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New Mobility:
Planning in a New Era of Transportation

May 29, 2018

Jean Crowther, AICP – Alta Planning + Design

Presenter

Jean Crowther, AICP

New Mobility Group Leader

Alta Planning + Design

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National Dialogue

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Director of Engineering and Technical Services

Reema Griffith

Washington State Transportation Commission

Executive Director

Art Guzzetti

American Public Transportation Association

Vice President for Policy

Larry Head

University of Arizona

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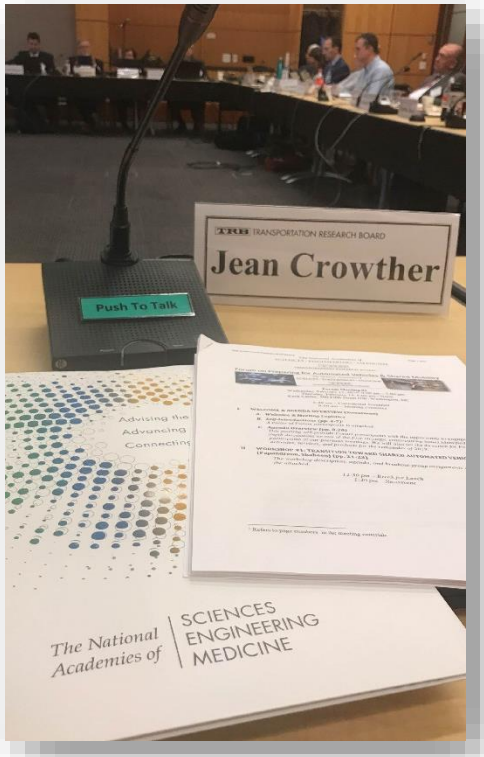

Link to TRB Forum 2018 White Paper: https://altaplanning.com/resource_categories/industry-resources/

TRB Forum Website: http://www.trb.org/TRBAVSMForum/AVSMForum.aspx

Understanding Implications

Not just Mobility: How E-bike Share Can Spark a Design Revolution

Promoting Active Transportation Safety in Preparation for Autonomou...

Complete Streets 2.0: Responding to The Fast Pace of Change in Transportation

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Alta Innovation Lab:
https://blog.altaplanning.com/alta-innovation-lab/home

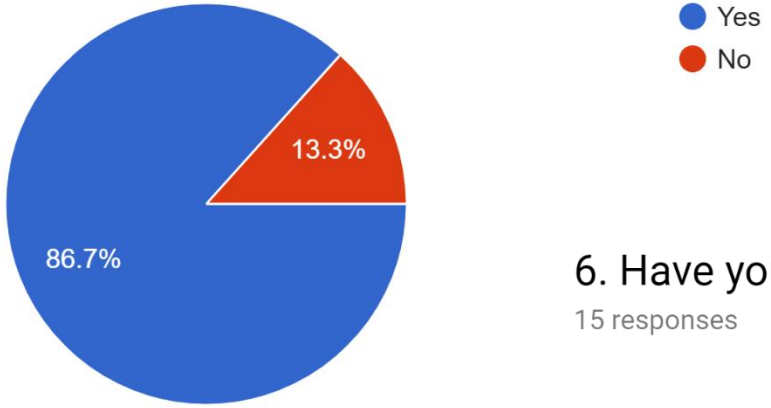
Today's Focus

1. Terms
2. How did we get here?
3. Use Cases
4. Responses & Reactions
5. Implications

Today's Focus

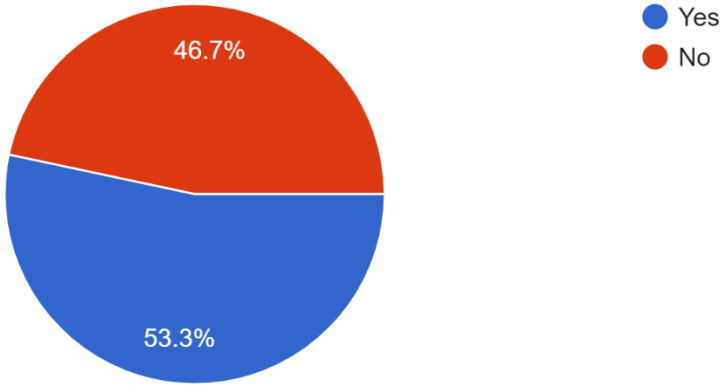
5. Have you ever used Uber or Lyft to go somewhere?

15 responses



6. Have you ever ridden bike-share or scooter-share?

15 responses

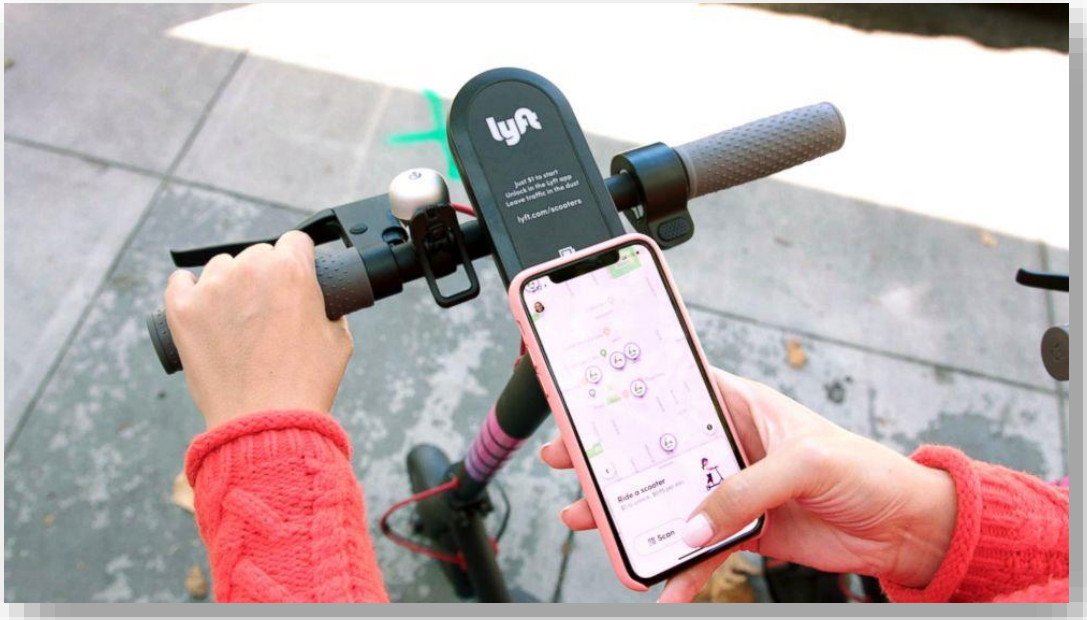


What is New Mobility?

Transportation services that are enabled, defined, or redefined by digital technology.

What does that look like?

- App-based
- Real-time
- Point-to-point
- On-demand
- Multimodal
- Shared
- Electric



Shared Micro-Mobility

"All shared-use fleets of small, full, or partially human-powered vehicles such as bikes, e-bikes, and e-scooters."

- NACTO

NACTO Shared Micromobility in the U.S.: 2018

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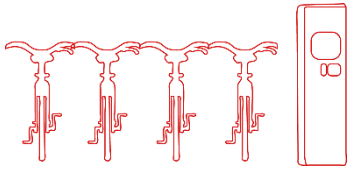
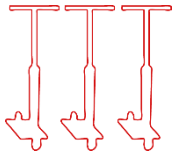
Shared Mobility Terms

carsharing



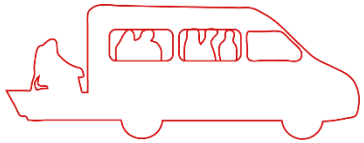
bikesharing



scooter sharing

ridesharing

ridehailing



microtransit

Taxonomy: https://www.sae.org/shared-mobility/

What is Mobility Management?

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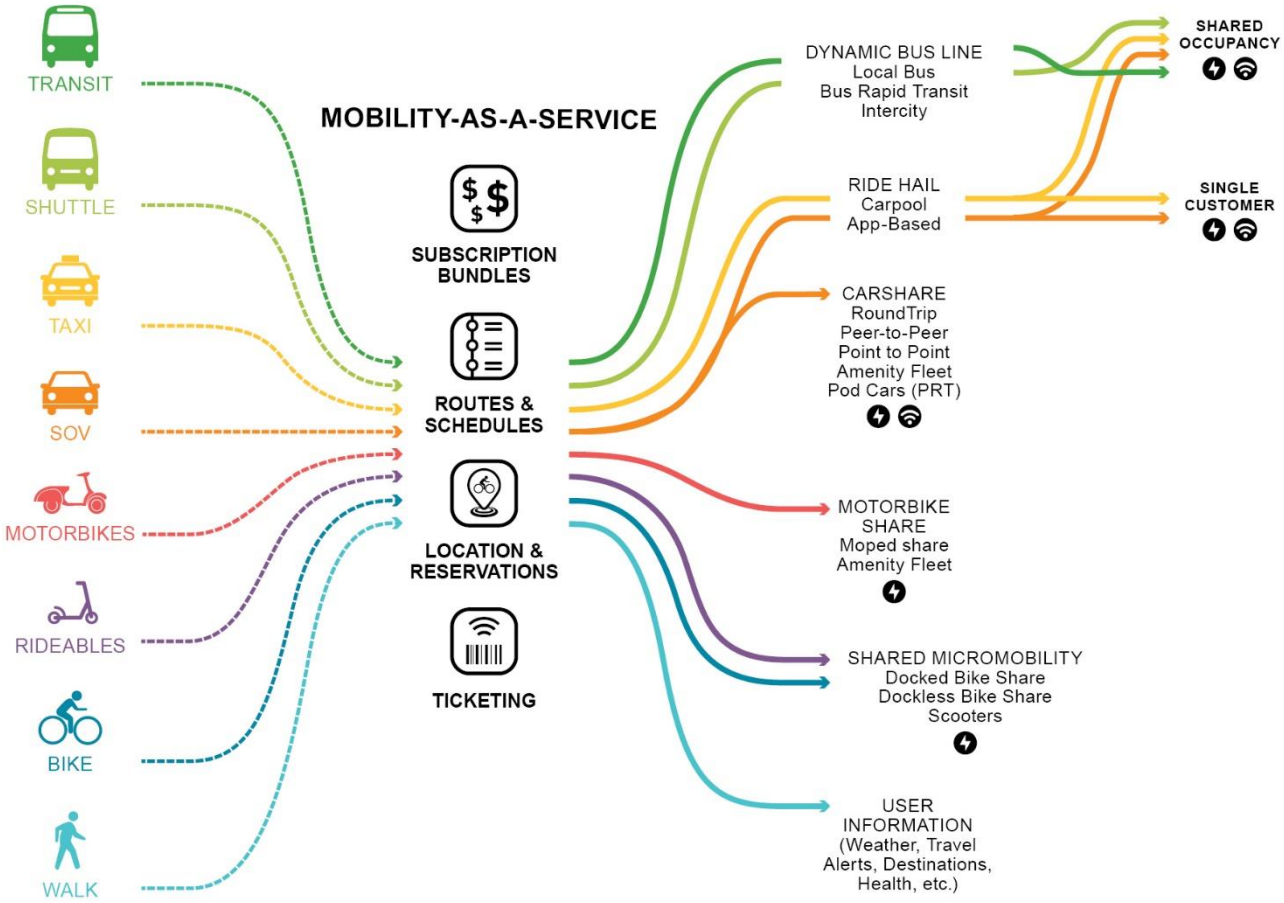
Mobility-as-a-Service



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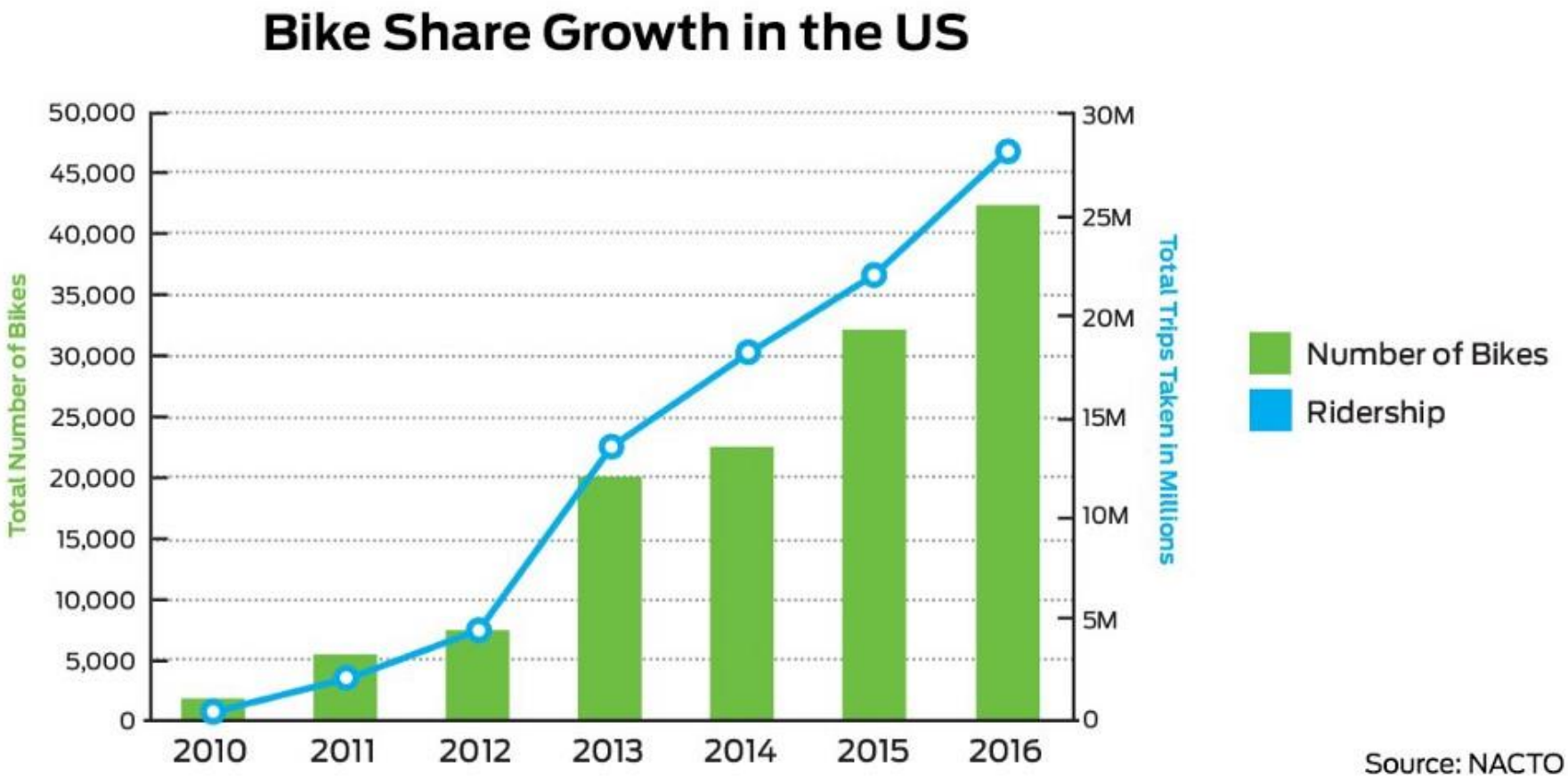
How Did We Get Here?

