



# Urbanism Next

Understanding the Impacts of Emerging Technology on Cities

**URBANISM NEXT CENTER**

at the University of Oregon



Sustainable Cities Initiative



UNIVERSITY OF OREGON

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University of Oregon

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 @nicolarco

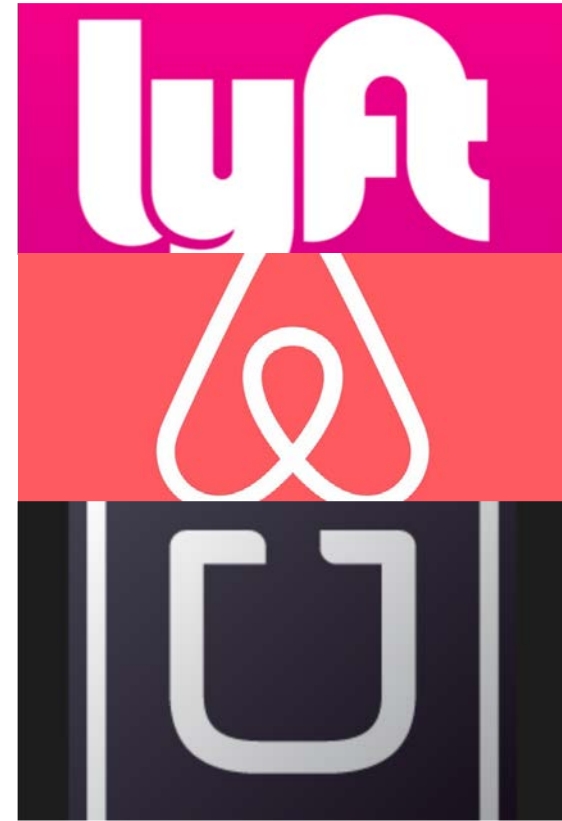


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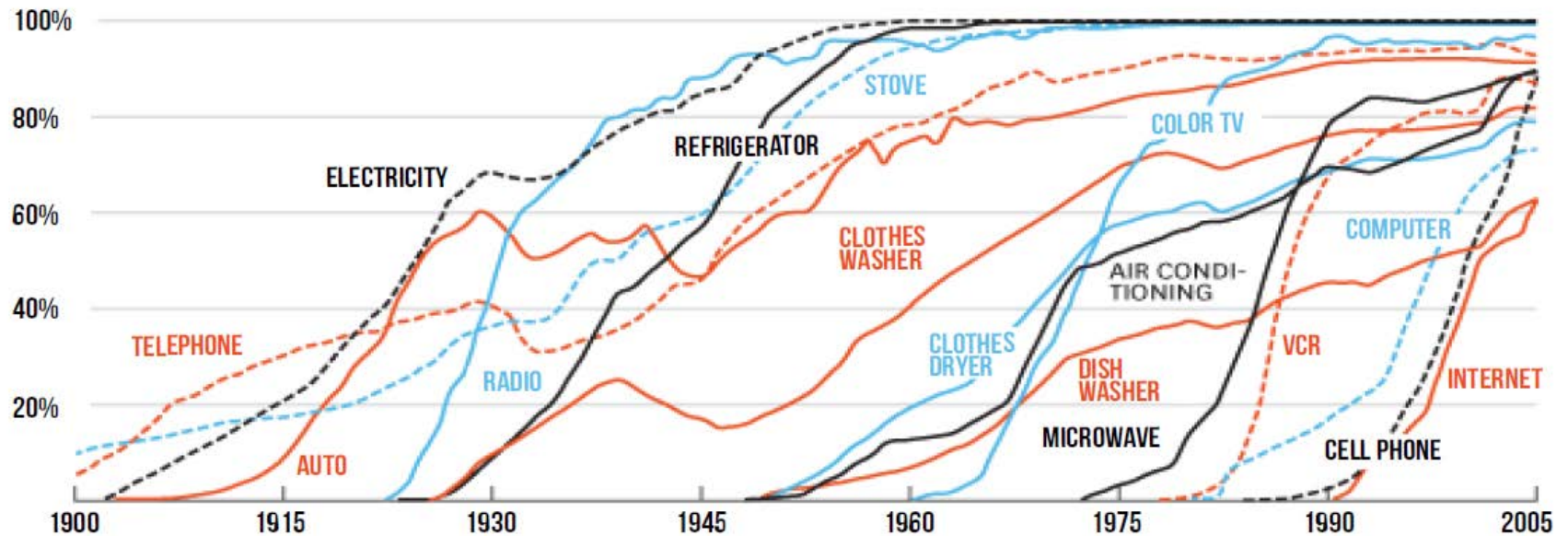




# URBANISM NEXT – (WHEN?)

## CONSUMPTION SPREADS FASTER TODAY

PERCENT OF U.S. HOUSEHOLDS



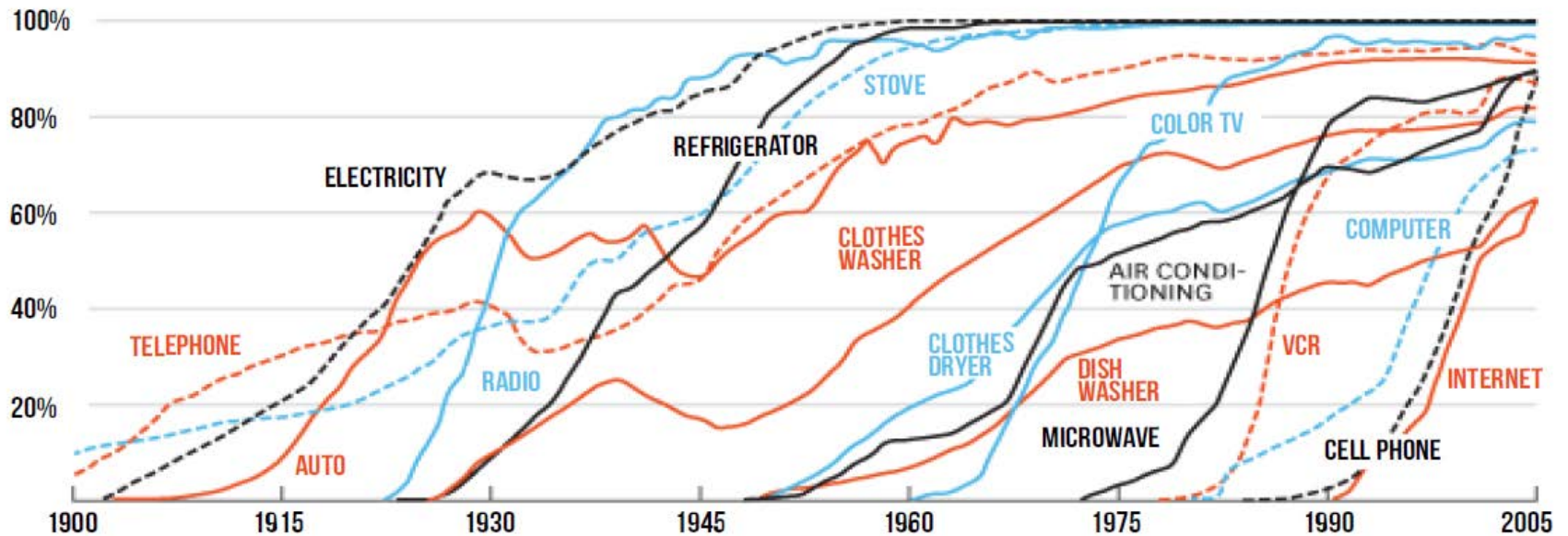
SOURCE: MICHAEL FELTON, THE NEW YORK TIMES

