

# *Current Travel Behavior and Transit Ridership*

APTA CEO Seminar

Monday, February 11, 2018

**Steven E. Polzin, PhD.**

# Outline

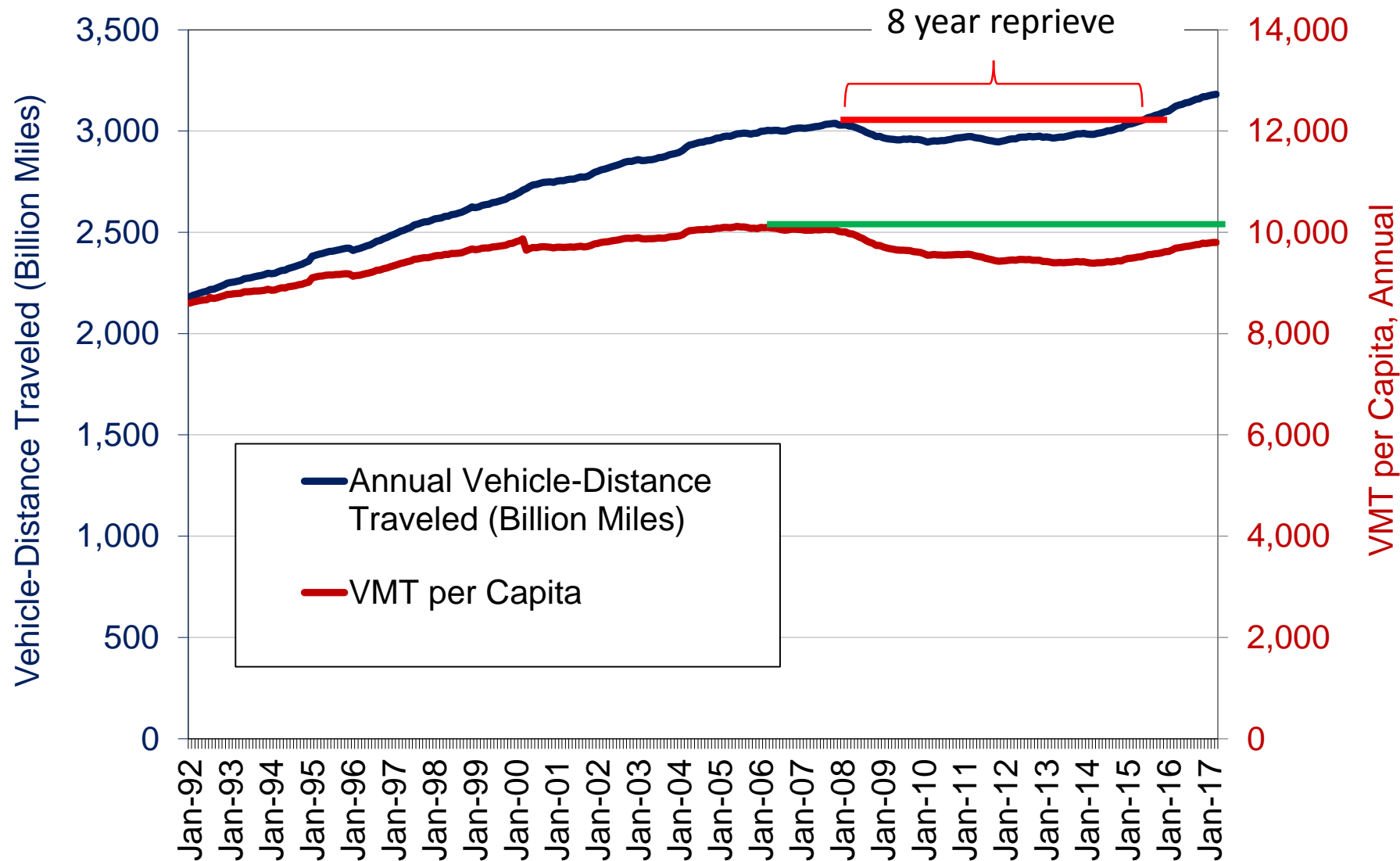
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- **What is going on with travel**
- **What factors are influencing transit use**
- **Critical Issues going forward**

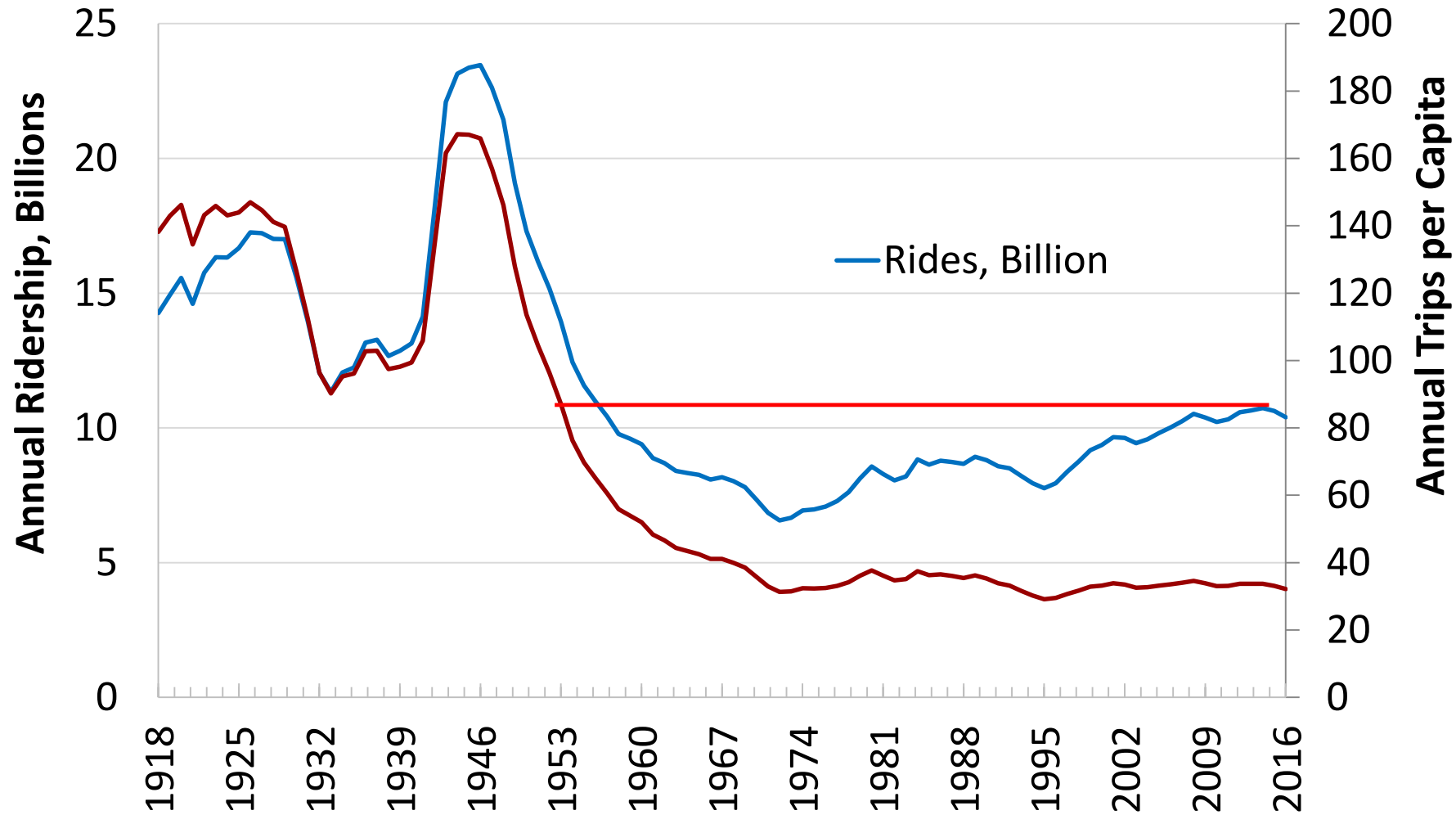
# U.S. Context and Travel Trends

	2015/2014	2016/2015	2017/2016 YTD	Months	Source
U.S. Population	0.8%	0.5%	<b>0.7%</b>	-	Census
Total Employment	1.7%	1.7%	<b>1.3%</b>	11	BLS
Real GDP	2.9%	1.5%	<b>2.3%</b>	12	BEA (1 <sup>st</sup> est.)
Gas Price	-29.3%	-14.8%	<b>15.1%</b>	12	EIA
Registered Cars and Light Trucks	2.1%	1.5%	<b>3.0%</b>	12 proj.	Hedges Co.
Light Vehicle Sales	5.8%	0.1%	<b>-1.8%</b>	12	BEA
Count of Zero-Vehicle Households	-1.0%	-1.9%			Census
VMT	3.5%	2.8%	<b>1.3%</b>	11	FHWA
Public Transit Ridership	-1.0% to -2.2%	-2.3% to -1.6%	<b>-3.1, -2.4%</b>	9, 11	APTA and NTD
Amtrak Ridership (FY)	-0.3%	1.9%	<b>1.9%</b>	12	Amtrak
Airline Passengers	5.3%	3.9%	<b>3.3%</b>	10	USDOT, BTS

