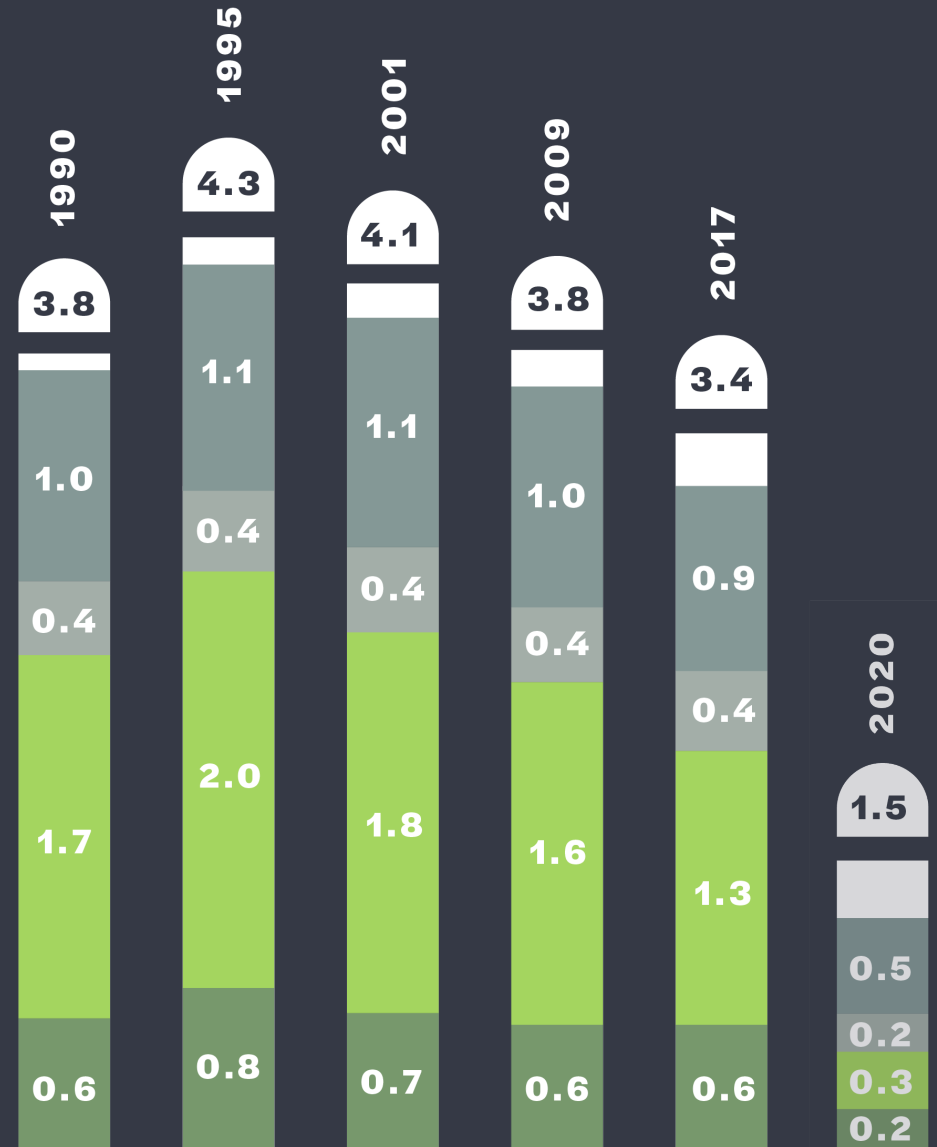# Mobility
Disruption and Evolution

Ronald T. Milam, AICP, PTP

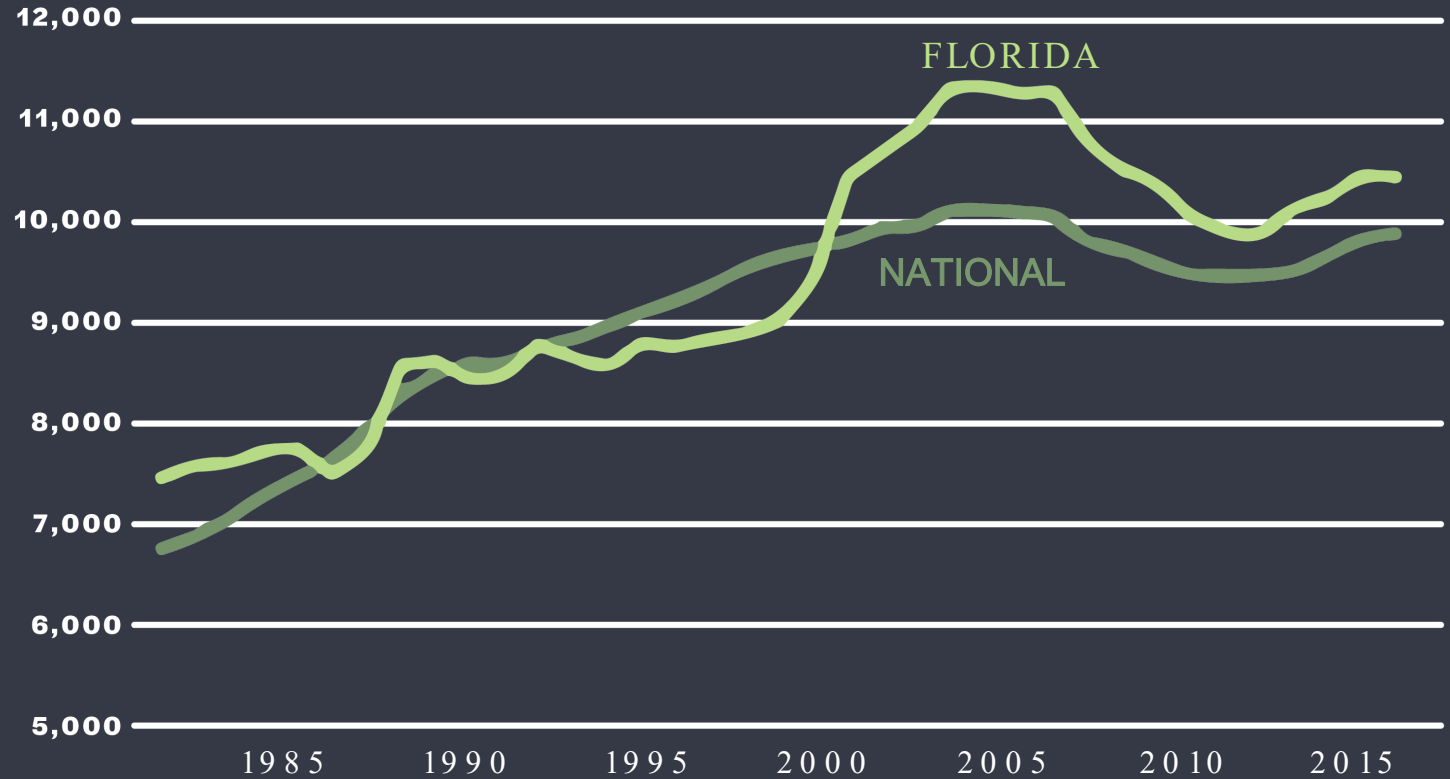Fehr & Peers | January 2021

How is travel demand evolving?