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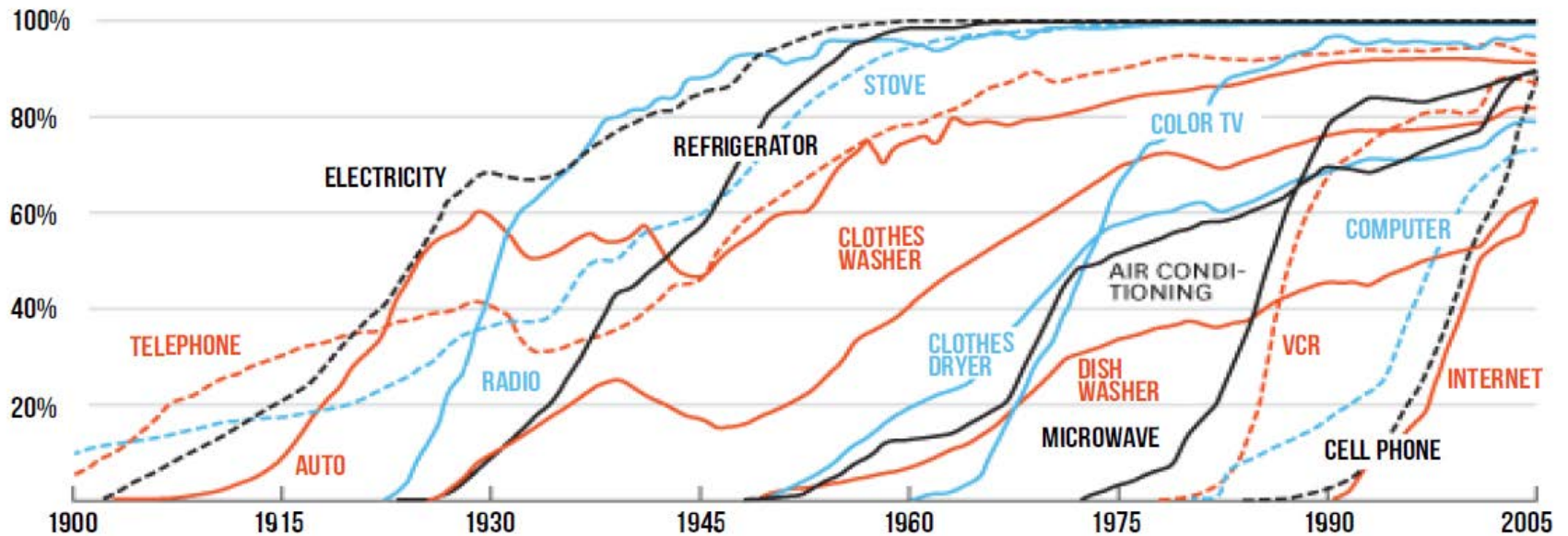
AUG 2016



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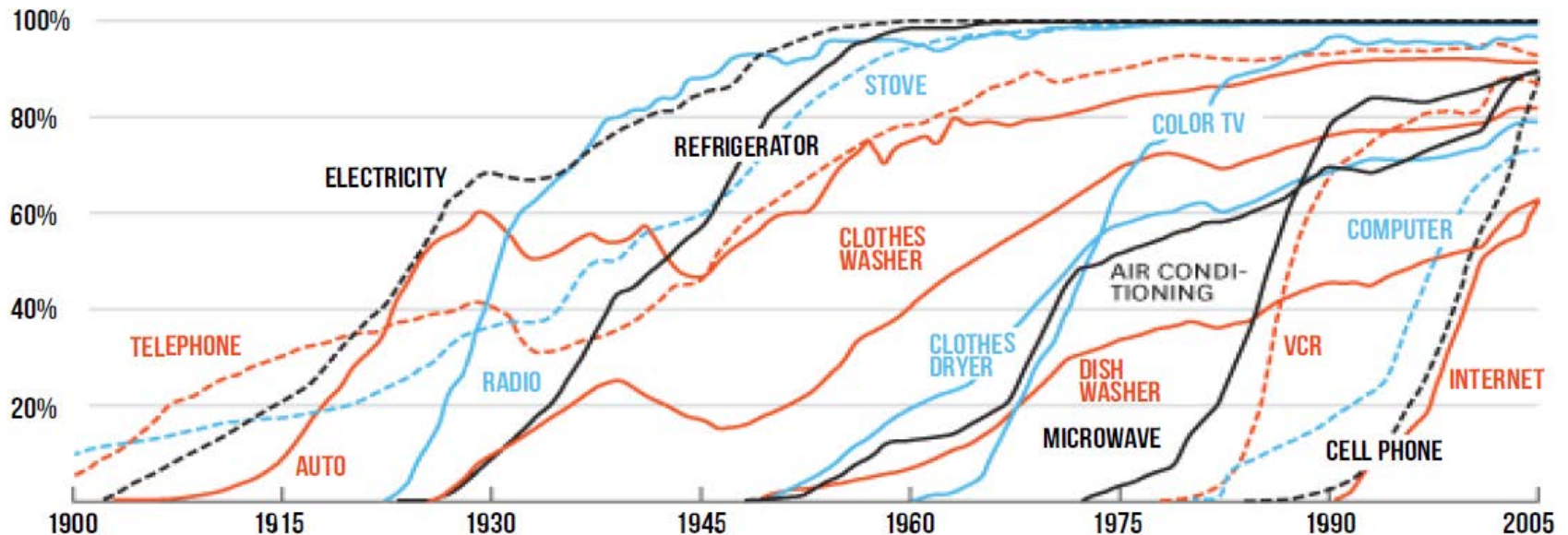
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AUG 2016