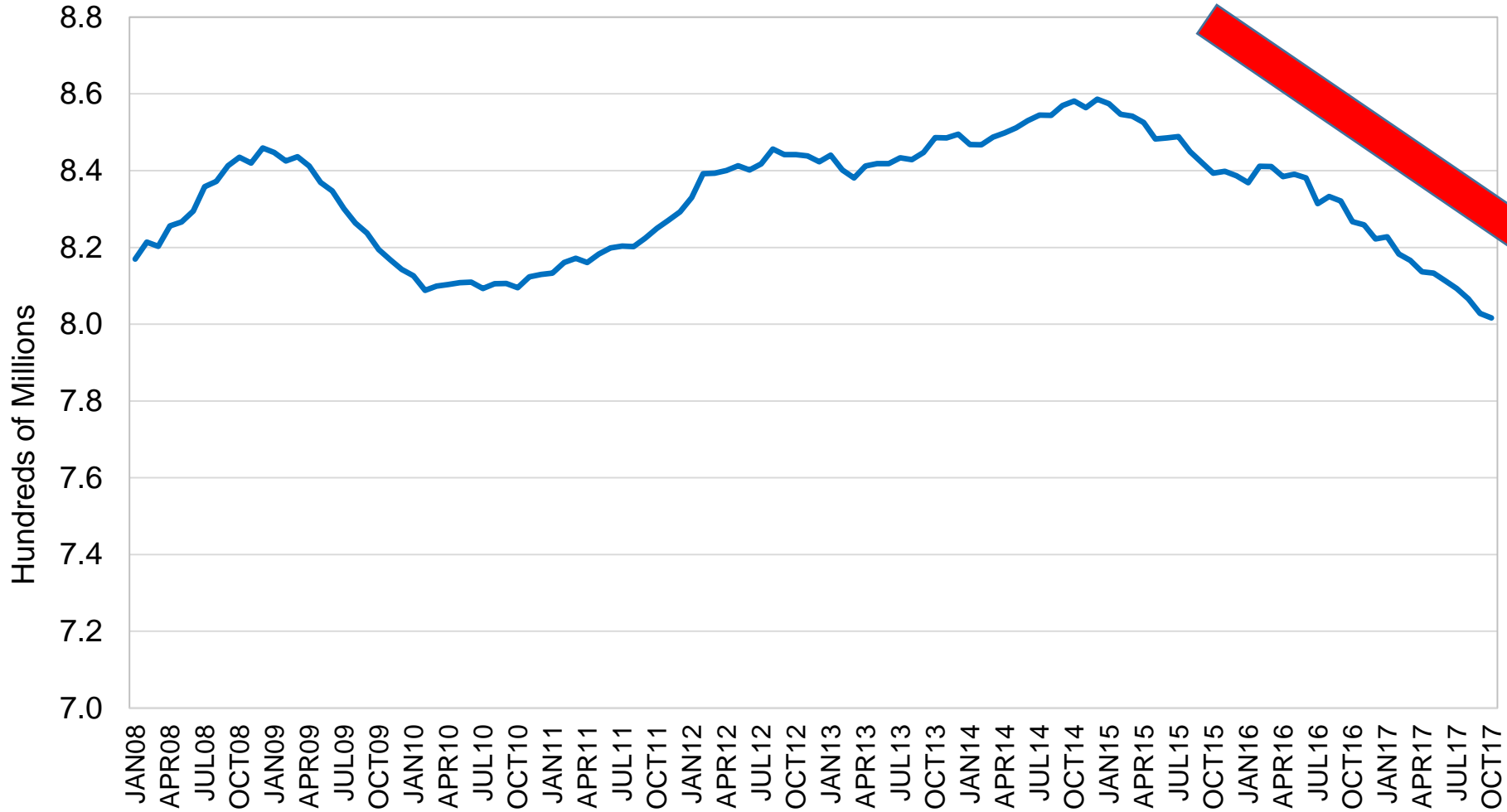
# National VMT and VMT per Capita Trend, Moving 12-Month Total, 1990–2016



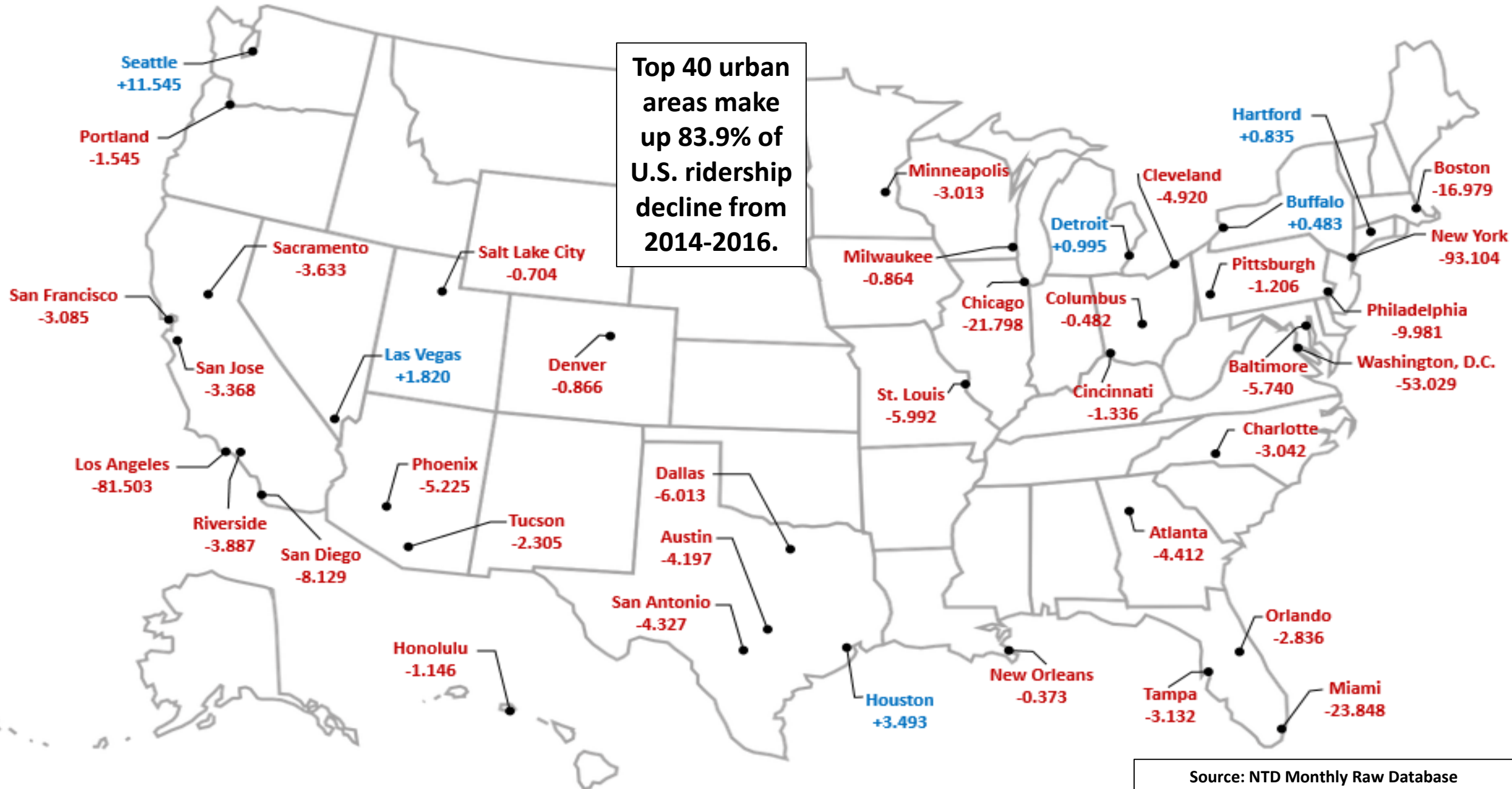
# U.S. Transit Ridership and Ridership per Capita



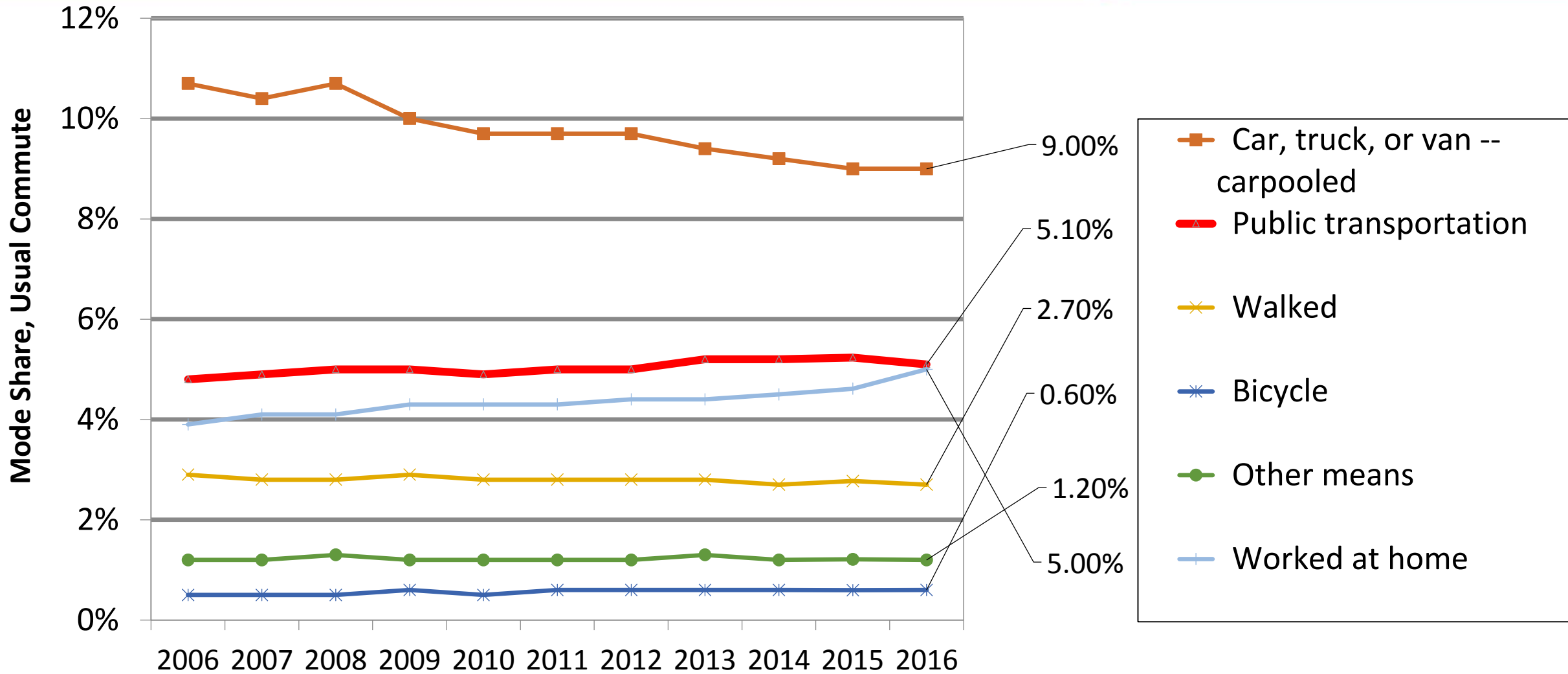
# U.S. Transit Ridership, Fixed Route, 12-Month Rolling Average



# Top 40 UZAs by 2016 Transit Ridership, Change 2014-2016 (Millions)



# Declining Carpooling and Growing Work-at-Home Dominate Trends





# Where are We Headed?

## 2012-2014

Transit ridership near 60 year high

Millennials are different

We passed peak VMT

We are urbanizing and  
CBD's are thriving

Developers embrace  
transit

Strong referendum  
success

TNC's address first-  
mile/last-mile issue



## 2015-2017

Transit ridership loss accelerates in 3<sup>rd</sup> year of decline

Millennials buy cars and move to suburbs

VMT and VMT/Capita continue growth

Growth and migration resume historic patterns

System conditions, reliability, health care  
costs, etc. plague transit operators

How much will that subway cost? When  
will Hawaii's rail system open? How is that  
new streetcar doing?