How We Got Here



Source: NACTO

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2017+
Dockless
SPIN
www.spin.pm
LimeBike
mobike
A01600 1214


2018+
Expanding the Suite
Lime
GPS Tracked
$1 TO START

Volume + Market Share

Multimodal Private Sector

https://www.bicycling.com/news/a26558471/uber-jump-bikes/

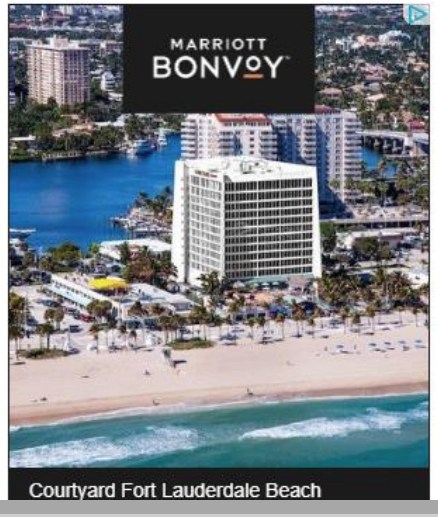
ps Alta GMAIL Alta Planning + Des... ADP Workforce No... ARC Framework Test Cas... Contents - The Fra... Egnyte Google Docs WSDOT ATP - Proje...

Bicycling BIKES & GEAR TRAINING NEWS SUBSCRIBE NEWSLETTER US

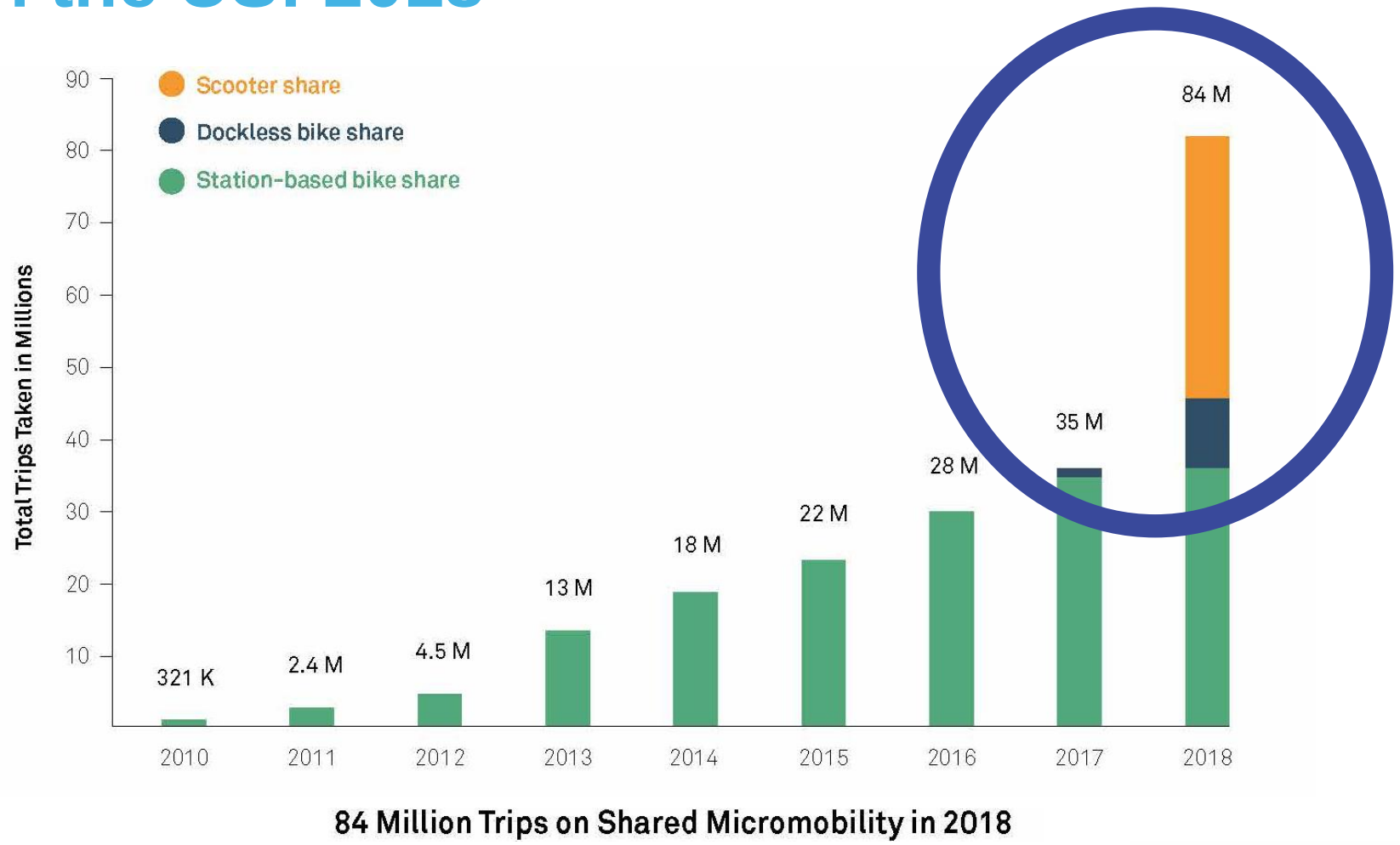
Uber's Electric Bikes May Be More Popular Than Its Cars

PEOPLE IN SACRAMENTO RENTED JUMP BIKES AT A HIGHER RATE THAN THEY HAILED UBER DRIVERS IN OCTOBER.

BY DANIELLE ZICKL Feb 28, 2019

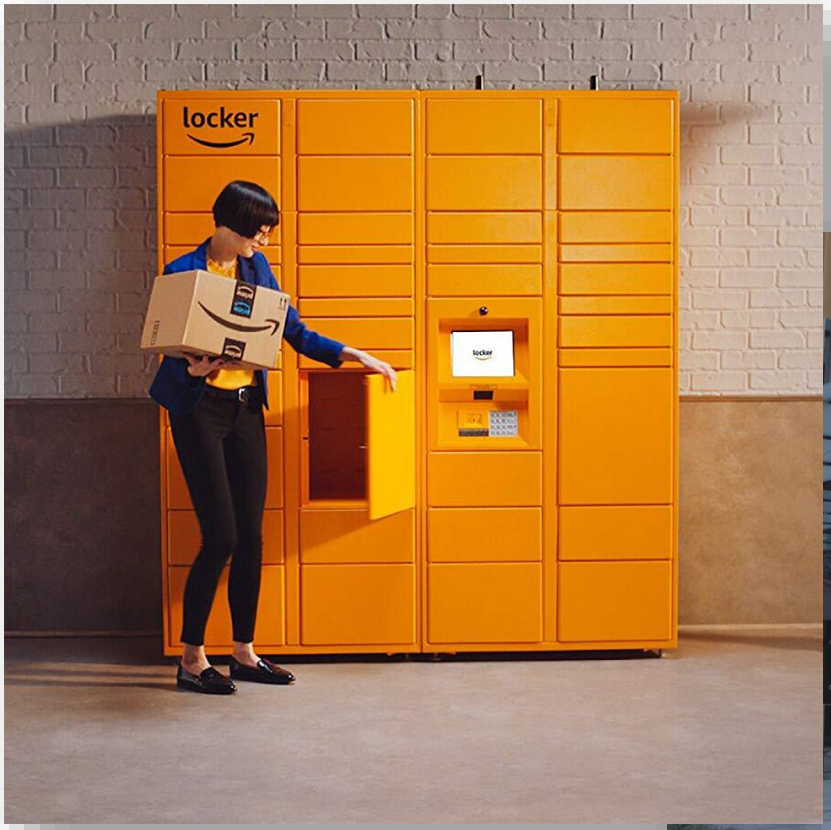


NACTO Shared Micromobility in the US: 2018

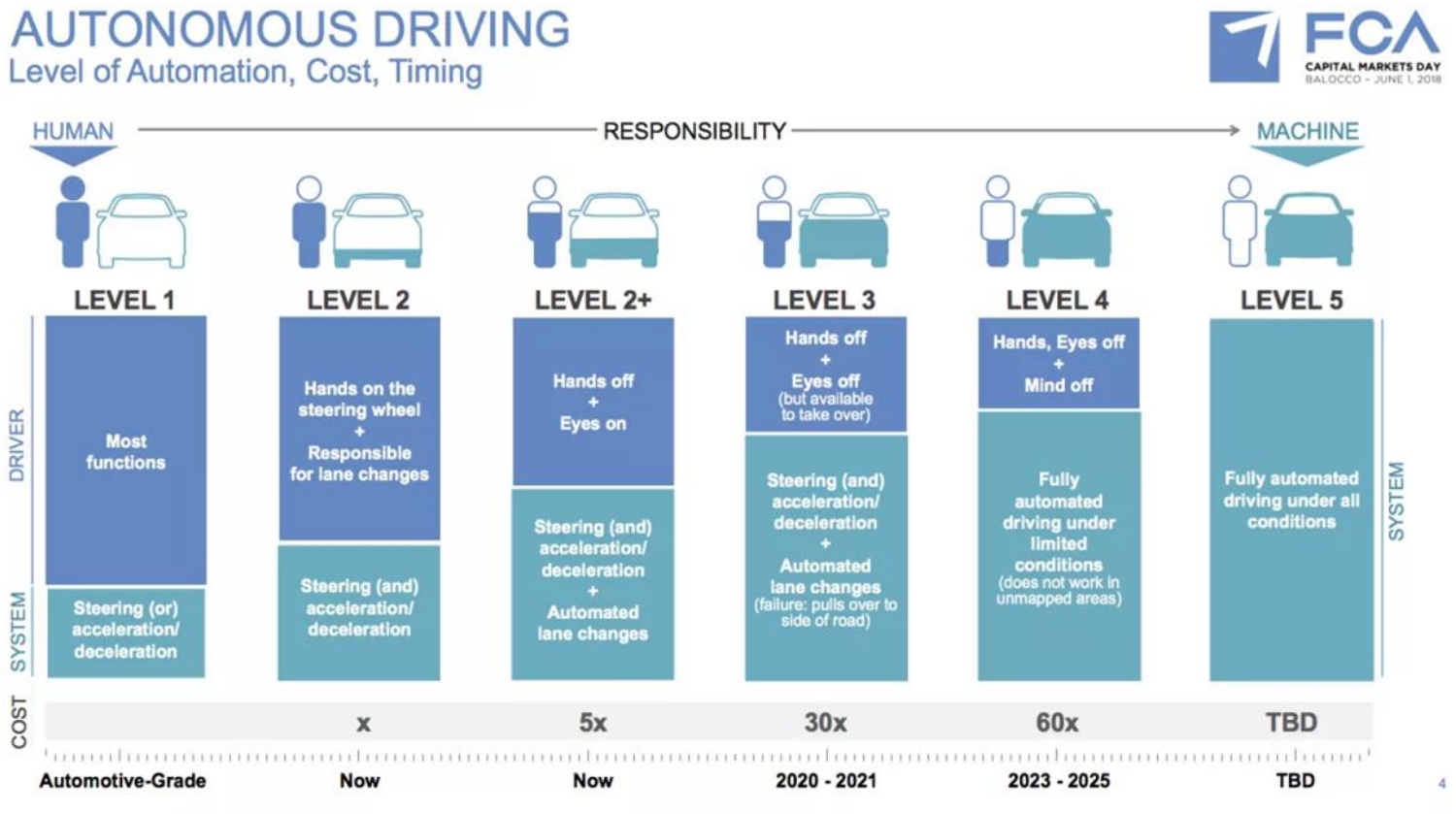


Source: NACTO

E-Commerce, Logistics, Deliveries



Definitions: Connected/Autonomous Vehicles



Source: Fiat Chrysler

Use Cases

First/Last Mile Access to Transit

Take Via to Transit – Your New Car-Free Commute in Southeast Seattle!

