



An AV for Everyone: Shared Mobility and Equity

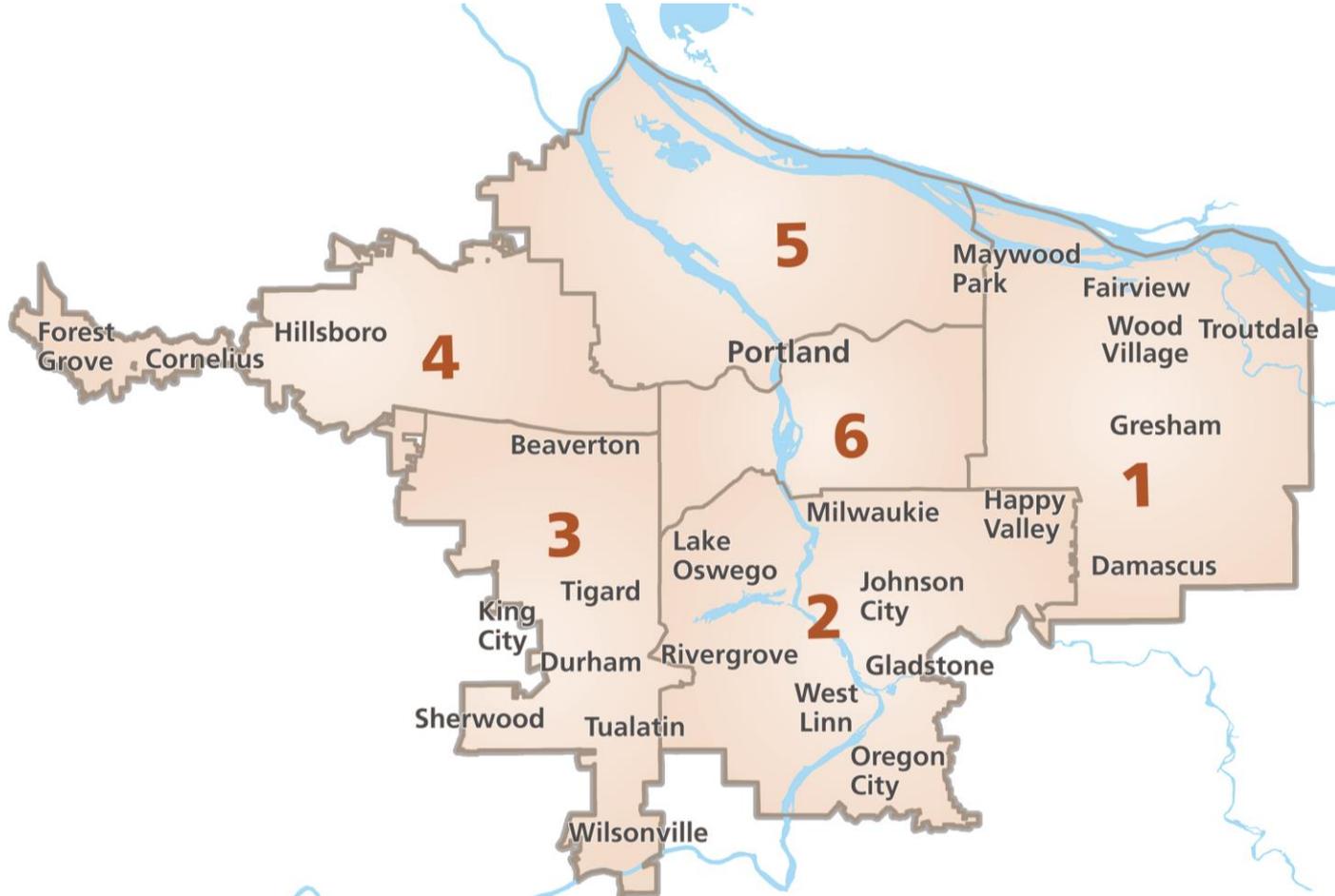
Urbanism Next Conference

March 6, 2018

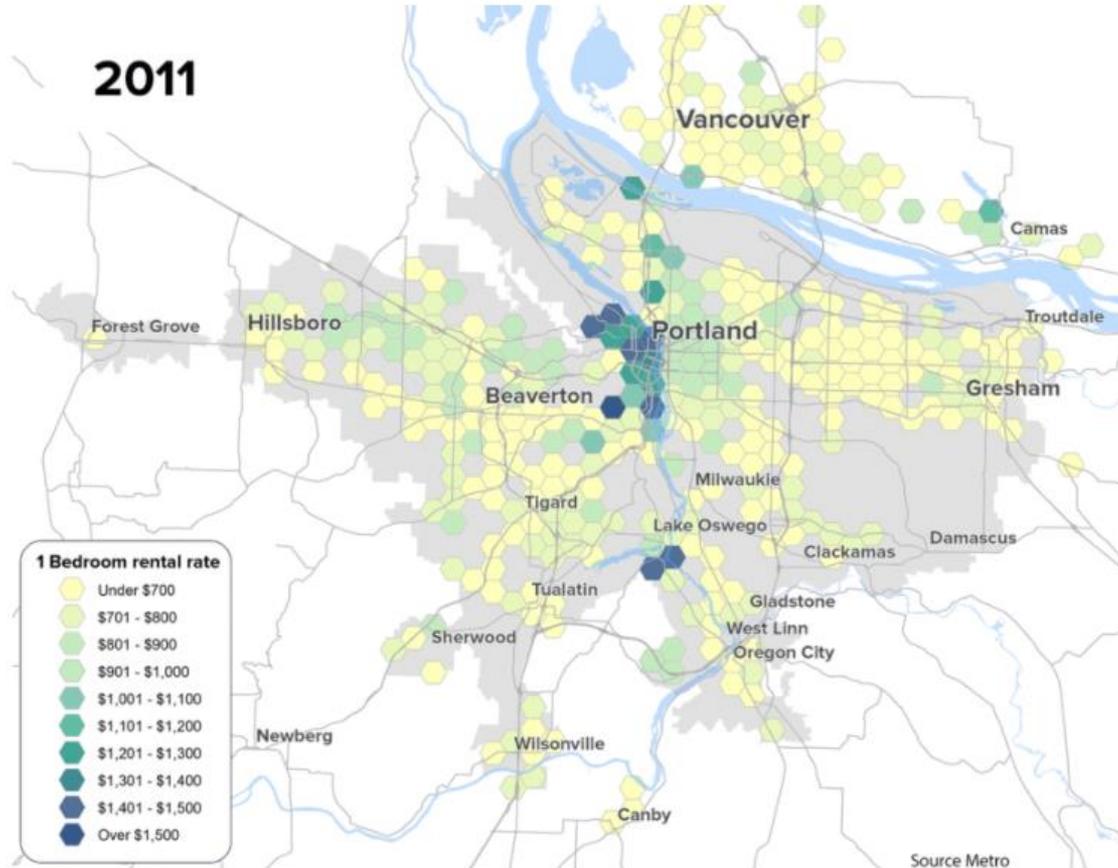
Agenda

- Introduction and overview (20 min.)
- Opening discussion (20 min.)
- Presentations (60 min.)
- Q+A (10 min.)
- Breakout groups (45 min.)
- Closing discussion (25 min.)