TRENDS IN PERSON TRIPS BY PURPOSE (NATIONAL HOUSEHOLD TRAVEL SURVEY, 1990 TO 2017)

Daily Trip Rate Estimate ⬬
Other ⬤
Social Activities ⬤
School/Church ⬤
Shopping and Errands ⬤
To or From Work ⬤

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Source: Nancy McGuckin and Anthony Fucci , Summary of Travel Trends Findings from the 2017 NHTS

1990
3.8
1.0
0.4
1.7
0.6

1995
4.3
1.1
0.4
2.0
0.8

2001
4.1
1.1
0.4
1.8
0.7

2009
3.8
1.0
0.4
1.6
0.6

2017
3.4
0.9
0.4
1.3
0.6

2020
1.5
0.5
0.2
0.3
0.2

How is driving changing?

FLORIDA VMT PER CAPITA TRENDS

FLORIDA

NATIONAL

12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000

1985   1990   1995   2000   2005   2010   2015

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Is congestion a symptom or problem?

Congestion — Total Delay (Billions of Hours) — Cost of Delay

Source: https://static.tti.tamu.edu/ tti.tamu.edu/documents/mobility - report -2019.pdf
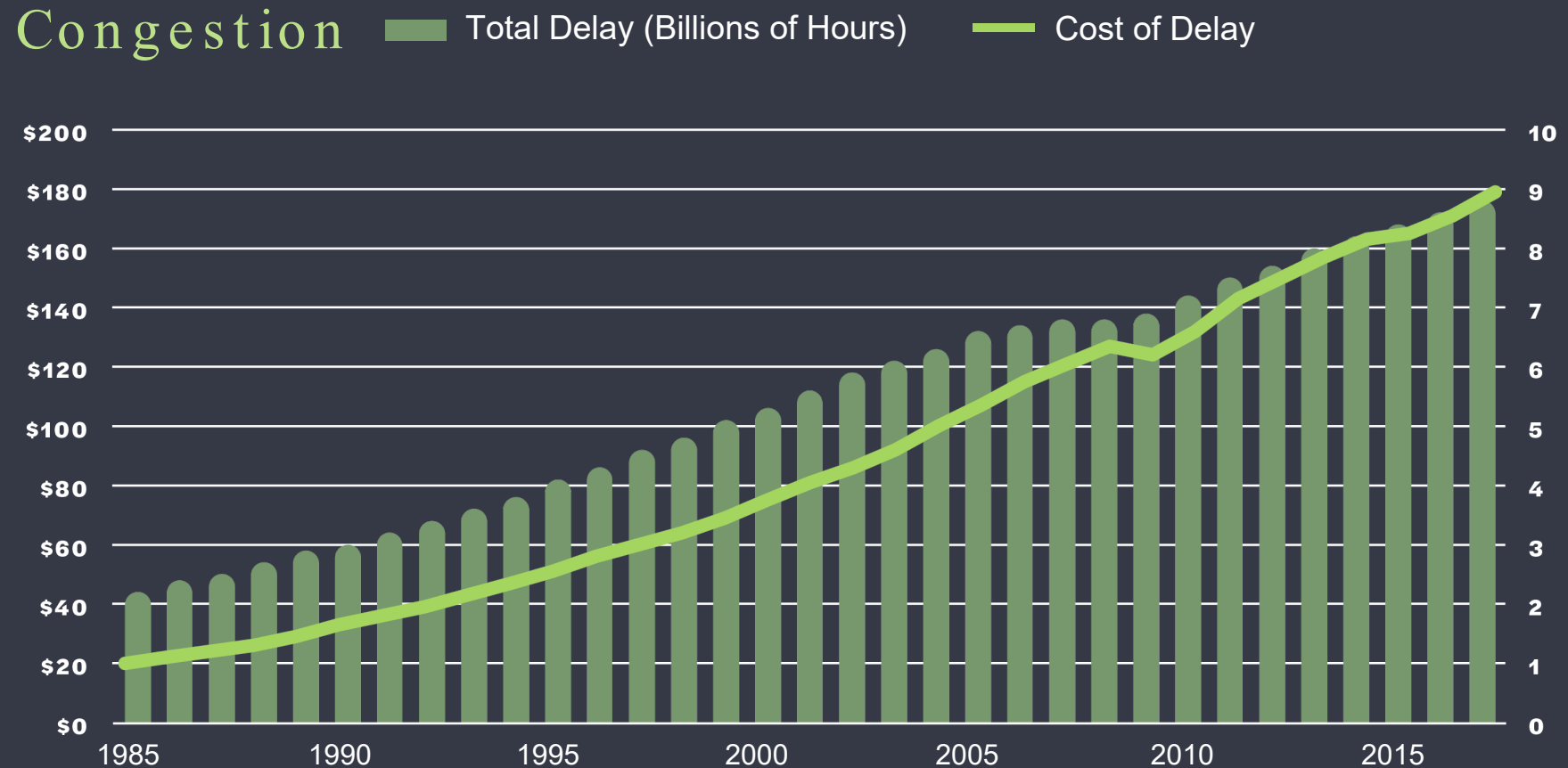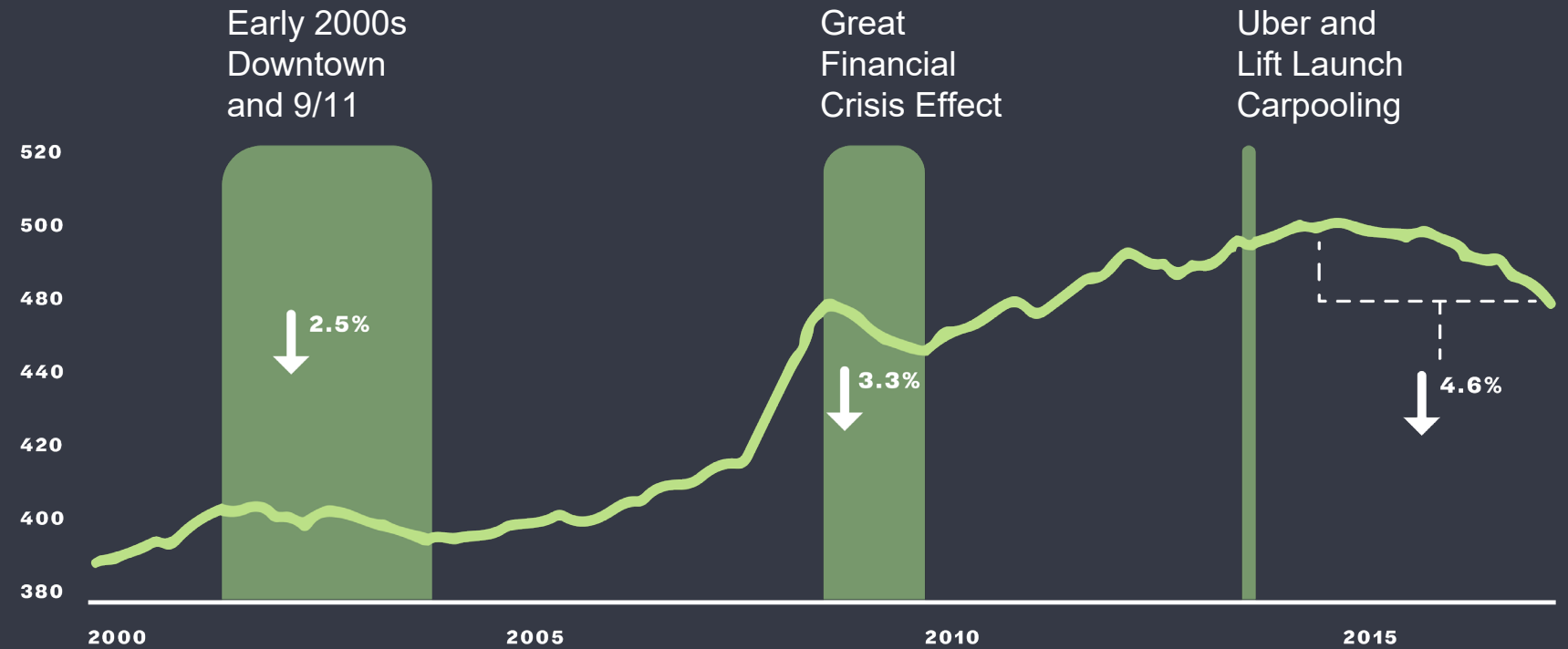
What about transit?