April 16, 2019 by Molly Wright

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@seattledot

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Ridehailing or $10m Parking Garage?

Transit-Linked Public/Private/Partnership

Trail Access + Campus Mobility

Public Services

NEWS TRANSPORTATION

Florida town is first in the world to test autonomous school shuttles [Updated]

3

The government has ordered the pilot program be stopped immediately

By Liz Stinson | Updated Oct 23, 2018, 11:45am EDT

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Urban Delivery

First/Last 500 Feet

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Freight

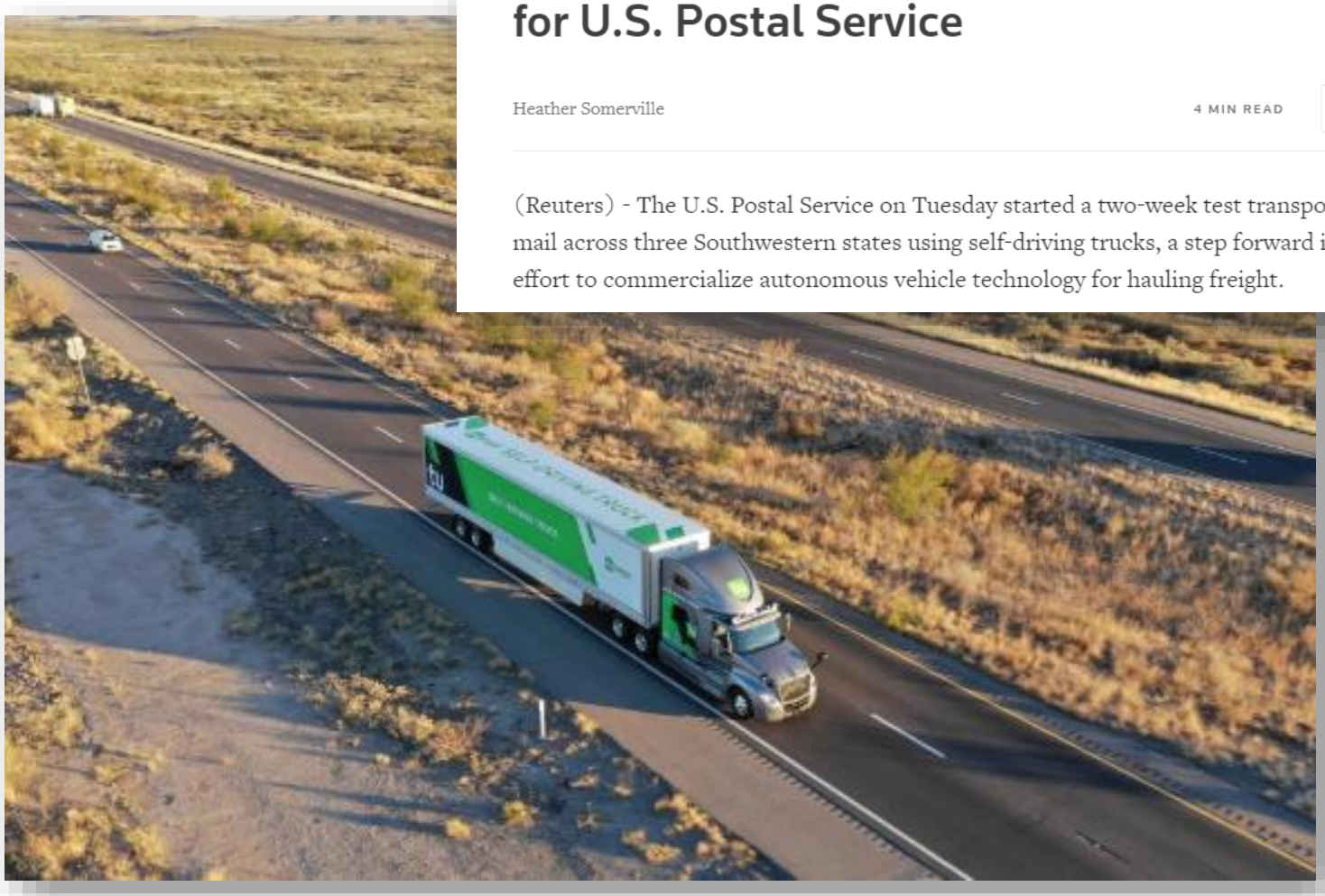
BUSINESS NEWS MAY 21, 2019 / 3:08 AM / 8 DAYS AGO

Self-driving trucks begin mail delivery test for U.S. Postal Service

Heather Somerville

4 MIN READ

(Reuters) - The U.S. Postal Service on Tuesday started a two-week test transporting mail across three Southwestern states using self-driving trucks, a step forward in the effort to commercialize autonomous vehicle technology for hauling freight.



Air Taxis

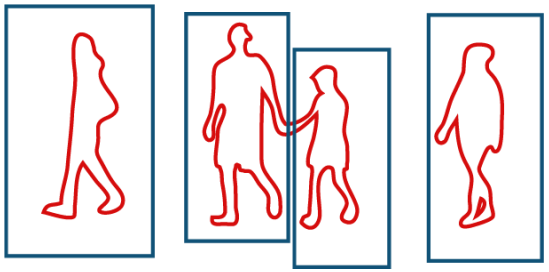
Miami High-Rise Projects Prepare For The Future Of Flying Cars

December 7, 2018 at 2:16 pm **Filed Under:** Flying Cars, Local TV, Miami, talkers

Big Data – Expanding What We Know

Source:https://www.portlandoregon.gov/TRANSPORTATION/article/682644

Source:https://www.govtech.com/fs/transportation/Massachusetts-Cities-Tackle-Pedestrian-Safety-with-Data.html



counters

trace data

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Responses & Reactions

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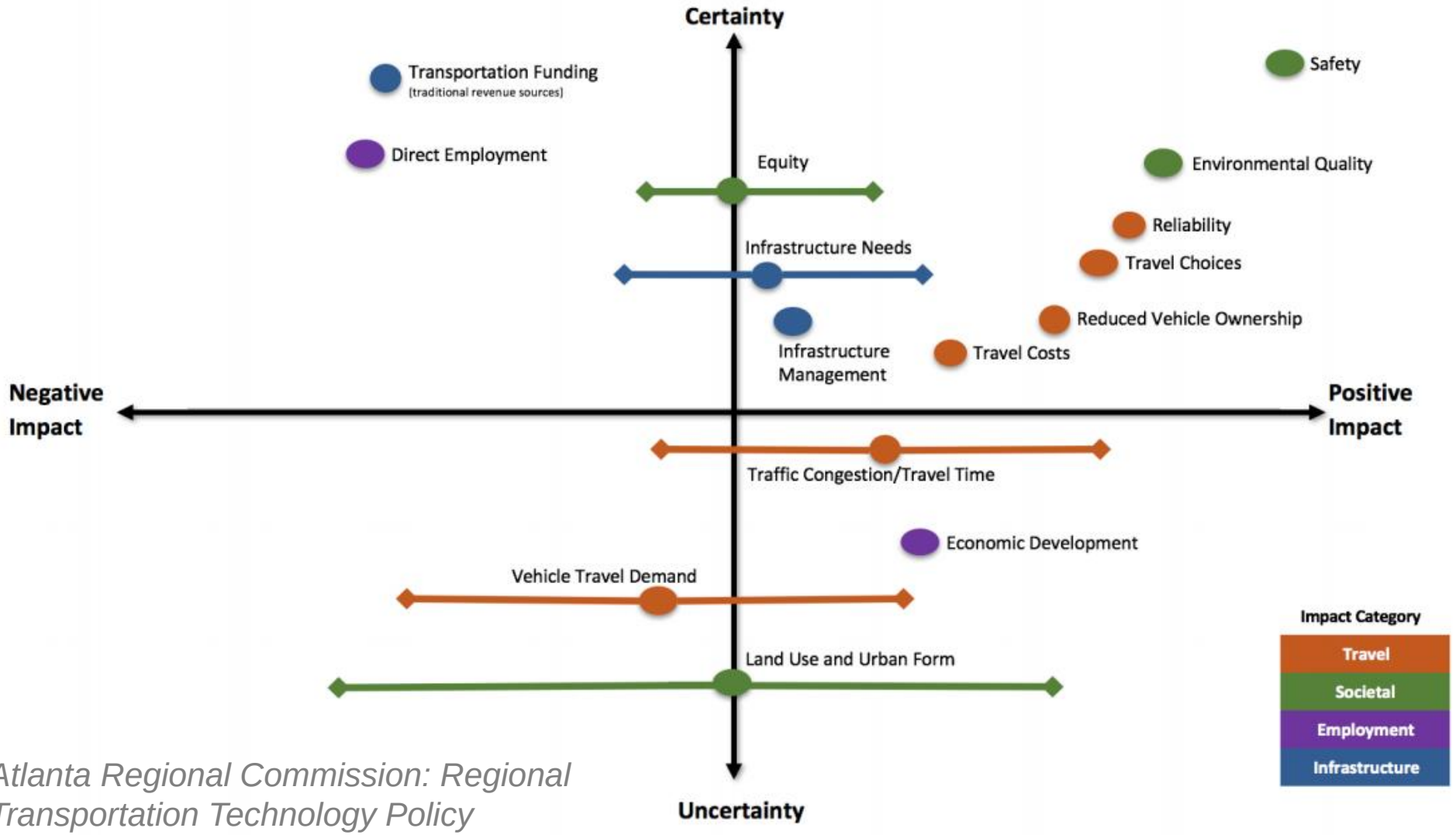
Tech Is Forcing State Leaders To Rethink Transportation Departments

"The irony in transportation is we tend to plan 25 years ahead, … the only thing we know about 25 years from now is it will be nothing like today."
Stephanie Pollack, Secretary of Transportation for the Massachusetts DOT

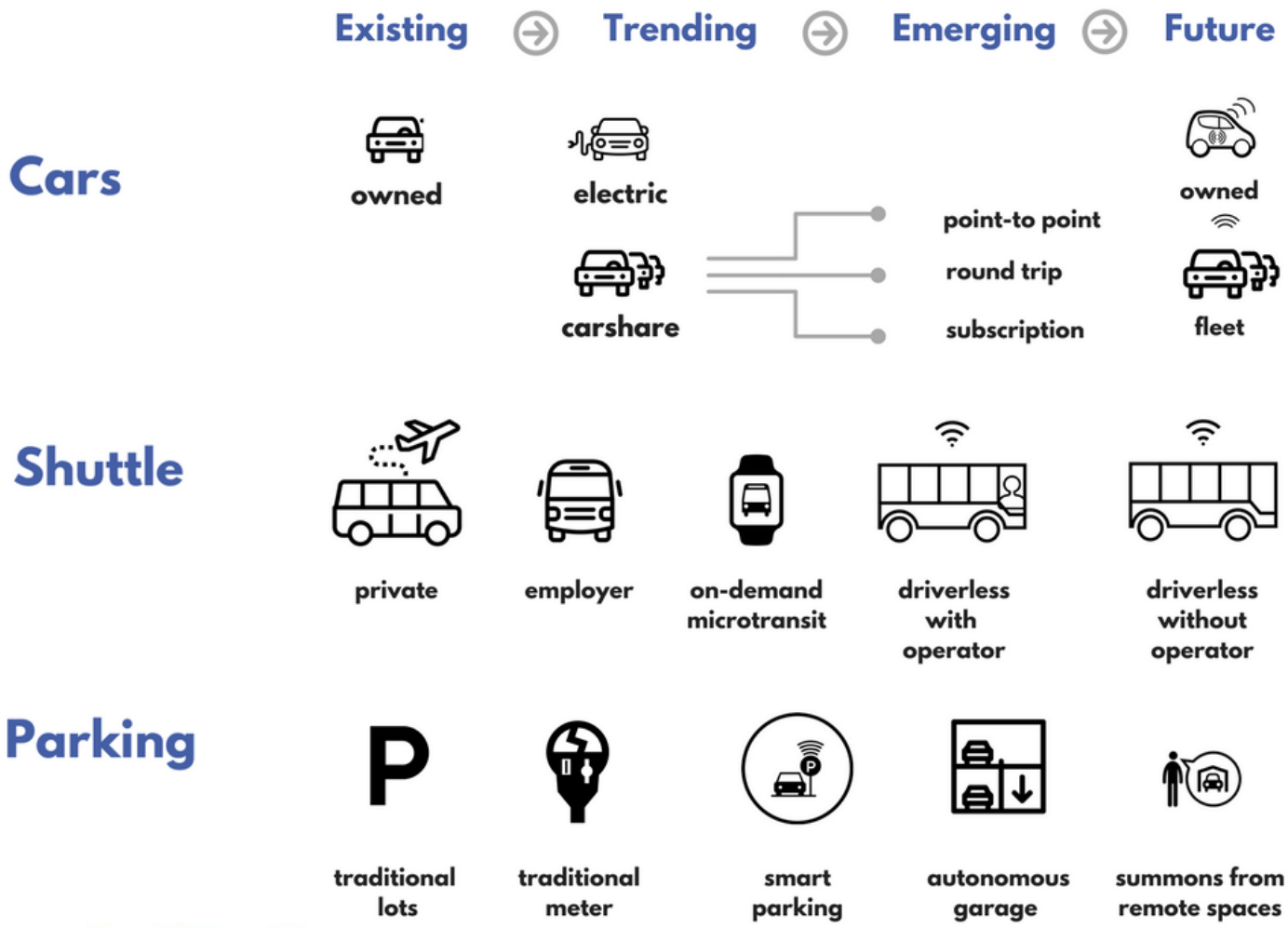
Implications of Transportation Technology Trends



Atlanta Regional Commission: Regional Transportation Technology Policy Document (2016)

Planning Transitions

How Do We Handle Transitions?



