PRESENTATION

Emerging Technology = Emerging Trail Users

How EBikes and Electric and Autonomous Vehicles are Effecting Trail Development

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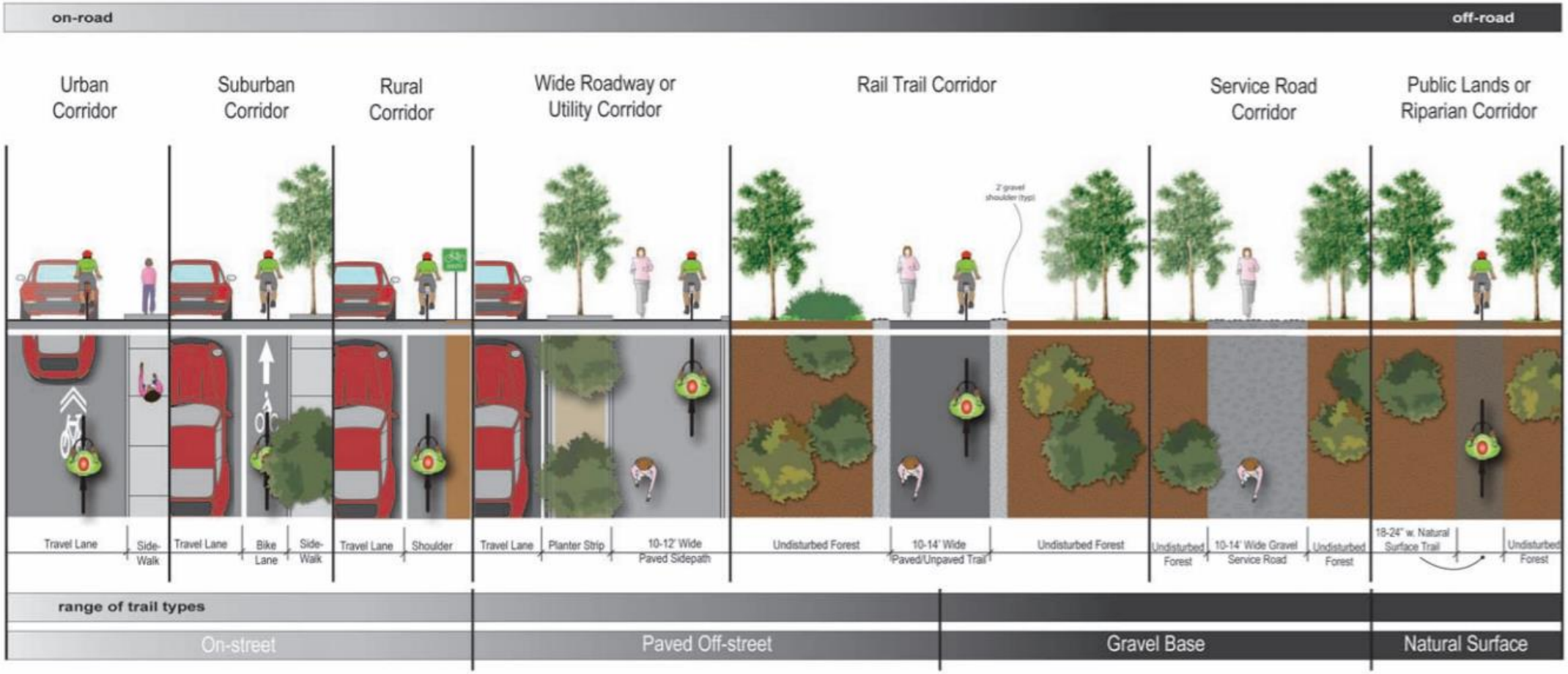
Mobility + Change

What are Trails and New Mobility?

What is a trail?



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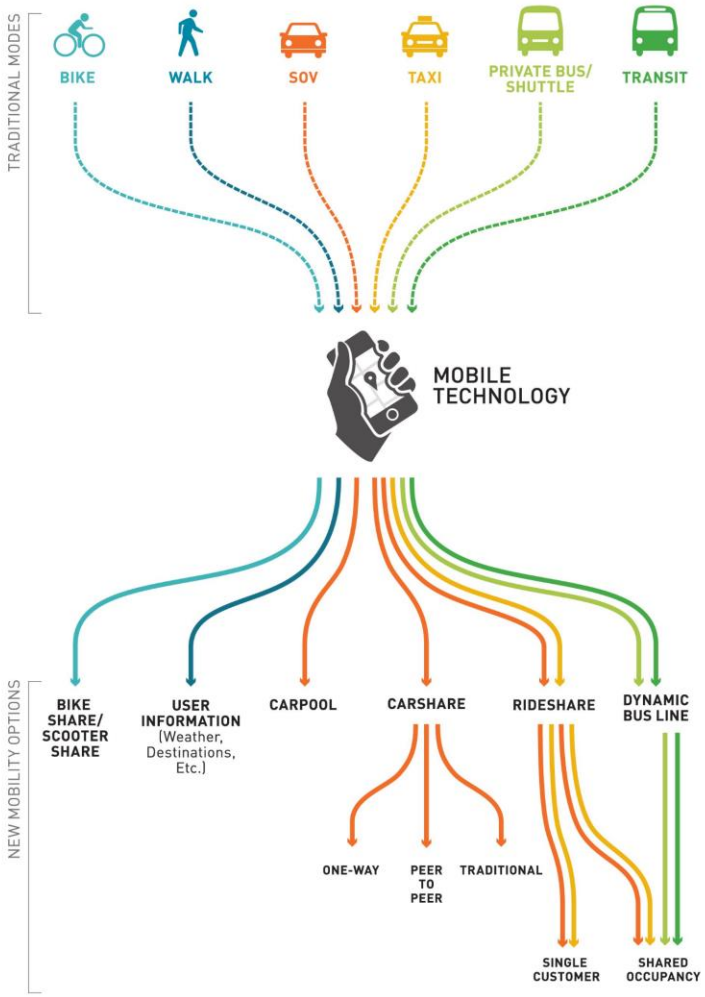
What is New Mobility?

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



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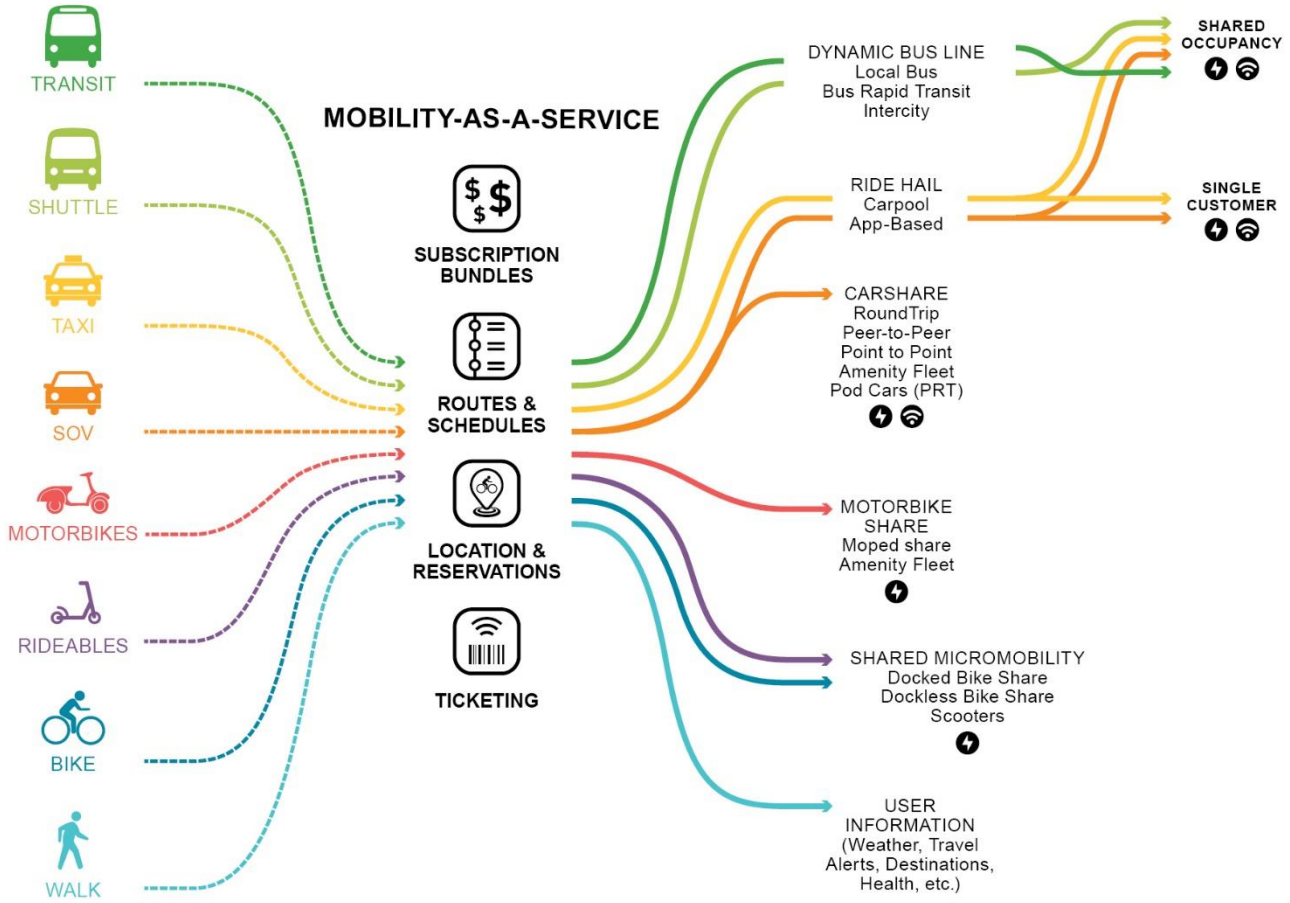
New Mobility Traits

- Smart phone enabled
- Real-time
- Point-to-point
- On-demand
- Shared
- Electric



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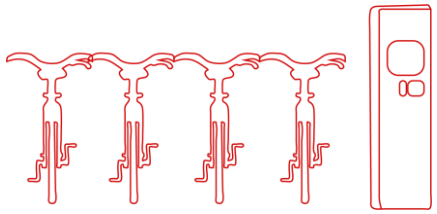
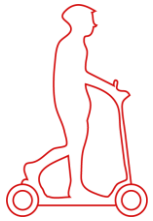
New Mobility Forms

