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Public Transit Ridership Trends

August 18, 2020

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Learning Objectives

1. Identify traditional causes of transit ridership increases and declines

2. Discuss current trends in bus and rail ridership

3. List strategies agencies are using to combat ridership change

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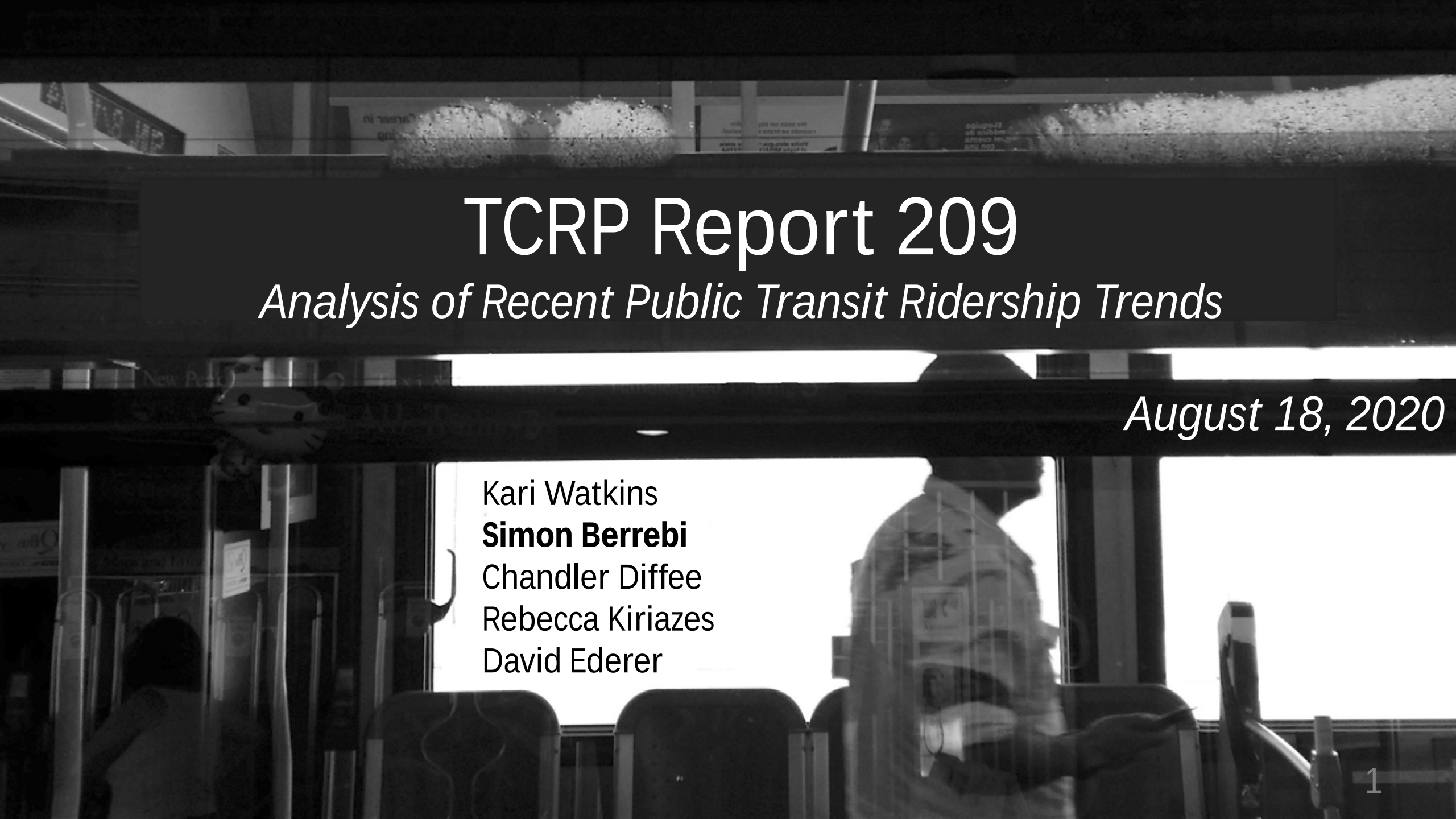

TCRP Report 209

Analysis of Recent Public Transit Ridership Trends

August 18, 2020

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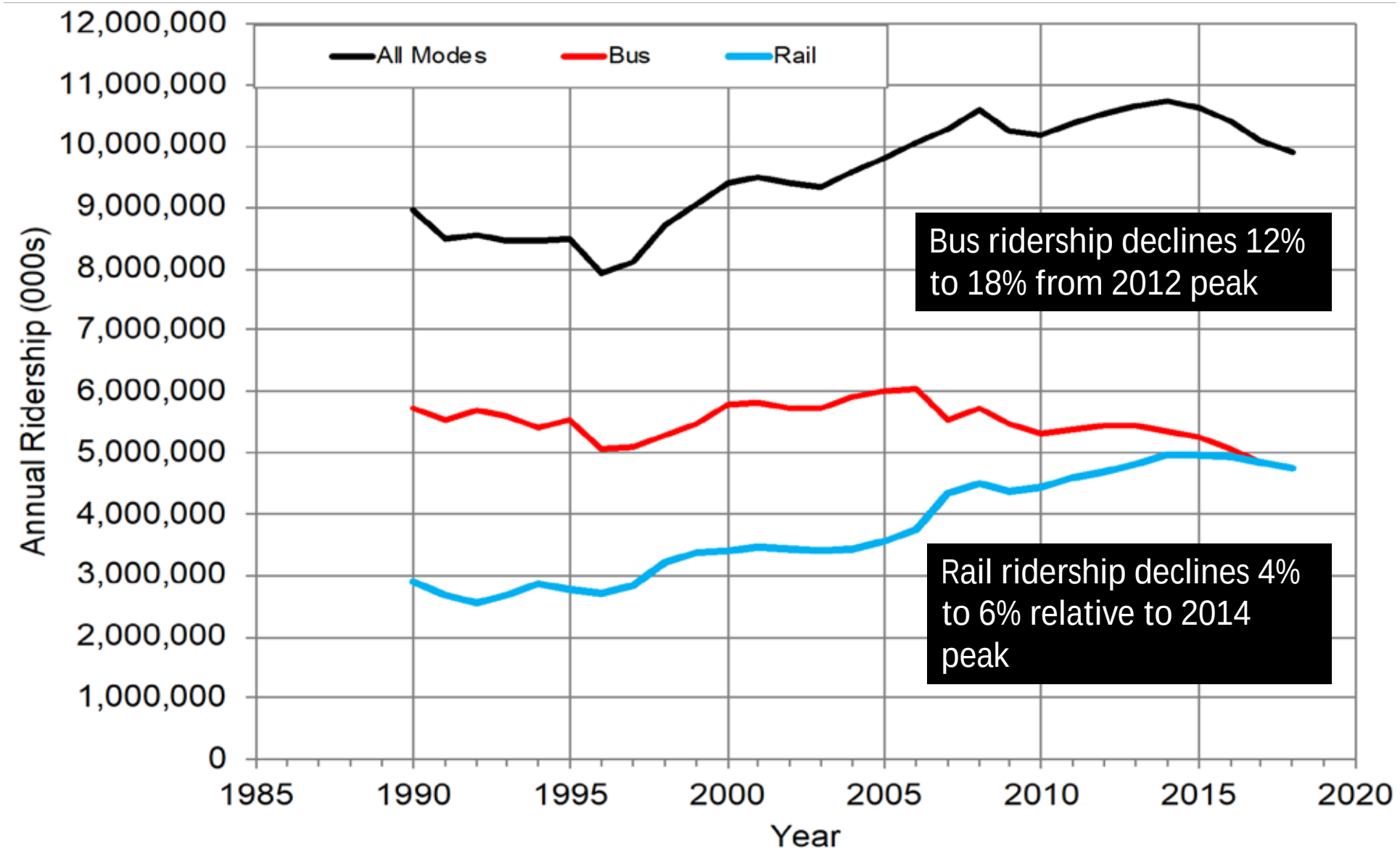
Rebecca Kiriazes
David Ederer