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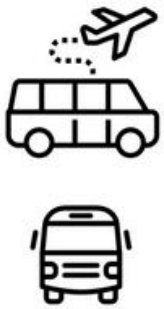
How Do We Handle Transitions?

Existing → **Trending** → **Emerging** → **Future**



private & public

private on-demand microtransit

driverless - operator segregated lane assigned routes/stops

driverless without operator

Tipping Points for approving microtransit

succesful pilot & subsidies
ridership metrics
number of transit feeds
financial projections

Tipping Points for limited AV shuttles

successful pilot - private lanes
succesful pilot - public streets
safety protocol
ridership goals

Tipping Points for full scale AV shuttles

pilot - scaled, on-demand
safety protocol
congestion metrics
equitable service metircs
financial projections

Autonomous Vehicles

"[Uber] expects it will be **a long time** before one of its biggest investments, self-driving cars, is ready for wide-scale deployment"

Chief Scientist at Uber Advanced Technologies Group on April 9, 2019

Source:https://www.insurancejournal.com/news/national/2019/04/09/523200.htm

Download: https://altaplanning.com/resources/promoting-active-transportation-safety-in-preparation-for-autonomous-vehicles/

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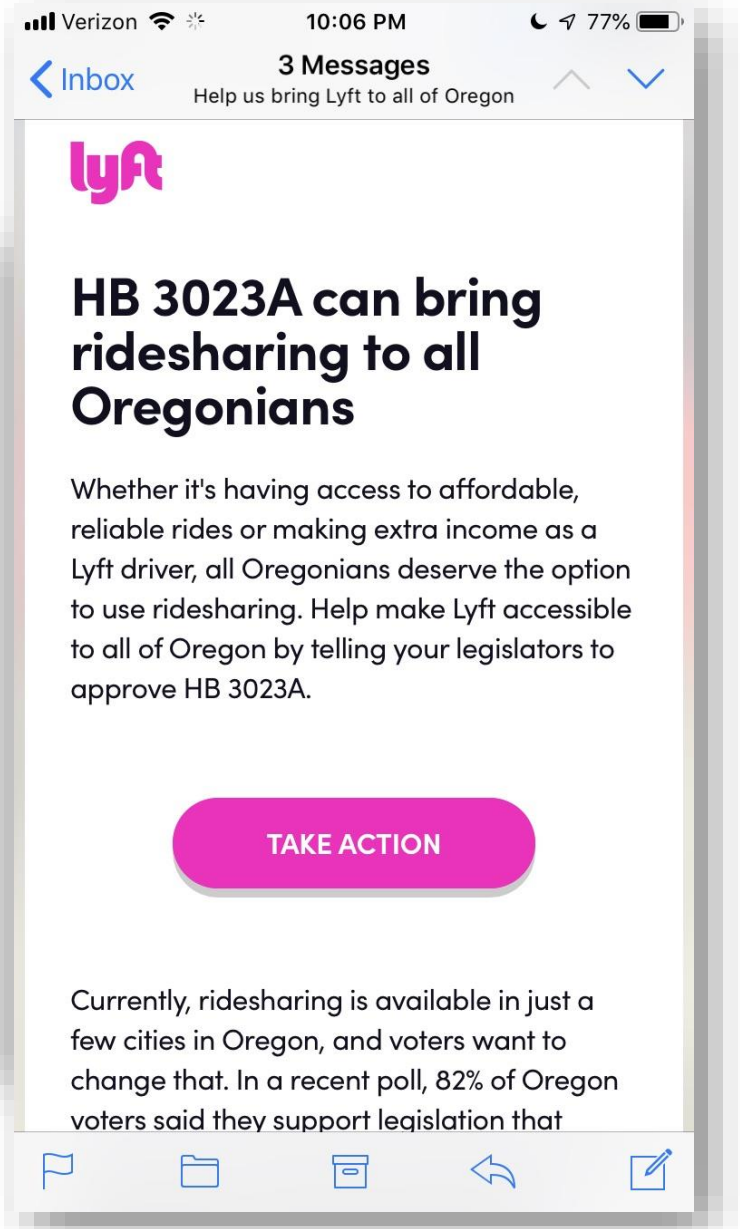
Policy Response

Dockless bikes are moving into many American cities. Who gets to regulate them? // Edgar Su/Reuters

A New State Preemption Battlefield: Dockless Bikesharing

JOSH COHEN FEB 13, 2018

Florida lawmakers are weighing a bill that would override a city's ability to regulate the new private bikesharing companies.



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Setting and Signaling Priorities

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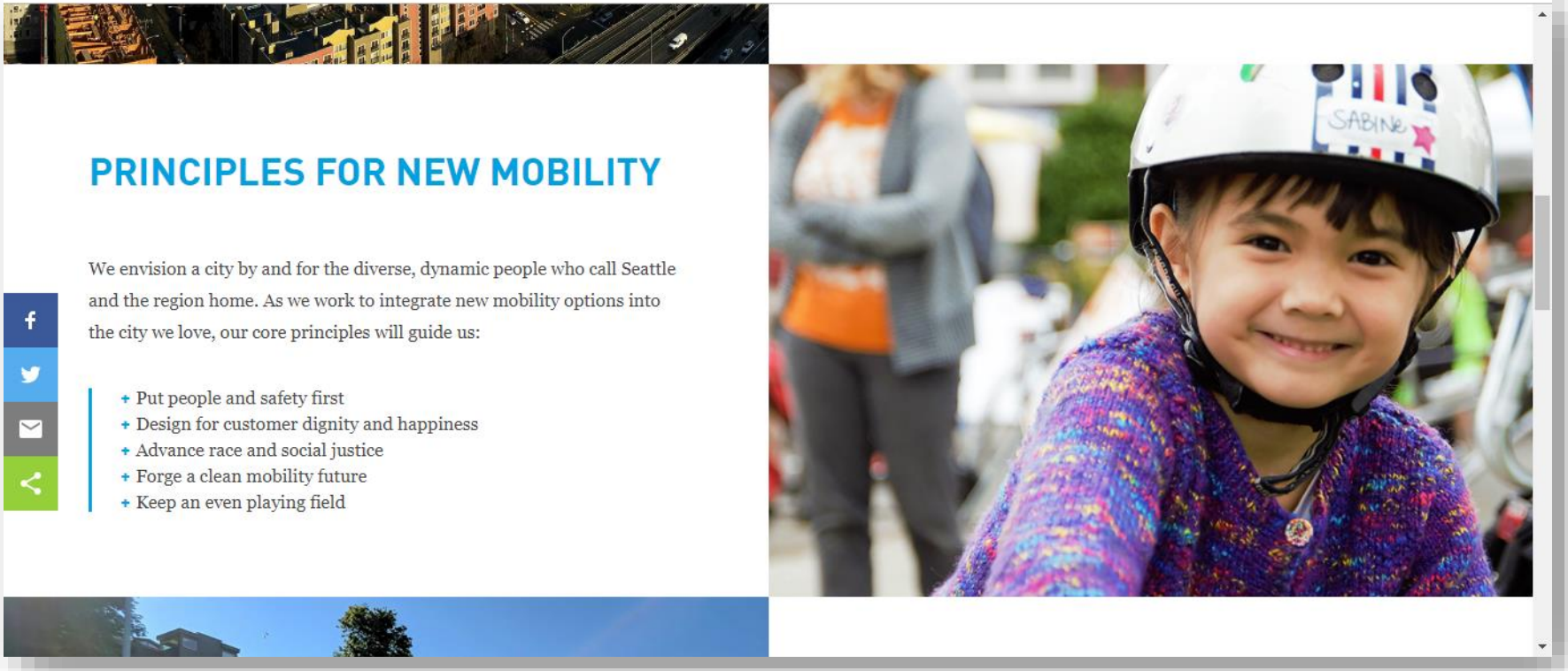
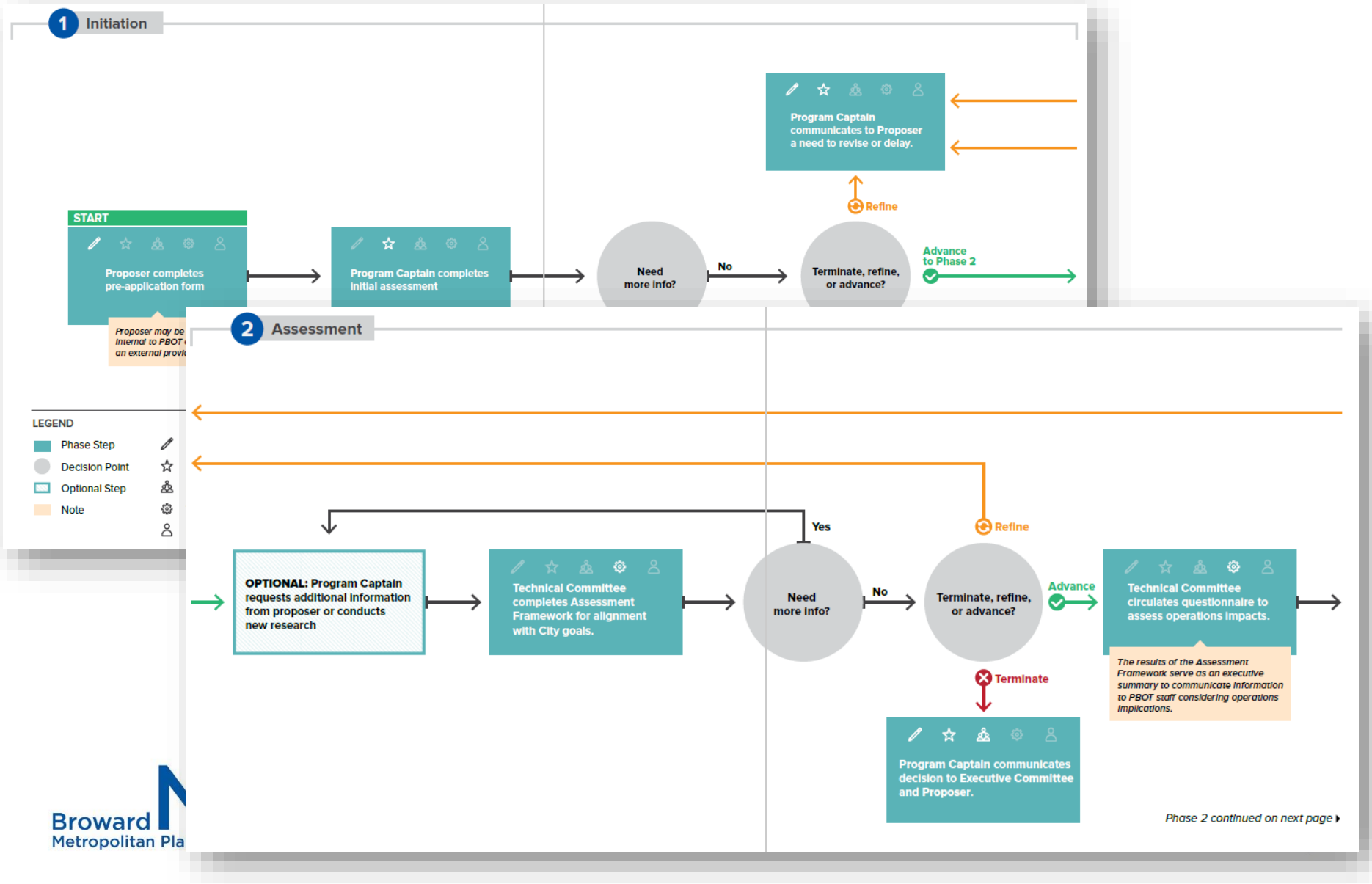
Setting and Signaling Priorities