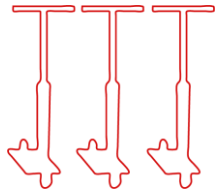
e-bikes



bikesharing

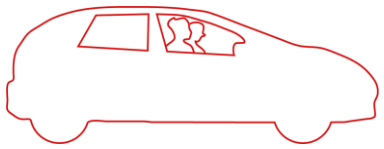


e-scooters



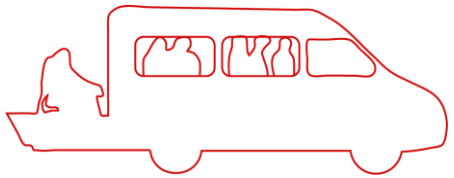
scooter sharing

carsharing



ridesharing

ridehailing



microtransit

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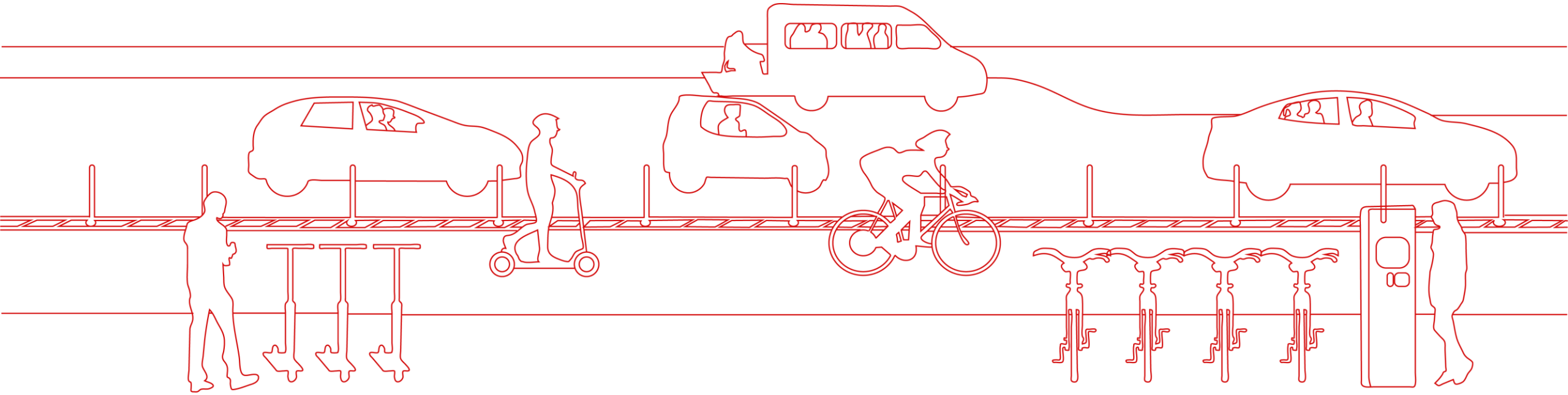
Expanded Options



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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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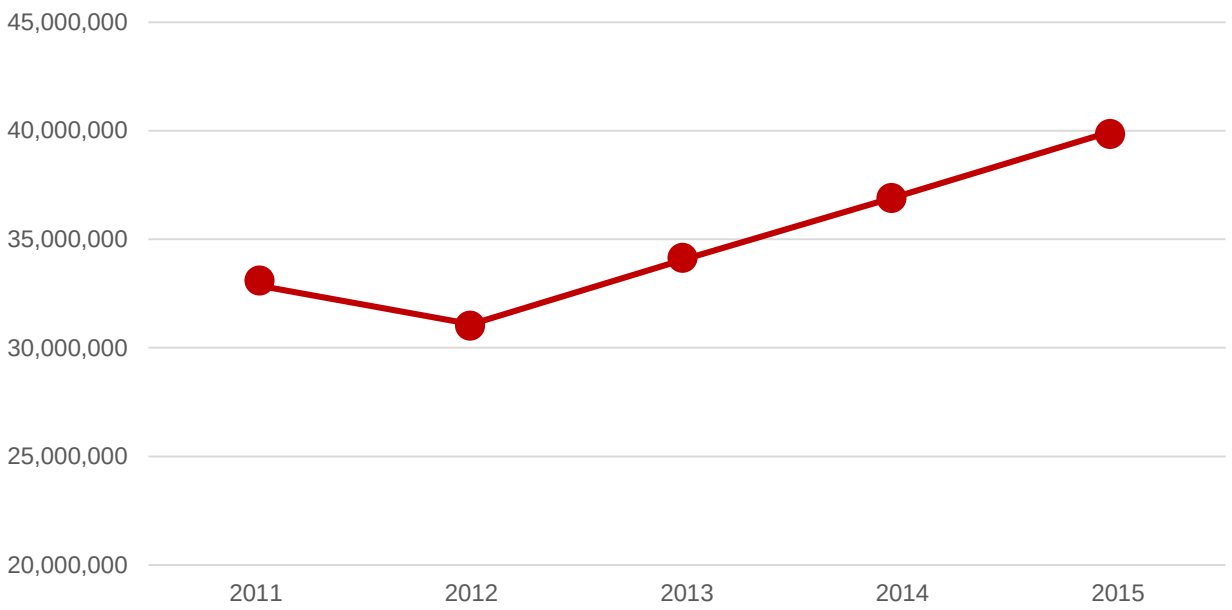
Trail Disruption

Growing Use



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

SOURCE: *Fishman and Cherry, 2015*

of **shared micromobility trips** in US **doubled** from 36 million in 2017 to 86 million in 2018

SOURCE: *NACTO*

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

SOURCE: *Statista, 2018*

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New Trail Users

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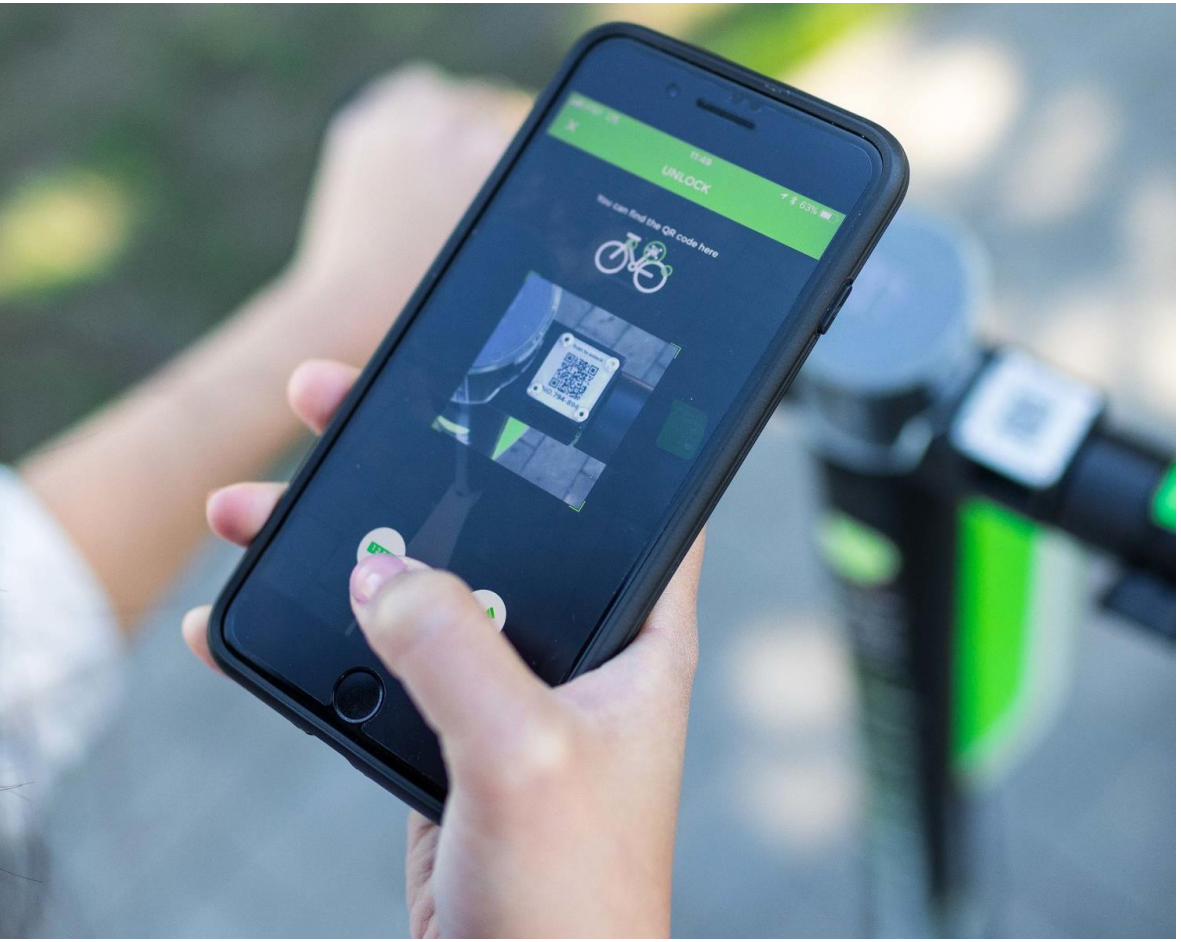
New Devices