OCT 2016

JUN 2017

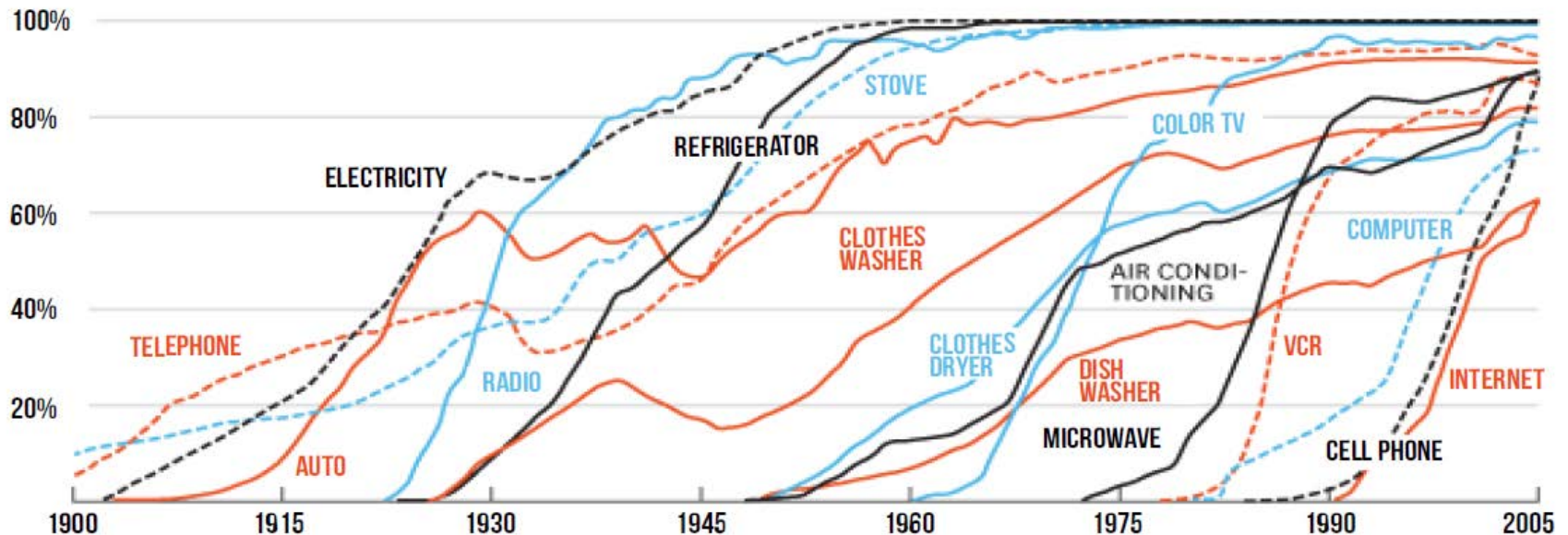




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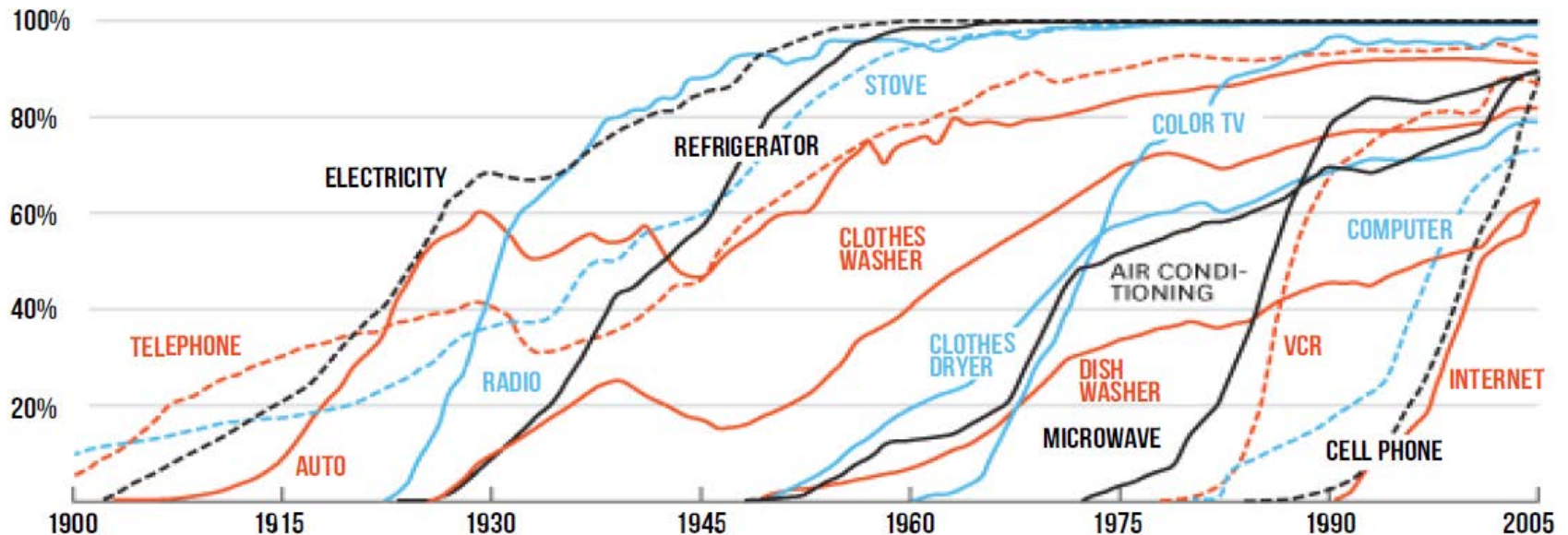
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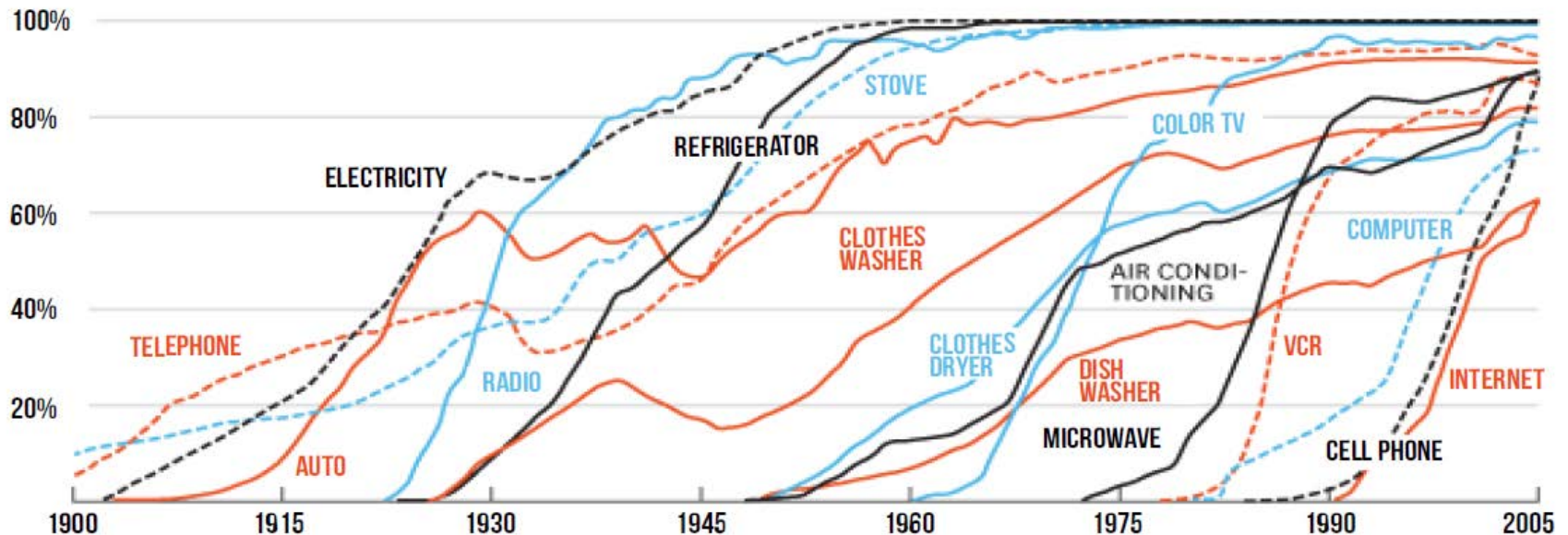




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**DEPLOYMENT WILL BE STEPPED  
(NOT GRADUAL)**



**AVs ALREADY EXIST IN OUR  
CITIES, THEY JUST HAVE DRIVERS**





(In 2018)

**4.2 BILLION TNC TRIPS IN US.**



(In 2018) Pew, 2019

**36% OF PEOPLE**

**51% OF MILLENNIALS**

**19% IN RURAL AREAS**





# NEW MOBILITY SERVICES AND MAAS

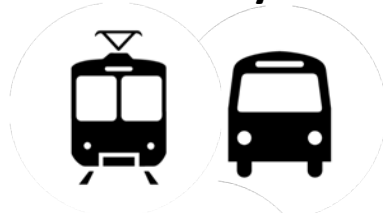
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## New Mobility Services



