Understanding Post-Pandemic Transit Ridership Trends

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Sustainability/Operations, Planning and Scheduling Workshop

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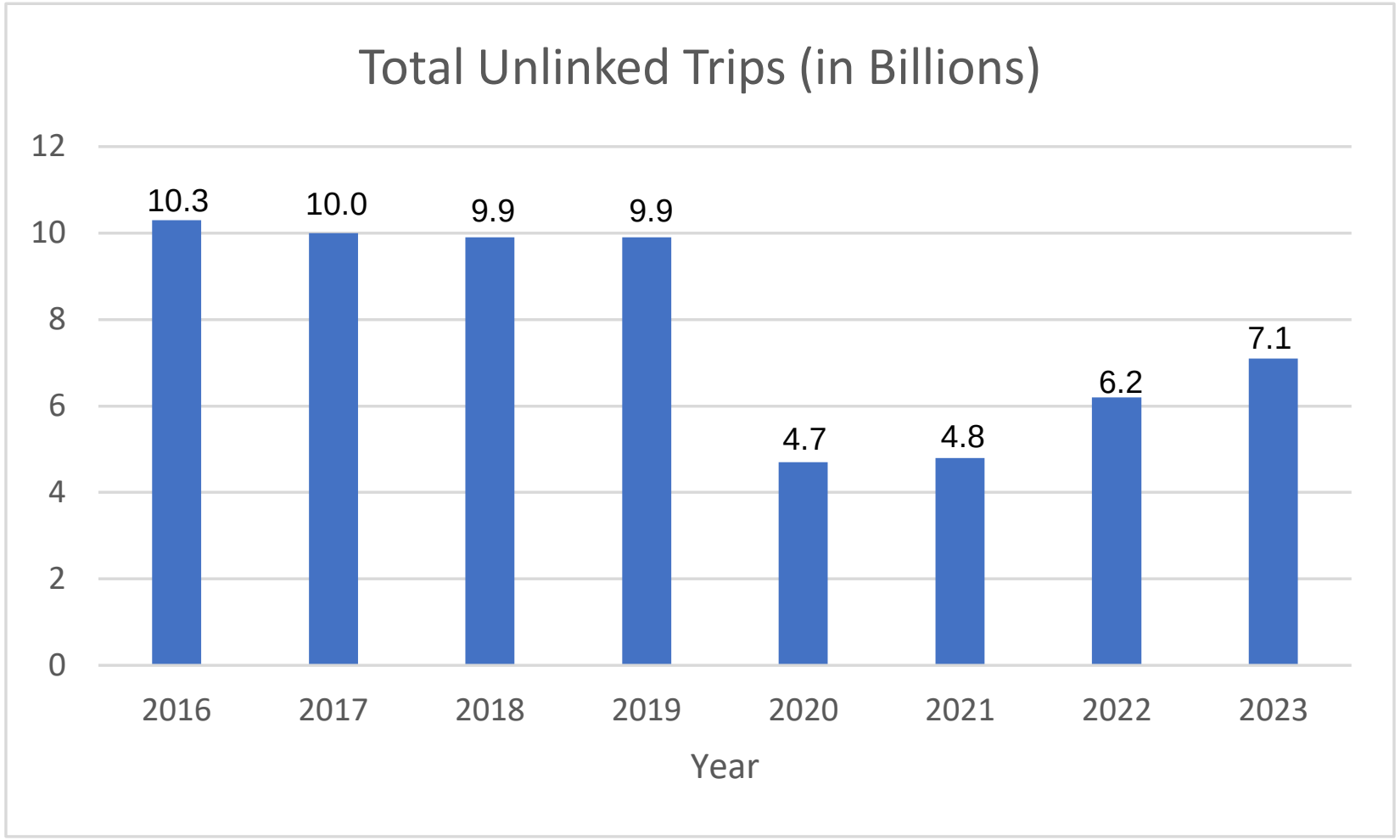
Federal Transit Administration

