Intelligent Transportation Systems
Joint Program Office

Mobility on Demand Program
Webinar 2:

Integrating Ridesharing With Transit Operations

November 9, 2017

Today's Agenda

- Purpose of this Webinar
  - To present Mobility on Demand and examples of innovative approaches and technologies

- Webinar Content
  - Integration of ride-sharing services into transit operations

- Webinar Protocol
  - Please mute your phone during the entire webinar
  - You are welcome to ask questions via chatbox at the Q&A Section
  - Questions will be answered in the order in which they were received

Mobility on Demand Overview

Robert Sheehan
USDOT Joint Programs Office

Trends/Setting the Stage

Societal Trends Driving MOD

•Redefining Longevity

•By 2045, the number of Americans over age 65 will increase by 77%

•Population Growth & Urbanization

•In 30 years, our population is expected to grow by about 70 million

Image Source: Thinkstock/USDOT

Technological Trends Driving MOD

•Big Data & Analytics

•Transportation increasingly relying on data to drive decisions and to enable innovative travel options

•Real-Time Travelers

•72% of Americans own a smartphone, with access to up-to-the minute traveler information

Image Source: Thinkstock/USDOT

Mobility & Environmental Trends Driving MOD

•Increasing Congestion

•On average, Americans spend over 40 hours stuck in traffic each year, costing $121 billion

•Mobility Choices

•There is growing popularity of shared mobility and shared modes, such as bikesharing, carsharing, and ridesourcing

Image Source: Thinkstock/USDOT

Public or Private?

Image Source: Thinkstock/USDOT

Public or Private?

Image Source: Thinkstock/USDOT

USDOT MOD Program

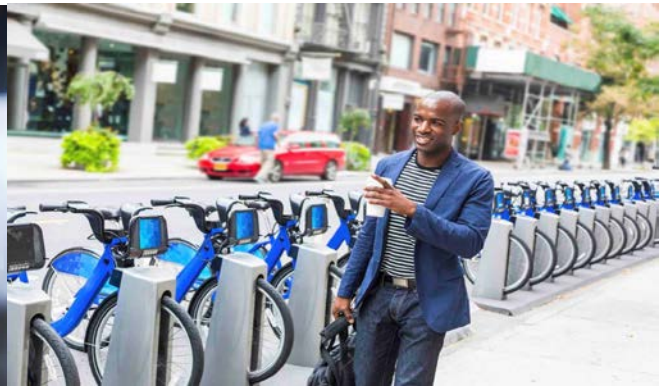
USDOT MOD Program Goals

- **Explore emerging technology solutions and new business approaches** that have the potential to transform mobility services.

- **Prepare the transportation industry to deliver innovative mobility solutions** that will enhance transportation efficiency and effectiveness, improve customer service, and foster personal mobility and access to goods and services.
- **Enable the widespread deployment of integrated mobility solutions** that are connected, equitable, and effective to enhance the personal mobility of everyone and provide access to all users.

What is Mobility on Demand (MOD)?

An **integrated and connected multi-modal** network of **safe**, **affordable**, and **reliable** transportation options that are **available to all**



- User-focused options to improve personal mobility and access to more destinations
- Promotes choice in personal mobility & optimizes the transportation system through Intelligent Transportation Systems
- Advances connected vehicles & automation applications
- Utilizes emerging technologies & data exchange to enable personal mobility
- Encourages multimodal connectivity & system interoperability

Who Benefits from MOD?

Travelers

- Access to more transportation options
- Builds a more efficient, effective, and customer-centered transportation network

Public Transit Providers

- Connects ALL regional transportation services and assets into a seamless public transit network
- Extends service quality and coverage

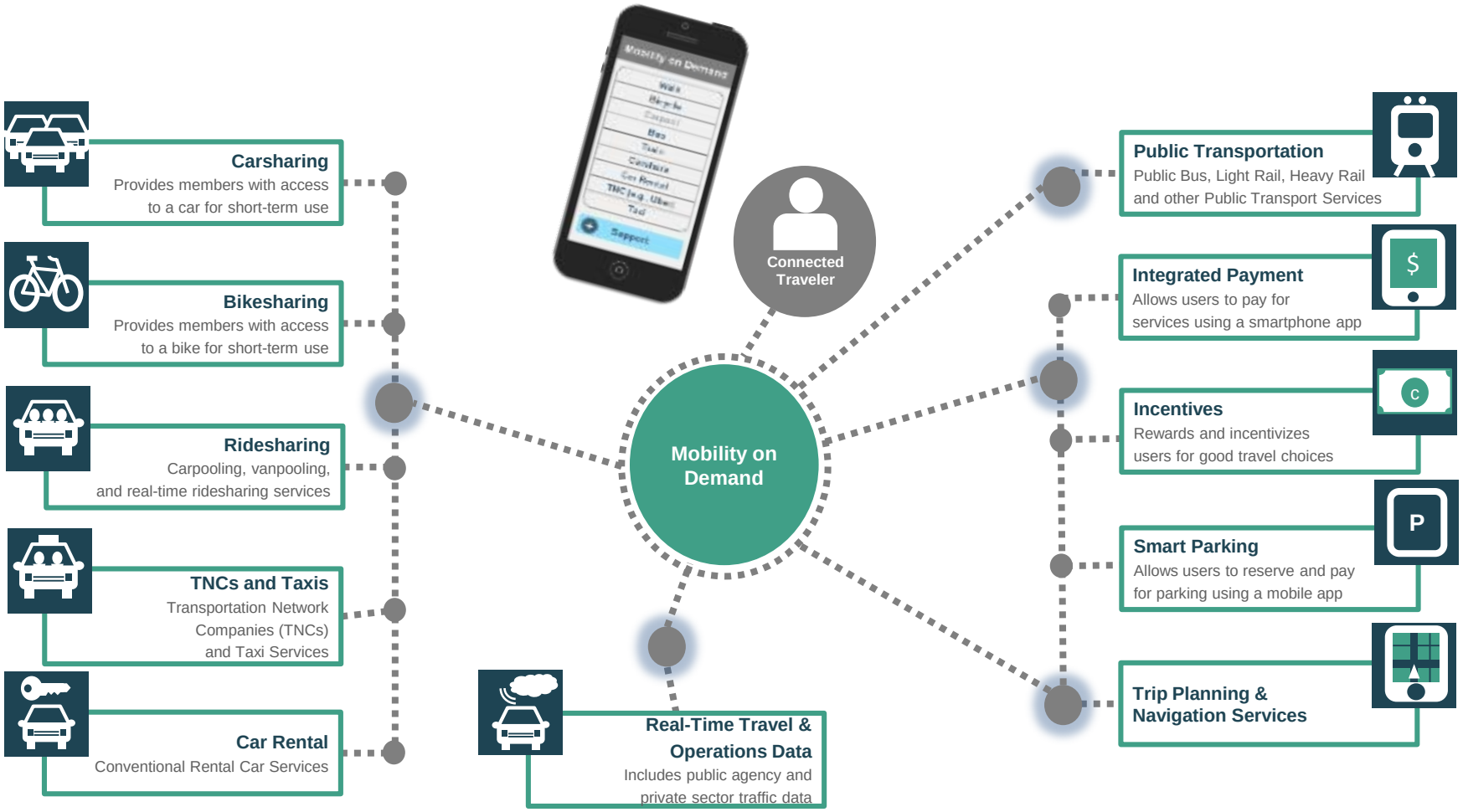
Shared-Use Transportation Providers

- Connects travelers to provider services
- Provides an easy to use, common technology platform for mobility options

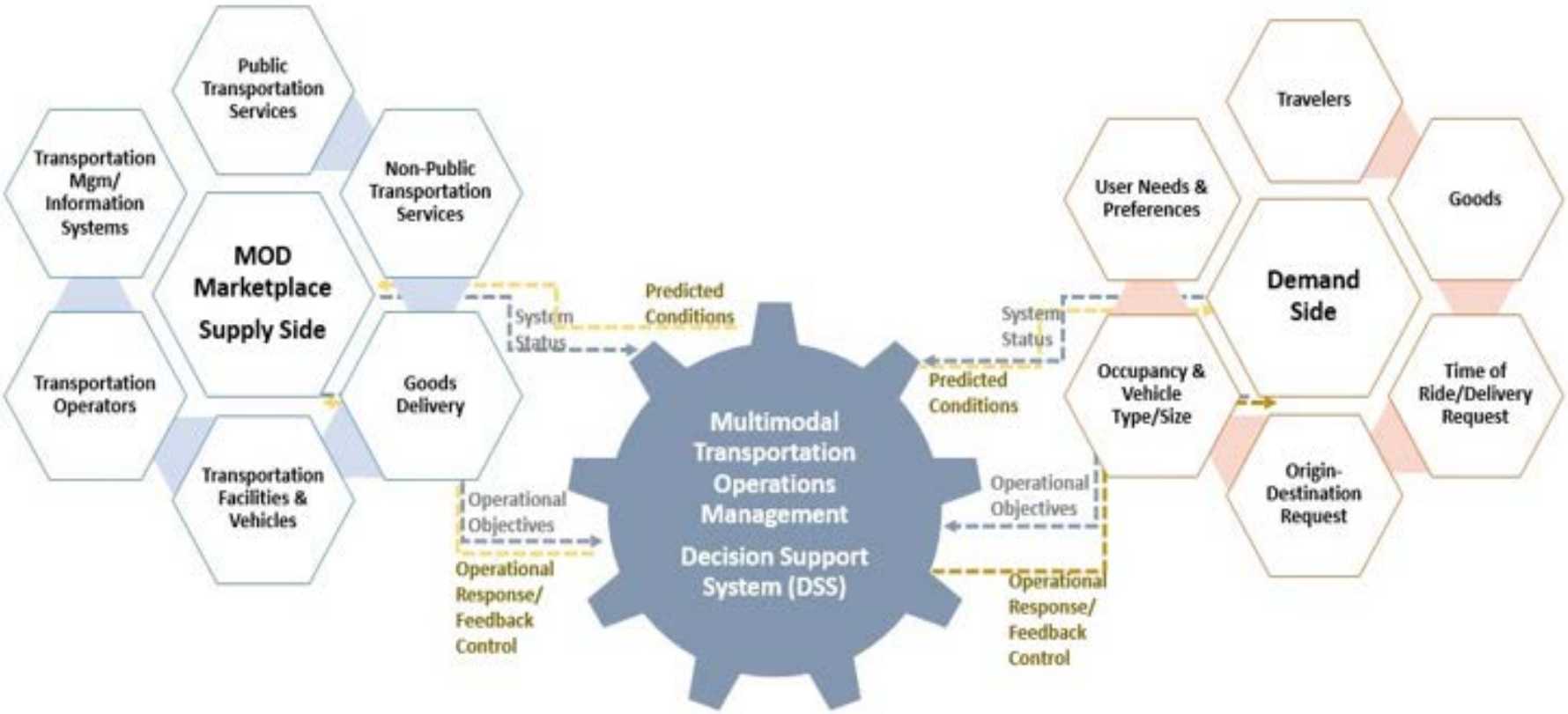
•Mobility Managers

- Streamlines information for transportation options
- Growing employment and transportation partnerships

