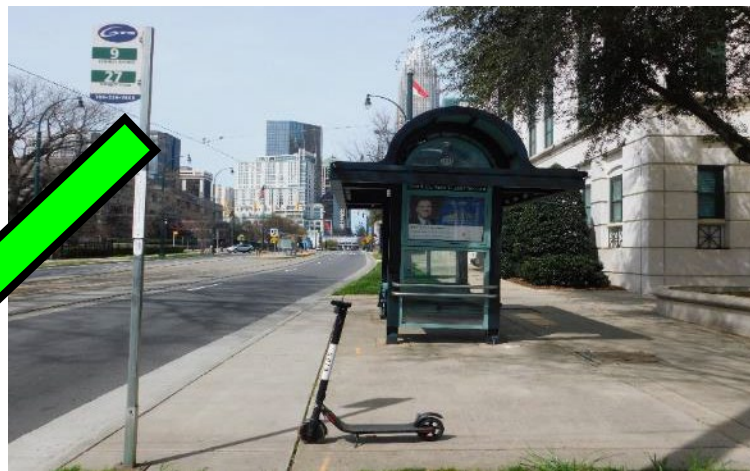
Parked in high pedestrian activity area, blocking sidewalk, user did not wear a helmet and scooter was parked for 4 hours

Dynamic Fee Example (1 million trips)

No helmet	+15 cents
Block sidewalk	+15 cents
Parked for 4 hours	+<u>15 cents</u>
	45 cents

$450,000

Parked near transit, not blocking sidewalk, user wore a helmet and scooter was only parked for a short time

Dynamic Fee Example (1 million trips)

Used helmet	-15 cents
Did not block sidewalk	-15 cents
Parked for <1 hour	0 cents
	-30 cents

$0

- **Allows number of e-scooters in Charlotte to grow** as ridership grows

    - **> 3 trips per scooter per day**

- If vendor can demonstrate they have more than <u>3 trips per scooter per day</u> then they can **expand their system**

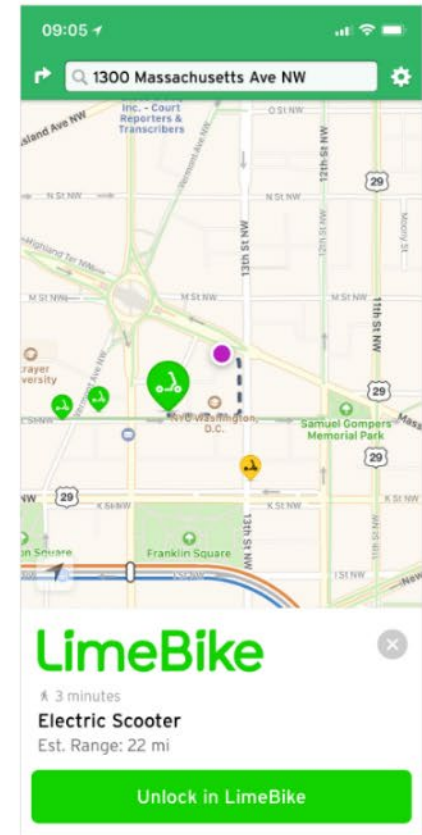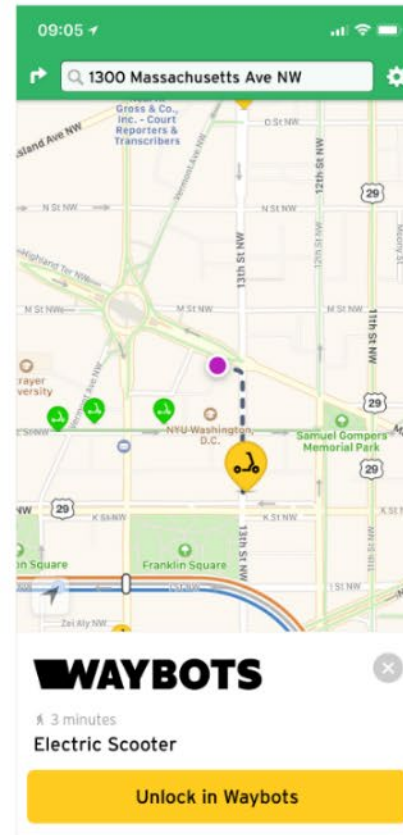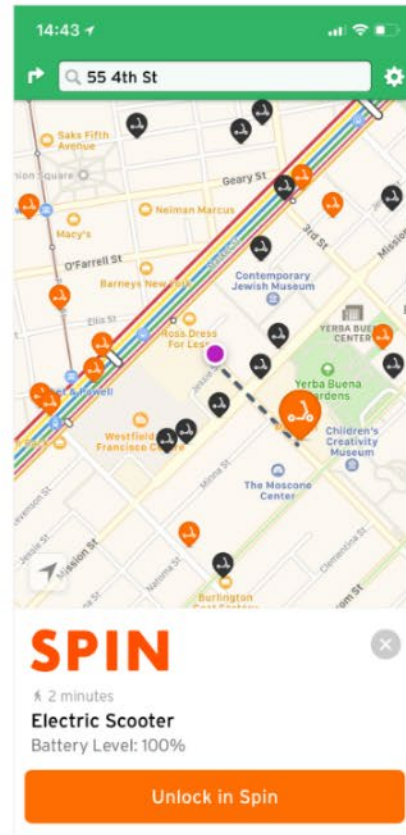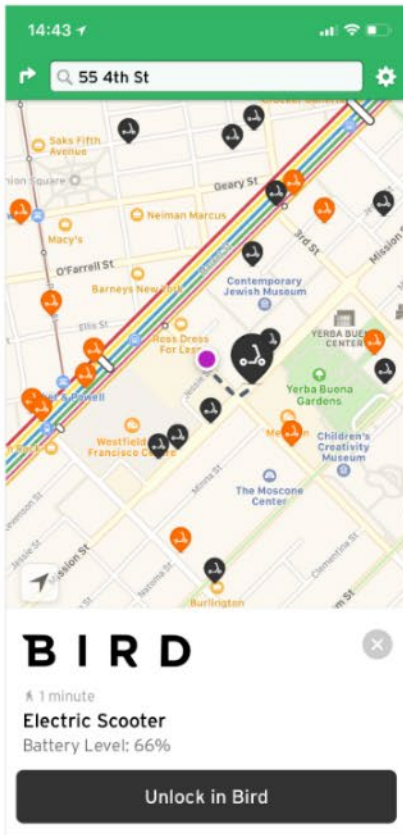- Dynamic fee increases if vendor does not exceed 3 trips per day