# US NOW – NEW MOBILITY DEPLOYMENT

## New Mobility Services

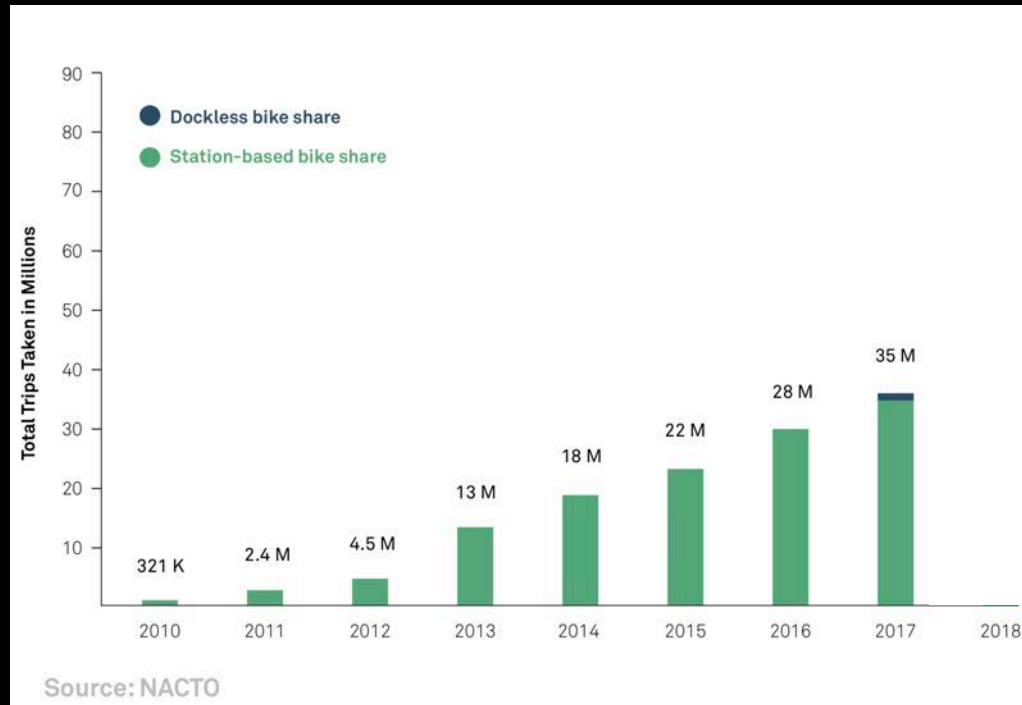


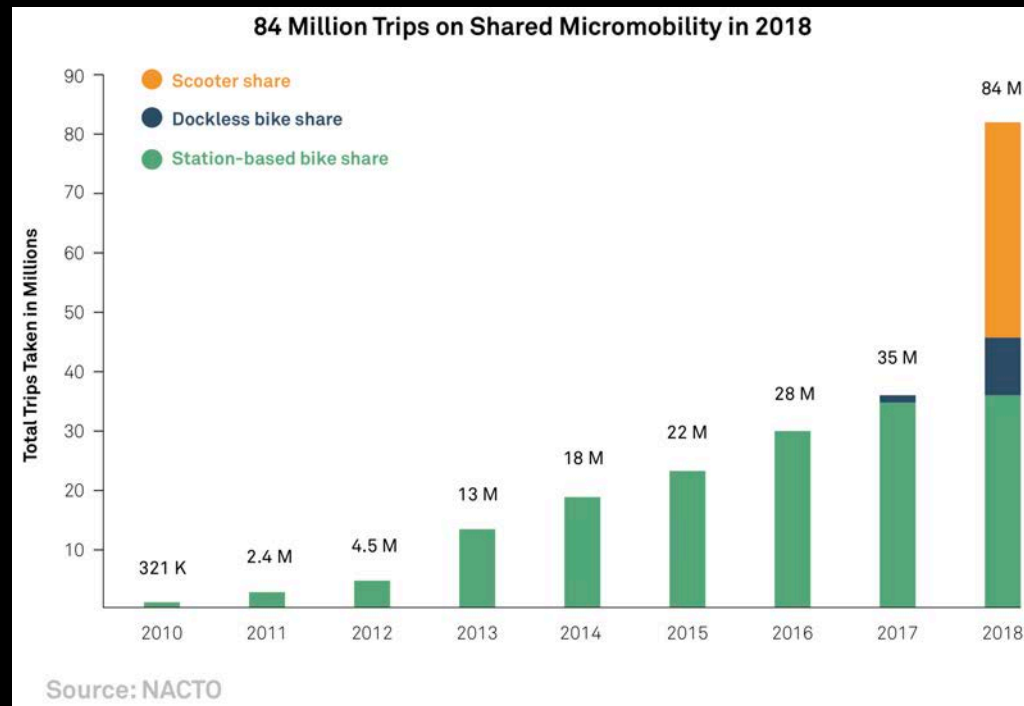


(In 2018)

**36 MILLION BIKESHARE  
TRIPS IN US.**









(In 2018)

**38+ MILLION E-SCOOTER  
TRIPS IN US.**



# NEW MOBILITY SERVICES AND MAAS

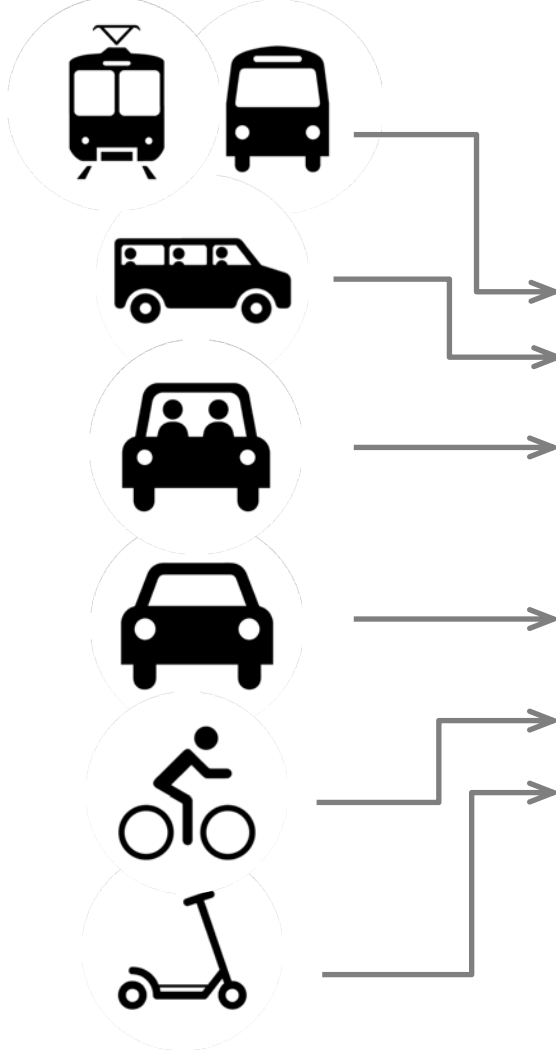
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## New Mobility Services



# NEW MOBILITY SERVICES AND MAAS

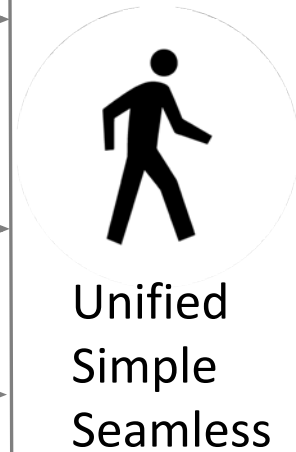
## New Mobility Services



## MaaS Platform



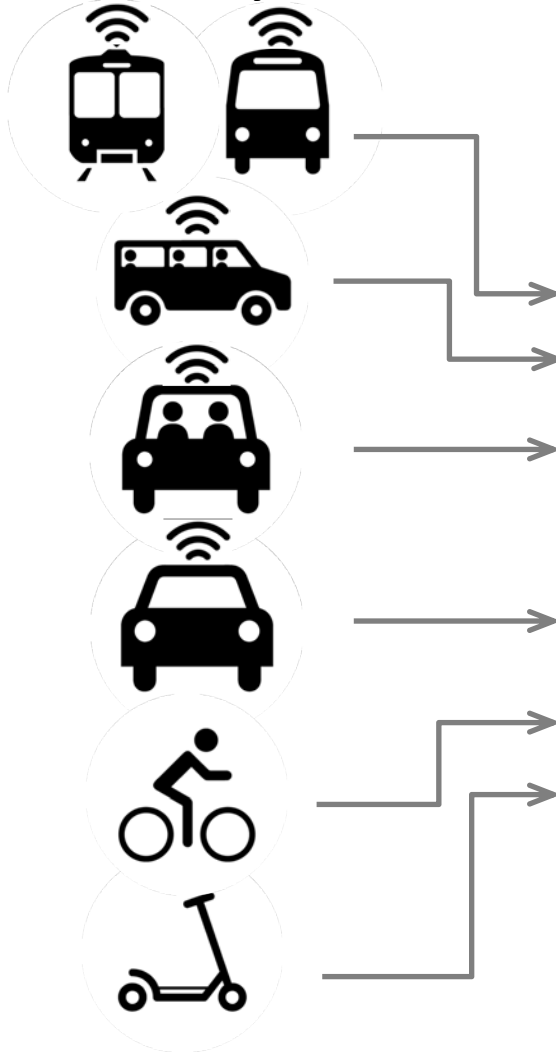
## User Experience





# NEW MOBILITY SERVICES AND MAAS

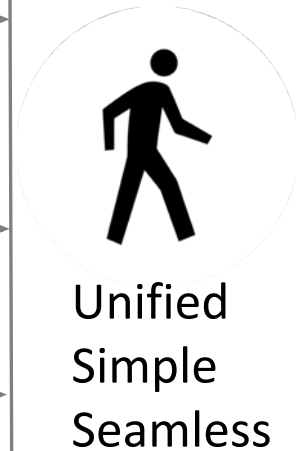
## New Mobility Services



## MaaS Platform





## User Experience



# VERTICALLY INTEGRATED MAAS?





  
 U B E R  
 uberPOOL  
**JUMP**  


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**JUMP**  


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 LYFT LINE  
 motivate  


  
 WAYMO  
 ?  
 ?  
 ?

?  
 chariot  
 TransLōc®  
 ?  
 SPIN



# RISE OF E-COMMERCE

JANUARY 10, 2017

## E-COMMERCE: BRICK-AND-MORTAR SLIDE CONTINUES – 12% DROP IN STORE TRIPS THIS PAST HOLIDAY

A recent [article](#) in the Wall Street Journal documents the continued rise of e-commerce coupled with the inevitable slide of brick-and-mortar stores. A few key numbers:

- Overall, online holiday sales increased by 11% over the previous year while brick-and-mortar sales increased only 2.7%
- JC Penny brick-and-mortar sales dropped by nearly 1% while its online sales grew by double digits.
- Amazon was the clear leader in online sales with 38% of all online revenue

\$ Sales  
Traffic

Nov 2017	-9.0%	-7.7%
Nov 2018	-4.1%	-8.3%

 RetailNext

Monthly Report for Physical Retail  
(YOY)

