

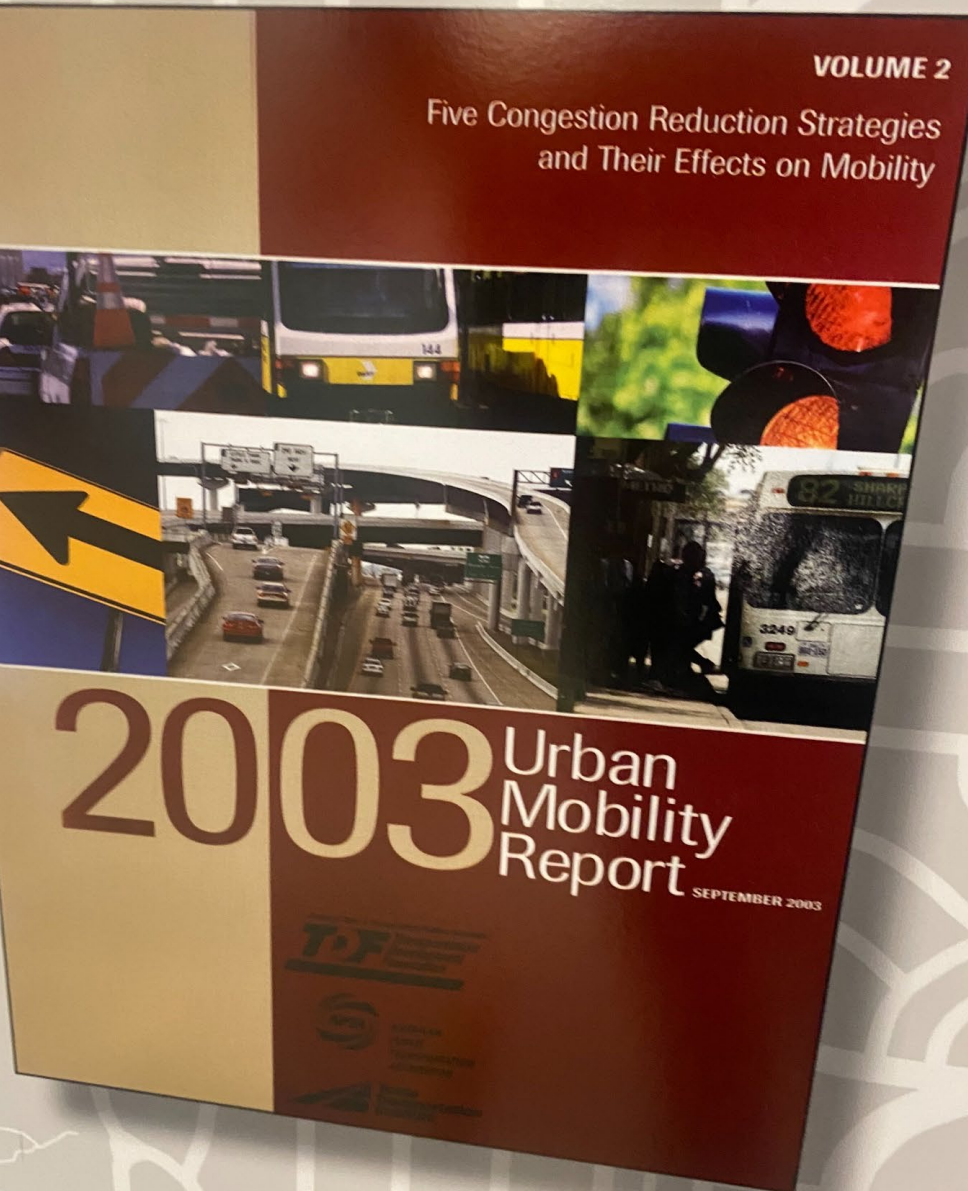
Pandemic Effects on Transportation

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Why am I standing up here?

- 2021 Urban Mobility Report
- 2023 Urban Mobility Report (under development)
- 2022 Texas 100 Most Congested Road Sections
- 2022 Maryland 100 Most Congested Road Sections
- 2023 Freight Mobility Trends (FHWA)
- Numerous other efforts around the U.S.