Topics

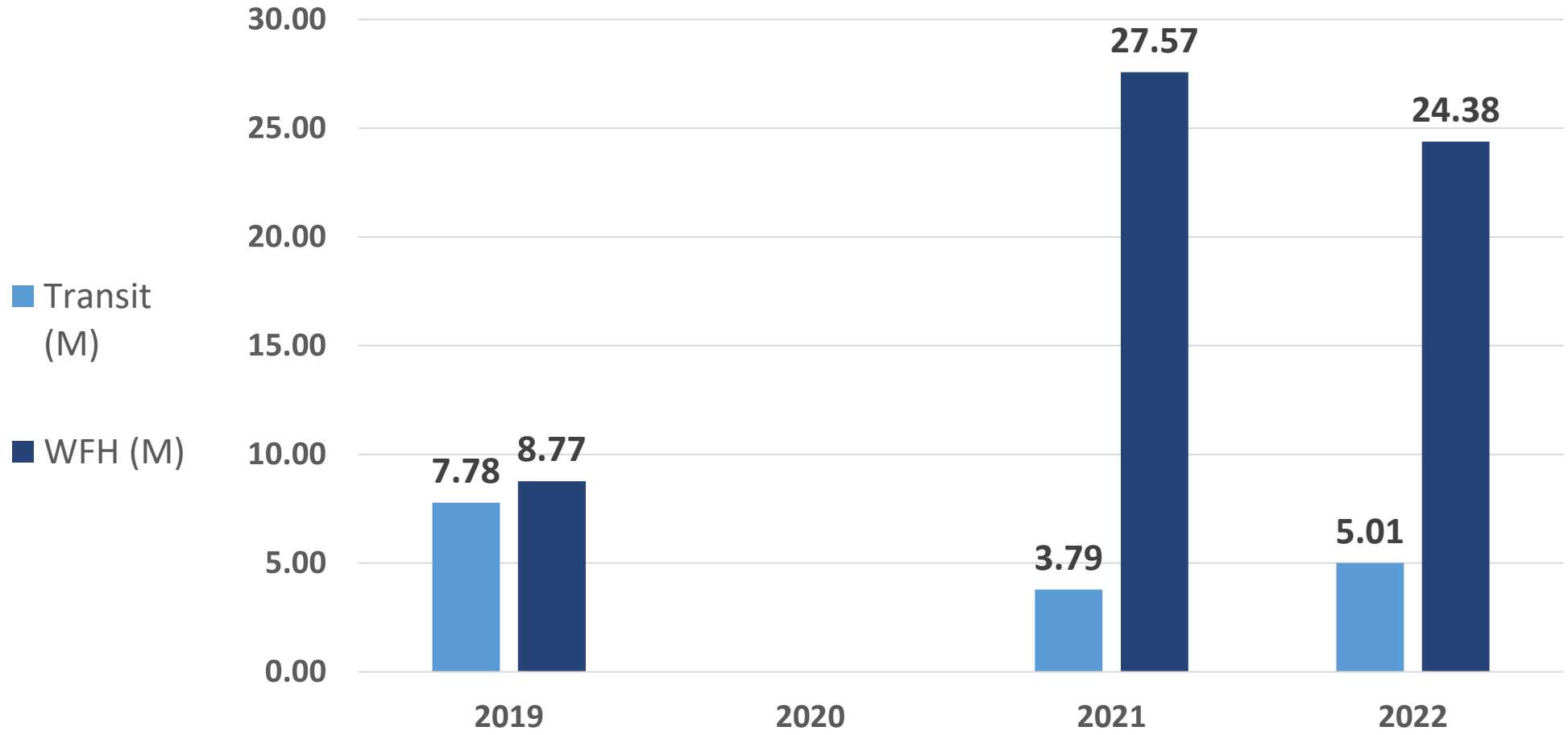
- Big Picture, National Trends
  - NTD (unlinked trips)
  - American Community Survey – Work-from-home (WFH)
  - Relationship WFH & Ridership Declines
- 7 Cities with Before and After Pandemic On-Board Surveys
  - Before and After Pandemic Survey Tabulations
  - Insights on Behavior Change following pandemic
- Reliability/OTP Challenges for local buses
- Implications
- Next Steps
- Acknowledgements

Annual NTD Unlinked Trips – National Recovery Trends



- Jan-June'24 = 3.68M, up 6.4% YOY
- Current Pace for 7.4-7.7M for full year 2024

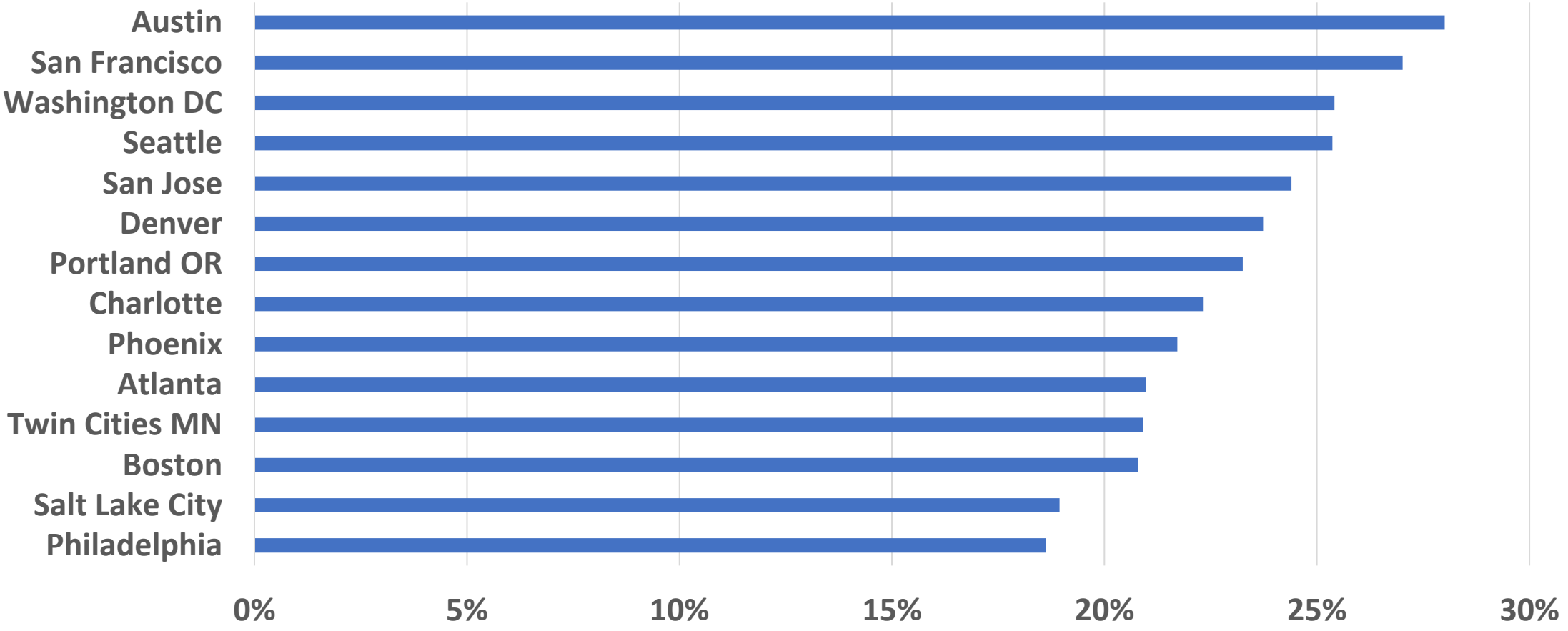
ACS Census (1-Year) Data Persons Using Transit to Commute or WFH: Average Weekday USA