US Transit Ridership by Mode



International Changes in Ridership

US is not alone in their ridership losses, but most countries with similar losses have poor economic conditions or substantial changes in demographics.

Graphics Source: UITP (2017)

GROUP	COUNTRIES	CHARACTERISTICS IN COMMON
1. **High demand** in the beginning + **large growth**	Switzerland, Austria, Luxembourg, Norway	Small and dense countries (except Norway) with a long history of public transport and large economic growth
2. **High demand** in the beginning + **mild growth**	Germany, UK, Sweden	
3. **High demand** in the beginning + **decline**	Russia, Ukraine, Bulgaria, Hungary, Czech Republic, Poland, Japan, Italy, Latvia	Improvement of living conditions and possibility of purchasing private vehicles (except Japan and Italy), reduction of population/small population growth, aging population
4. **Low/medium demand** in the beginning + **mild/large growth**	Turkey, Belgium, China, New Zealand, Malta, Canada, Australia, Brazil, France	Notable increase in public transport investment, recognition of vital role public transport plays to alleviate growing congestion, tangible economic growth and fast urbanisation (for Turkey, China and Brazil)
5. **Low demand** in the beginning + **decline**	Slovenia, Ireland, Spain	inadequate supply, financial crisis

Traditional Causes of Ridership Change

- Historically, most vital factor affecting ridership is the **amount of service** provided.
- In past few years, many agencies have increased service **without associated ridership** increases.
- Transit ridership is cyclical and tied to **economic factors**
  - Low unemployment increases ridership
  - High gas prices increases ridership
- Ridership also tied to **built environment** factors
  - Higher housing and employment density increases ridership
  - Low cost parking decreases ridership
- Shifts in housing and demographics are **not favoring transit** access
  - Growing suburbs
  - Gentrification in urban cores

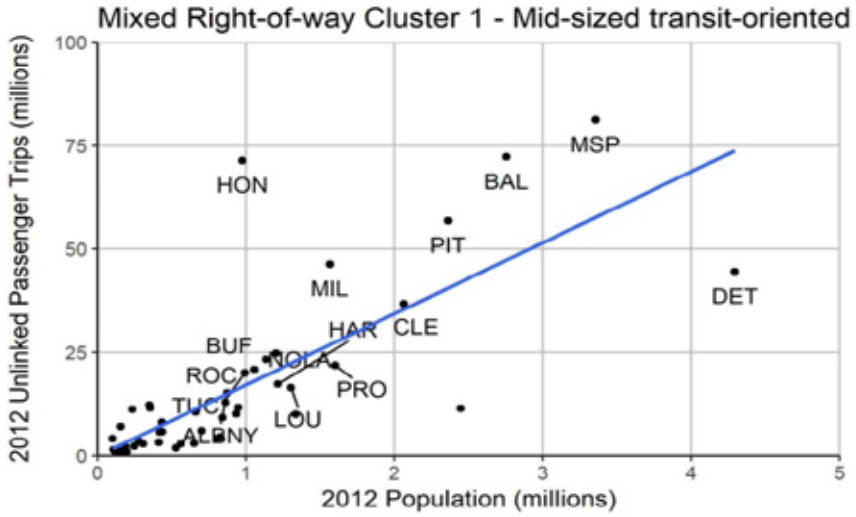
New Competition for Ridership

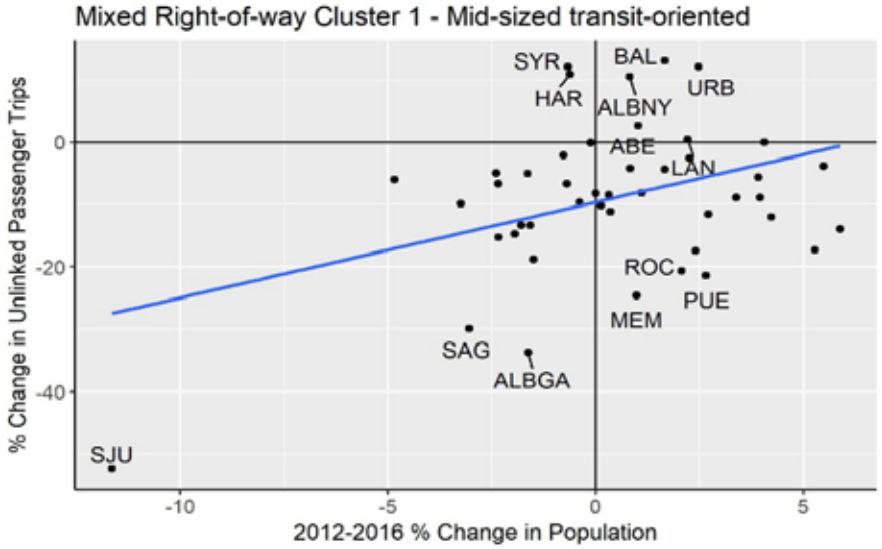
- Increasingly people are making less traditional trips
  - Telecommuting increasing (less monthly transit passes)
  - Flex work schedules
  - Delivery services to stores and restaurants
- There is more competition from new modes
  - Bikeshare
  - Carshare
  - Shared mobility services
    - Evidence that Uber and Lyft replace transit trips, particularly outside of peak hours
    - Also evidence that Uber and Lyft complement transit, particularly for rail systems