Urban Mobility Report 1982-2008 (the early years)

- Highway Performance Monitoring System
(1982 to present)
- Speeds estimated using Daily Traffic per Lane and Speed relationships from Bureau of Public Roads Functions
- Texas Cities Only

- By late 1980's began to look beyond Texas
- 39 urban areas, then 50 urban areas

UMR 1982 to 2008 (cont.)

- Mid to Late 1990's
- Traffic management centers brought new information
 - Better relationships between daily traffic volume per lane and speed
 - Many urban areas with different traffic and congestion levels
- Expanded to 101 areas
 - The extra 'one' was San Juan PR
- Estimated benefits from certain treatment types
 - Signals, ramp metering, incident management, HOV, and public transit
- Created FHWA Mobility Analysis Pooled Fund in 1998 (now called Support for Urban Mobility Analyses - SUMA, TxDOT is lead agency).



2021 Urban Mobility Report

- Evaluates areawide mobility conditions based on actual speed data
- Freeway and principal arterial street networks
- 101 urban areas from 1982 to 2020
- 393 <mostly smaller> urban areas from 2014 to 2020
- Uses a suite of performance measures





2020 (COVID-19) in the UMR

- 4 congestion years in one.
- A 18% reduction in travel led to a 51% reduction in delay for the year.
- Truck travel had a smaller decline than passenger cars.
- More of the delay is on streets, in the middle of the day, and on weekends than in typical years.
- A majority of truck delay happened in off-peak periods (53% in 2020 compared to 40% in 2019).