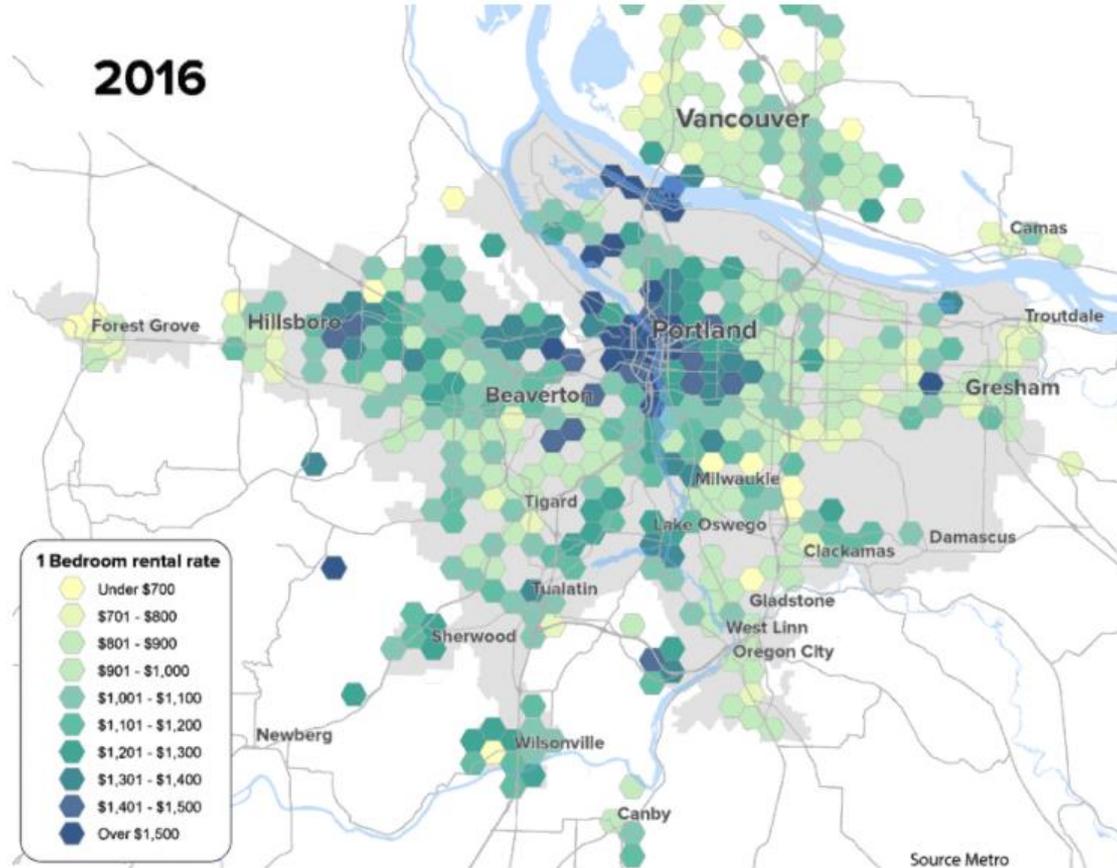
This is the Portland Region



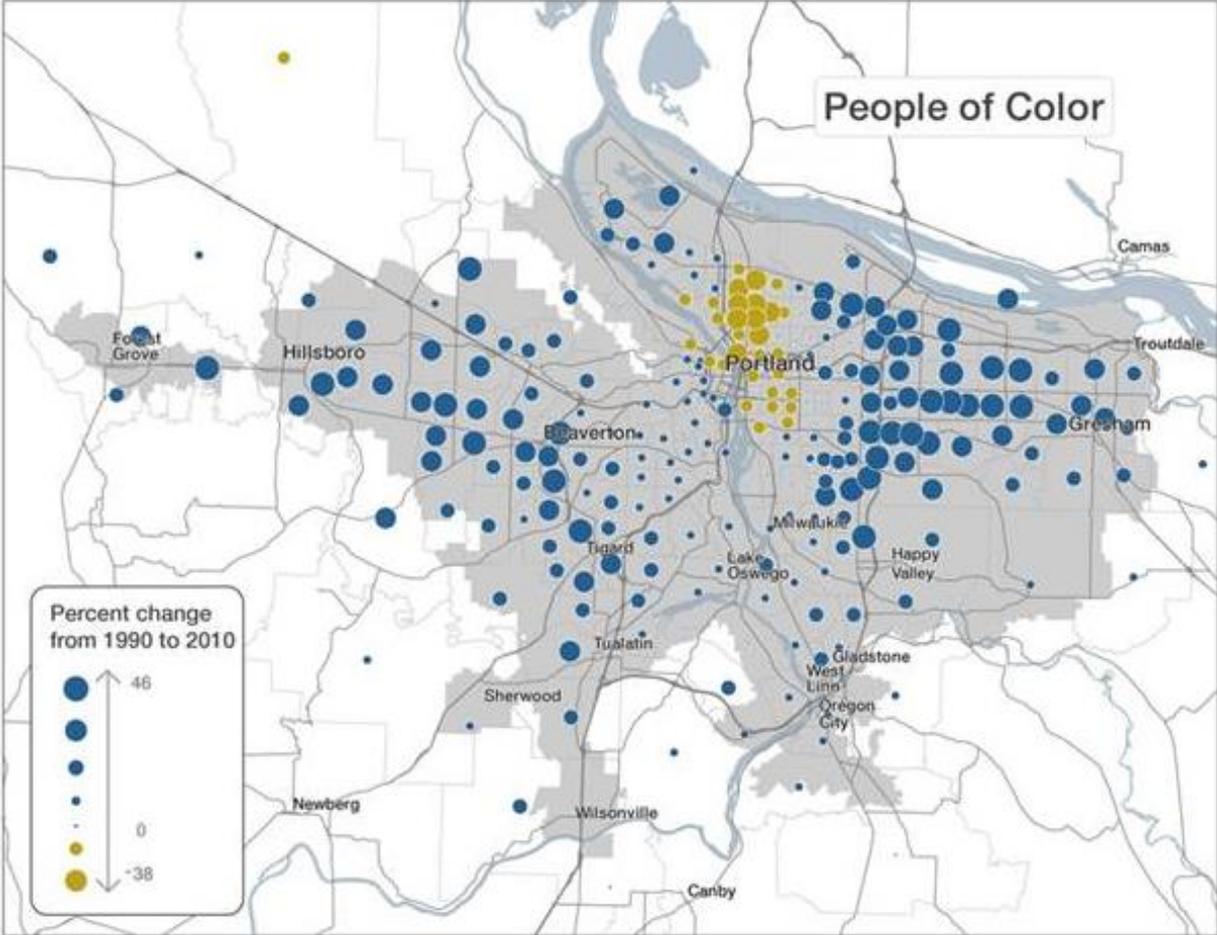
Housing costs have skyrocketed



Housing costs have skyrocketed



People of color are being displaced from the center



All of this deepens inequities in transportation

Historically marginalized communities face...

- Longer, less convenient trips
- Higher risks of being hurt or killed while traveling
- Less access to jobs

How can shared mobility help?

Emerging technologies



Automated vehicles (AVs)



Connected vehicles (CVs) and infrastructure



Electric vehicles (EVs)



Transportation network companies (TNCs)



AV/EV transit vehicles



Microtransit



Car share



Bike share



Travel information and payment



New data sources

Some are shared mobility services



Automated vehicles (AVs)



Connected vehicles (CVs) and infrastructure



Electric vehicles (EVs)



TNCs, aka ridehailing, ridesourcing



AV/EV transit vehicles



Microtransit



Car share



Bike share



Travel information and payment

...and don't forget transit, carpooling, vanpools, and taxis.

The first generation of AVs will likely be shared

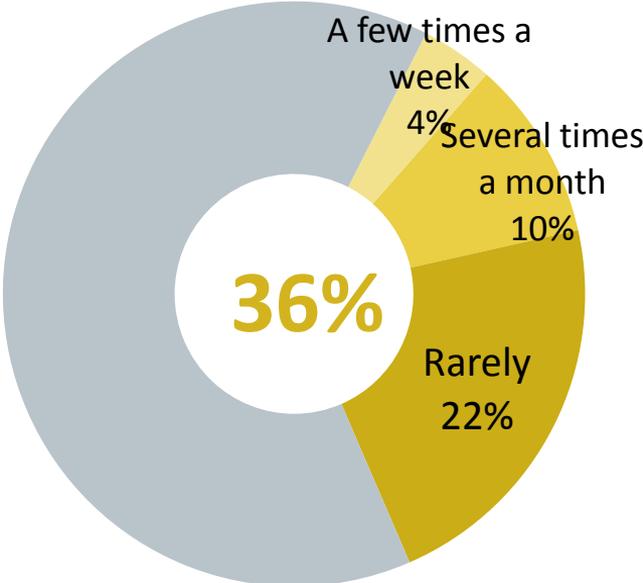
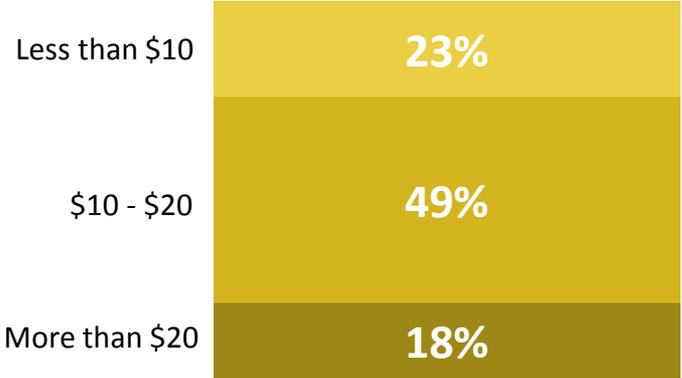


About one-third of our region's residents have used TNCs, most sharing occasional short trips with others.

How many people ride with you?



On average, were your rides...?



15% of our region's residents use TNCs multiple times a month. Who is (and isn't) in this group?

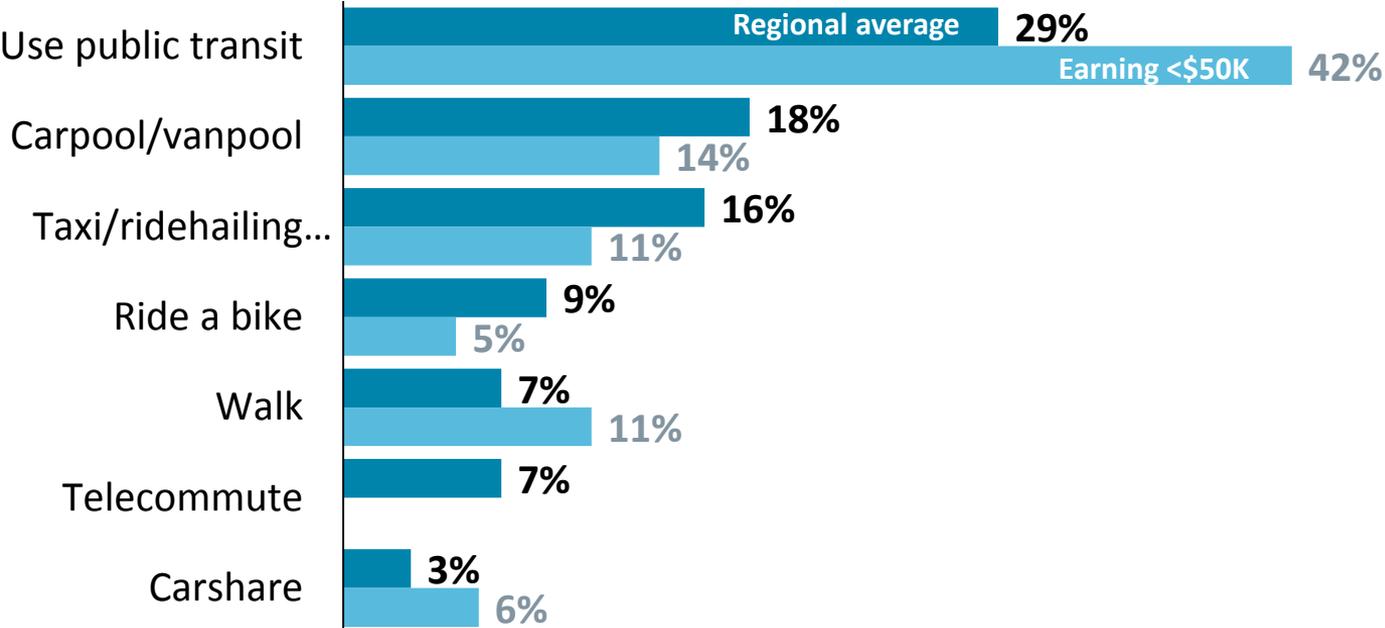
Over-represented

- People from Multnomah County
- Men
- 16-29 year-olds
- People earning \$100K or more

Under-represented

- People from Washington and Clackamas County
- Women
- 45+ year-olds
- People earning less than \$50K and \$74-100K

Transit is still the most important option when people don't have a car available... especially for low-income people



There are other barriers besides income



New mobility and transit are codependent



A healthy, well-functioning transit system supports other shared modes.

Almost everyone suffers from congestion.

But shared mobility may be hurting rather than helping. Studies have found:

- 14-42% of TNC riders would have otherwise taken transit.
- 47-56% are shifting from modes that produce less congestion.
- Many other shared mobility services slightly decrease transit ridership.

