WEBINAR

MAKING NEW MOBILITY WORK FOR YOUR COMMUNITY

Equity, Access, Safety, and Street Design

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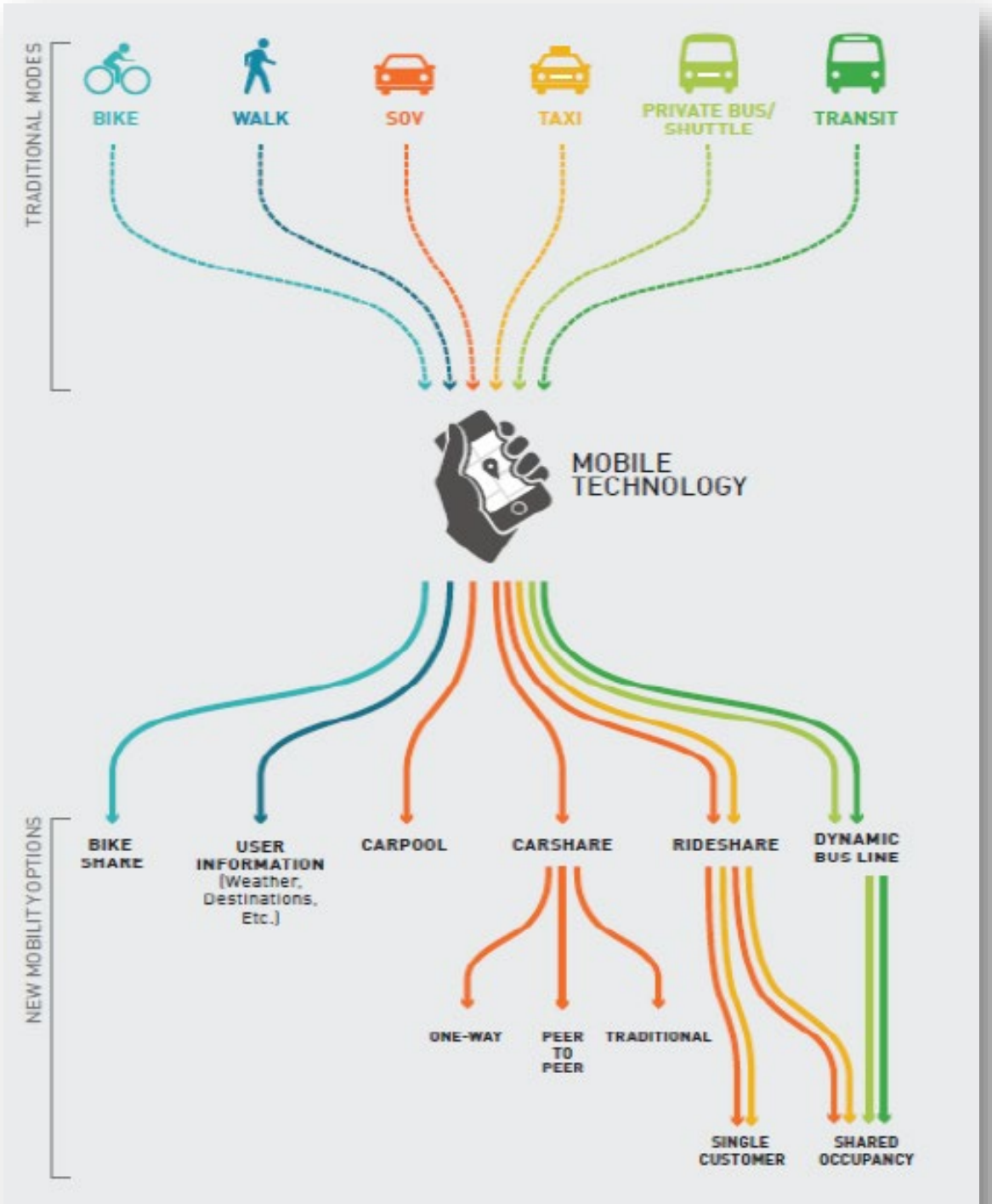
New Mobility

- Smart phone enabled
- Mode comparison
- Real-time
- Route planning
- Point-to-point
- On-demand
- Shared
- Multimodal trip linking



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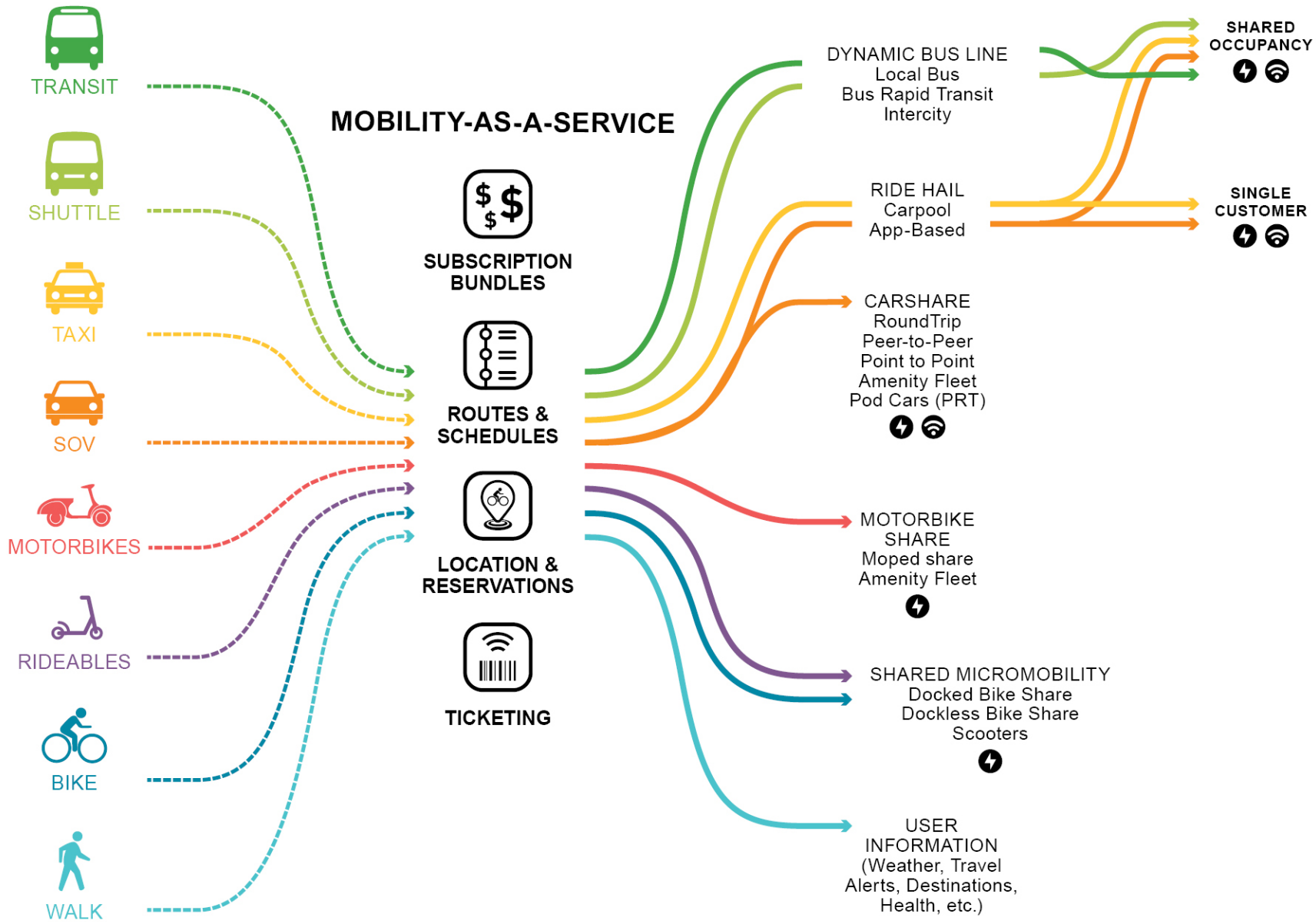
Rouge



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STOP
STOP
ONLY
EXCEPT BIKES

AQUARIUM
Shuttle
ELECTRIC
SHUTTLE

Today's Speakers

Jean Crowther, AICP
Senior Associate
New Mobility Leader

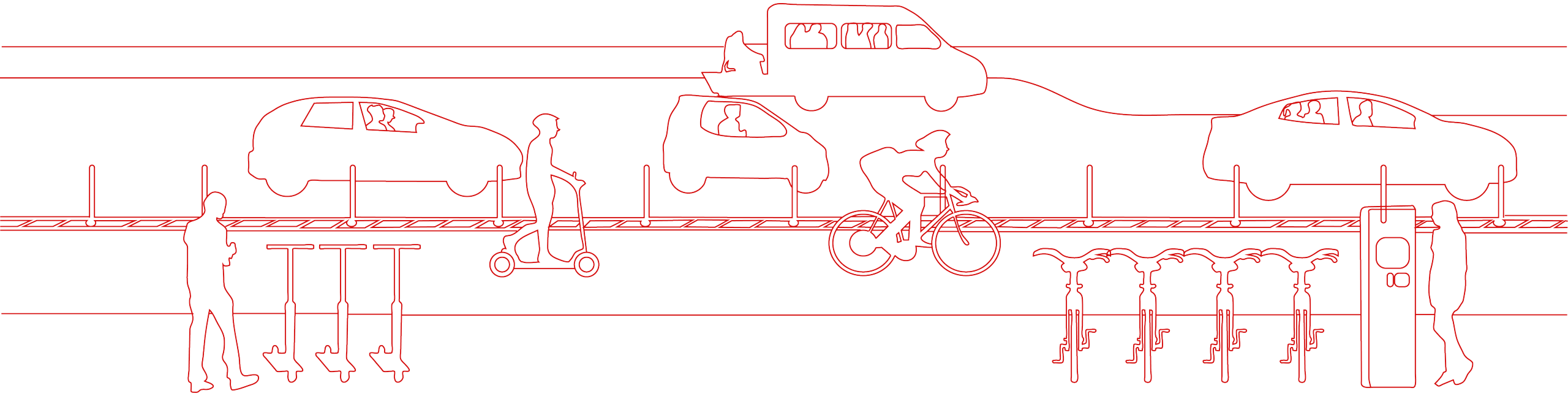
Kyle James
Senior Planner
New Data Sources and Travel Behavior

Catrine Machi
Senior Associate
Impact of AVs on Safety

Derek Abe
Planning Associate
Complete Streets 2.0

Expanded Travel Choice

Expanded Options



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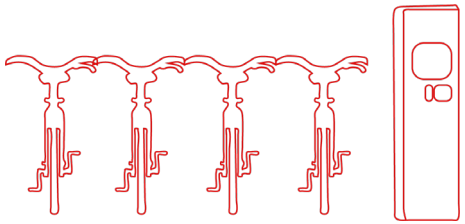
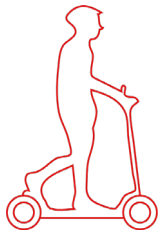
Expanded Options

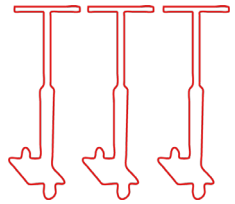
e-bikes



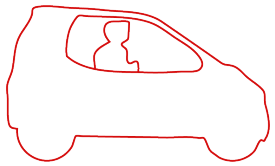
bikesharing



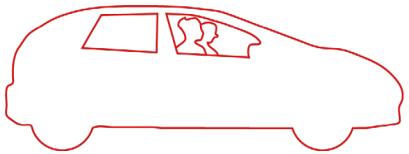
e-scooters/NEV



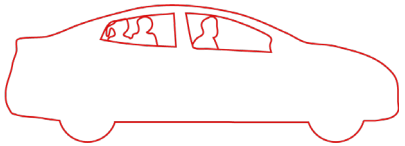
scooter sharing



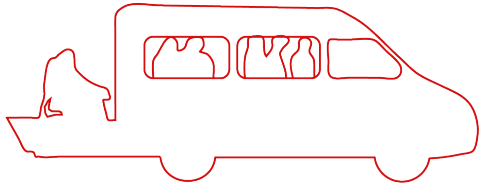
carsharing



ridesharing



ridesourcing/hailing



microtransit

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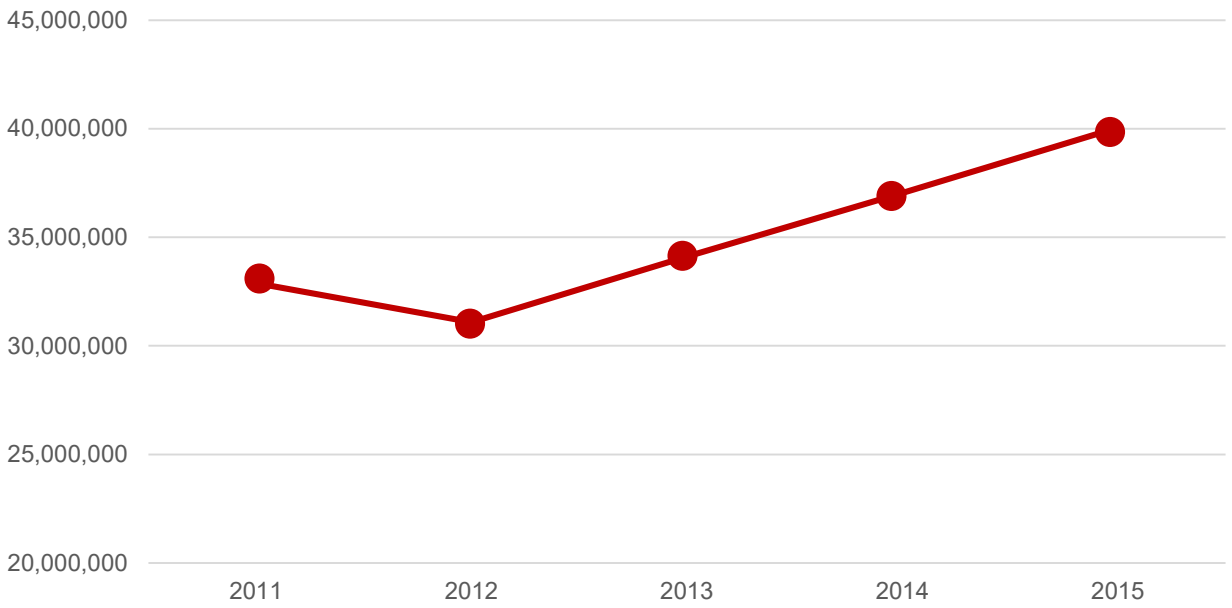
Growing Use



global e-bike sales increased 20% from 2011 to 2015

SOURCE: *Fishman and Cherry, 2015*

of **scooter sharing** schemes have **doubled** every year from 2012 to 2017 globally