## The Rise of E-Commerce in the United States

E-Commerce sales as a percentage of total retail sales in the United States\*

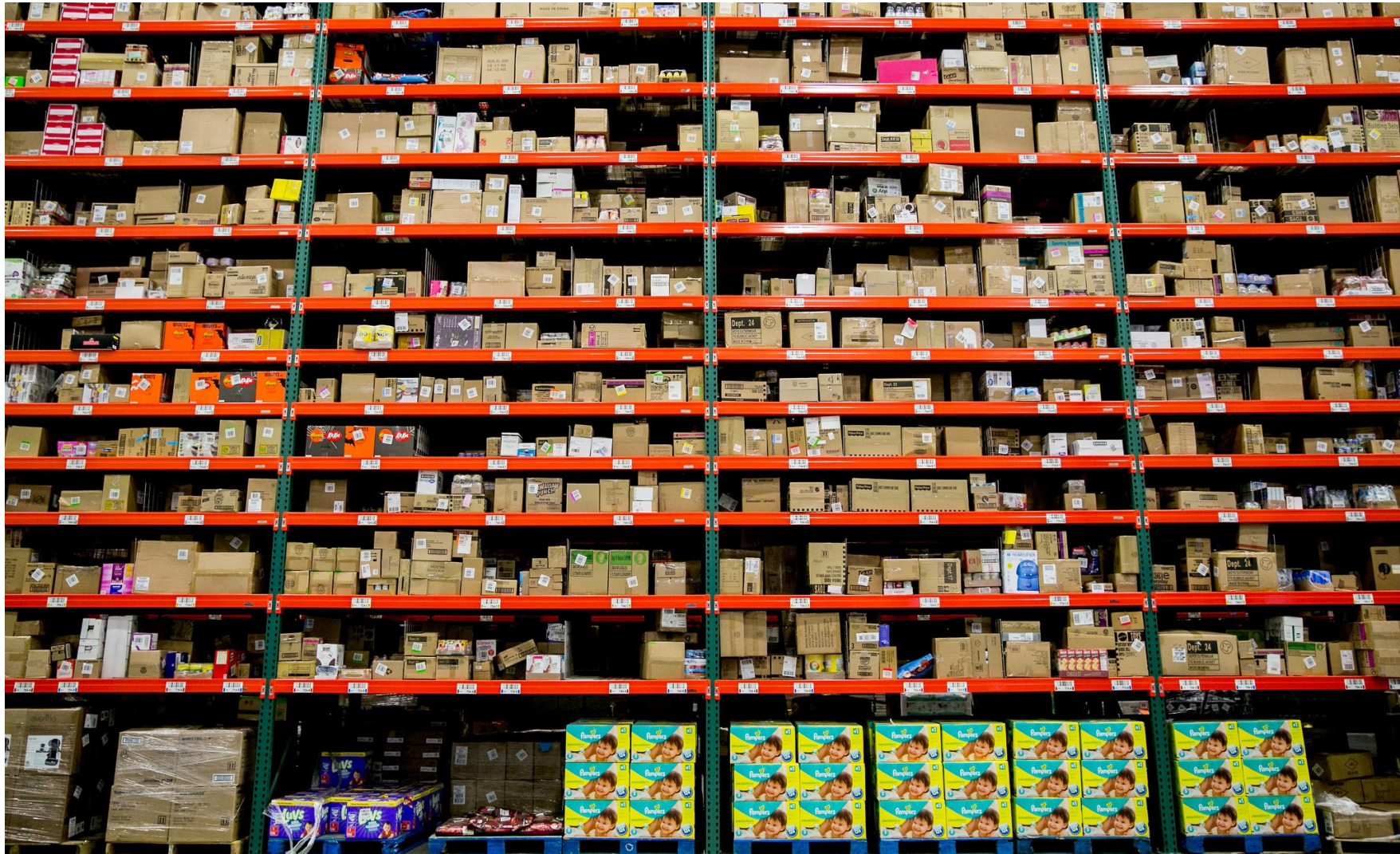


***U.S. Retail Stores' Planned Closings Already Exceed 2018 Total***

The New York Times  
APRIL, 2019



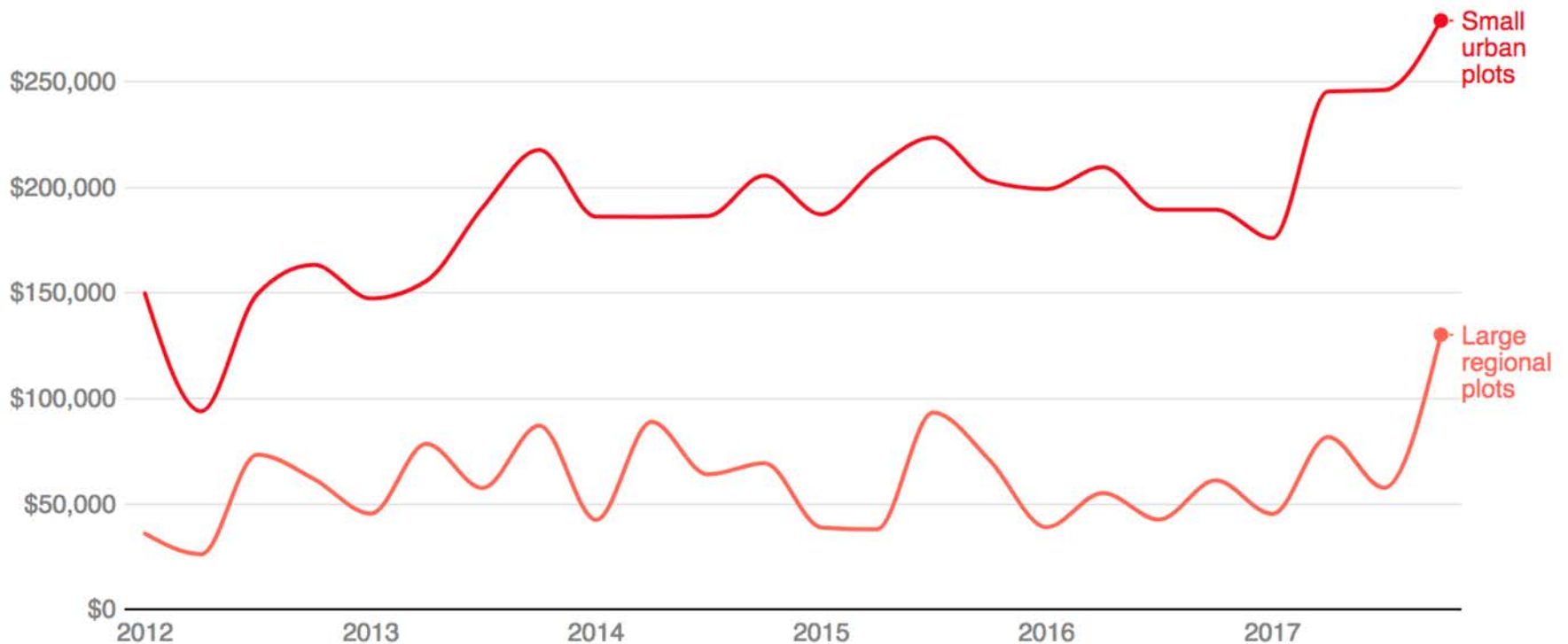
# RISE OF E-COMMERCE





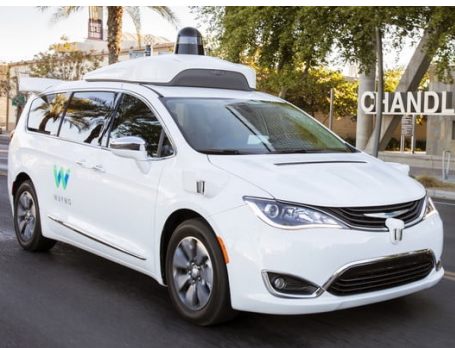
# RISE OF E-COMMERCE

Price/acre of industrial land, US, 2012-2017



*Small = 5-9.99 acres, large = 50-500 acres*

Source: [CoStar](#), [CBRE Research](#) • Created with [Datawrapper](#)





# URBANISM NEXT | FRAMEWORK

## MULTI-LEVEL IMPACTS

### LAND USE



#### RETAIL/COMMERCIAL/ OFFICE/INDUSTRIAL (EMPLOYMENT USES)

How will the changing nature of travel, employment and shopping impact retail, commercial, and industrial districts?



#### HOUSING

What are the opportunities to increase housing through infill? Will people choose to locate in cities? Or move farther out in the suburbs?



#### PARKS & OPEN SPACE

How do we protect open space under the pressure to expand cities? What opportunities are there to reclaim parking lots for parks?

### URBAN DESIGN



#### METROPOLITAN FOOTPRINT

When proximity to workplaces and goods/services is no longer holding people in cities, what will happen to their already sprawling footprints?



#### STREET DESIGN

As cities make plans for future expansions, changes to their street network, the inclusion of various modes/complete streets, and overall street design – what should they be considering?



#### CENTERS AND CORRIDORS

Will AVs support transit to strengthen current nodes and corridors or will they lead to more dispersal with continuous low-density development?



#### DENSIFICATION

How and where will AVs and new mobility increase or decrease development density?