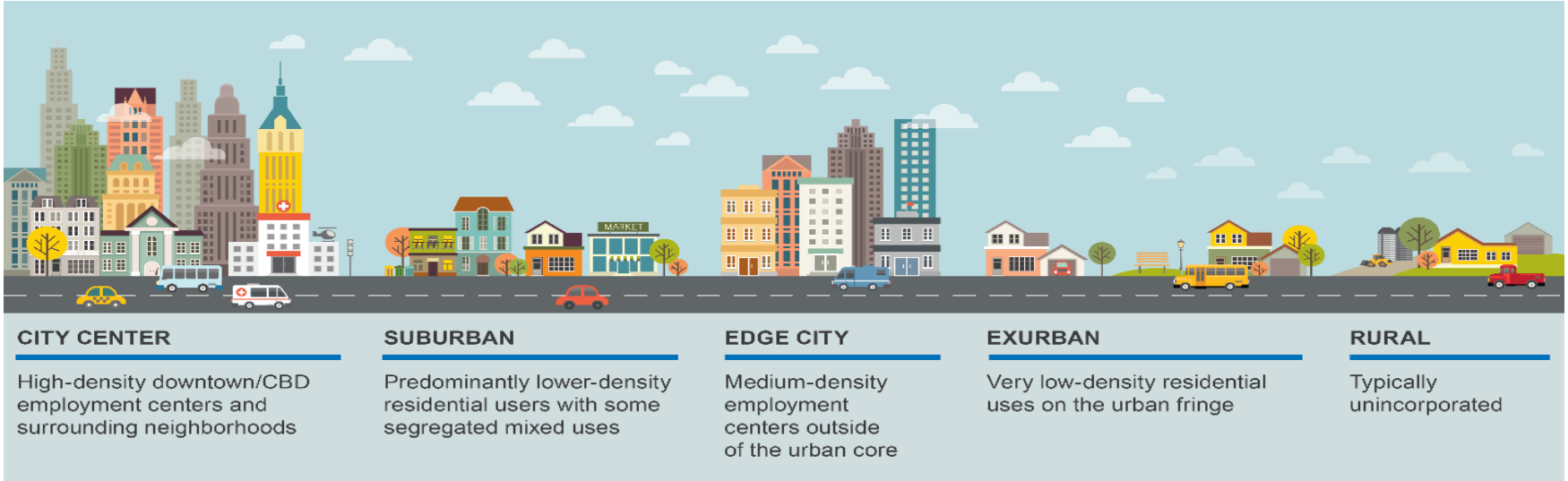
MOD - User-centric Travel Options

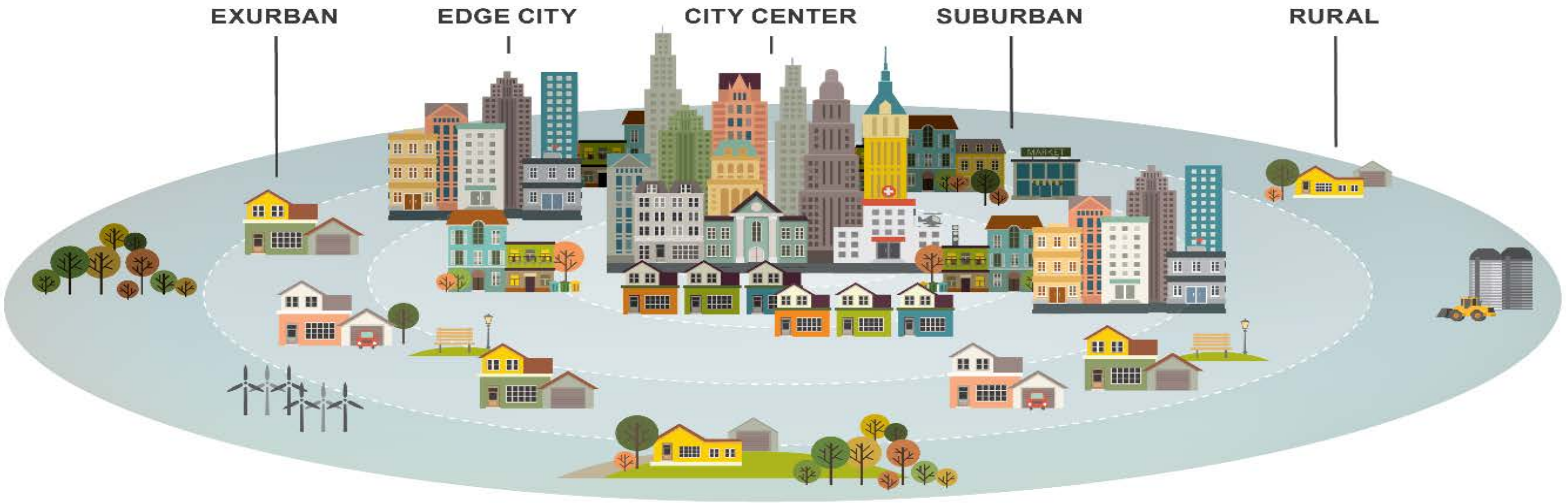


MOD - Supply and Demand



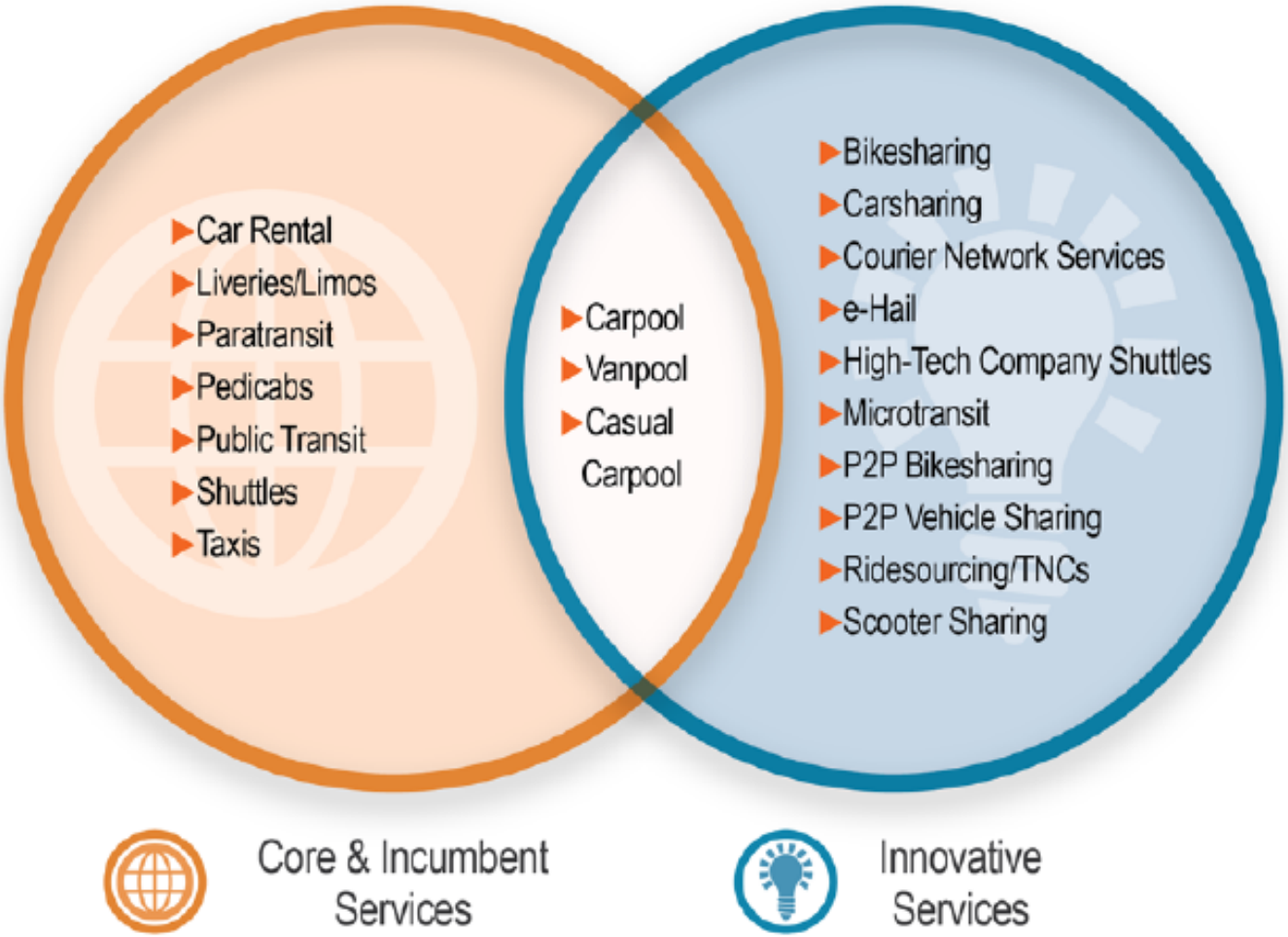
Not just city center





MOD Enablers

MOD and Shared Mobility Sector



State of Industry and Business Models: Digital Matching Firms

Increasingly, consumers and transportation providers are engaging in transactions facilitated by Internet-based platforms—commonly referred to as digital matching firms.

According to the Department of Commerce, digital matching firms typically comprise of four key characteristics:

1. T-based systems, typically available via web-based platforms such as mobile apps on Internet-enabled devices, to facilitate P2P transactions.
2. Rely on user-based rating systems for quality control, ensuring a level of trust, virtually, between consumers and service providers.
3. Service providers/operators often have flexibility in deciding their typical working hours.
4. To the extent that tools and assets are necessary to provide a service, digital matching firms rely on the workers using their own.

State of Industry and Business Models: Automotive Sector

Interest in MOD by the automotive sector has taken a variety of forms including acquisitions, investments, partnerships, and internal development of technologies and services that were previously not on the radar of automotive OEM's

Automotive Company	Activity
Ford	Acquisitions: Chariot (microtransit) Investments: Lyft (ridesourcing) Internal Developments: Ford Smart Mobility LLC; a Ford subsidiary working to design and invest in emerging mobility services
General Motors	Acquisitions: Sidecar (ridesourcing) Investments: Lyft (ridesourcing) Partnerships: Lyft; leases electric Bolt cars to Lyft drivers Internal Developments: Maven (carsharing)
Fiat Chrysler	Partnerships: Google/Waymo (shared automated vehicles); provides Chrysler vans to Waymo as test vehicles
Daimler	Acquisitions: car2Go (one-way carsharing), Moovel (multimodal trip aggregator), Hailo (e-Hail taxi app) Partnerships: Matternet (drones)
Volvo	Partnerships: Uber (ridesourcing); joint venture to develop fully autonomous vehicles Partnership: Volvo with its new digital key app paired with Urb-it, a shopping and delivery startup, to deliver goods.
Toyota	Investments: Uber (ridesourcing) Partnerships: Uber; lease vehicles to Uber drivers

State of Industry and Business Models: Shared Mobility Sector

In North America, the first shared mobility passenger services launched in 1994. Since then, shared mobility passenger and courier services have grown rapidly. Although shared mobility traces its origins to city centers, numerous shared modes continue to expand to markets outside of the city center.

Benchmarking Data
• As of January 2017, there were 21 active carsharing programs in the United States with over 1.4 million members • In April 2011, Zipcar, a carsharing company providing short-term (e.g., hourly) vehicle rentals, raised $174 million in its initial public offering, giving it a valuation of $1.2 billion. The Avis Budget Group acquired Zipcar for $500 million in January 2013 • As of April 2016, there were 32,200 bikes at 3,400 stations across 99 cities in the US • In January 2016, various ridesourcing services were available in 175 metropolitan areas • As of July 2011, there were an estimated 638 ridematching services in North America. • Advancements in courier services (both technologies and service models) are transforming how consumers access goods and services. One app-based courier service, Postmates, was making more than one million deliveries per month, as of April 2016

MOD Constraints and Issues

MOD – Travel Constraint Types

Constraint Type	MOD Opportunities	MOD Challenges
Spatial	• Public transit operators and ridesourcing/TNC first- and last-mile partnerships • Microtransit for lower-density areas • First-and-last mile goods and digital delivery to areas lacking community resources (e.g., goods delivery, remote healthcare, online learning) • Fixed route, flexible route	• Higher operating costs (passenger movement and goods delivery) in lower-density exurban and rural settings • Limited curb space for increasing variety of mobility services • Bandwidth limitations that may limit or inhibit MOD passenger and goods ordering capabilities.
Temporal	• Dynamic microtransit • Late-night ridesourcing/TNC and shuttle services • Commuter carpooling services	• Wait-time and travel-time volatility on congested roadways • Unpredictable wait times due to supply fluctuations
Economic	• MOD subsidies for low-income users • Multiple payment options for shared mobility services • Multimodal hubs with Wi-Fi access • Free delivery and low-cost flat-rate subscription delivery services (e.g., Amazon Prime, ShopRunner etc.)	• Credit/Debit Card payment • High cost for longer distance and peak-demand trips • Maintaining affordability, while providing livable wages • High one-time annual costs of delivery subscription services.
Physiological	• Older adult-focused MOD services • Voice activated mobility app features • Goods delivery and digital delivery services that eliminate the need for a trip (e.g., substituting goods delivery for people movement).	• Maintaining legacy technology access • Ensuring adequate driver training
Social	• Ridesourcing/TNC app interface that minimizes sociodemographic profiling • Targeted outreach to low-income and minorities • Website and app information in user's native language	• Attracting marginalized groups • Driver prejudice against riders • Providing security at un-manned vehicle stations

MOD – Issues to consider

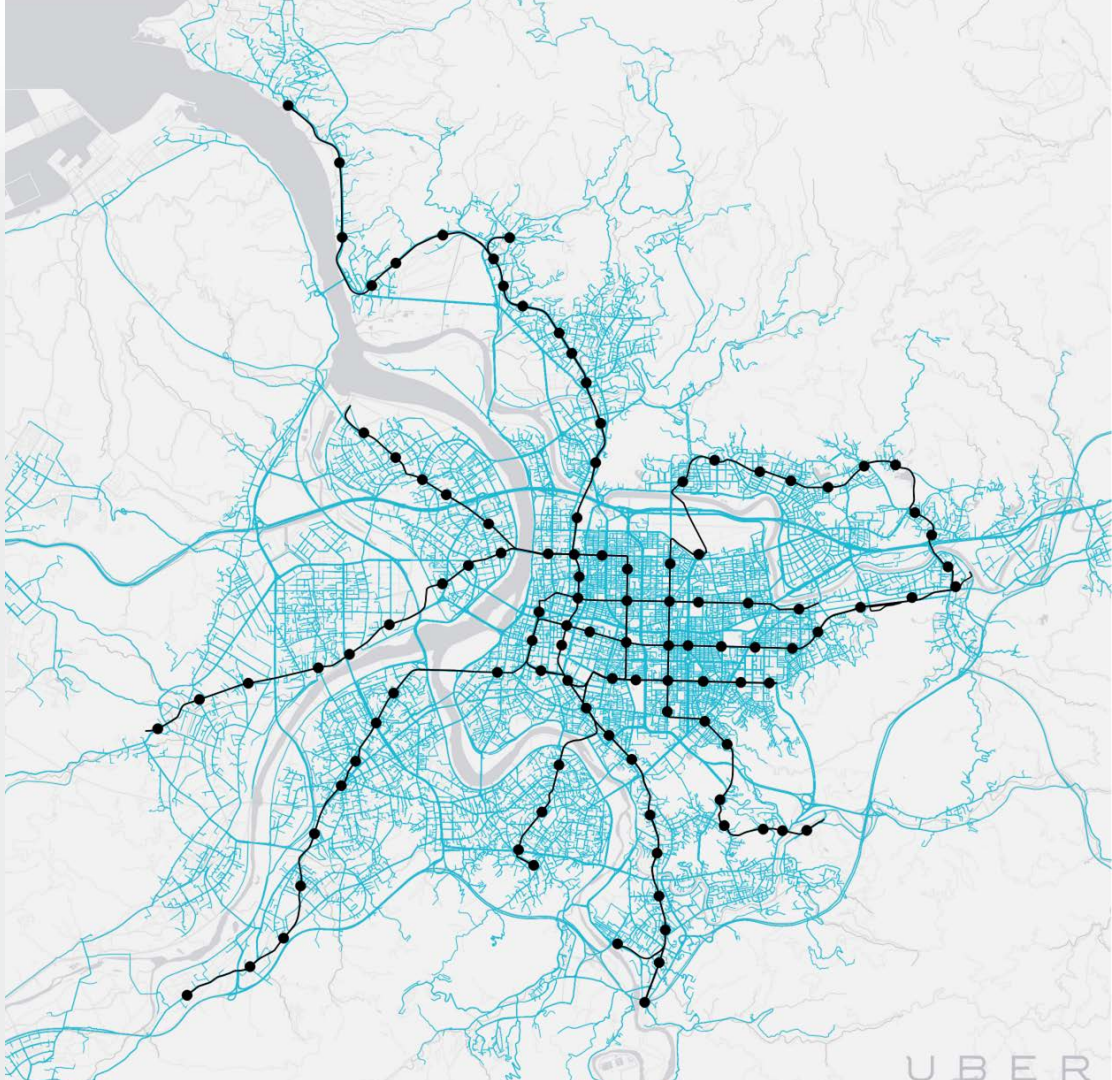
- Economics
  - Economic impacts of MOD
  - Economic costs of MOD on Public Infrastructure
  - Commodification of Transportation
  - Economic impacts of reduced vehicle ownership
  - Cost savings for public agencies
  - Economic impacts of MOD on households/individuals
  - Economic impacts of changing consumer preferences
- Travel Behaviors
  - Impacts on public transportation
  - Incidental trips
  - Regional variations
  - Goods movement
  - Productivity, macro and micro
  - Impact of cultural norms on pricing and modal choice
- Energy and environmental impacts
- Social Equity and Environmental justice
  - Disabilities
  - Unbanked/underbanked
  - Digital divide
  - Other populations
  - User demographics
- Policy and regulations
- Physical infrastructure needs
- Data management, sharing, and standardization
- Transportation planning
- Analysis and modeling