SOURCE: *INNOZ, 2017*

Ridesourcing revenue expected to **grow 75%** from 2018 to 2022

SOURCE: *Statista, 2018*

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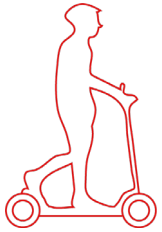
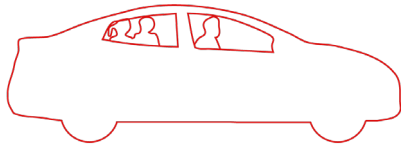
Shifting Demographics

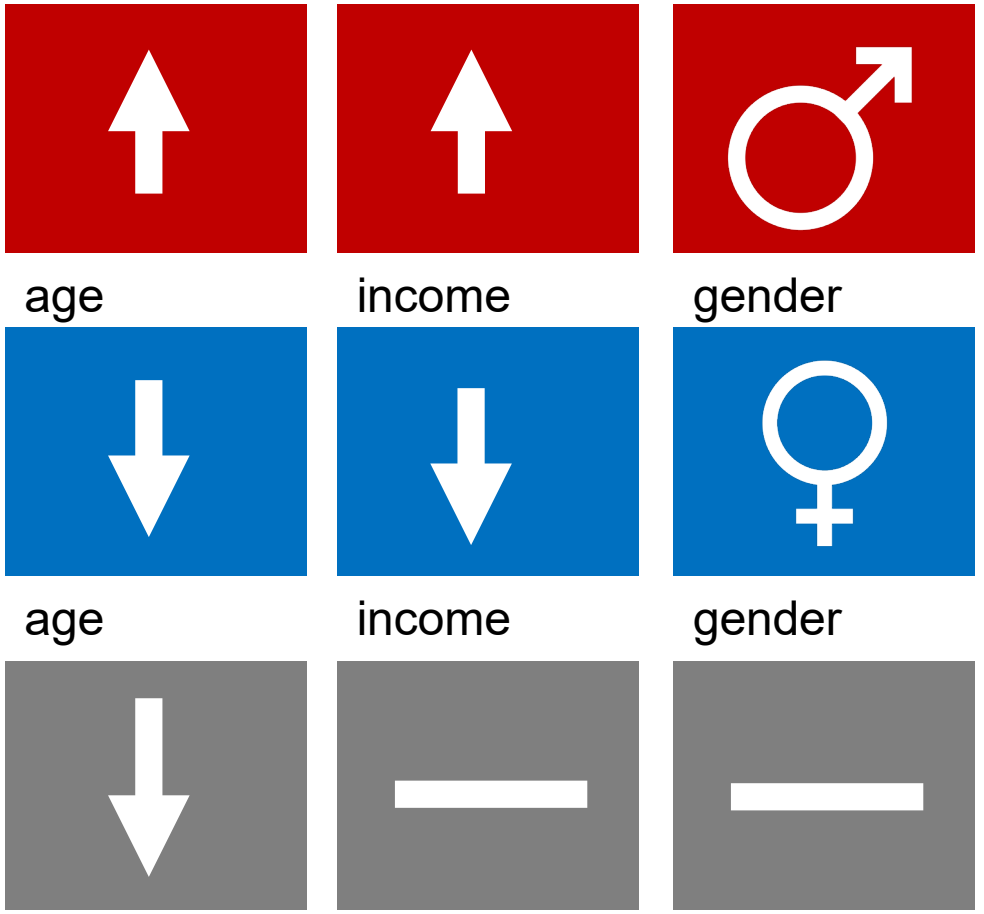
e-bikes



e-scooters



ridesourcing/hailing



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Poll Question

How many more minutes per week does an e-bicyclist ride compared to a traditional bicyclist?

no difference | +15 minutes | +25 minutes | +35 minutes

Poll Question

How many more minutes per week does an e-bicyclist ride compared to a traditional bicyclist?

no difference

+15 minutes

+25 minutes

+35 minutes

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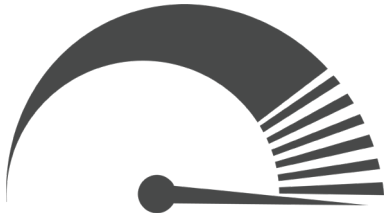
e-Bikes = More for Less

55% more trips

SOURCE: *Fyhri & Fearnley, 2015*



10-27% faster

SOURCE: *Cherry & Cervero, 2007*
SOURCE: *Xu, et al., 2015*

118% longer distances

SOURCE: *Fyhri & Fearnley, 2015*

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Trip Replacement

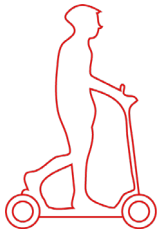
e-bikes

25% auto

60% transit

7% bike

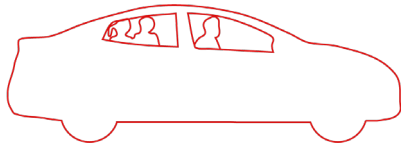
SOURCE: *Cherry et al, 2016*



e-scooters/NEV

39% auto

SOURCE: *Walker, Curbed*



ridesourcing/hailing

25% transit

+15% more auto trips

SOURCE: *NCST. 2018*

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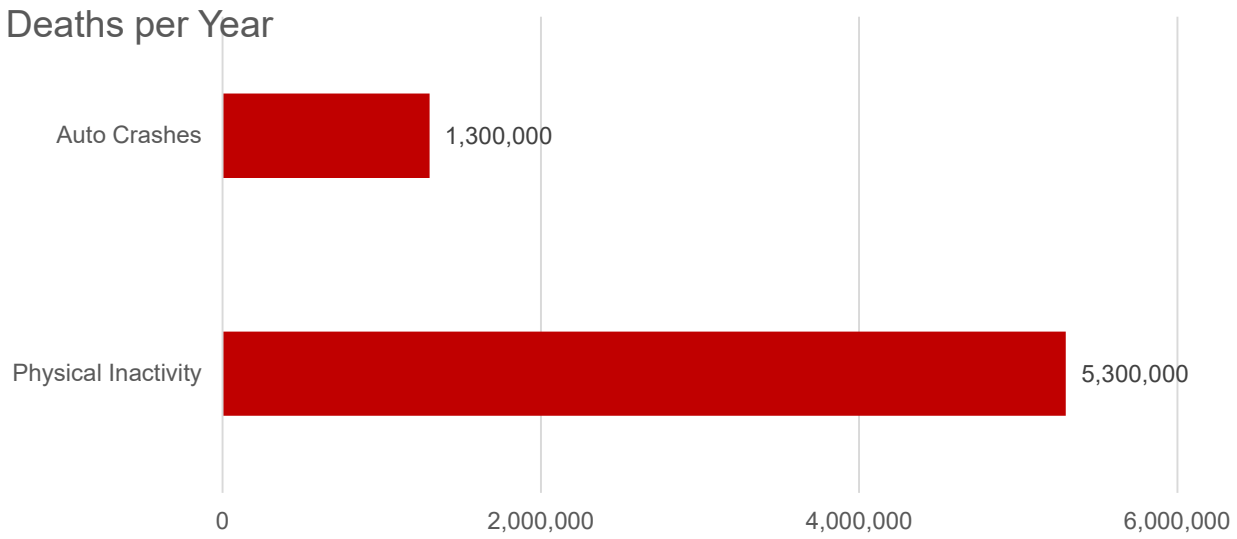
Health Impacts



physical inactivity leads to 3x more deaths than crashes

SOURCE: *Lancet, 2013*

7.3 MET

(metabolic equivalent)

SOURCE: *Gojanovic, et al, 2011*

-11%

energy expenditure

SOURCE: *Langford, et al, 2015*

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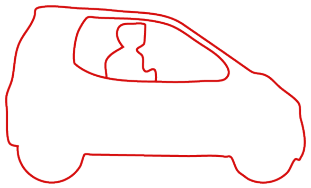
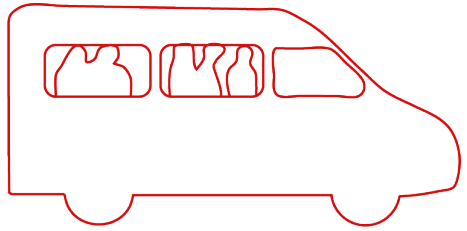
Environmental Impacts

per person trip…



emissions less than auto



emissions similar to bus

SOURCE: *Cherry, et al. 2009*

vary by available energy sources

other concerns

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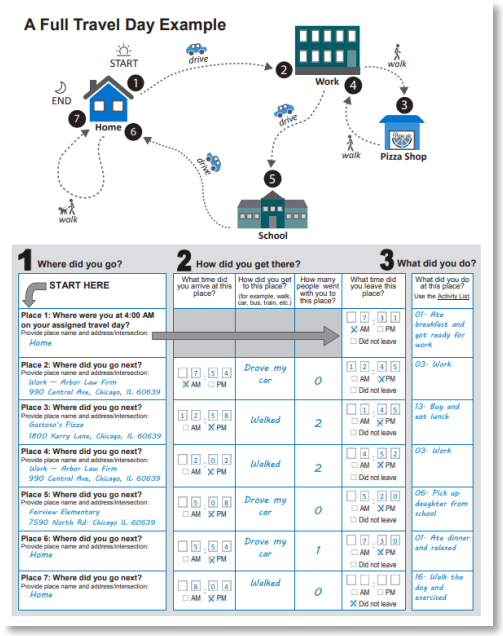
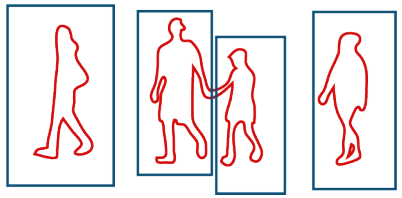
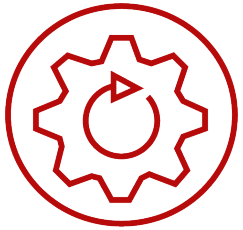
Collecting Data



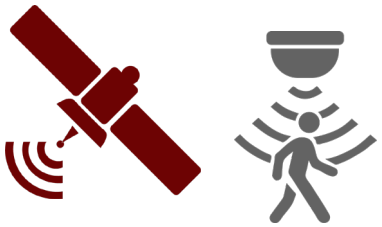
travel surveys



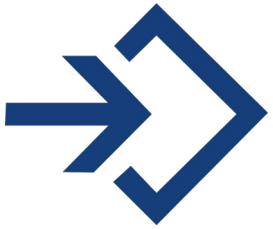
counters



asset/curb management



trace data



feed specifications

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Questions to Ask

project scale

budget/ repetition

margin of error

multiple metrics

overlapping jurisdictions

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Expanded Travel Choice

Safety of AVs

(with people walking and biking)

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.**

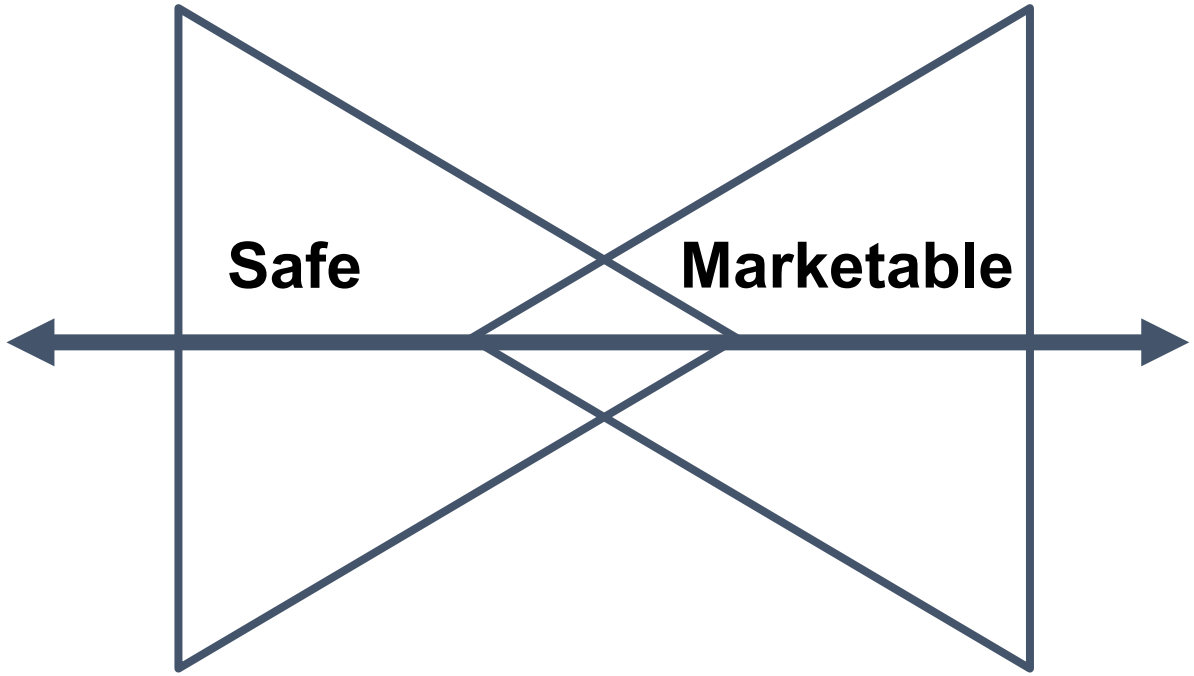
AVs are demonstrably safer than the median human driver.

A Waymo report states:

“Every mile, in every car, is shared with the entire fleet, giving every Waymo vehicle more experience for the next mile.”

Safe - OR - Marketable?

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



Safety of AV's for all.