Trend Analysis

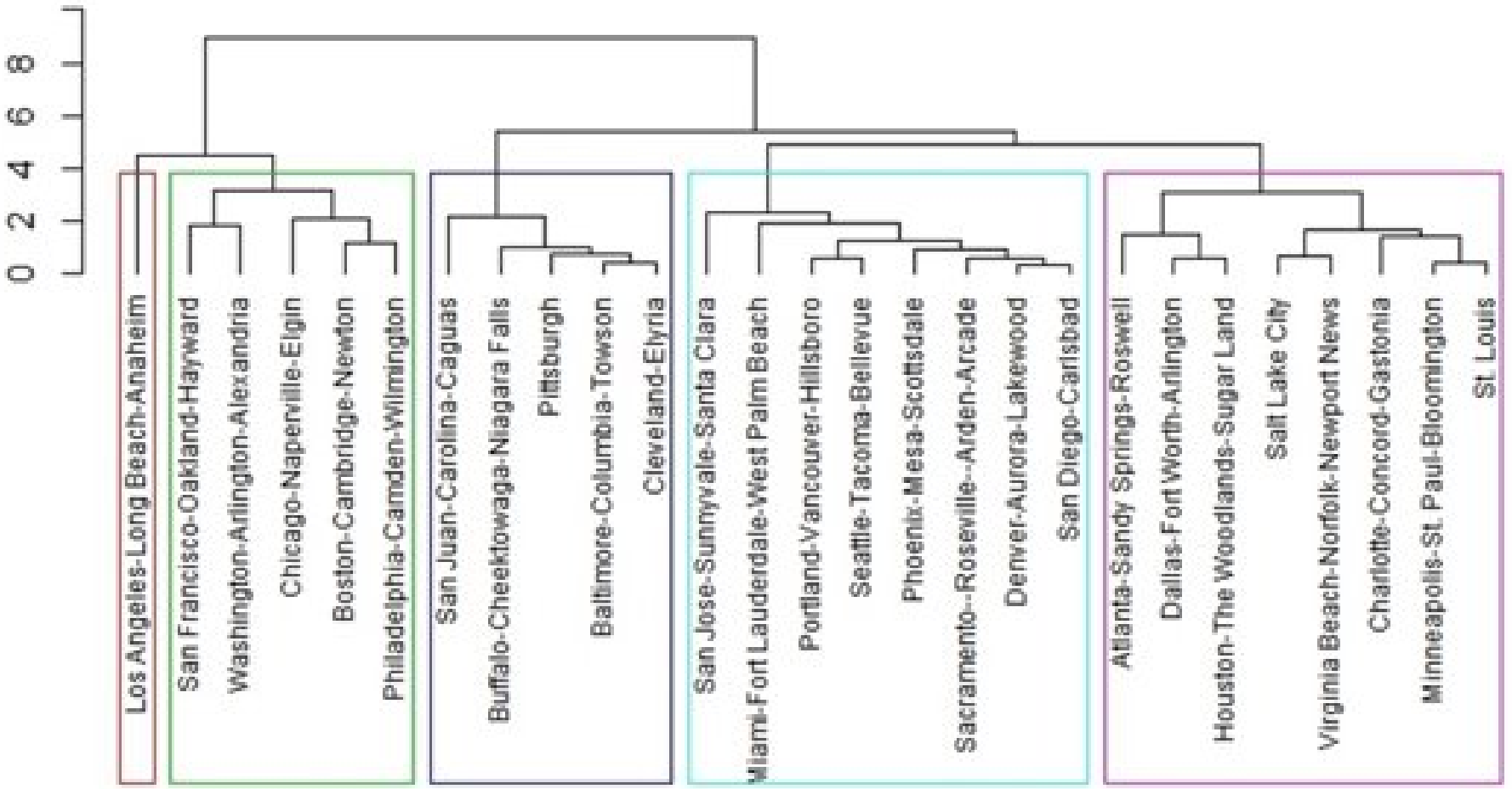
Ridership Trend Analysis

- Used clusters to produce snapshot of ridership trends
- Trend analysis to examine relationship with three major factors:
  - Population
  - Share of zero-vehicle households
  - Vehicle revenue miles

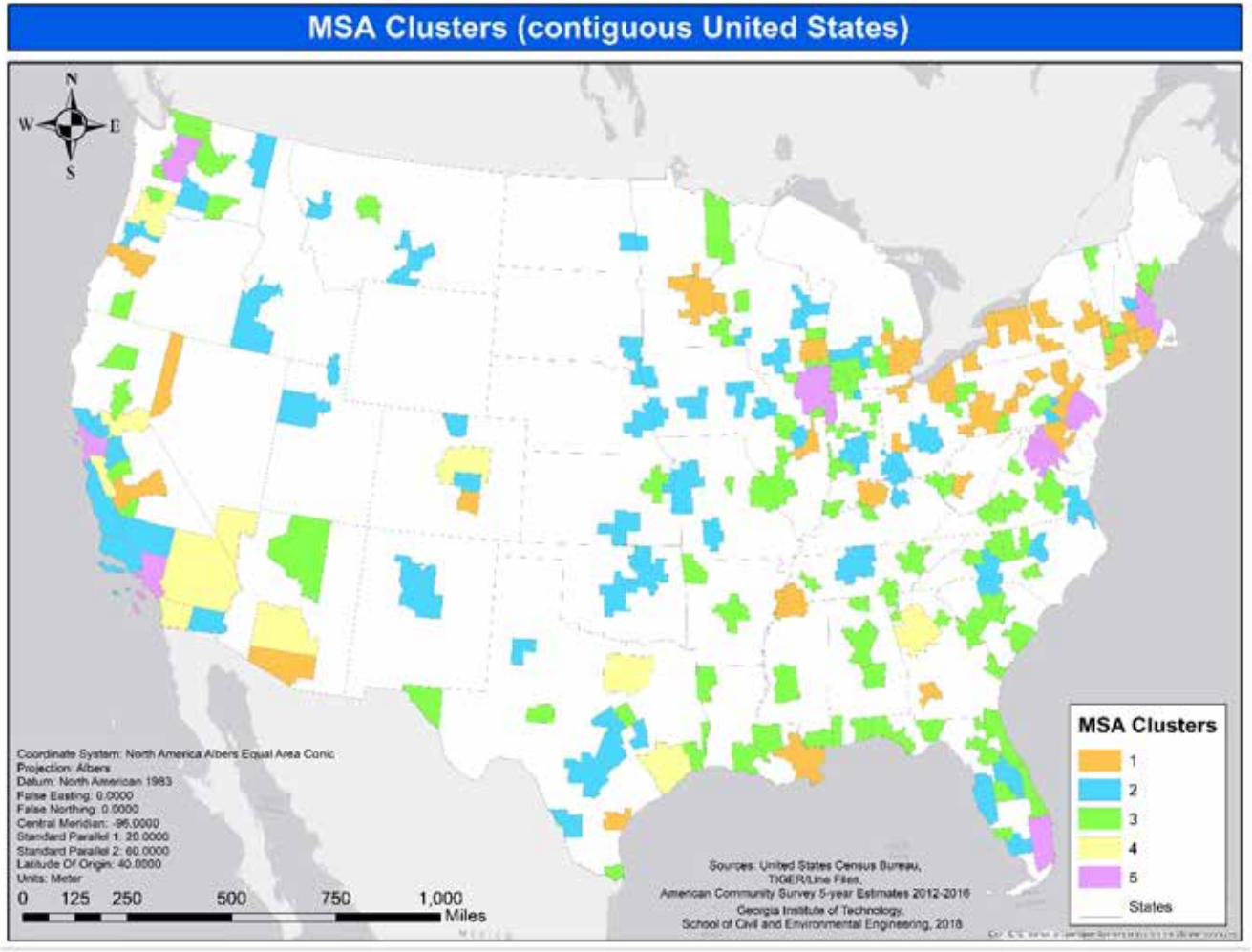




Dedicated Right-of-Way (Rail Clusters)