U.S. PUBLIC TRANSIT RIDERSHIP (MILLIONS OF RIDES PER MONTH, 12-MONTH TRAILING AVERAGE, BOSTON, CHICAGO, LOS ANGELES, NEW YORK CITY, SAN FRANCISCO, AND WASHINGTON D.C.)

Early 2000s Downtown and 9/11

Great Financial Crisis Effect

Uber and Lift Launch Carpooling

↓ 2.5%

↓ 3.3%

↓ 4.6%

520
500
480
440
420
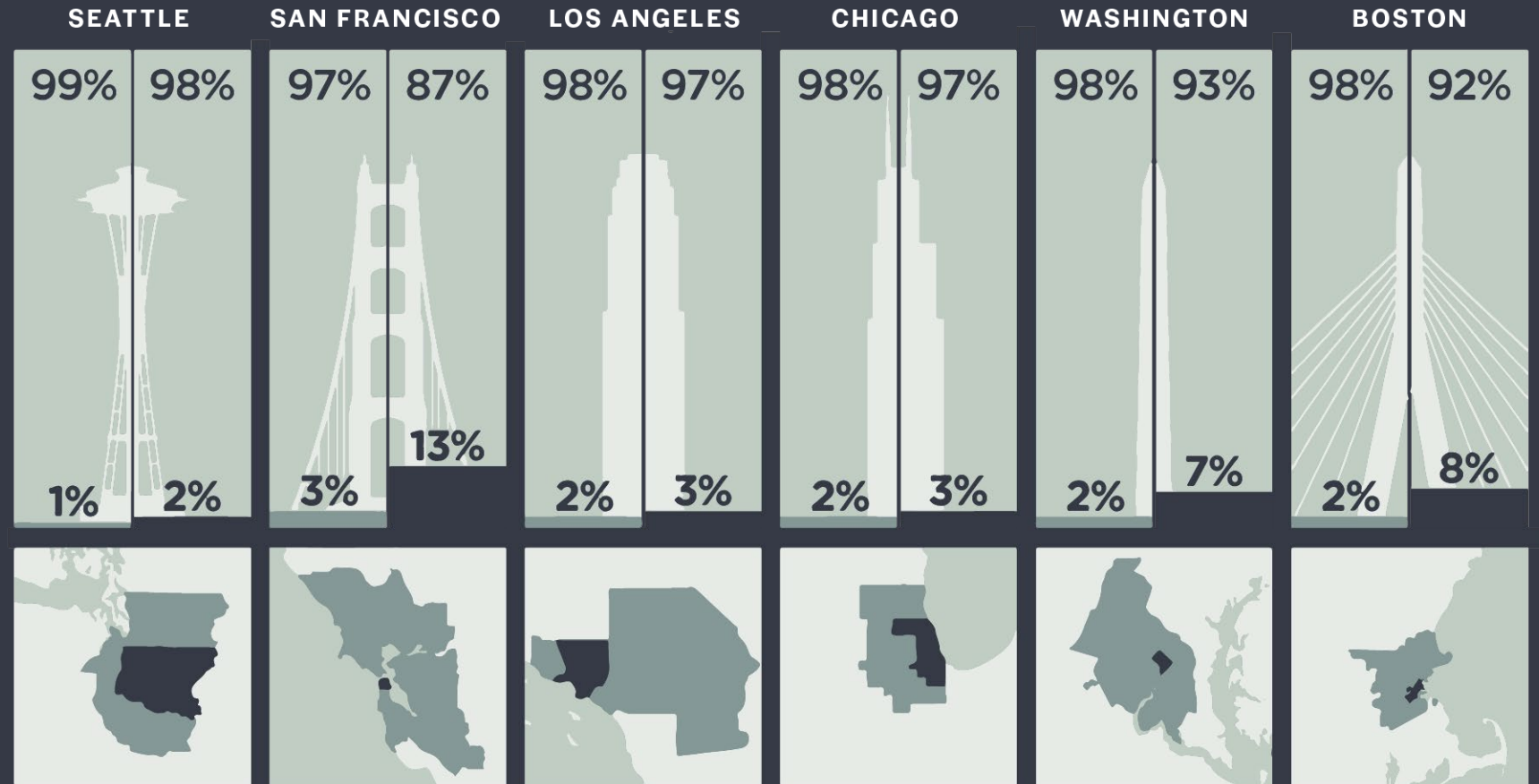400
380

2000   2005   2010   2015

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Source: On the Road Again: How Advances in Transportation are Shaping the Future of Real Estate, MetLife Investment Management. 2018

What about TNCs?