TNC's can cannibalize  
transit ridership

Why do we need  
transit with CAV?

2018 →  
?



# Framework for Understanding Changes in Transit Ridership

1. Demographics and Land-Use } Demand

2. Transit Service Quality } Supply

3. Competition

**How much of ridership change is explained by these factors?**

- Demographic, Economic, and Land Use Factors: Demand Factors**
- Geographic Population Distribution across Metros
  - Geographic Activity Distribution within Metros (access to service?)
  - Age
  - Income/Economic Activity
  - Licensure Level
  - Auto Availability
  - Poverty Level
  - Unemployment
  - Core Values (sensitivity to travel traits, i.e. safety, reliability, etc.)

- Transit Service Factors: Supply Factors**
- Fares (levels, convenience, ease of use)
  - Level of Service (coverage, frequency, hours of operation)
  - Speed (access, wait, in vehicle, transfer, egress)
  - Reliability
  - Safety/Security
    - Accident Safety
    - In-Vehicle/Facility Crime
  - Image
    - Cleanliness
    - Interpersonal Compatibility/Civility
    - Status/Persona
  - Environmental Impacts
  - Awareness/Marketing
  - Amenities (Wi-Fi, shelter, convenience retail, etc.)

- Competition Factors: Supply Factors**
- Communication Substitution for Travel
    - Trip Making Levels (as impacted by communication substitution)
  - TNC Availability/LOS/Price
  - Bike/Bikeshare
  - Auto Cost
    - Fuel Cost
    - Purchase/Lease/Finance cost
    - Parking Cost/Other Auto Costs
  - Roadway Congestion/Speed

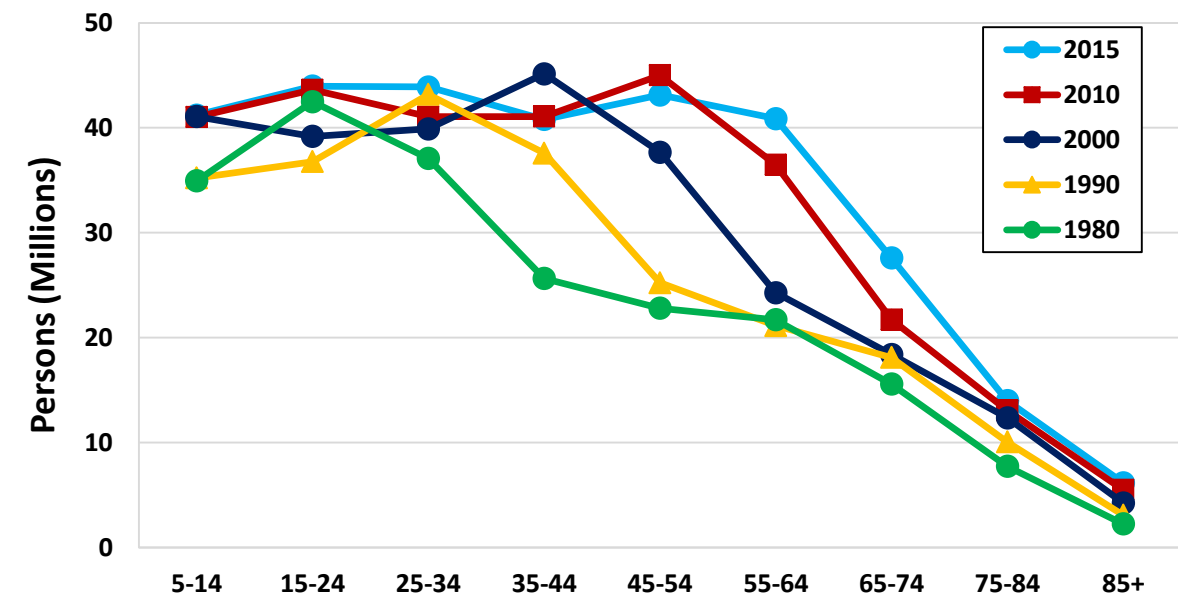
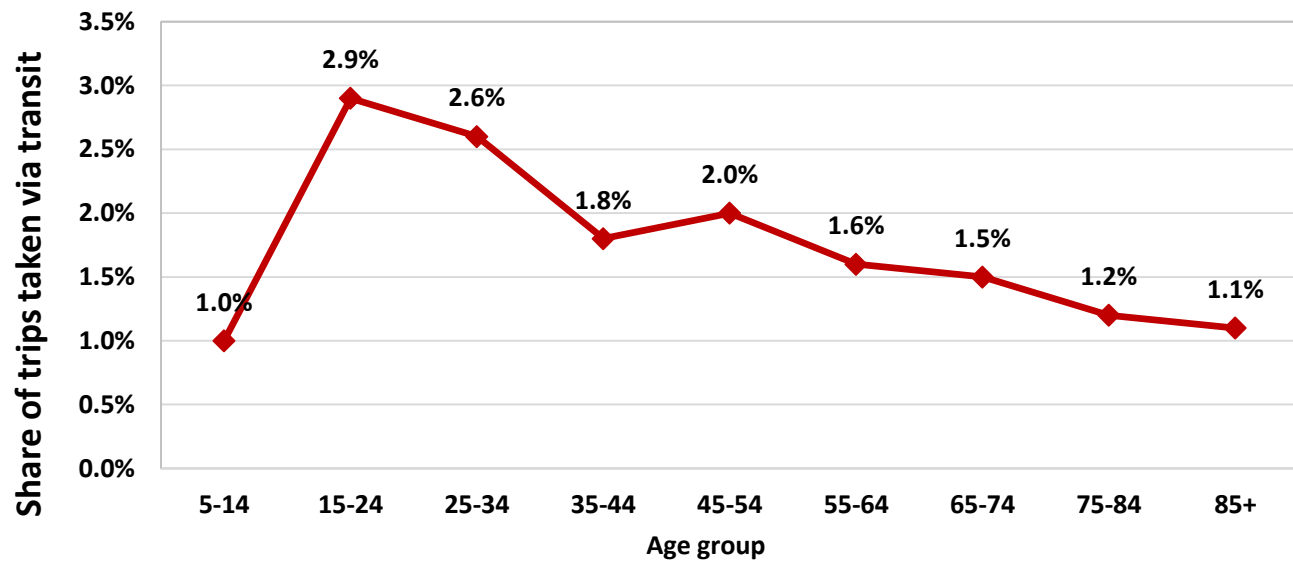
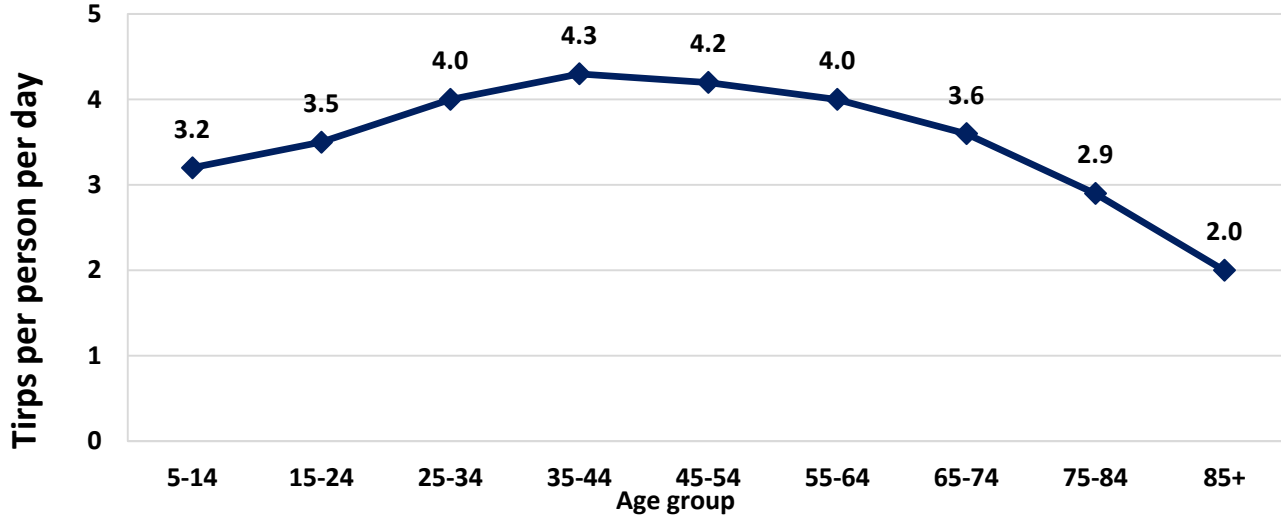
**Transit Ridership**

# Framework for Understanding Changes in Transit Ridership

## 1. Demographics and Land-Use

- Age
- Geographic Distribution across Metros
- Geographic Distribution within Metros (within proximity of service?/gentrification)
- Income
- Licensure Levels
- Auto Ownership
- Poverty Levels (SNAP enrollment)
- Unemployment
- Reduced College Student Ridership (APTA report)
- Core Values