Mixed Right-of-Way (Bus) Clusters



Cluster 1 - Mid-sized, transit-oriented

Albany, Baltimore, Pittsburgh, and Cleveland

Cluster 2 - Mid-sized auto-oriented

Charlotte, Tampa, Billings, and Wichita

Cluster 3 - Sprawling small towns

Lansing, Burlington, Blacksburg, and Knoxville

Cluster 4 - Sprawling metropolis

Atlanta, Houston, Denver, and Phoenix

Cluster 5 - Dense metropolis

Boston, Chicago, Seattle, and Miami

Mixed Right-Of-Way (Bus)

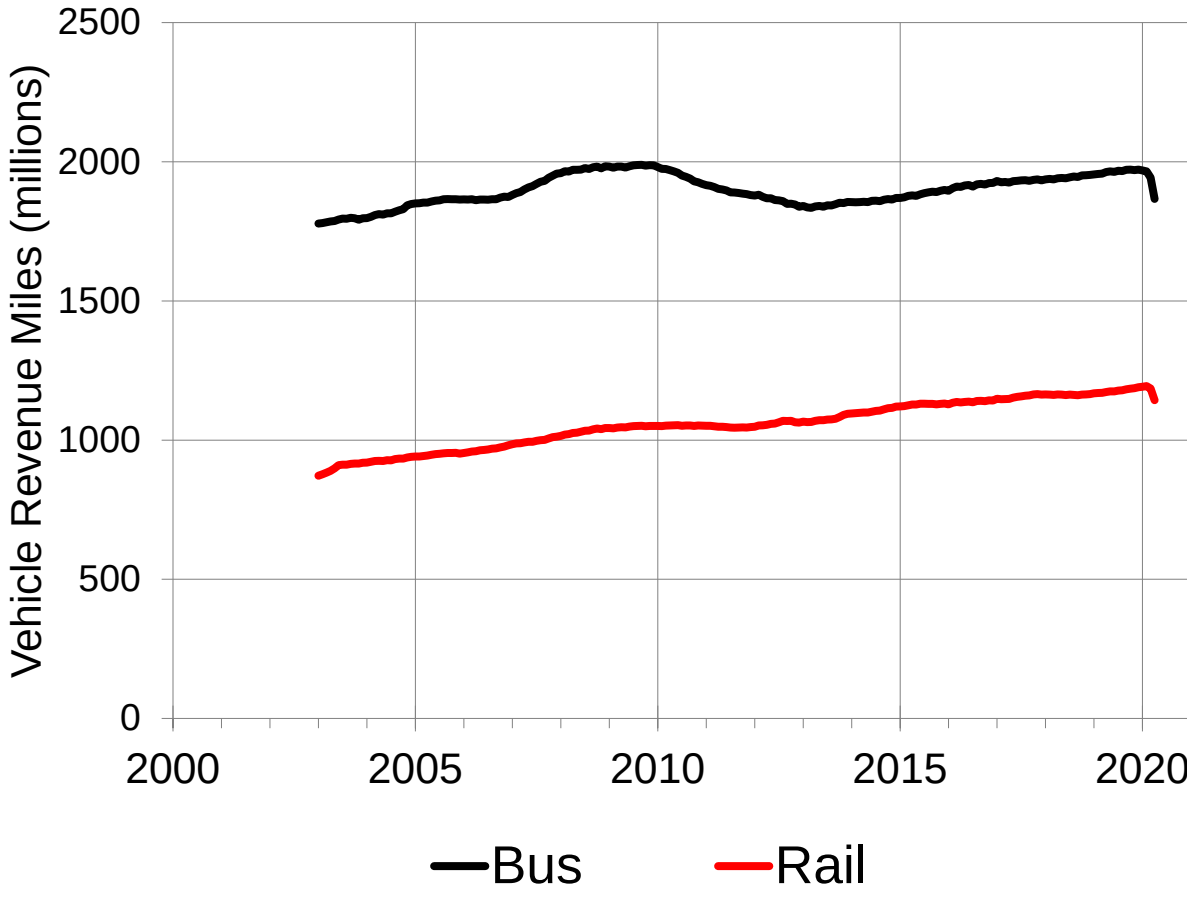
Population	Zero-Vehicle Households	Transit Service Levels
2012		
Strong relationship between population and ridership in every cluster except sprawling metros	**Very little relationship** between zero-vehicle households and transit ridership	**Strong relationship** between ridership and service-levels, especially in mid-sized MSAs
Change from 2012-2016		
No relationship linking cities that had population gains to increases in transit ridership	Change in transit ridership and change in zero-vehicle households are **only linked in the largest metros**	Change in service **somewhat linked** to change in ridership in mid-sized MSAs, but not in larger metros.

Dedicated Right-of-Way (Rail)