ESTIMATED PERCENT OF TOTAL DRIVING BY LYFT AND UBER (IN SIX MAJOR US REGIONS, SEPTEMBER 2018)

SEATTLE	SAN FRANCISCO	LOS ANGELES	CHICAGO	WASHINGTON	BOSTON
99% 98%	97% 87%	98% 97%	98% 97%	98% 93%	98% 92%
1% 2%	3% 13%	2% 3%	2% 3%	2% 7%	2% 8%

- Lyft & Uber: Region-Wide
- Lyft & Uber: Core County
- All Other Vehicles

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Source: https://drive.google.com/file/d/1FlUskVkj9lsAnWJQ6kLhAhNoVLjfFdx3/view

Travel market disruption

VEHICLE ACCESSIBILTY & TRAVEL MODE

ACCESSIBILITY ▶

OWN
RENT
SHARE
AUTONOMOUS

◀ BEFORE 2013   2013 to 2020   FUTURE ▶

MODES ▶

WALK

BICYCLE

DRIVE
Alone

DRIVE
Others

TRANSIT

TAXI

CARSHARE
Station-Based
- ZipCar
- Hertz Demand
- City Car Share

BIKESHARE
Dock-Based
- Nice Ride
- Divvy
- Ford GoBike

CARSHARE
One-to-Many
- Car2Go
- DriveNow
- Scoot

CARSHARE
Peer-to-Peer
- Getaround
- RelayRides

TNC
- Uber
- Lyft

TNC
Shared
- Uber Pool
- Lyft Line

MICROTRANSIT
- Via
- Chariot

BIKESHARE
Dockless
- Ofo
- LimeBike
- MoBike

E-SCOOTER
- Bird

E-BIKE
- Lime-E

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What about COVID effects?

What about COVID effects?

TOMTOM

Overview   Traffic Index ranking   Press   About

Wuhan traffic

HOURLY CONGESTION LEVEL

Last 48 hours   **Last 7 days**

— Live congestion   ·········· Previous week's congestion

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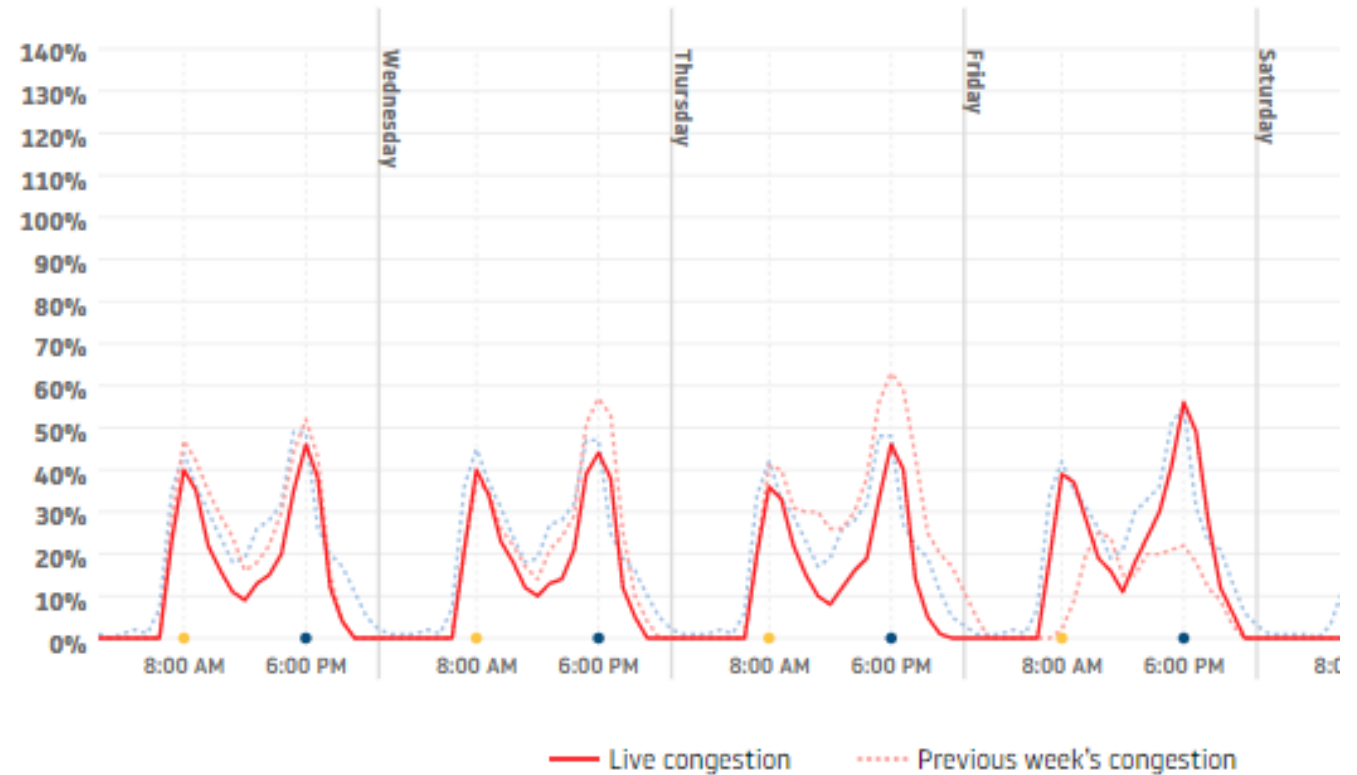
How should the transportation network evolve?

Common vision expectations :
It should provide a safe, efficient, and multimodal transportation system

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User expectations?

Connect us to where we need to go with multiple options for the mode and cost of the trip while keeping us safe from harm when we travel.

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Driver expectations?

Allow me to drive to any destination, at any time of day, in any size vehicle, without any passengers, delays, tolls, or parking costs.
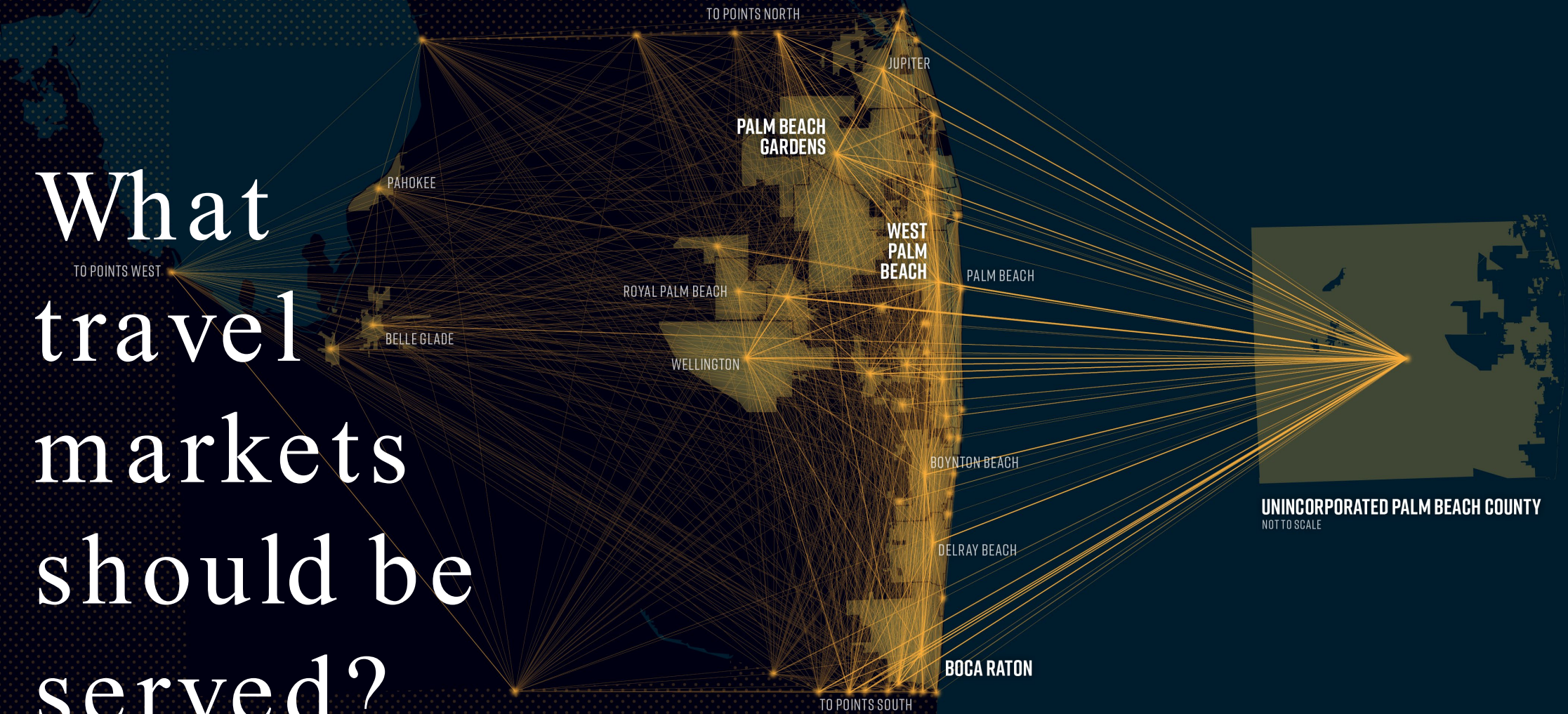
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Financial expectations?