# Aging Population has a Negative Impact on Ridership



# Migration and Growth are Higher in Low Transit Use Areas

**Top 10 Largest-Gaining Counties (Numeric Change): July 1, 2015 to July 1, 2016**

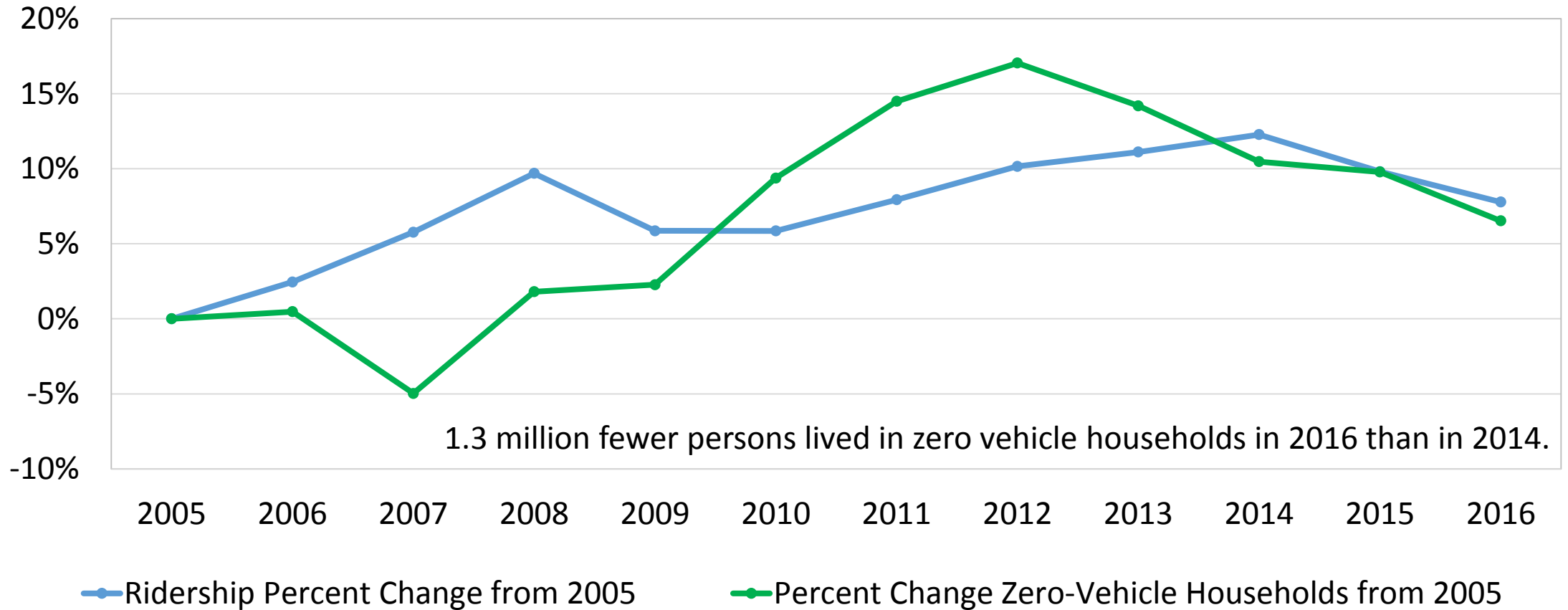
County	Population	Numeric Change	Percent Change	Transit Commute Share 2015
Maricopa County, Arizona	4,242,997	81,360	1.95	2.3%
Harris County, Texas	4,589,928	56,587	1.25	2.8%
Clark County, Nevada	2,155,664	46,375	2.2	4.2%
King County, Washington	2,149,970	35,714	1.69	12.6%
Tarrant County, Texas	2,016,872	35,462	1.79	0.6%
Riverside County, California	2,387,741	34,849	1.48	1.4%
Bexar County, Texas	1,928,680	33,198	1.75	2.6%
Orange County, Florida	1,314,367	29,503	2.3	3.2%
Dallas County, Texas	2,574,984	29,209	1.15	2.9%
Hillsborough County, Florida	1,376,238	29,161	2.16	1.7%
Average				3.4%

**Largest-Declining Counties or County Equivalents (Numeric Change): July 1, 2015 to July 1, 2016**

County	Population	Numeric Change	Percent Change	Transit Commute Share 2015
Cook County, Illinois	5,203,499	-21,324	-0.41	18.8%
Wayne County, Michigan	1,749,366	-7,696	-0.44	2.5%
Baltimore city, Maryland	614,664	-6,738	-1.08	19.6%
Cuyahoga County, Ohio	1,249,352	-5,673	-0.45	5.1%
Suffolk County, New York	1,492,583	-5,320	-0.36	6.8%
Milwaukee County, Wisconsin	951,448	-4,866	-0.51	6.2%
Allegheny County, Pennsylvania	1,225,365	-3,933	-0.32	9.1%
San Juan County, New Mexico	115,079	-3,622	-3.05	0.3%
St. Louis City, Missouri	311,404	-3,471	-1.1	9.7%
Jefferson County, New York	114,006	-3,254	-2.78	0.0%
Average				7.8%

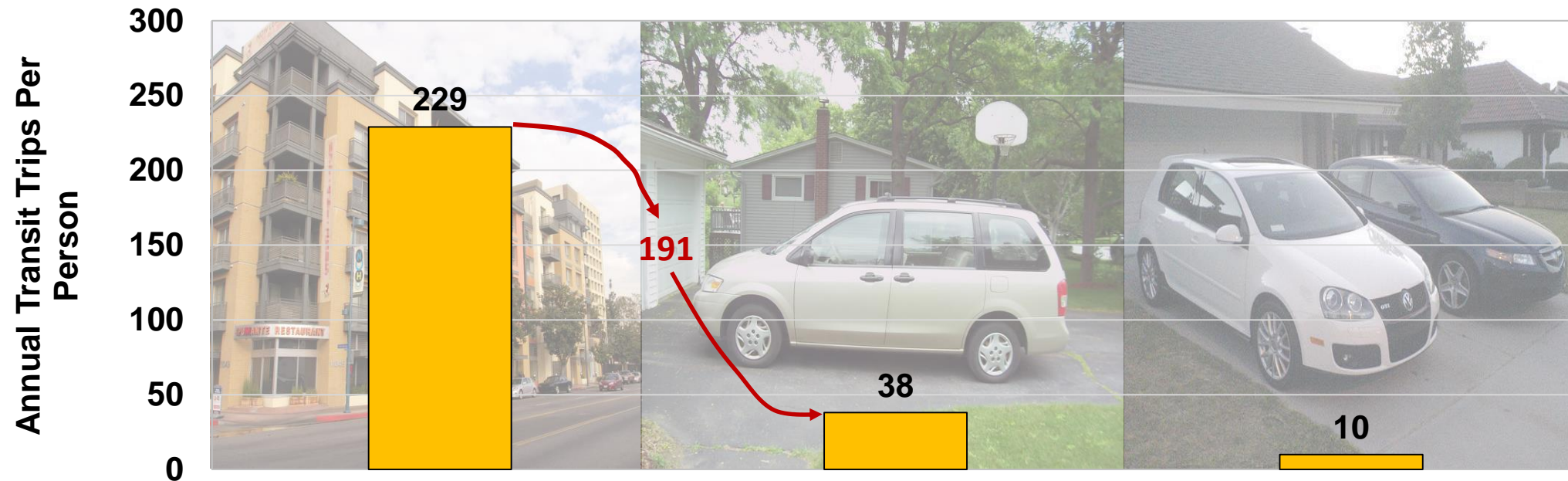
# Improving Vehicle Availability Coincides with Declining Transit Ridership

Percent Change in Transit Ridership and Zero-Vehicle Households from 2005



# Impact of Greater Auto Availability

Each Fewer Resident in a Zero-Vehicle Household is Estimated to Reduce Annual Transit Trips by 191



Sources:  
2009 NHTS,  
U.S. Census,  
NTD

Vehicles in Household

0

1

2+

Total

Change in Population  
(5 and up), 2014-2016

-1.094 million

-1.440 million

+5.360 million

+4.265 million

Estimated Transit Trip  
Change

-251 million

-55 million

+67 million

-239 million

Total Population  
(5 and up), 2016

19.036 million

73.889 million

221.115 million

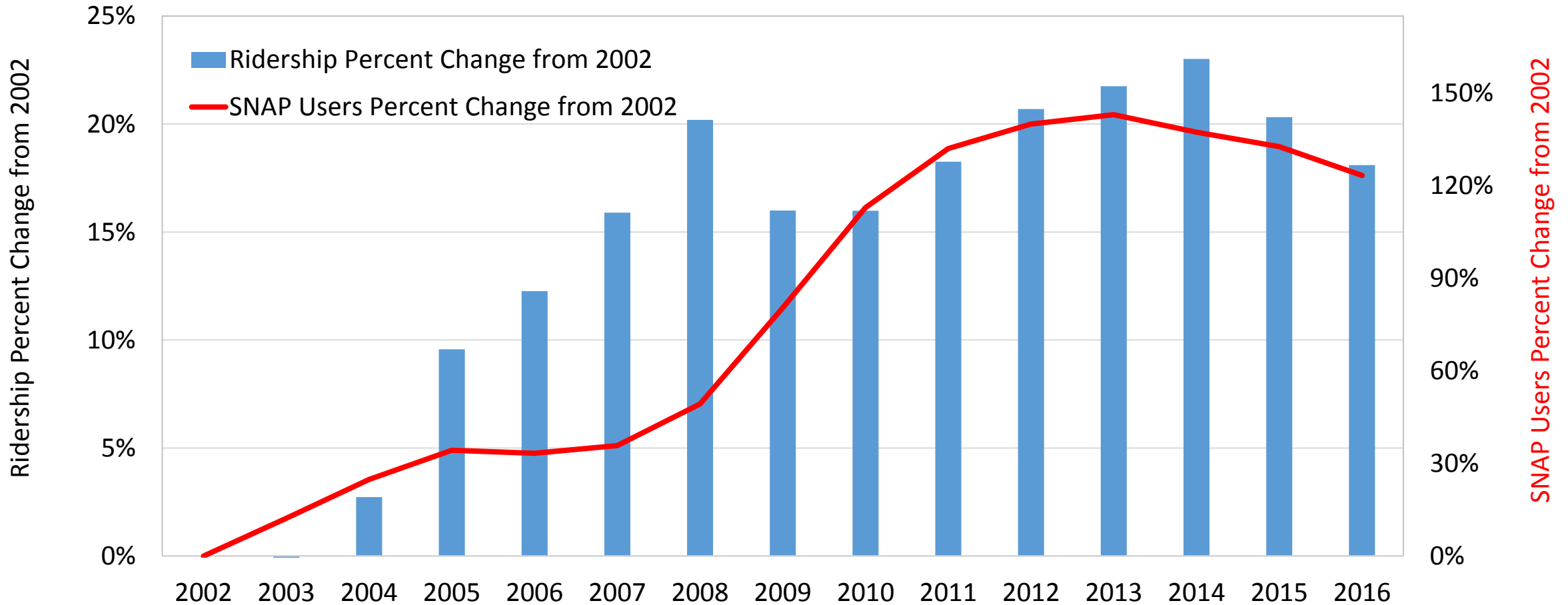
295.004 million

Note: Fixed-route transit ridership was 10,331 million in 2014 and 9,881 million in 2016, declining 449 million trips.