UBER

UBER'S IMPACT ON CITIES

Paige Tsai, Transportation Policy & Research Senior Associate

NOVEMBER 2017



Agenda

1. Uber overview
2. How Uber impacts cities
3. Working with public transit
4. Trip Planning Apps

UBER

Uber overview

70+
Countries
UBER

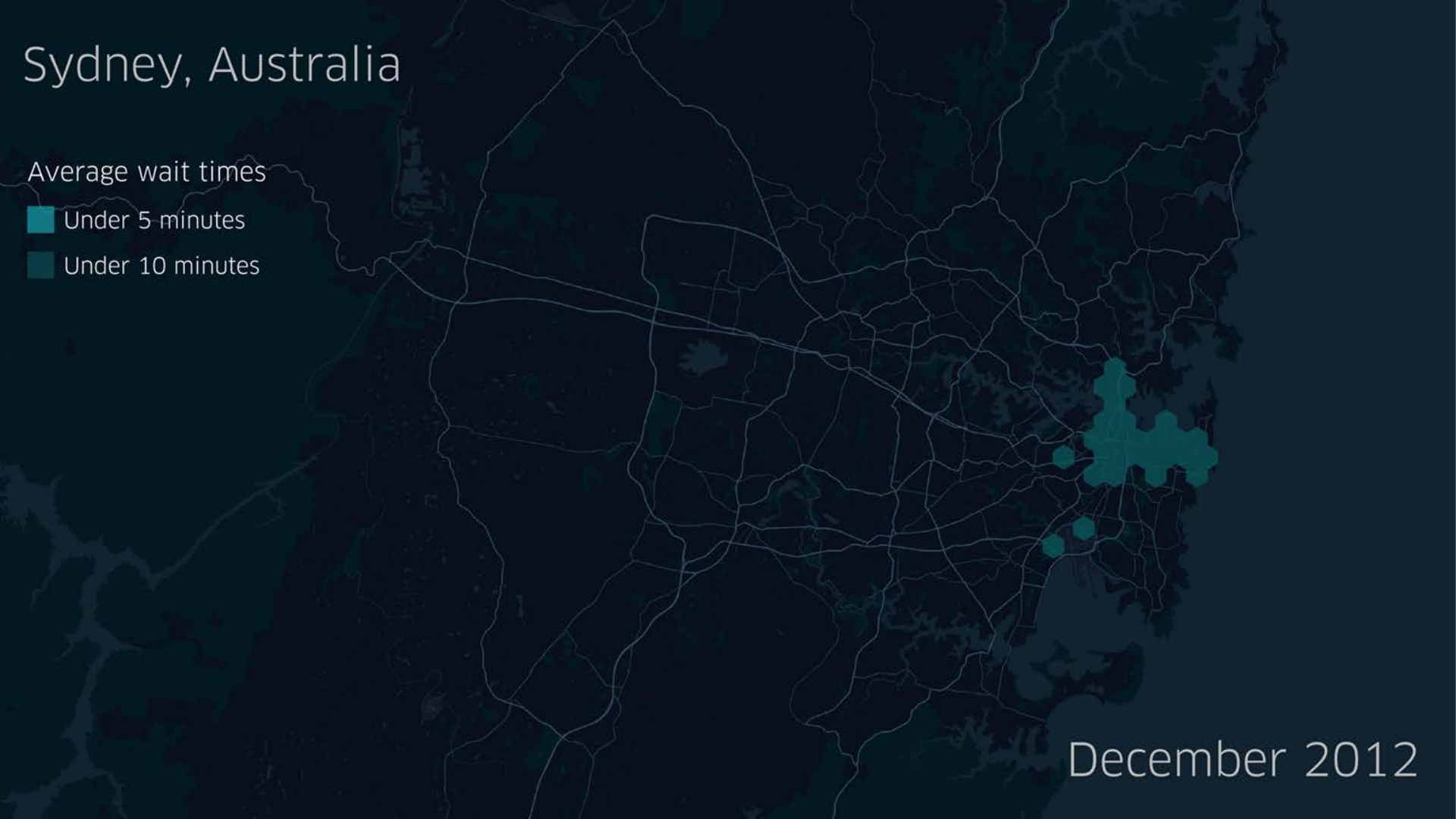
UBER

Uber’s impact on cities

Sydney, Australia

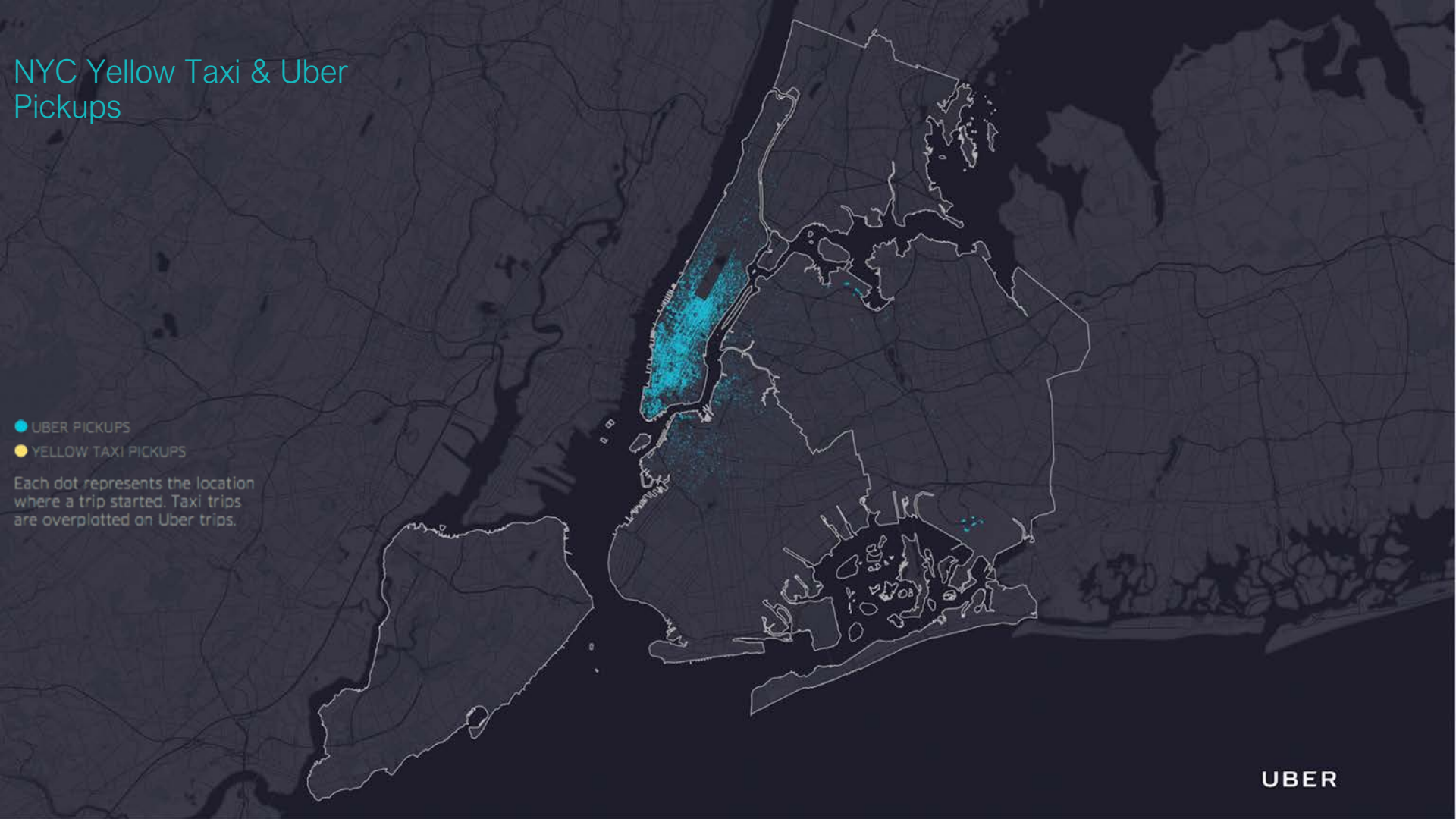
Average wait times

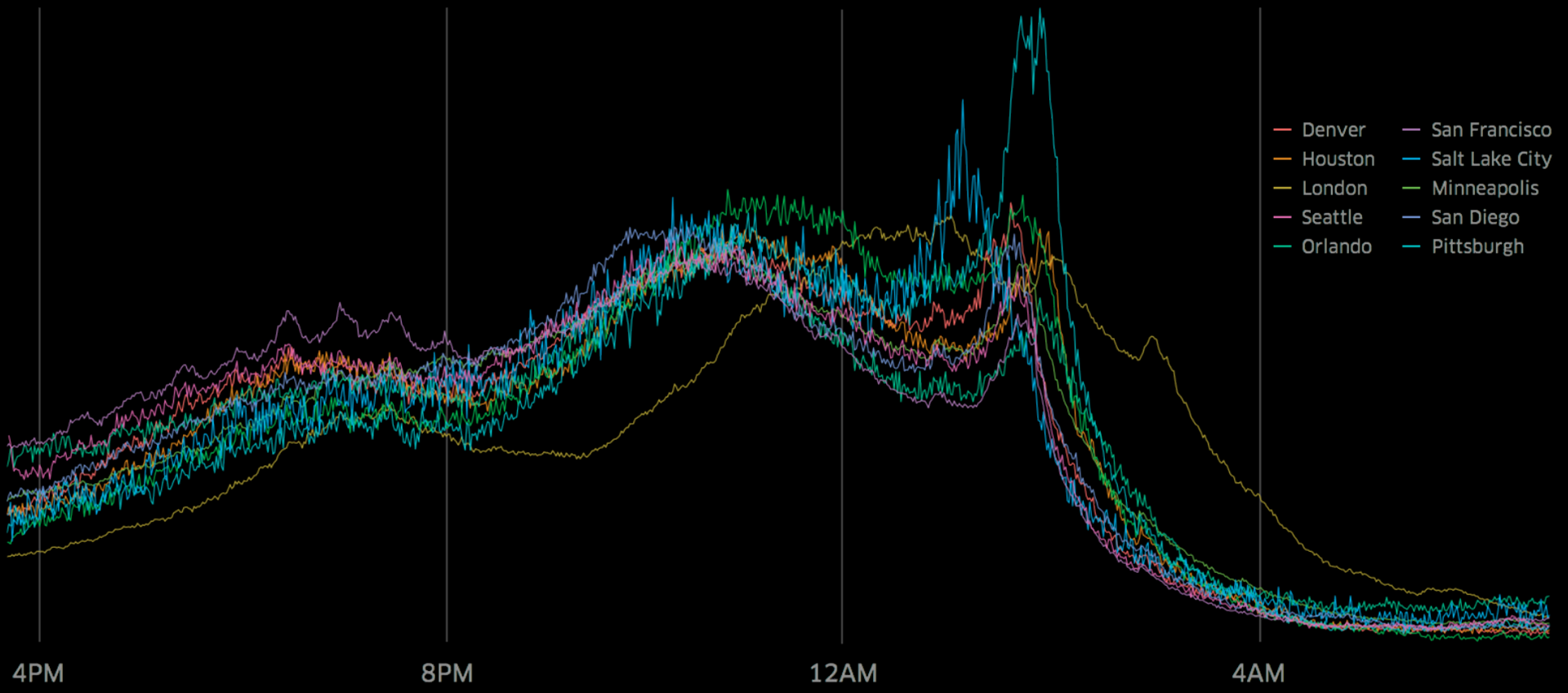
- Under 5 minutes
- Under 10 minutes



December 2012

NYC Yellow Taxi & Uber Pickups




Denver
Houston
London
Seattle
Orlando
San Francisco
Salt Lake City
Minneapolis
San Diego
Pittsburgh
4PM
8PM
12AM
4AM