#### PLACE/IDENTITY

When shopping and transportation can be acquired anywhere, what happens to business districts, shopping districts and neighborhoods?



#### PARKING (URBAN FORM)

How will reduced need for parking impact urban form?

### TRANSPORTATION



#### WALKING

How will we regulate the interactions between pedestrians and vehicles? What happens when pedestrians can stop AVs by simply stepping into the street?



#### BIKING

Will the mixing of modes be frowned upon because it is such a limitation to AV efficiency? Will some areas ban bikes? How will bikes work around curbside deliveries and dropoff?



#### TRANSIT

Transit faces many challenges including economic displacement, demographics, and ridehailing. What happens to transit when AVs are deployed?



#### PARKING (TRANSPORTATION)

What happens if parking utilization needs drop dramatically over a short period of time. How quickly will parking requirements shift with that?



#### VEHICLES

Preliminary models of individual ownership of AVs show vehicle miles traveled (VMT) increasing dramatically. Will AVs be fleets or individually owned?

### REAL ESTATE



#### LAND VALUE

A reduction in demand for parking will open up land for redevelopment. How will this impact land value and project feasibility?



#### PROJECT FEASIBILITY

Development will likely get more risky as market conditions related to parking demand and commercial and retail viability change. How do we reduce risk?



#### BUZZ/VITALITY

What will draw people to places in the future? How important will entertainment be a factor in to where people want to congregate? How do we create "buzz"?



#### QUALITY

If location in relation to other areas of the city is no longer a strong factor in housing/commercial building location, will quality of design become more relevant in attracting and keeping people in cities/neighborhoods?

## IMPLICATIONS FOR ...

### EQUITY

How will the impacts of emerging technologies impact vulnerable and low income populations? What opportunities are there to improve services and reduce inequities?

### HEALTH

Preliminary research finds that people are replacing walking, biking, and transit trips with ridehail services. If this trend continues and is exacerbated by AVs, what will the impact be on our health? What are the impacts of E-commerce on health?

### ENVIRONMENT

How can we take advantage of emerging technologies to improve sustainability and environmental outcomes? Can we reduce greenhouse gas (GHG) emissions? Can we improve stormwater treatment?

### ECONOMY

Up to 4 million people drive for a living. What happens to their jobs with the deployment of AVs? Brick-and-mortar stores are closing as shoppers go online. How will emerging technologies disrupt the economy?

### GOVERNANCE

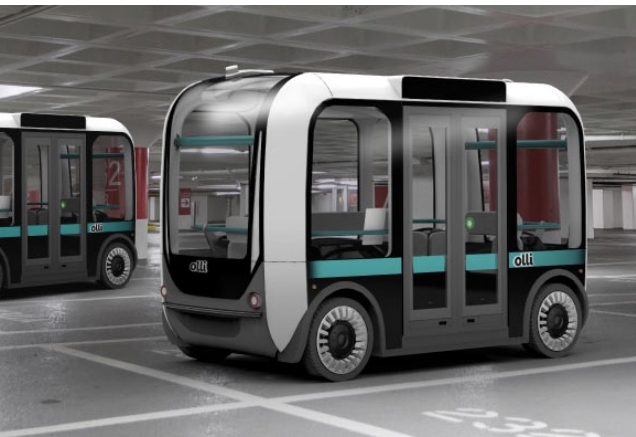
Emerging technologies will disrupt revenues for cities, counties, and states. How do we provide a great level of service and support thriving communities?

## RESPONSE

### WHAT SHOULD WE DO?

Given the possible range of multi-level impacts of emerging technologies on land use, urban design, transportation, and real estate, and the implications on equity, the economy, and the environment, how should governments, companies, and institutions respond to maximize the benefits and minimize the risks? How do policies, programs, and infrastructure investments need to adapt and change?

# ROLE OF TRANSIT



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Use code **FASTLAP**

  **DOWNLOAD & RIDE**  
Subject to Lyft's Terms



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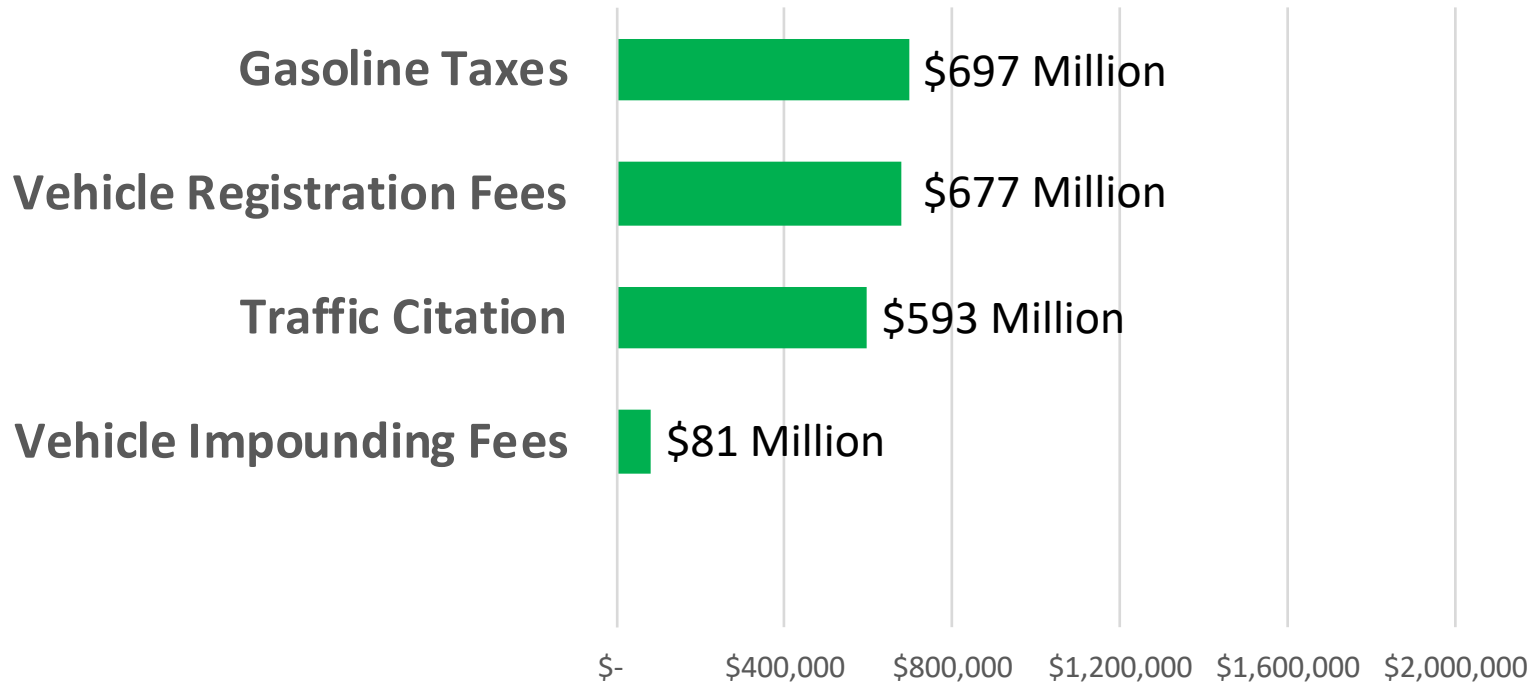