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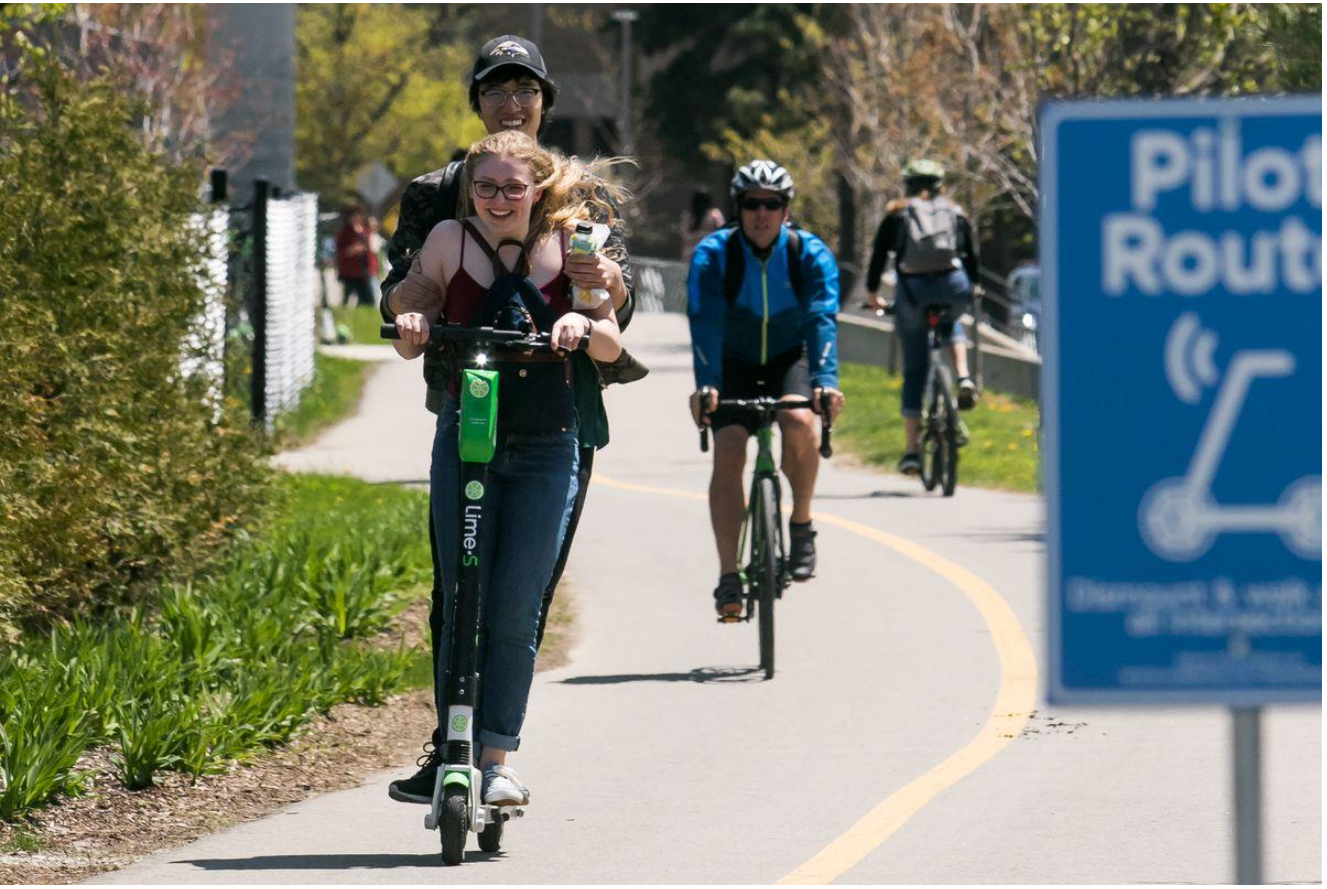
Competing Needs



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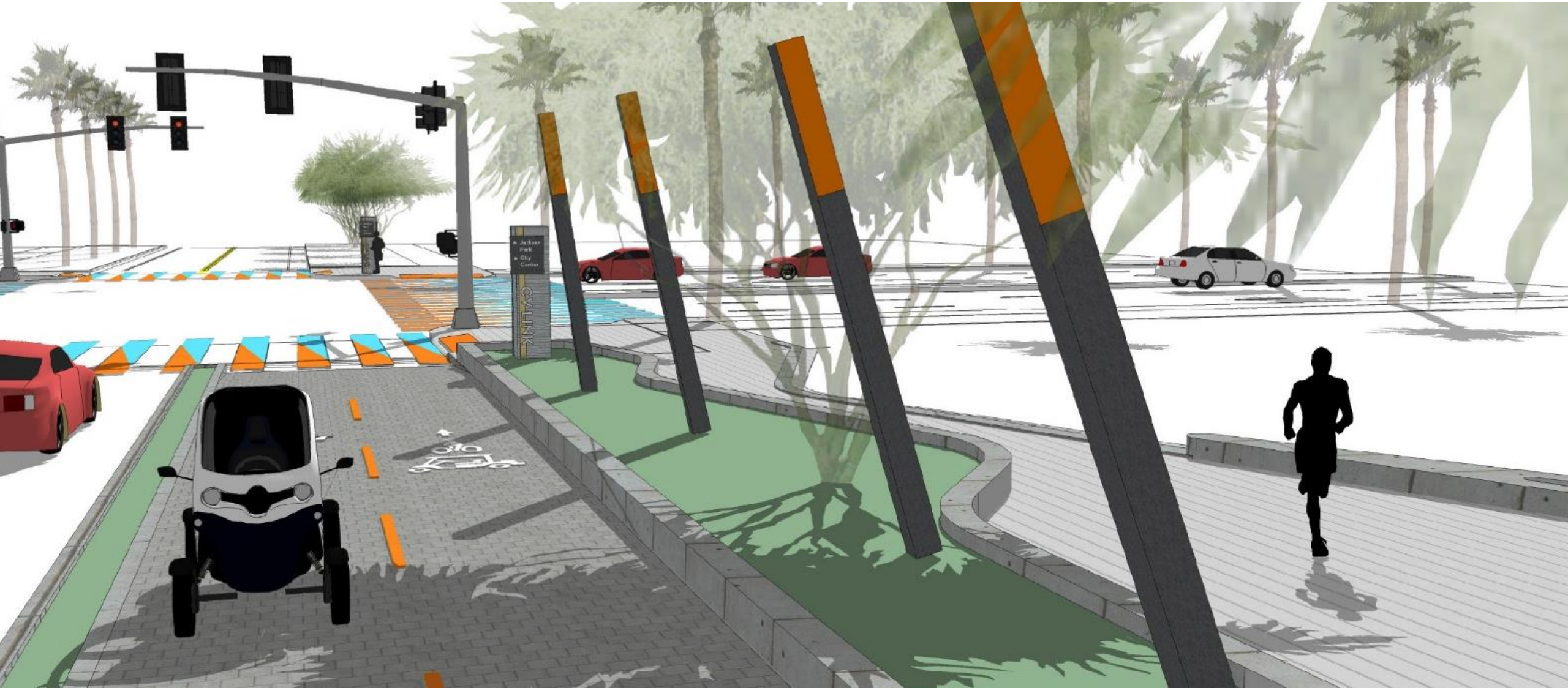
New Trail Design



Framework to Manage Change

Approach to Change

Make Room

Test It Out

Measure the Right Outcomes

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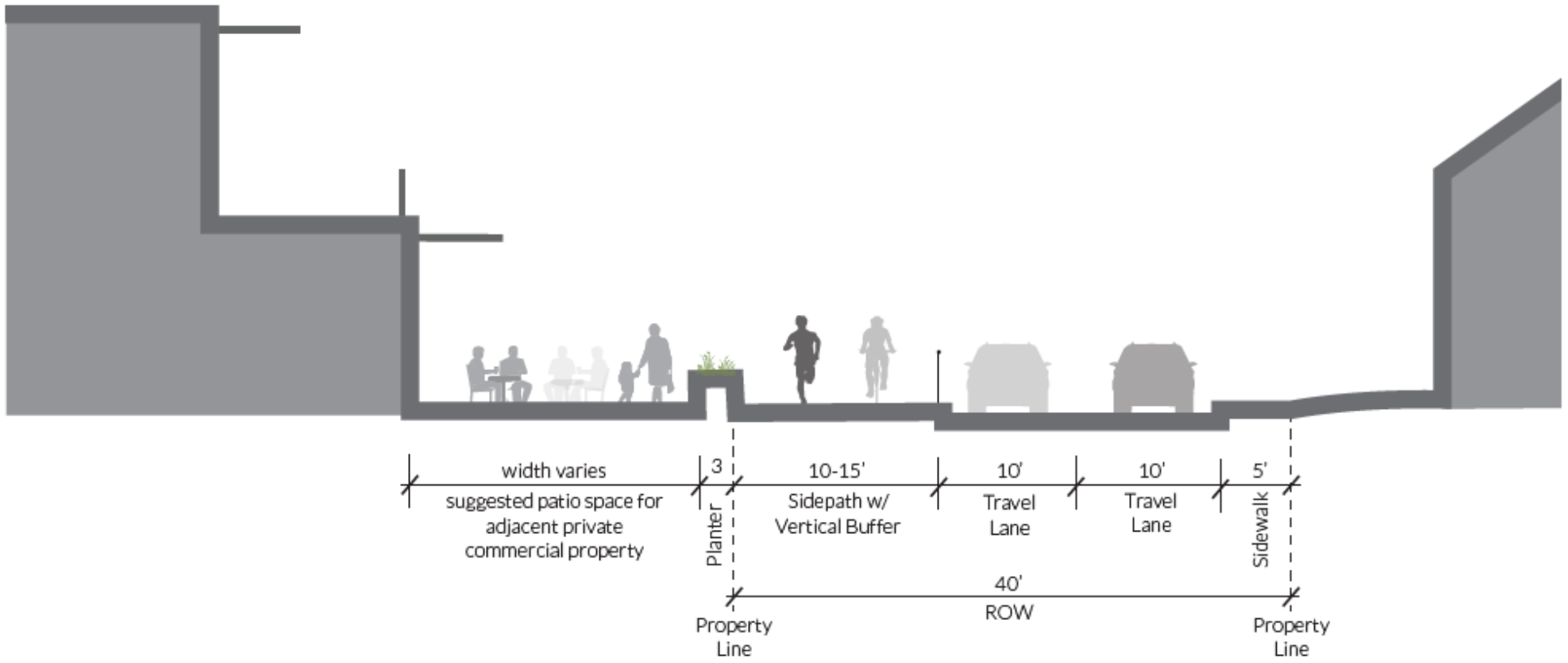
Make Room



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Test it Out

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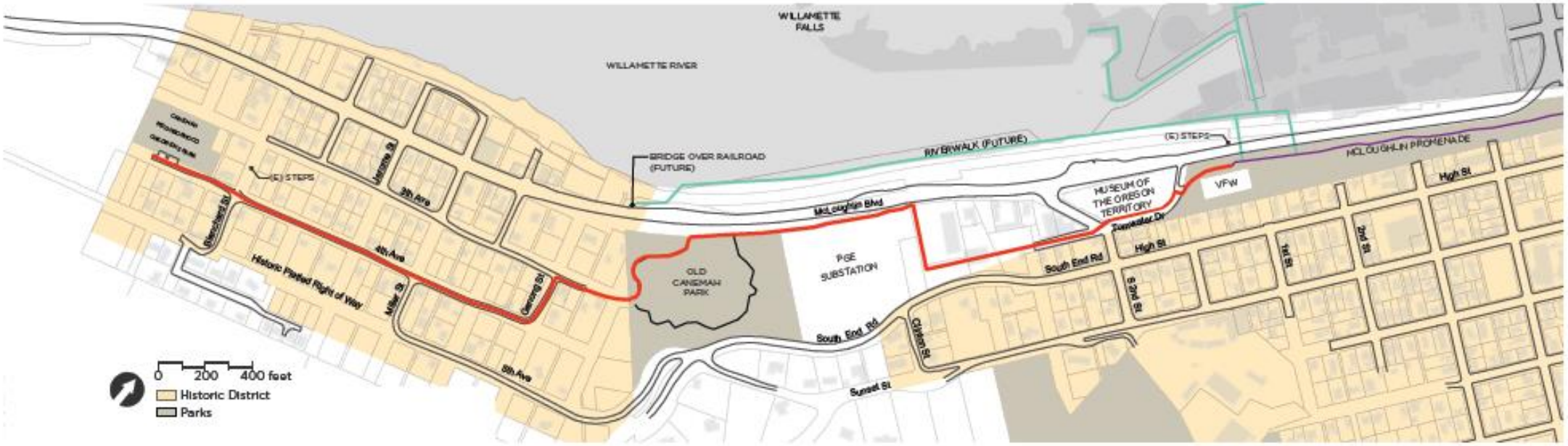
Measure the Right Outcomes