Source: City of Seattle https://newmobilityseattle.info/

Evaluation Frameworks

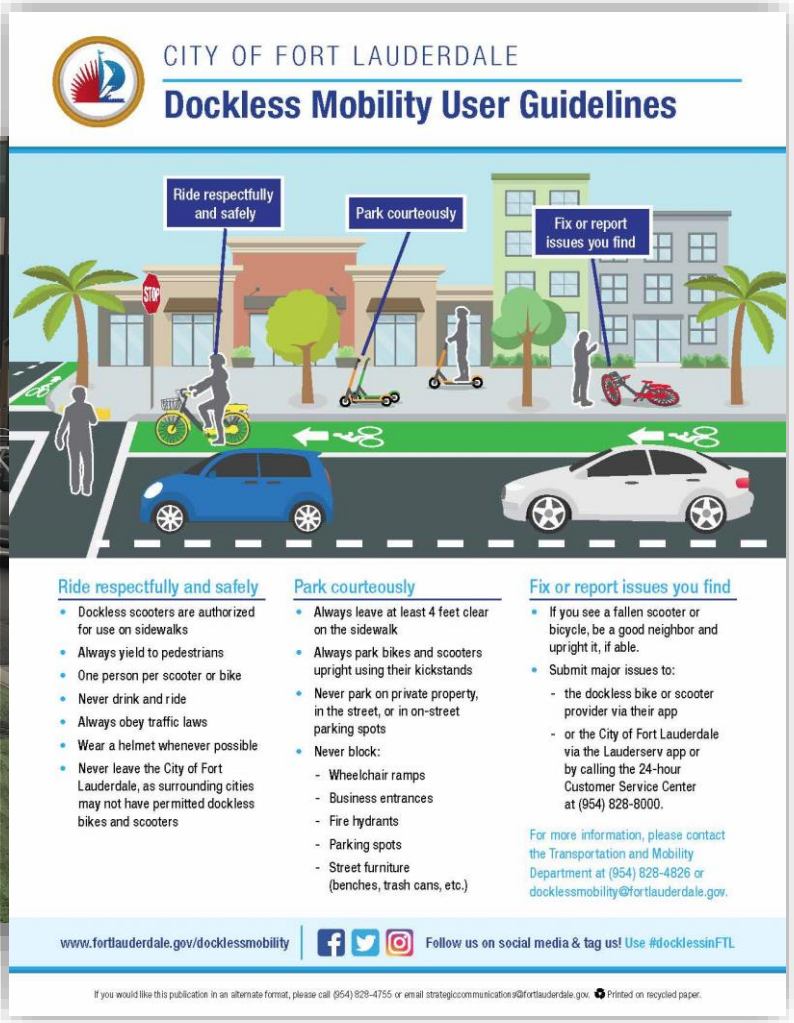


Broward Metropolitan Pla

From Procurement to Permitting

- City-authorized
- Non-exclusivity
- Privately operated
- Equity requirements
- Cost-neutral/Revenue-generating
- Less control, and more uncertainty

Managing for Safety



CITY OF FORT LAUDERDALE

Dockless Mobility User Guidelines

Ride respectfully and safely

- Dockless scooters are authorized for use on sidewalks
- Always yield to pedestrians
- One person per scooter or bike
- Never drink and ride
- Always obey traffic laws
- Wear a helmet whenever possible
- Never leave the City of Fort Lauderdale, as surrounding cities may not have permitted dockless bikes and scooters

Park courteously

- Always leave at least 4 feet clear on the sidewalk
- Always park bikes and scooters upright using their kickstands
- Never park on private property, in the street, or in on-street parking spots
- Never block:
  - Wheelchair ramps
  - Business entrances
  - Fire hydrants
  - Parking spots
  - Street furniture (benches, trash cans, etc.)

Fix or report issues you find

- If you see a fallen scooter or bicycle, be a good neighbor and upright it, if able.
- Submit major issues to:
  - the dockless bike or scooter provider via their app
  - or the City of Fort Lauderdale via the Lauderserv app or by calling the 24-hour Customer Service Center at (954) 828-8000.

For more information, please contact the Transportation and Mobility Department at (954) 828-4826 or docklessmobility@fortlauderdale.gov.

www.fortlauderdale.gov/docklessmobility | Follow us on social media & tag us! Use #docklessinFTL

If you would like this publication in an alternate format, please call (954) 828-4755 or email strategiccommunications@fortlauderdale.gov. Printed on recycled paper.

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Managing for Equity

Seattle: (2017): if 2,000 vehicle, must operate 20% in priority areas.

Los Angeles (2018): Cap at 3,000 with option to add 2,500 vehicles if operating in disadvantaged communities, another 5,000 if operating in San Fernando Valley + 70% reduced per vehicle fee

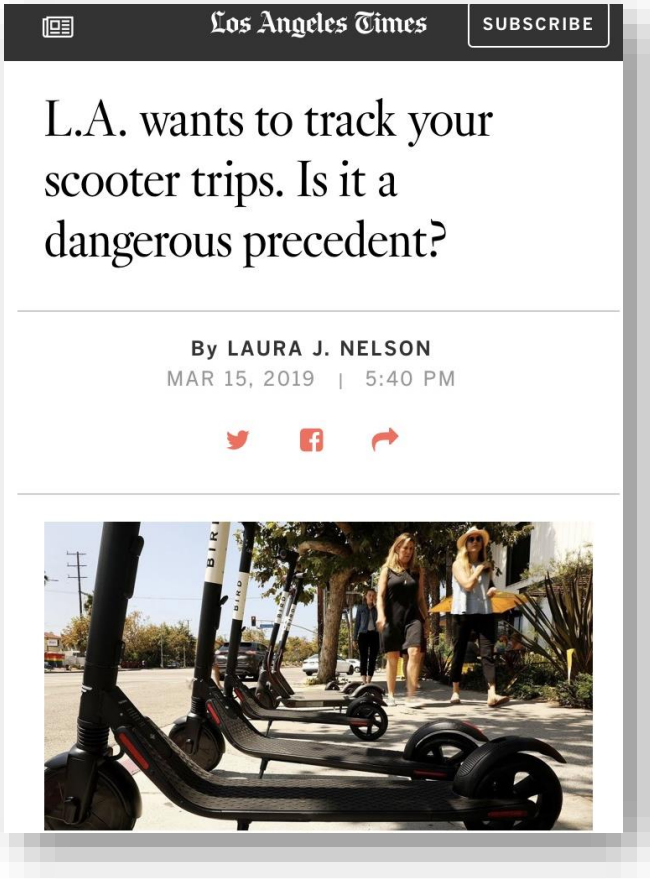
Portland (2019): up to 1,250 vehicles; if meets or exceeds an average of 2-3 trips per scooter per day in East Portland may be eligible for up to 35% allotment increase

Data Standards

*"For Los Angeles, the goal should be to get and **retain the minimum amount of data necessary** to managing the right of way. Big Brother doesn't need to know where you ride a scooter, but the public should be assured **that government has the tools to make sure for-profit companies are good stewards of the public space**."*

– LA Times Editorial Board

https://www.latimes.com/opinion/editorials/la-ed-scooters-privacy-los-angeles-20190322-story.html



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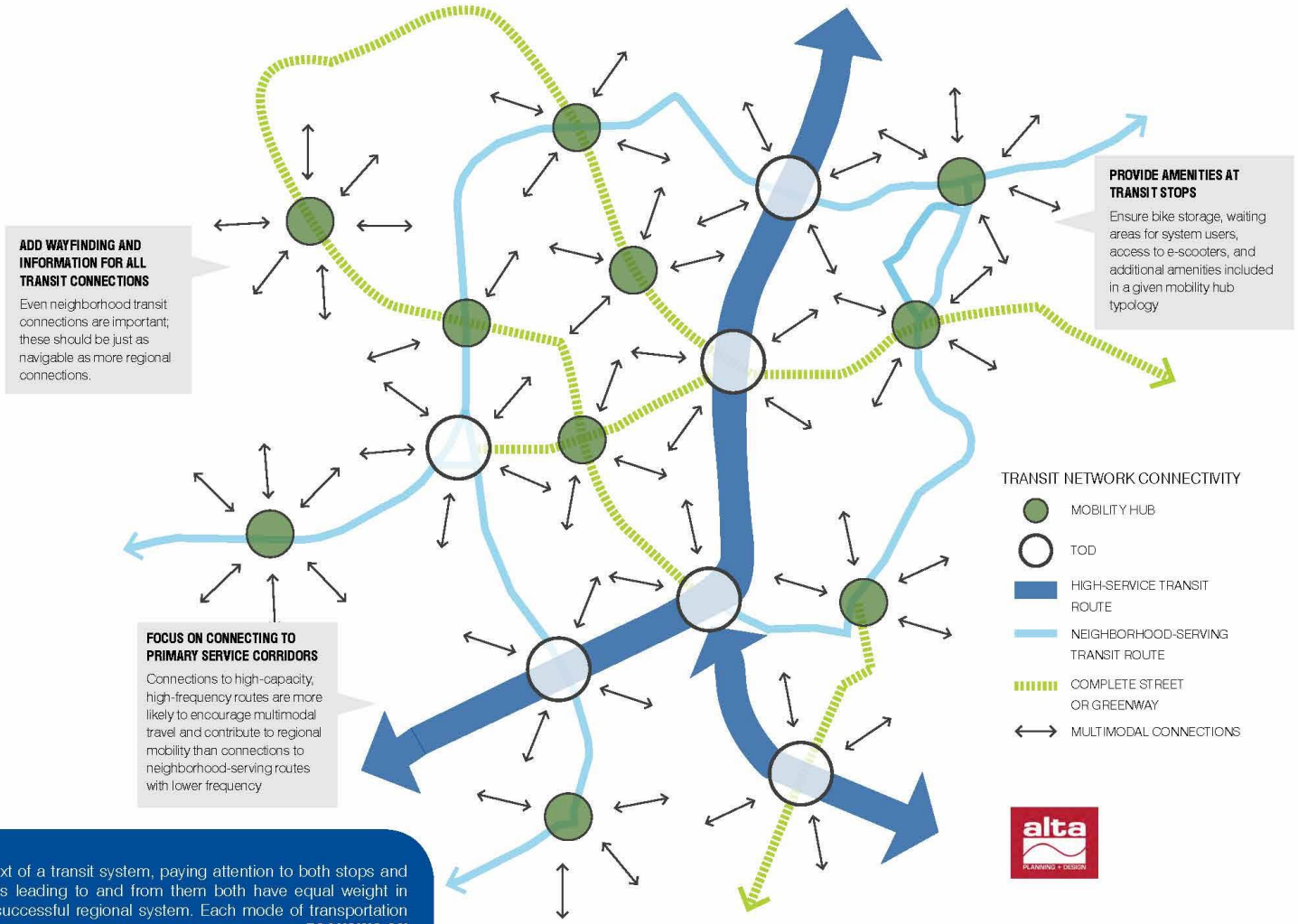
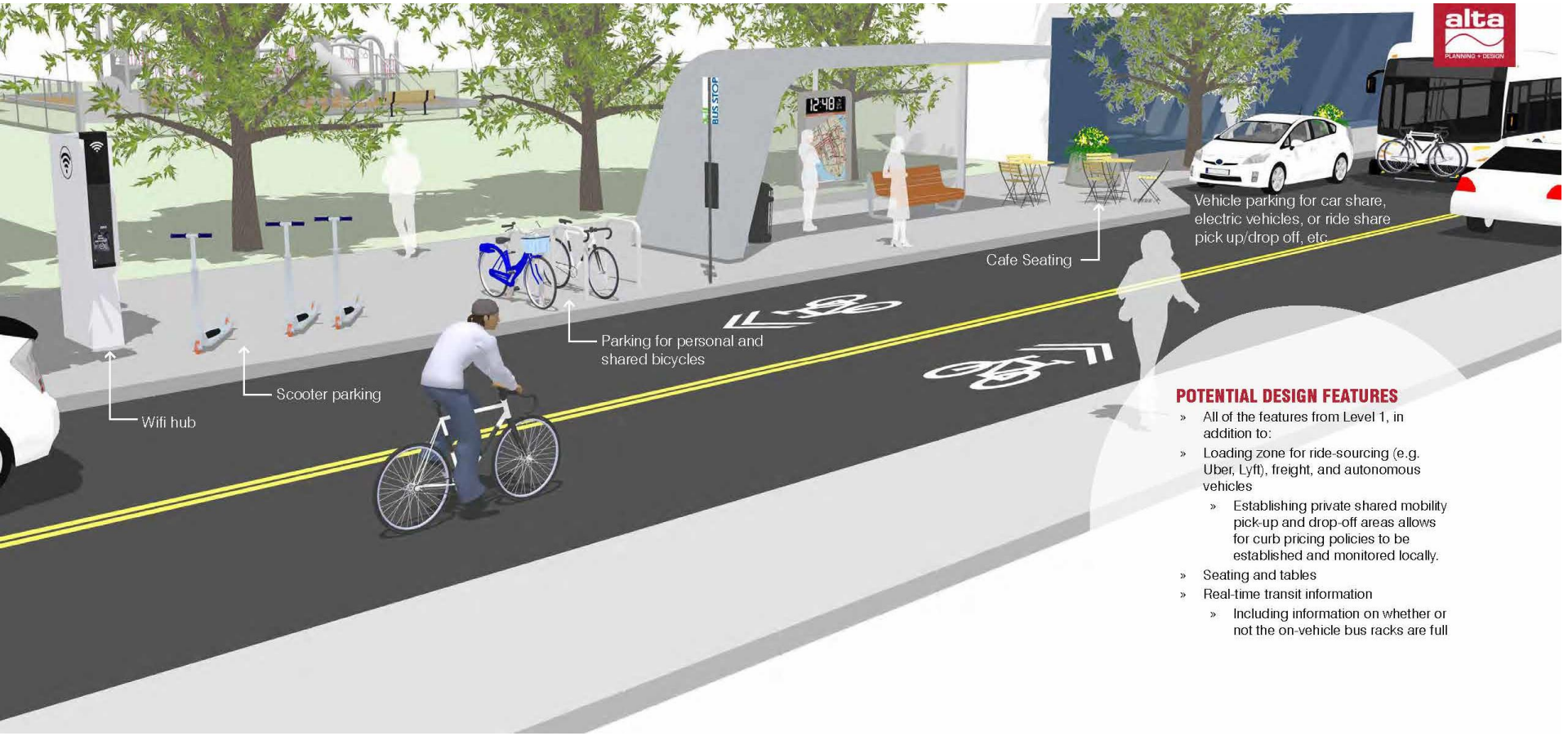
Mobility Hubs – Expanded Access



In the context of a transit system, paying attention to both stops and the corridors leading to and from them both have equal weight in creating a successful regional system. Each mode of transportation has its own requirements and methods to function, and **FOCUSING ON HOW THESE RELATE TO EACH OTHER IS CRITICAL FOR DEVELOPING A FLUID NETWORK.**