DYNAMIC PRICING PILOT SCHEDULE

PHASE 1   Pilot development

- **Jan/Feb –** Coordination with Passport/Vendors
- **March 19th** – Press Release
- **March 7-April 15** – Pricing model analysis

PHASE 2   Pilot implementation

- **April 15th** – Begin Live Testing
- **May** – Invoice #1
- **June** – Invoice # 2
- **July** – Invoice #3

Aggregation Challenge

Once you find a scooter, we'll deep-link you to the corresponding app, so you can unlock it. Easy peasy.

Charging Challenge

Current

- Companies recharge at night
- Companies swap batteries
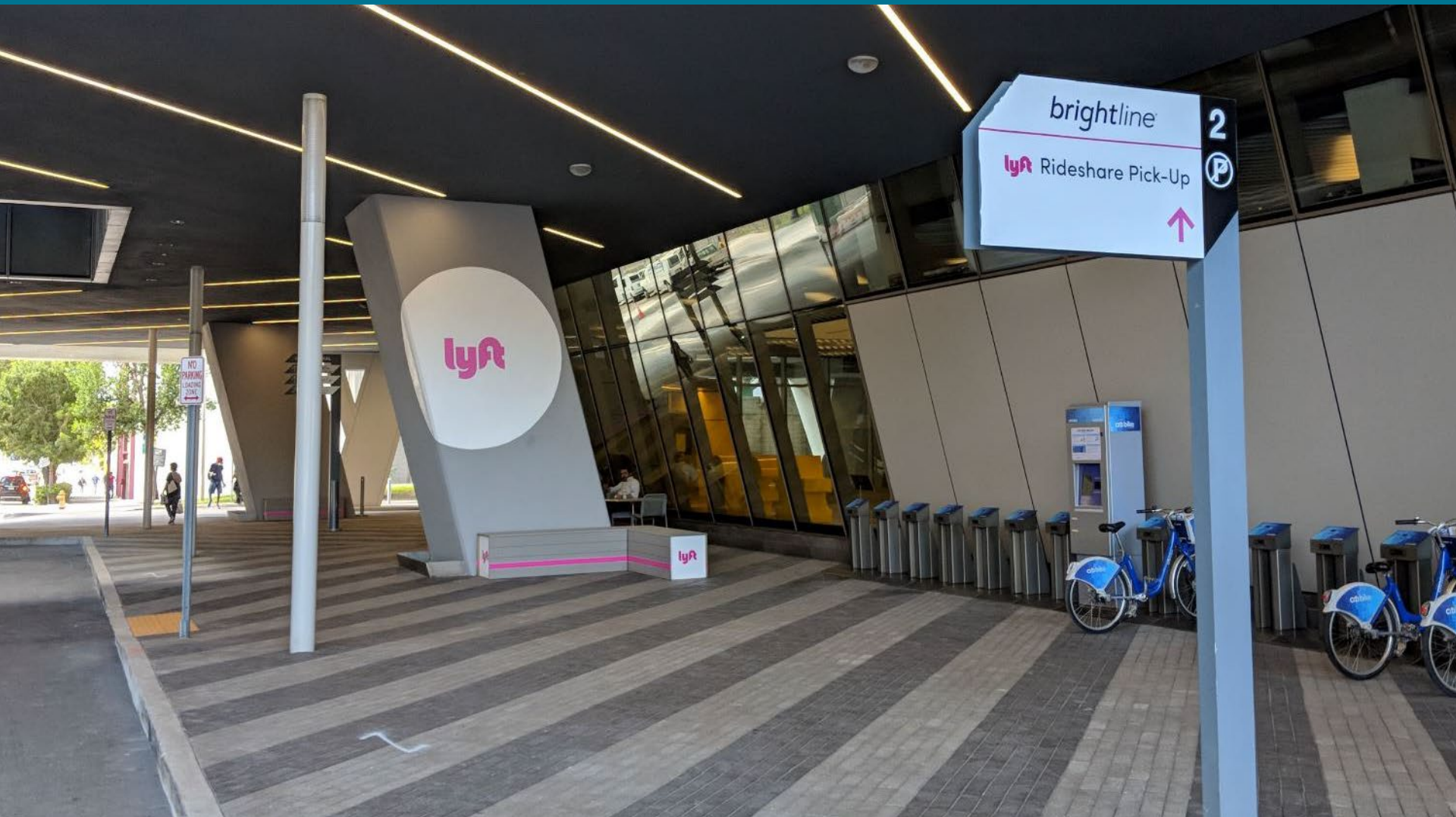- Paid "Juicers"
- BYOB (as in battery)

