

# Executive Summary

The Mobility Management Center (MMC) operates the City of Austin's traffic signal network. The MMC prepares for and responds to expected and unexpected events and works continuously to improve the City's traffic signal performance. This report outlines major accomplishments of the MMC in 2020 and quantifies many of the program's benefits.

The MMC moved into a newly-renovated space in January 2020. In March, the MMC transitioned to work-from-home due to the the COVID-19 pandemic.

The COVID-19 pandemic created opportunities for the MMC to adapt and serve the City in new ways. During the pandemic, the MMC continued to provide innovative services to road users by applying new data analysis techniques, signal operations technology, and improved strategies in arterial management.

The MMC launched the Arterial Coordinator program and provided holistic, quantitative metrics to increase awareness and improve operations along selected critical arterials.

Using Power BI, the MMC created dynamic automated reports and dashboards to quickly and easily track Arterial Coordinator program metrics, COVID-19 impacts, signal software deployments, detection status, signal flash events, Service Requests (SRs) and more.

The MMC also continued to manage available special events, adapt to traffic issues in real-time, respond to Service Requests, and remotely investigate issues. Modified traditional special event management included operations for UT Football and Trail of Lights.

The MMC continues to provide support in numerous ways to the City of Austin, partner agencies and the traveling public. The quantitative benefit from the MMC can be represented by a benefit-cost ratio, which was found to be **3.22** for 2020. This is an increase from 2.42 in 2019.

**MMC Upgrades**

**COVID-19 Response**

**Arterial Coordinator**

**Additional  
Accomplishments**

**Additional  
Accomplishments  
Cont.**

**Benefit-Cost  
Analysis**

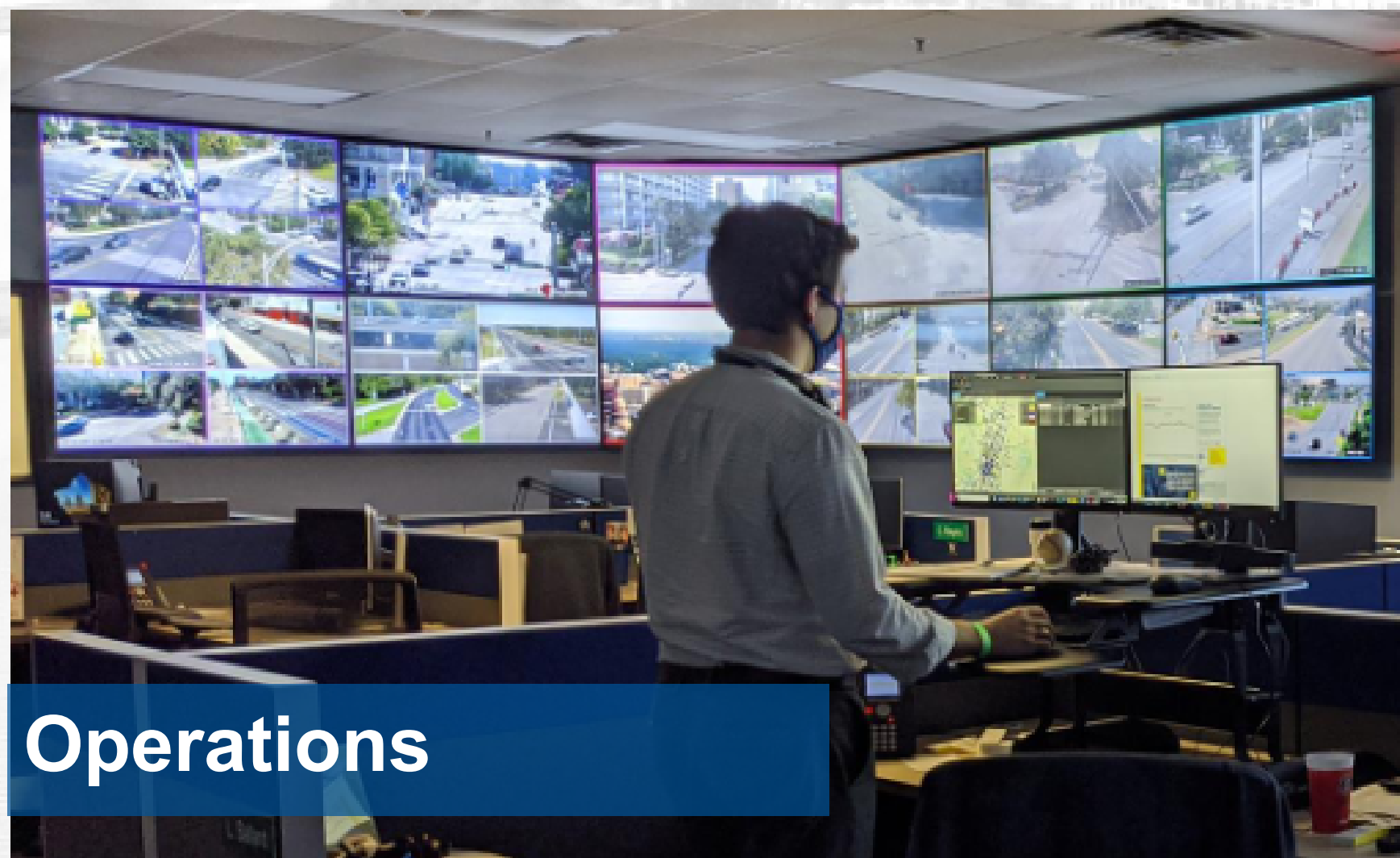
**Appendix**



# MMC Upgrades



22 65-inch displays



Operations

"The Mobility Management Center is where we monitor traffic... our signal infrastructure...making real-time changes to the traffic conditions within Austin."