We can't take for granted that autonomous vehicles will be safe, we need to insist upon it from every angle for all roadway users:

- *policy*
- *regulations*
- *roadway design*
- *vehicle design*
- *as consumers*

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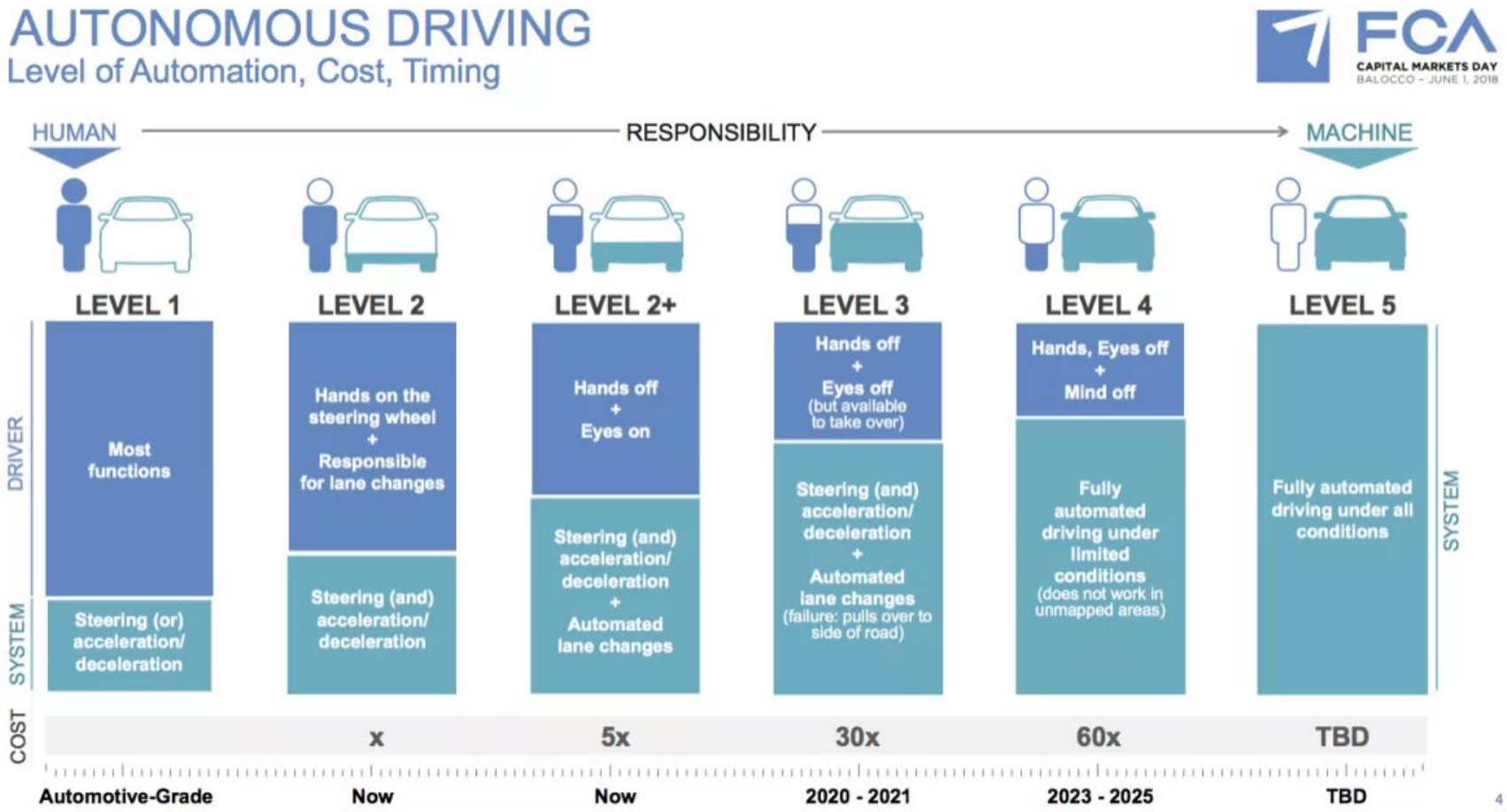
Definitions: Connected/Autonomous Vehicles



Source: Fiat Chrysler

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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

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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

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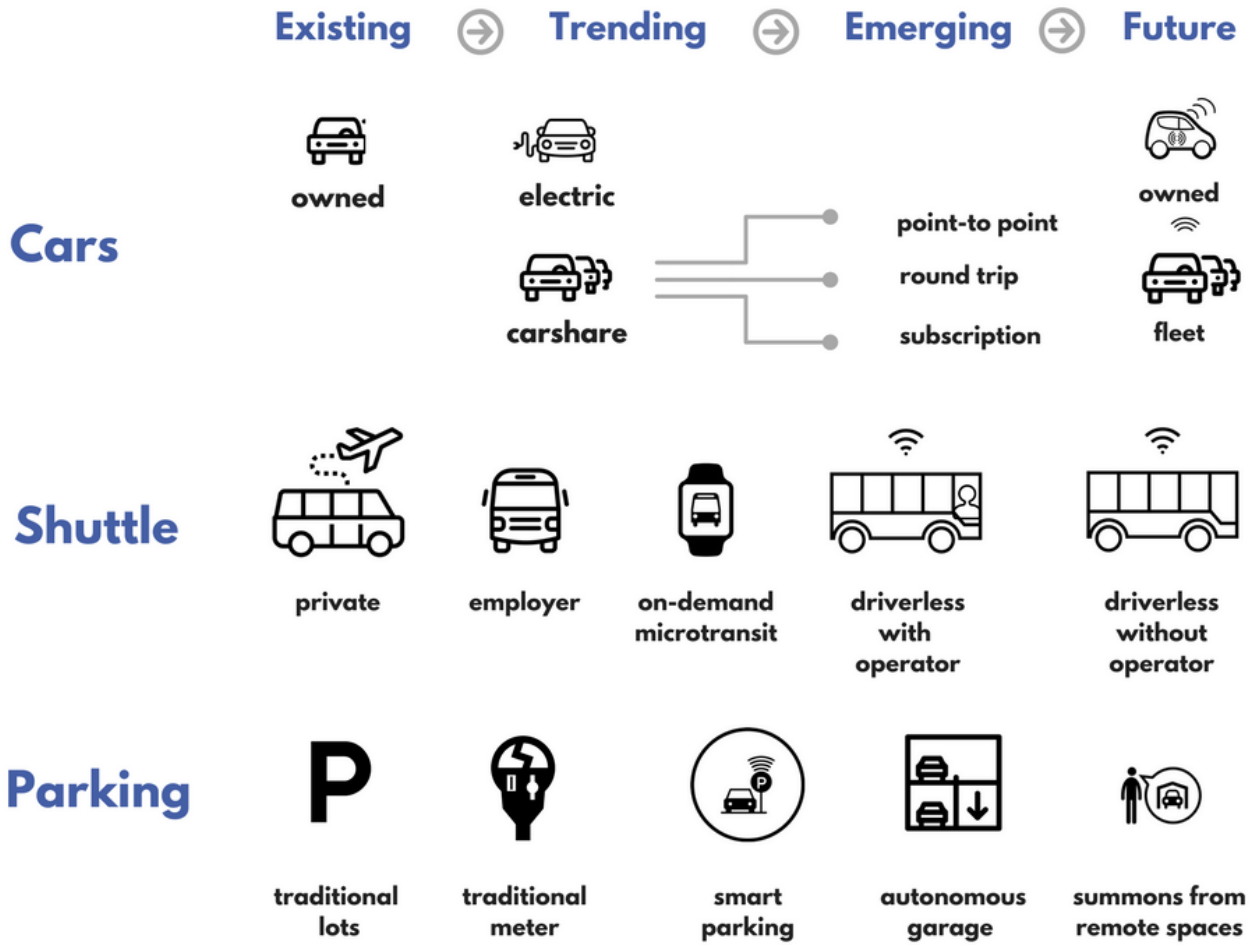
How will the shift to AV happen?



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Where are you now in the shift?

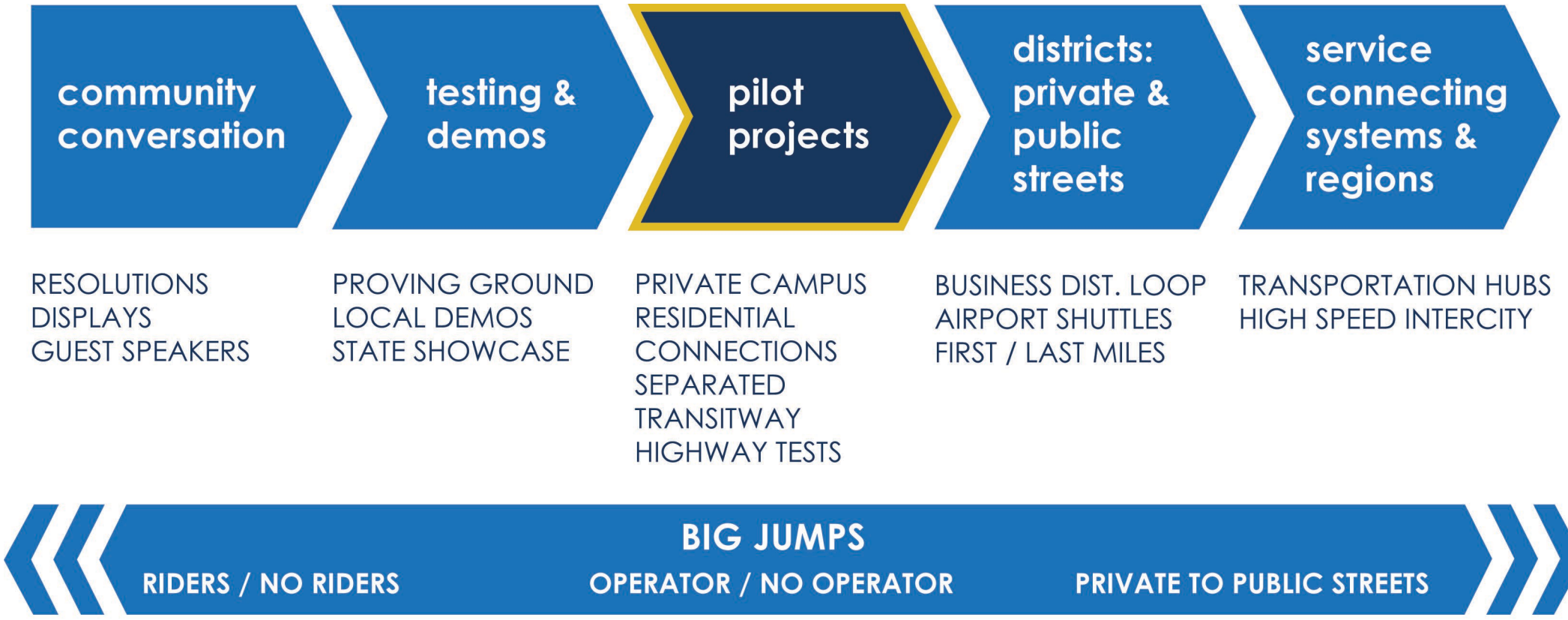

Image adapted from: Mobility E3

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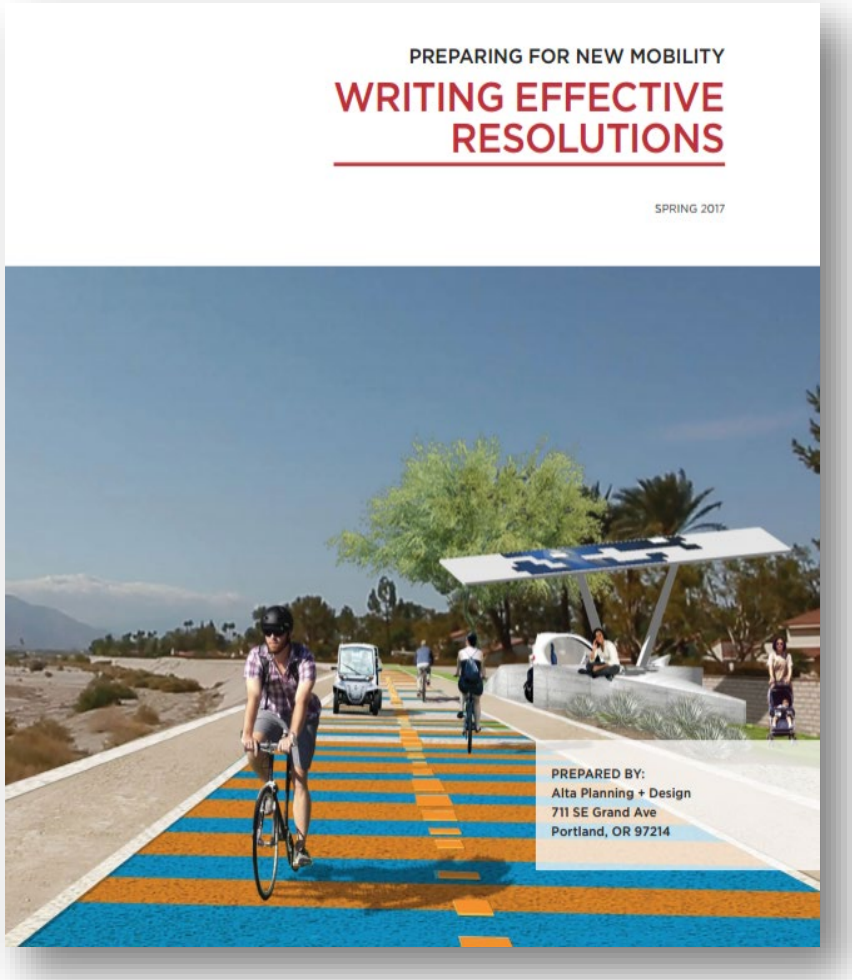
Scan of Research and Information on Safety Issues



Alta's goal is to continue to help us all keep apprised of latest developments in AV safety and take the steps towards helping our clients move through these transitions.