Transit trip rates based on 2009 National Household Travel Survey and Census data suggest 240 million, or **53%**, of the decline is explained by changes in vehicle availability.

# Transit Use Correlates with Need-Based Program Participation

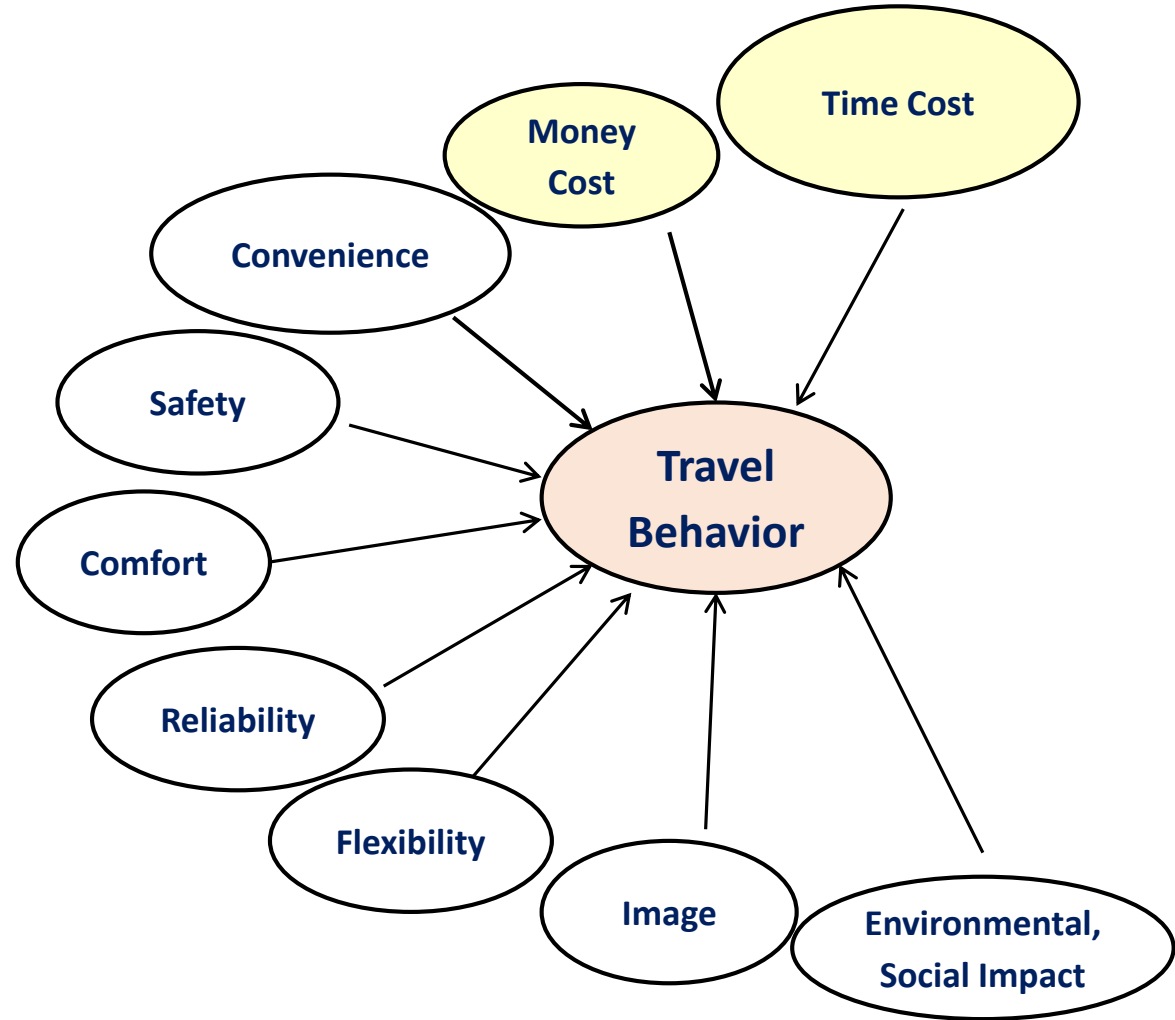
## Percent Change U.S. Transit Ridership and SNAP Enrollment





# Are Core Values that Impact Travel Changing?

- Do we value autonomy, privacy, flexibility, convenience, etc. more than in the past?