EVALUATION MATRIX

○ Not Advisable ◔ Major Constraint ◑ Moderate Constraints ◕ Minor Constraints ● Optimal

QUALITY			SAFETY			PROPERTY		CONSTRAINTS		OVERALL EVALUATION		RECOMMENDATIONS	
QUALITY OF EXPERIENCE	WILLAMETTE FALLS VIEWS	ALL AGES & ABILITIES	VEHICLE CONFLICT RISK	CRIME RISK	HISTORIC DISTRICT	CANEMAH IMPACTS	PROPERTY IMPACTS	GEOTECH CONSTRAINTS	ENVIRONMENTAL IMPACTS	OVERALL SCORE	ORDER OF MAGNITUDE COST	INTERIM RECOMMENDATION	PERMANENT RECOMMENDATION
◕	●	◑	◕	◕	☑	●	◕	◕	◕	◕	$2.1 - $2.6 M	☑	☑

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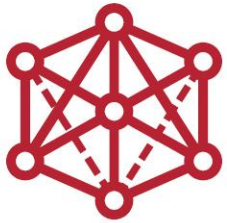
New Mobility + Trails Principles

PRIORITIZED USES

SAFE BY DESIGN

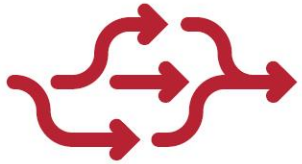
POINT-TO-POINT TRIPS

MULTIMODALISM



COMPLETE NETWORKS

DIGITAL INFRASTRUCTURE



ADAPTABILITY

OUTCOMES BASED

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New Mobility + Trails Principles

PRIORITIZED USES

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New Mobility + Trails Principles

SAFE BY DESIGN

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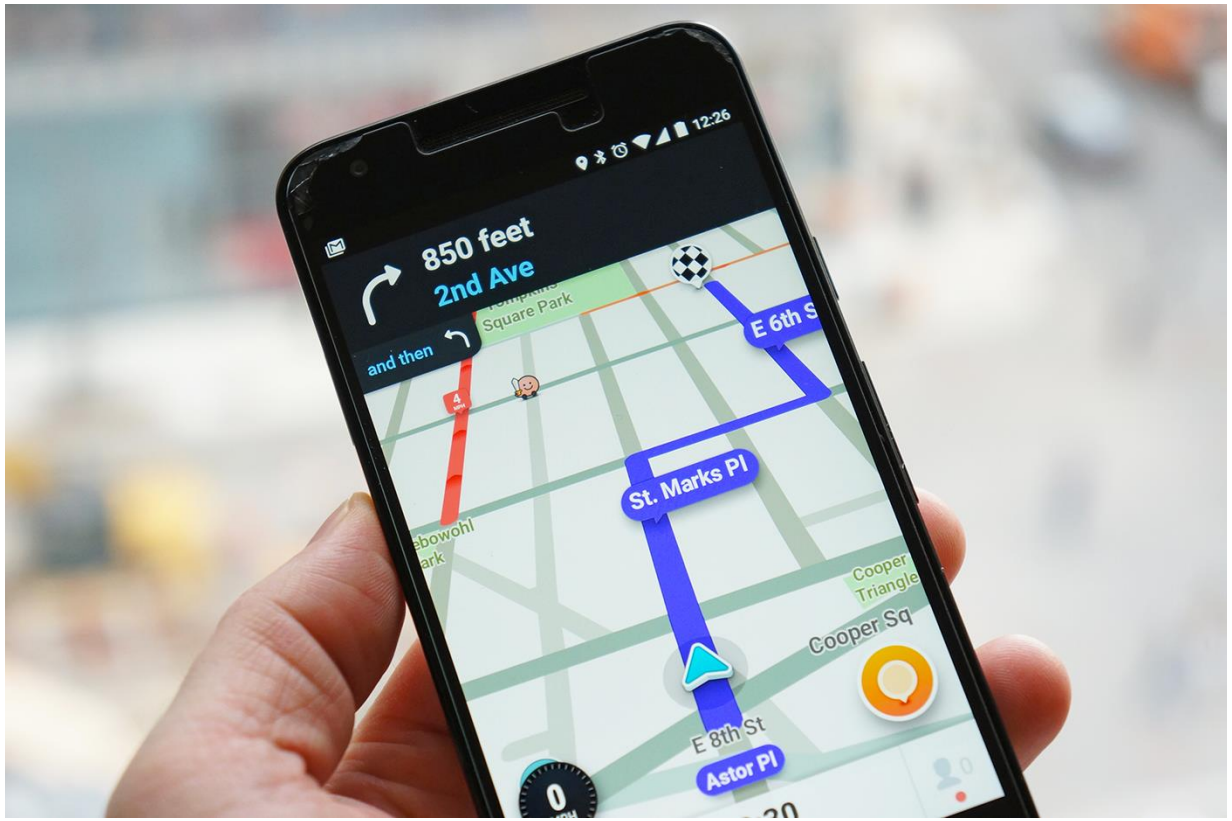
New Mobility + Trails Principles

POINT-TO-POINT TRIPS



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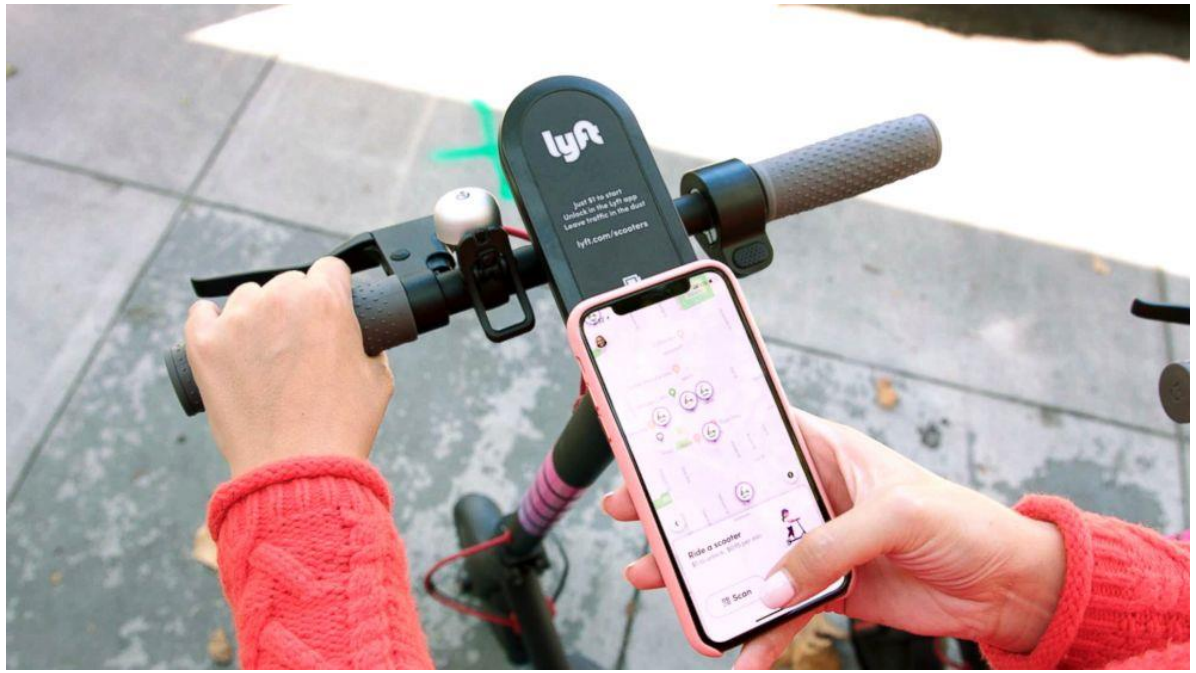
New Mobility + Trails Principles

MULTIMODALISM



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New Mobility + Trails Principles

COMPLETE NETWORKS

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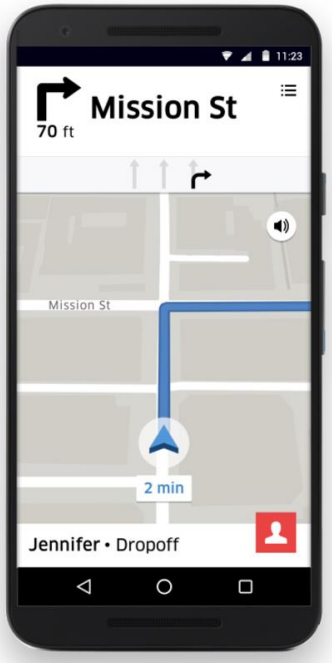
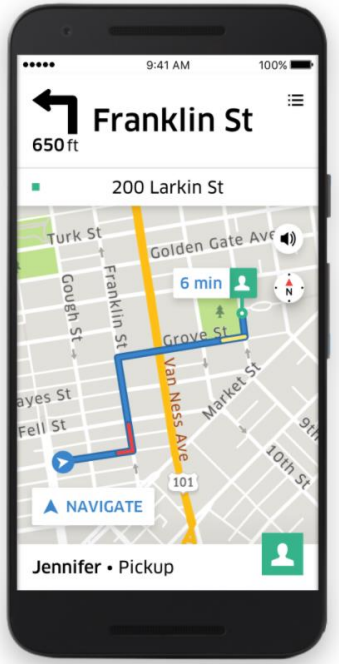
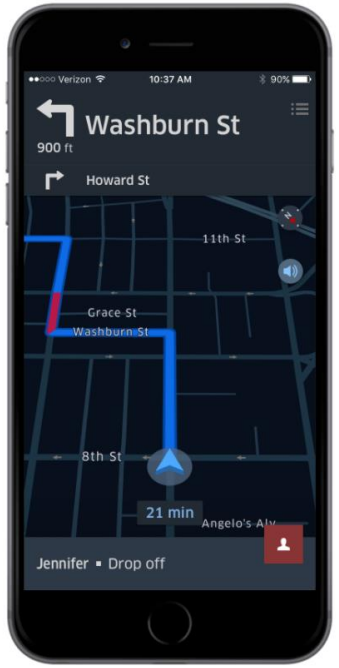
New Mobility + Trails Principles