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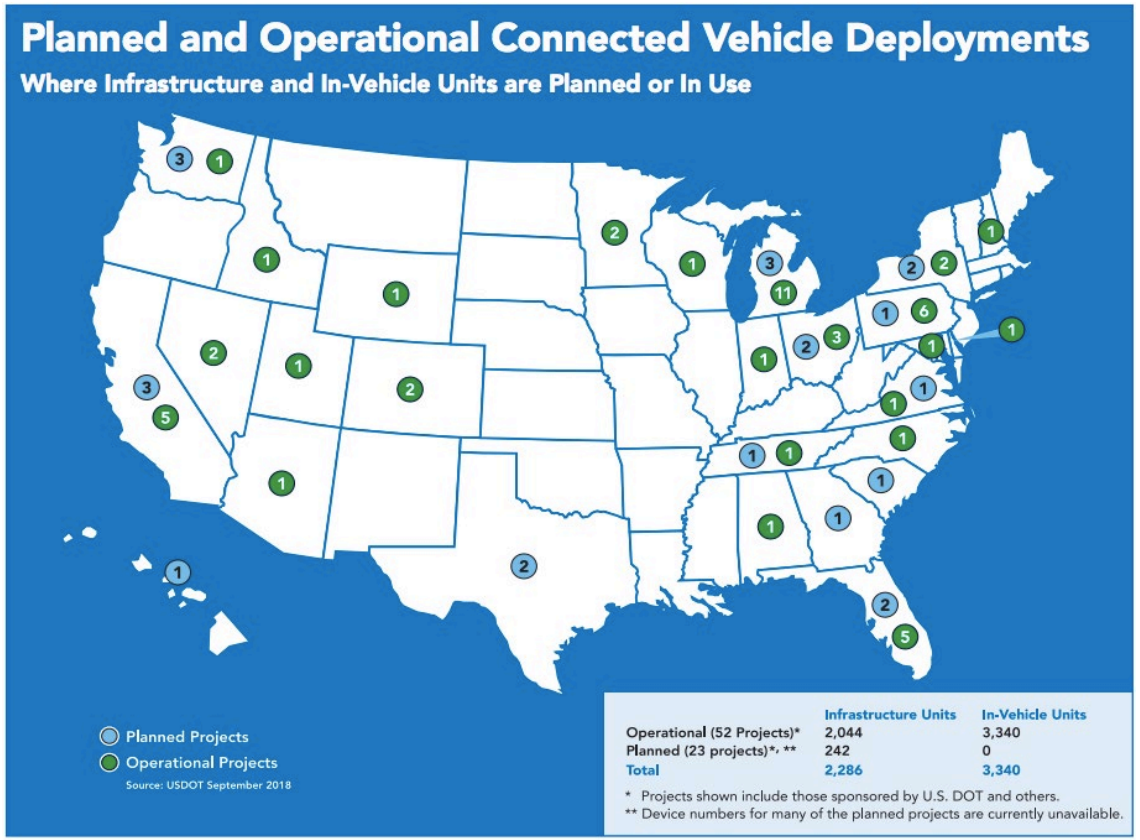
Scan of Research and Information on Safety Issues: Challenges - Now

- Standards: there are no current nation-wide standards for which AVs can operate.
- Along these lines, state and local laws vary with respect to speed limits, if motorists must yield or stop for a pedestrian, etc.
- AV guidance 3.0 calls for nationwide testing



Source: https://www.transportation.gov/AV

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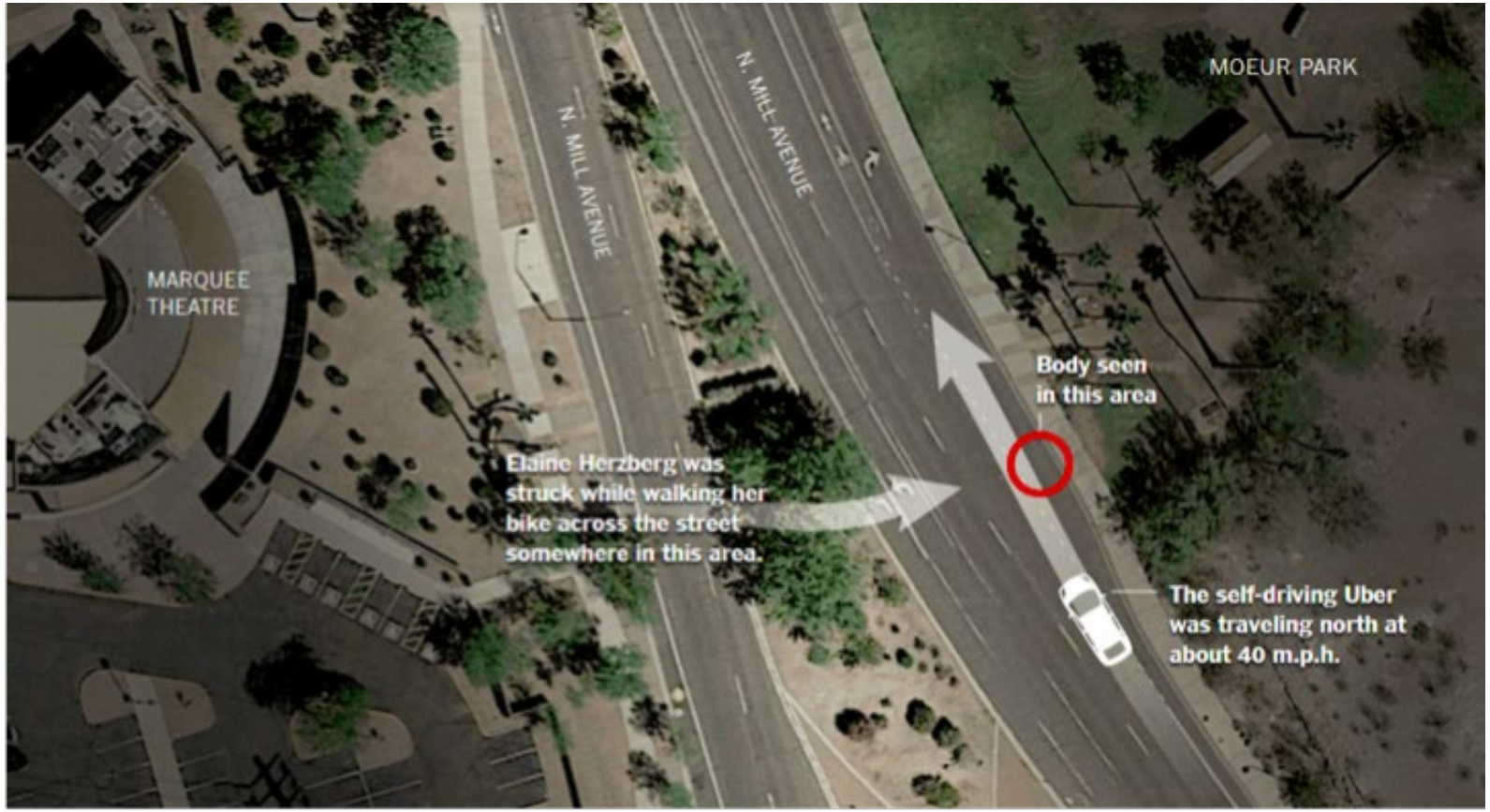
Scan of Research and Information on Safety Issues: Challenges - Now



Source: New York Times

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Scan of Research and Information on Safety Issues: Challenges - Now

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Scan of Research and Information on Safety Issues: Challenges - Now

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

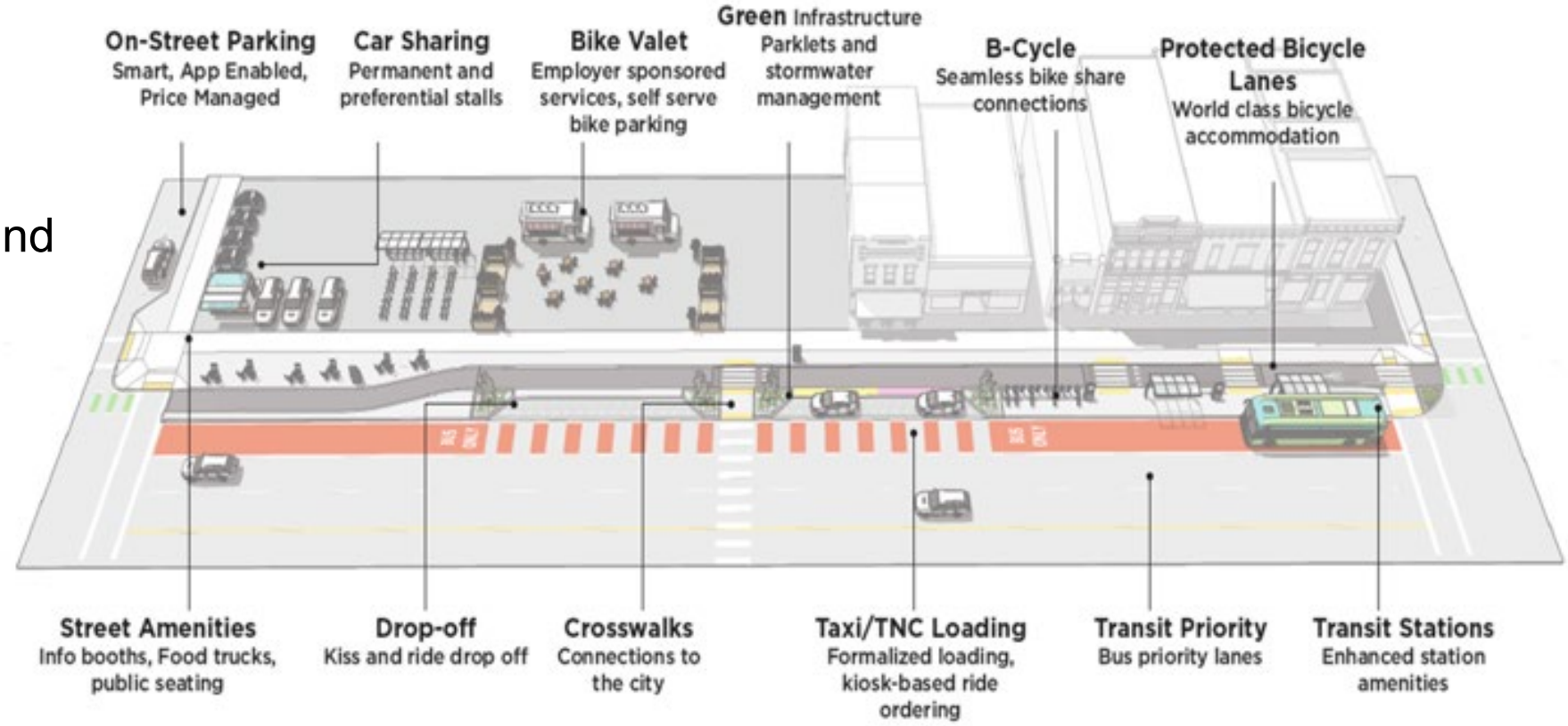
- **Detection Problem:** AV's do not see and anticipate bicyclists and pedestrians as well as they do vehicles.
- **Communication Problem:** Currently pedestrians, bicyclists and drivers make eye contact to communicate intent - especially at a 4-way intersection scenario.

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

Scan of Research and Information on Safety Issues: Challenges - Anticipated

Pick-up / Drop-off Problem:

The curb is an area where pedestrians and bicyclists are most vulnerable



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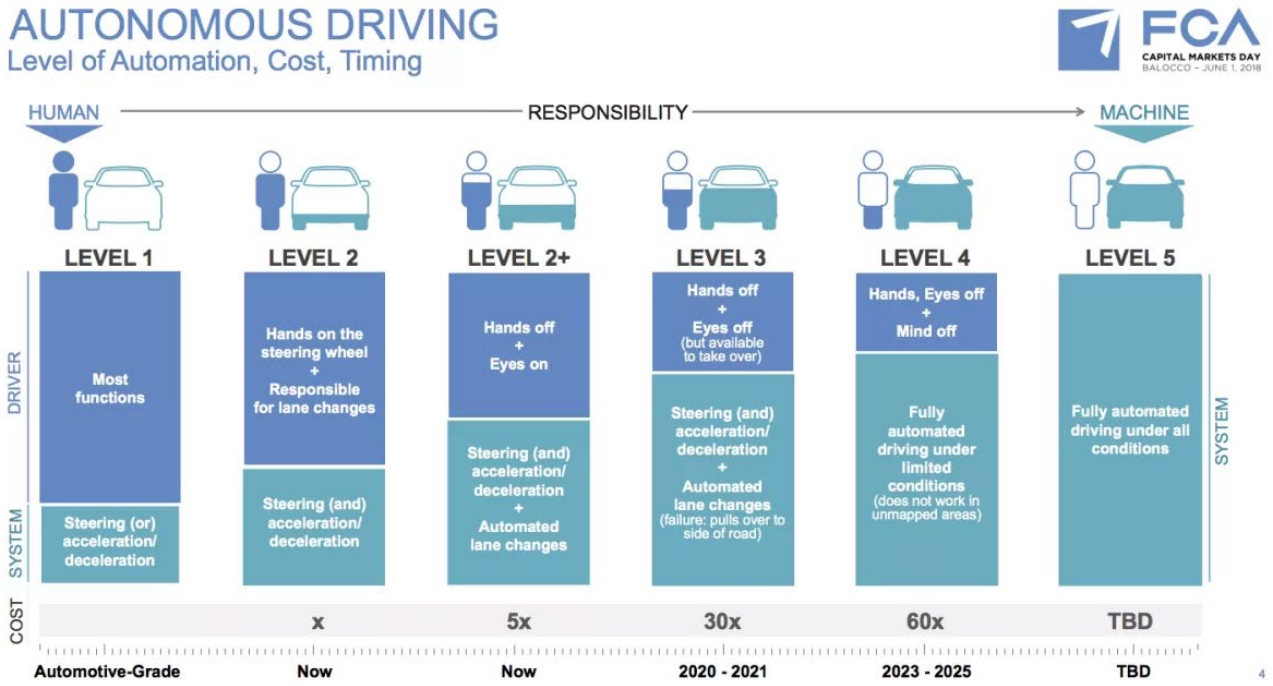
Scan of Research and Information on Safety Issues: Challenges - Anticipated

Provide clear messaging of vehicle capabilities - simplify the five levels of automation.

Driver Handoff Problem: local policies may need to restrict where and when AV's operate at which level of automation.



Source: Fiat Chrysler

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SUBSCRIBE

ROUTE FIFTY

MANAGEMENT | INFRASTRUCTURE | TECH & DATA | SMART CITIES | PUBLIC SAFETY | HEALTH & HUMAN

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

What can cities, MPOs, State DOT Agencies do now?