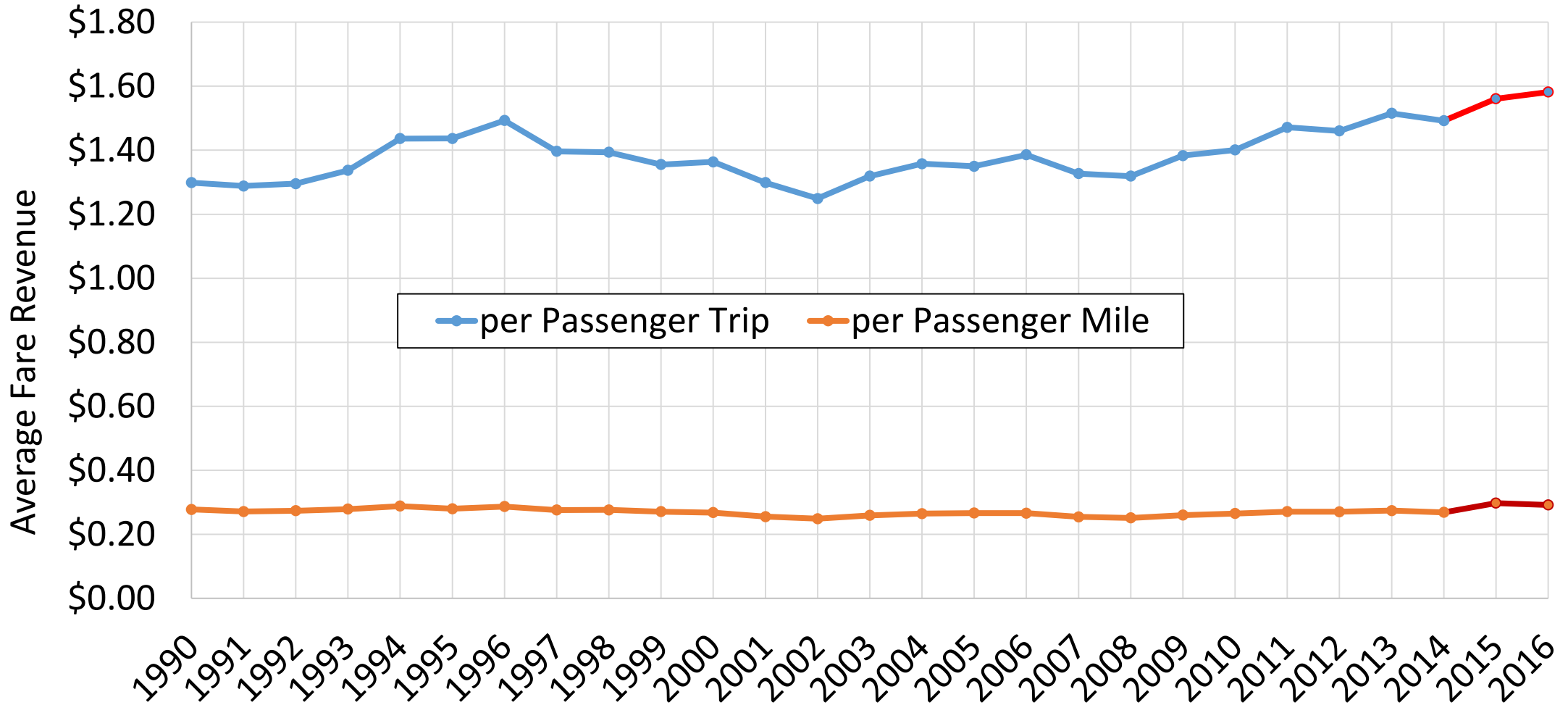


# Framework for Understanding Changes in Transit Ridership

## 2. Transit Service Quality

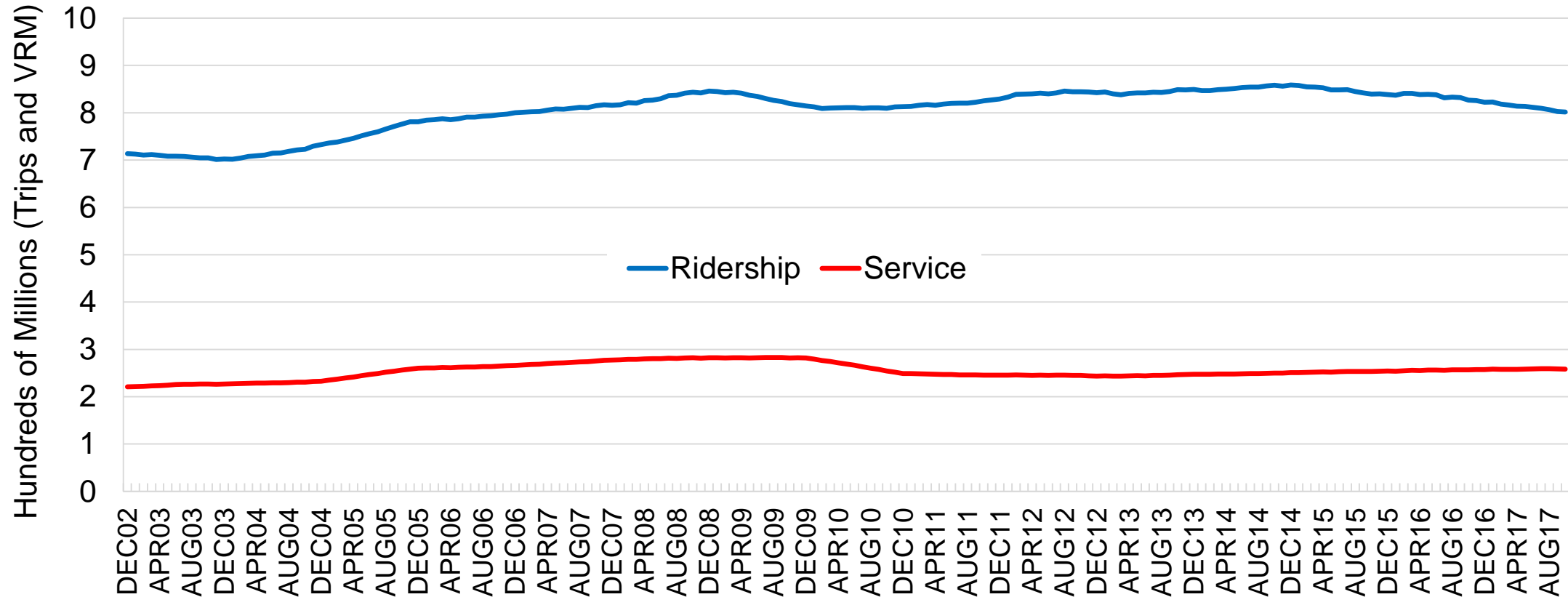
- Fares (levels, convenience, ease of use)
- Level of Service (coverage, frequency, hours of operation)
- Speed (access, wait, in vehicle, transfer, egress)(tolerance for waiting in our immediate gratification culture)
- Reliability
- Safety/Security
  - Accident Safety, In-Vehicle/Facility Crime
- Image
  - Cleanliness
  - Interpersonal Compatibility - Increased homeless/mental ill ridership (APTA report)
  - Status/Persona
- Environmental Impacts
- Awareness/Marketing (trip planning, real time information, digital fare payment, etc.)
- Amenities (Wi-Fi, shelter, convenience retail, etc.)