- Jen Duthie,  
Managing Engineer,  
AMD, 2020



More information [here](#).



**Remote  
Response**

In March, the MMC staff moved to remote operations due to COVID-19. Even in a remote environment, the MMC continued to provide comprehensive management services for the City's traffic signal system.



BACK

NEXT



MOBILITY  
MANAGEMENT  
CENTER



# COVID-19 Response

- Adjusted signal timing and school zone flashing beacon (SZF) schedules city-wide due to lower traffic volumes and school closures. Changes included lowered cycle lengths and more balanced green time.
- Built Power BI Dashboard to track travel times, traffic volumes, Service Requests and other metrics on a weekly basis to inform ATD management.
- The MMC successfully adjusted 87% of the City's signals by utilizing our comprehensive network coverage.

## Signal Timing Adjustments

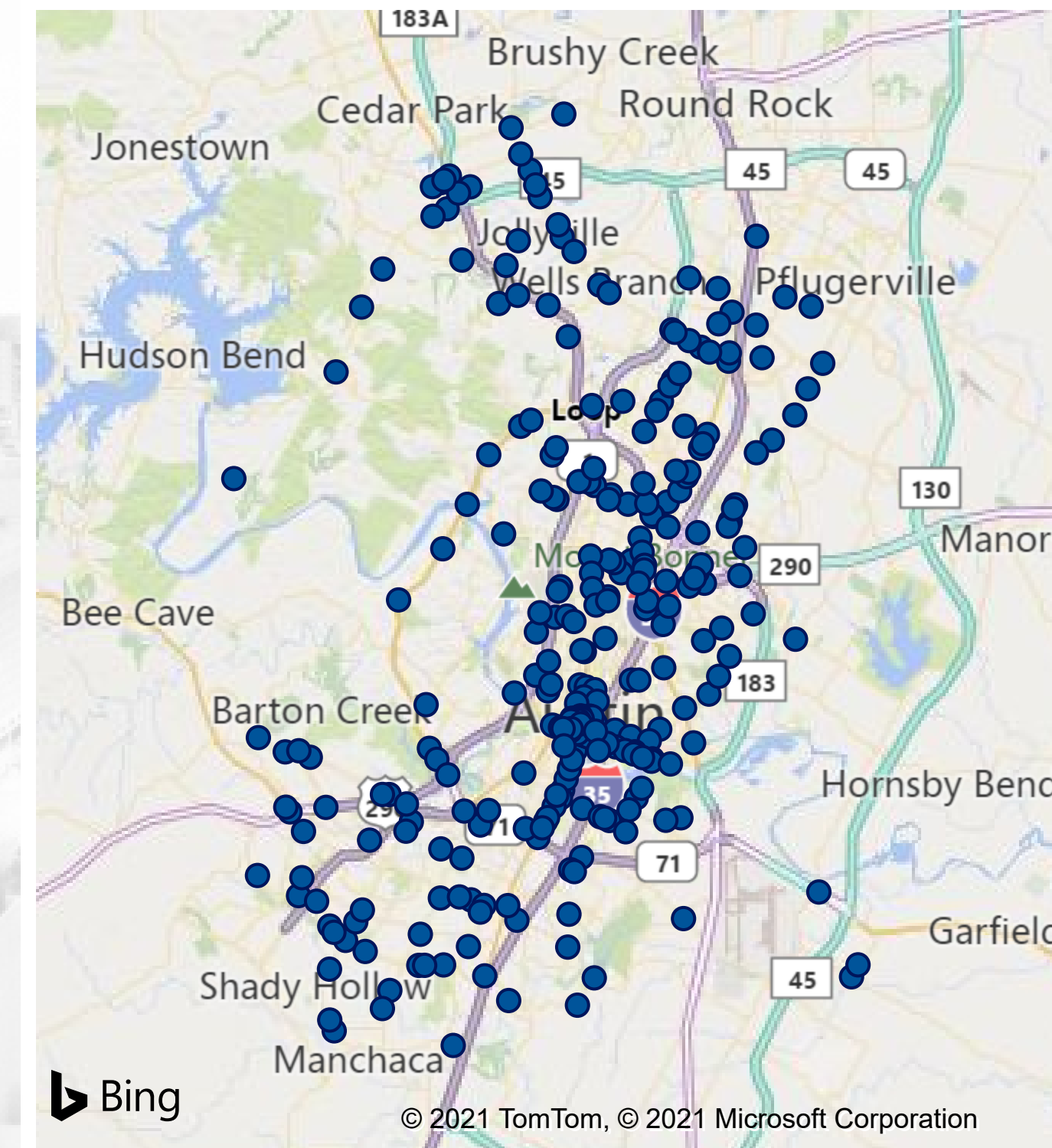
Adjusted timings at 87% of signals due to COVID-19