Future-proofing: crash prevention through design, policy and consistent signage and marking standards

Support safety elements that are already proven and not likely to change:

- Design Guidelines
- Vision Zero and other Safety Policies
- Curb Management
- Mode separation
- Speed separation
- Maintenance - set standards/minimums

What are our ideal outcomes?
Complete Networks – All Modes

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What are our ideal outcomes?
First/Last Mile

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What are our ideal outcomes?
Public Services, Cleaner Air

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What are our ideal outcomes? Freight, Vision Zero

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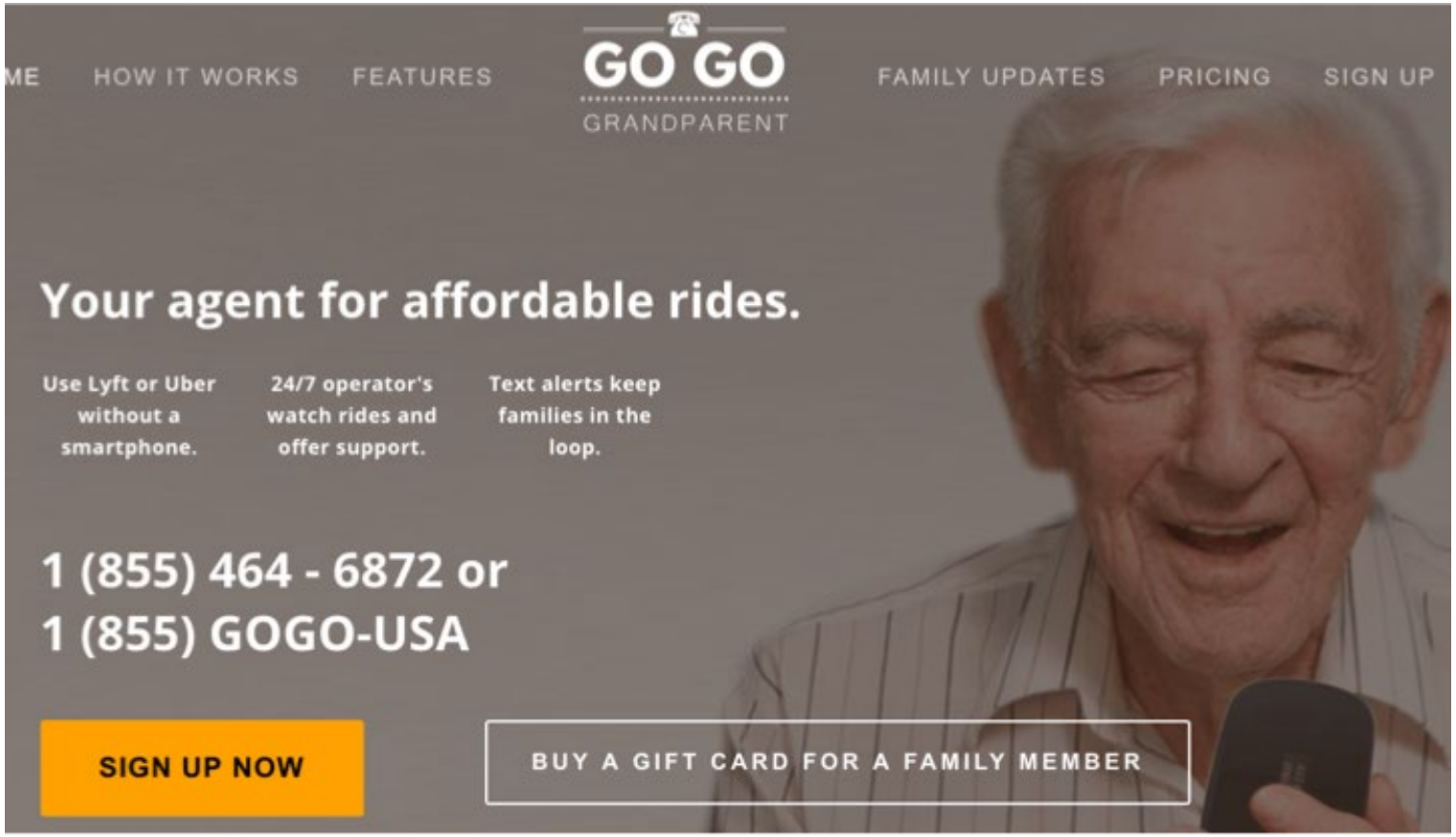
What are our ideal outcomes?
Expanded Mobility For All Ages and Abilities



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Where do we start?

Visualize your ideal outcome and then work towards achieving that goal!

Safety of AVs

(with people walking and biking)

Complete Streets 2.0

Derek Abe

Alta Planning + Design

Complete Street Principles

- **Access and mobility** for everyone regardless of age, ability, mode
- **Unique** - responds to the specific needs of the community, streetscape, and land use context
- **Balanced** – Provides the highest degree of transportation options, transitioning away from auto-centric planning and design
- **Safe** – prioritizes the needs of most vulnerable users
- **Comprehensive** – Considers the larger network, a system-wide approach

Complete Streets 1.0

+ New Mobility

Complete Streets 2.0

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Poll Question:

- Has your community had a project to reallocate or reorganize space on the street within the last few years?
  - Yes
  - No
  - Not Sure

Complete Streets 2.0 Principles

PRIORITIZED USES

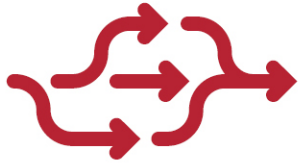
SAFE BY DESIGN

POINT-TO-POINT TRIPS

MULTIMODALISM

COMPLETE NETWORKS

DIGITAL INFRASTRUCTURE



ADAPTABILITY

OUTCOMES BASED

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Complete Streets 2.0 Principles

PRIORITIZED USES

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Complete Streets 2.0 Principles

SAFE BY DESIGN

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Complete Streets 2.0 Principles

POINT-TO-POINT TRIPS

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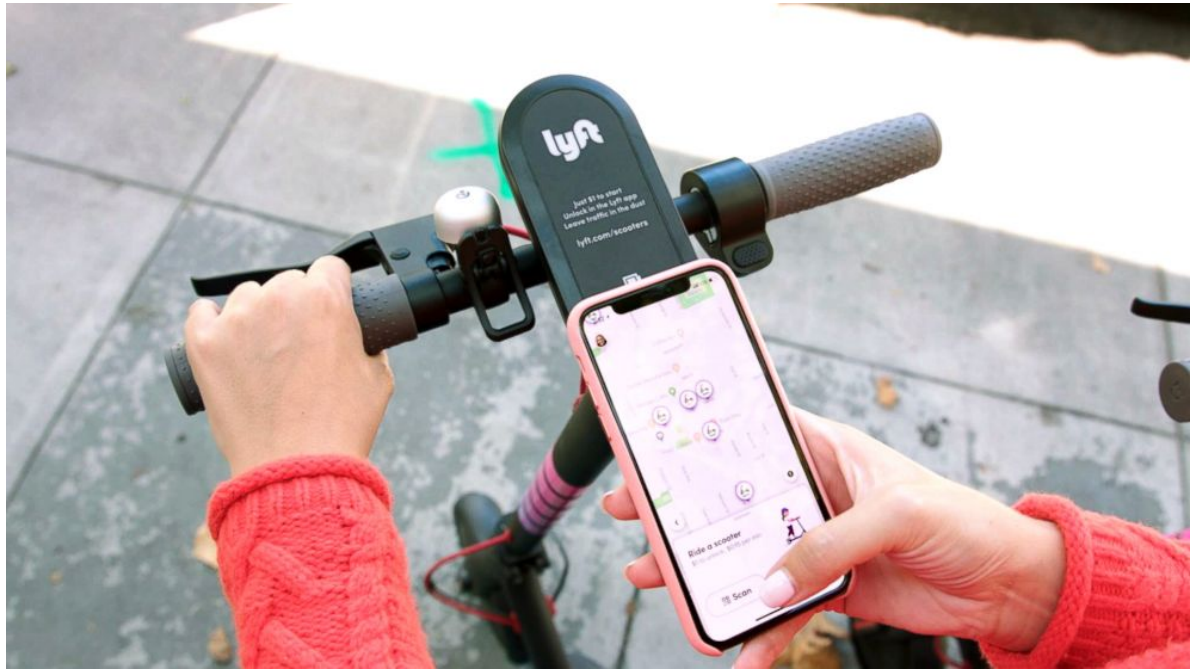
Complete Streets 2.0 Principles

MULTIMODALISM



Complete Streets 2.0 Principles

COMPLETE NETWORKS

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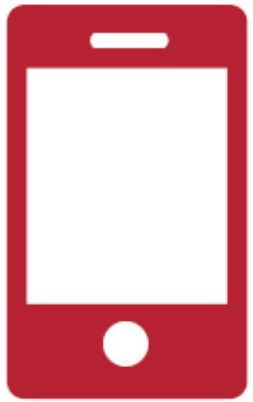
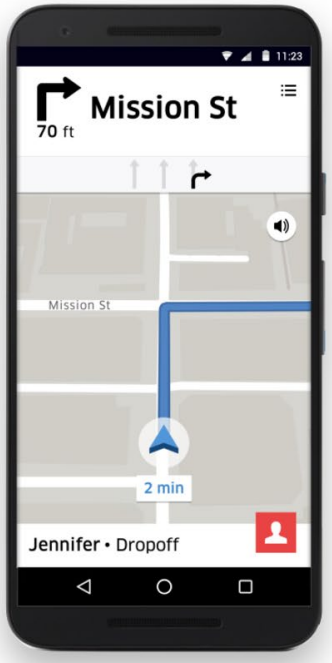
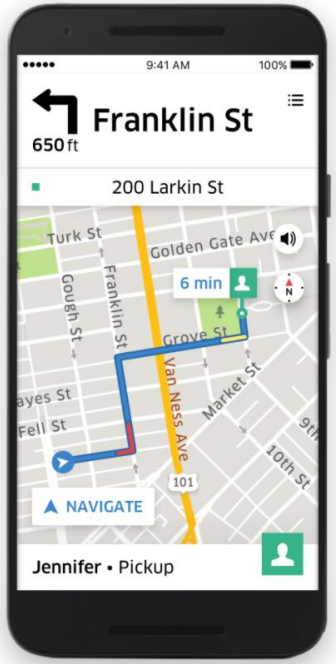
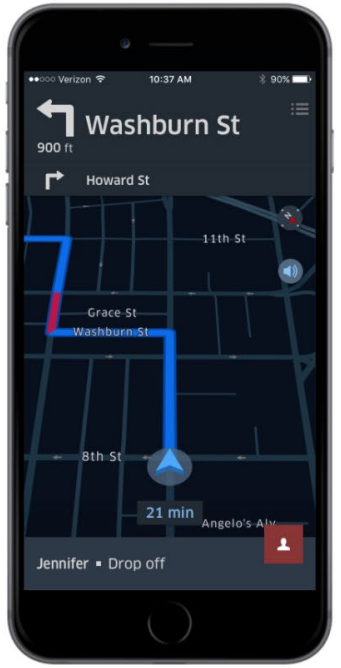
Complete Streets 2.0 Principles



DIGITAL INFRASTRUCTURE







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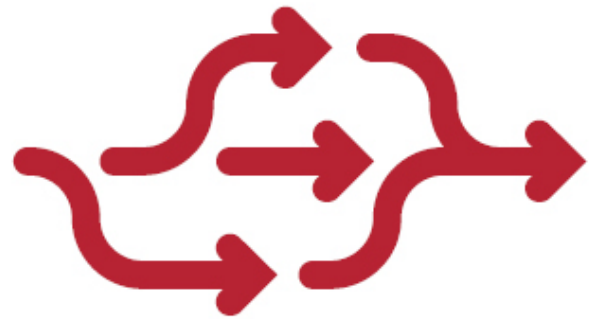
Complete Streets 2.0 Principles



ADAPTABILITY

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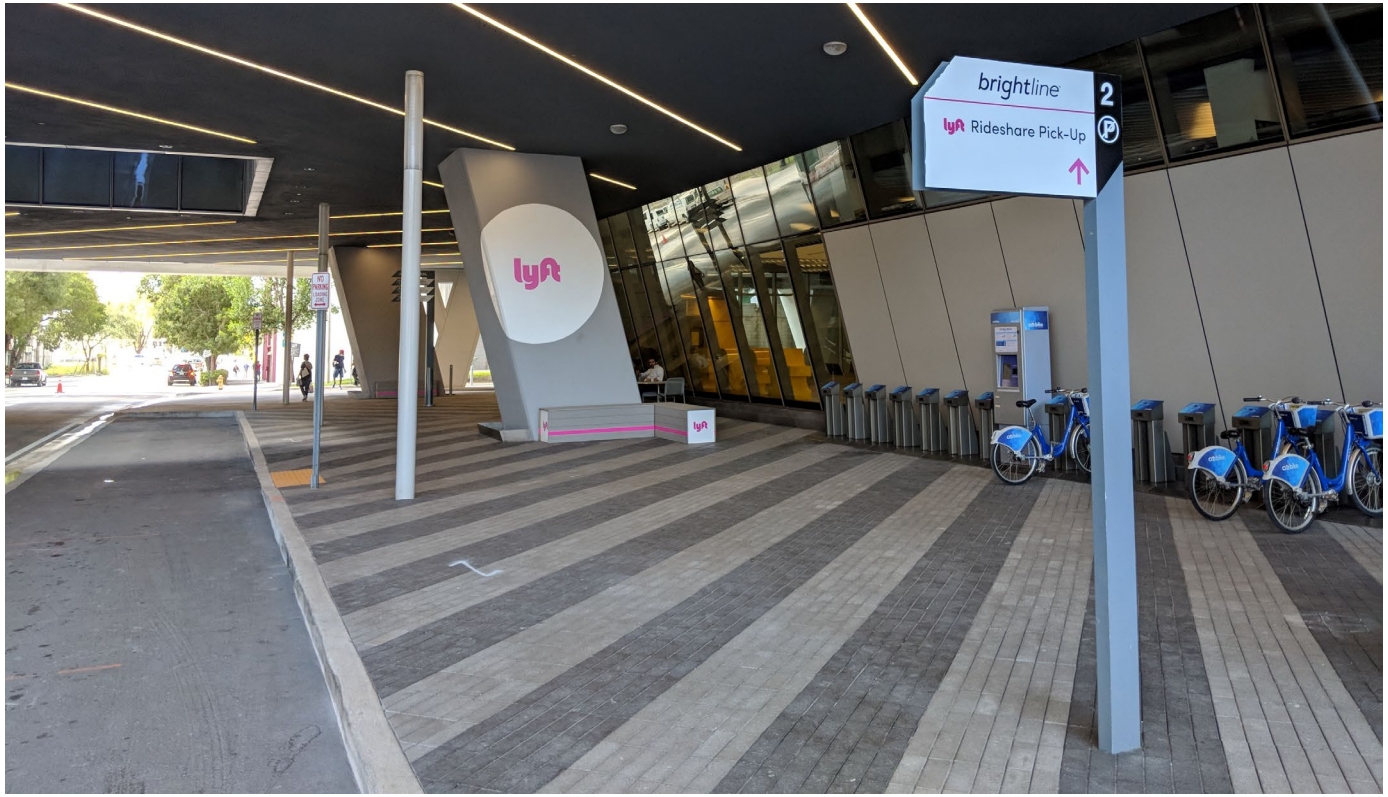
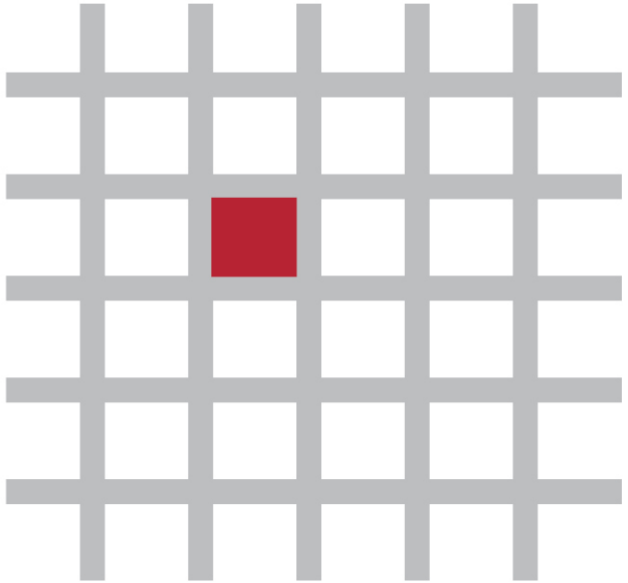
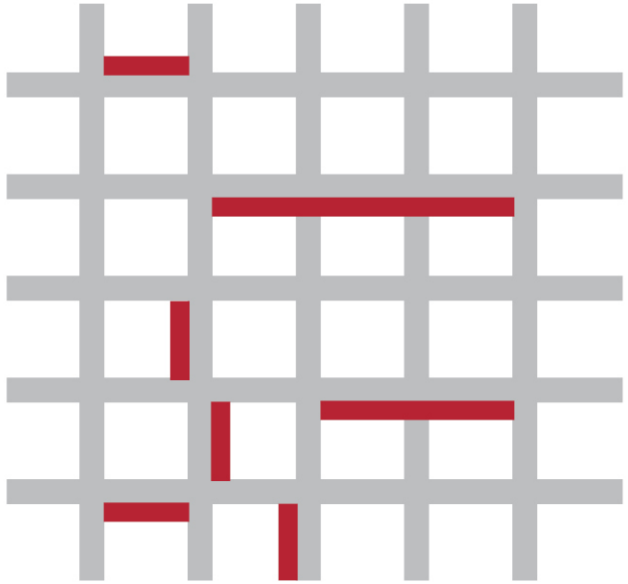
OUTCOMES BASED