Equitable shared mobility is...

Accessible for all, regardless of age, physical ability, digital access, language/cultural background or documentation.

Affordable enough to be used by people of all income levels to meet their daily needs.

Available throughout our region, with reasonable variation in service quality, fares, and wait times.

Non-discriminatory; companies and drivers cannot deny people service on the basis of race, color, national origin, religion, sex, disability, or age.

Safe for both riders and non-riders.

Opening discussion

Please take 15 min. to discuss:

- What are you hoping to learn from this conversation?
- What promising opportunities do you see for AVs and new mobility services to create more equitable communities?
- What concerns do you have about how AVs and new mobility services will negatively impact marginalized communities?

Please designate someone to take notes and briefly (2-3 min.) report back to the group.

Presentations

- Vivian Satterfield, OPAL; and Aaron Golub, PSU
- Jon Isaacs, Uber
- Tim Navarrette, ReachNow
- Zach Henkin, Forth
- Ingrid Fish, City of Portland Bureau of Planning and Sustainability



OPAL Environmental Justice Oregon

What steps can be taken to ensure that the coming wave of transportation innovations will benefit all groups equitably?

Or even better - achieve *transportation justice*?





Collaborative Research - OPAL, Forth and PSU

**Community-based Assessment of
Transportation Needs to inform
City of Portland Smart Cities Plan**



Research Questions

1. How can smart mobility technologies address the current and future needs of transportation disadvantaged communities?
2. What are the barriers to using smart mobility technologies experienced by different communities?
3. What potential solutions show the most promise in overcoming these barriers?



Methods

Two focus groups

- Bus Riders Unite

- Lower-income East Portland residents

Larger sample survey

- Online and in-person at several community events and intercepts on buses and transit stops

- August - October of 2017

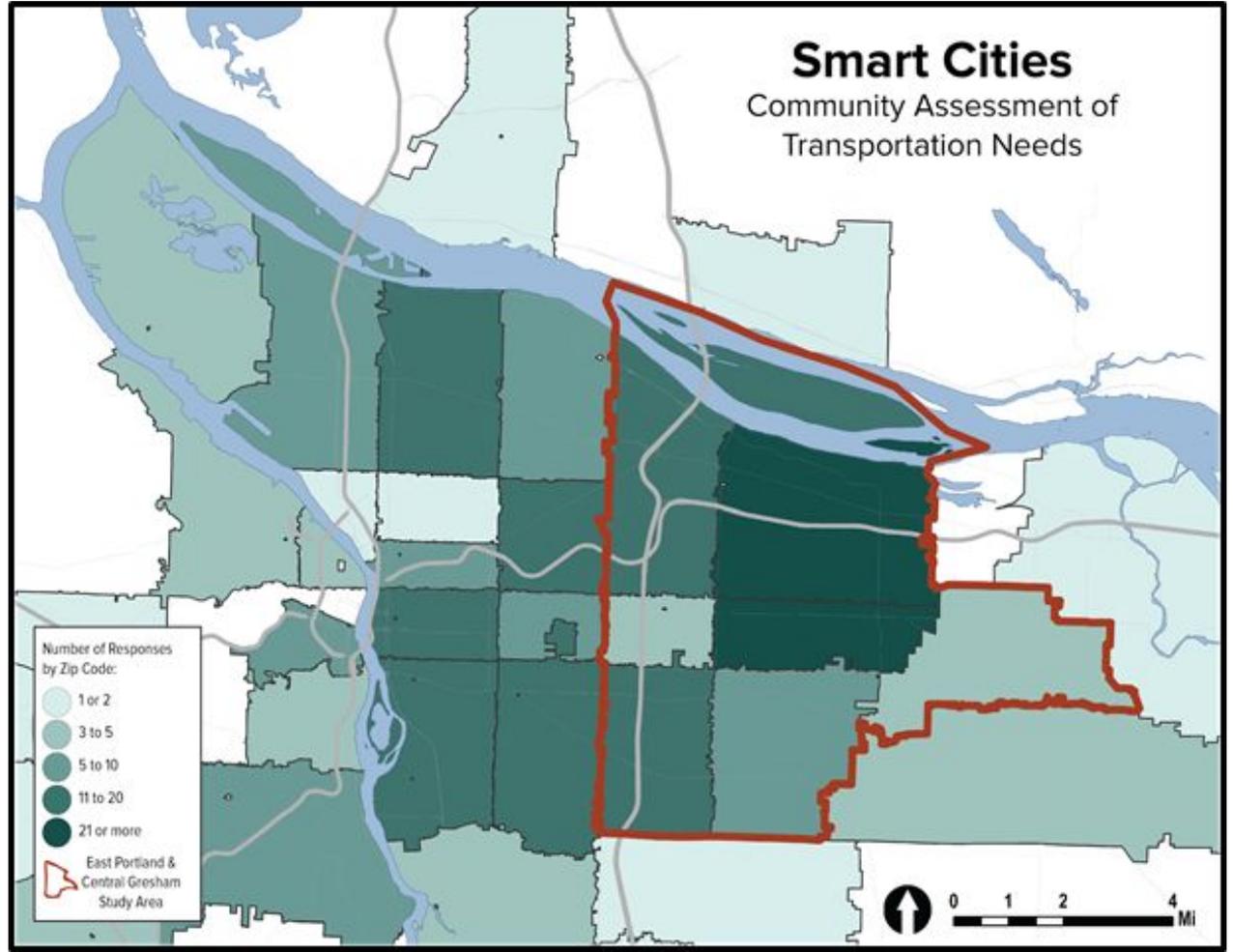
- 300 survey responses

- Representing a racially, socio-economically diverse group of individuals

 - 46% of survey respondents identifying themselves as people of color

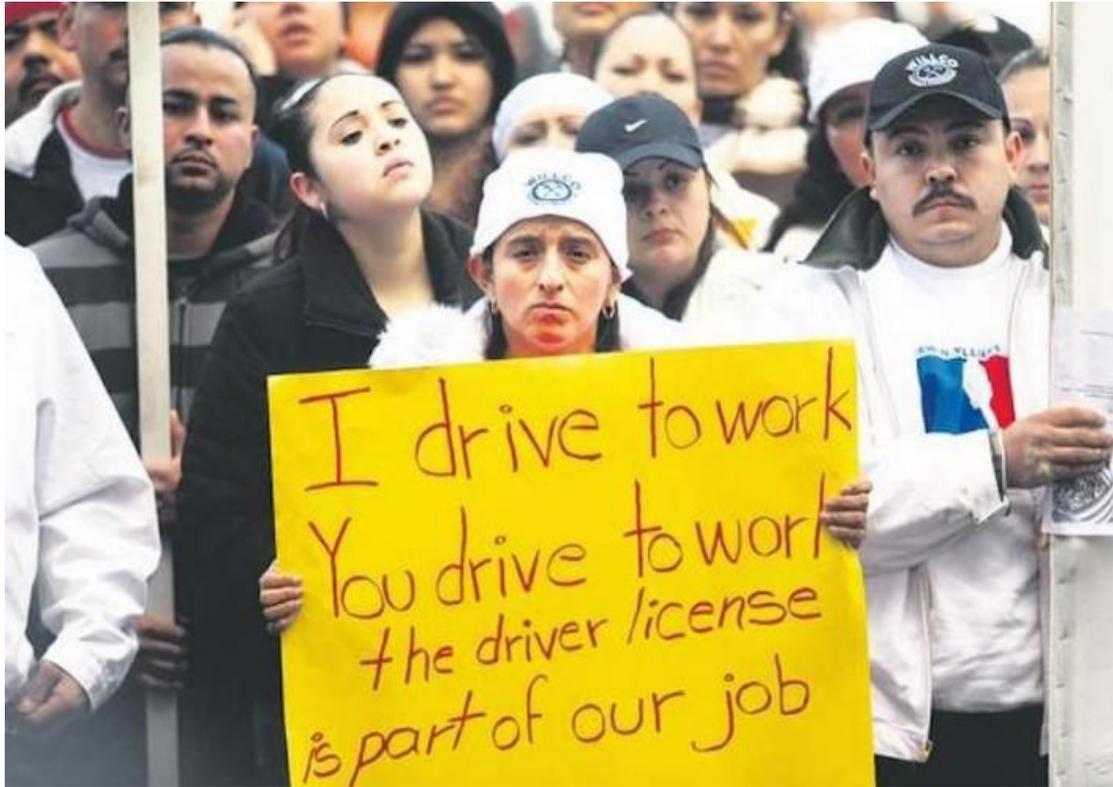
 - 55% reporting lower than the study area's median income; solid distribution of ages

Where we surveyed



Results focusing on Race/Ethnicity:

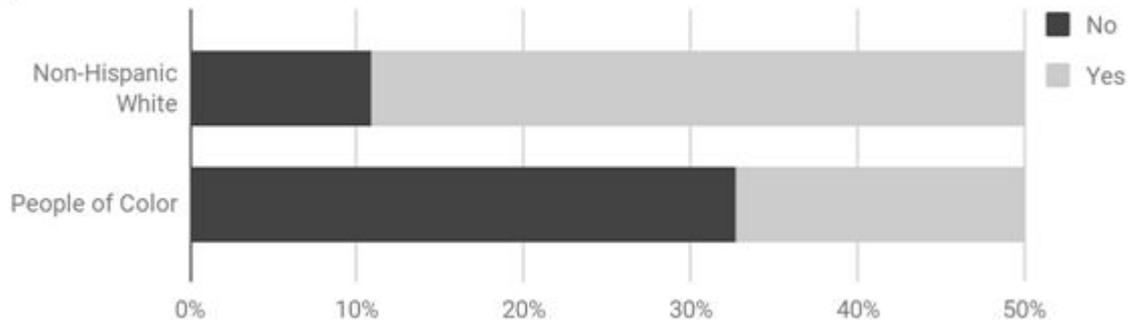
Barriers to Access: Documentation and Banking



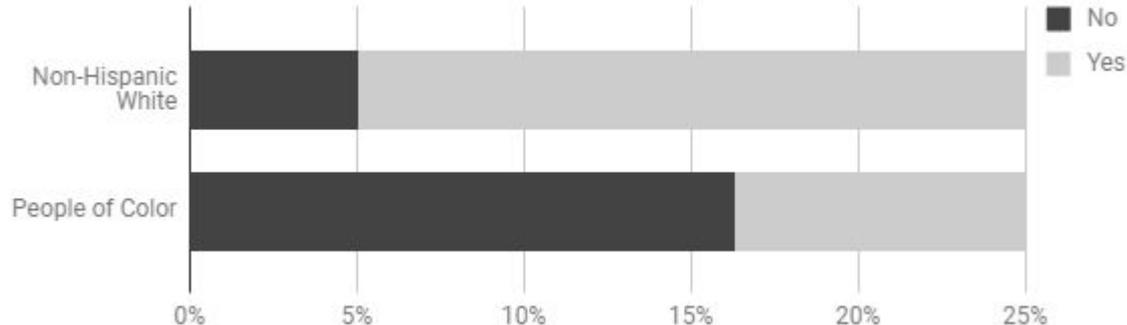
Significant disparities by race/ ethnicity

(and even higher
by income)

Do you have a driver's license?