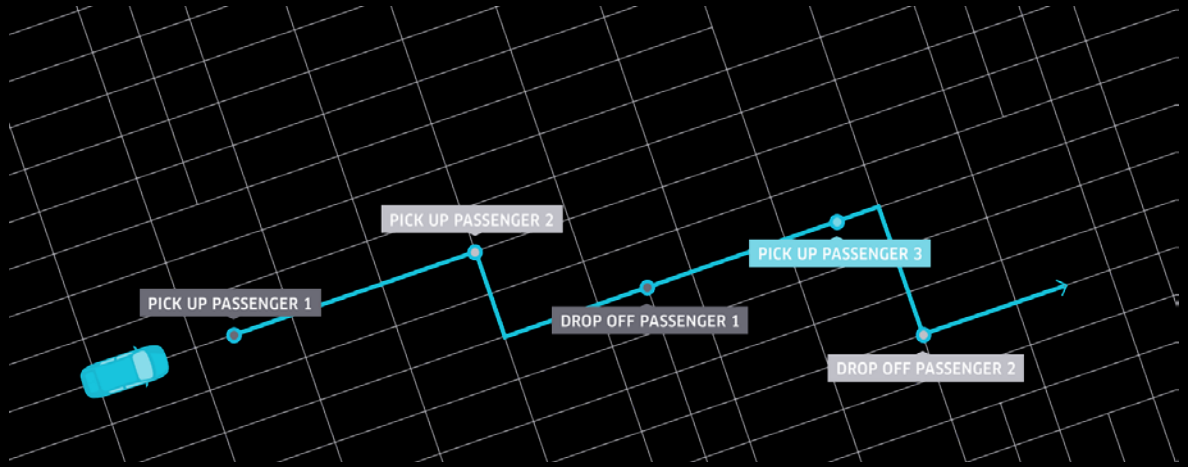
Reducing congestion with uberPOOL

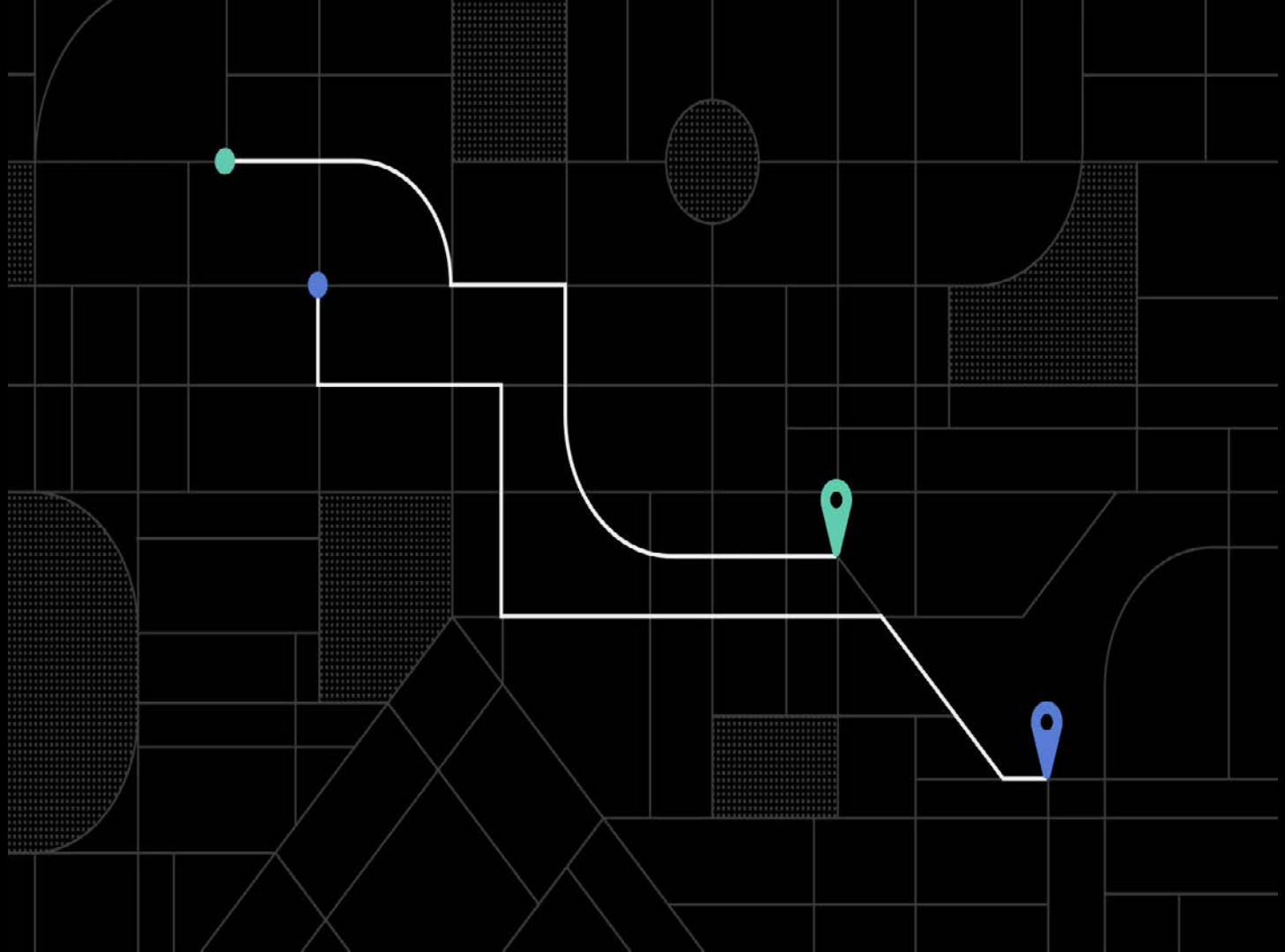
More efficient.

Drivers spend more time per hour earning money on longer trips—without the downtime between passengers

More cost-effective.

Riders share the cost between them, while adding only a few minutes of time per trip.



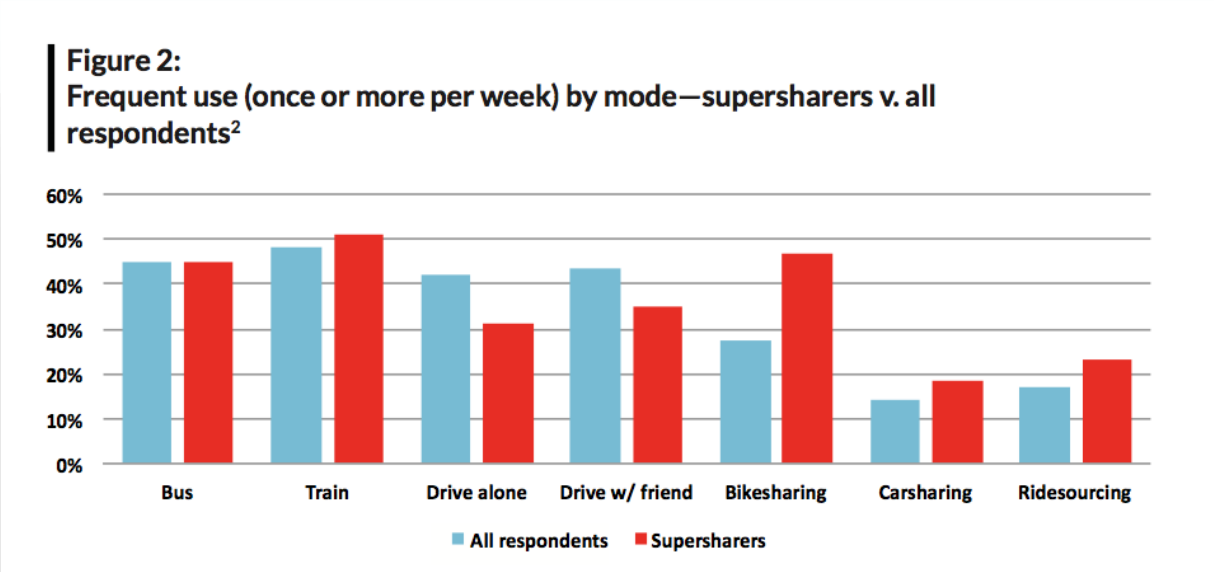


UBER

uberPOOL makes up 20% of our trips globally today, in cities where it’s available

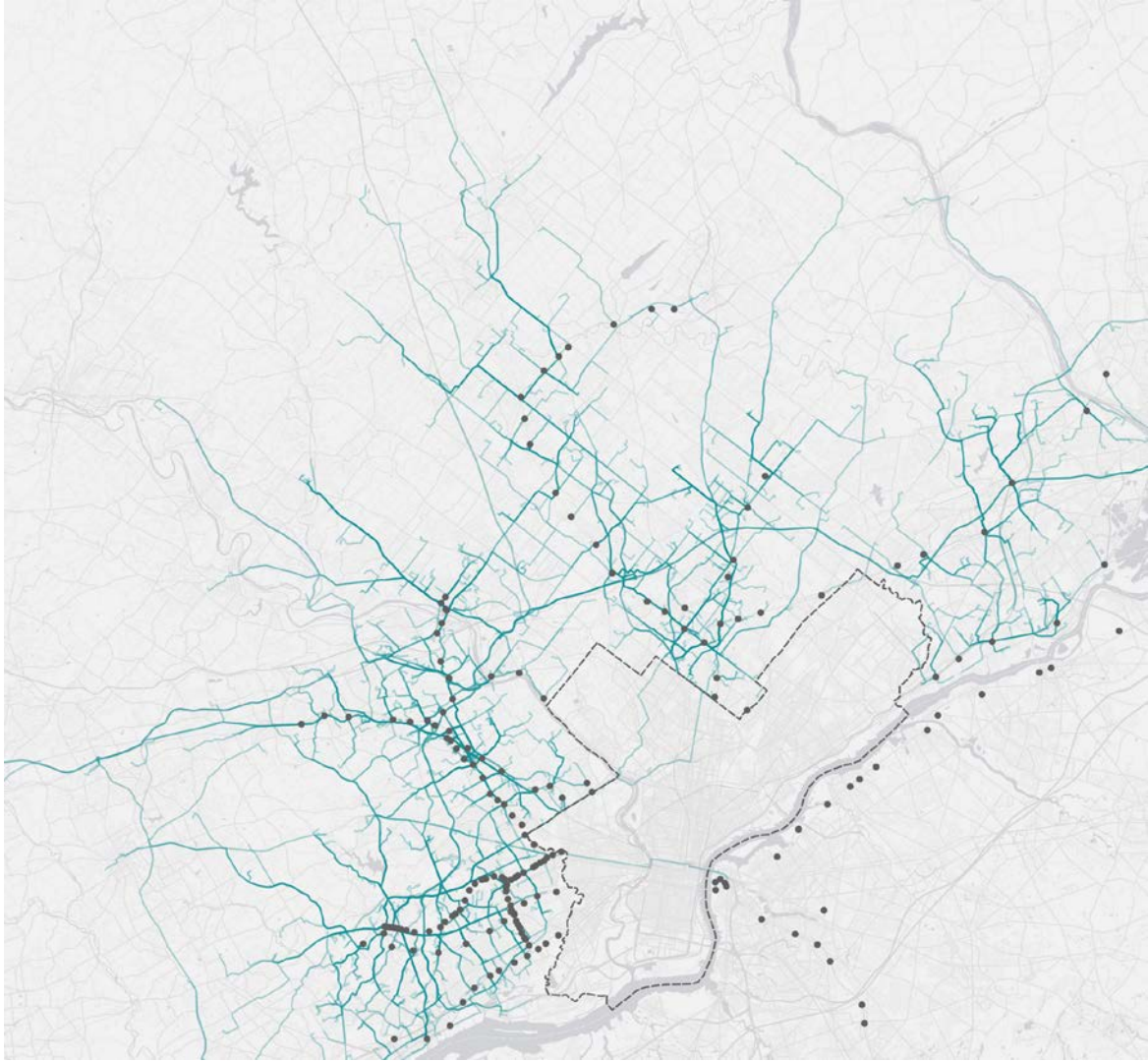
The rise in shared modes

The more people use shared modes, the more likely they are to use public transit, own fewer cars, and spend less on transportation overall.



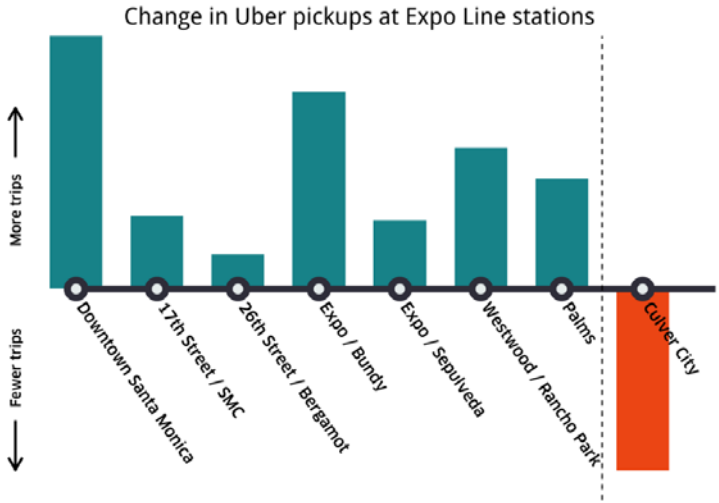
UBER EXTENDS BEYOND EXISTING TRANSPORTATION

PHILADELPHIA, PENNSYLVANIA

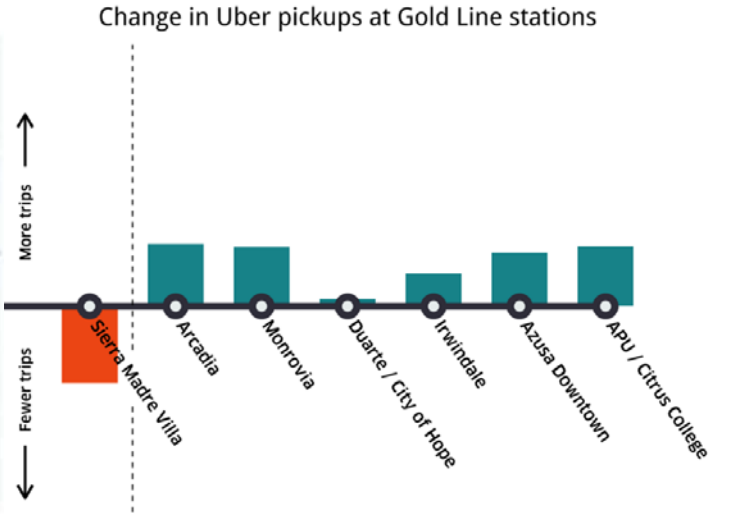


- RAIL/SUBWAY STOPS
- UBER TRIPS
- PHILADELPHIA COUNTY BOUNDARY

06:30:00 AM



Los Angeles Metro Rail 2016 extension stations (green) and previous end-of-line stations (orange)