DIGITAL INFRASTRUCTURE







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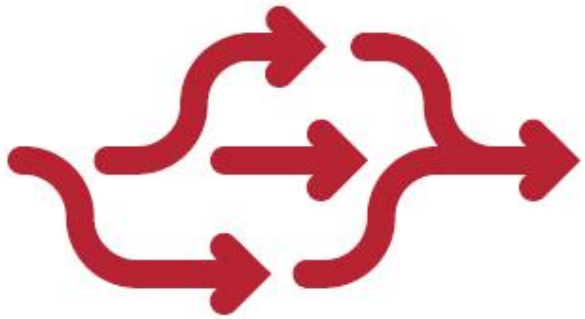
New Mobility + Trails Principles



ADAPTABILITY

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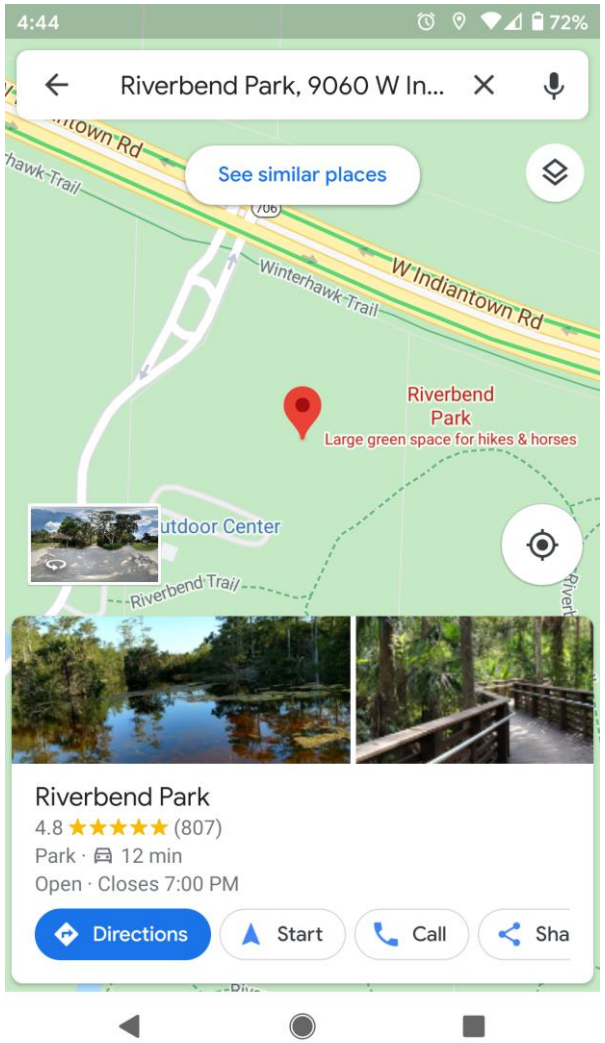
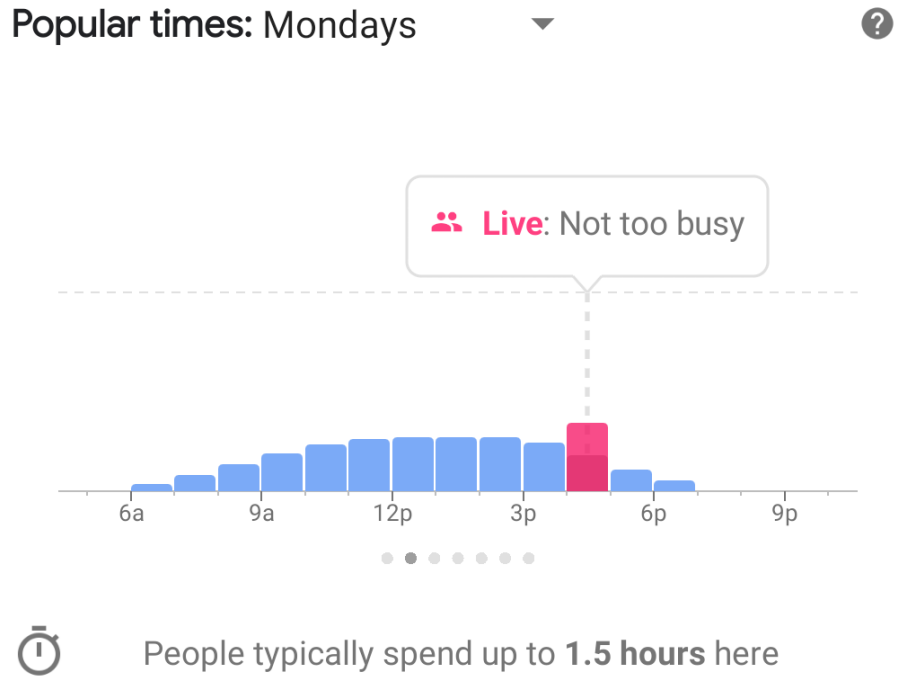
New Mobility + Trails Principles

OUTCOMES BASED





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New Mobility + Trails Design Criteria

Vehicle Use

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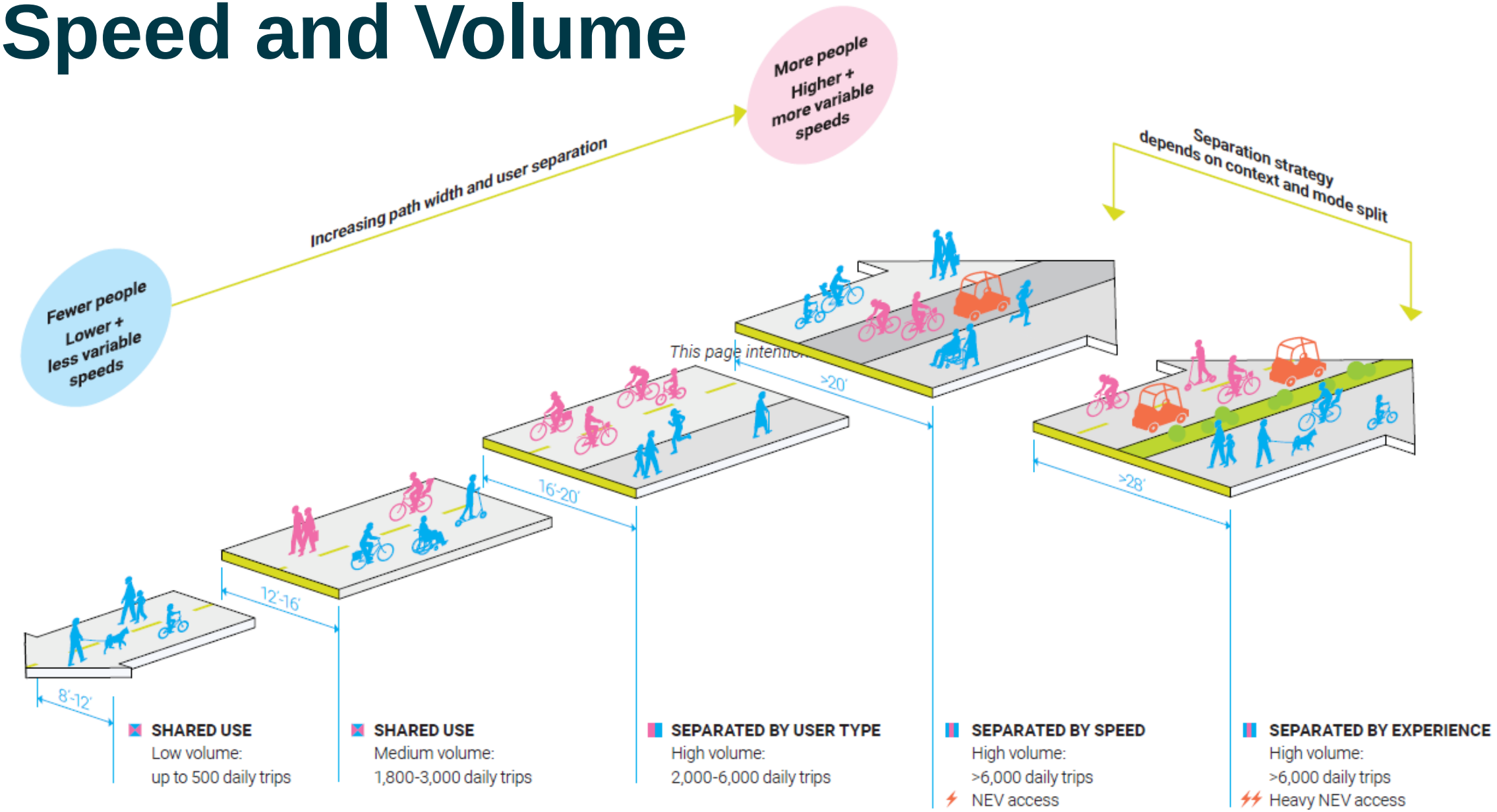
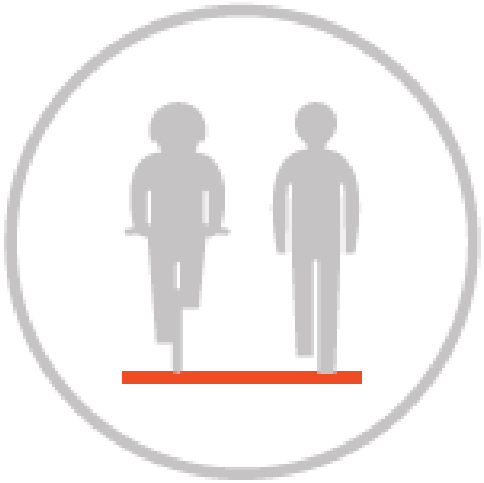
Speed and Volume



Experience and Users



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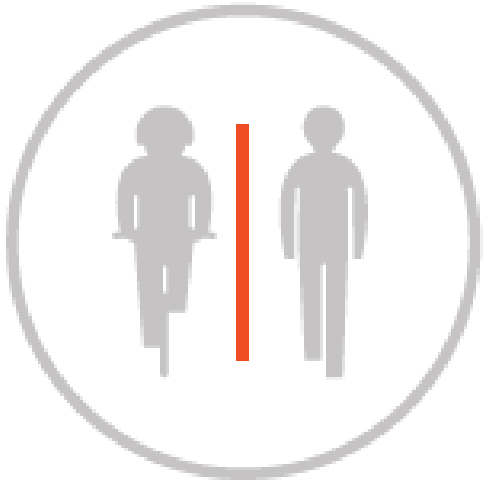