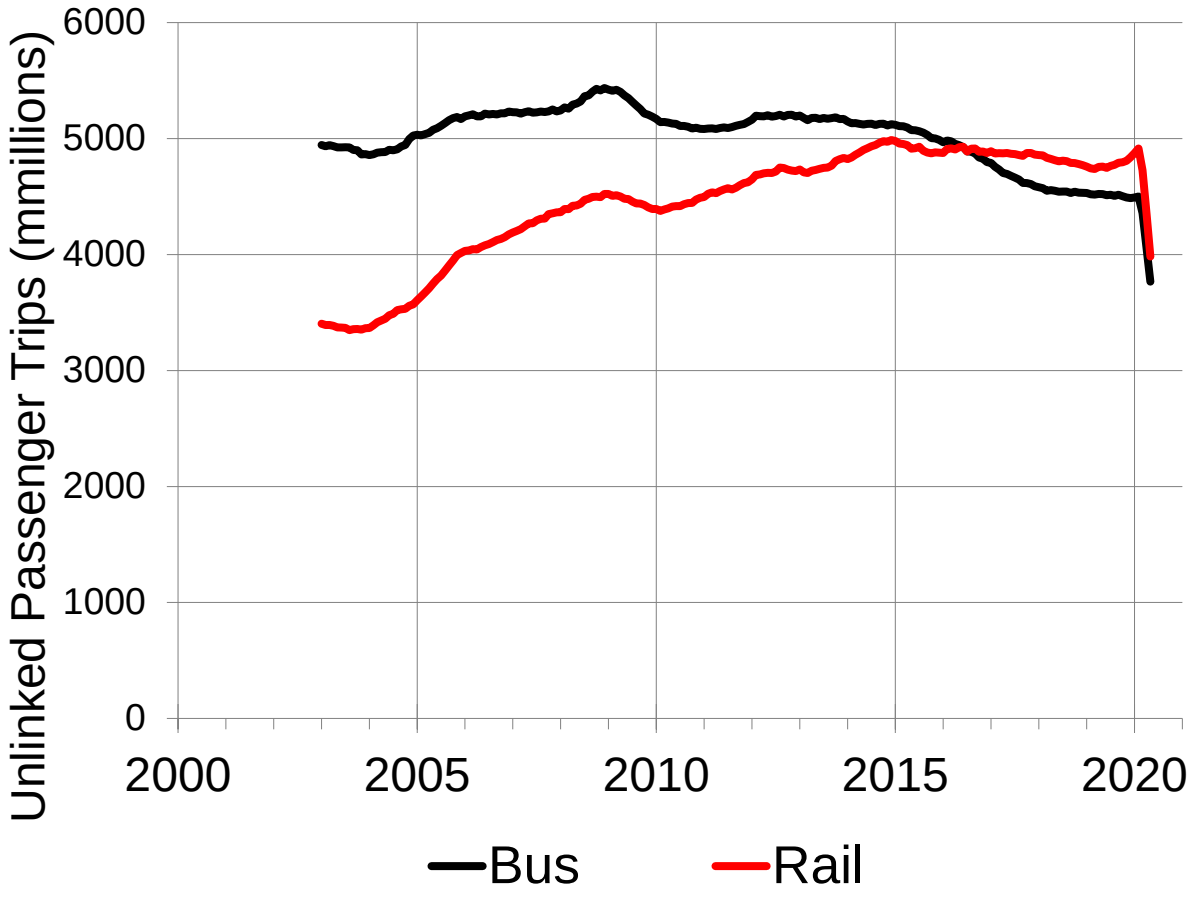
Population	Zero-Vehicle Households	Transit Service Levels
2012		
Moderate relationship between population and ridership	**Minimal relationship** between zero-vehicle households and transit ridership	**Strong relationship** between transit ridership and transit service levels
Change from 2012-2016		
Moderate relationship between the change in population and change in transit ridership	**No relationship** between the change in zero-vehicle households and change in ridership	**Moderate relationship** between the change in transit service and change in transit ridership