# Average Fare Revenue per Passenger Trip and Passenger Mile (2017 Dollars)



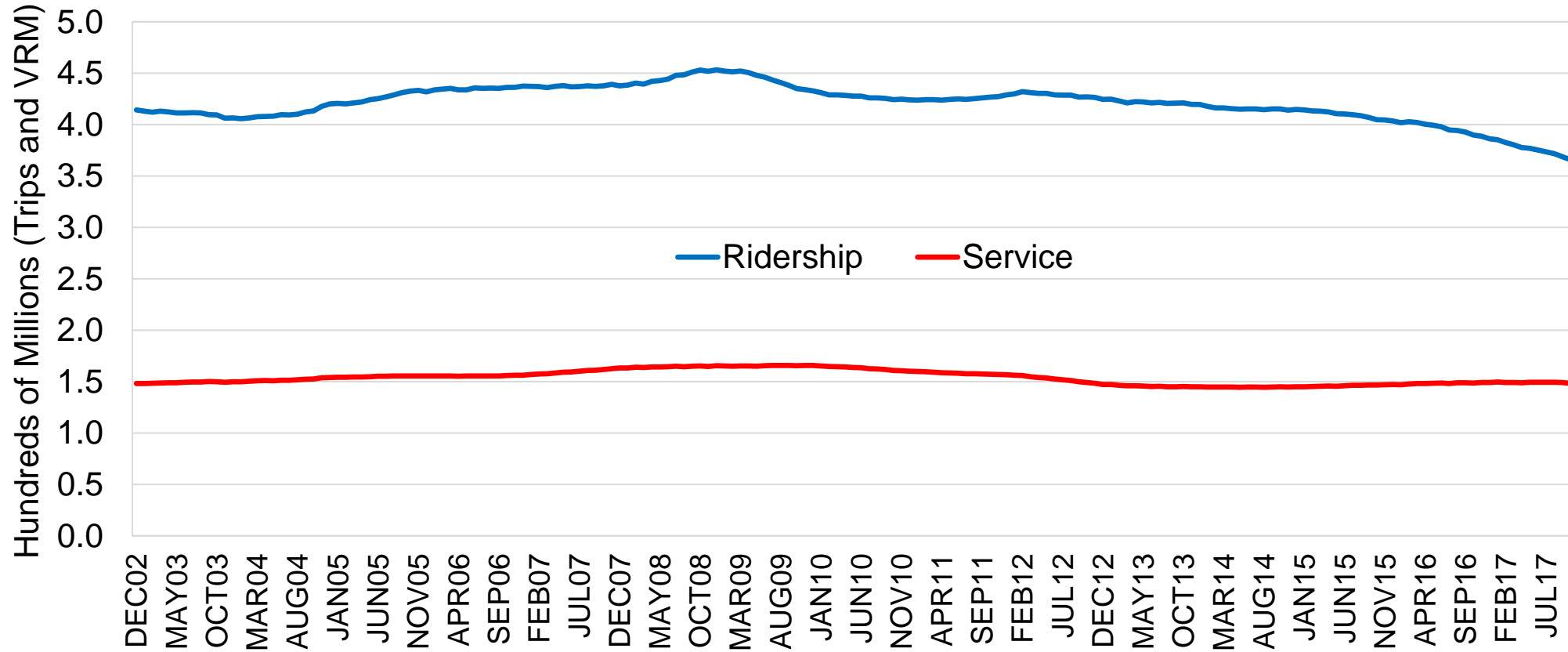
# Service Supply

12-Month Rolling Average of U.S. Transit Ridership and Service, Fixed Route



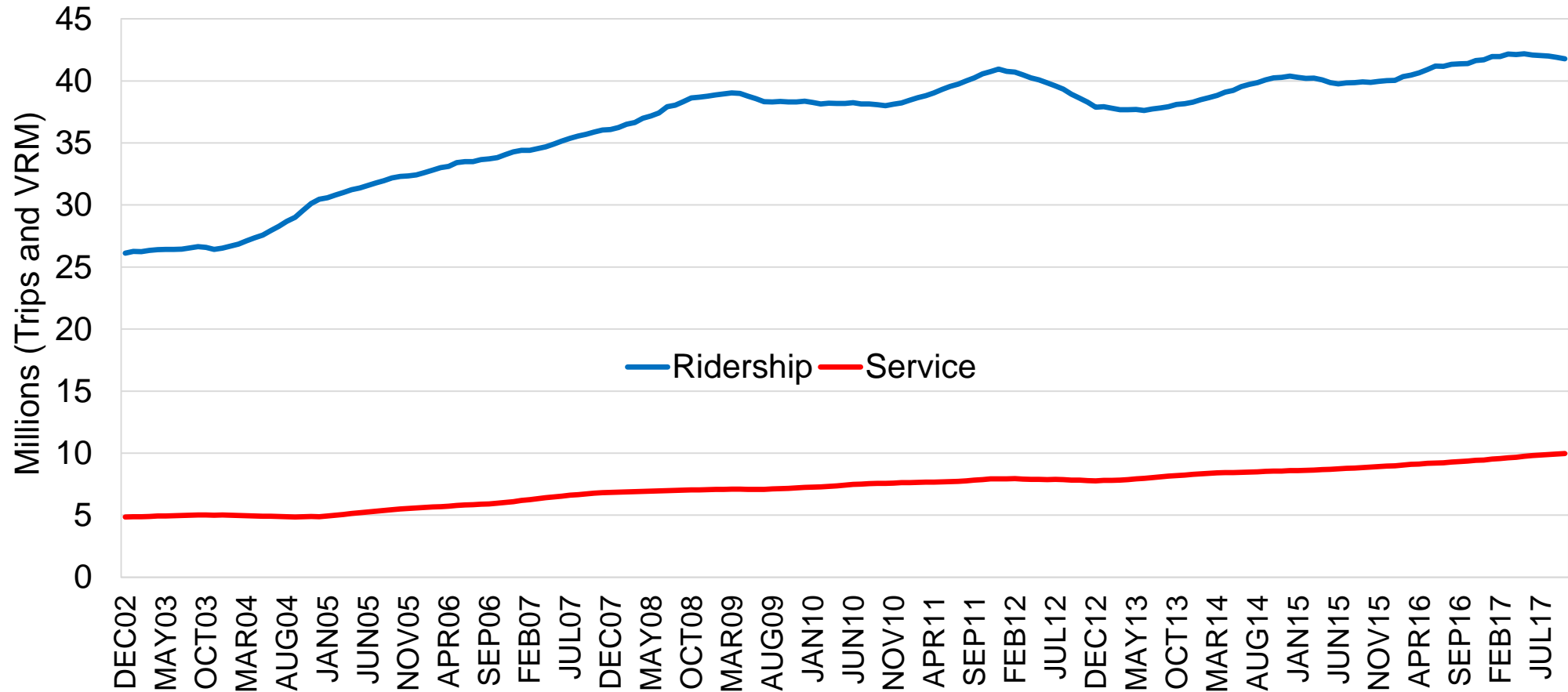
# Service Supply

12-Month Rolling Average of U.S. Transit Ridership and Service, **Metro Bus**



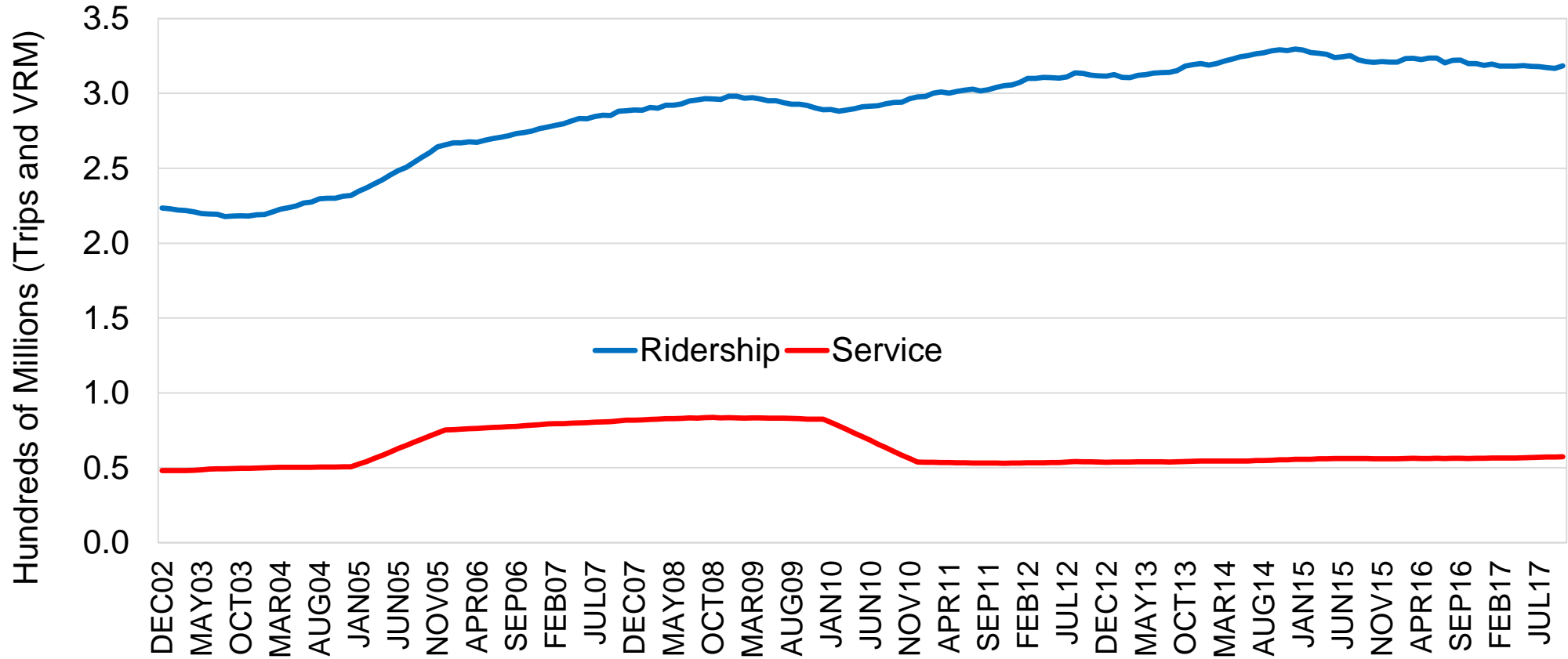
# Service Supply

12-Month Rolling Average of U.S. Transit Ridership and Service, **Light Rail**



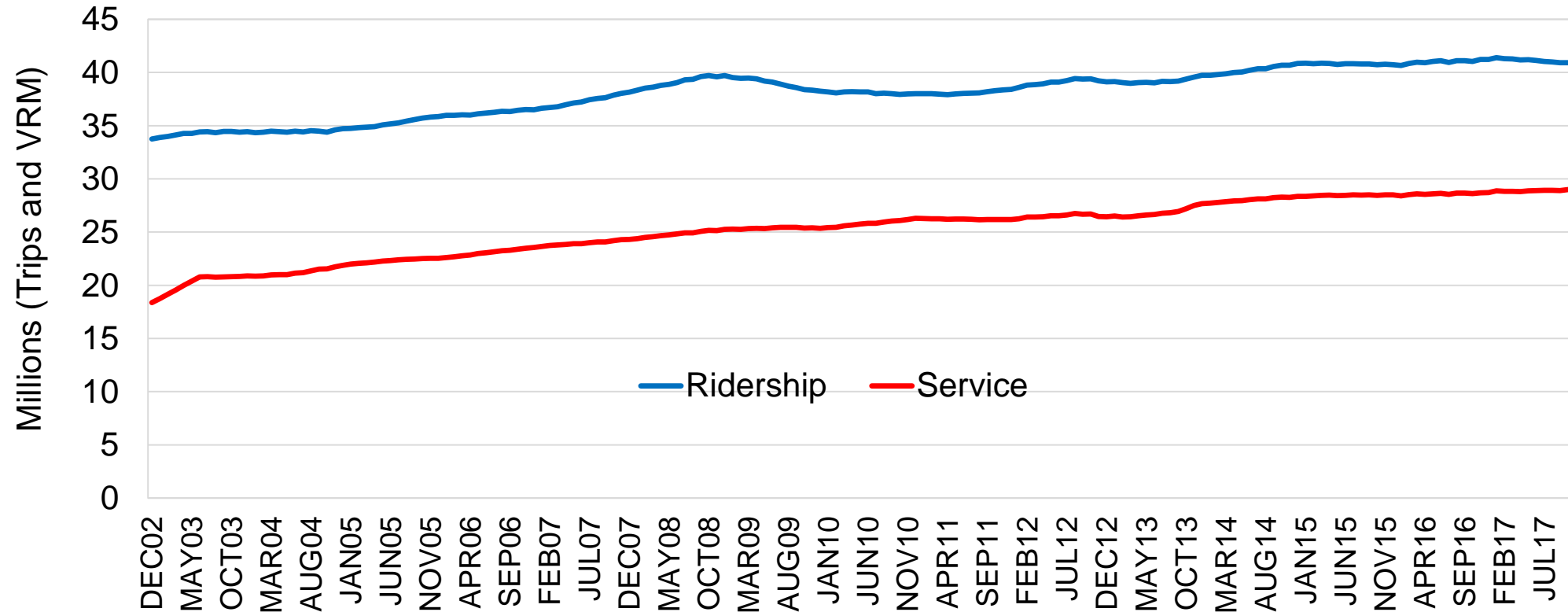
# Service Supply

12-Month Rolling Average of U.S. Transit Ridership and Service, **Heavy Rail**



# Service Supply

12-Month Rolling Average of U.S. Transit Ridership and Service,  
Commuter Rail



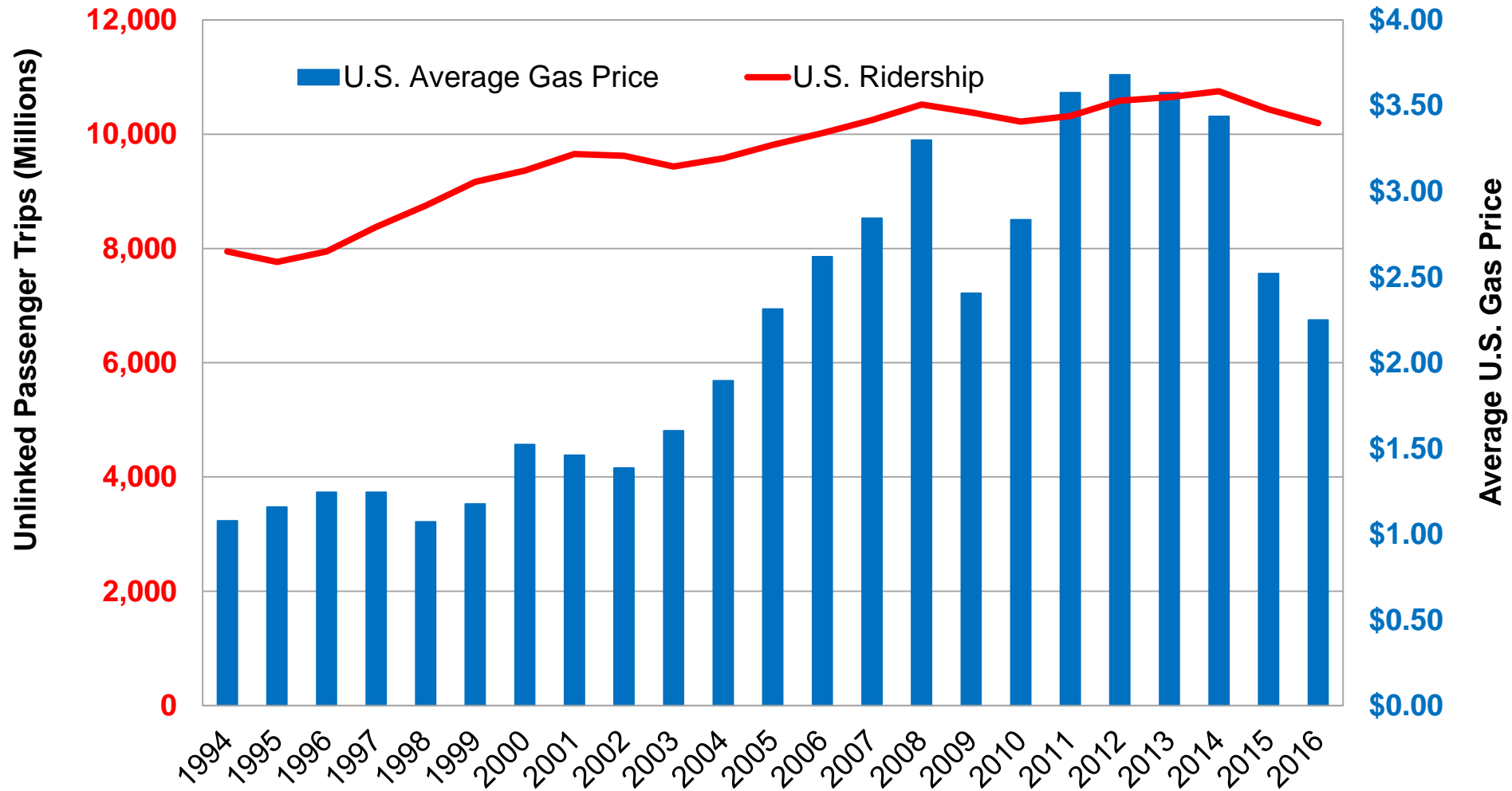


# Framework for Understanding Changes in Transit Ridership

## 3. Competition

- Communication Substitution for Travel
- Trip making levels (telecommuting, e-commerce, distant learning, online banking etc.)
- TNC availability/LOS/price
- Bike/Bikeshare
- Auto Cost
  - Fuel Cost
  - Purchase/Lease/Finance Cost
  - Parking Cost/Other Auto Costs
- Roadway Congestion/Speed