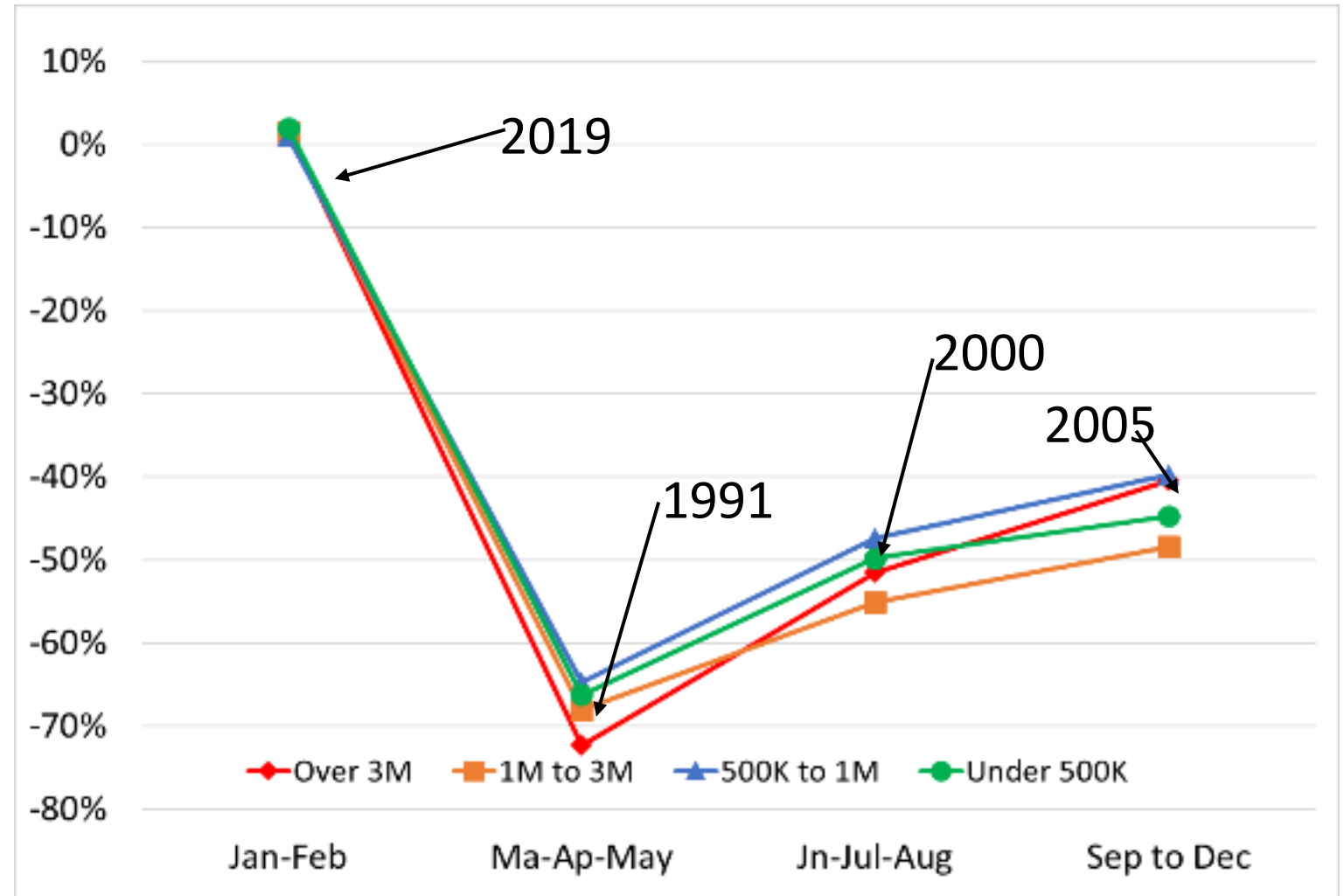
Congestion Levels

- Annual 2020 congestion costs and travel delays were half the 2019 levels

Measure	2019	2020
Annual Delay Per Auto Commuter (hours)	54	27
Wasted Fuel Per Auto Commuter (Gallons)	22	11
Congestion Cost Per Auto Commuter (in 2020\$)	\$1,170	\$605

Four Unique 2020s of Congestion

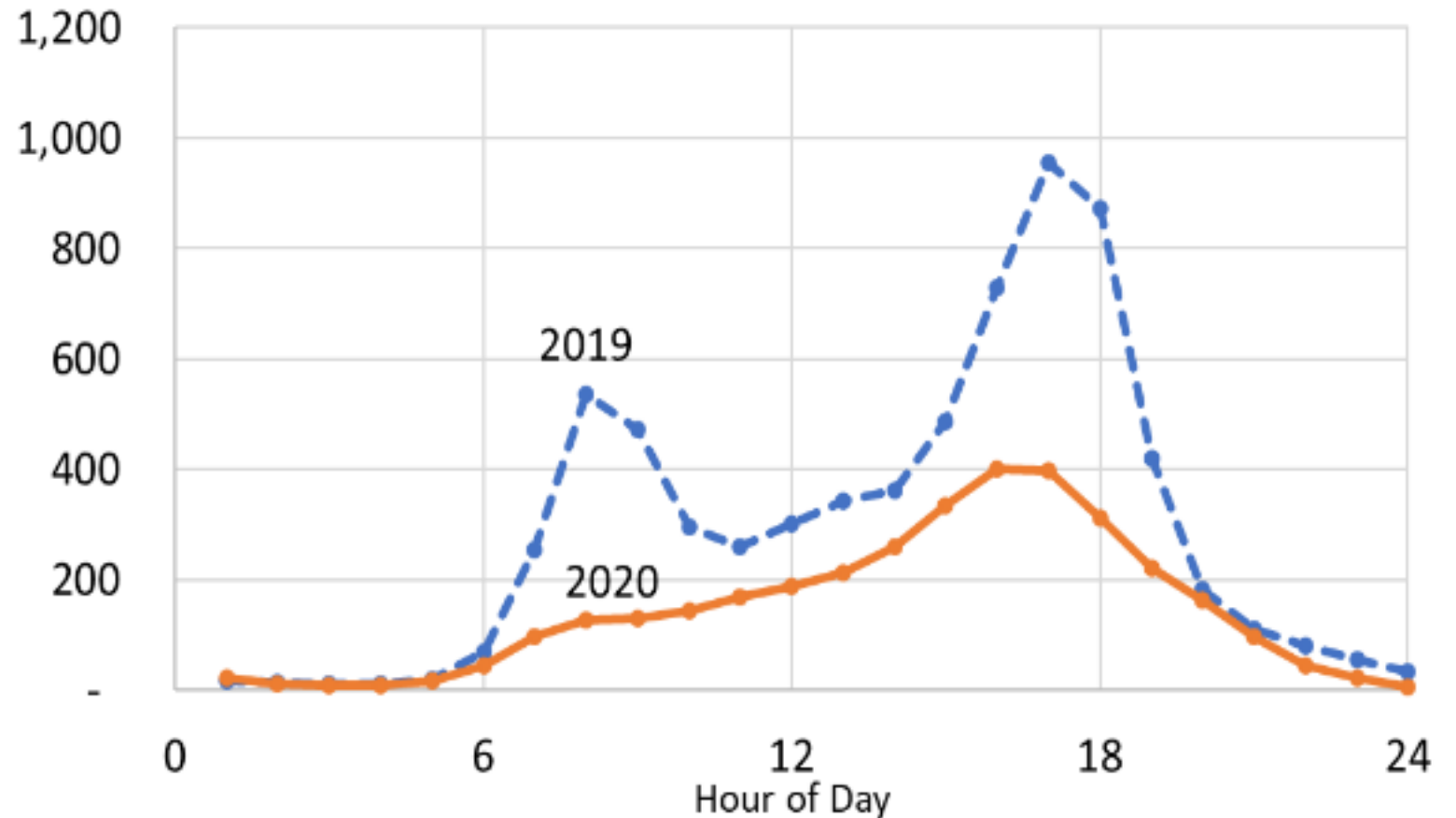
- Jan & Feb ~2019
- March to May, large declines
- June to August, back toward normal
- Sept to Dec, PM rush hour returning