# INDIVIDUAL RIDES OR POOLED RIDES



# Impacts on Municipal Budgets

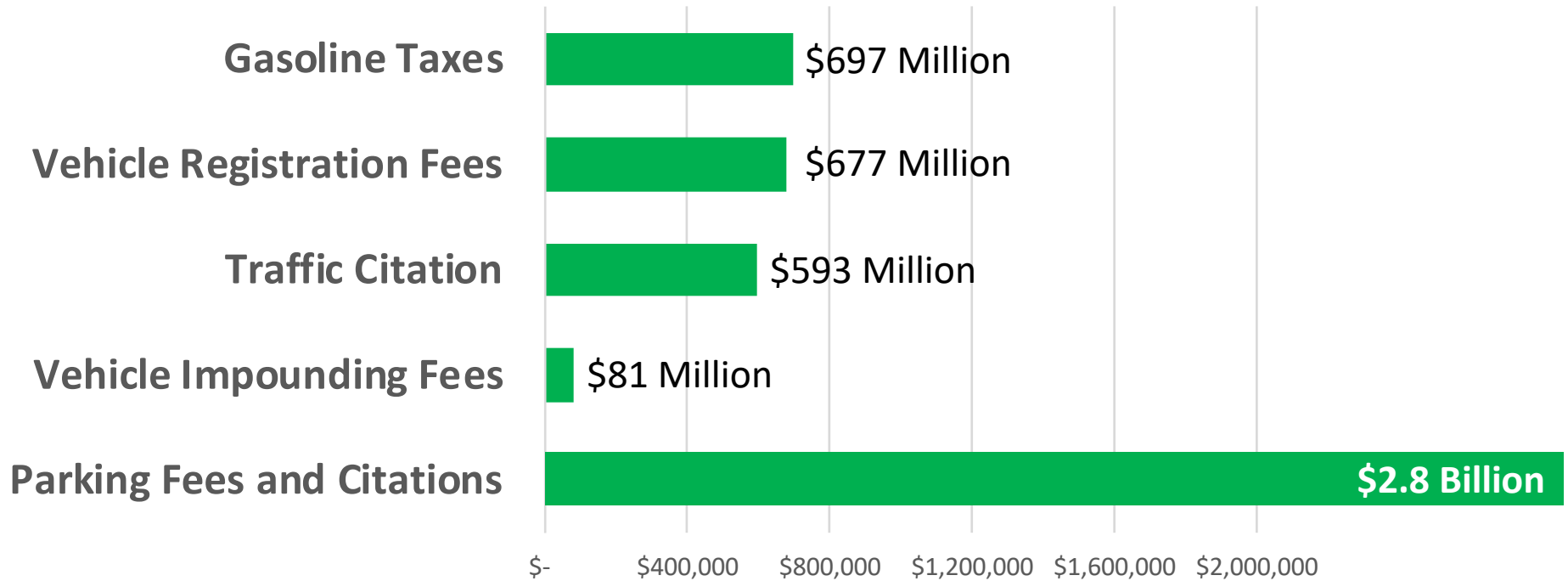
## Transportation Fiscal Impacts



25 Largest US Cities, FY16, Governing.com

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## Transportation Fiscal Impacts



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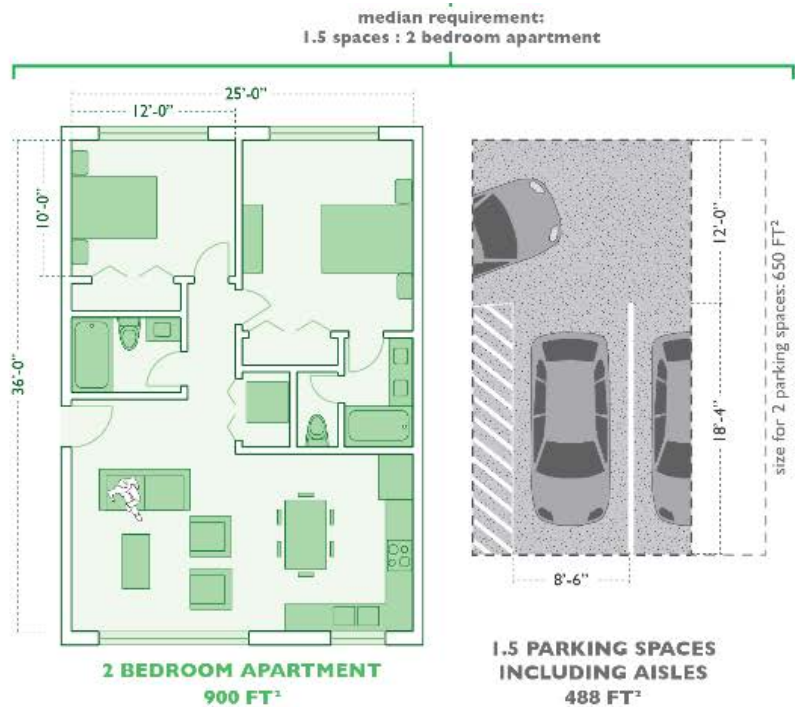
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NISIAN HUGHES/GETTY IMAGES





## LIVING VS PARKING SPACE

parking required by city laws across Cascadia



graphing parking



SF: Average Const. Cost/Unit = \$550/gsf  
 SF: Average Const. Cost/Stall = \$130/gsf  
 = 24% burden on unit costs @1.5 spaces/unit

Gerry Tierney, Perkins + Will

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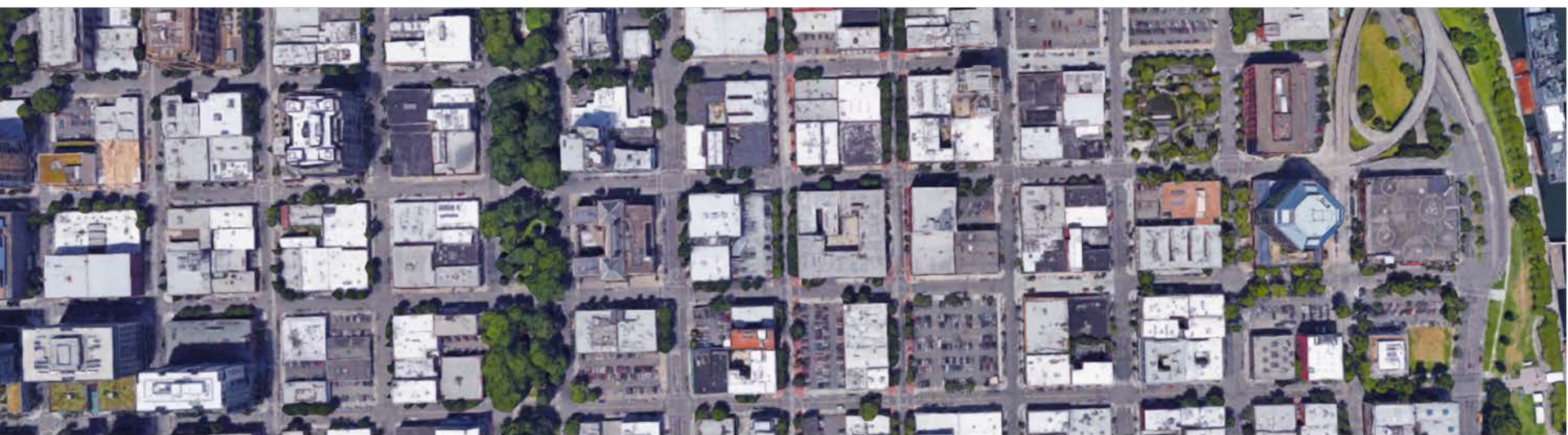
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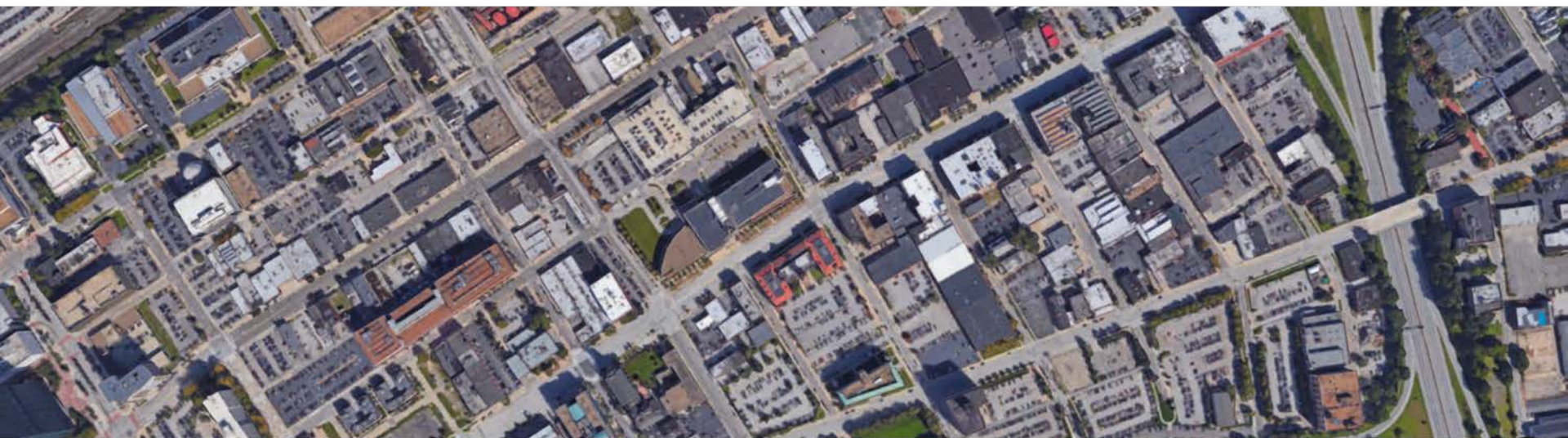
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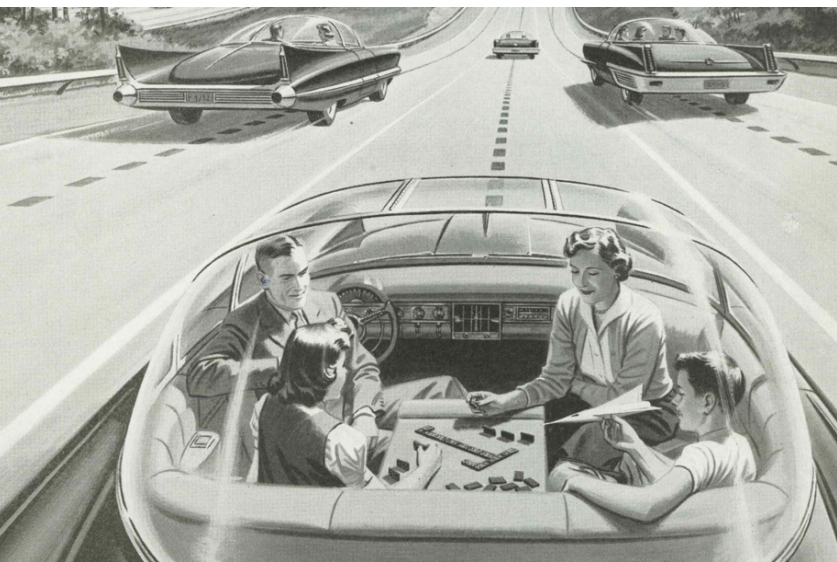
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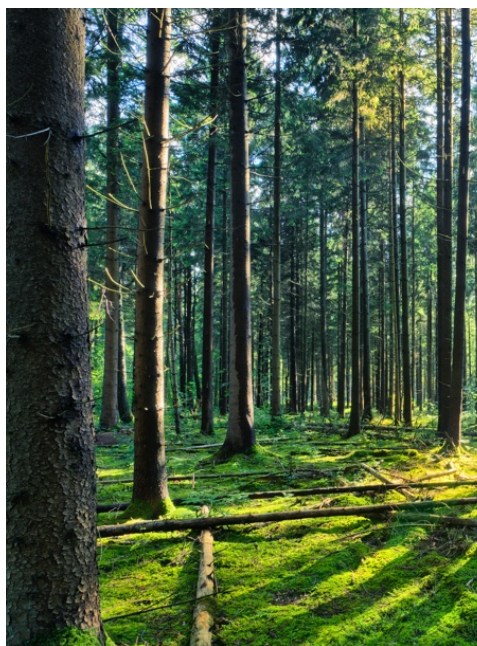