How much of transportation revenues are consumed by operating and maintaining the existing network?

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PALM BEACH COUNTY TRAVEL FLOWS
2020 AVERAGE DAILY WEEKDAY TRAVEL, PRE-COVID-19, FROM STREETLIGHT DATA

0   10,000   100,000   1,000,000

TO POINTS NORTH
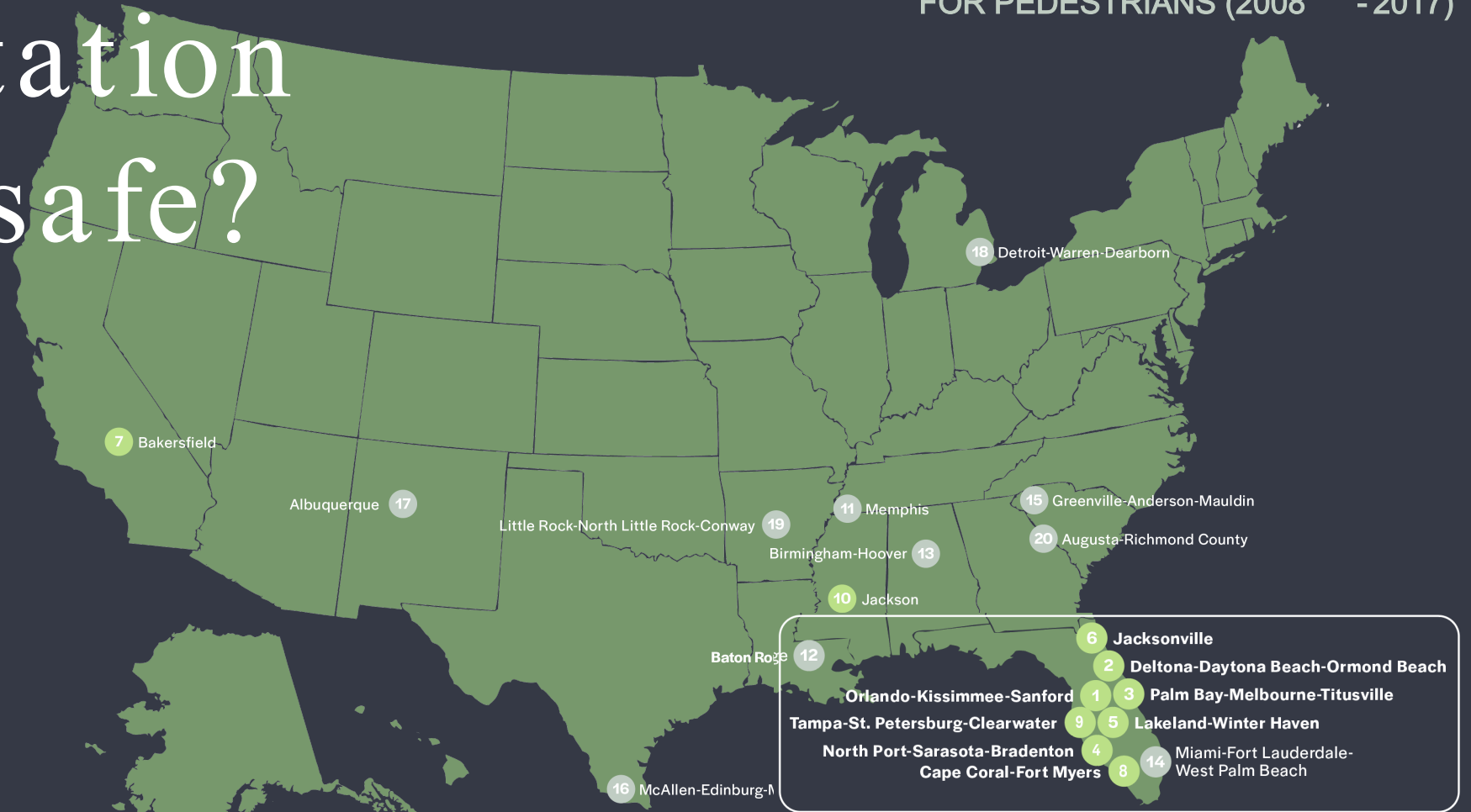
JUPITER

PALM BEACH
GARDENS

PAHOKEE

WEST
PALM
BEACH

PALM BEACH

TO POINTS WEST

ROYAL PALM BEACH

BELLE GLADE

WELLINGTON

UNINCORPORATED PALM BEACH COUNTY
NOT TO SCALE

BOYNTON BEACH

DELRAY BEACH

BOCA RATON

TO POINTS SOUTH

What travel markets should be served?

Source: StreetLight Data and Fehr & Peers

Is the transportation network safe?

THE TOP 20
MOST DANGEROUS METROPOLITAN AREAS
FOR PEDESTRIANS (2008 - 2017)

18 Detroit-Warren-Dearborn

7 Bakersfield

Albuquerque 17

15 Greenville-Anderson-Mauldin

11 Memphis

Little Rock-North Little Rock-Conway 19

20 Augusta-Richmond County

Birmingham-Hoover 13

10 Jackson

6 Jacksonville

Baton Roge 12

2 Deltona-Daytona Beach-Ormond Beach

Orlando-Kissimmee-Sanford 1 3 Palm Bay-Melbourne-Titusville

Tampa-St. Petersburg-Clearwater 9 5 Lakeland-Winter Haven

North Port-Sarasota-Bradenton 4

Miami-Fort Lauderdale-
West Palm Beach

Cape Coral-Fort Myers 8 14

16 McAllen-Edinburg-M

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Top 1-10   Top 11-20

Source:
https://smartgrowthamerica.org
/dangerous -by-design/

Is the transportation network efficient?