Do you have access to a checking account?

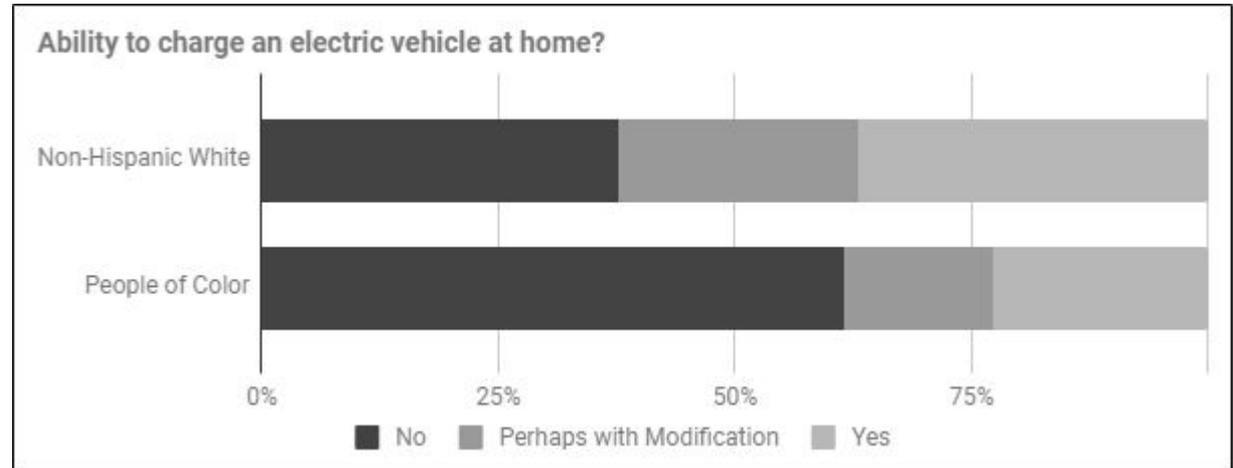
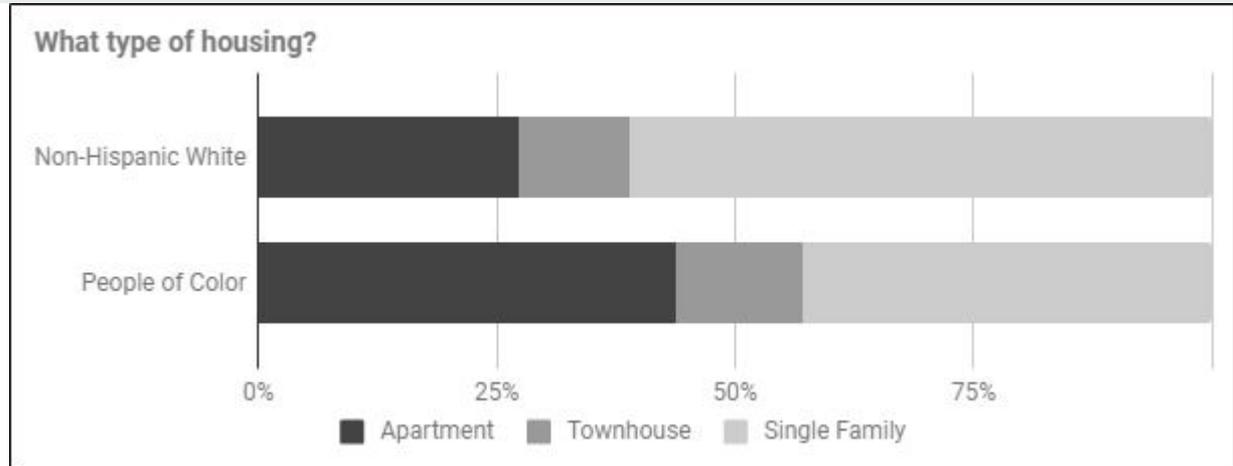


Barriers to Access: Housing Type and Ability to Charge Electric Vehicles



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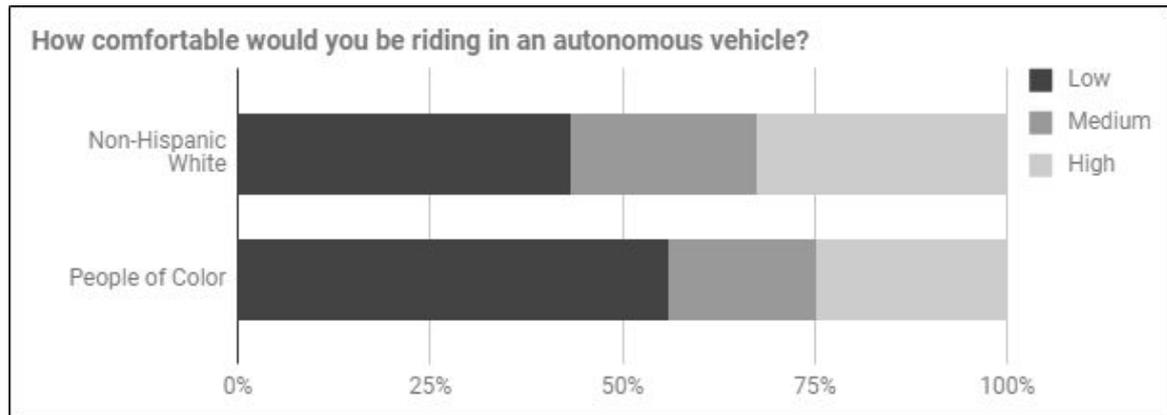
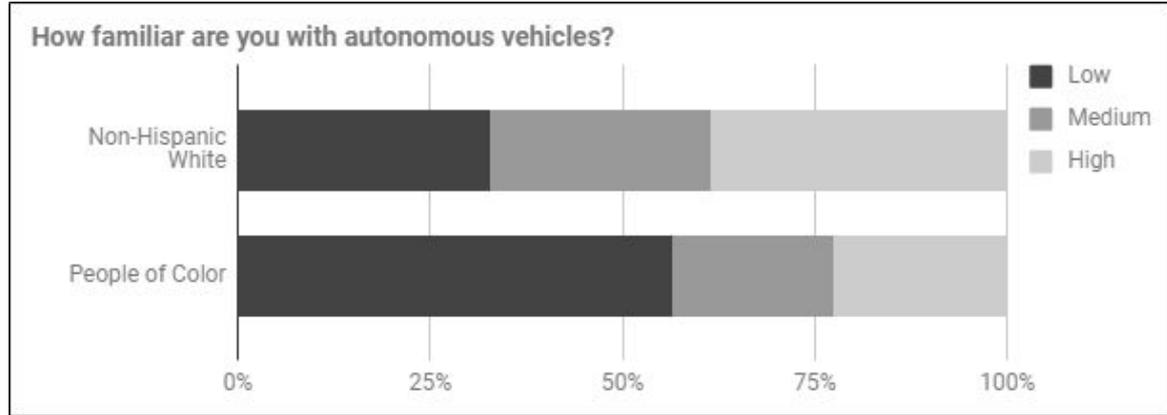
Significant disparities by race/ ethnicity and by income



Barriers to Access: Differences in familiarity and comfort with new technologies



**Slight
difference in
familiarity and
interest in
autonomous
vehicles by
race/ethnicity**



The “Digital Divide” and Smart Mobility: Mixed signals



Use SP for:	POC vs WNH
Public Transit Info	More
Navigation	No Difference
Shared Vehicles	More
Share Bicycles	No Difference
Licenced?	Less
Banked?	Less

Focus group participants:

Language is an issue



“I like the [transit] screens in downtown. I can read a little bit of English , but the time I was lost, I had to ask because the **instructions were only in English**. So not everyone can understand. In a situation that is unexpected like that, **I don't know what the screen or the conductor is saying then it's frustrating**. It makes you fearful...”

Trust is an issue

“I do have a bank account, but am afraid TriMet will use it and share it.”

“I don't have any information on my phone. I am afraid people will hack my phone. I would rather pay cash.”

Community Recommended Policies



#1 Real time communication between buses and riders about crowding, arrival time, etc. (n=140; 48.3%)

#2 Public wifi and charging stations for smartphone/mobile technology (n=135; 46.6%)

#3 Rebates or financing to help buy clean electric vehicles (n=106; 36.6%)

#4 Smartphone apps for transportation services translated to languages other than English (n=95; 32.8%)

#5 Self driving neighborhood shuttles to bring people to transit stops (n=86; 29.7%)

Capacity building recommendations



Which of the following types of neighborhood institutions or places would you most trust to lead trainings?