UBER

Partnering with transit agencies

How Uber can help transit agencies

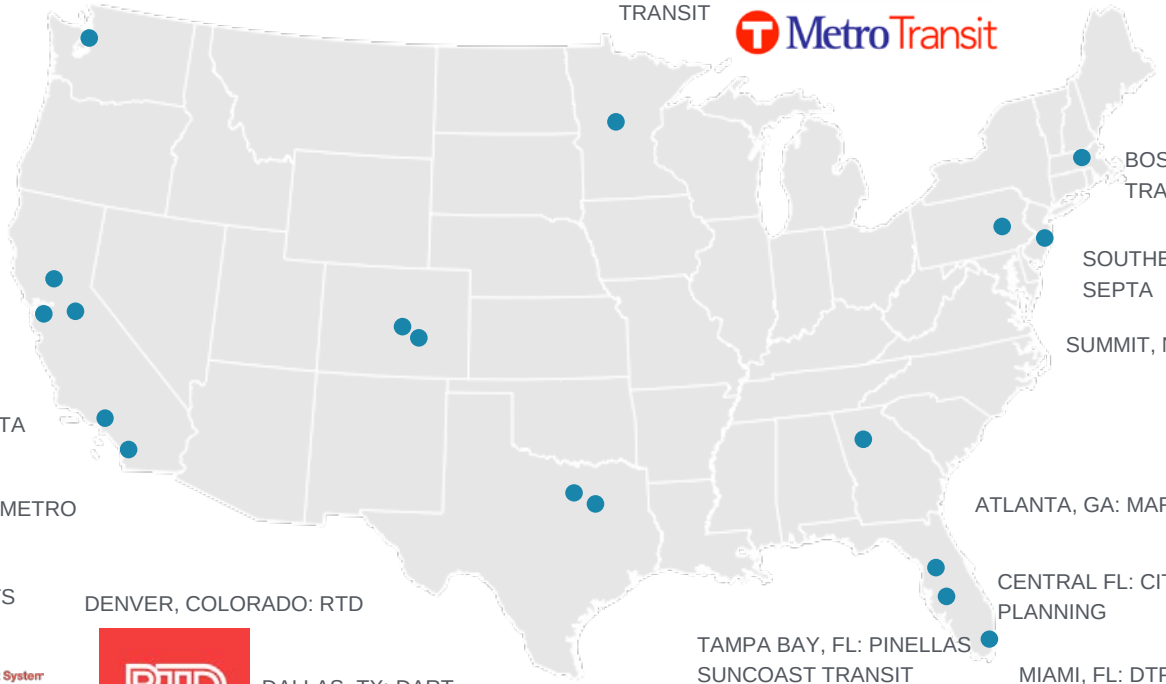
1. Help fill the gaps in transit

1. Providing access to underserved communities

1. Alleviate the demand for parking

1. Reduce costs of underutilized routes or services

Global Transit Partnerships Snapshot



Westside Transportation Alliance

SEATTLE, WA: SDOT

Caltrain

SAN FRANCISCO, CA: CALTRAIN

SACRAMENTO, CA: SAC RTD

LIVERMORE, CA: LAVTA

LOS ANGELES, CA: METRO

SAN DIEGO, CA: MTS

MTS Metropolitan Transit System

DENVER, COLORADO: RTD

RTD

DALLAS, TX: DART

DART

DENTON, TX: DCTA

DCTA

LONE TREE, COLORADO

LONE TREE Link

MINNEAPOLIS, MN: METRO TRANSIT

Metro Transit

Massachusetts Bay Transportation Authority

BOSTON, MA: MBTA TRANSIT

SOUTHEAST PENNSYLVANIA: SEPTA

SEPTA

SUMMIT, NJ

ATLANTA, GA: MARTA

marta

CENTRAL FL: CITY PLANNING

TAMPA BAY, FL: PINELLAS SUNCOAST TRANSIT

PSTA

MIAMI, FL: DTPW

MIAMI-DADE COUNTY

Alleviating the demand for parking: Summit, NJ

During commuting hours, residents enrolled in the existing parking program, can ride Uber to an NJ Transit hub for free. Residents who aren't enrolled, are charged a flat $2.

Increasing access to transportation & reducing costs: MBTA

- In September 2016, Massachusetts Governor Baker and leaders in the disability community announced the pilot partnership with MBTA

- Uber to subsidize on-demand transportation option to better serve customers of the RIDE and reduce paratransit costs for the MBTA

Pilot program details: MBTA

- The RIDE: door-to-door service to people with disabilities who are unable to access or use the MBTA's fixed-route system, which services a 712 square mile area that includes 60 cities and towns.

- Passengers will pay just $2 per ride, the MBTA will cover the rest of the Uber (or Lyft) trip, up to $13.

- Before the pilot launched, the average paratransit ride cost the MBTA $31. Under the new program, Uber rides will cost the agency an average of $13 per trip

RESULTS

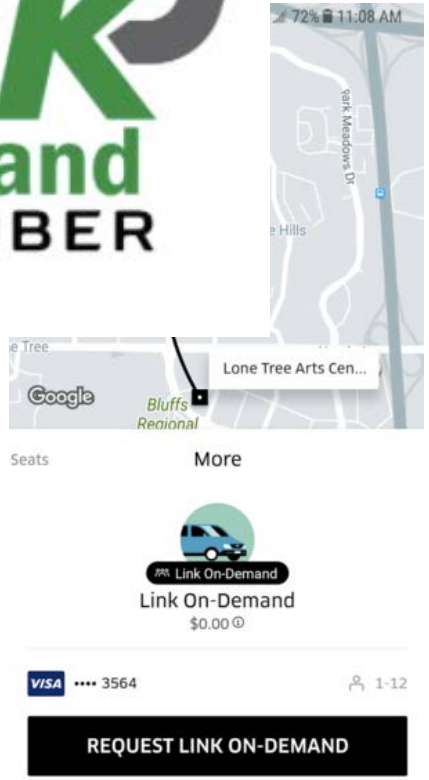
- In just over 5 months, Uber and Lyft have helped connect RIDE customers and drivers to a convenient and safe on-demand transportation option 10,000 times.

- In February 2017, Governor Baker announced the MBTA is opening up the program to to everyone who has signed up, including the 200+ people on the waitlist.

"This is 70 percent cheaper than our existing service. If it works, we certainly hope that we would expand it while dramatically reducing our total cost per trip."
– MBTA GM Brian Shortsleeve

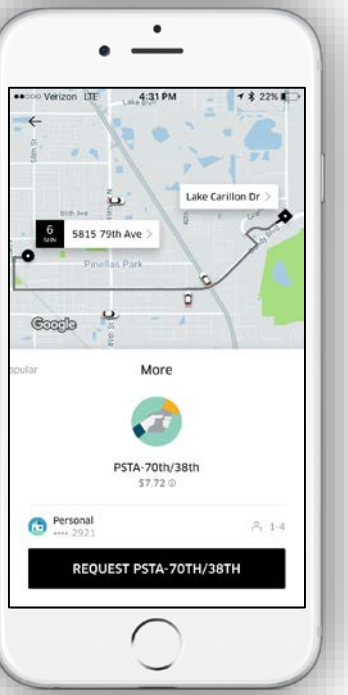
Connecting to existing vehicles: Lone Tree, CO

- Link on Demand offers FREE door-to-door on-demand rides within the Lone Tree city limits
- Residents can request the shuttle on-demand through the Uber app.
- Shuttles are wheelchair accessible
- Operates 7 days a week



Uber’s technology makes partnering easy

- In-app messaging to showcase partnership and encourage local utilization
- Transit ‘view’ incorporated within the Uber app for maximum visibility, if desired
- Geo-fence technology to target transit stops and other important areas directly within the Uber app
- Custom subsidy structure to allow agencies to pay all or part of the fare



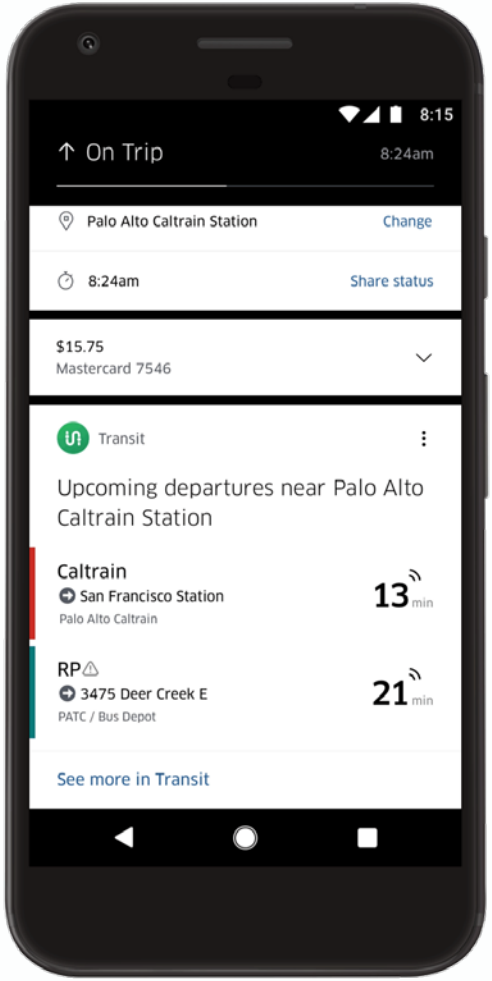
UBER

Transit API Integrations

Uber + Transit Makes it Easy to be Multimodal

"Our integration with Uber is a perfect match, as we both envision a future in which every journey is shared using a combination of transit options."

Jake Sion, Chief Operating Officer, Transit



Integration with CityMapper

A better connected city.

Access more parts of the city that might not be well supported by public transportation.

Reduced costs.

More affordable options than taking an Uber all the way, especially for long distances.

Reduced travel times.

Sometimes trains are faster. Sometimes cars are faster. Sometimes combining them is faster.

Reduced traffic and parking.

Public transit + Uber can mean fewer cars on the road and less congestion.