Separated

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Experience and Users

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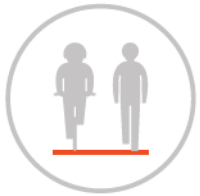
Experience and Users



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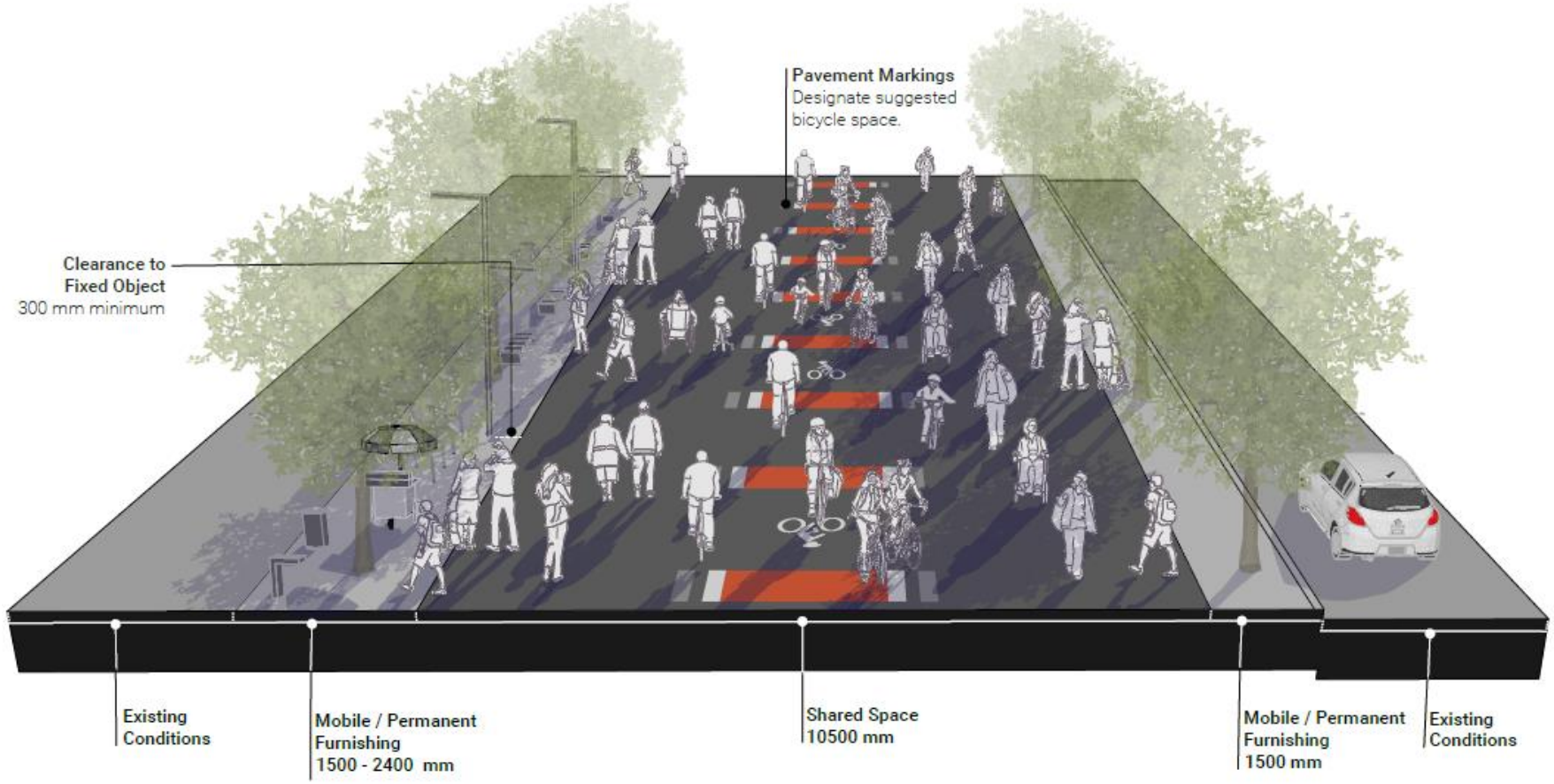

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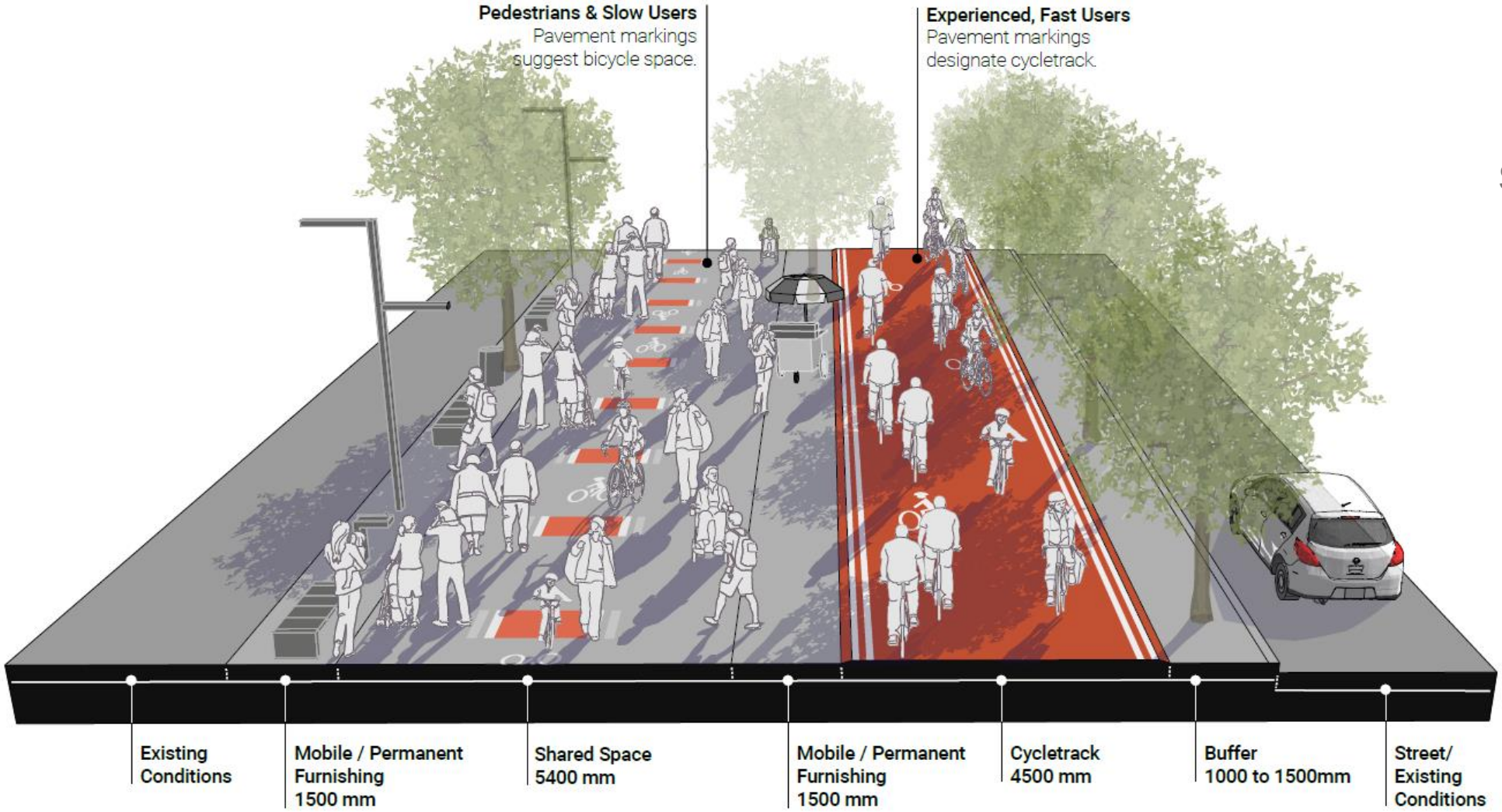
Experience and Users



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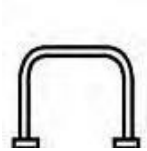
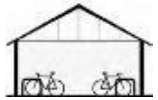
Trends + Responses

Trail Hubs = Mobility Hubs

- New Mobility demands:
  - Curbspace
  - Storage and securing facilities
  - Electric charging
  - Wayfinding (real-time and navigation)
- Trail access points as key hubs



Short term bike parking

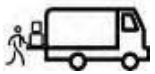


Long term bike parking

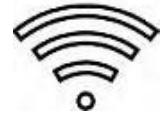
Bikeshare & scootershare parking

Transit ticket and integrated payment kiosks

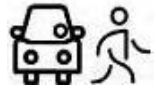
Bus/shuttle stop



Freight loading/ unloading area



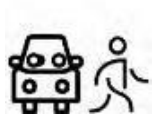
Wifi hub



Ridesourcing loading/ unloading area

Electric vehicle charging (including bicycles & scooters)

Real time transit information & other shared mode information



Microtransit pick up & drop off area

Carshare parking and access points

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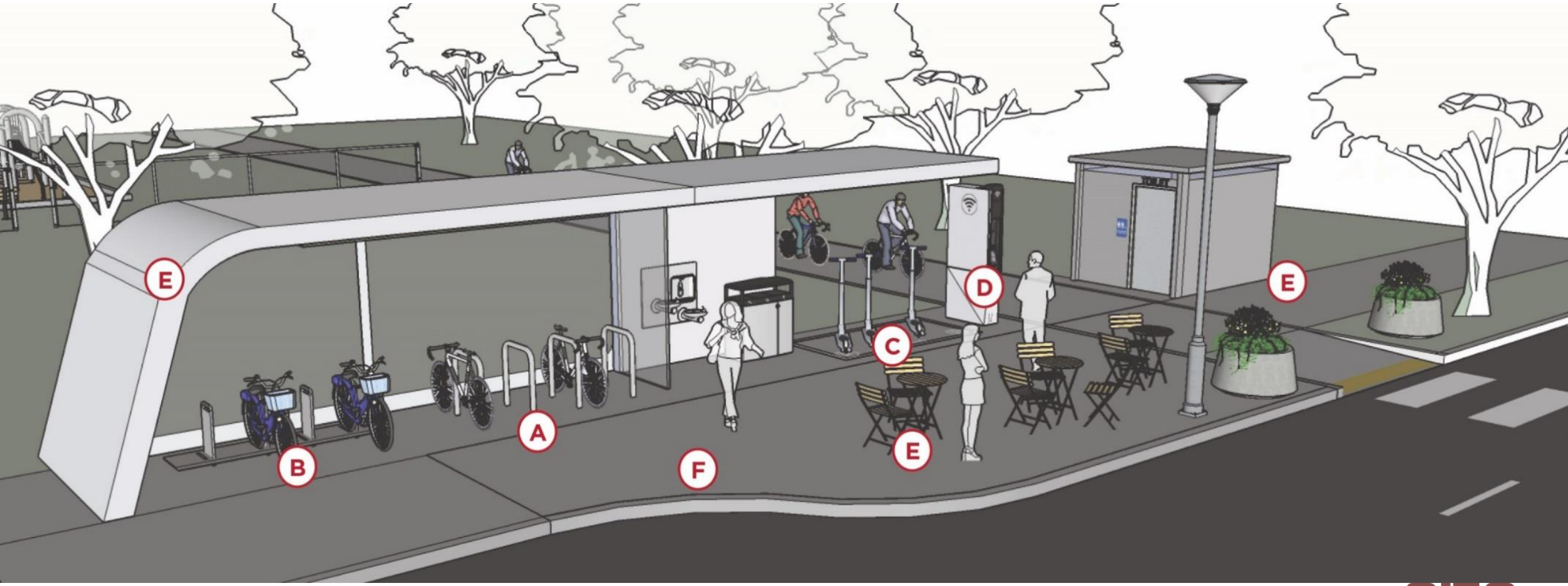
Trial Hubs = Mobility Hubs