Most popular:

- Public Libraries (204, 70.6%)
- TriMet Transit Stations (202, 69.9%)
- Neighborhood Community Centers (172, 59.9%)



Thank You

Mike Serritella *Portland State University*

Jai Singh *Community Organizer*

Professor Aaron Golub *Director and Associate Professor, Nohad A. Toulan School of Urban Studies and Planning, Portland State University*

Survey respondents and focus group participants

Forth Mobility

Contact: Vivian Satterfield *Deputy Director, OPAL Environmental Justice Oregon* vivian@opalpdx.org

UBER

Driving Sustainable Mobility

FEBRUARY 2018



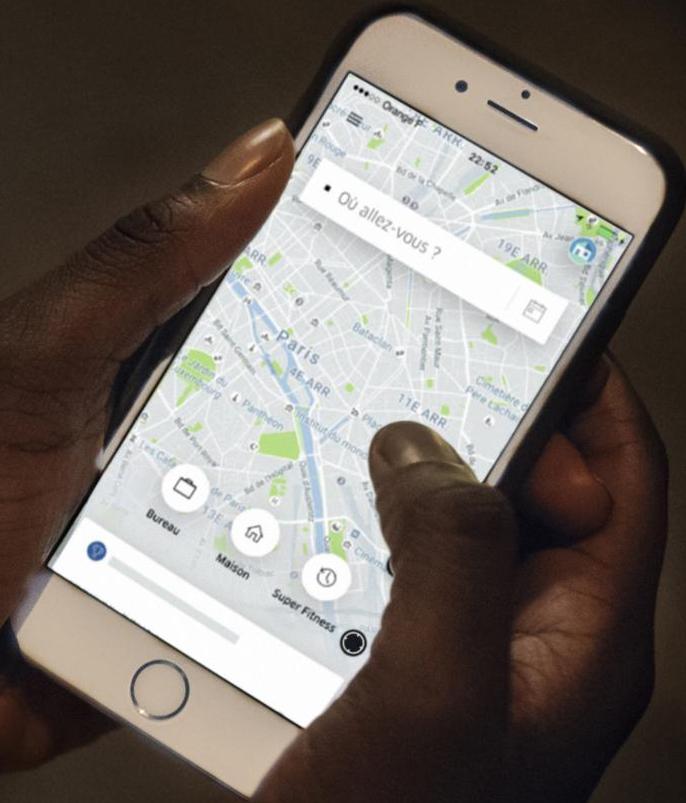
Uber

Point-to-point, on demand mobility

Mobile tech enabled

Network of mobility providers and consumers

Two-way, flexible participation



Uber

Mobility globally

600+

Cities

78

Countries

300

Airports

3M

Active drivers

5B+

Rides completed

15M

Rides per day

Sharing by design

Uber's business works best when we **ENABLE MORE PEOPLE TO MOVE WITH...**

FEWER

FULLER

MORE
EFFICIENT

...VEHICLES &
TRIPS

FEWER

One driver on Uber's network can serve as many as 10 or more riders per day

FULLER

2 strangers in 1 car is how we began...
...3 or more is POOL & other innovations

MORE EFFICIENT

A driver on Uber's network knows every dollar saved on fuel is a dollar in their pocket

FEWER

Rider-driver GPS matching
“Forward dispatch”
Trip swap technology
Pre- & rematch technology
...

FULLER

POOL
UberXL
Split-fare
Multi-destination trips
...

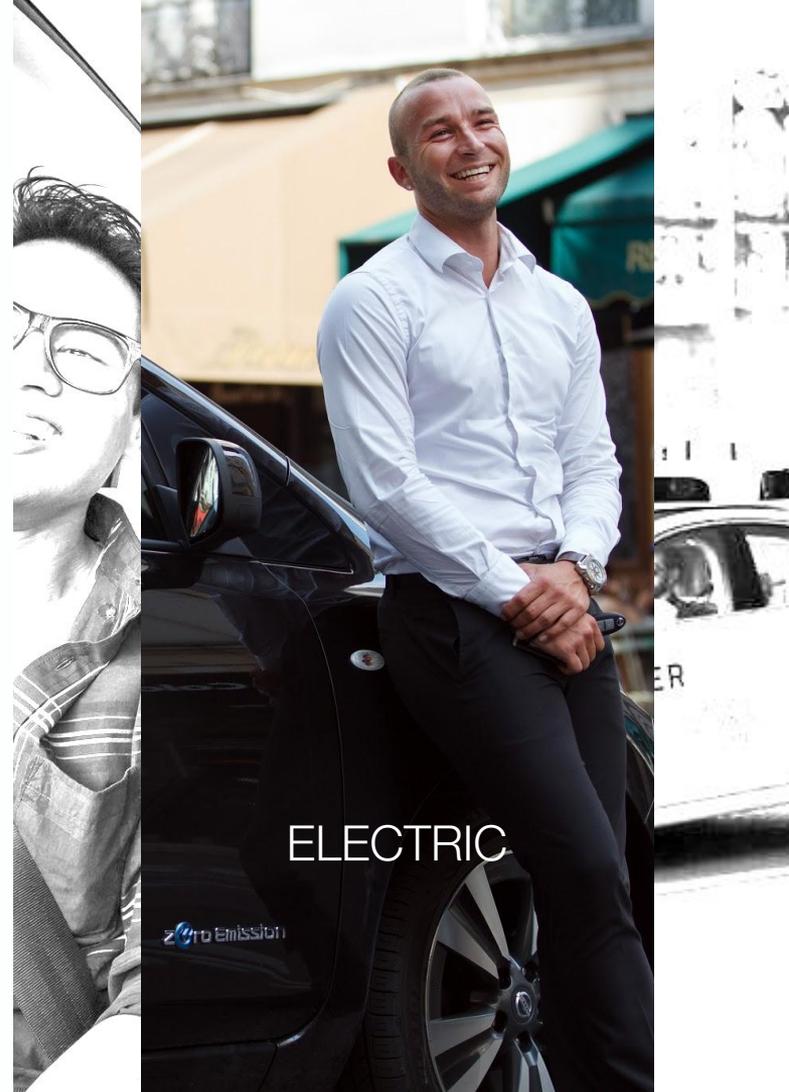
MORE EFFICIENT

Smart routing
Aggressive driving notifications
Vehicle-to-trip right-sizing
Driver vehicle solutions support
EV & hybrid focused initiatives
...

Ridesharing helps EV adoption,
EVs help ridesharing expansion

Electric vehicles <1% global new car sales after decades of government spending ... today, a hundred EVs on Uber's network can serve 100,000's of riders

In 2017, on Uber's network in the US & Europe:
thousands of EV drivers delivered millions of rides



Uber can help drive equitable access to EVs for both riders and drivers

For Drivers

- Cost of new vehicle can be covered, in part, by ability to drive for Uber and earn extra income.
- Partnership with Forth provides free financing advice including qualifying for federal and state tax rebates.
- EV Ambassador program provides extra monthly stipend to drivers for carrying EV informational materials.

For Riders

- More EVs on Uber increases access to a clean, affordable ride.
- First/last mile to public transit. Reliable rides home in the evening.

Uber has grown about 3x faster in historically underserved areas of Portland.

- Outer East and North Portland - Approx 323%
- Rest of Portland - Approx 122%



Portland EV Program: How it works

- **EV Ambassadors:**
 - Forth Mobility trains drivers to effectively engage riders in EV-related conversations.
 - EV Ambassadors carry educational content on EVs for distribution to riders in their cars. Materials and app refer interested riders to the Forth Mobility EV showroom.
 - Drivers participating in the EV Ambassadors initiative may be eligible for \$30 / month charging credit.
- **Assist PGE with the installation of new fast charging stations. - #1 priority for drivers.**
- **In app driver and rider referrals** to Forth Mobility for special purchasing or long term lease deals.



Automated mobility promises dramatic efficiency gains in the future ... **so we're real-world testing today**

Automated UberX: Pittsburgh & Phoenix

- Over 1M miles
- Over 30,000 riders

Automated heavy duty trucks & light-duty cars testing on CA roads



AUTOMATED

New solutions are emerging to drive a more sustainable future of mobility

New mobility solution themes



BEHAVIORAL SHIFT

...away from solo, private car trips to shared journeys



VEHICLE GREENING

...via turnover to cleaner fuels and higher efficiency technologies



COMPLEMENTARITY

...with public transit and multi-modal mobility on more sustainable modes

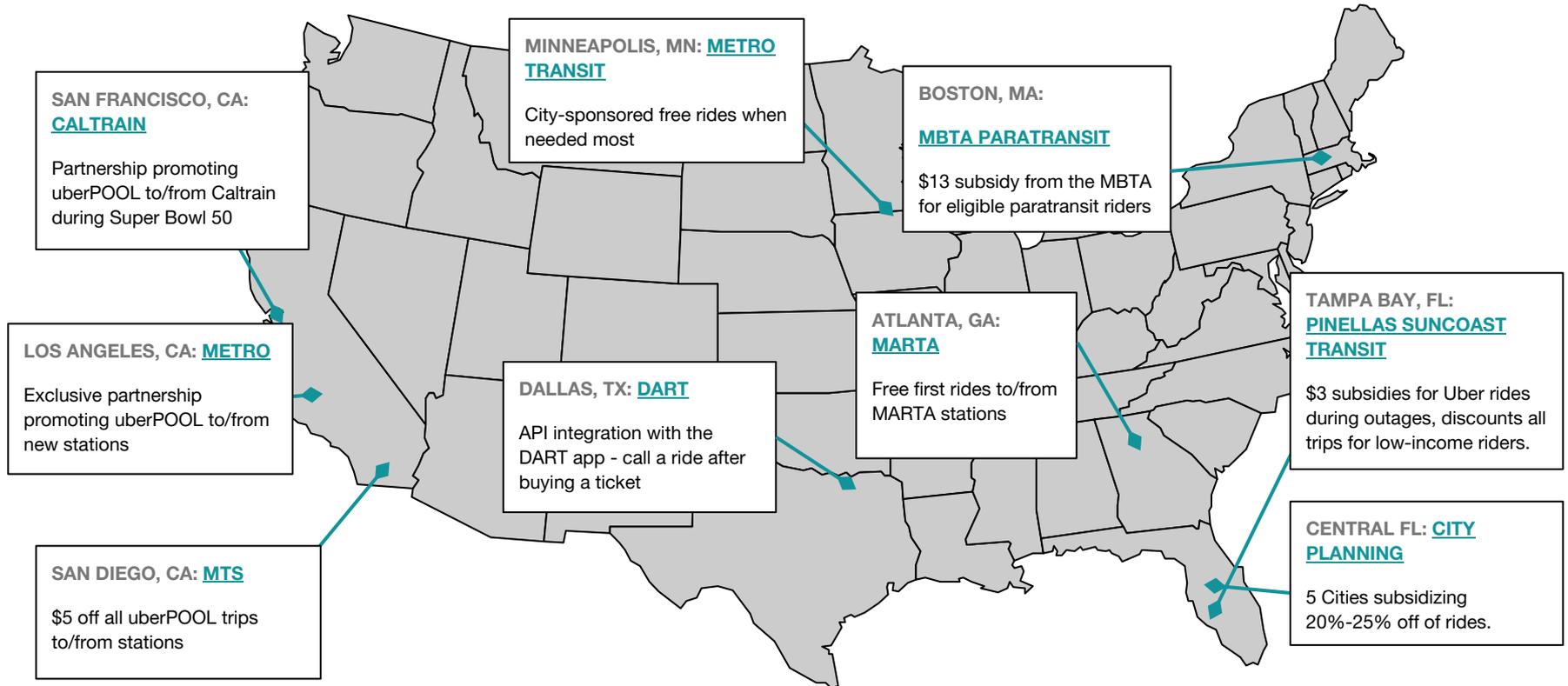


INFRASTRUCTURE TRANSFORMATION

...to more human-centric designs as demand from private cars shrinks

Transit Partnerships

We have learnings from partnerships across the country and now know what works for improving first mile / last mile logistics



Multi-Modal Partnership with TriMet

- TriMet is the first transit agency in the nation to be given real time access to Uber's API.
- Open Trip Planner will allow multi-modal trip planning. Beta in 2018.
- Riders will be able to see estimated wait times, trip costs, and ride times to and from TriMet stations across Portland.