We Sure Flattened the Congestion Curve!

Million Hours of Weekday Travel Delay by Hour of Day

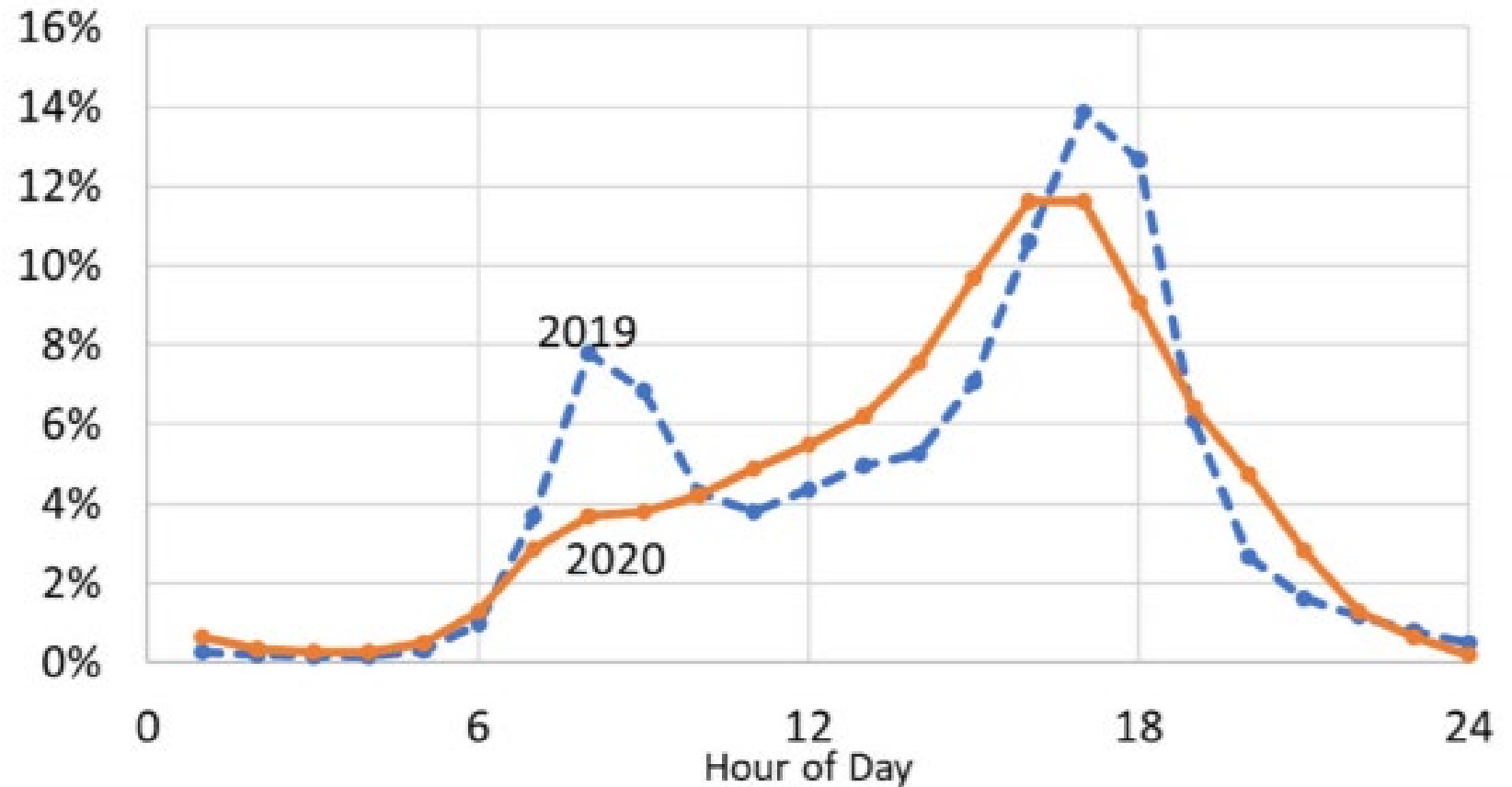
- Morning peak period disappeared
- Evening peak period was less than half of 2019 levels