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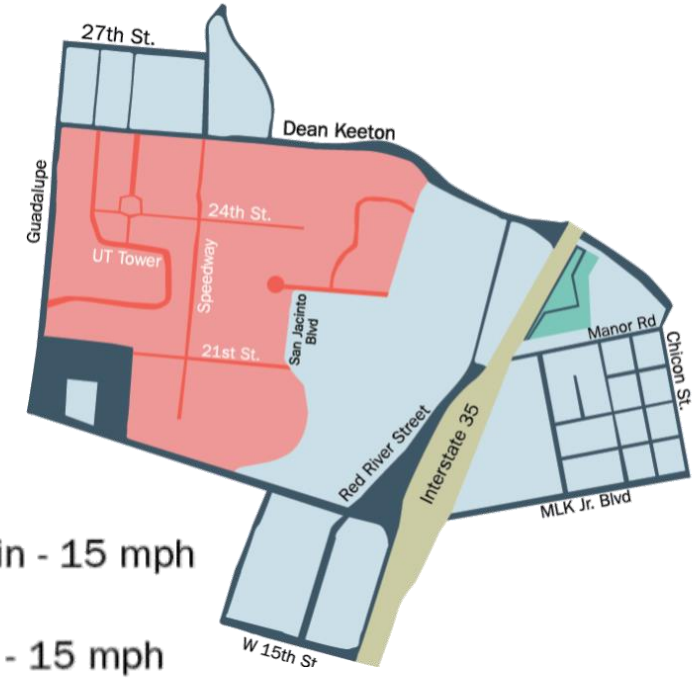
Technology



KEY

- City of Austin - 15 mph
- UT Campus - 15 mph
- Under review - proposed 8 mph
- Inner Campus - 8 mph

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Wayfinding

Electric Charging

CV/LINK

CONNECTING THE COACHELLA VALLEY

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Flexible + Innovative Design

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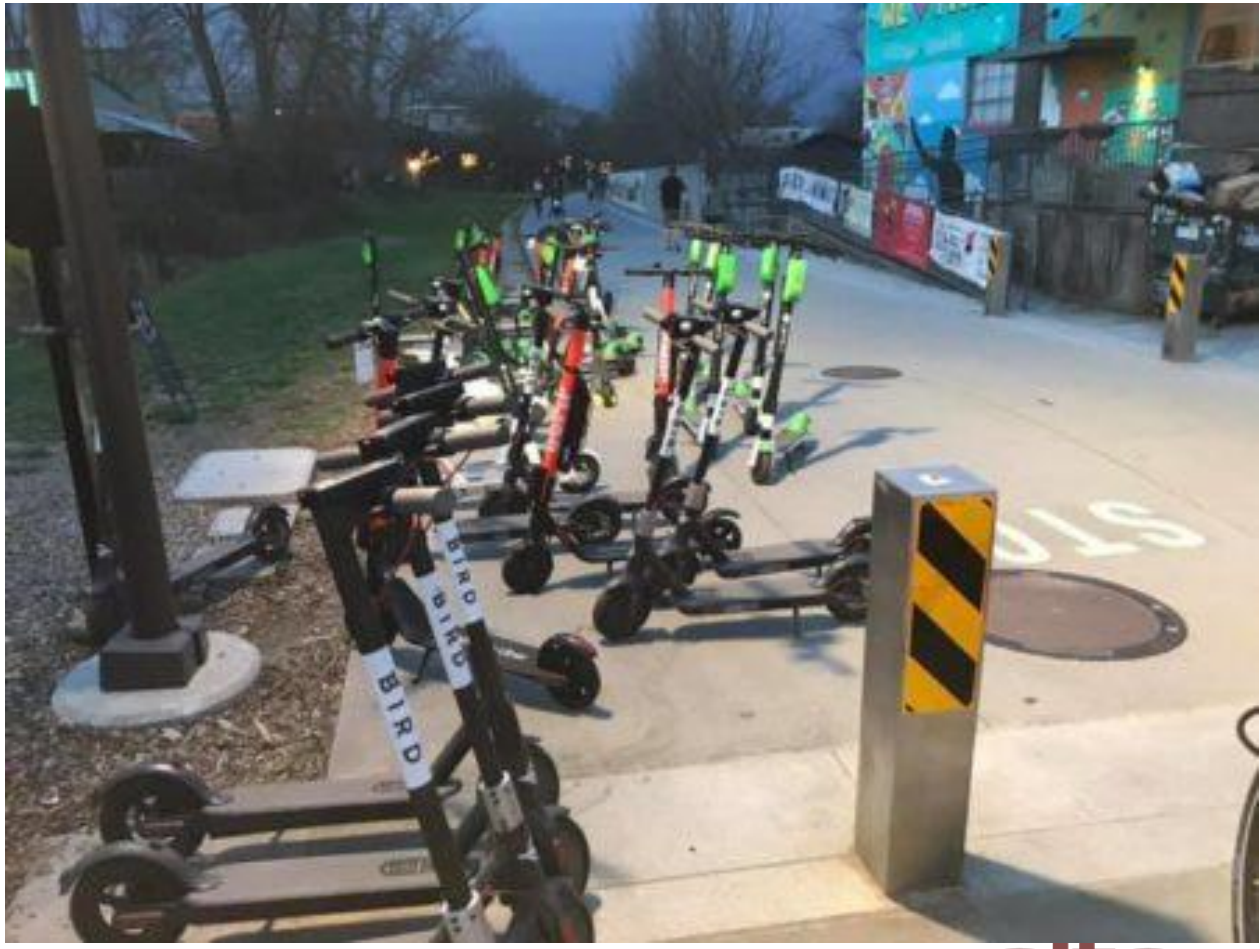
Parking