Curb Management



Complete Streets 2.0

PRIORITIZED USES

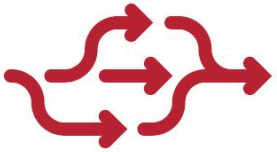
SAFE BY DESIGN

POINT-TO-POINT TRIPS

MULTIMODALISM

COMPLETE NETWORKS

DIGITAL INFRASTRUCTURE



ADAPTABILITY

OUTCOMES BASED

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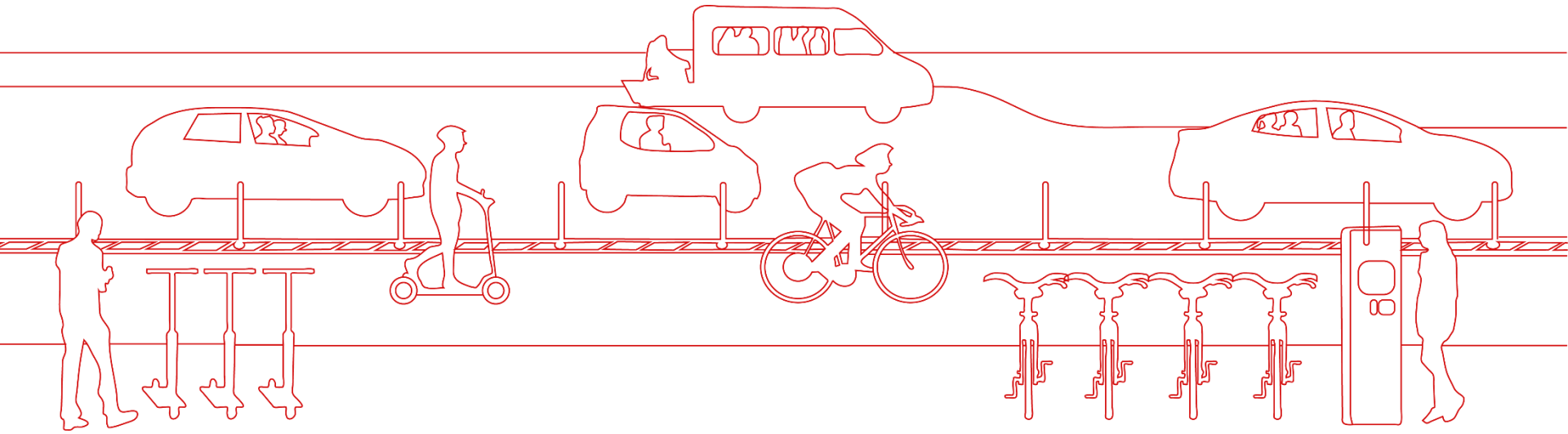
IMPLICATIONS

Expanded Choice



Taxonomy: https://www.sae.org/shared-mobility/

Mode Choice

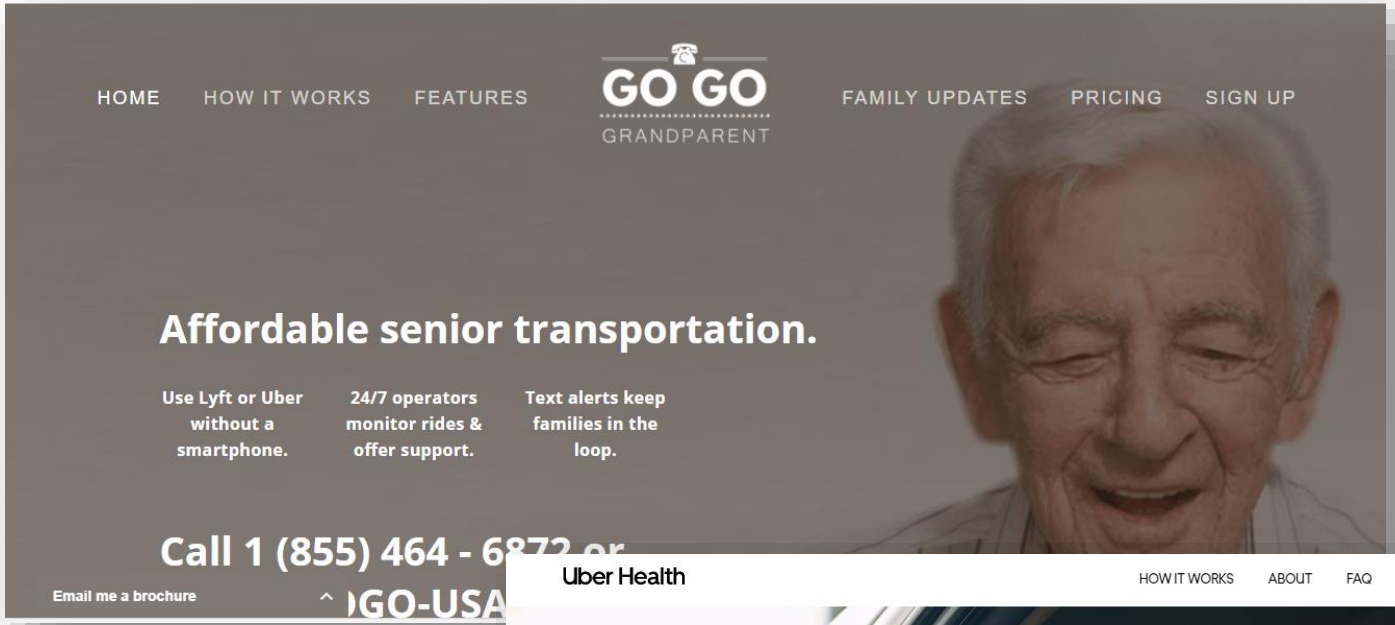
San Francisco (2018):

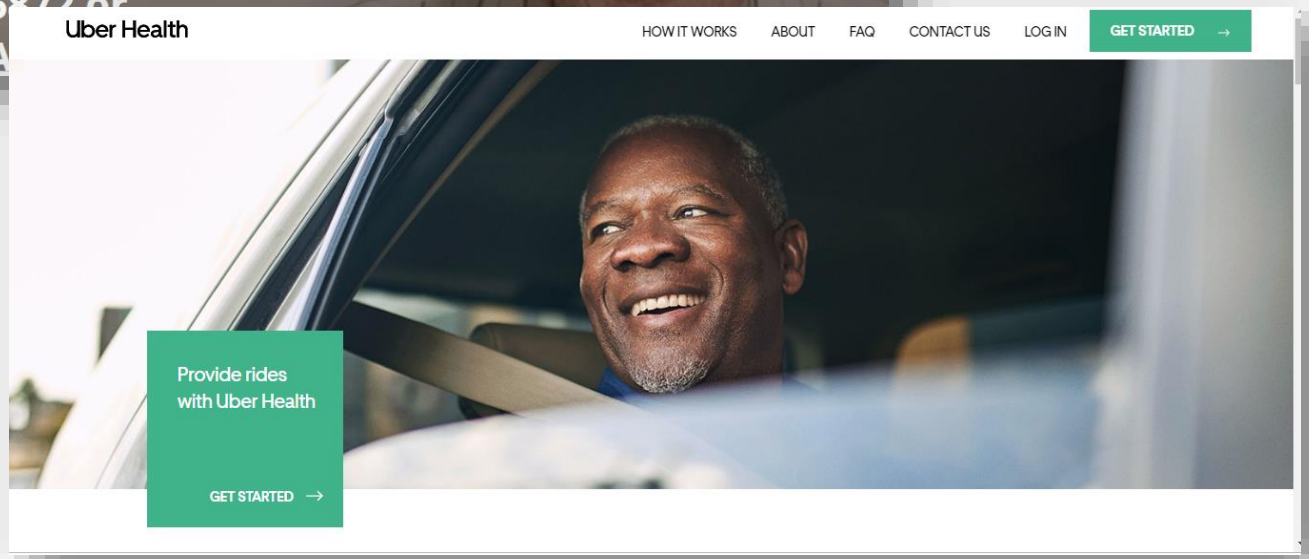
- 53% said that they chose Lime's scooter over a car for their last trip
- 39% of riders reported that they used Lime to get to or from public transportation

Portland (2019):

- 34% of Portland riders took an e-scooter instead of driving a personal car or ridehailing
- This percentage jumped to 48% for visitors.

Expanded Mobility





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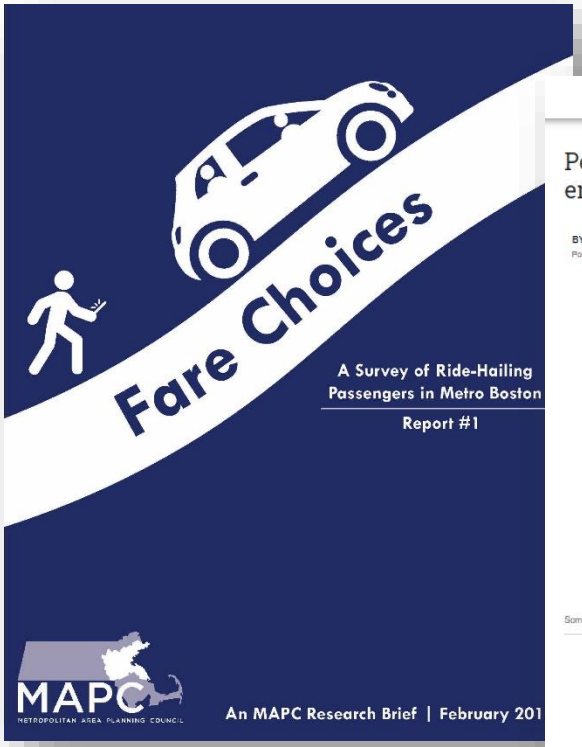
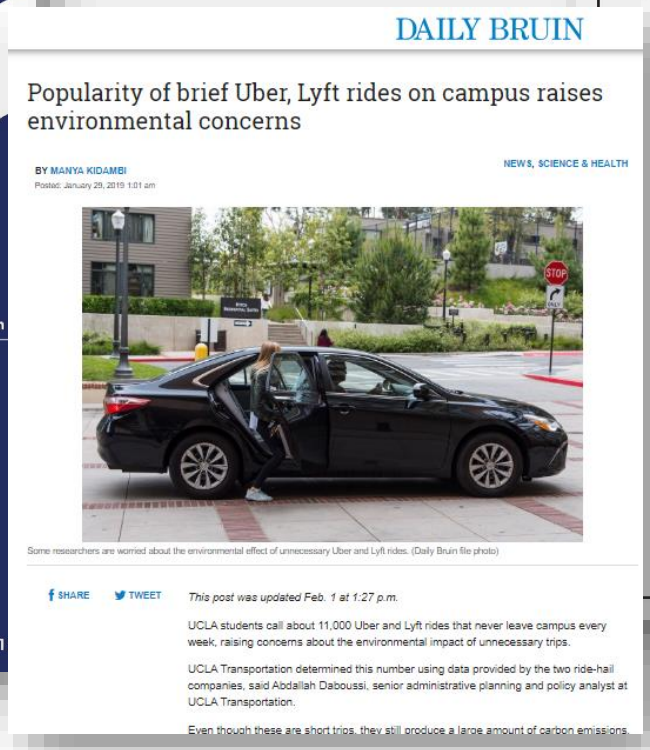
Evaluating Shared Mobility



Source: http://www.mapc.org/wp-content/uploads/2018/02/Fare-Choices-MAPC.pdf


DAILY BRUIN

Popularity of brief Uber, Lyft rides on campus raises environmental concerns

BY MANYA KIDAMBI
Posted: January 29, 2019 1:01 am

NEWS, SCIENCE & HEALTH

Some researchers are worried about the environmental effect of unnecessary Uber and Lyft rides. (Daily Bruin file photo)

SHARE TWEET

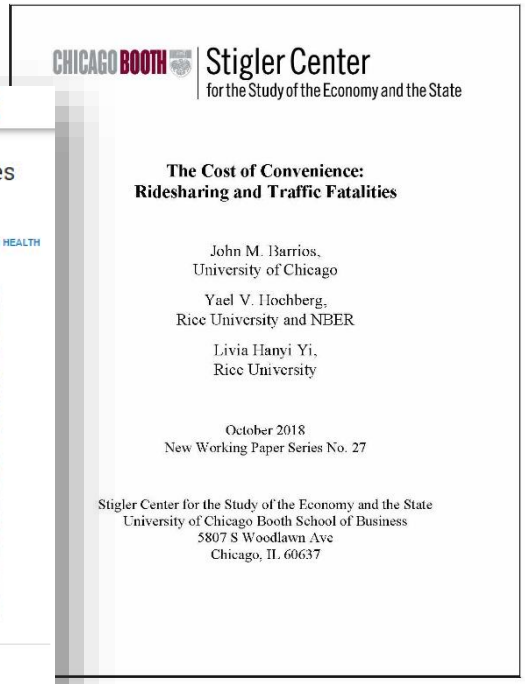
This post was updated Feb. 1 at 1:27 p.m.

UCLA students call about 11,000 Uber and Lyft rides that never leave campus every week, raising concerns about the environmental impact of unnecessary trips.

UCLA Transportation determined this number using data provided by the two ride-hail companies, said Abdallah Daboussi, senior administrative planning and policy analyst at UCLA Transportation.

Even though these are short trips, they still produce a large amount of carbon emissions.