Flattened the Daily Congestion Curve

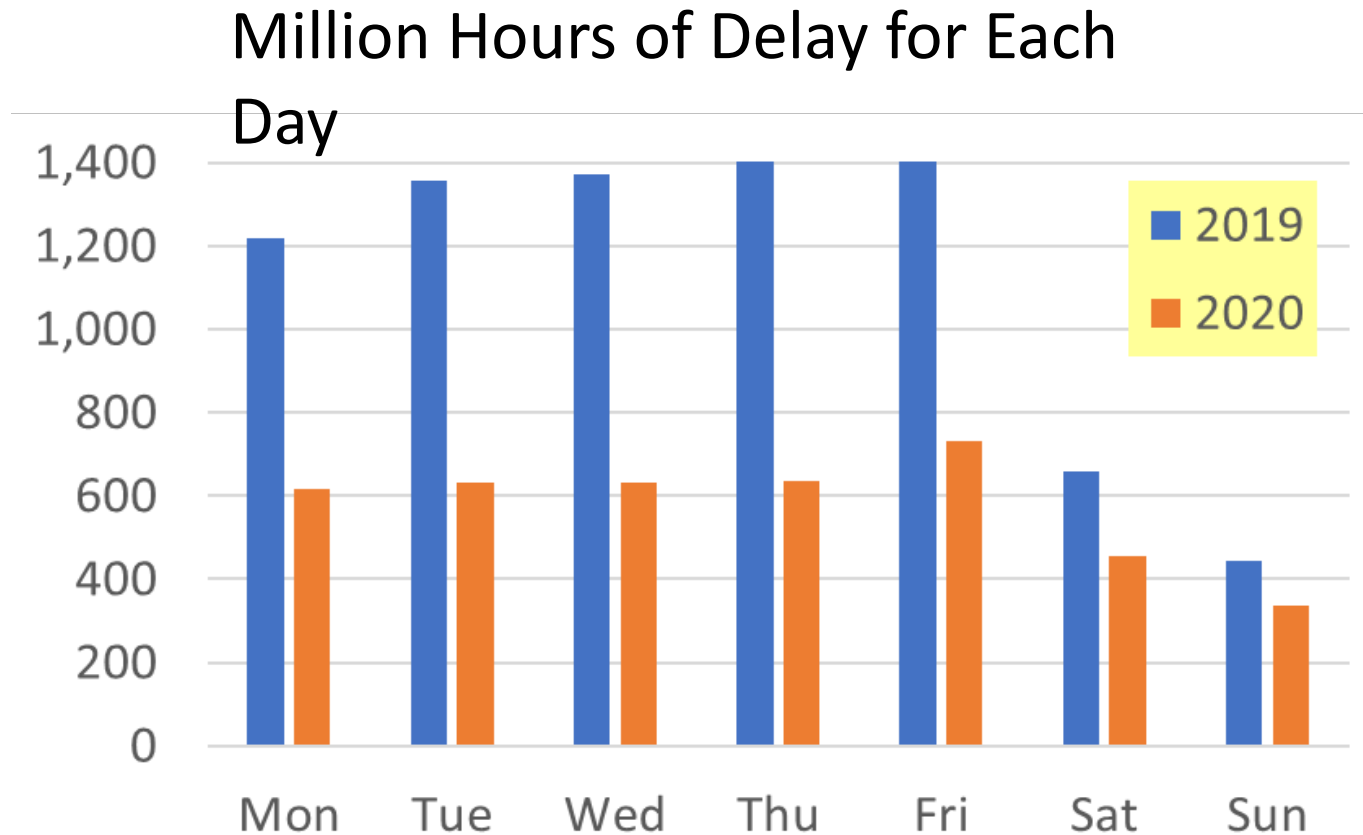
- % of delay during morning was much lower in 2020
- % of delay during midday hours were higher
- % of evening slightly lower in 2020