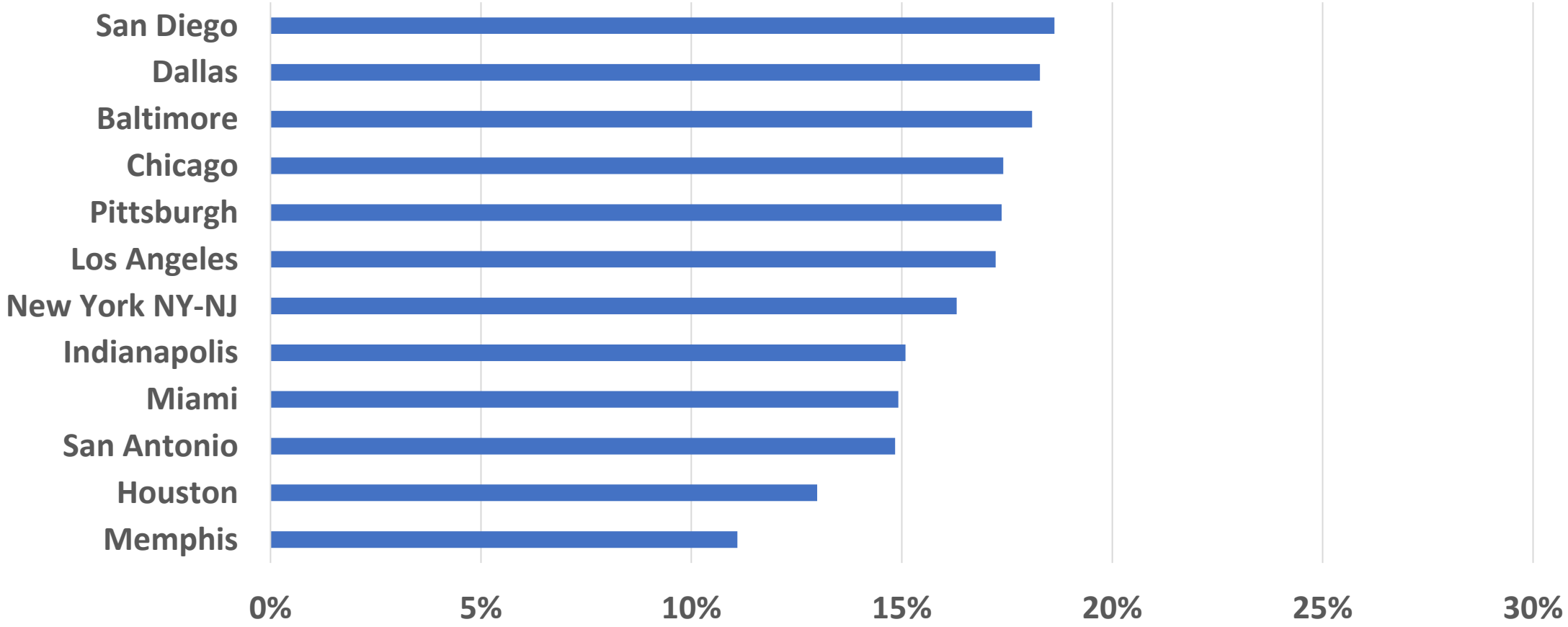
2022 ACS (1-Year) Transit and Work from Home Shares, Nationwide by Industry

Industry	US Total Workers	Transit Share	WFH Share
Information	3,089,888	4.8%	36.0%
Finance and insurance, real estate, rental and leasing	10,830,753	4.2%	32.8%
Professional, scientific, management and administrative	20,146,869	3.8%	32.6%
Wholesale trade	3,456,314	2.0%	15.6%
Public administration	7,451,923	3.2%	15.0%
Other services	7,505,714	3.2%	12.8%
Agriculture, forestry, fishing, hunting and mining	2,494,454	1.0%	12.5%
Manufacturing	15,846,829	1.4%	11.8%
Educational services, healthcare and social assistance	36,556,551	3.3%	10.8%
Retail trade	17,676,924	3.0%	9.3%
Transportation, warehousing and utilities	9,504,236	2.5%	9.1%
Construction	10,942,035	1.9%	7.7%
Arts, entertainment, recreation, accomodations and food service	13,740,793	4.7%	7.0%
Armed forces	1,334,453	1.1%	5.6%
Total	**160,577,736**	**3.1%**	**15.2%**