Solving a seat utilization problem creates new solutions compared to solving a congestion problem

FEHR✧PEERS

Source: Fehr & Peers

SEAT UTILIZATION
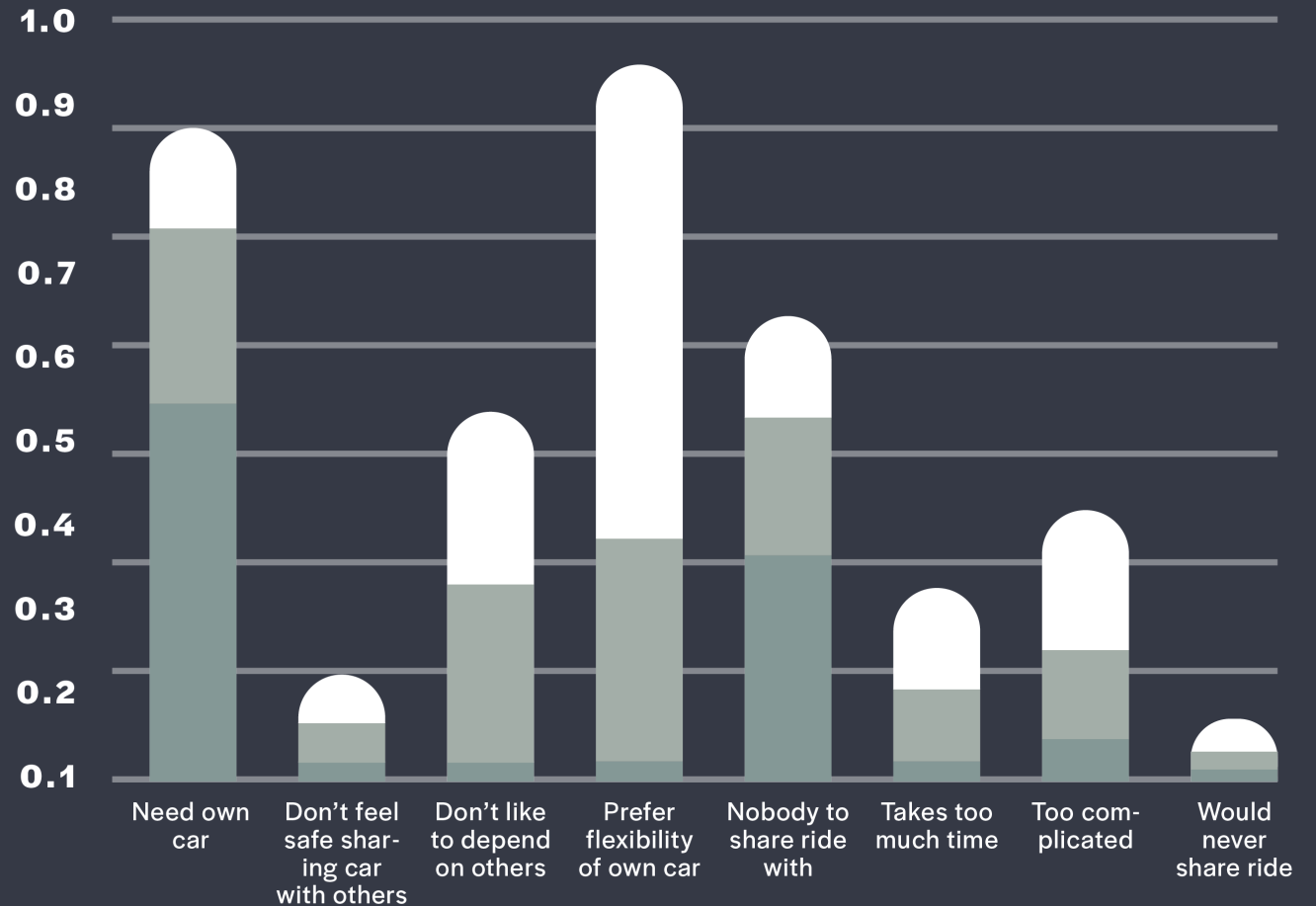## I-95 Corridor, West Palm Beach