Source: http://dailybruin.com/2019/01/29/popularity-of-brief-uber-lyft-rides-on-campus-raises-environmental-concerns/


CHICAGO BOOTH | Stigler Center
for the Study of the Economy and the State

The Cost of Convenience: Ridesharing and Traffic Fatalities

John M. Barrios,
University of Chicago

Yael V. Hochberg,
Rice University and NBER

Livia Hanyi Yi,
Rice University

October 2018
New Working Paper Series No. 27

Stigler Center for the Study of the Economy and the State
University of Chicago Booth School of Business
5807 S Woodlawn Ave
Chicago, IL 60637

Source: https://research.chicagobooth.edu/-/media/research/stigler/pdfs/workingpapers/27thecostofconvenience.pdf

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Congestion (to come?)

Zhang @ Georgia Tech

18% of households could reduce vehicle ownership, which would reduce total rates of vehicle ownership by 9.5%

VMT generation in metro area will rise by 13.3%

Model assumed 1) no change in travel, 2) vehicles only shared by households (not shared between households); 3) 100% market penetration 4) also assumes that the family members are not going to share their trips

An estimated 39,141 people lost their lives on all modes of our transportation system in 2017.

THE VAST MAJORITY

37,133

deaths were from **motor vehicle crashes.**

SOURCE: *https://www.transportation.gov/AV*

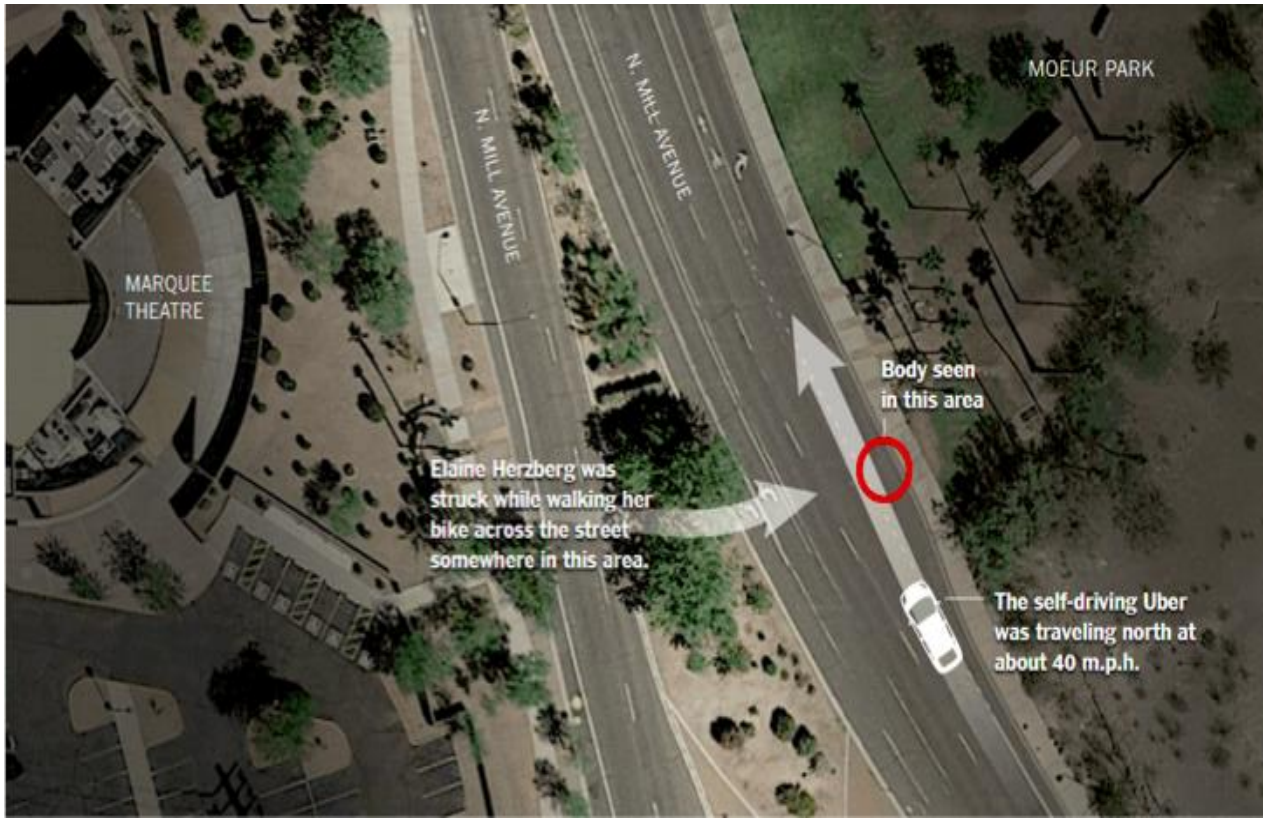
DRIVER FACTORS

Of all serious motor vehicle crashes,

94%

involve driver-related factors, such as **impaired driving, distraction, and speeding or illegal maneuvers.**

March 2018 Fatality



Source: New York Times

Autonomous Vehicles

Technology has come a long way - but there are still some important developments being made.

Detection Problem: AV's do not see and anticipate people walking and bicycling as well as they do vehicles.

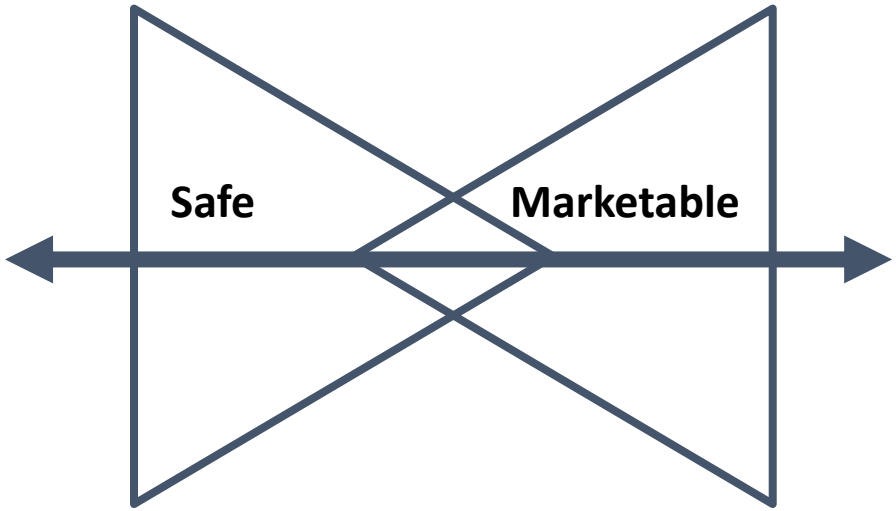
Communication Problem: Currently pedestrians, bicyclists and drivers make eye contact to communicate intent - especially at a 4-way intersection scenario.

Paradox of Safe Crossings: AVs that stop for pedestrians at any time/location may lead to impaired traffic flow or, in response, physical restrictions to pedestrian access or further criminalizing jaywalking.

Source: https://www.theverge.com/2018/7/30/17622540/drive-ai-self-driving-car-ride-share-texas

Safe - OR - Marketable?

Self-driving cars can and will be safe only directly in inverse proportion to their marketability.



Expanded Mobility?

SHARED-USE MOBILITY CENTER

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Will Autonomous Vehicles Be Accessible to People with Disabilities?

By Tim Frisbie | October 31, 2017 | News

No Comments | 2 | 1

RECENT POSTS

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- Mobility on Demand On-Ramp – Request for Proposals
- What Can Transit Agencies Learn from TNCs' Late-Night Popularity?
- 6 Opportunity Areas Cities Can Pursue to Expand Shared Mobility

E-Scooter Safety

Figure 1 - Fewer e-Scooter Injuries in Bike-Friendly Cities

	TOTAL BIRD REPORTED INJURIES PER MILLION MILES	"PEOPLE FOR BIKES" SAFETY SCORE
San Diego	32.4	3.0
Austin	32.8	3.0
Phoenix Area	37.3	1.5
Dallas	38.7	1.5
San Antonio	51.2	1.0

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Equity in Bike Share

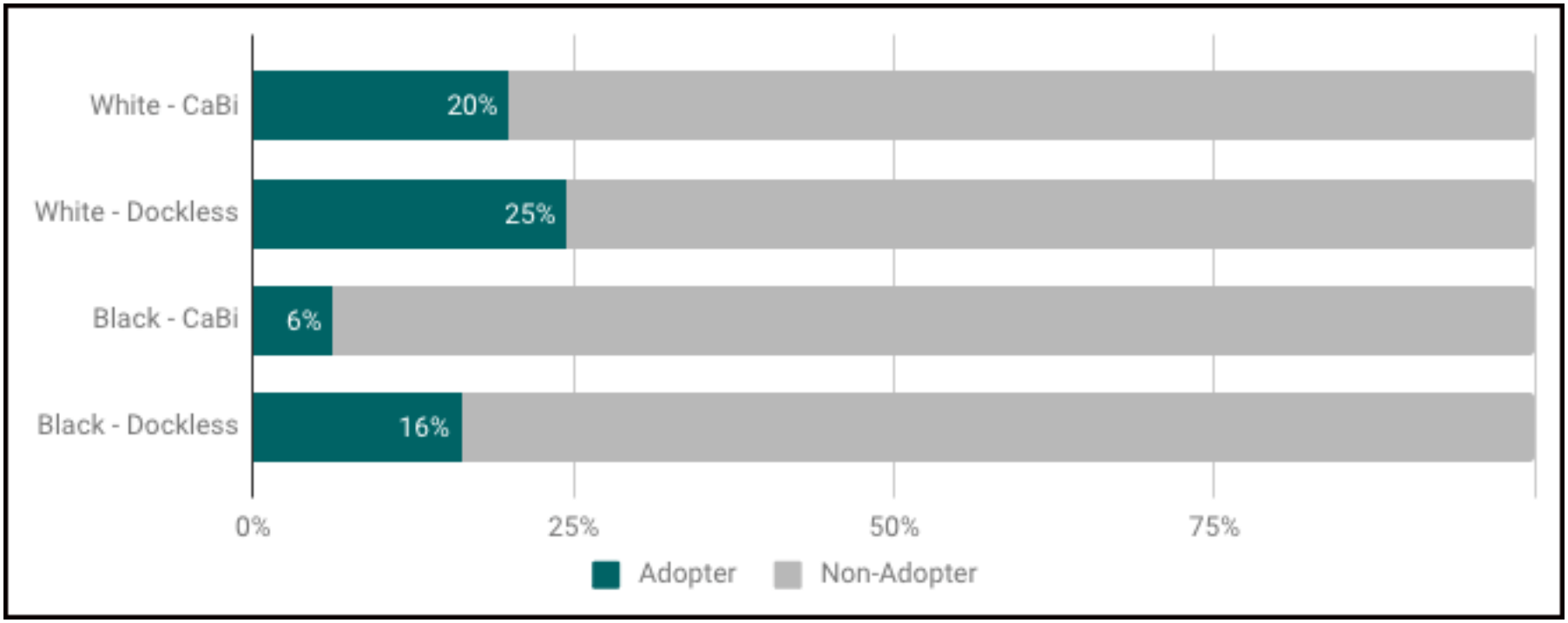
- 32% of cities with station-based systems had an income-based program (in 2017)
- Eligibility for a discount is important
- Not knowing enough about bike share is a barrier for people of color
- Other concerns specific to people of color

Equity in Bike Share

City Lab research shows that affordability and other equity improvements **cannot make up for lack of geographic access**.

Baca, A. (2018). “What Cities Need to Understand About Bikeshare Now,” Citylab. Citylab.com

Equity of Dockless Micromobility?



Clewlow, R. November 15, 2018.
https://medium.com/populus-ai/measuring-equity-dockless-27c40af259f8

Strategies for Equity

- Equitable rights of way
- Alternatives to digital platform
- Integration with transit fare payment/programs
- Affordability
- Community programming + safety outreach
- Service area reach + vehicle availability
- Complaint response time to preserve right of way
- Multilingual
- Pilot + Evaluate

Contact Us

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Competition: Atomized Travel

"Need a new pair of shoes? Summon the mobile shoe palette and try on different sizes as you travel from here to there."
The Verge, January 8, 2018

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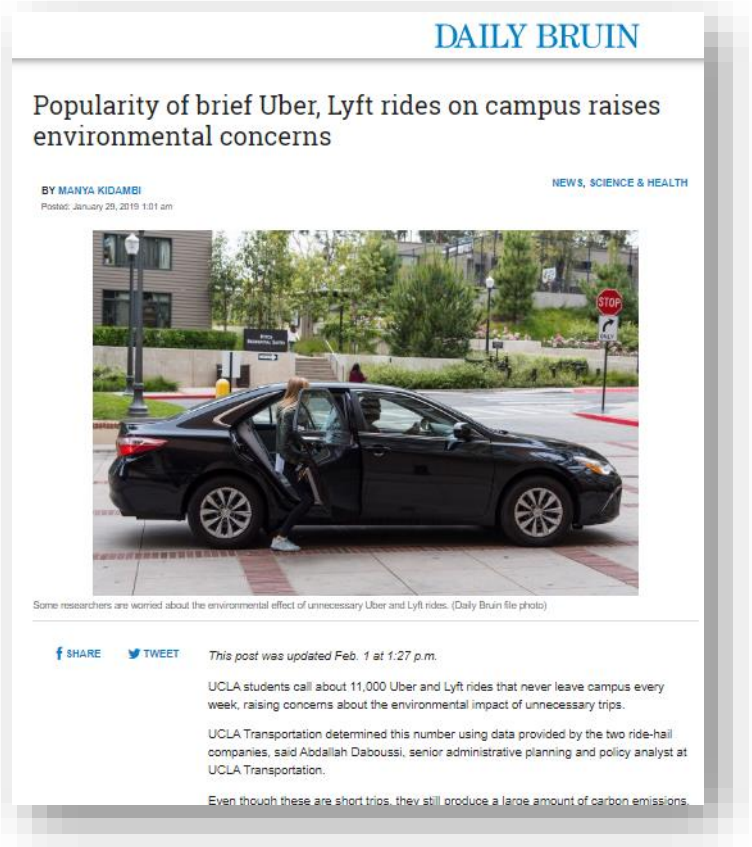
Direct to Consumer

- Frictionless Transportation
- User Experience
- Gig Economy

Frictionless Transportation



DAILY BRUIN

Popularity of brief Uber, Lyft rides on campus raises environmental concerns

BY MANYA KIDAMBI
Posted: January 29, 2019 1:01 am

NEWS, SCIENCE & HEALTH

Some researchers are worried about the environmental effect of unnecessary Uber and Lyft rides. (Daily Bruin file photo)

SHARE TWEET

This post was updated Feb. 1 at 1:27 p.m.