Complete Streets 2.0 in Practice



MOBILITY HUB SITE



LINEAR MOBILITY BLOCKS

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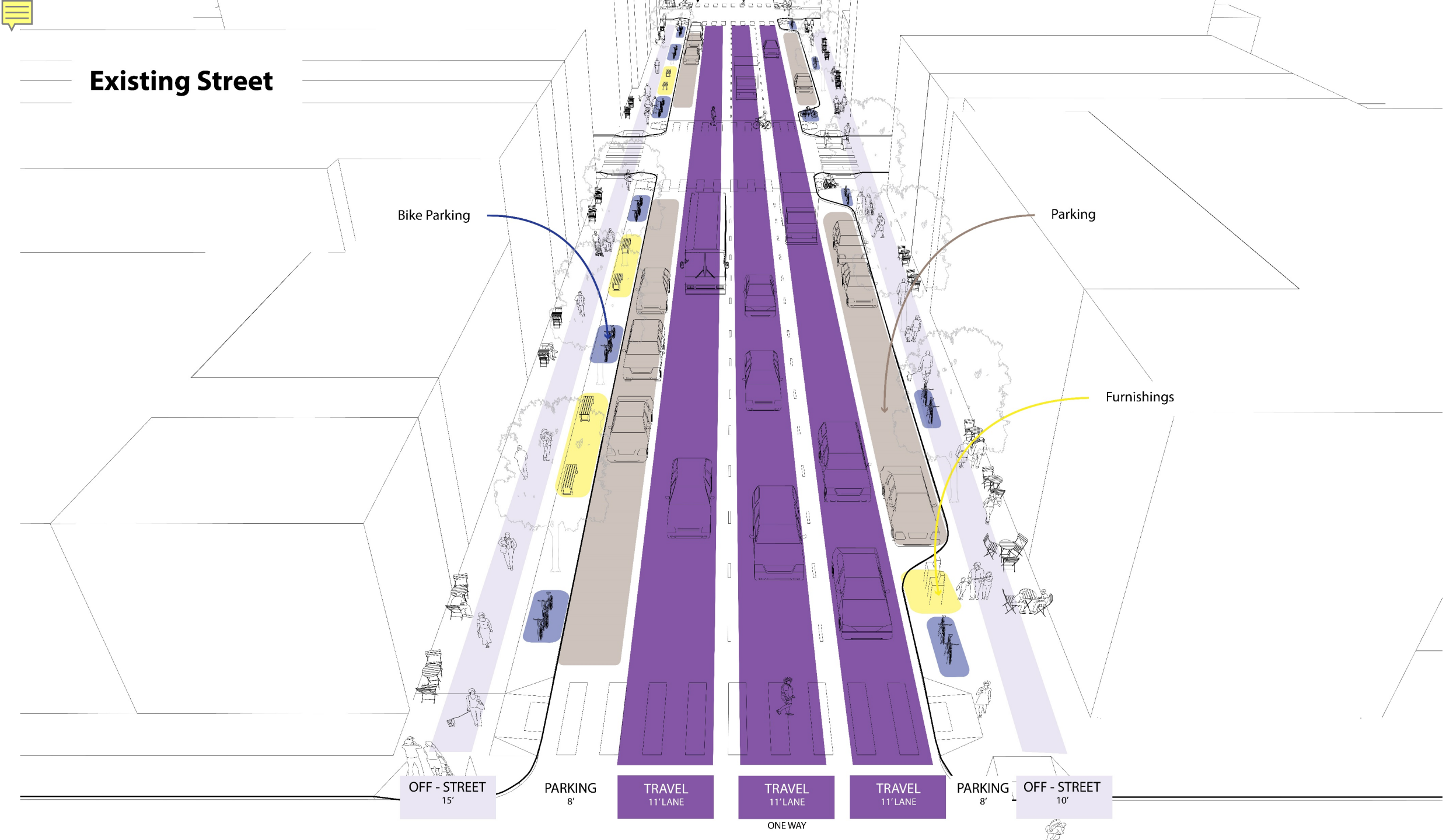
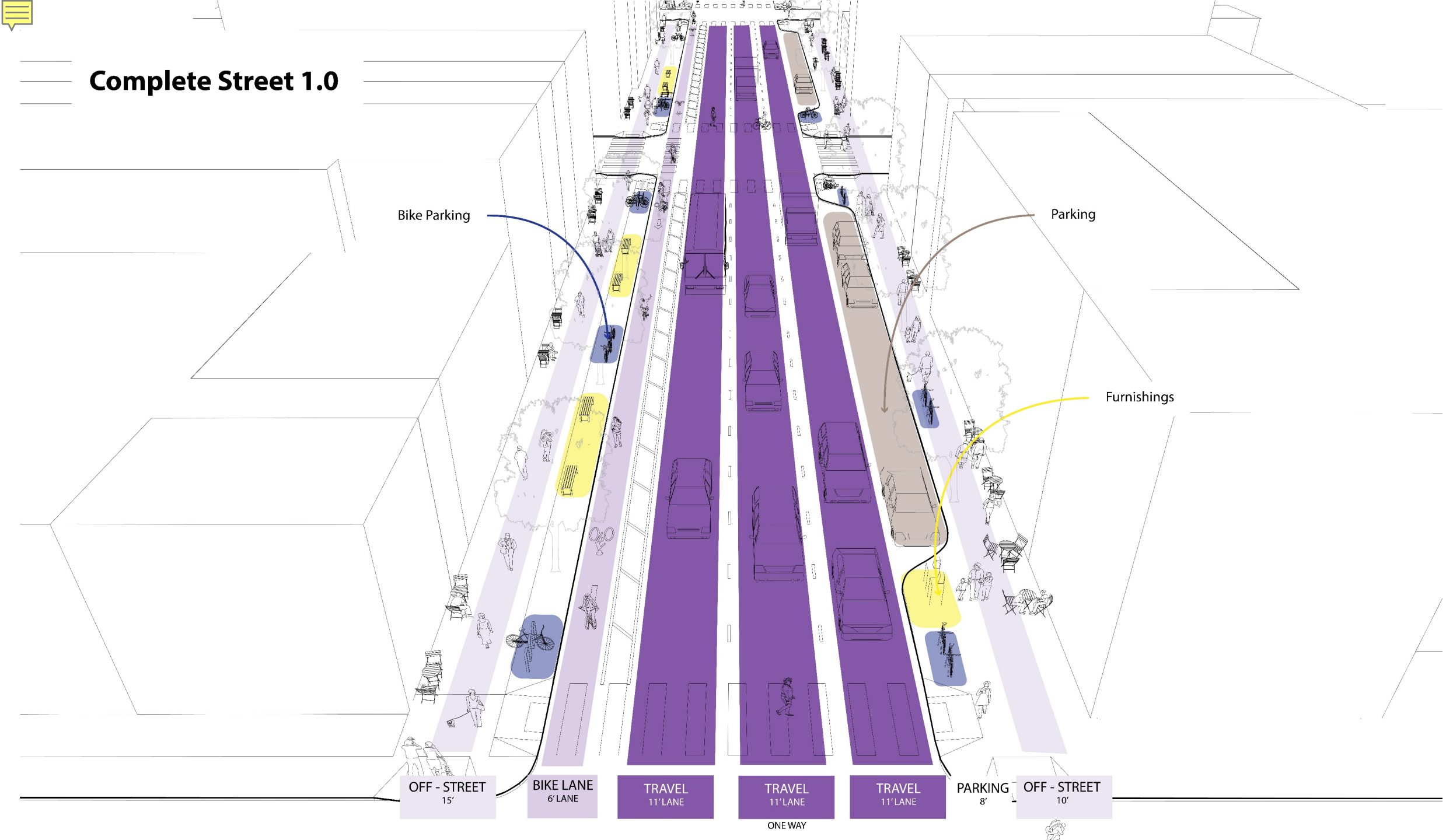
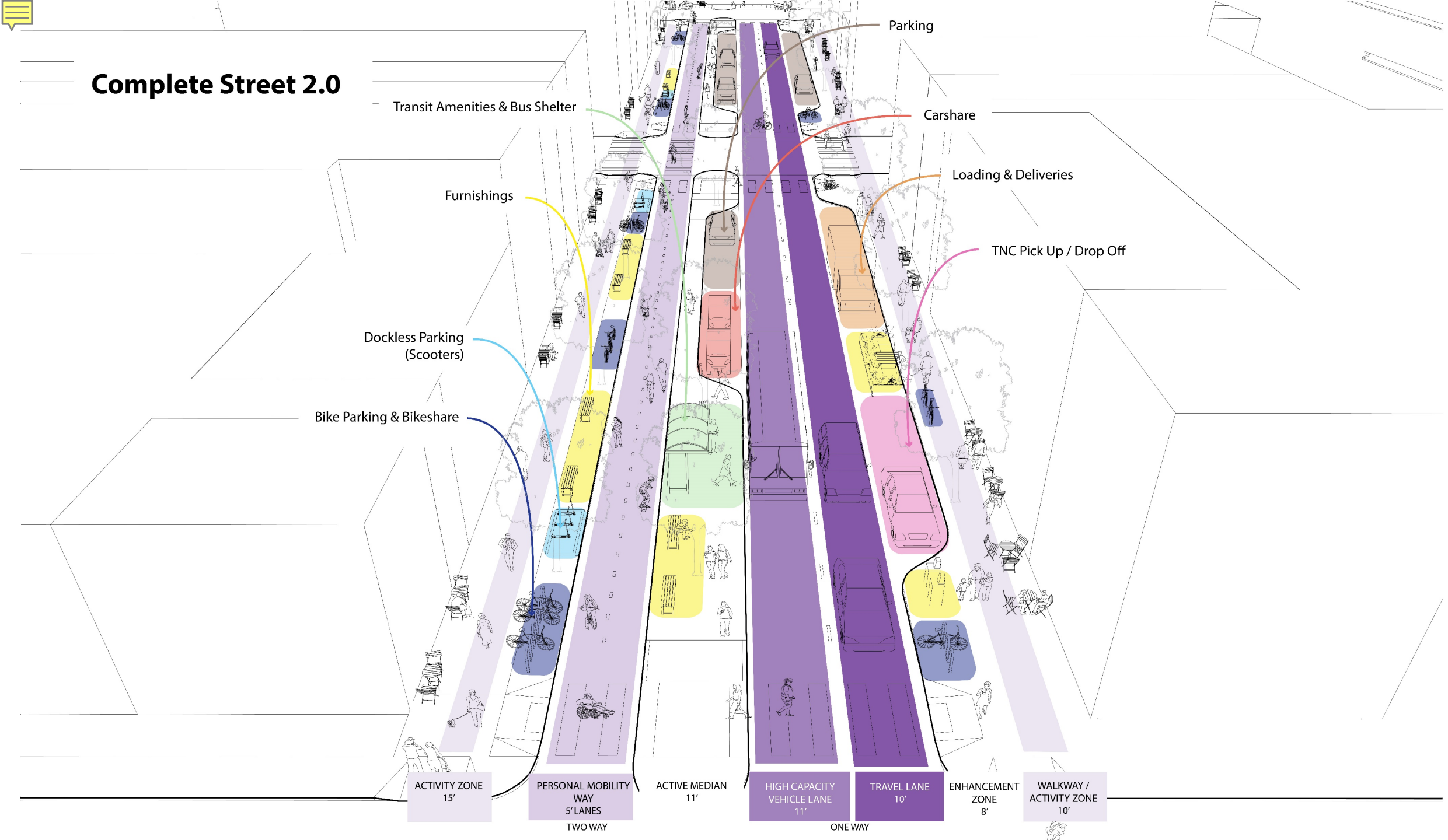
Existing Street



Complete Street 1.0



Complete Street 2.0



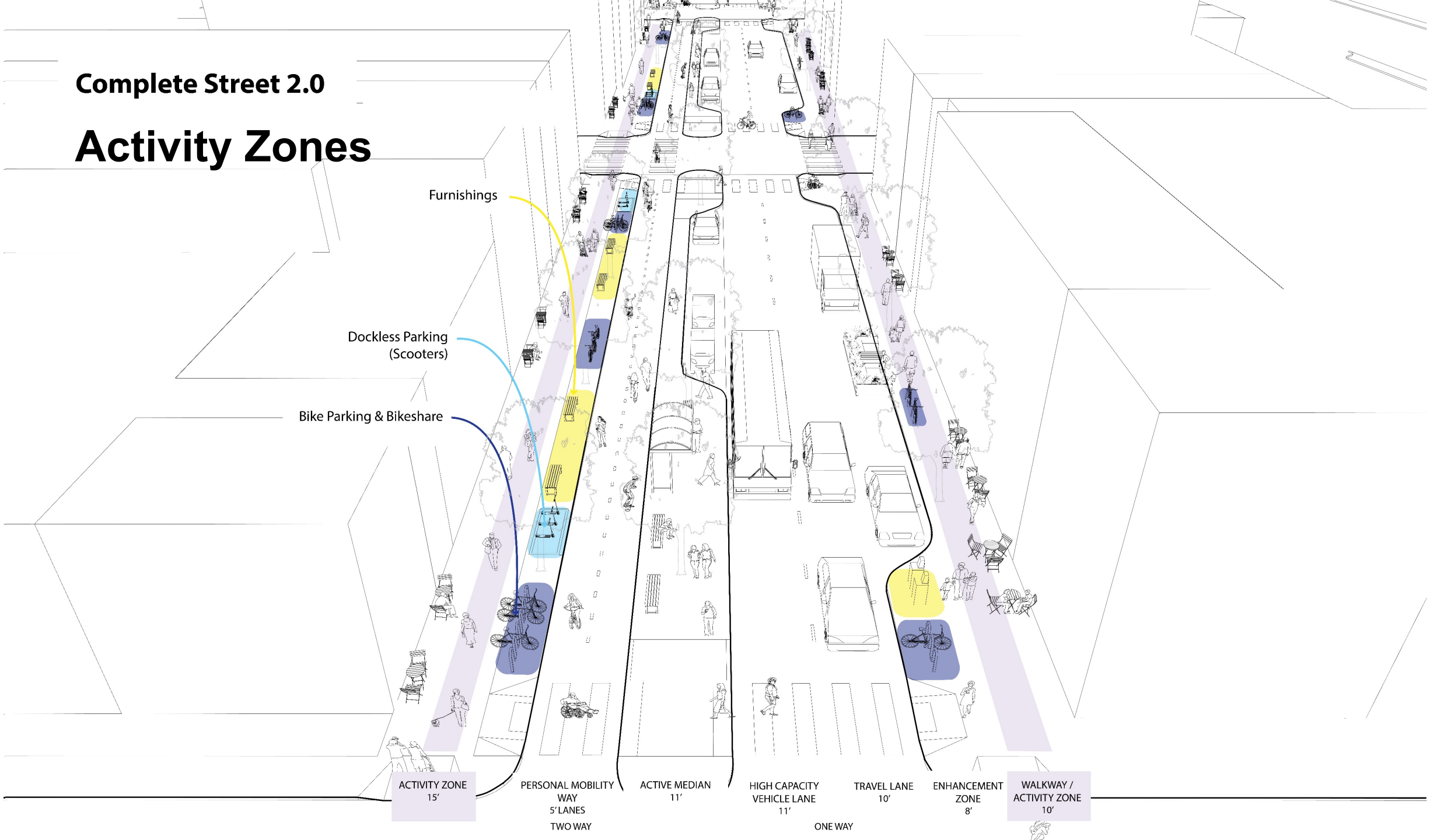
Complete Streets 2.0 in Practice

Design is guided by:

- **Mode**
- **Speed**
- **Person-Capacity**
- **Demand**

Complete Street 2.0

Activity Zones



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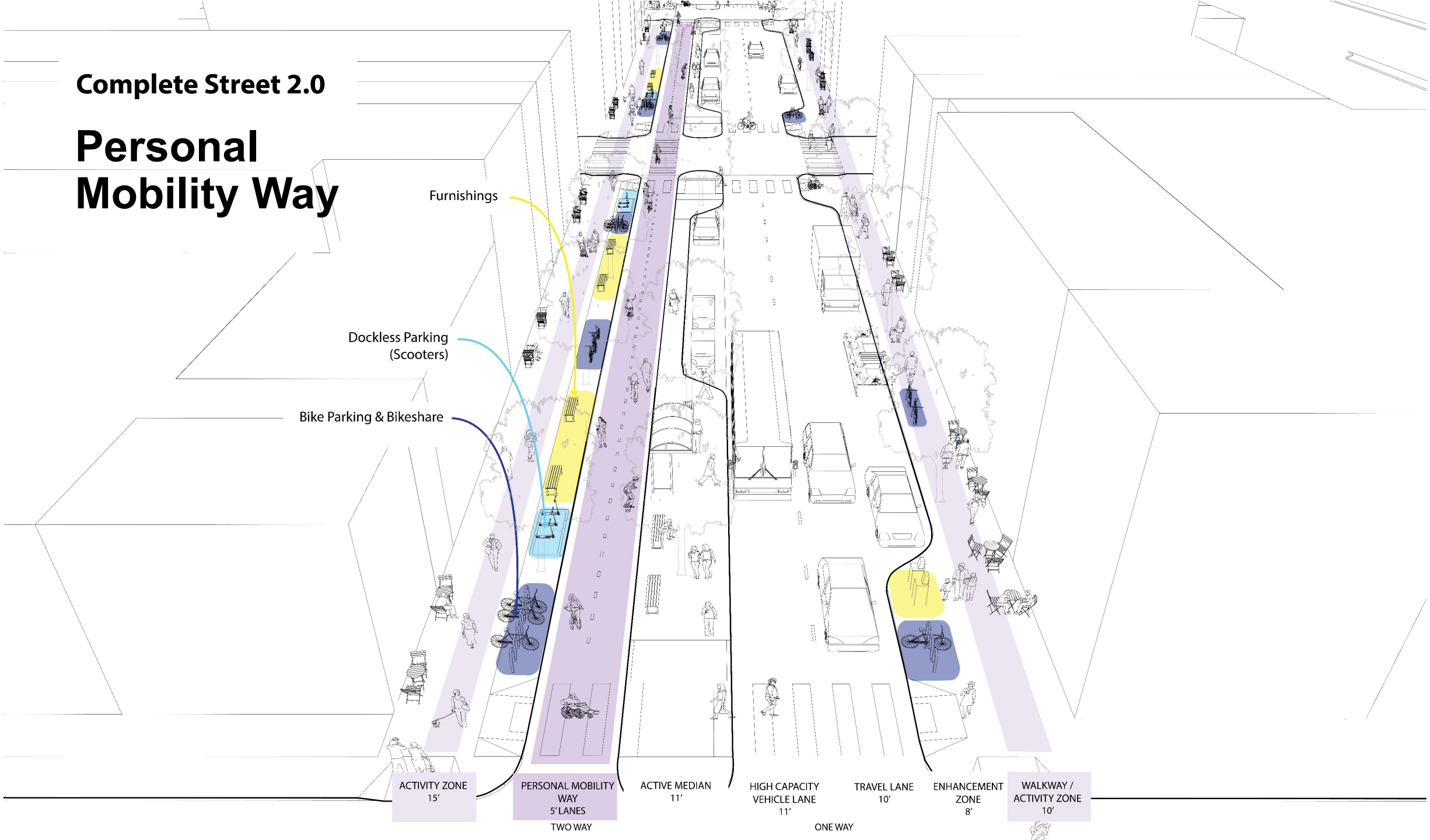
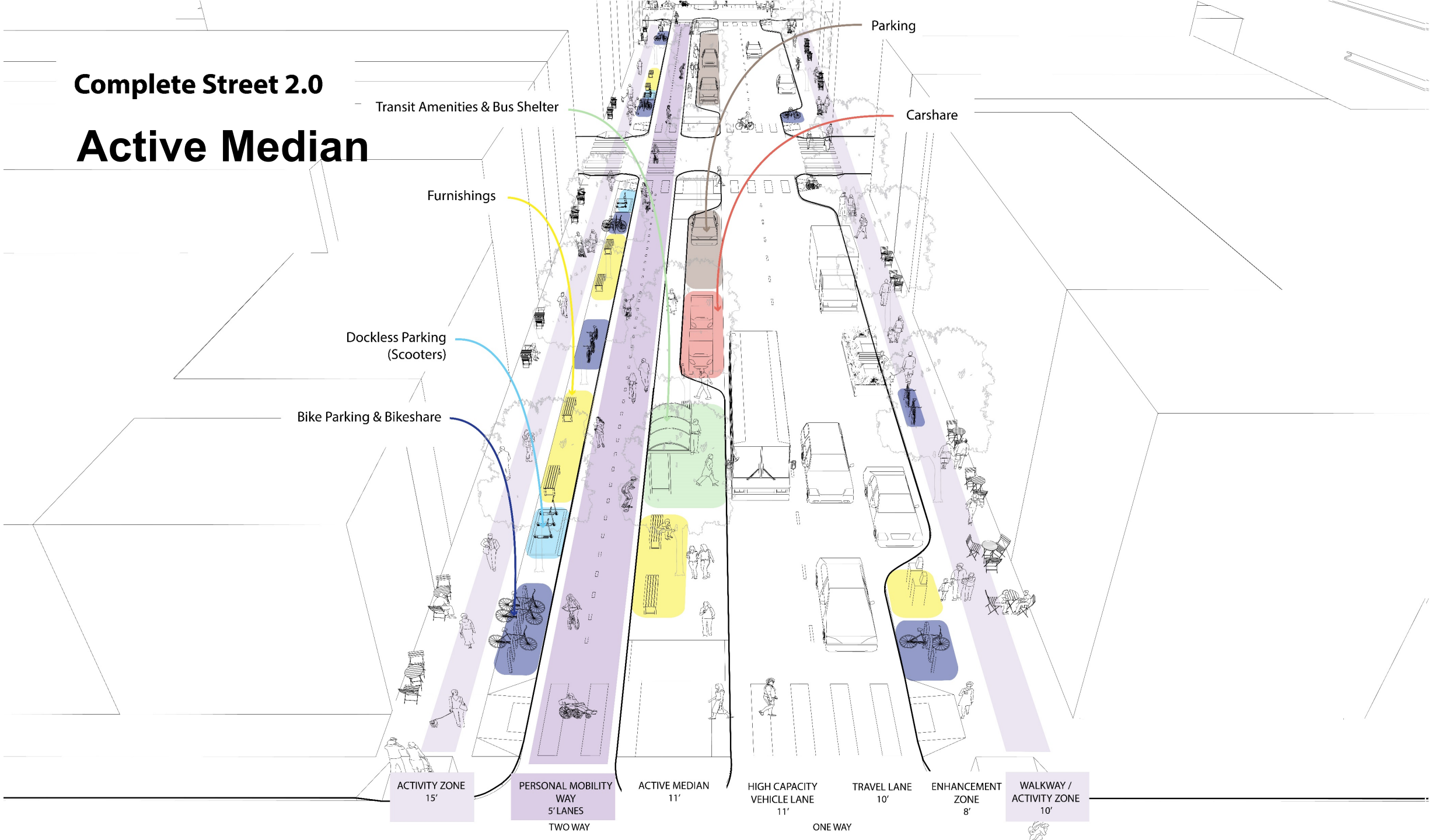
Personal Mobility Way