Palm Tran
200 occupied   600 unoccupied

Tri-Rail
620 occupied   508 unoccupied

Brightline
142 occupied   426 unoccupied

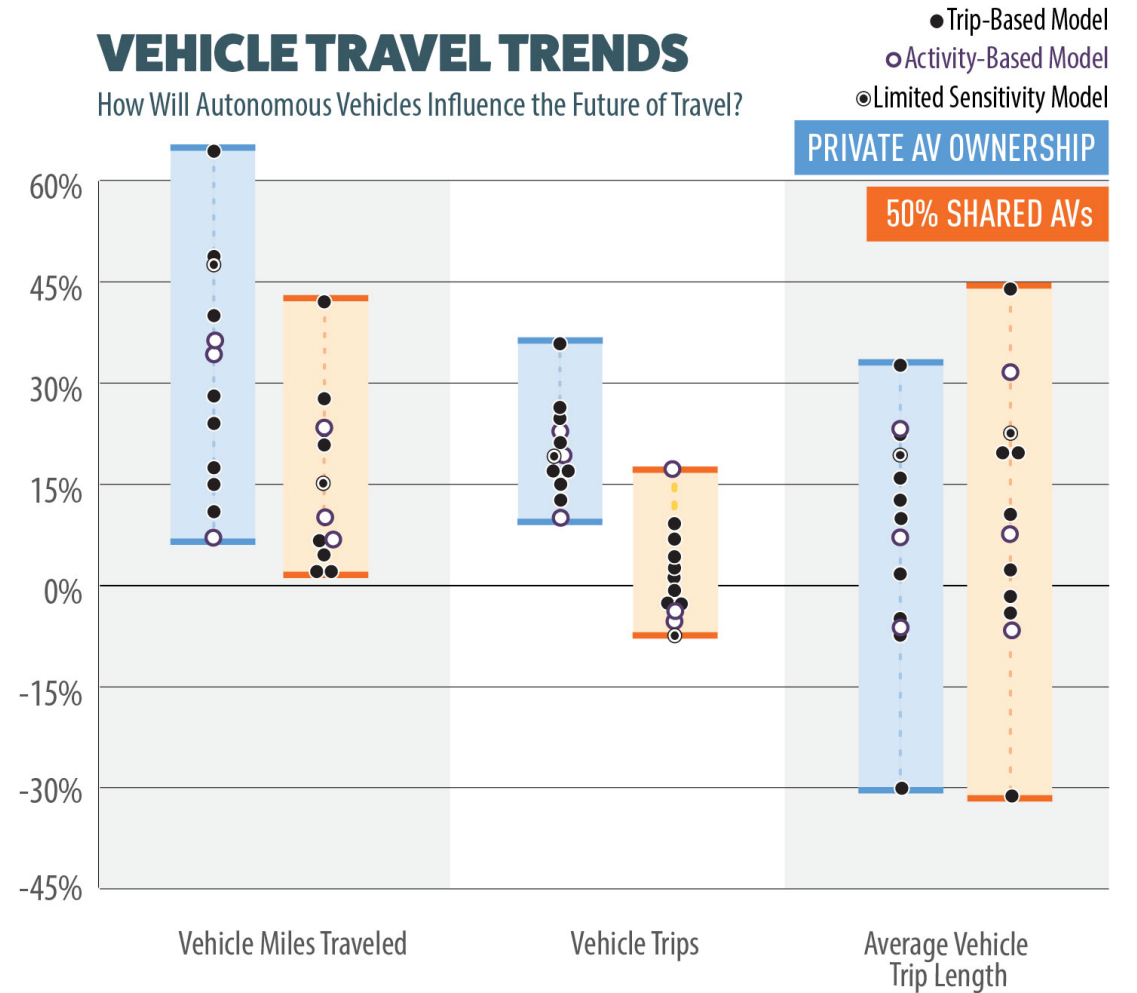**I-95 Vehicles**

29,249 occupied   46,231 unoccupied

Private sector vs. public sector

Competing or complementary interests?
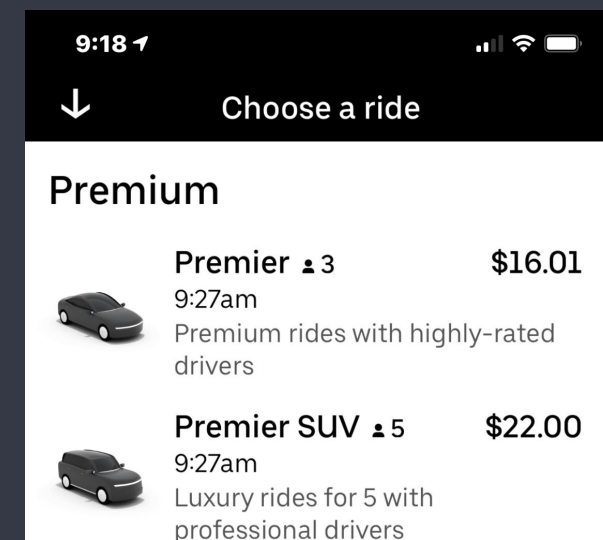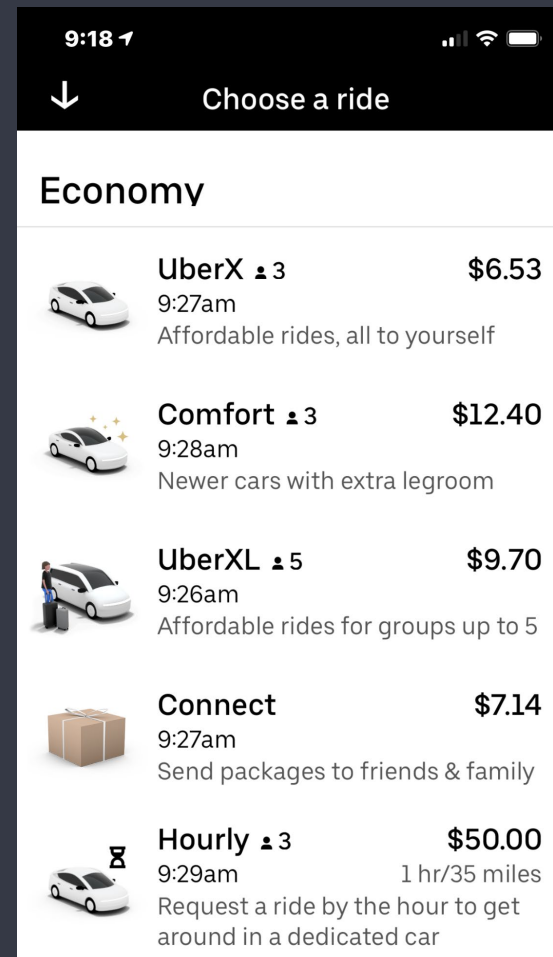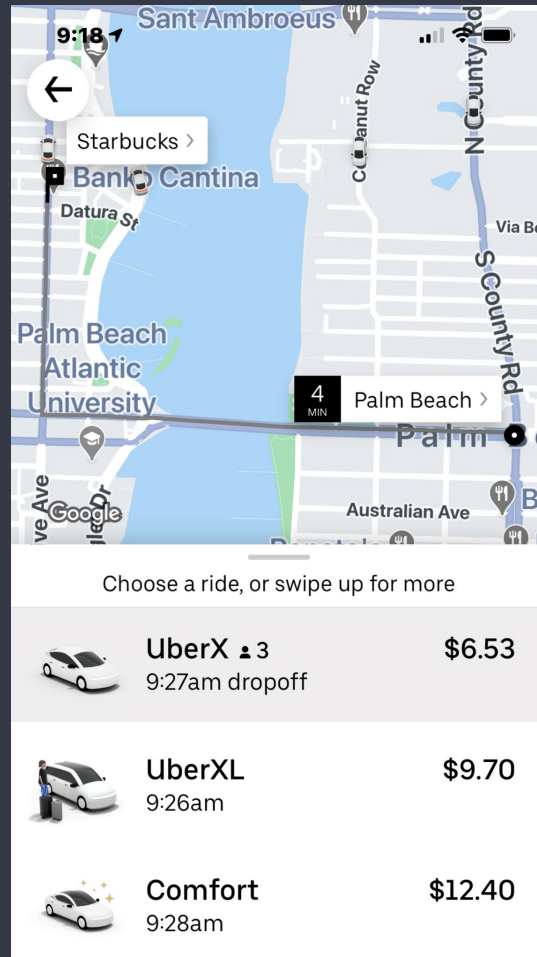
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Anticipating change

Autonomy, the next tipping point?

VEHICLE TRAVEL TRENDS
How Will Autonomous Vehicles Influence the Future of Travel?