UBER

Thank you

Jon Isaacs

+1 503.757.5721
jisaacs@uber.com



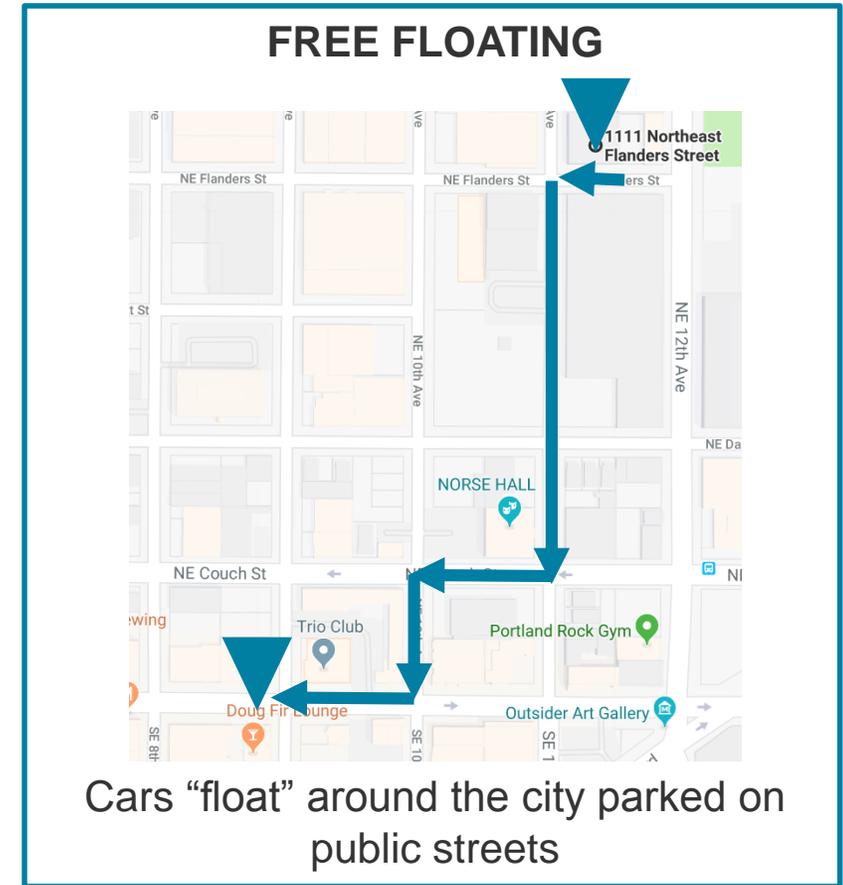
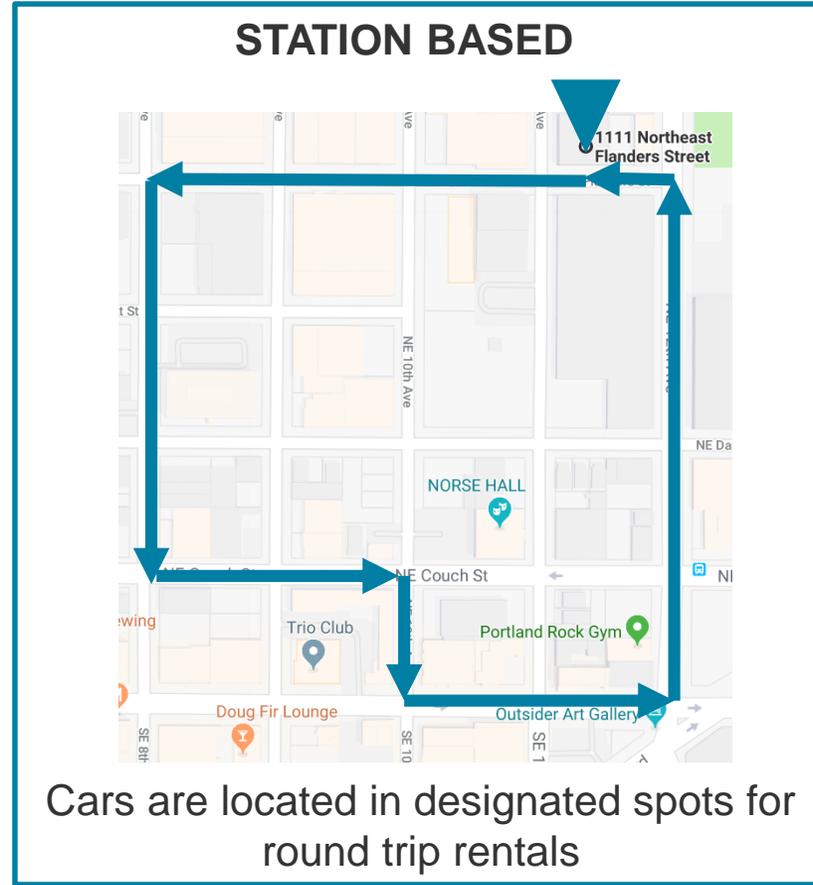
An AV for Everyone: Private public partnerships

ReachNow
Tim Navarrette
Community Manager
03/06/2018

What is car sharing?

Short term car rental

Car Sharing is short term car rental – instead of renting cars by the day Car Share vehicles can be rented by the hour or minute. There are two types of Car Sharing:



Who is ReachNow?

Mobility services by BMW

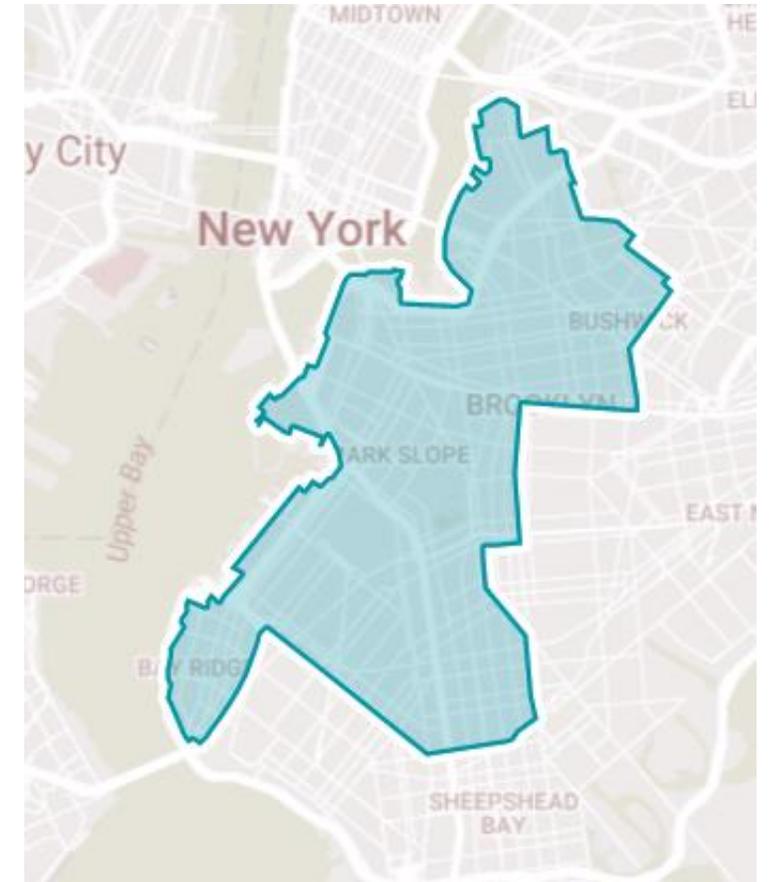
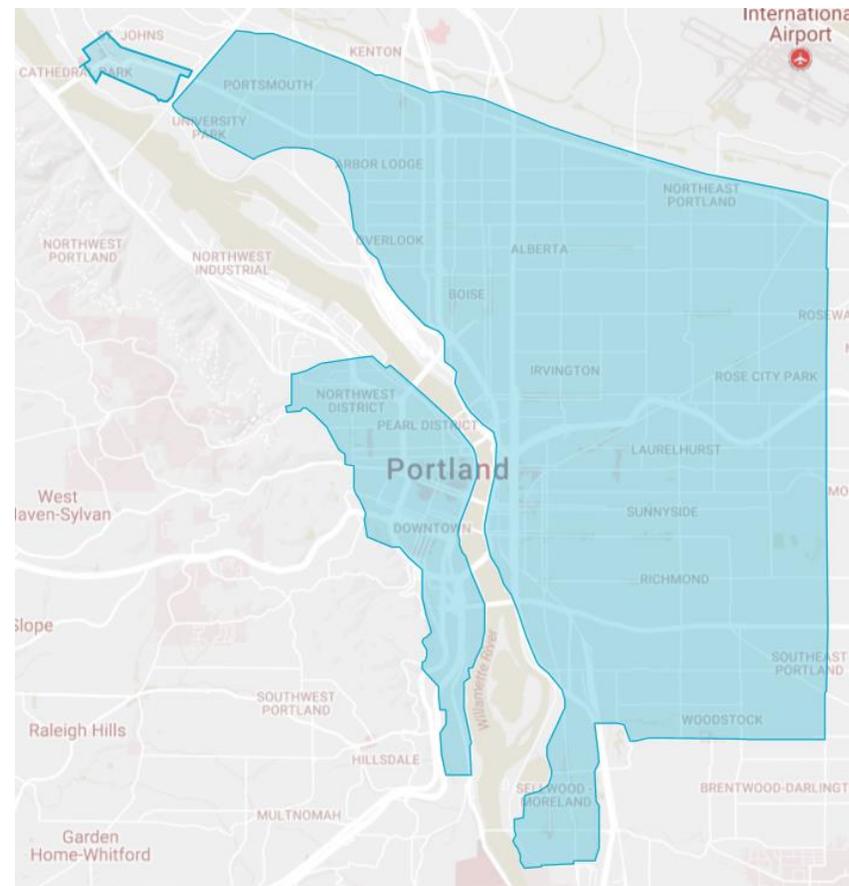
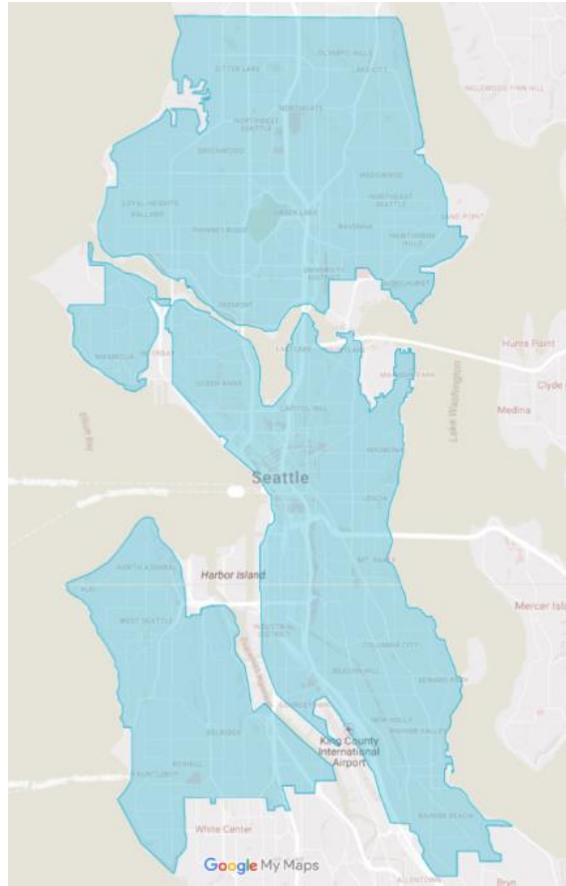
- Started as a pilot in the CA Bay Area in 2011
- Moved HQ to Seattle to launch first city April 2016
- Portland August 2016 and Brooklyn 2016
- Free floating car share
- ReachNow Ride Seattle Pilot Launch [ride share]