Ridership Decline Doesn't Coincide with Service Cuts

Vehicle Revenue Miles

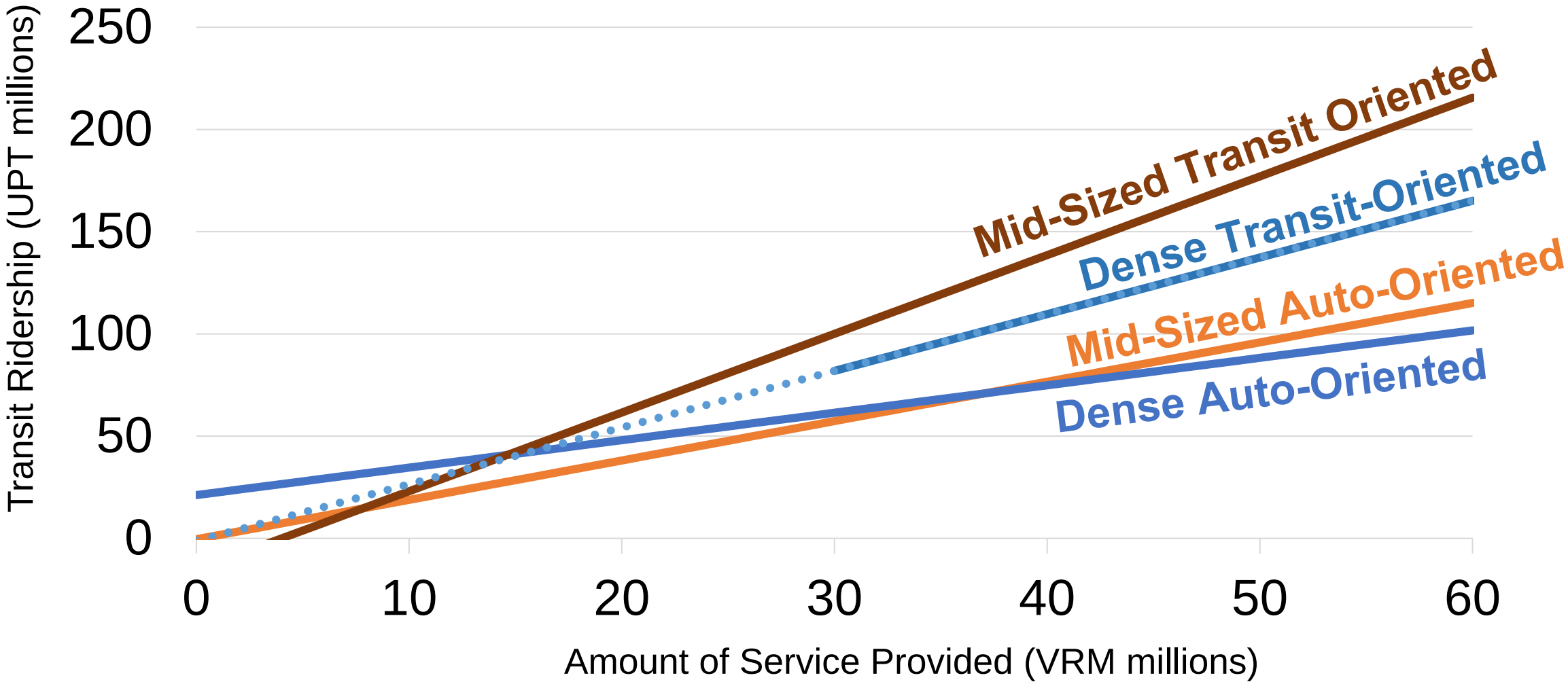


Unlinked Passenger Trips



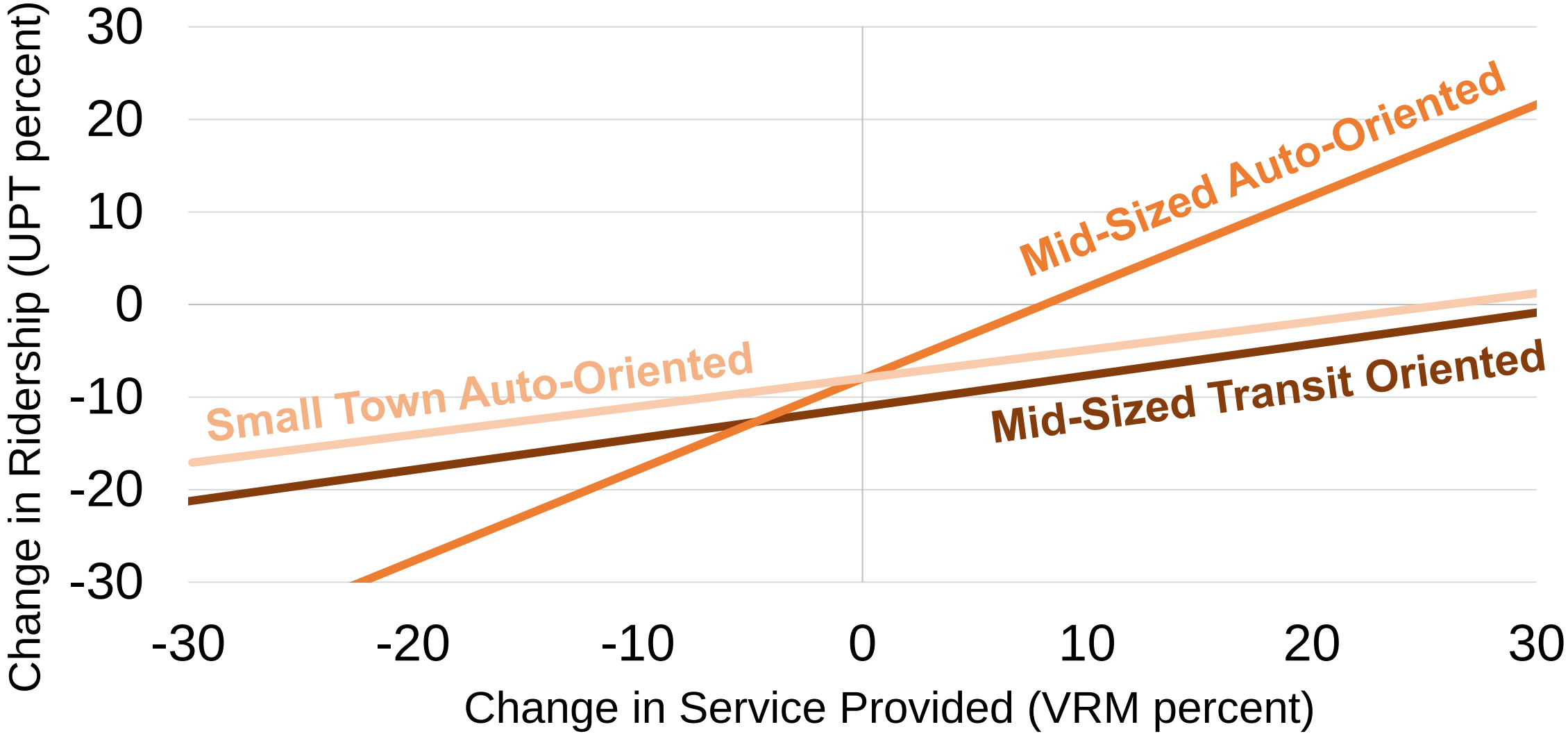
Ridership Vs. Service Provided in 2012 (Bus)

Transit oriented cities have more passengers per revenue mile



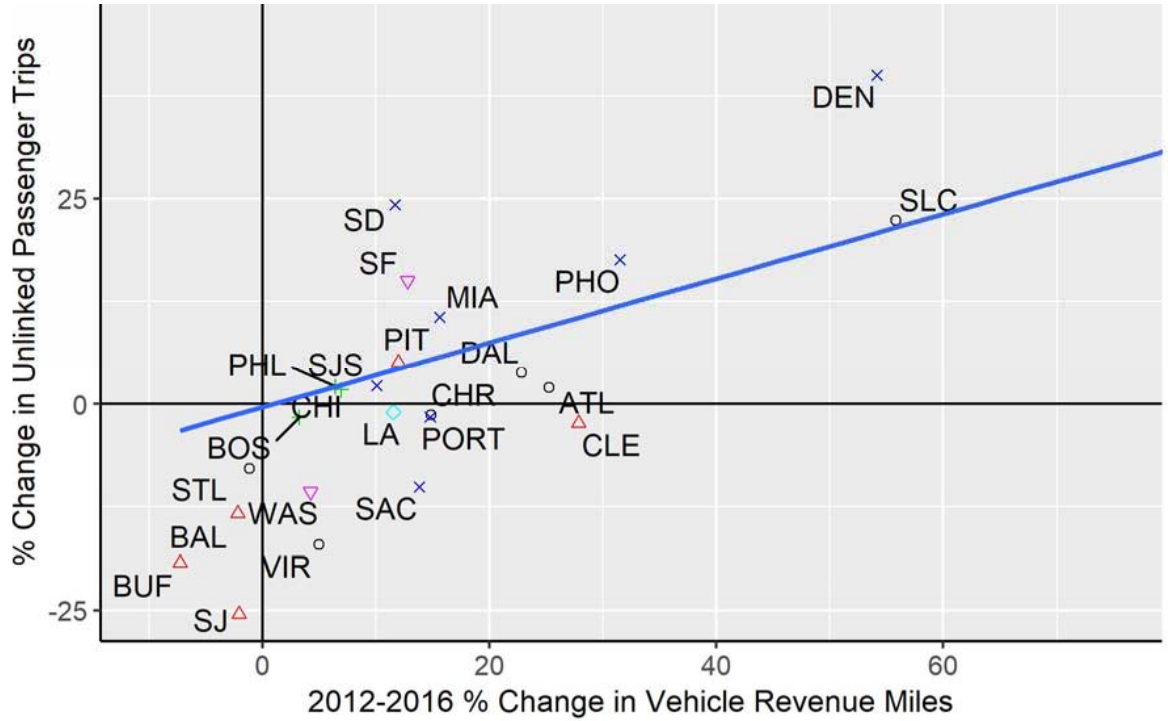
Ridership CHANGE Vs. Service CHANGE (Bus)

Cities that did not change services expected 8-10% ridership loss



Ridership Vs. Service (Rail)

- Relationship between service and ridership is uniform across clusters
- Over time, transit agencies maintaining service levels constant should not expect changes in ridership