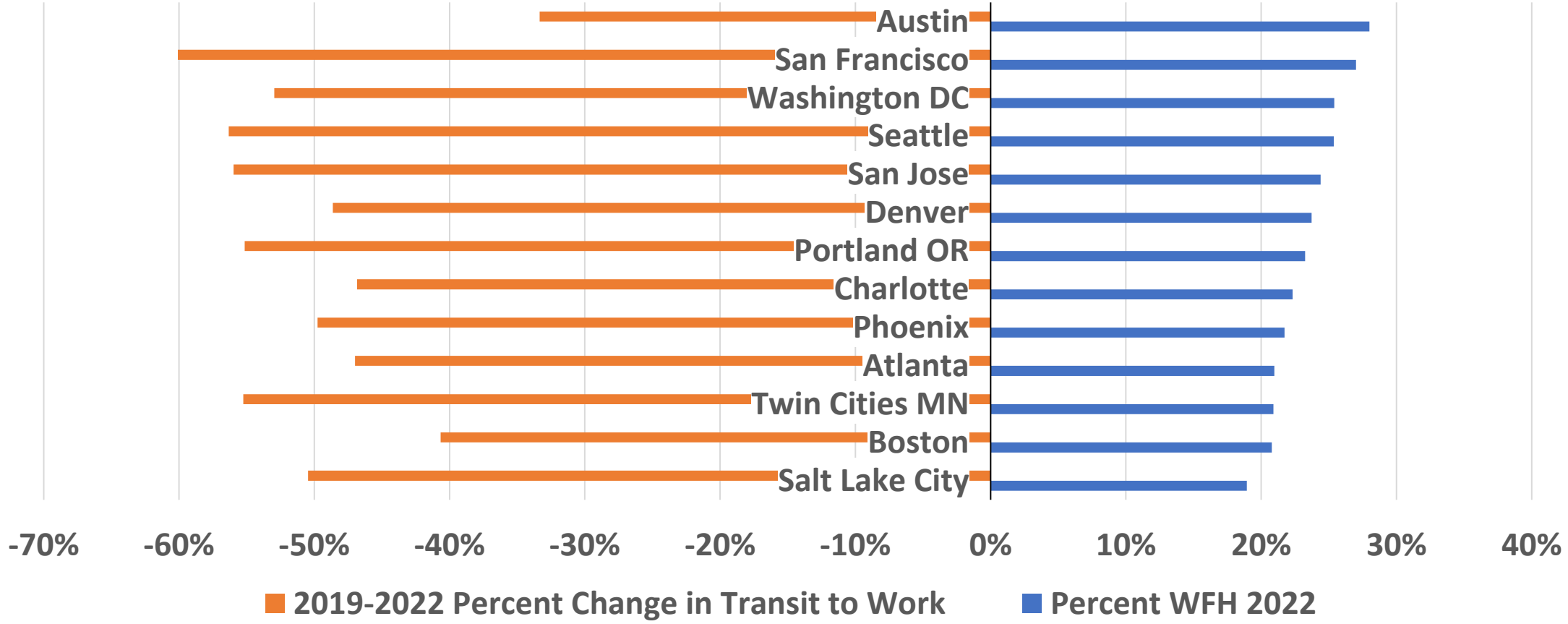
2022 American Community Survey – Work From Home by Metro Area – Part 1



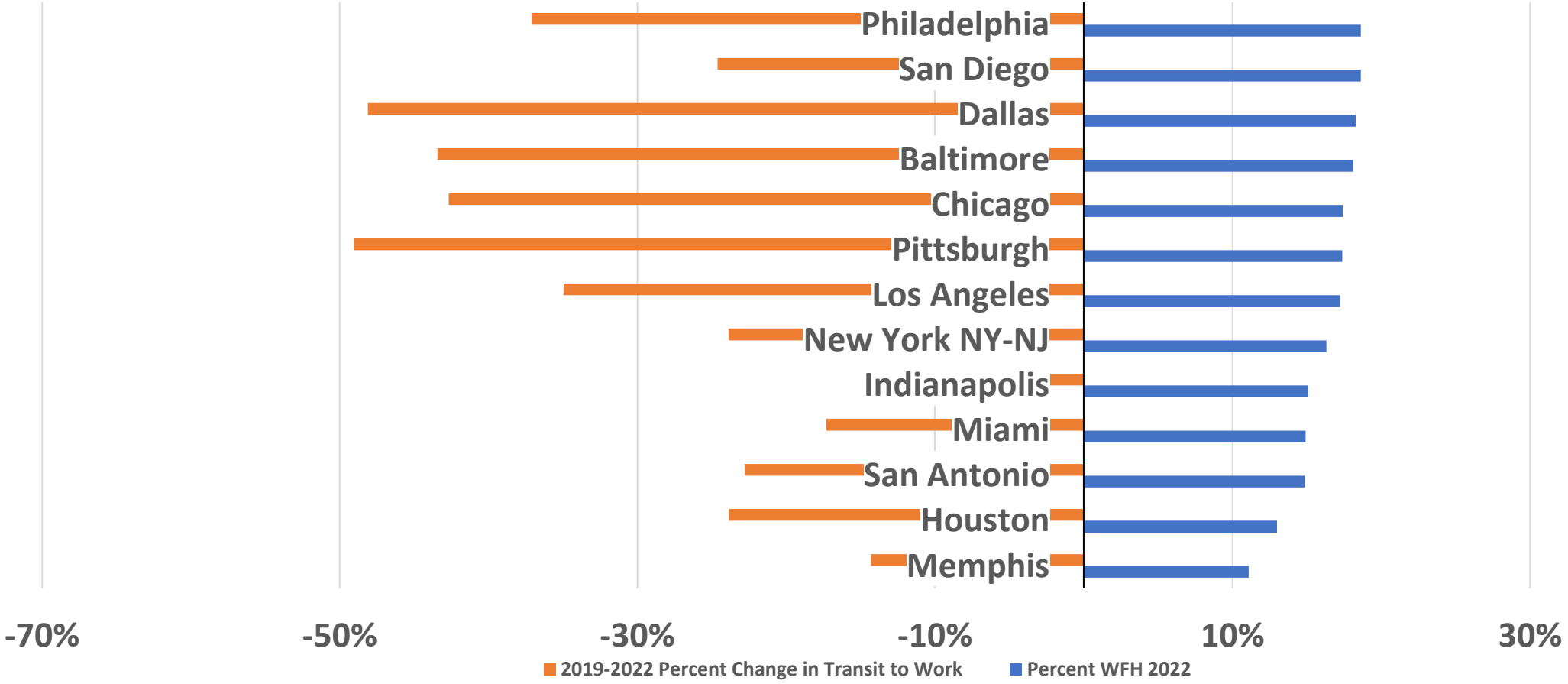
2022 American Community Survey – Work From Home, Part 2