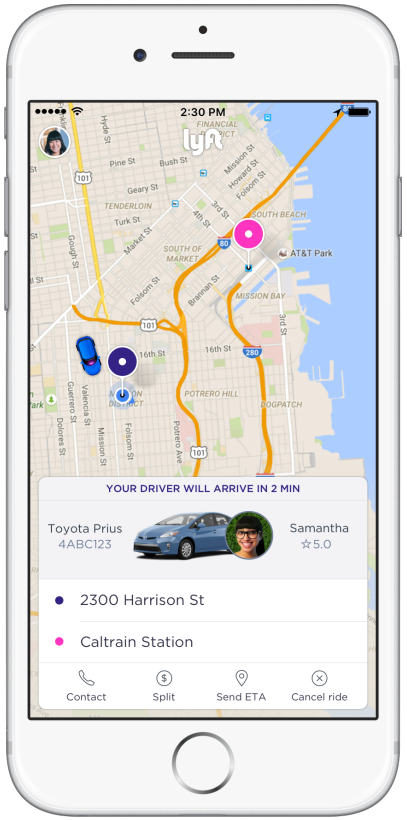
Public Transit Only

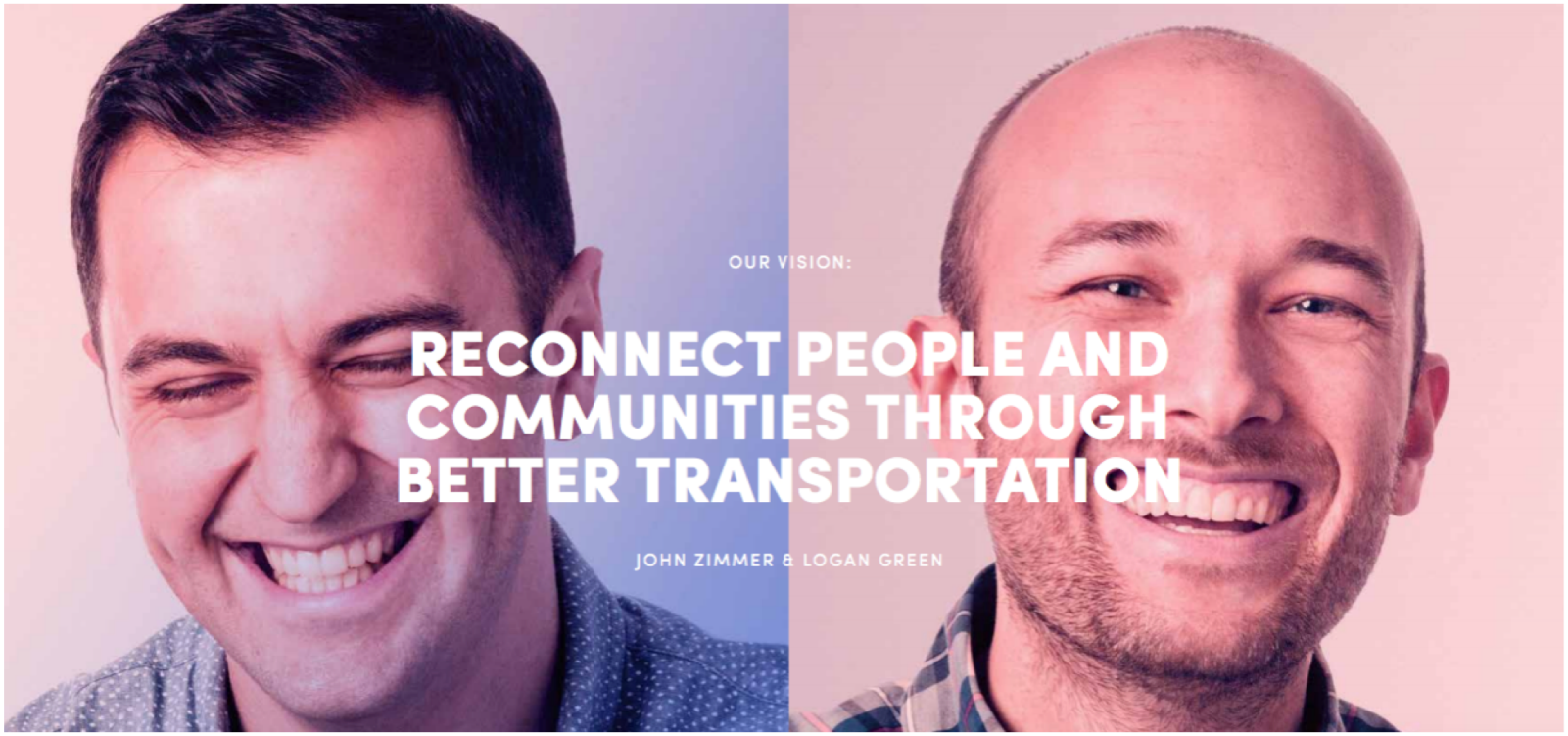
Public Transit + Uber

UBER

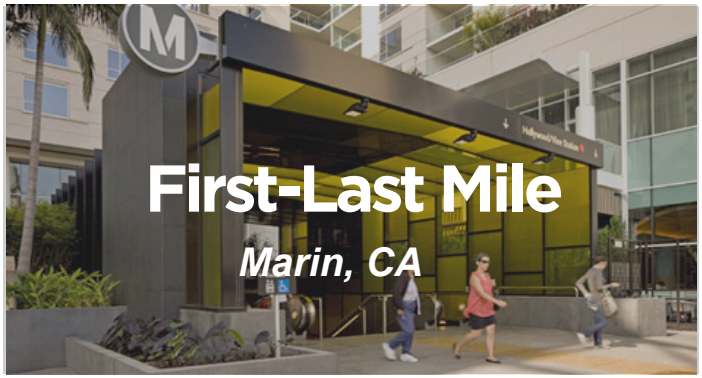
Connecting Communities

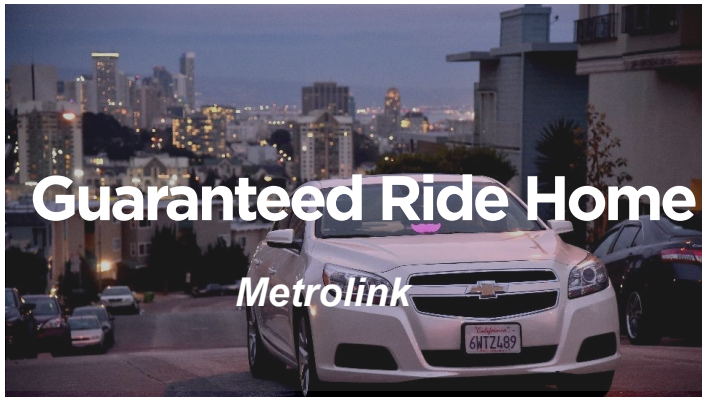
Partnering to improve regional mobility


2:30 PM
YOUR DRIVER WILL ARRIVE IN 2 MIN
Toyota Prius
4ABC123
Samantha
☆5.0
2300 Harrison St
Caltrain Station
Contact
Split
Send ETA
Cancel ride

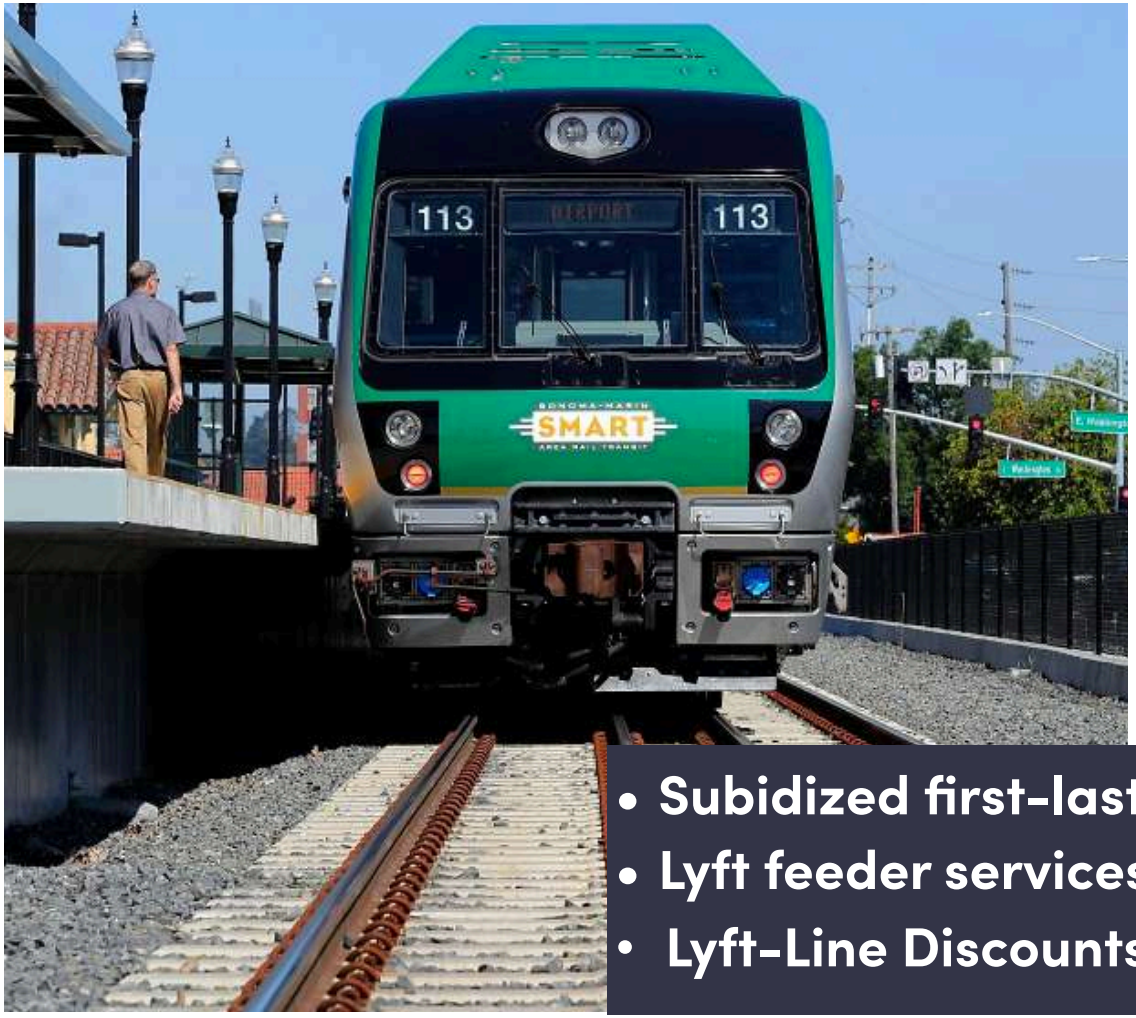

OUR VISION:
RECONNECT PEOPLE AND COMMUNITIES THROUGH BETTER TRANSPORTATION
JOHN ZIMMER & LOGAN GREEN

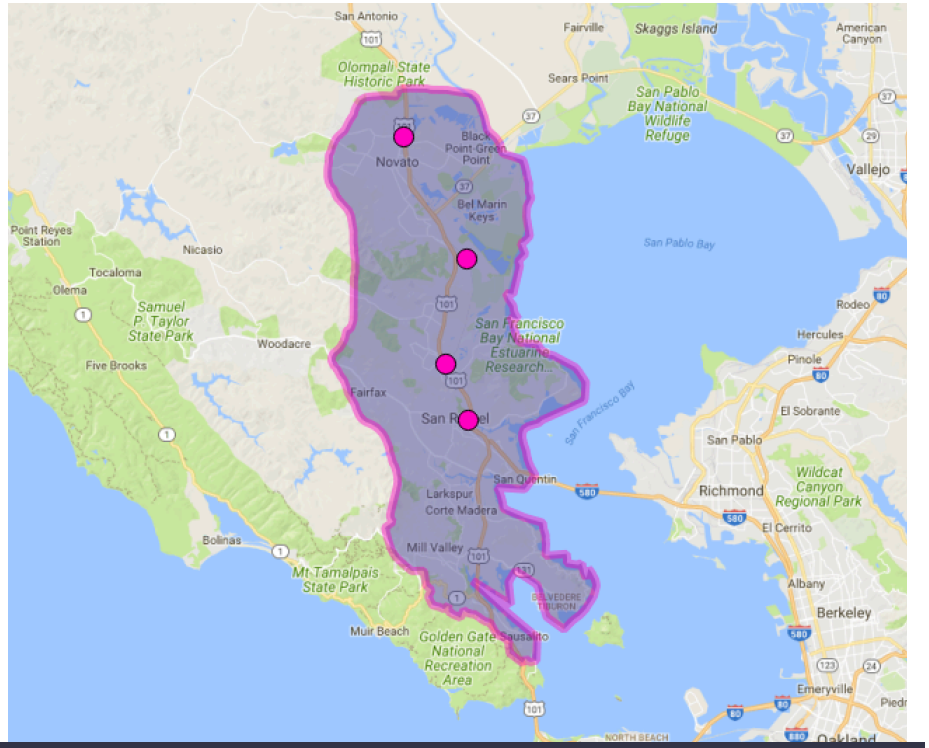
Pilots and Types





First-Last Mile Services



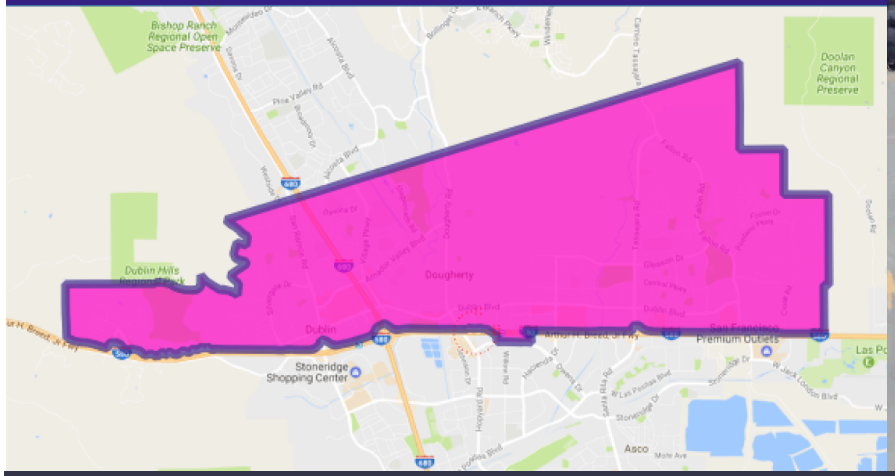


- Subidized first-last mile rides into new stations
- Lyft feeder services encouraging behavior change.
- Lyft-Line Discounts: Encouraging Shared commuting.

Alternative Dial-a-Ride Services

GODUBLIN

50% off up to $5 for any of your Lyft Line rides in the City of Dublin, CA
Get discounted rides until June 30th or while budget lasts



- Increase convenience of suburban feeder/ circulator services.
- Encourage ridesharing to BART stations to alleviate parking congestion.
- Suburban Services study being conducted.

Paratransit Programs

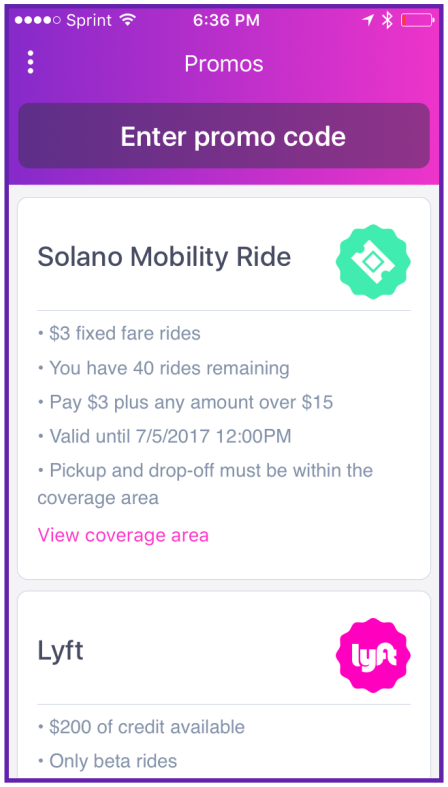
- **MBTA:** Creation of On-Demand Paratransit Program alternative.
- **Rabbit Transit:** Overflow provider to improve program performance.
- **Lyft integrating** with Paratransit platforms to ease program tracking.