**571**  
**School Zone**  
**Flashing Beacons**  
**Adjusted**

**856**  
**Signals Adjusted**

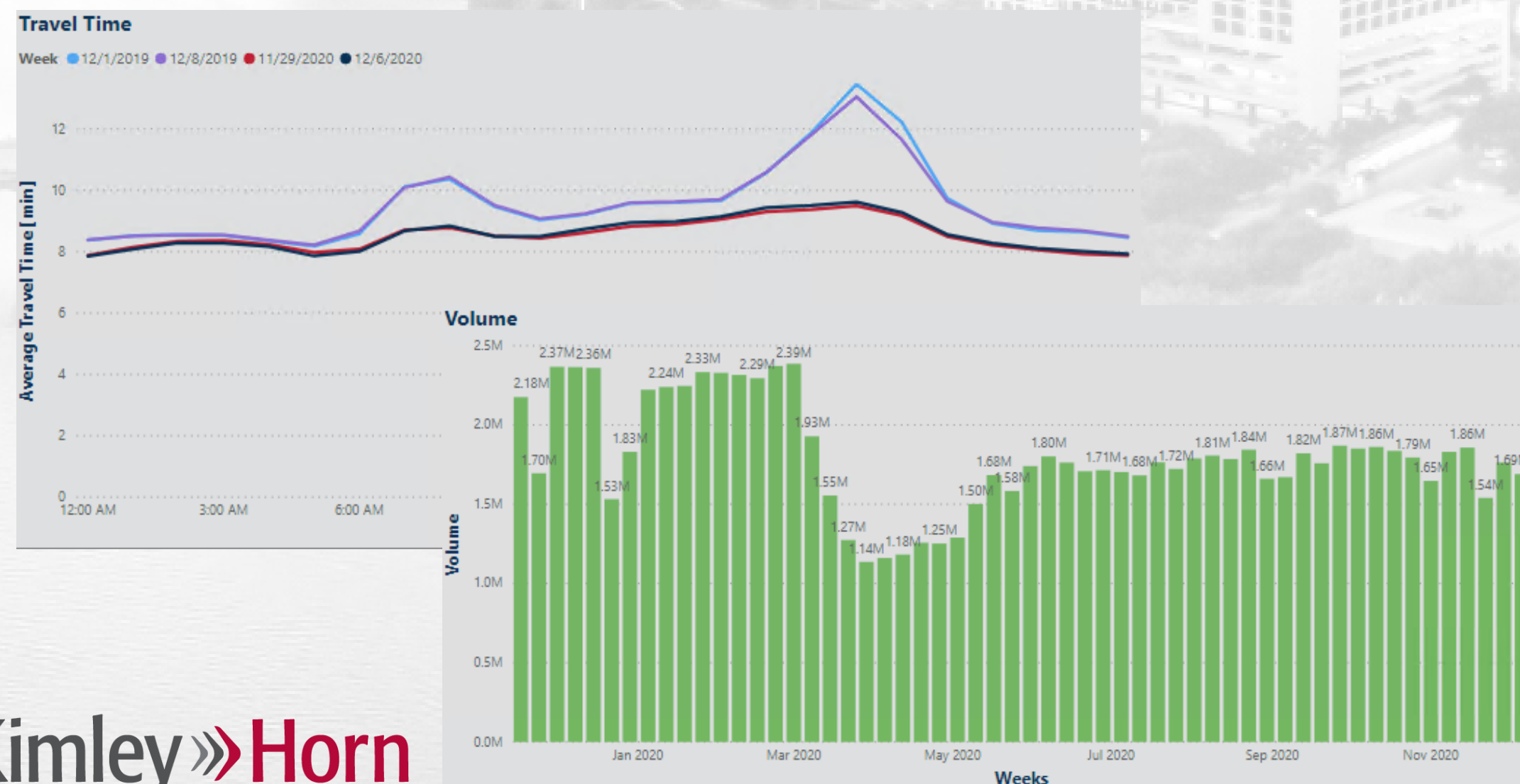
**COVID-19 Timing**  
**Adjustment Benefit**  
**\$2,832,800**  
 2019: \$0