2022 ACS Change in Transit Commuting – Part 1



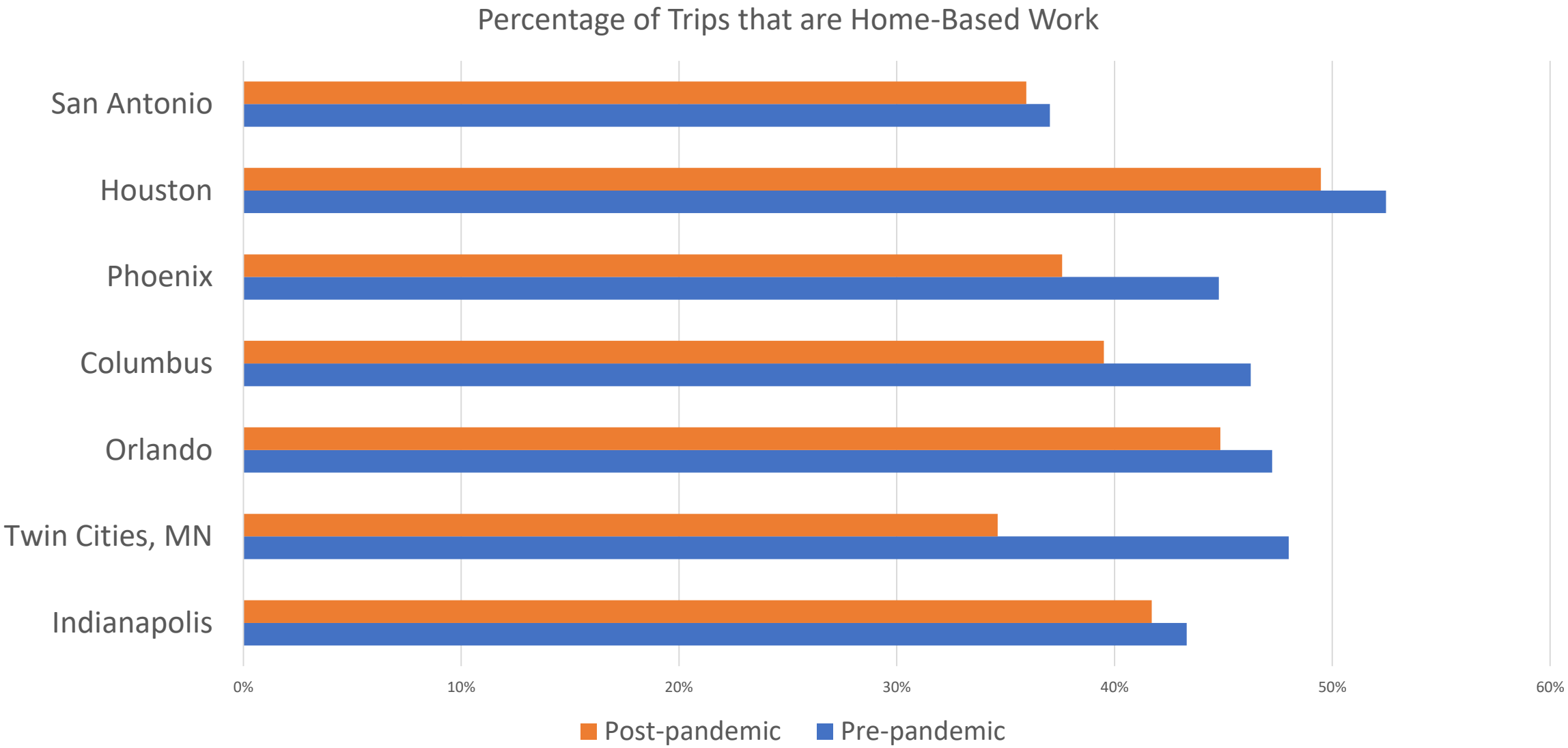
2022 ACS Change in Transit Commuting - Part 2