- Trip-Based Model
- Activity-Based Model
- Limited Sensitivity Model

PRIVATE AV OWNERSHIP
50% SHARED AVs

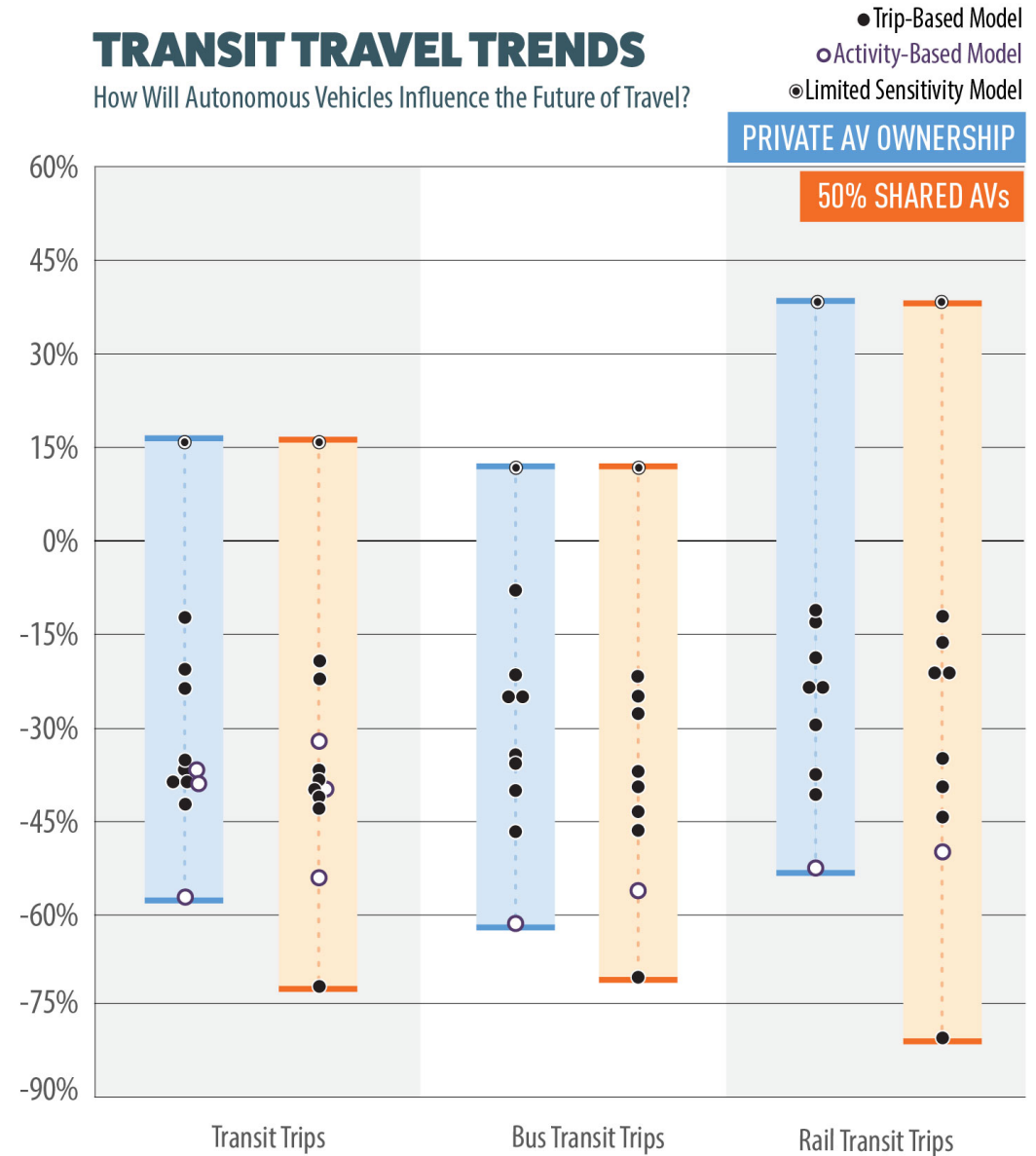Vehicle Miles Traveled   Vehicle Trips   Average Vehicle Trip Length

Anticipating change

Autonomy, the next tipping point?

TRANSIT TRAVEL TRENDS
How Will Autonomous Vehicles Influence the Future of Travel?

- Trip-Based Model
- Activity-Based Model
- Limited Sensitivity Model

PRIVATE AV OWNERSHIP
50% SHARED AVs

Transit Trips   Bus Transit Trips   Rail Transit Trips

Source: https://www.fehrandpeers.com/autonomous   -vehicle -research/

Preparing for the evolution

FEHR & PEERS

trendlab+

A tool to explore how the COVID-19 pandemic and its impacts on the economy may affect short- and long-term travel behavior, traffic levels, and transit use.
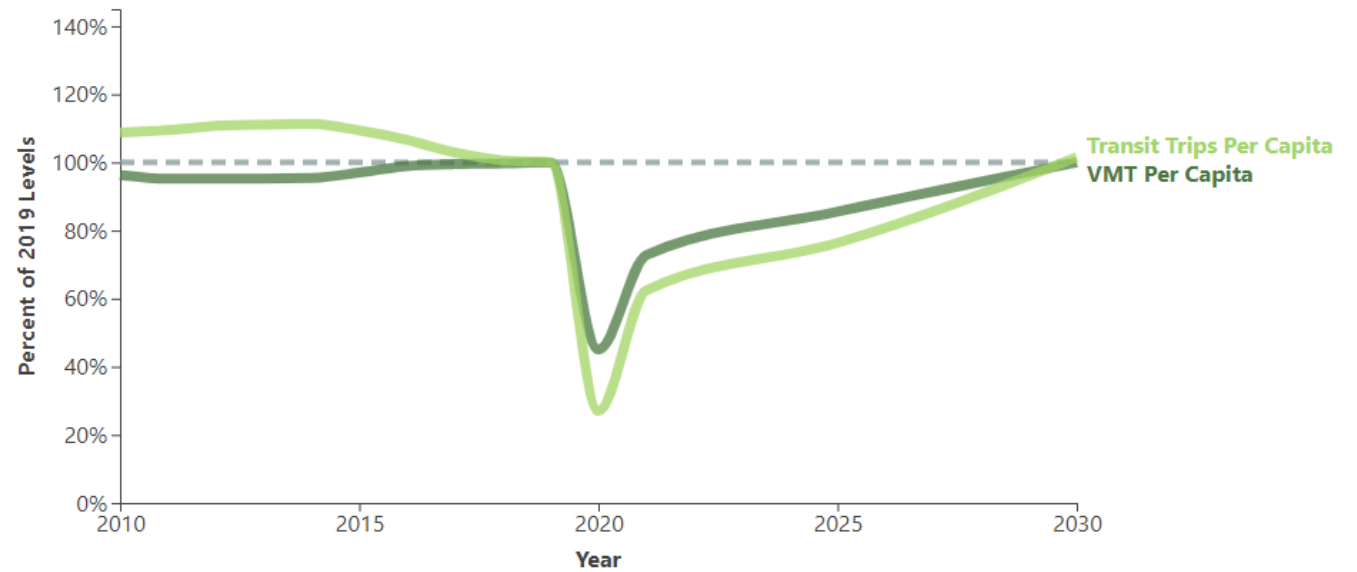
Based on your predictions, we think VMT per capita and transit ridership per capita will change as shown above. The table to the right indicates the net effect of your predictions (all values are shown as a percentage of 2019 levels).

	2020	2021	2025	2030
VMT Per Capita	45%	73%	86%	100%
Transit Trips Per Capita	27%	62%	76%	102%

Powered by FEHR & PEERS

https://apps.fehrandpeers.com/palmbeach-trendlab/