**More info in Appendix**



**Signal Timing Adjustment Locations**

### Volume and Travel Time Dashboard





# Arterial Coordinator

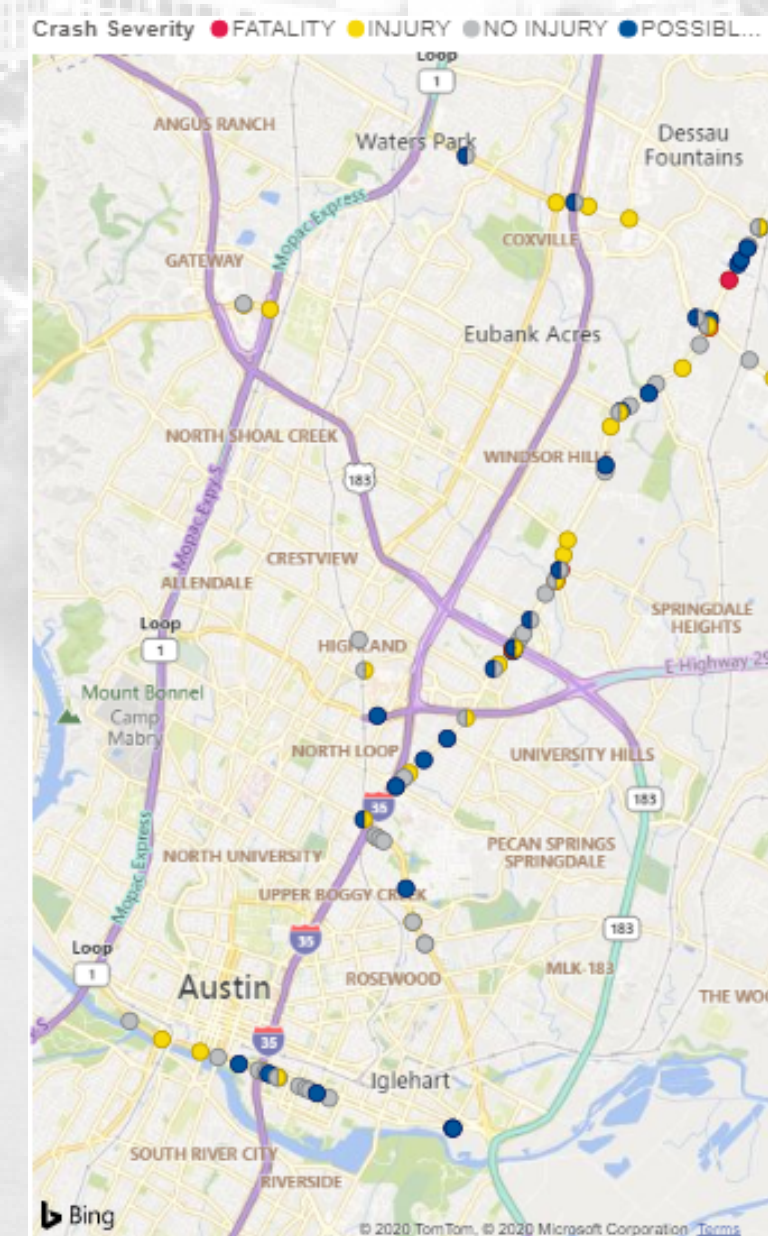
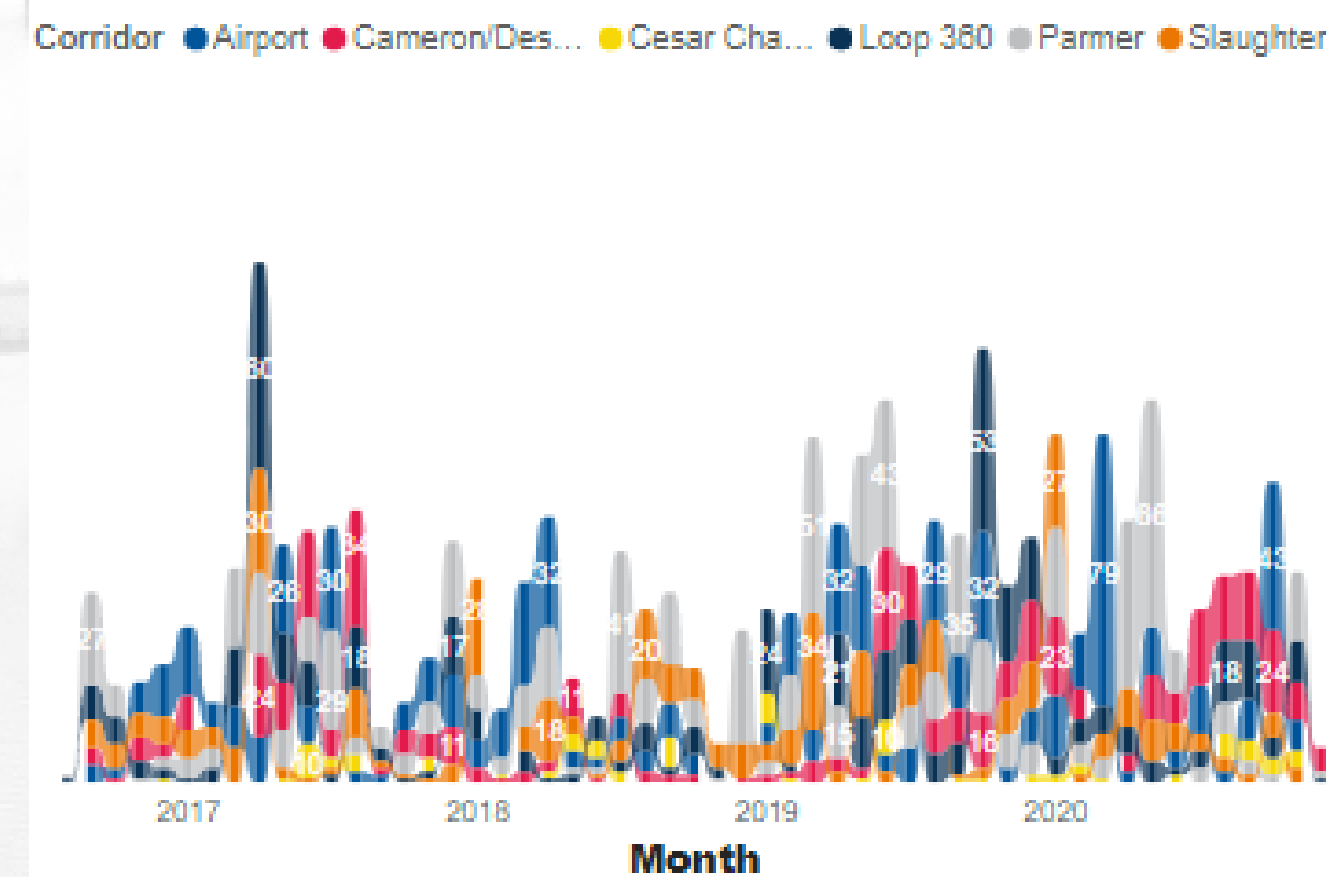
- Created the program in January 2020 to provide a focused approach to improving operations on selected critical arterials.
- Created and analyzed monthly corridor reports (available in Appendix) by bringing together previously disparate datasets for holistic analysis.
- Upgraded signal controller software.
- Prioritized detection configuration and repair.
- Increased staffing to accommodate program workload.
- These corridors are test beds for new equipment, technology, and performance measures.