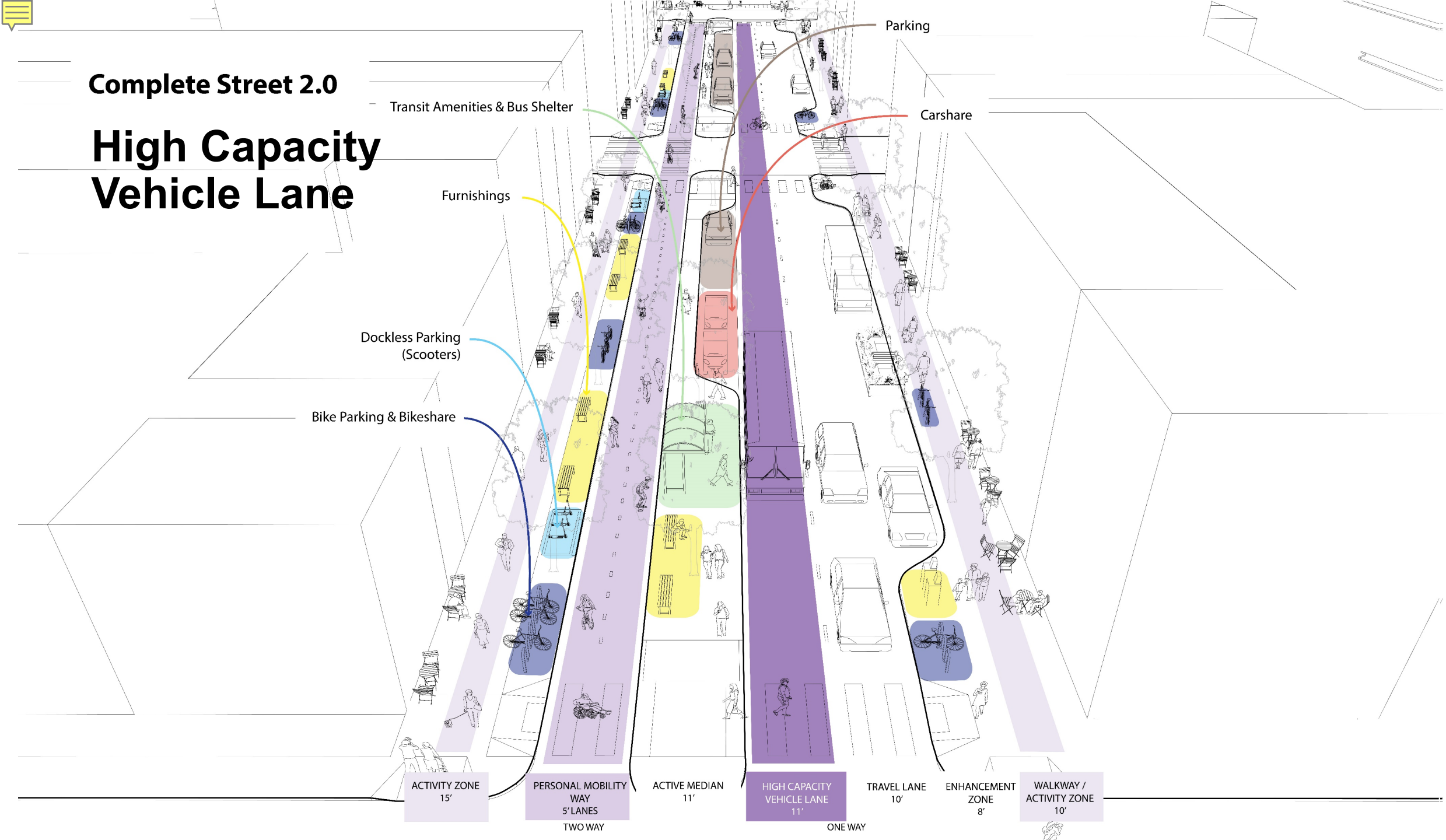
Complete Street 2.0

Active Median



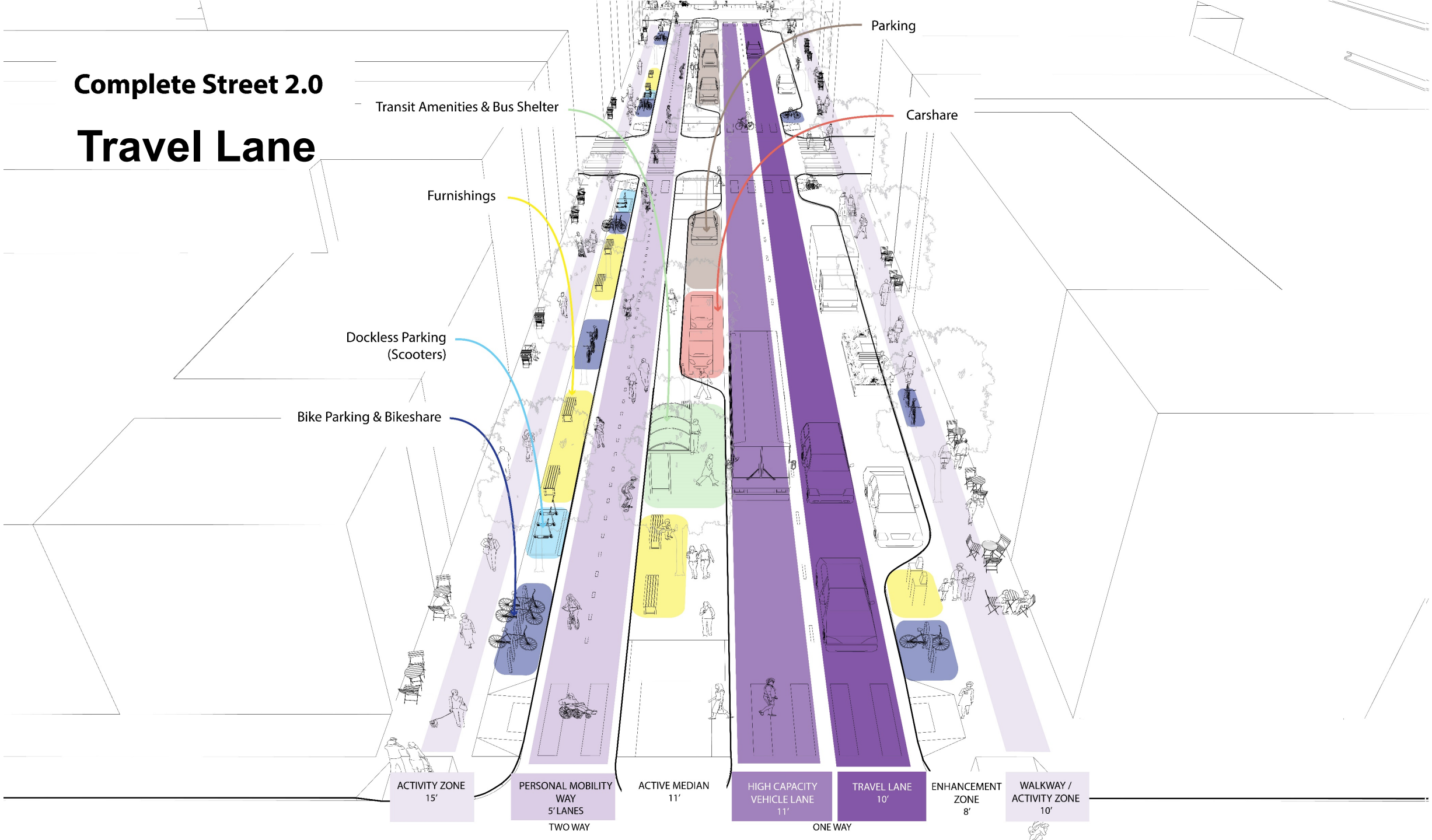
Complete Street 2.0

High Capacity Vehicle Lane



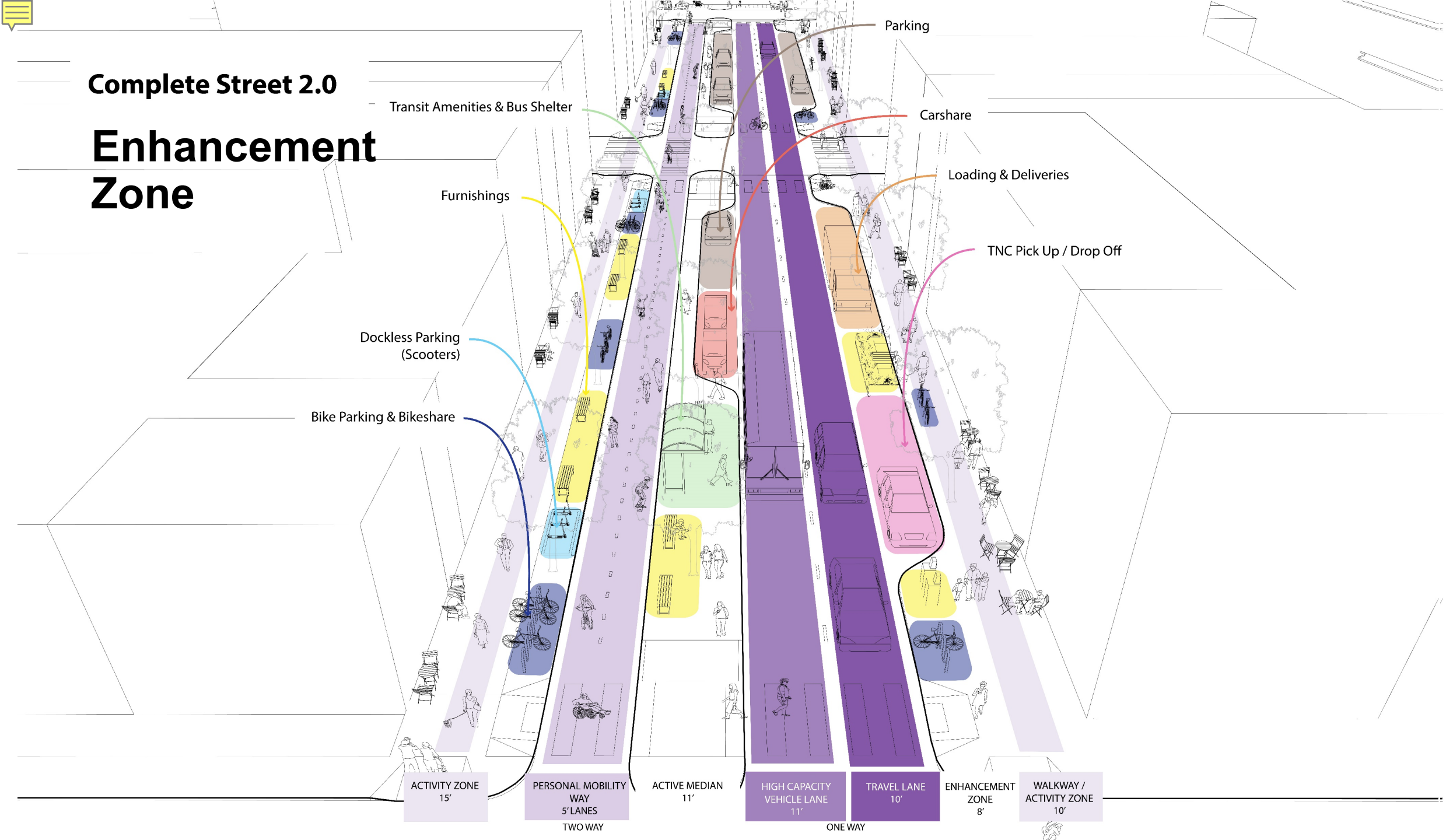
Complete Street 2.0

Travel Lane



Complete Street 2.0

Enhancement Zone



Complete Streets 2.0 in Practice

Design by **Mode**

Source: NACTO Urban Street Design Guide

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Complete Streets 2.0 in Practice

Design for **Person-capacity**

A growing city,
a fixed right-of-way

Cars: 28 people / city block

Buses: 225 people / city block

Walking: 1000 people / city block

Source: Portland Bureau of Transportation

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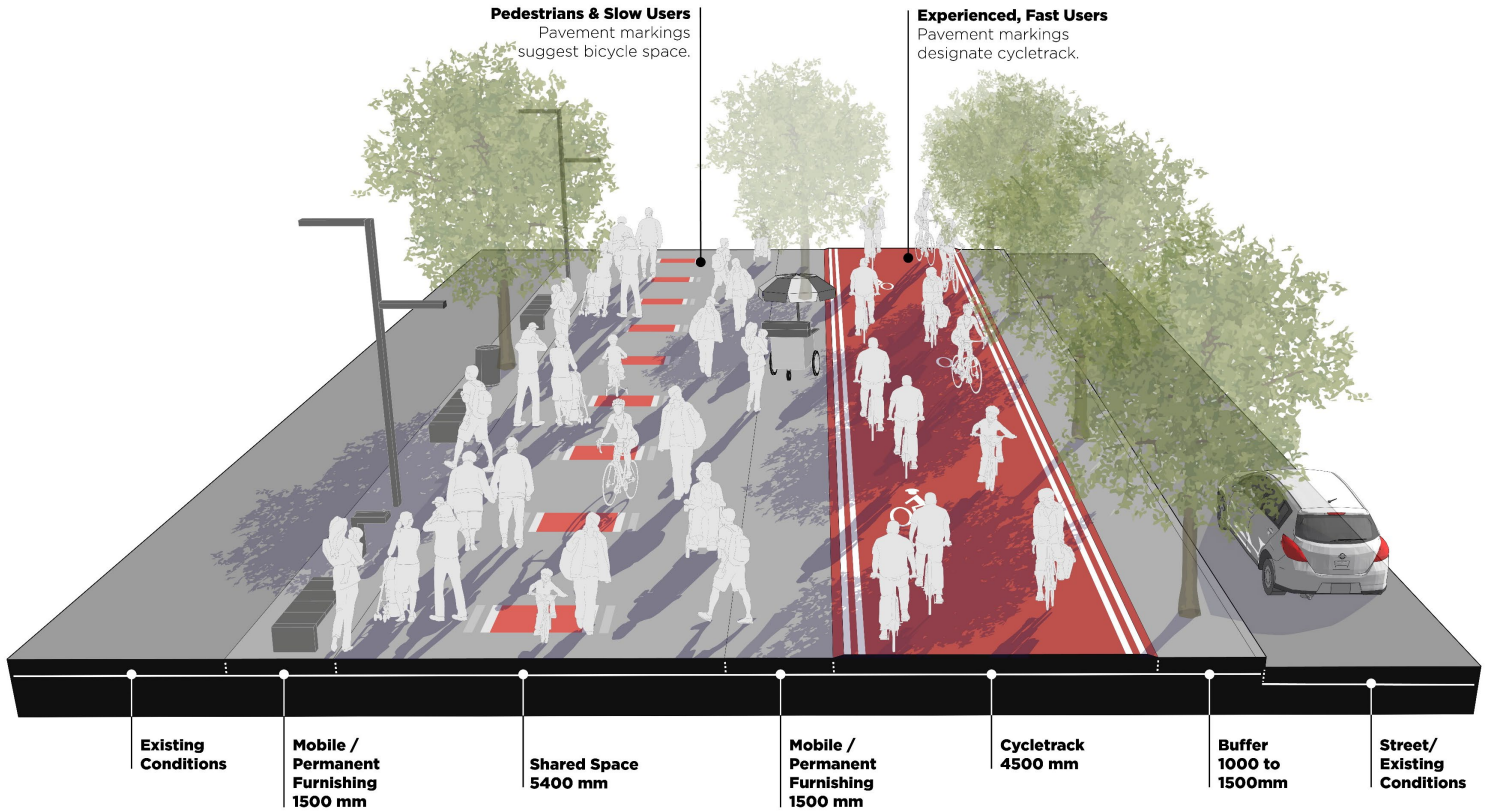
Design by **Speed**



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Design for **Demand**

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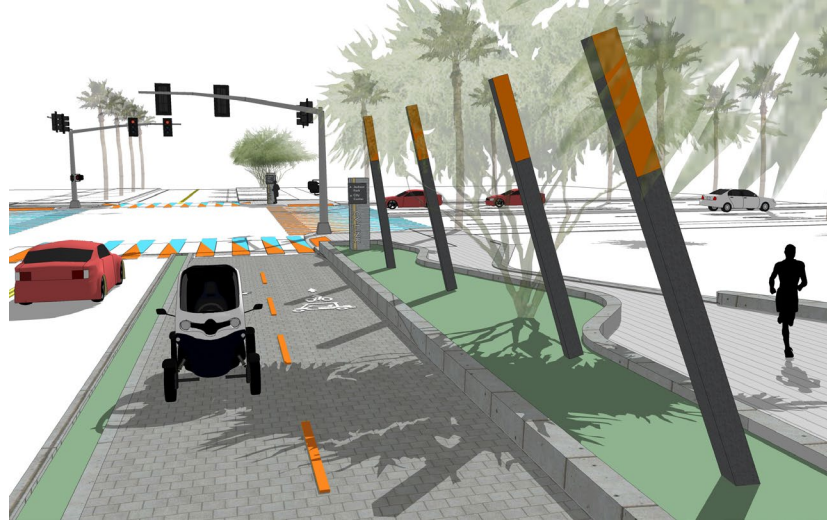
Derek Abe

Alta Planning + Design

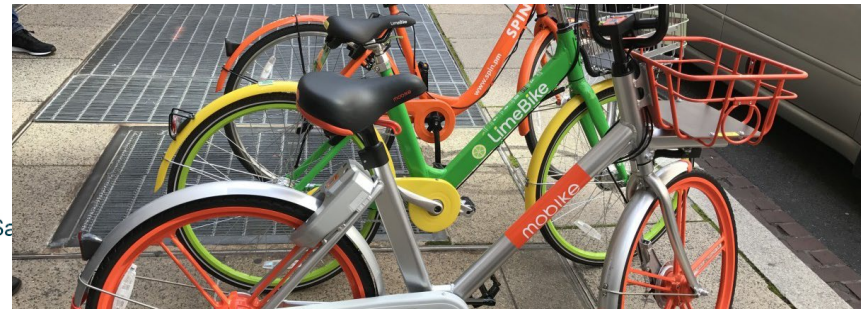
STOP
STOP
ONLY

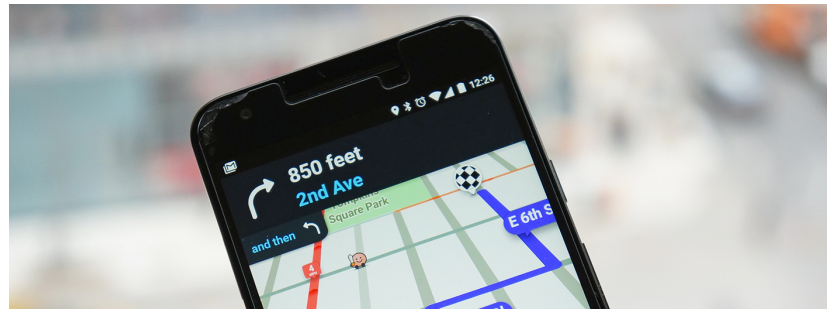
SHUTTLE



SIGNAGE

brightline
Rideshare Pick-Up
2
lyft


LimeBike
mobike


12:26
850 feet
2nd Ave
and then
Square Park
E 6th S

Speaker Contact Information

Jean Crowther, AICP
Senior Associate
New Mobility Leader
jeancrowther@altaplanning.com

Catrine Machi
Senior Associate
Impacts of AVs on Safety
catrinemachi@altaplanning.com

Kyle James
Senior Planner
New Data Sources and Travel Behaviors
kylejames@altaplanning.com

Derek Abe
Planning Associate
Complete Streets 2.0
derekabe@altaplanning.com