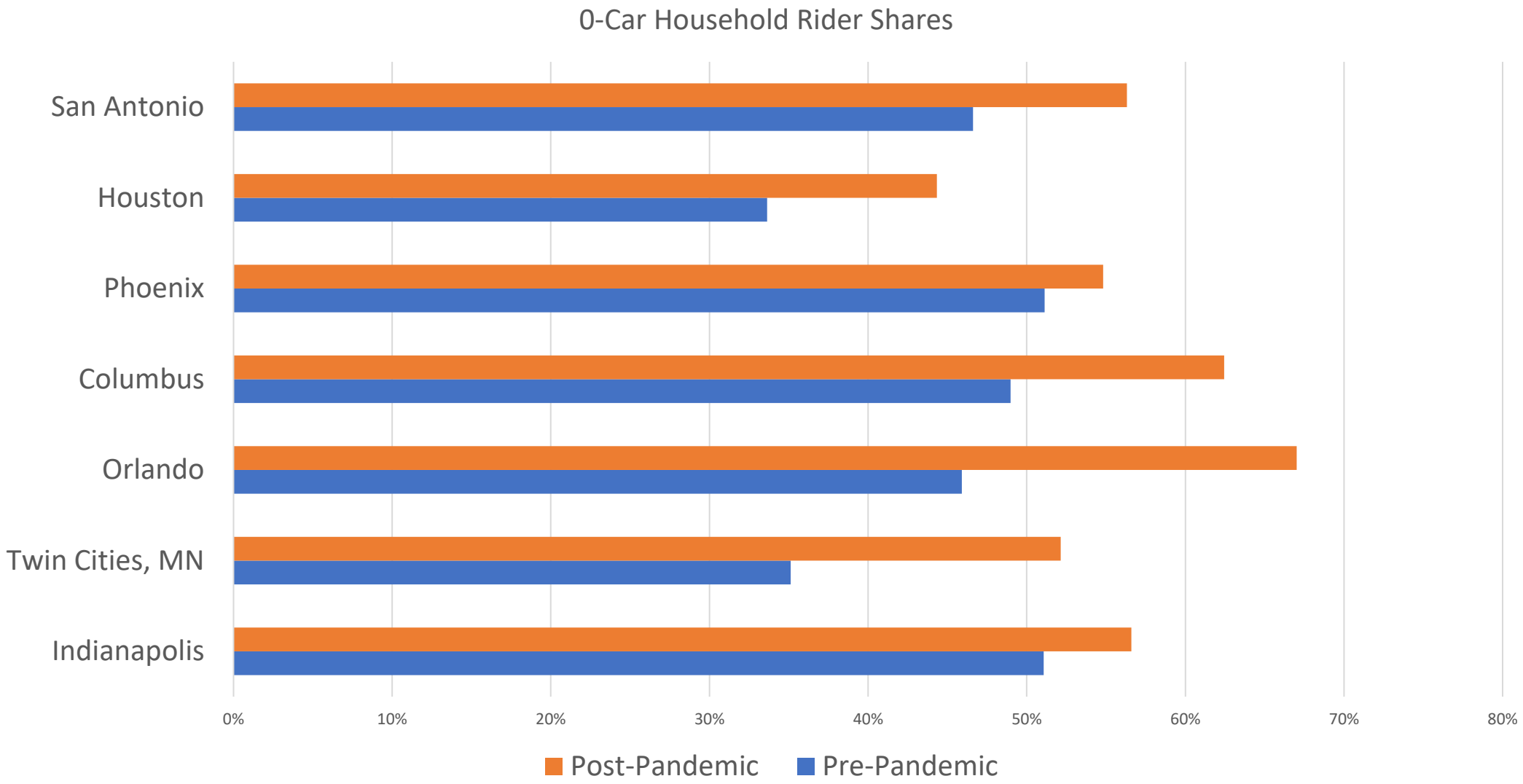
On-Board Rider Survey Analyses

- Pre- and Post-Pandemic Surveys
- Surveys capture:
  - How riders make their trips (origins, destinations, purpose, modes used, access mode, egress mode, transfers, routes used)
  - The characteristics of the riders (autos owned, income, employment status, age)
- Seven Cities with Before and After Pandemic Data:
  - San Antonio
  - Houston
  - Orlando
  - Minneapolis/St. Paul (Twin Cities, MN)
  - Indianapolis
  - Columbus
  - Phoenix
- Insights on what behaviors have changed between pre-and-post pandemic