Our mission is to empower members to move seamlessly through their world and experience the people and places that matter most to them.



Free floating car share

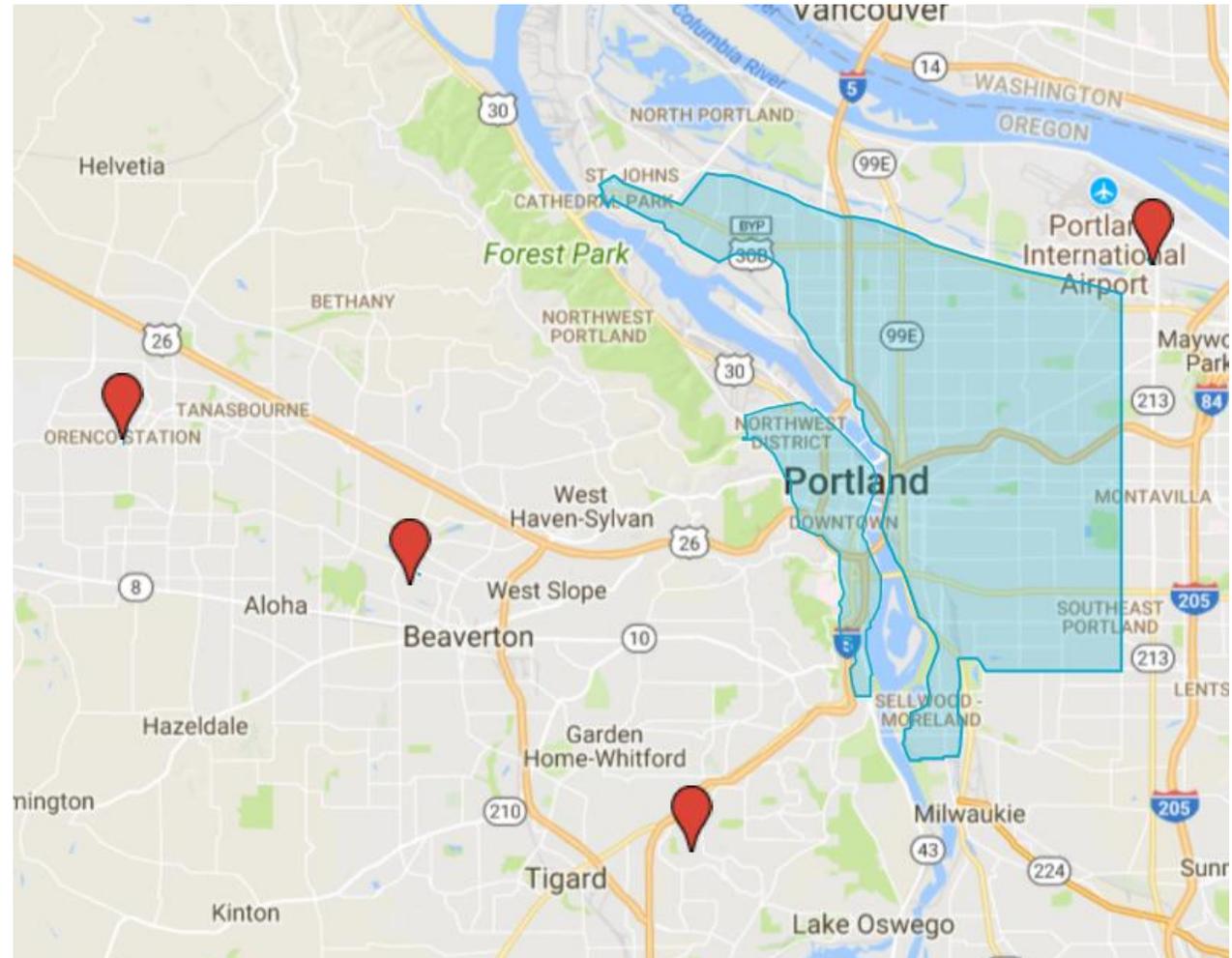
Contiguous areas and public partnership



An urban solution for a suburban problem

Portland's west side

- ReachNow's first non-contiguous islands of service
- Private partnerships with large employers and property management companies
- Public partnerships with the City of Hillsboro
- Initial success with continued improvement



How do we expand our business into new communities?

Population, partnerships, presence, pilots

POPULATION

- Is there a viable membership base?
- What is the public/active transit infrastructure?
- Will usage warrant expansion?

PARTNERSHIPS

- HOAs/Neighborhood organizations?
- Can we operate in parking right of way?
- Time restricted/paid parking?
 - Private partnerships to be had?

How do we expand our business into new communities?

Population, partnerships, presence, pilots

PRESENCE

- Where is the best place for vehicles/parking?
- Where can we be to physically promote?
 - Transportation/benefit/sustainability fairs
- How can we keep cadence?

PILOTS

- ...not necessarily permanence
 - ...unless permanence!
- Can we test all of this and iterate for success?

What is the underlying thread?

Education

POPULATION

RESIDENTS

EMPLOYEES

BUSINESS OWNERS

NEIGHBORS

PARTNERS

MUNICIPALITIES
HOA/NEIGHBORHOOD ASSOCIATIONS
TRANSPORTATION COORDINATORS
HR DEPARTMENTS
SECURITY PERSONELL
LOCAL LAW ENFORCEMENT
LOCAL PARKING ENFORCEMENT

PILOTS

WHAT IS THE GOAL OF PARTNERING?

WHAT CAN WE TEST?

WHAT IS SUCCESS?

HOW CAN WE ITERATE?

PRESENCE

WHERE

FREQUENCY

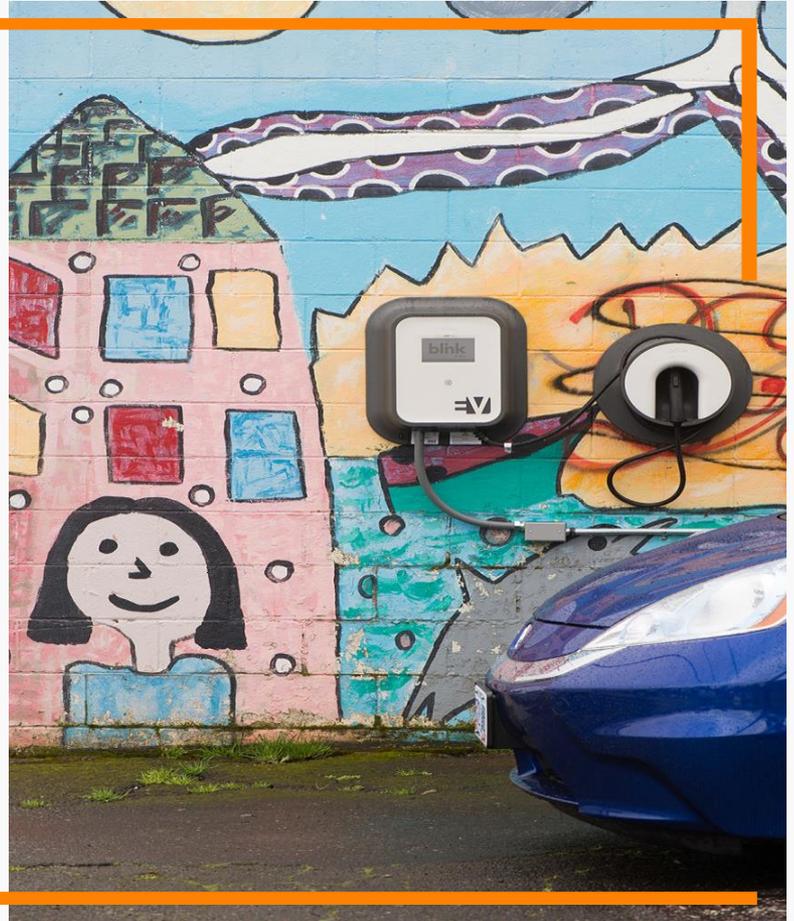
EXECUTION



An aerial photograph of a city street grid, likely New York City, showing a dense arrangement of buildings and streets. A semi-transparent white banner is overlaid across the top portion of the image. The text "Thank you." is written in a blue, sans-serif font on this banner. The background image shows a mix of older brick buildings and modern glass-fronted skyscrapers. A prominent yellow taxi is visible in the lower right quadrant. The overall scene is captured from a high-angle perspective, looking down on the city.