Takeaways: Population and Service Quantity

In 2012

Correlated with bus and rail ridership at one point in time

Between 2012 and 2016

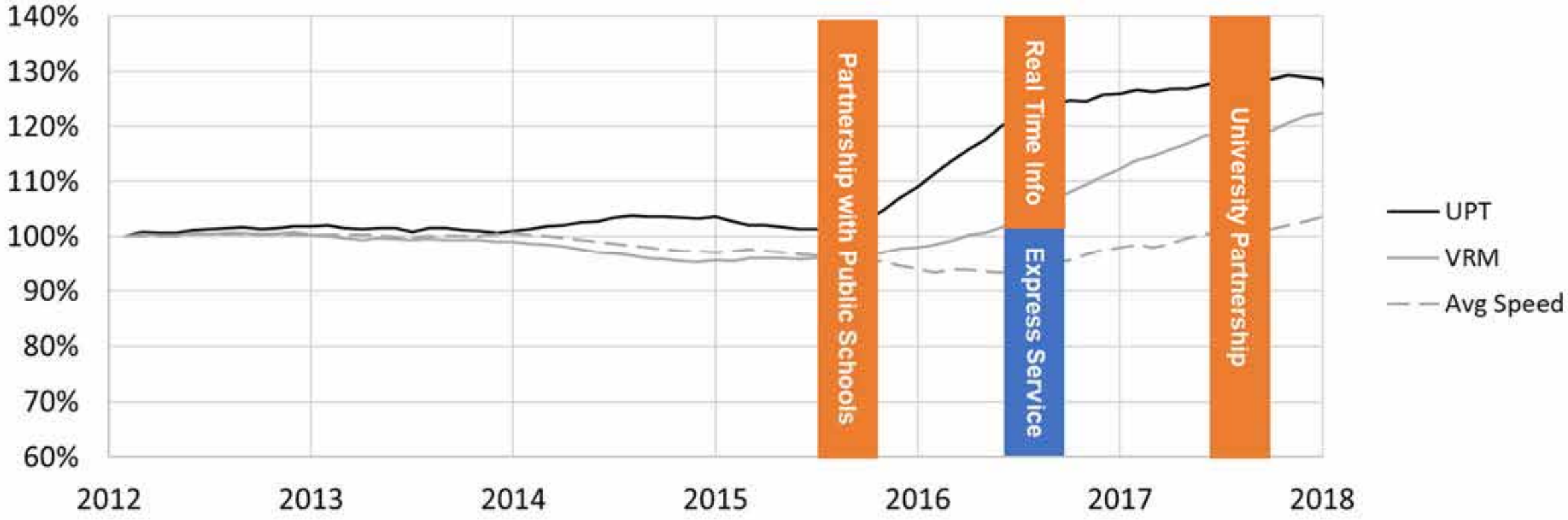
Bus – Do not explain bus ridership decline over time

Rail – Are more closely correlated with change in rail ridership

Therefore, the decline in bus ridership may be linked to external factor affecting travel behavior

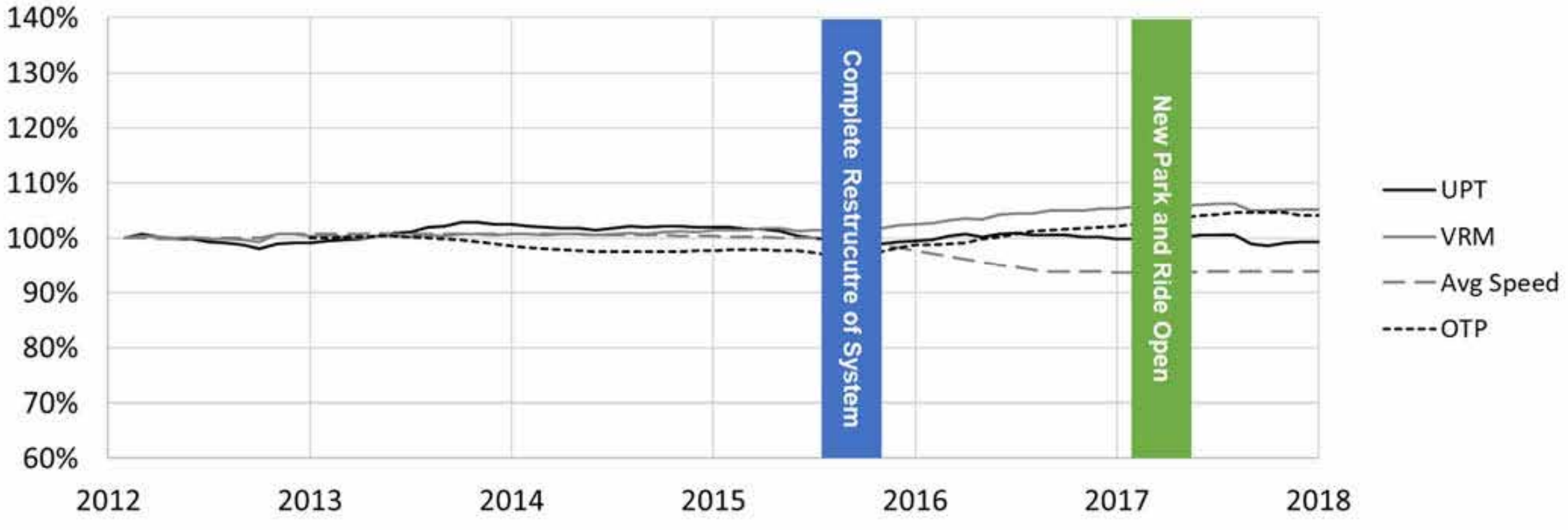
Case Studies

Greater Portland Metro, ME



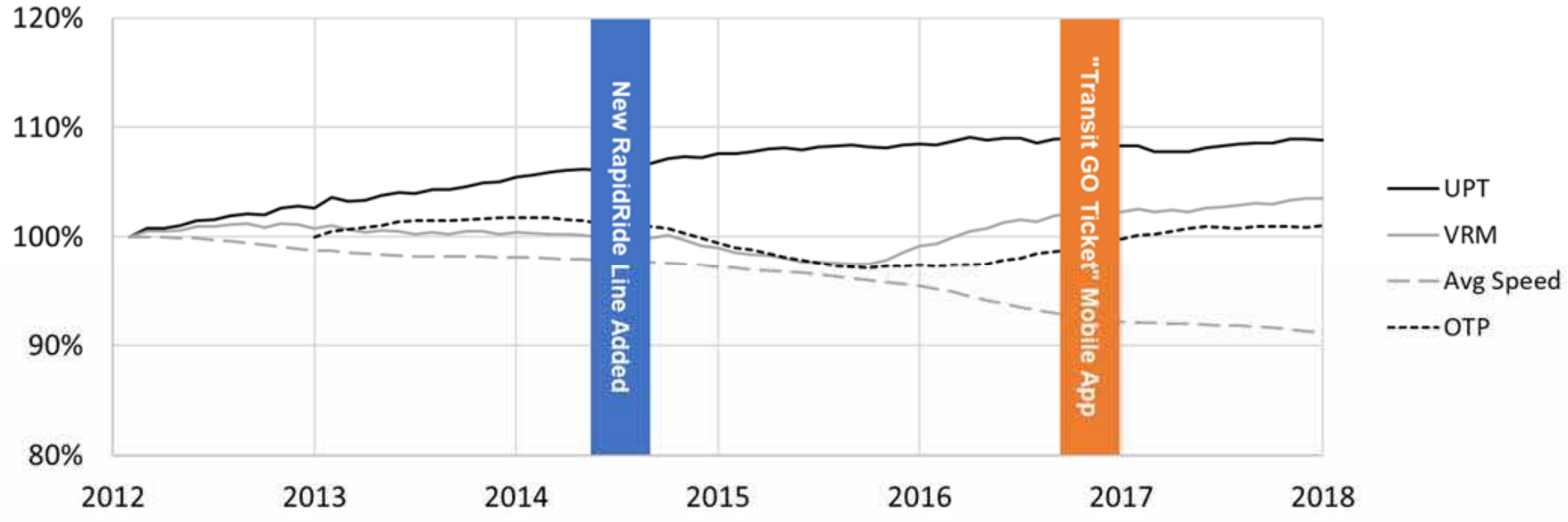
- Partnership with schools had an immediate and substantial impact on ridership
- Possible long-term effect as children learn how to ride transit