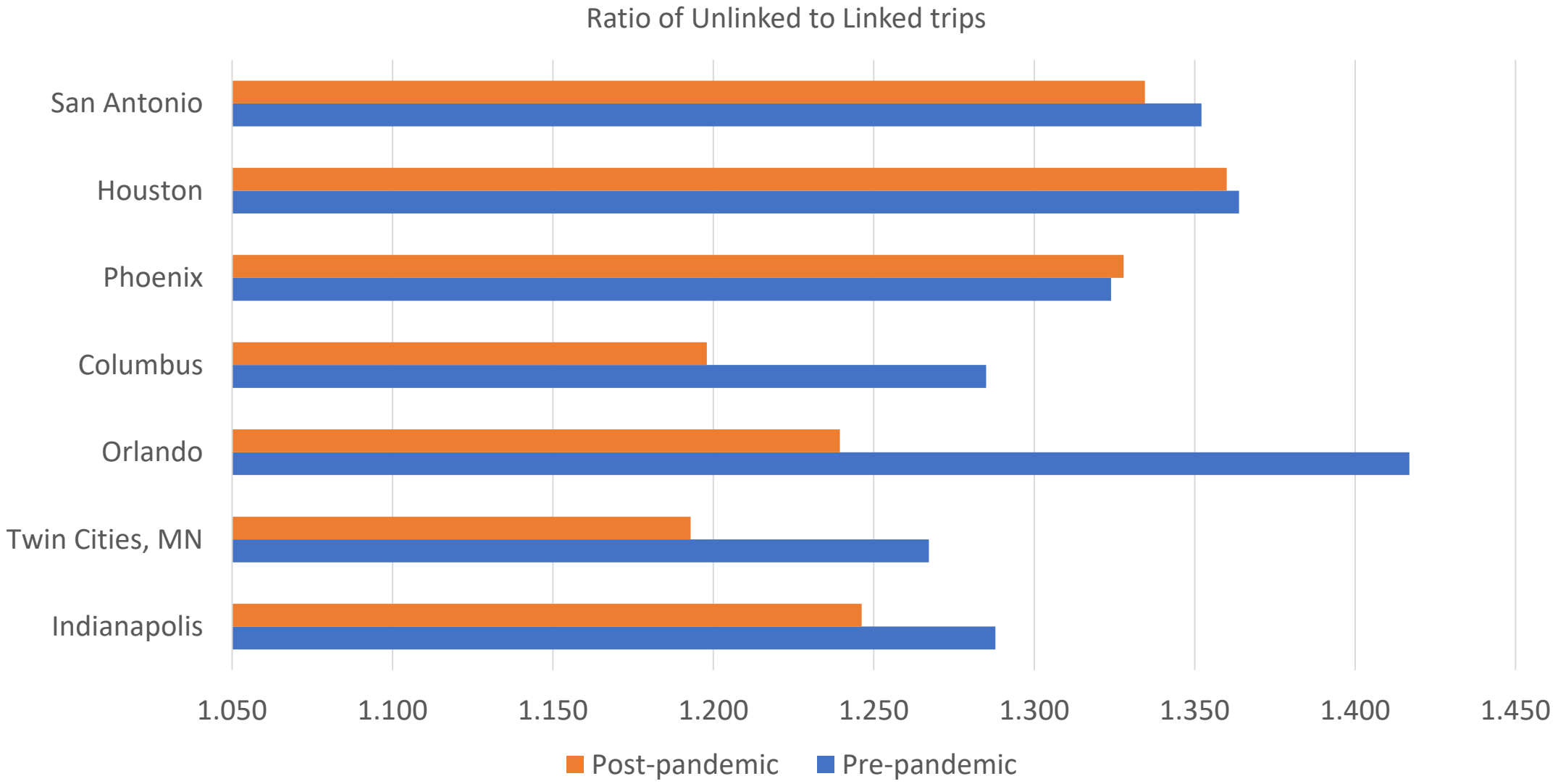
Decreased Share of Home-Based-Work Trips



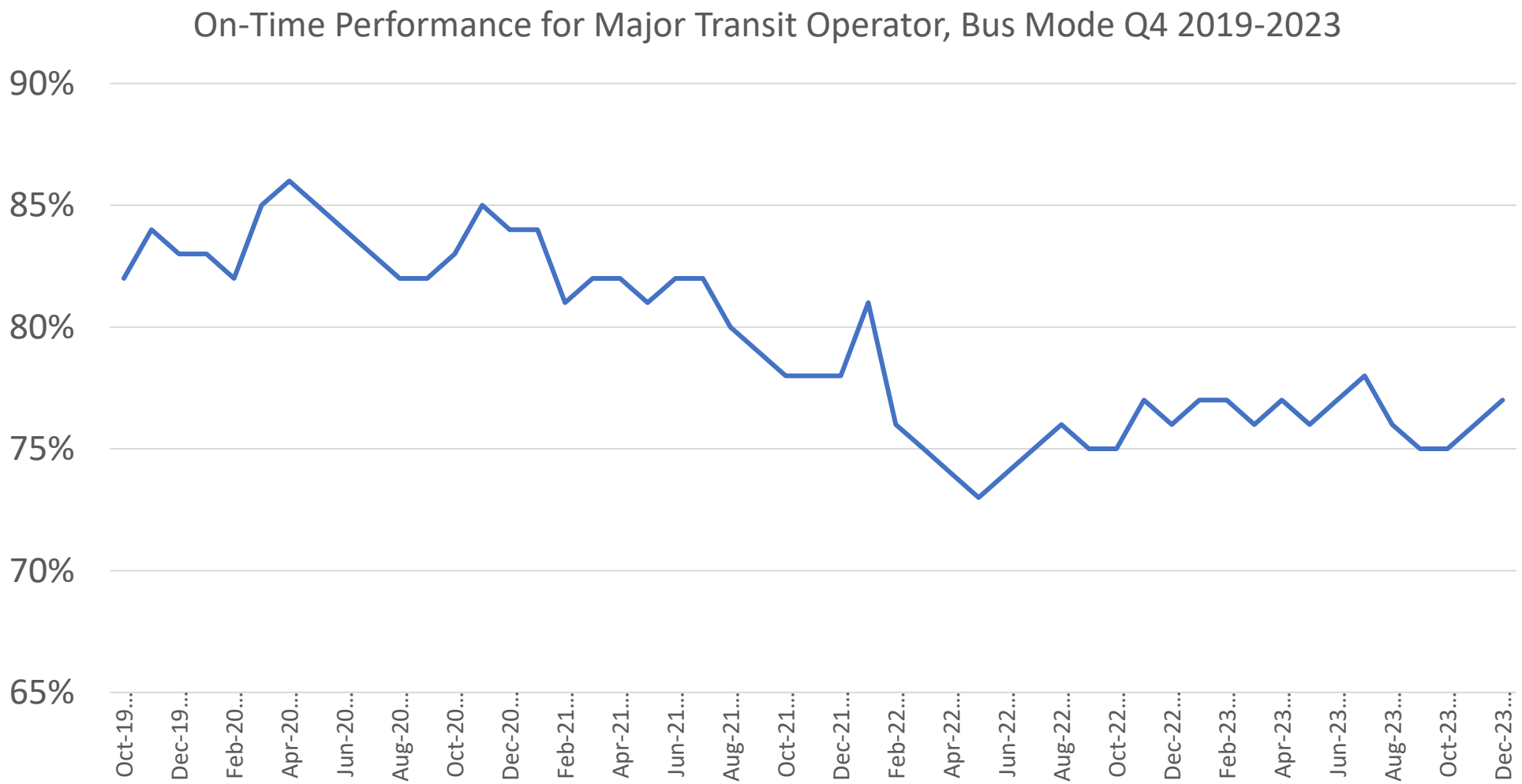
Greater Share of Riders from 0-car HHs



Fewer Transfers



Hypothesis on Transfer Changes



Source: Major Transit Operator On-Line Performance Dashboard

Many agencies who report OTP data show similar patterns.