## Launched in 2020

Pilot program to prioritize and holistically manage critical arterials

### Metric Tracking

#### Total Flash Events by Month and Corridor

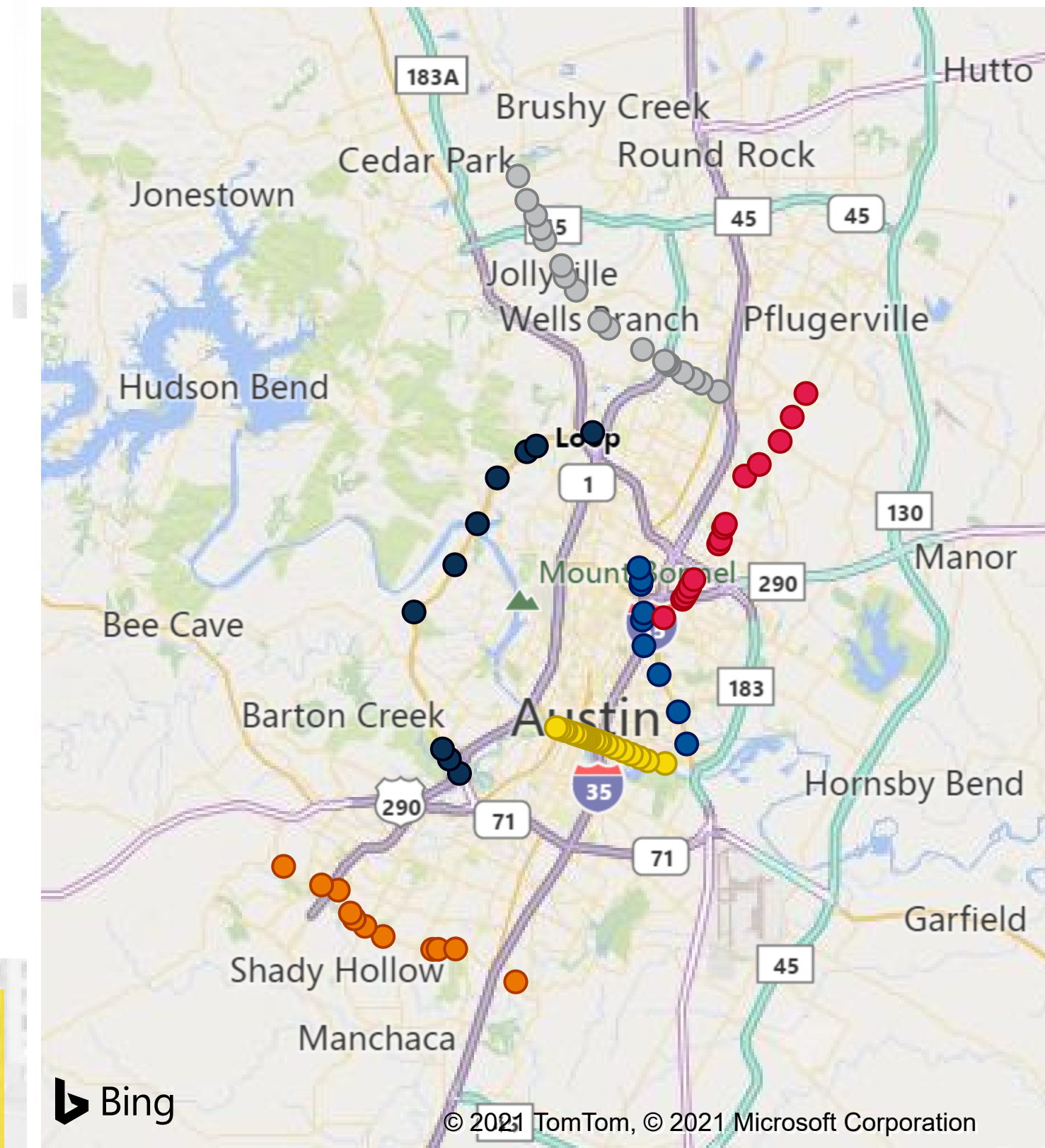


- Airport
- Cameron/Dessau
- Cesar Chavez
- Loop 360
- Parmer
- Slaughter

Arterial	# Signals
Airport	21
Cameron/Dessau	25
Cesar Chavez	24
Loop 360	17
Parmer	28
Slaughter	26
<b>Total</b>	<b>141</b>

Thanks to early success, we expanded from three to six corridors in the first year of the program.