Thank you.

Zach Henkin, Deputy Director
March 2018



Who we are:



Nonprofit (501c6 & 501c3)

Mission: Forth is transforming the way we get around. Through innovation, demonstration projects, advocacy and engagement, we are advancing electric, smart, and shared transportation in the Pacific Northwest and beyond.

Funded by grants, member companies, and Roadmap—our annual conference

Membership 130+ companies, utilities, local governments, other stakeholders

New mobility options are not (yet) reaching diverse communities

- 87% of carshare users were white
- 80% of DC bikeshare users were white
- Both carsharing and bikesharing used more by higher income people
- Use of TNCs higher among younger and more education
- 8% of households are unbanked

Many new and used electric options



Let's avoid “privileged mobility”

“For low-income households—roughly the poorest 25 percent of households—only housing and food expenditures constitute larger budget shares than transportation expenditures.”

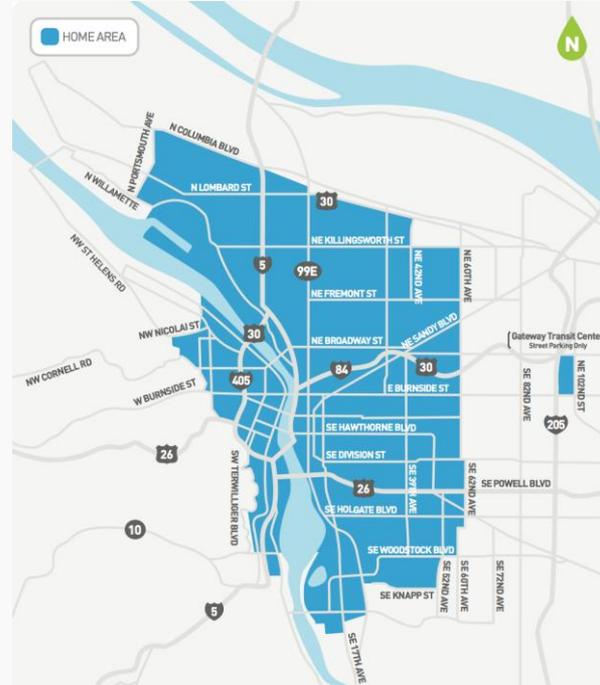
Public Policy Institute of California, *How Much Do California's Low-Income Households Spend on Transportation?*, 2007



Community Electric Vehicle Project

Hacienda CDC in NE Portland

- 85% of Cully students qualify for free or reduced lunch
- Poor transit access
- Outside of most car share territories
- Redlined by Getaround
- 325 units of community-centered affordable rental housing



Community Electric Vehicle Project



Community E-Bike Project

Community Cycling Center in NE Portland

- Measure 88 denies Oregon undocumented immigrants drivers licenses
- Portland has the highest bike commute in the U.S. (for large city)
- Biketown bike doesn't extend to areas of need
- E-bikes are a healthy



Community E-Bike Project



Commuting on our ebike **saves our family time and money, allows me to spend quality time** outside with my kids and generally makes me a happier person.”

Ingrid Fish, SE Portland



www.forthmobility.org/ebikes



Questions?

Zach Henkin

zachh@forthmobility.org

www.forthmobility.org

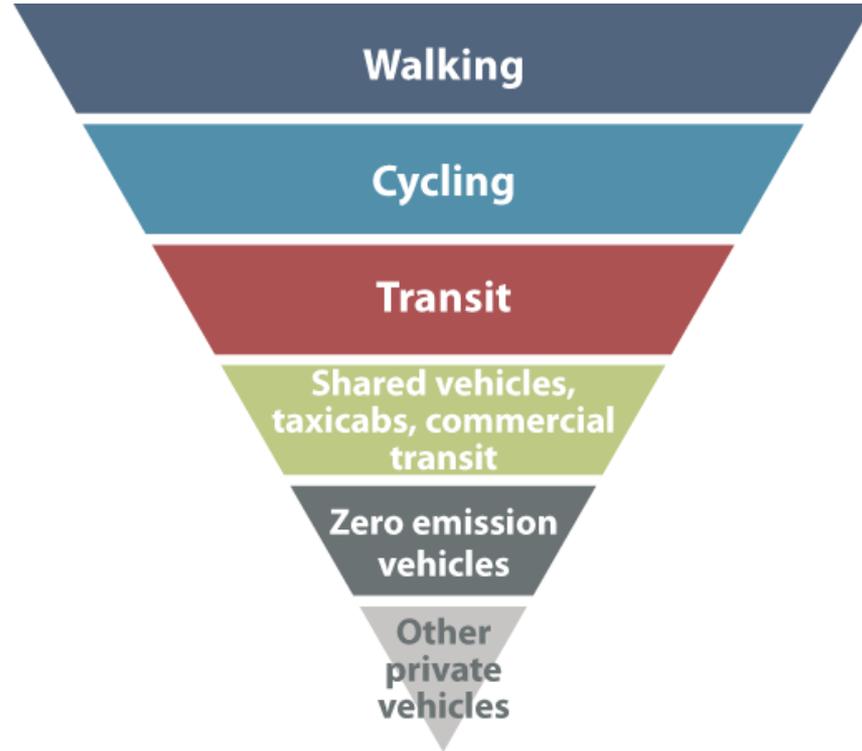
Twitter: [@zachenkin](https://twitter.com/zachenkin)





Ingrid Fish
City of Portland
Bureau of Planning & Sustainability

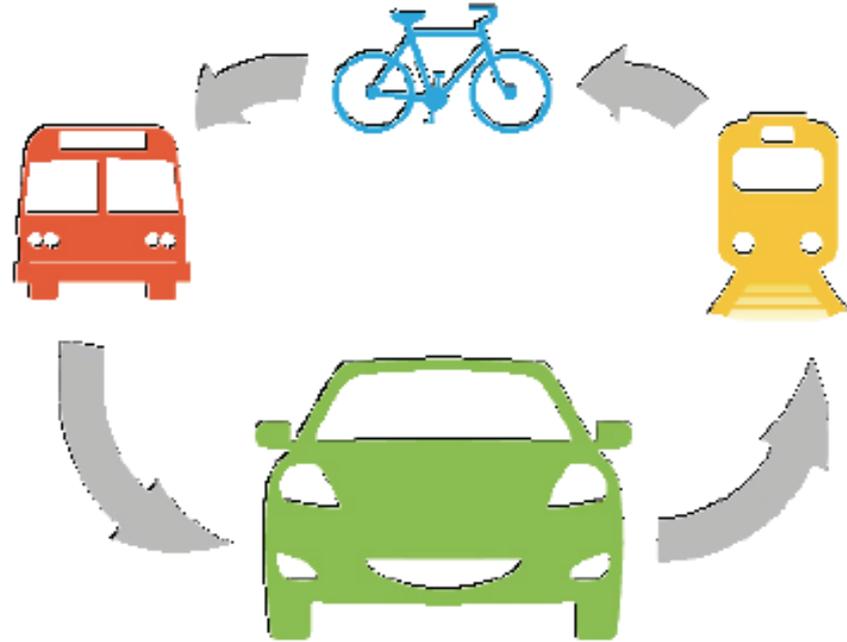
TRANSPORTATION HEIRARCHY



Sources: City of Portland Climate Action Plan, Comprehensive Plan, and Transportation Systems Plan.

SHARED MOBILITY BENEFITS

- Increase transportation options for POC & LIC
- Decrease Transportation Costs
- Employment opportunities



WHAT CAN CITIES DO TO MITIGATE POC & LIC BARRIERS TO SHARED MOBILITY?

- Technical Assistance
- Dedicating Space
- Planning
- Research
- Incentives
- Programs
- Pilot Projects
- Mandatory Requirements
- Fees



TECHNICAL ASSISTANCE



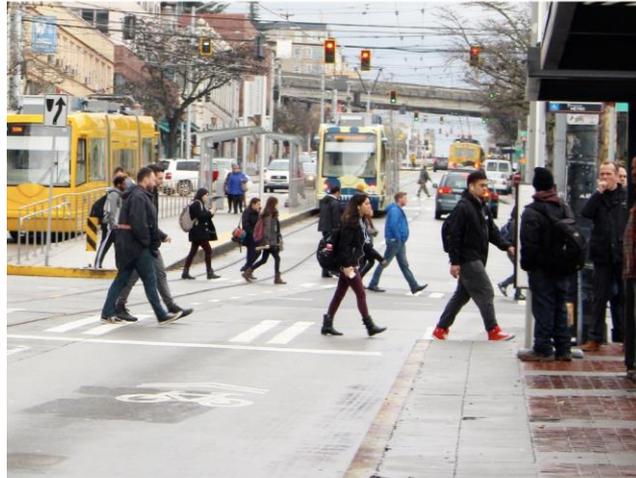
DEDICATING SPACE



PLANNING

Seattle Department of Transportation

NEW MOBILITY PLAYBOOK



Version 1.0

September 2017



Seattle
Department of
Transportation

RESEARCH



INCENTIVES



PROGRAMS



PILOT PROJECTS



Photo by Marco Verch, from Flickr creative commons

MANDATORY REQUIREMENTS



FEE/PRICING



Questions?

Breakout groups (45 min.)

Your table group will be assigned a community in the Portland region. Think about the needs of this community and discuss:

- What shared mobility services could help meet needs?
- What barriers are people likely to face to using shared mobility?
What solutions might help?
- What role could public agencies, shared mobility companies, and community groups play?

Please designate someone to take notes and report back.

Closing discussion