Percent of Delay by Hour of Day



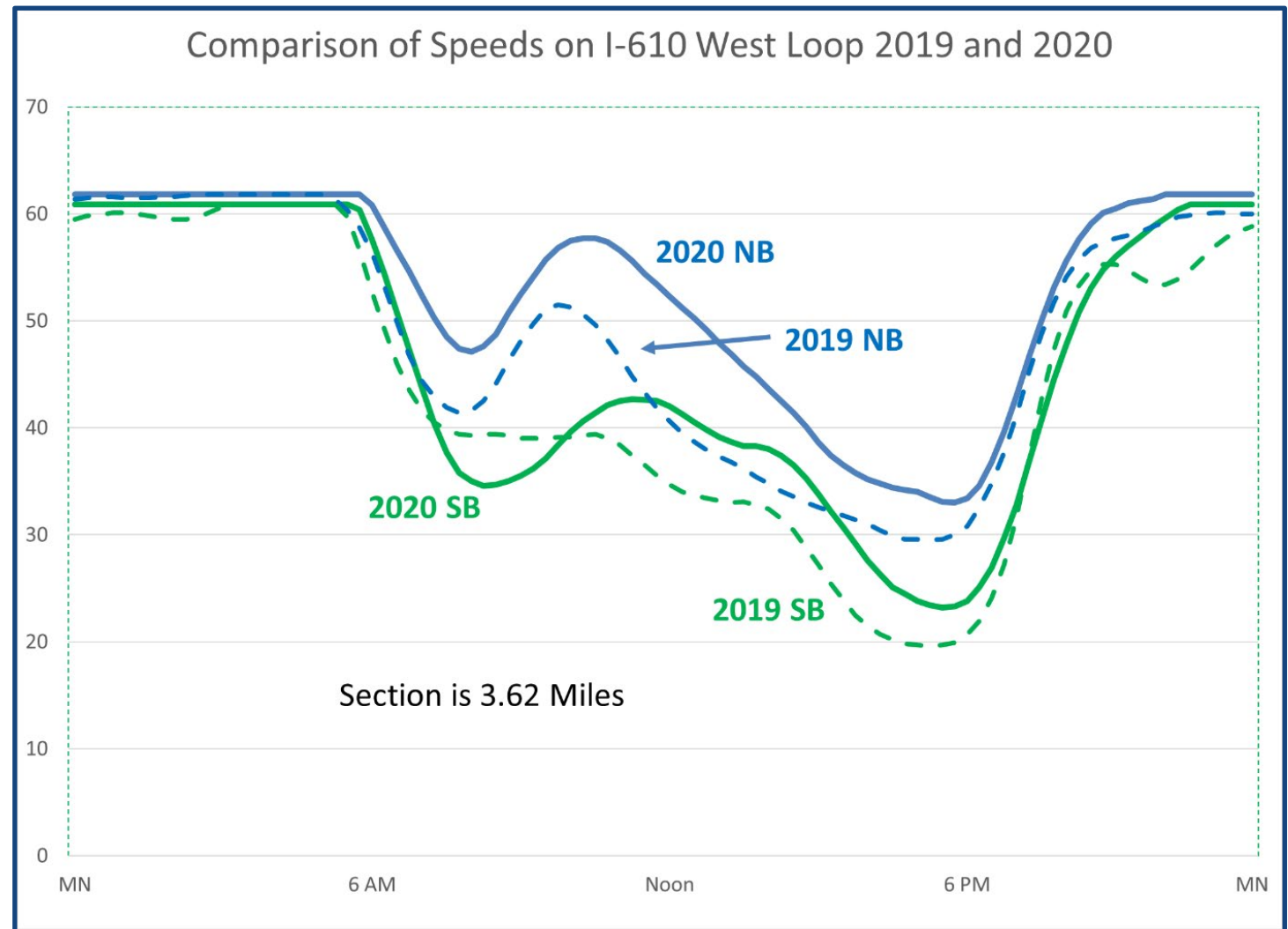
The Week Was Also Flatter

- Weekend delay hours in 2020 were more than 70 percent of 2019 delay, while Tuesday through Thursday delay were only about 45 percent of 2019



How Different Was 2020?