UCLA students call about 11,000 Uber and Lyft rides that never leave campus every week, raising concerns about the environmental impact of unnecessary trips.

UCLA Transportation determined this number using data provided by the two ride-hail companies, said Abdallah Daboussi, senior administrative planning and policy analyst at UCLA Transportation.

Even though these are short trips, they still produce a large amount of carbon emissions.

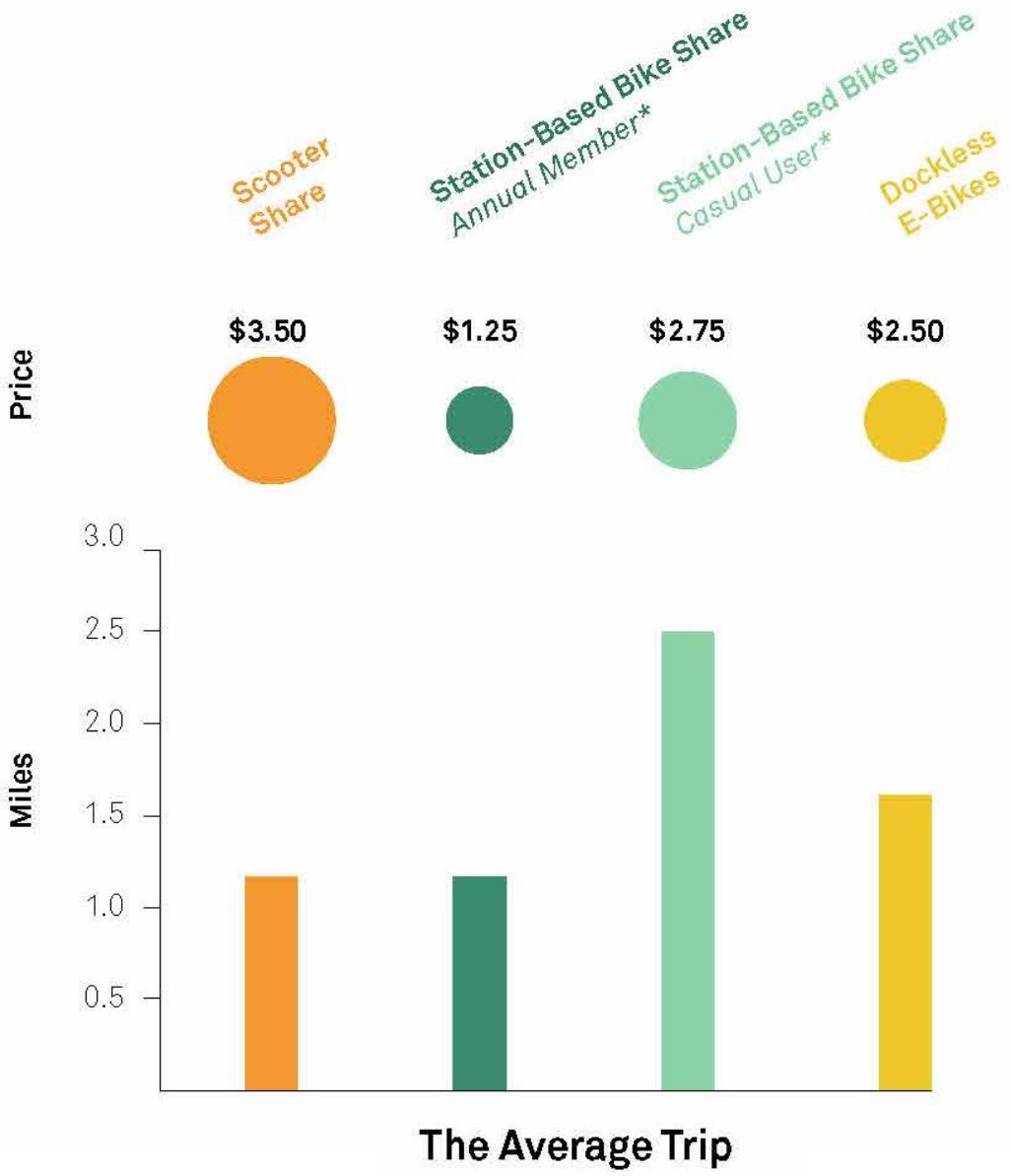
Source: http://dailybruin.com/2019/01/29/popularity-of-brief-uber-lyft-rides-on-campus-raises-environmental-concerns/

Complete Networks

Affordability

- Fees and average distance vary by market
- Station-based bike share systems reducing fees

NACTO, Shared Micromobility in the U.S.: 2018



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Today's Focus

- Mobility options that should be considered when designing complete streets
- Impact on all users and people indirectly impacted by their use (pedestrians)
- Insights on policy development/urban design
- More insight on bike-share and scooter-share.
- Creative solutions for mobility in redevelopment areas that are capacity constrained and shortage of parking.

Definitions: LSAV

Low Speed Autonomous Vehicles

- Operate at speeds lower than 25-35 mph
- Operate on fixed routes, off street or in specific areas or zones
- Some are NEV's that have been adapted to be autonomous vehicles

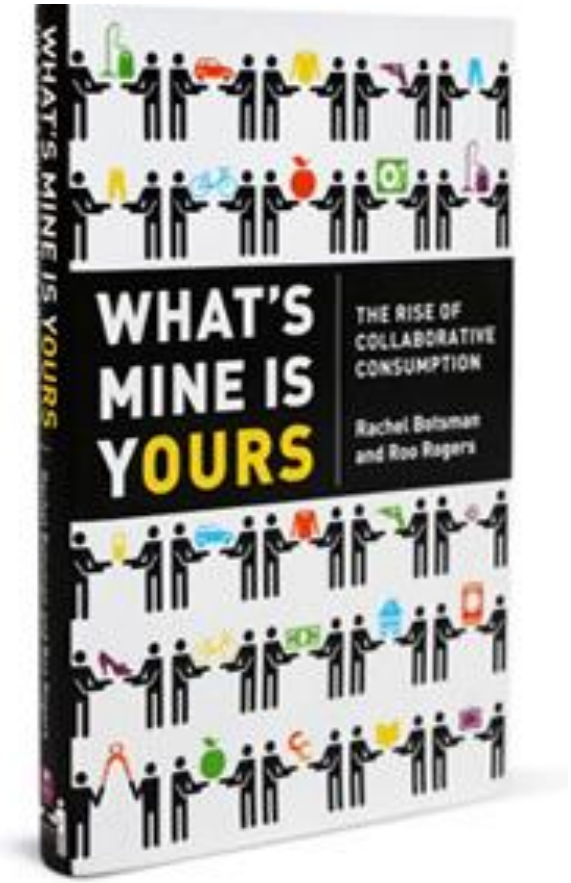
Definitions: HSAV

High Speed Autonomous Vehicles

- Operate up to or exceeding highway speeds
- Mix with vehicular traffic on typical roadways (depending on the state and test-case scenario)
- Not for use on paths or off-street conditions

How Did We Get Here?

- Internet/Social Media
- Smart Phone
- Sharing Economy
- Collaborative Consumption
- Gig Economy
- Amazon (Instant Gratification)



wework

airbnb

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Equity in Bike Share

Among cities with station-based bike share systems, 32% have an **income-based discount program**,… a 33% increase since 2016.

National Association of City Transportation Officials, (2017). “Bike Share in the U.S.: 2017,” Nacto.org.

Equity in Bike Share

A large majority of survey respondents said… **eligibility for a discounted membership** was very important to their decision to get a bike share membership.

McNeil, Nathan, Jennifer Dill, John MacArthur, Joseph Broach, Steven Howland. Breaking Barriers to Bike Share: Insights from Residents of Traditionally Underserved Neighborhoods. NITC-RR-884b. Portland, OR: Transportation Research and Education Center (TREC), 2017.

Equity in Bike Share

Is **not knowing enough about bike share** a barrier? *Yes for…..*

- 34% of low-income people of color
- 19% of higher income people of color
- 7% of higher income white people.

McNeil, Nathan, Jennifer Dill, John MacArthur, Joseph Broach, Steven Howland. Breaking Barriers to Bike Share: Insights from Residents of Traditionally Underserved Neighborhoods. NITC-RR-884b. Portland, OR: Transportation Research and Education Center (TREC), 2017.

Equity in Bike Share

Other concerns among people of color:

- Traffic safety
- Personal safety
- Liability and hidden fees

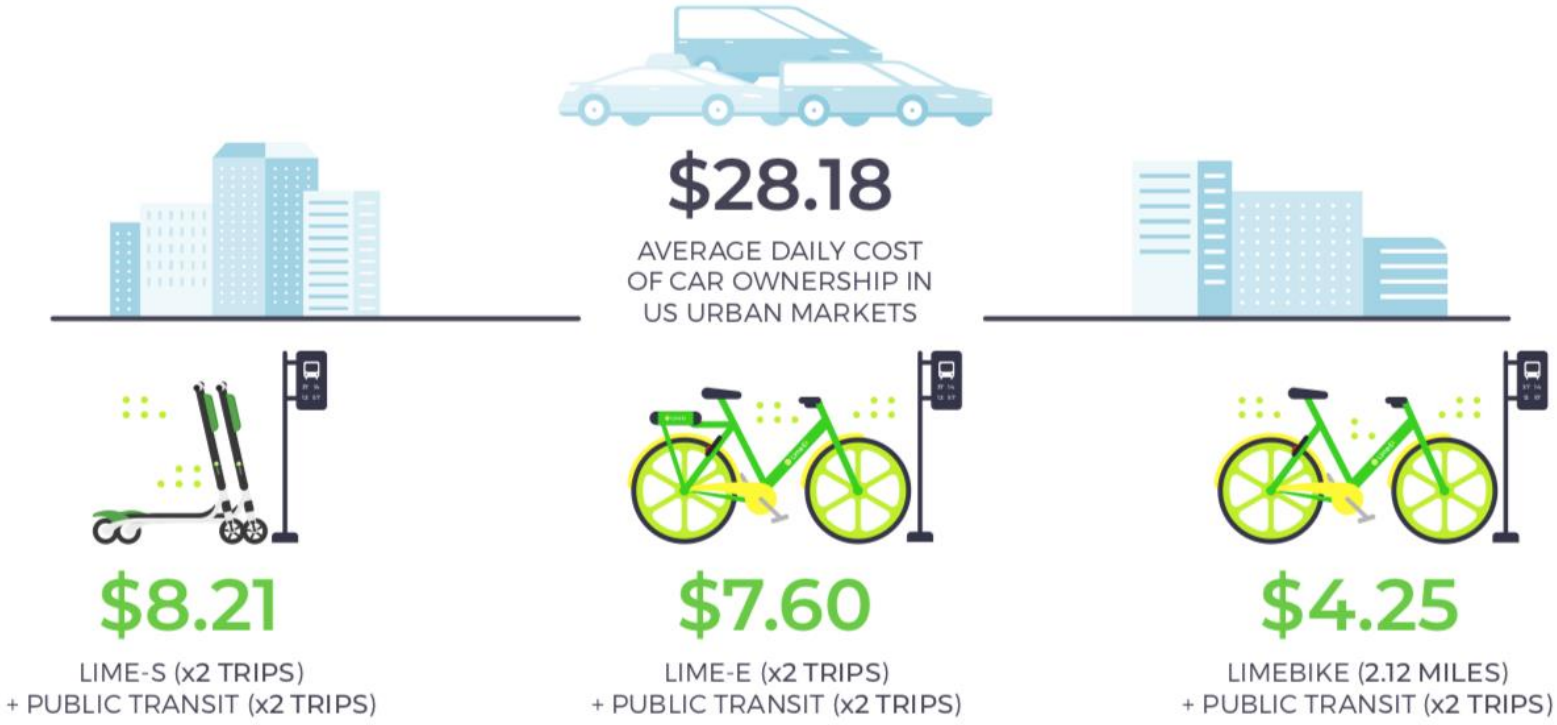
Schneider, B. (2017). “What Keeps Bike Share White,” Citylab. Citylab.org.

Shifts in Micromobility

Seattle (2017): 30 percent of the city's population tried dockless bike share, a percentage which is roughly the same across the city's largest racial groups.

Portland (2018): 74 percent of local scootershare users reported never riding BIKETOWN and 42 percent never bicycling.

Affordability…. and Staying Power?



Source: LIME https://www.limebike.com/hubfs/Lime_Official_One_Year_Report.pdf