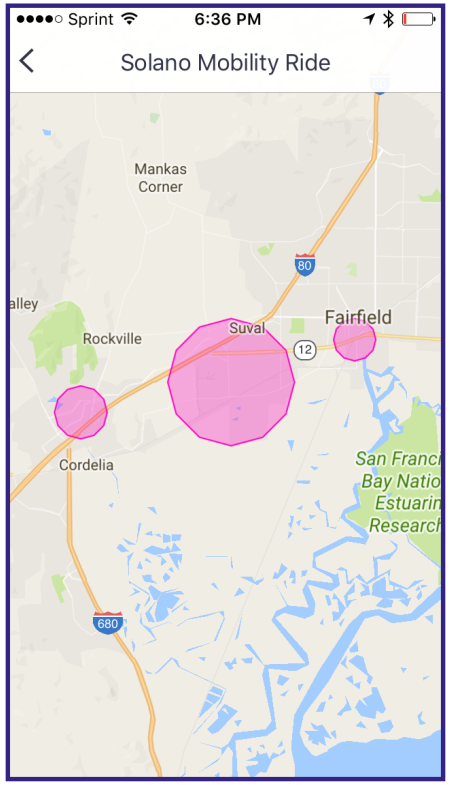
Programs have improved customer mobility & reduced program costs

"The success of this partnership . . . is changing lives and improving reliability for the MBTA's paratransit customers who rely on THE RIDE for their daily travels.

- Massachusetts Governor Charlie Baker, February 2017

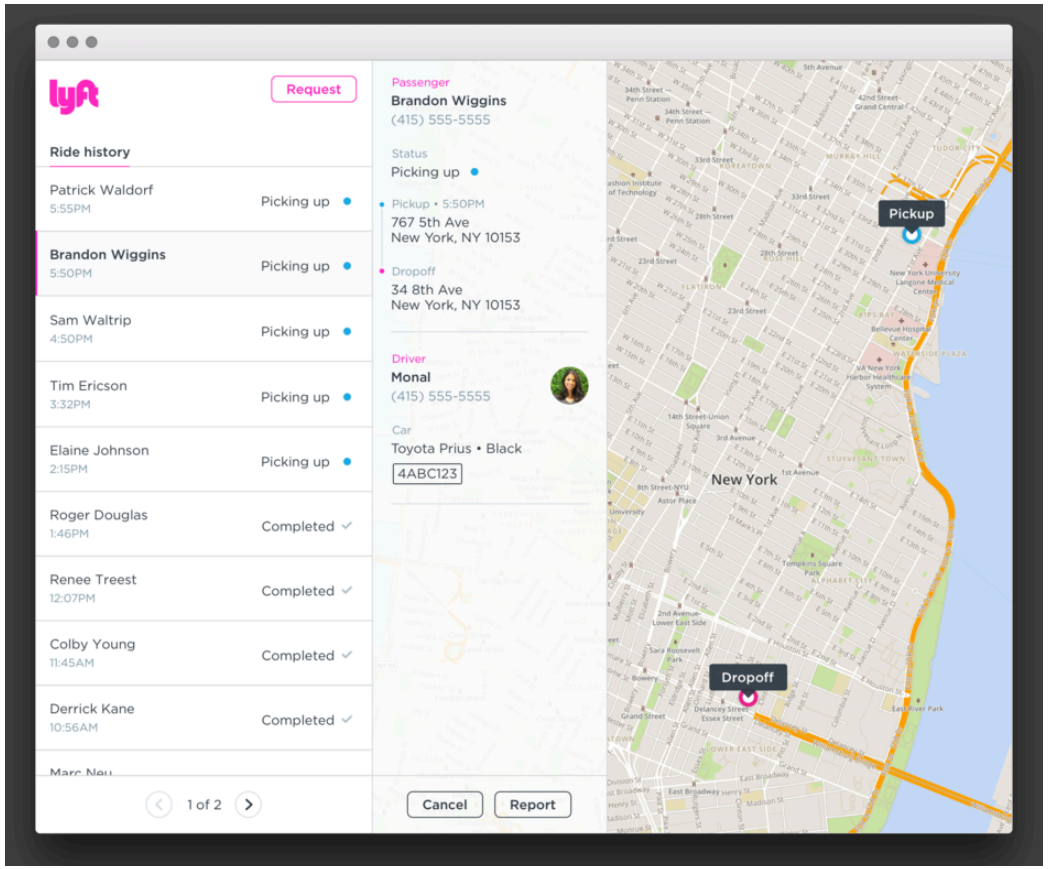
Features to Support Transit Partnerships

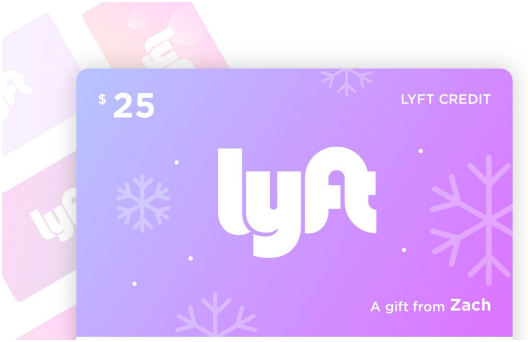




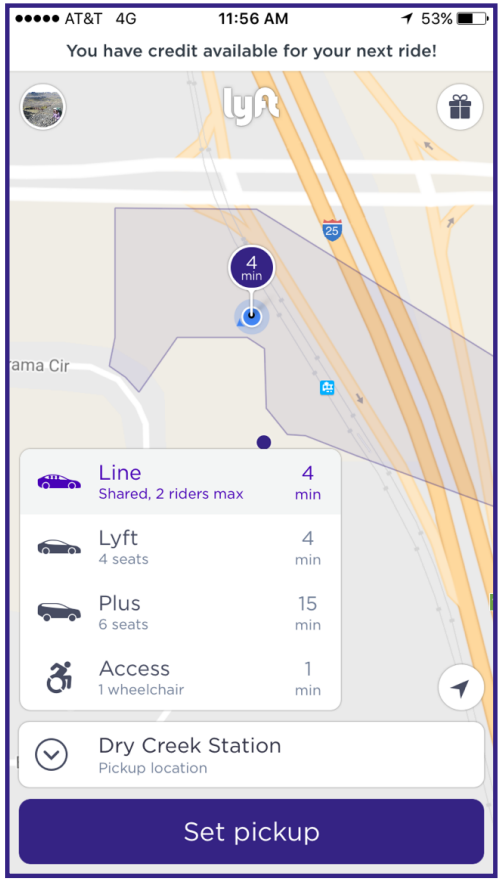
- **Geofencing Parameters**
  Restrict subsidized rides to specific areas
- **Timeboxing Parameters**
  Restrict subsidized rides to specific times
- **Support Elgibility Based Programs**
  Direct distribution of programs to eligible users
- **Flexible Fare Structures**
  - Fixed Fare of $X;
  - % Discount up to $Y; or
  - Split Fare Offerings

No Smartphone. No Bank. No problem.





WAV Mode and Service



- **Lyft Access Mode**
  - Additional Mode to view/book lift-equipped vehicles
- **Vehicle Supply through partnerships.**
  - **Collaborate with trusted local partners:** NEMT, NGOs

e.g. Whistlestop

- **Additional Subsidies for WAV rides**
  - Trip premium offered to cover the additional costs associated with WAV trips.

Keys to Success

- **Service Planning Sessions.** Planning/Operation meetings to develop service design and technology implementation plans.

- **Cross-functional Launch Meetings.** Marketing, Operations, Planning, and Customer Service Team sessions allow for seamless and coordinated program launch.

- **Engaging Local Partners** in program implementation and outreach.

Partnership Goals

- Partner with communities to improve regional mobility.
- Drive more users onto regional transit systems.
- Reduce single occupancy vehicle travel and car ownership.
- Reclaim parking spaces for more productive uses

Paul Davis
Transit Partnerships Manager
pdavis@lyft.com

Powering the world's most efficient shared rides

Louis Pappas | Business Development Principal, Via
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INTRODUCING VIA

Powerful passenger aggregation and dynamic vehicle routing software

Efficiency and automation

On-demand

Book a seat on your phone

Convenient

Get picked up at a corner nearby: ‘Virtual Bus Stop’

Shared

Seamlessly share the ride with others with no fixed routes

Via is the world's first on-demand transit system operating at global scale

1. NYC/CHI/DC/+

Consumer microtransit business

2. Mobility Platform

Partner to transportation providers

22M+

Shared rides since launch (2013)

1.5M

Rides per month

$350M

Venture funding

The more people use shared modes, the more likely they are to use public transit, own fewer cars, and spend less on transportation overall…Shared modes complement public transit, enhancing urban mobility.

"Shared Mobility and the Transformation of Public Transit", American Public Transportation Association (APTA) and Shared-Use Mobility Center (SUMC) - March 2016

via

Reinventing dial-a-ride (and more) with METRO

CASE STUDY

METRO Problem

Deviated dial-a-ride service in NE Austin, a rapidly redeveloping area

Low ridership due to:

Advanced
booking requirement

2 **Hours in advance**

Limited
deviation ability

.5 mi

Limited
service hours

3 **Days Per week**

Thus, **expensive** to provide service, and **low user satisfaction**

VIA

METRO Solution

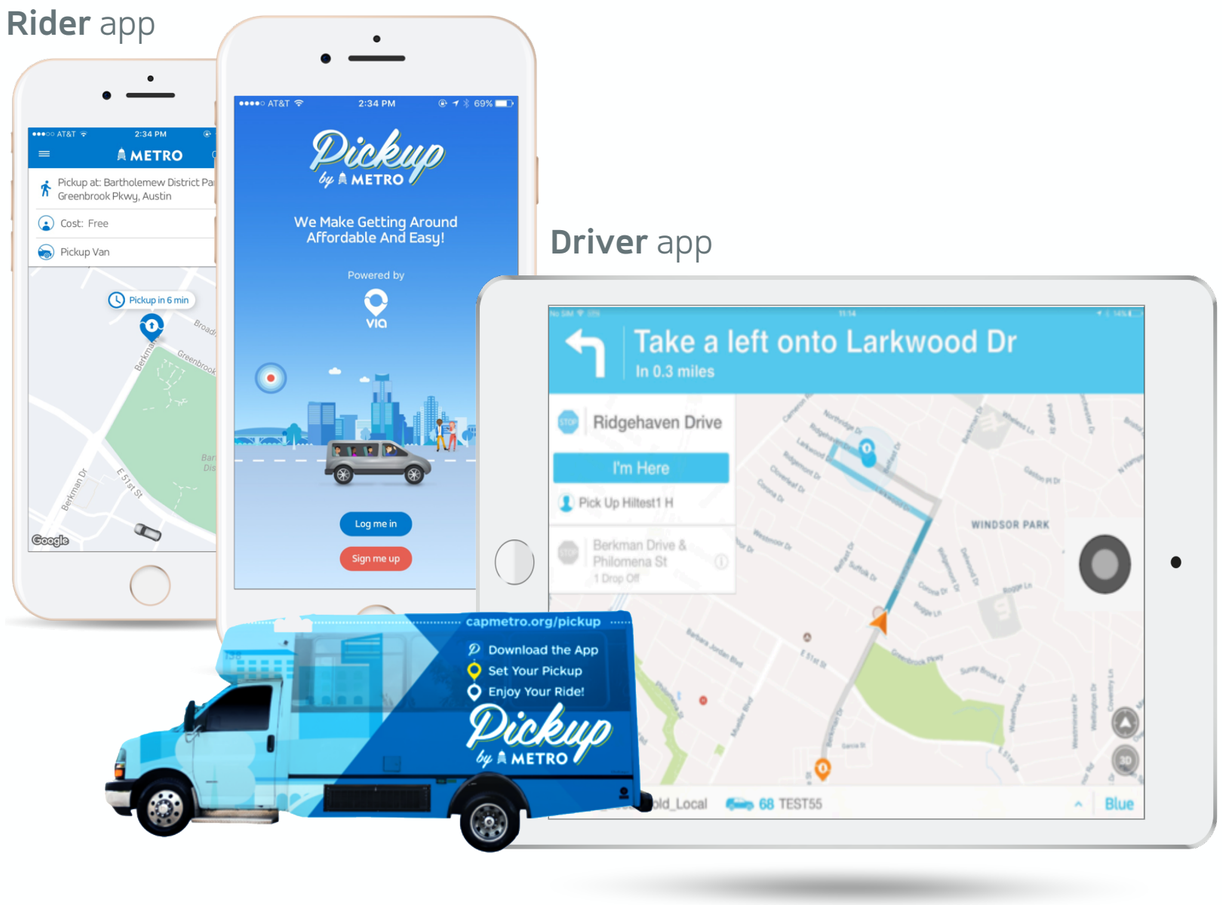
Capital Metro partnered with Via to **reimagine** the bus route as an entirely **flexible, on-demand shuttle.**