- West Loop in Houston
- Speeds were often 5-10 mph faster in 2020 than in 2019.
- The difference between 20 and 30 mph is 1 minute per mile; between 30 and 40 is a half minute per mile.



2023 Urban Mobility Report

- Adds 2021 and 2022 data in 494 urban areas
- Recently obtained 2021 Highway Performance Monitoring System Data
- Working on analysis and reviewing preliminary results

2023 Urban Mobility Report – Early Trends

- Decrease in percentage of weekly traffic on Mondays and Tuesdays, Thursdays on the rise
- Increase in percentage of weekly traffic on weekends
- In some urban areas 2022 VMT and/or delay is higher than 2019, especially smaller satellite urban areas
- 2022 truck delay increase from 2019 higher than all vehicle delay

Potential Long-Term Effects of Pandemic on Transportation

- More variance in delay by day of week due to hybrid work schedules, less reliable travel
- Greater percentage of travel during off-peak times
- More travel on shoulders of the peak periods and less travel in core of urban areas
- Transit ridership slower to return than auto travel, lots of anecdotal discussions on this
- Areas with larger truck movements more congested

How are we handling this in our mobility monitoring?

- Consistent methodology is important. Let the performance be the cause of changes
- More emphasis on changes in rankings rather than the actual performance results
- Speed profiles are going to be critical moving forward to help show WHY/HOW performance is changing
- Incorporating trip patterns as well

Congestion Management Process Analysis Tool (COMPAT)

- Quick access to roadways monitored annually by MPO for CMP
- Aggregates segment level statistics to monitored section level
- Includes speed profiles where available (not for estimated speed locations)

The screenshot displays the COMPAT web application interface. On the left is a data table with columns for Label, Speed Profile, Person Hours of Delay, Planning Time Index 80, Planning Time Index 95, Truck Person-Hours of Delay, and Truck Planning Time Index 80. On the right is a map of Corpus Christi, Texas, with a legend for Person Hours of Delay and a properties panel for a selected segment (178AA6153).

	Label	Speed Profile	Person Hours of Delay	Planning Time Index 80	Planning Time Index 95	Truck Person-Hours of Delay	Truck Planning Time Index 80
(+) <input checked="" type="checkbox"/>	COC-01 FM0624-KG (108.41 - 113.699)		207,642	1.32	1.34	26,616	1.4
(+) <input checked="" type="checkbox"/>	COC-02 FM1889-KG (0 - 2.288)		3,519	1.04	1.06	218	1.09
(+) <input checked="" type="checkbox"/>	COC-03 SH0358-KG (5.768 - 15.455)	Plot	394,689	1.2	1.24	18,106	1.27
(+) <input checked="" type="checkbox"/>	COC-04 PR0022-KG (0 - 8.508)	Plot	100,022	1.1	1.11	5,562	1.18
(+) <input checked="" type="checkbox"/>	COC-05 SH0357-KG (3.292-9.291)		637,930	1.55	1.59	23,367	1.69
(+) <input checked="" type="checkbox"/>	COC-06 FM0043-KG (6.086-10.767)	Plot	349,041	1.46	1.52	12,312	1.52

Map Legend: Person Hours of Delay

- 300,018 +
- 257,159 +
- 214,299 +
- 171,439 +
- 128,579 +
- 85,720 +
- 42,860 +
- 0.00 +

Properties for Segment 178AA6153

- From DFO: 3,022
- To DFO: 9,908
- Adjusted Current ADT: 4,540
- % of single unit trucks in ADT: 1.81
- % of combo unit trucks in ADT: 1.41
- Delay: 6,978
- Travel Time Index: 1.02
- Planning Time Index 80: 1.05
- Planning Time Index 95: 1.06
- Estimated: NO

COMPAT (cont.)

- A speed profile for a CMP monitored section