Emerging

- Multiple, proprietary recharging stations?
- Single standard for recharging for all vehicles?
- Single swappable battery?

"Whoever can solve that at scale in many cities is going to have a very strong operating advantage," Rzepecki says.
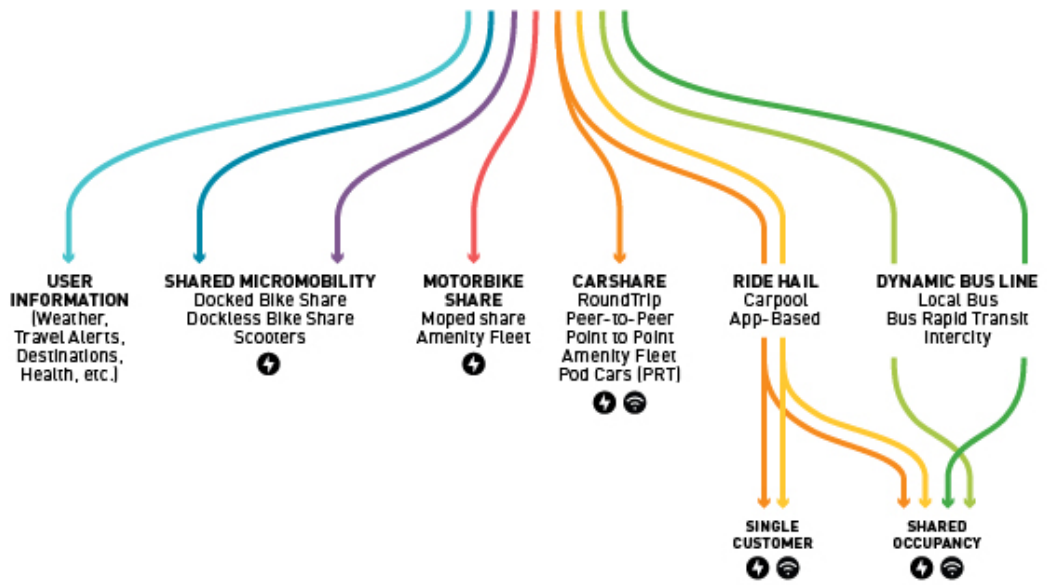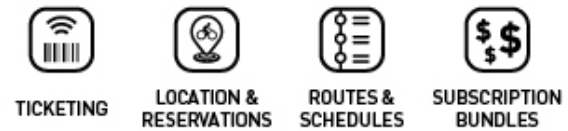
(Curbed, June 28, 2018; https://www.curbed.com/2018/6/28/17515758/electric-bike-share-cycling-city-transportation)

Mobility Hub Integration

WALK BIKE RIDEABLES MOTORBIKES SOV TAXI SHUTTLE TRANSIT

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