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Equity

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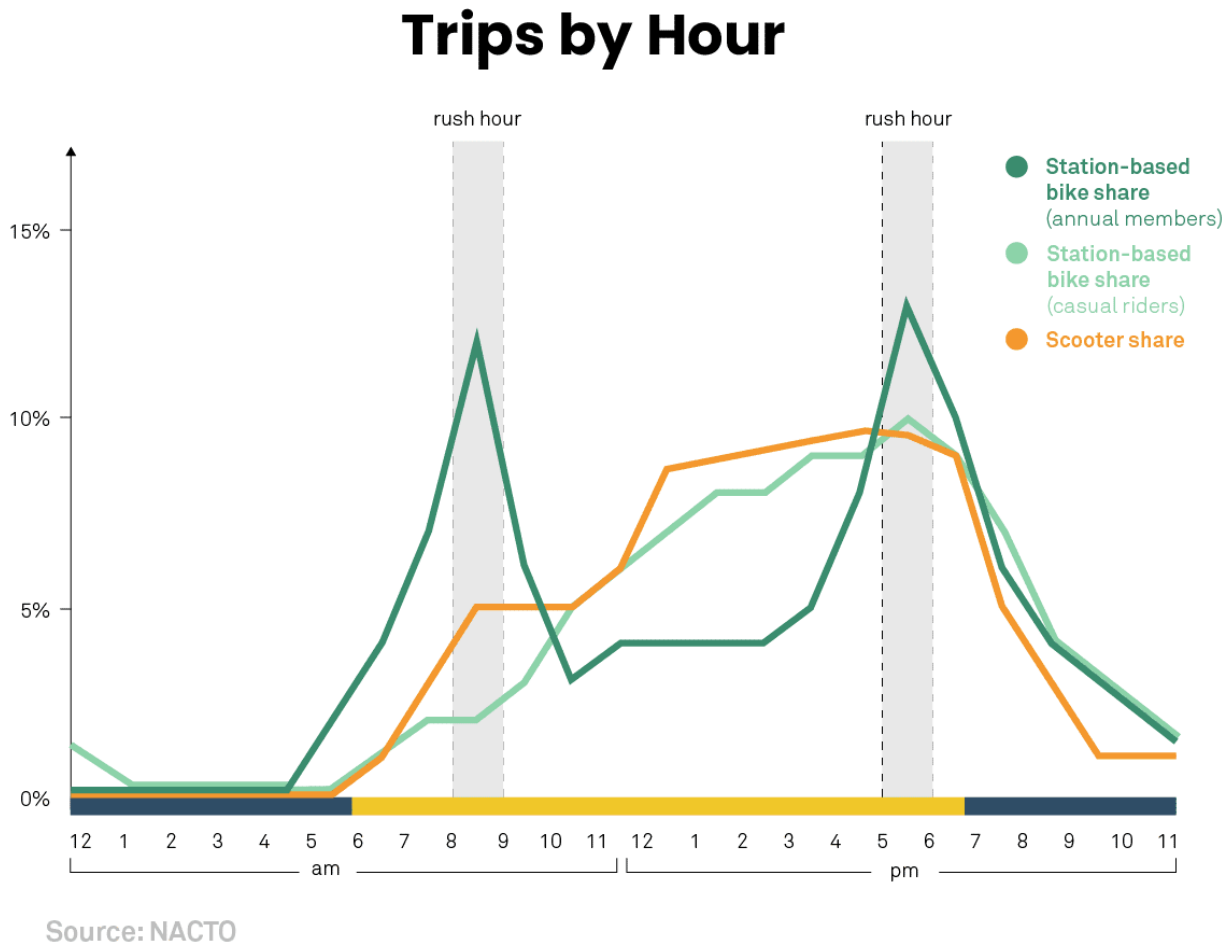
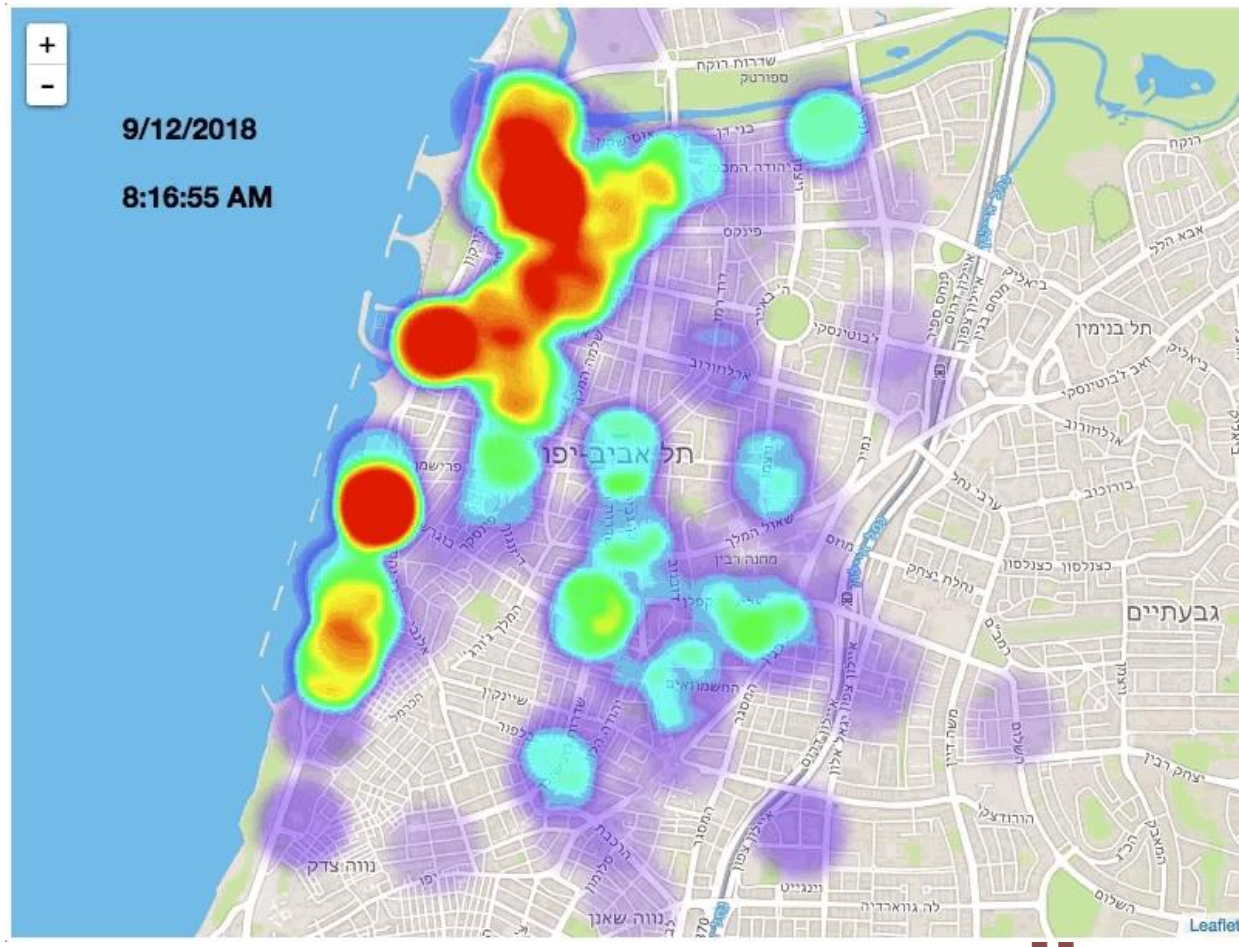
Data



Source: NACTO



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Safety

- On a trail versus on the road
- Trail crossings
- Transitions at trail access points

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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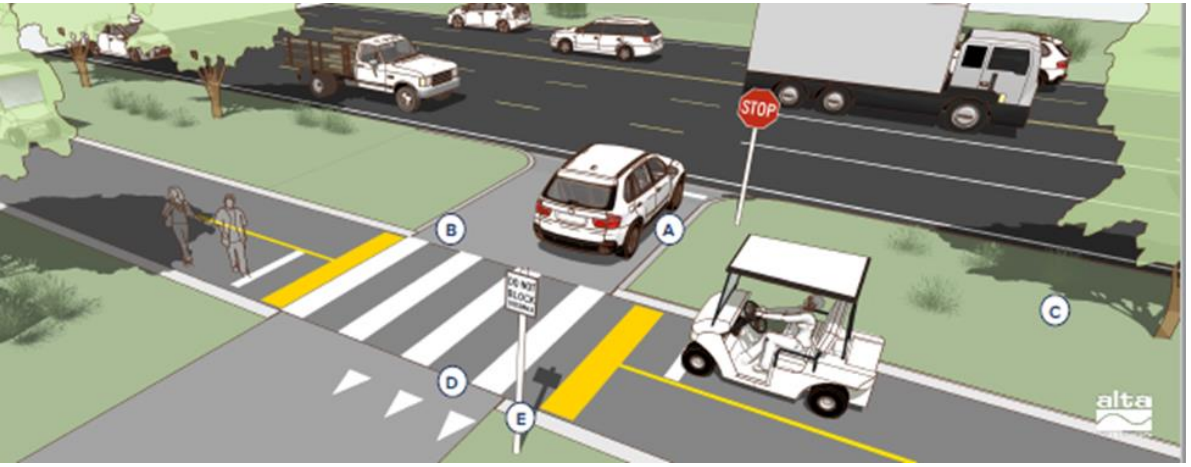
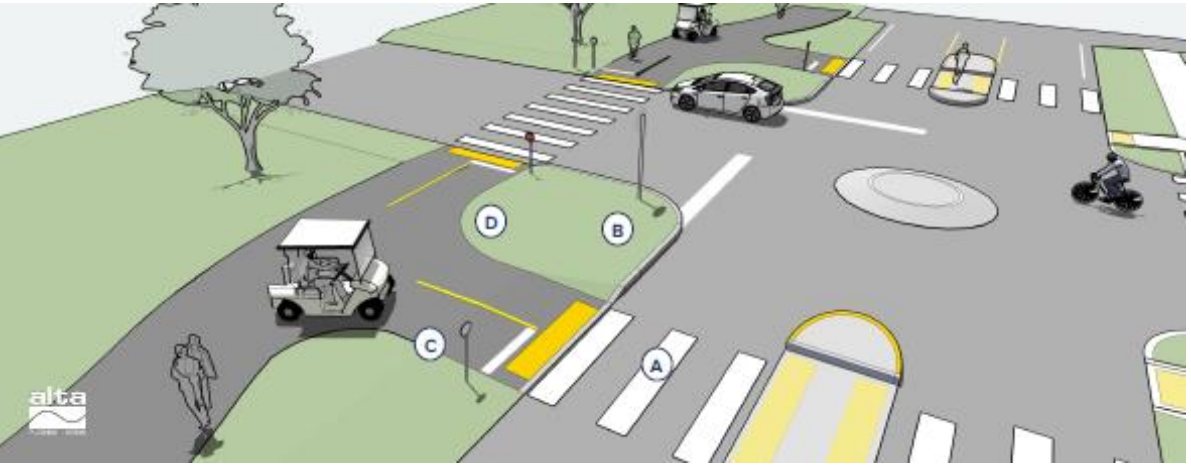
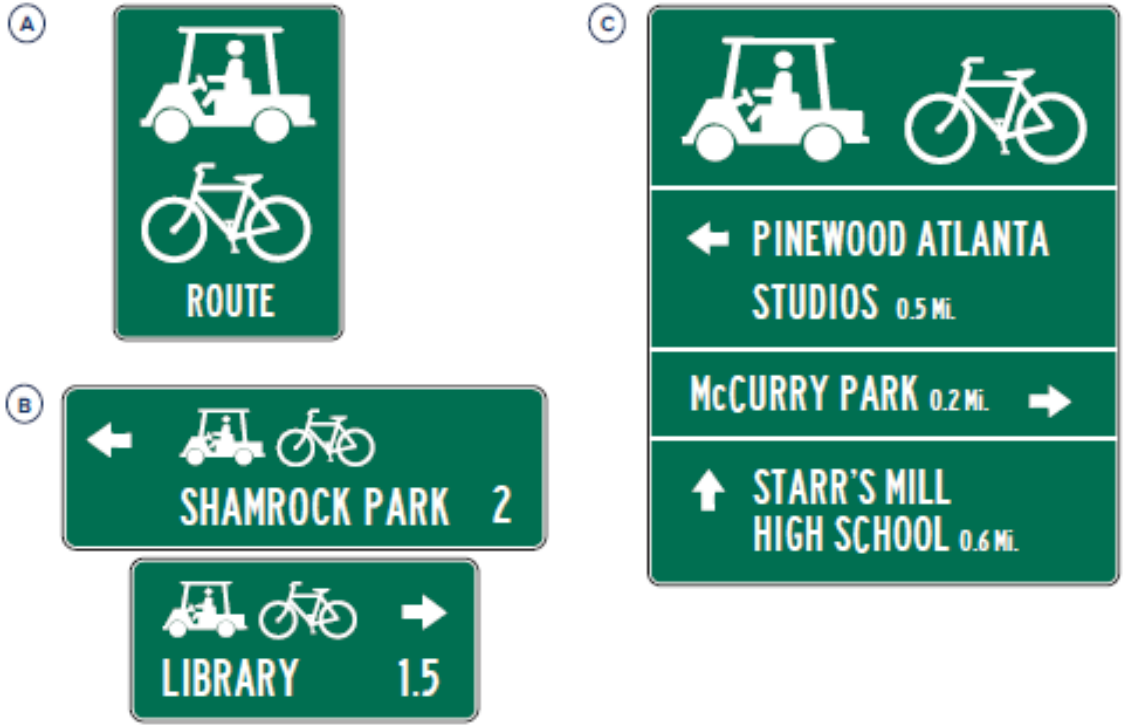
Intersection Design







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What’s next?

No Silver Bullet

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Questions to Ask

Who Does the Trail Serve Today and Tomorrow?

Can the Trail's Current Design Accommodate Different Uses?

Community Input + Desires + Values?

How Can You Make Technology Work for You?

How Do We Define + Evaluate Success?

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Questions?

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