### Signal Locations



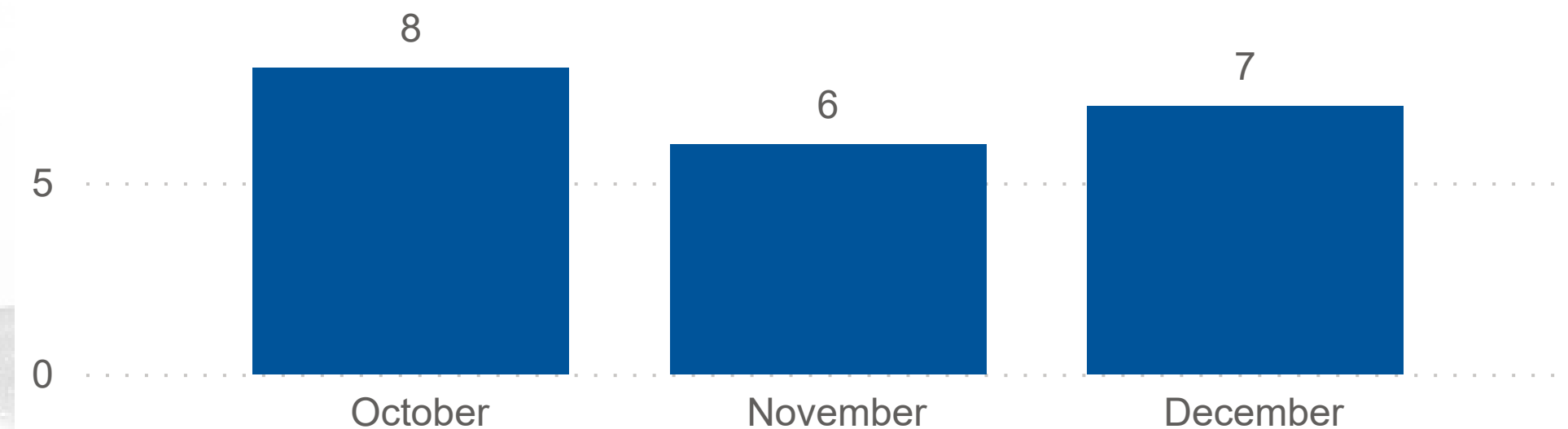
### Critical Arterials



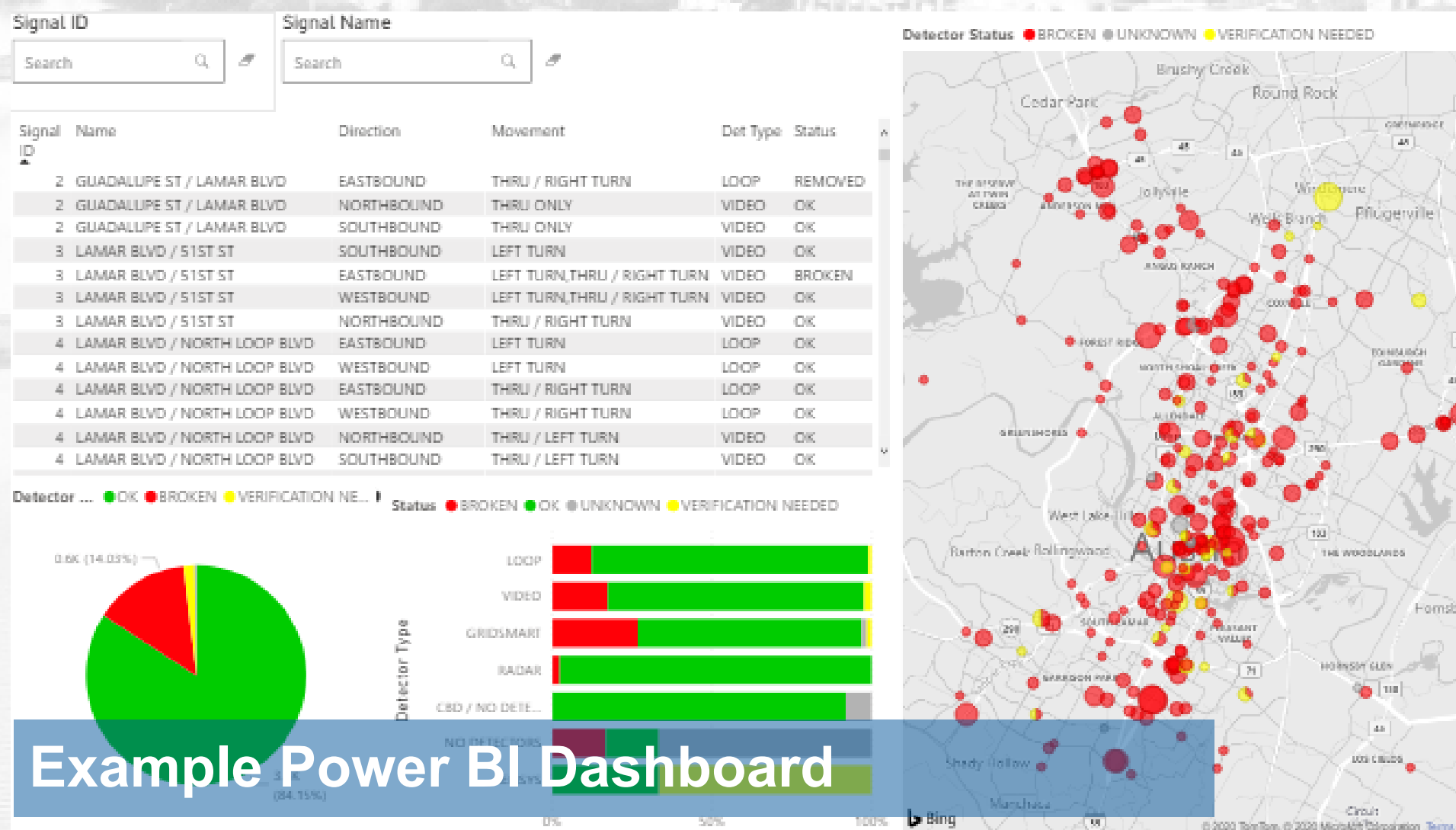
# Additional Accomplishments

## Signal Remote Resets

### Successful Signal Remote Resets by Month



## Improved Reporting & Analysis



Example Power BI Dashboard

When something malfunctions at a traffic signal, the signal goes into flash mode as a fail-safe protection. Over the past year, ATD has increased the number of signals that can be reset remotely when flashing under certain conditions (typically due to power outages after storms). Remotely resetting signals after resettable-faults saves time and money by keeping a technician from having to travel to the field. For travelers, remotely resetting a signal reduces the amount of time they are delayed due to flashing red operations.

**Signal Remote Reset Benefit**  
**\$30,700**  
 2019: \$0

The MMC began remotely resetting signals in mid-2020 and started tracking these actions in October 2020. Therefore, values were tracked for October through December 2020 and then extrapolated back to represent six months worth of benefit. Roughly 7% of flashing signals are able to be remotely reset and in 2020, the MMC was able to reset 7 per month on average.

2020 was a major breakthrough in the MMC for automated and dynamic reporting. Using Power BI, the MMC reduced the amount of time needed to analyze and report data by creating reports that could refresh their data, analysis, and results automatically.

Using this technology, the MMC created new reports and dashboards to more quickly track Arterial Coordinator program metrics, COVID impacts, signal software deployments, detection status, signal flash events, Service Requests and more.



# Additional Accomplishments (Cont)

Similar to years past, the MMC has continued to provide quantitative benefit to the city through other initiatives:

- Managed multiple special events (UT Football and Trail of Lights) and adjusted typical event timing plans to accommodate COVID 19 traffic patterns and changes in event logistics.
- Monitored and responded to various arterial and highway lane closures, similar to previous years.
- Responded to 1,737 signals on flash due to malfunction.
- Remotely investigated and responded to 9,112 Service Requests.

The 2019 Annual Report provides specifics of these initiatives, found in the Appendix.

## Additional Benefits

### Lane Closure Response

**\$1,207,300**

2019: \$1,176,400 (+2.63%)

### Signals on Flash Response

**\$585,500**

2019: \$666,200 (-12.11%)