5 of the 7 OD Survey Cities Publish Bus On-Time Performance On-Line

City	2019 OTP	2023 OTP	Change
Orlando	76%	63%	-13%
Columbus	78%	67%	-11%
Twin Cities, MN	82%	73%	-9%
San Antonio	78%	75%	-3%
Phoenix	88%	85%	-3%

- Note – FTA staff pieced this together from public websites, dashboards and performance reports. Agencies may have “better” data than we do.
- Decline in transfer rate, seems to correlate to the magnitude of the change in OTP

Other Agencies Local Bus OTP

City	2019 OTP	2023 OTP	Change
Dallas	85%	75%	-10%
Detroit	73%	63%	-10%
Baltimore	79%	71%	-8%
Denver	85%	78%	-7%
Austin	84%	78%	-6%
Los Angeles	74%	71%	-3%
Seattle	78%	79%	+1%
Honolulu	71%	74%	+3%

Note – FTA staff pieced this together from public websites, dashboards and performance reports. Agencies may have “better” data than we do.

Consequence for Transferring Riders

Example: Agency goes from 85% to 75% OTP

Trips involving one transfer:

- At 85% OTP:
  Prob (TripOT) = 0.85 * 0.85 = 72%
- At 75% OTP:
  Prob (TripOT) = 0.75 * 0.75 = 56%

Trips involving two transfers:

- At 85% OTP:
  Prob (TripOT) = 0.85 * 0.85 * 0.85 = 61%
- At 75% OTP:
  Prob (TripOT) = 0.75 * 0.75 * 0.75 = 42%

Orlando Survey Tabulations of Transferring Riders

Table - 2022 vs. 2017 Orlando On-Board Rider Survey					
Number of Linked Trips by Transfers					
	2017 Pre-Pandemic		2022 Post-Pandemic		
Number of Transfers	Linked Trips	Share	Linked Trips	Share	Diff from 2017
0	42,776	65%	40,181	80%	-6.1%
1	19,832	30%	8,759	17%	-55.8%
2	3,110	5%	1,469	3%	-52.8%
3	288	0%	98	0%	-66.0%
4	18	0%	26	0%	44.4%
5	1	0%	-	0%	-100.0%
Total Linked Trips	**66,025**	**100%**	**50,533**	**100%**	**-23.5%**
Total Unlinked Trips	**93,017**		**62,634**		**-32.7%**

Implications

- Reliability declines disproportionately impact transferring riders.
- Understanding the post-pandemic ridership “recovery”
  - Reporting typically made using NTD reported unlinked trips
  - **May understate ridership recovery**, with declines in transfers seen in 6 out of 7 post-pandemic OD surveys. Linked trips declines less than unlinked trips.
  - What happened to lost transferring riders?
    - Are the using auto instead?
    - Are they walking further to avoid transferring?
    - Are they not taking this trip?
- FTA CIG Travel Forecasting:
  - Post-pandemic models generally require larger transfer penalties (time in addition to the actual time to make transfer)
  - Most fixed guideway OTP operating at 90%+ reliability, little degradation
  - Bigger fixed guideway unmeasured effects required to replicate mix of FG and local bus ridership.

Next Steps

- Analyze additional cities, where post-pandemic transit on-board surveys are/will be completed. Miami, Raleigh/Durham, Cincinnati, Denver, Dallas, Salt Lake City and more.
  - Determine if these trends continue or reverse
  - Learn from different cities and contexts
- Monitor trends in on-time performance
- Identify data sources of transit trips annulled (scheduled but not made). Media reports have identified this as an issue with some operators. Recurring post-pandemic themes:
  - Workforce challenges
  - Fleet availability
- Continue to share our insights with the industry
  - Provide national perspective on trends and different contexts
  - Share insights through various venues – TRB, APTA and others

Acknowledgments

- APTA & Their Members:
  - Sharing their on-board rider survey data
  - Providing venues to share and discuss the data
  - Commitment to understanding the post-pandemic transit markets
- FTA Systems Planning and Analysis Team for developing these analyses
  - Greg Spitz
  - Tom Marchwinski
  - William Wong
  - Jonathan Howard
- Resource Systems Group (FTA travel forecasting contractor):
  - Bill Woodford
  - Mario Scott
  - Aaron Lee
  - Tristan Cherry

FTA Mission, Vision, Values

Mission

Improve America's Communities through Public Transportation

Vision

A Better Quality of Life for All Built on Public Transportation Excellence

Values

Service	Provide reliable, transparent, responsive, and anticipatory services to meet stakeholder needs
Integrity	Commitment to the highest professional and ethical standards
Innovation	Foster new ideas, concepts, and solutions for improved outcomes
Sustainability	Optimize decisions, resources, and systems to make long-term positive impacts on the environment, infrastructure, and safety
Equity	Remove barriers for systemically underserved communities to access all aspects of economic, social, and civic life

Thank you!

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