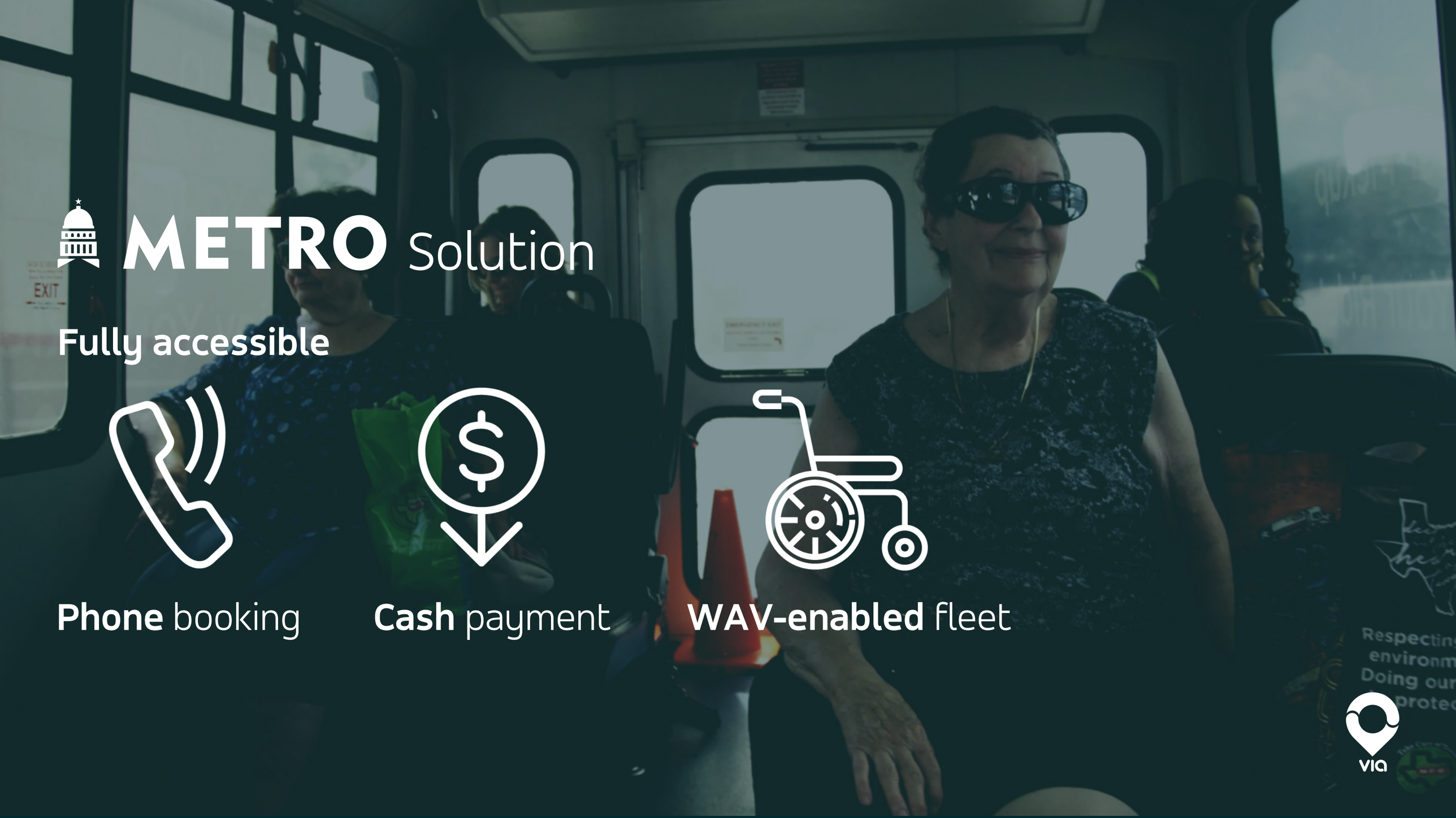
Customers can request rides **from anywhere, to anywhere** within the zone

via

METRO Solution

- ‘**Pickup**’ brand
- Existing **agency vehicles, operators, and dispatchers**
- Customized **rider app** and localized **driver app**
- **No fixed routes**





METRO Solution

Fully accessible

Phone booking

Cash payment

WAV-enabled fleet

via

METRO Results

Pre-booked wait time

2 Hours → **11** Minutes

Ridership

60% Increase ↑

Utilization

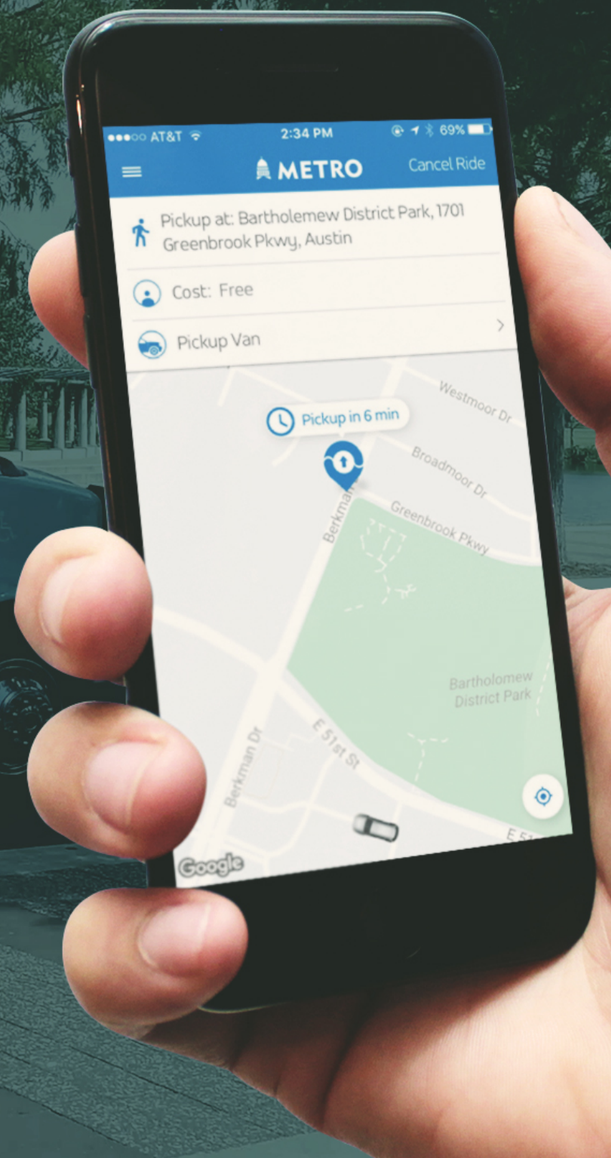
2 Rides/hour → **3.5** Rides/hour

Cost per ride

30% Reduction ↓

App bookings

0% Rides booked → **50%** Rides booked



via

METRO Picking Up

October 2017: **major service expansion**

Expanded Hours

3 → 6 **Days/ week**

Expanded Zone

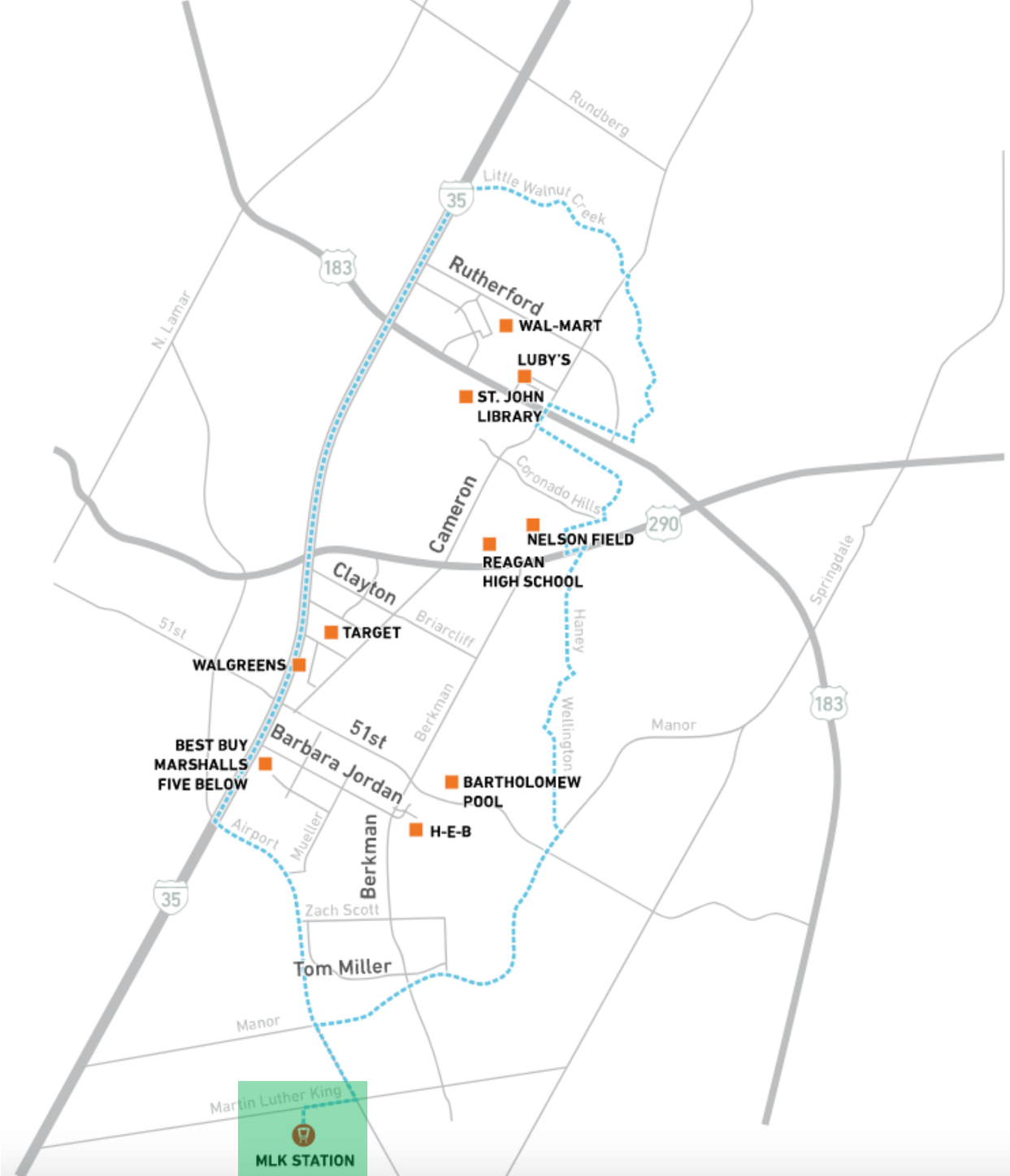
community circulator → **First and last mile service**

- JFK MetroRail station
- Connection to downtown Austin

via

METRO Looking ahead

- Continued **ridership growth**
- New **users** and **use-cases**
- More **learning opportunities** for Cap Metro



Creating **Virtual Infrastructure**

ARLINGTON℠
THE AMERICAN DREAM CITY

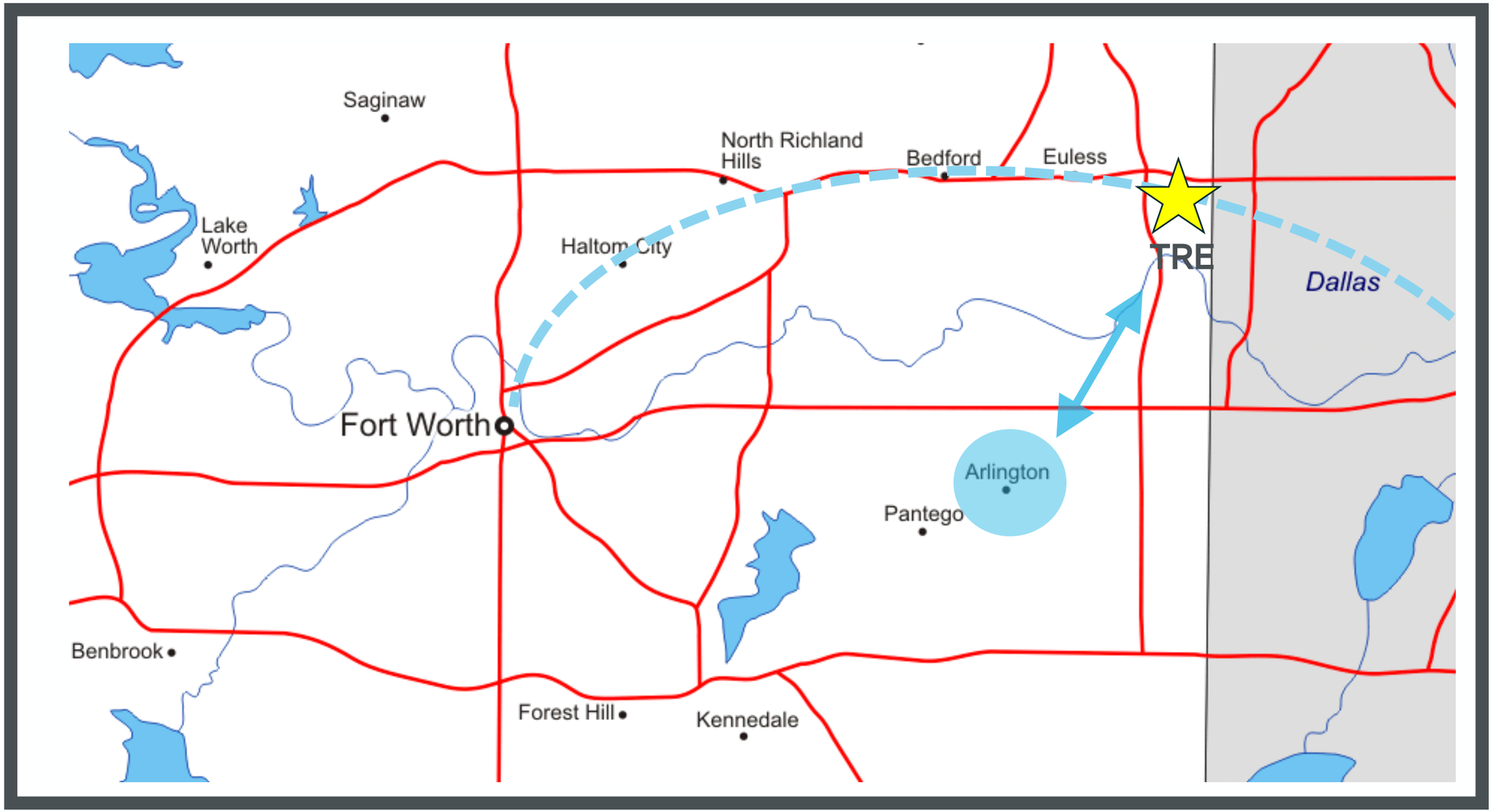
CASE STUDY

Problem

Long the nation's largest city **without a dedicated transit system**

Limited connectivity to regional commuter rail (Trinity Railway Express - TRE)

Problem


Saginaw
North Richland Hills
Bedford
Euless
Lake Worth
Haltom City
TRE
Dallas
Fort Worth
Arlington
Pantego
Benbrook
Forest Hill
Kennedale

Solution

Assemble use-case-optimized Mercedes-Benz **van fleet,** deploy **localized Via app**

Create **virtual corridor** between Arlington and TRE Station and **deliver shared journeys** within Arlington

Launching December 2017

Stay tuned!

ARLINGTON℠

THE AMERICAN DREAM CITY

via

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