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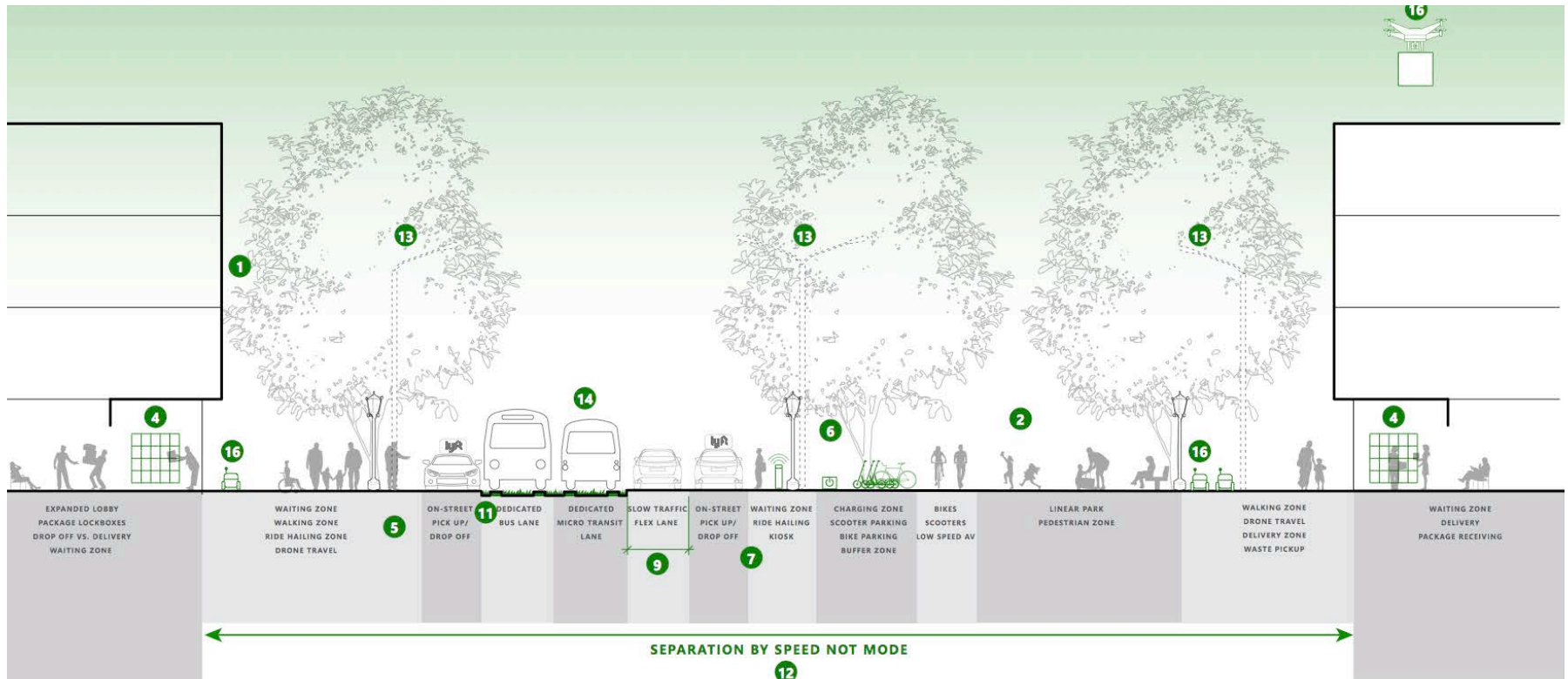






# Impacts on Street Design

- Buildings/Street Relationship
- Pick Up/Drop Off
- Separation by Speed, Not Mode
- Lane Width / Prioritization



# **AVs AND MAAS ARE NOT TRANSPORTATION ISSUES**



# **E-COMMERCE IS NOT A RETAIL ISSUE**

**CITIES THAT THINK AHEAD,  
STAY AHEAD**

# **Agenda**

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## **New Mobility Impacts to Transportation**

Leah Treat, Nelson/Nygaard

## **E-Commerce Impacts on Land Use**

Rick Stein, Urban Decision Group

Jason Sudy, HDR

Kelly Rula, City of Seattle

## **Making Better Decisions with Data**

Kelly Rula, City of Seattle

## **Fiscal Implications of Emerging Technologies**

Rebecca Lewis, University of Oregon

## **Planning for an Uncertain Future**

Becky Steckler, Urbanism Next Center, University of Oregon

# NATIONAL URBANISM NEXT CONFERENCE 2019

HOW TECHNOLOGY IS CHANGING OUR CITIES



May 7–9, 2019  
Oregon Convention Center  
Portland, Oregon



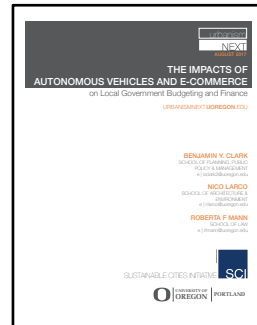
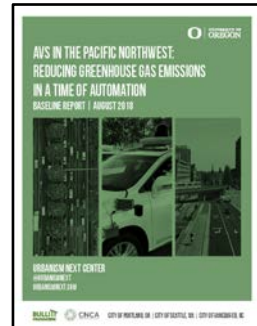
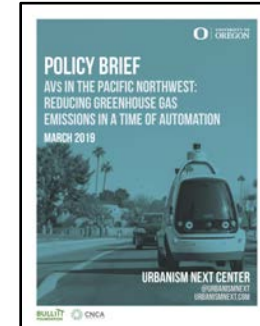
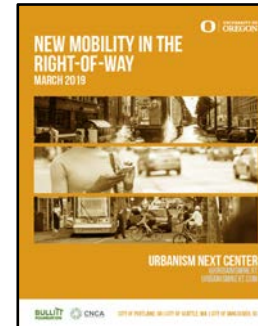
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- Multidisciplinary Research
- NEXUS
- Projects
- National Network
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