Houston Metro, TX



- Ridership decline immediately following network redesign
- Reached back pre-redesign-levels following service increase
- Although ridership did not increase, nationwide trend was decline

King County Metro, WA



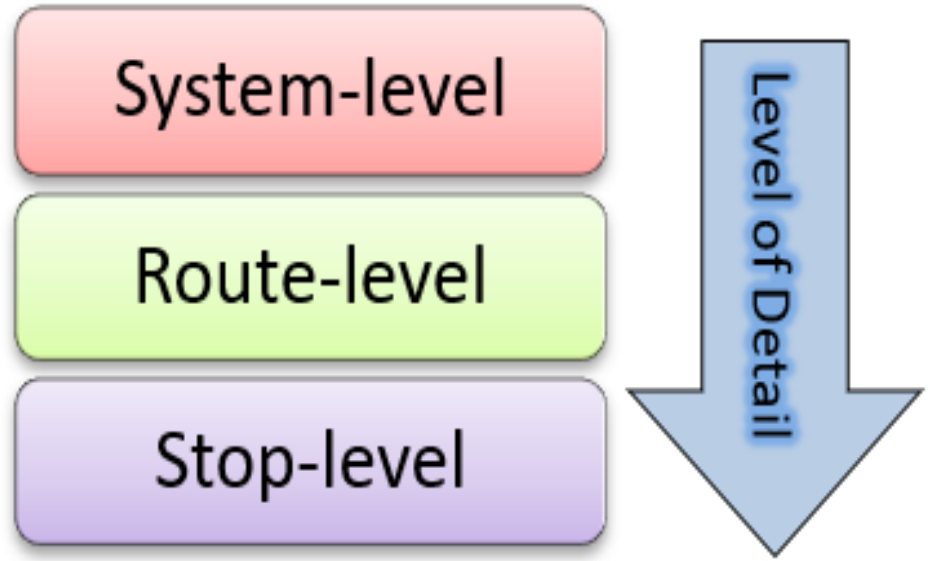
- Improvements to speed and reliability
- Travel demand management
- BRT rollout
- Integrated fares with regional operators

Conclusion

- Following drastic cuts, agencies have progressively restored service
- Over time, rail ridership is closely linked to population and service
- Bus ridership decline could be explained by external factors
- Successful strategies to reverse the trend include
  - Partnerships with schools
  - Speed and reliability
  - Real-time information
  - Travel demand management

TCRP A-43 Research Objectives

- To understand the **factors** contributing to the **recent decline** in transit ridership in the United States and **quantify the relative contribution** of each.
- To identify **strategies** to mitigate or reverse those declines and to **evaluate the effectiveness** of those strategies.
- To develop **recommendations** for how public transportation agencies can **respond to the ridership challenges** they are currently facing.



Thank You!

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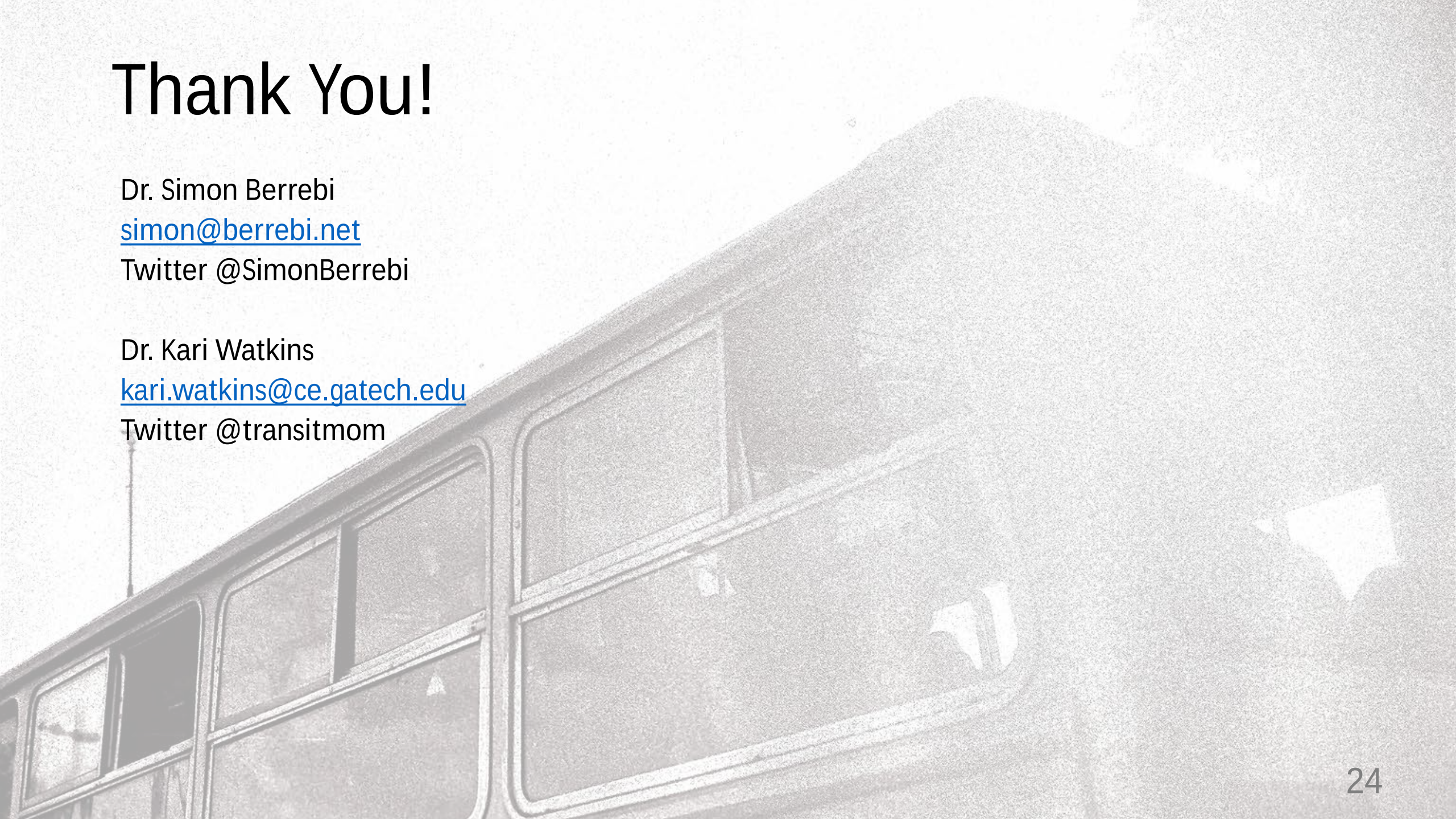

Today's Panelists

#TRBWebinar

Moderator:
Kari Watkins, *Georgia Institute of Technology*

Simon Berrebi

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- August 31: The Relationship Between Bicycle Facilities and Increasing Bicycle Trips
- September 2: How Women Fare in the Transit Industry

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