# Gas Prices and Transit Ridership, 1994-2016

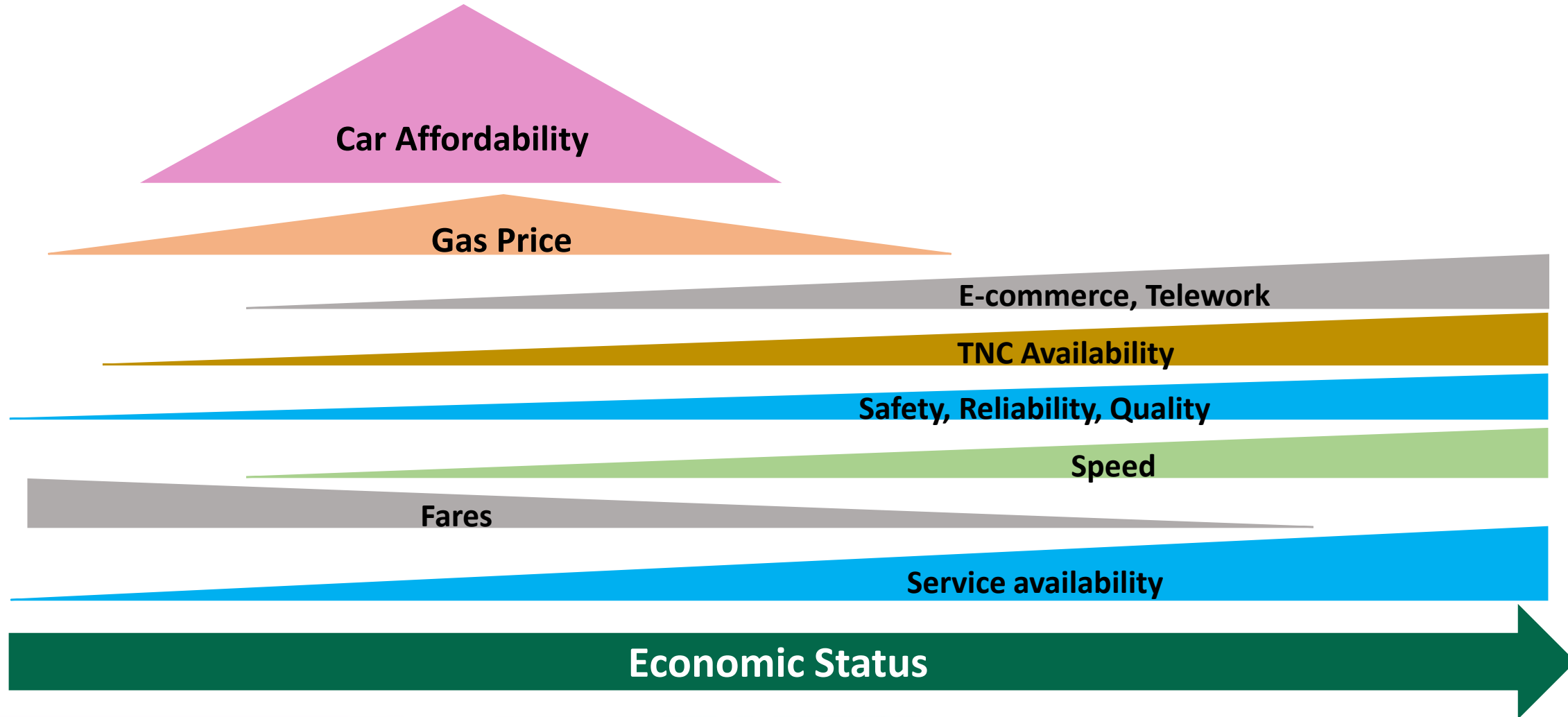


# Key Issues – Travel Behavior

- The reasons for soft ridership differ across contexts with telecommuting, TNC's, service reliability, auto ownership trends, fares, and other factors having different impacts in different markets.
- Transit has historically had the lowest mode loyalty (mode of last resort in many contexts).

# Influences on Transit Choice (Hypothesized)

Geographic and Economic Distribution of Population



# Key Issues – Travel Behavior

- Strong employment growth and growing real income could continue to undermine transit dependency and jeopardize ridership.
- Urban civility may influence future ridership trends.
- Demographic trends in proximity to transit services (TOD) will influence future ridership.
- Increasing roadway congestion could favor premium transit services but undermine mixed traffic transit operations.
- System condition and quality of industry execution may influence ridership.
- If declining fare revenues and/or dampened public willingness to increase subsidies result from soft ridership, it could jeopardize future service and ridership.

# Research on Ridership Trends

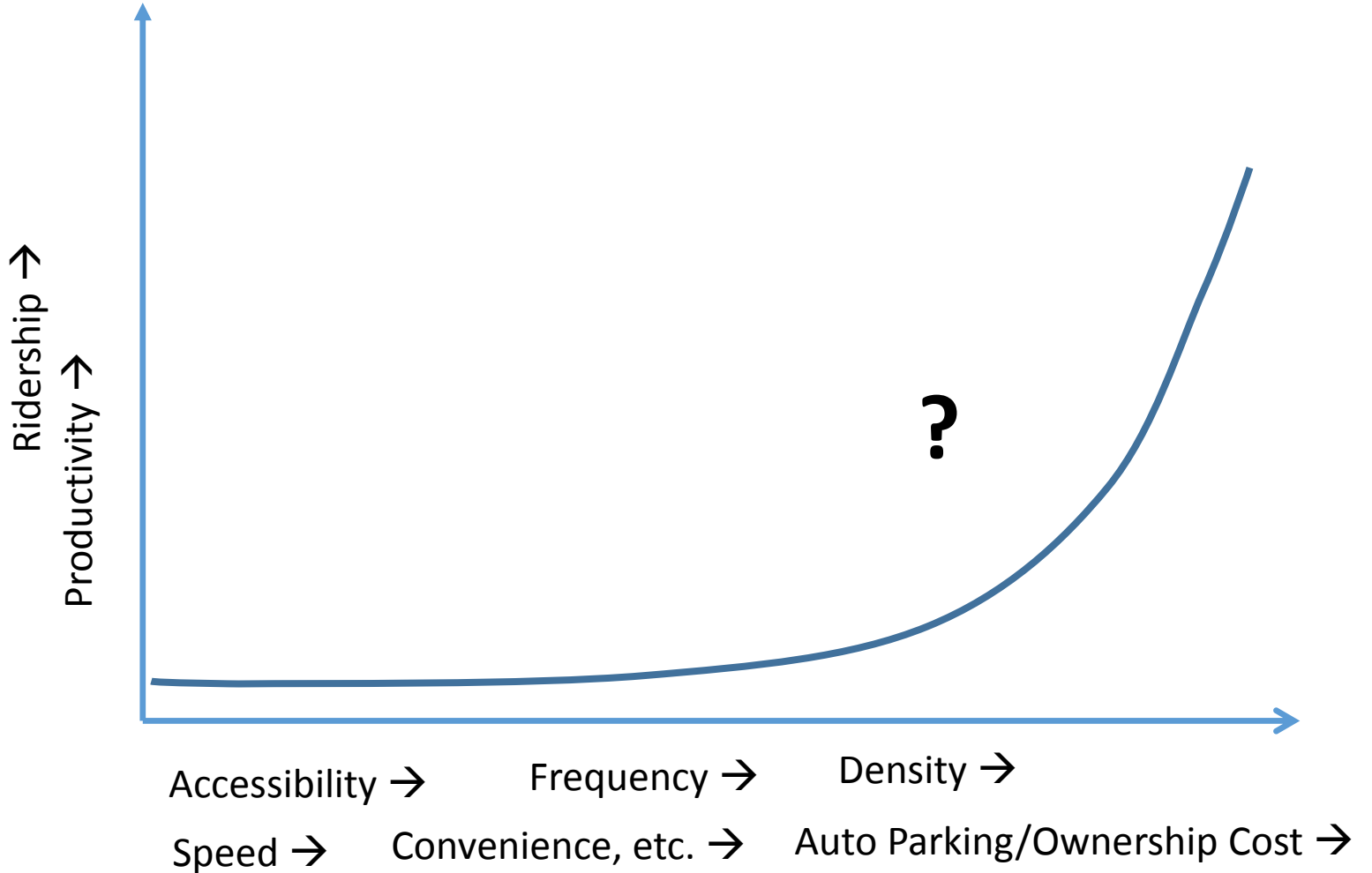
- APTA. “Understanding Recent Ridership Changes: Trends and Applications.” Policy Development and Research. Nov. 2017.
- Agency Initiatives: “Falling Transit Ridership: California and Southern California.” UCLA Institute of Transportation Studies. Dec. 2017.
- FDOT, Understanding Ridership Trends in Transit – in progress

## Pending:

- TCRP J-11/Task 28, Synthesis, “Analysis of Recent Public Transit Ridership Trends”, \$60,000.
- TCRP A-43, “Recent Decline in Public Transportation Ridership: Analysis, Causes, Responses,” \$400,000.
- TCRP H-56, “Reinventing Transit Networks for a New Mobility Future,” \$300,000.

# Key Issues – Strategic

Is there an **inflection point** where service becomes more attractive to choice travelers?



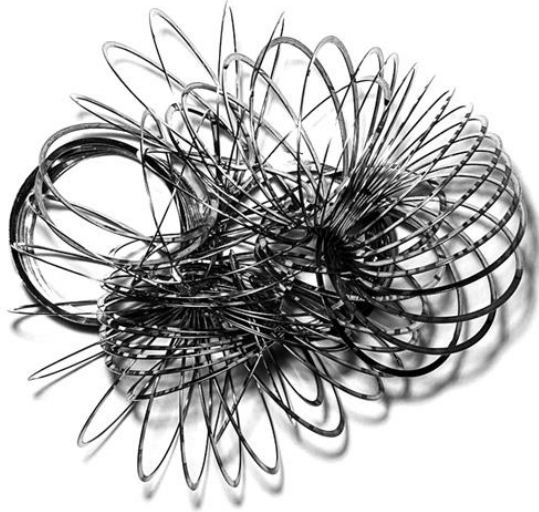
# How Do Stakeholders Respond?

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# Thank You!



**USF**

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