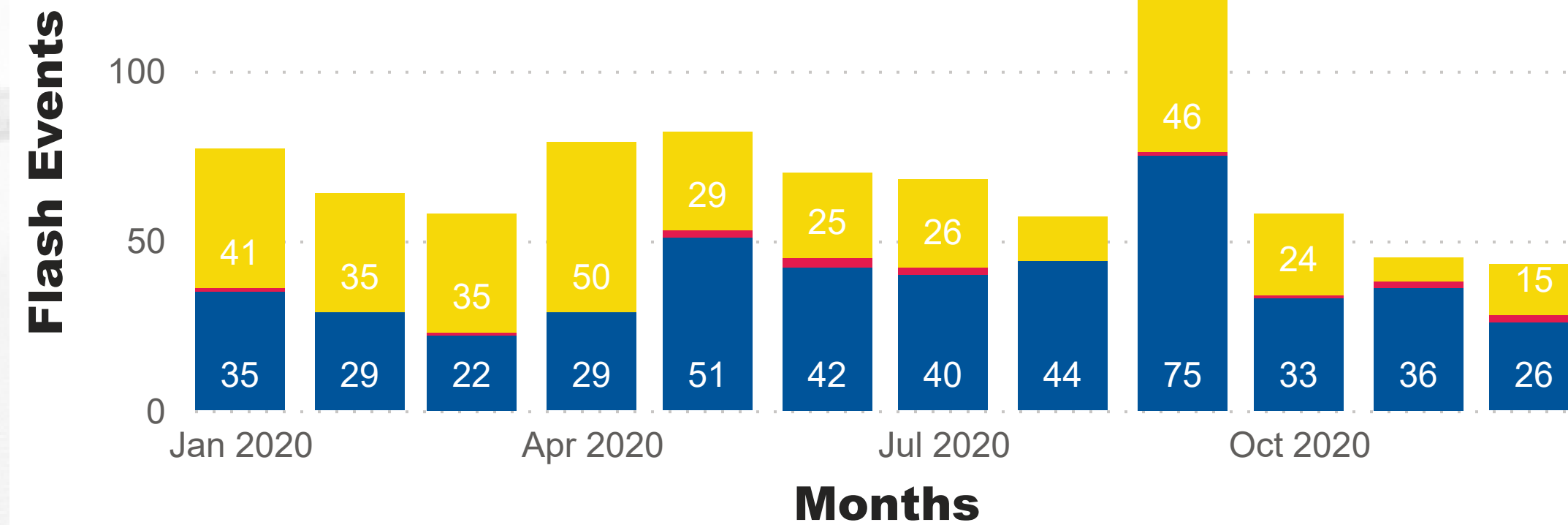
### SR Remote Investigation

**\$1,293,100**

2019: \$1,237,600 (+4.48%)

## 2020 Flash Events Identified by Source

Source ● 311 ● COA Staff ● MMC



## Months

- January 2020
- February 2020
- March 2020
- April 2020
- May 2020
- June 2020
- July 2020
- August 2020
- September 2020
- October 2020
- November 2020
- December 2020



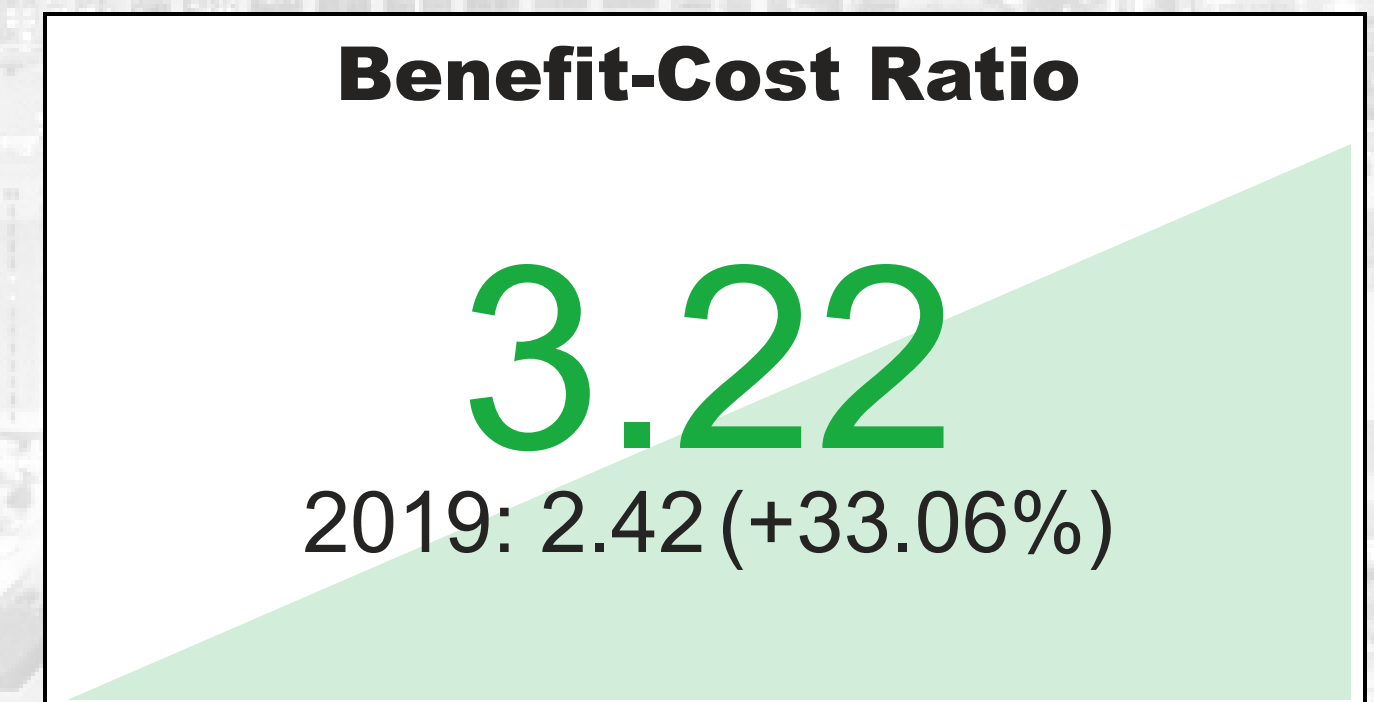
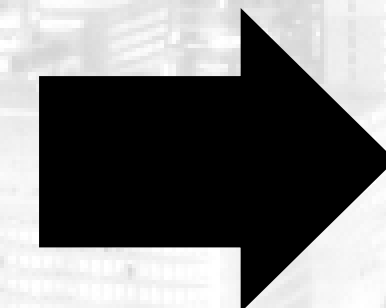
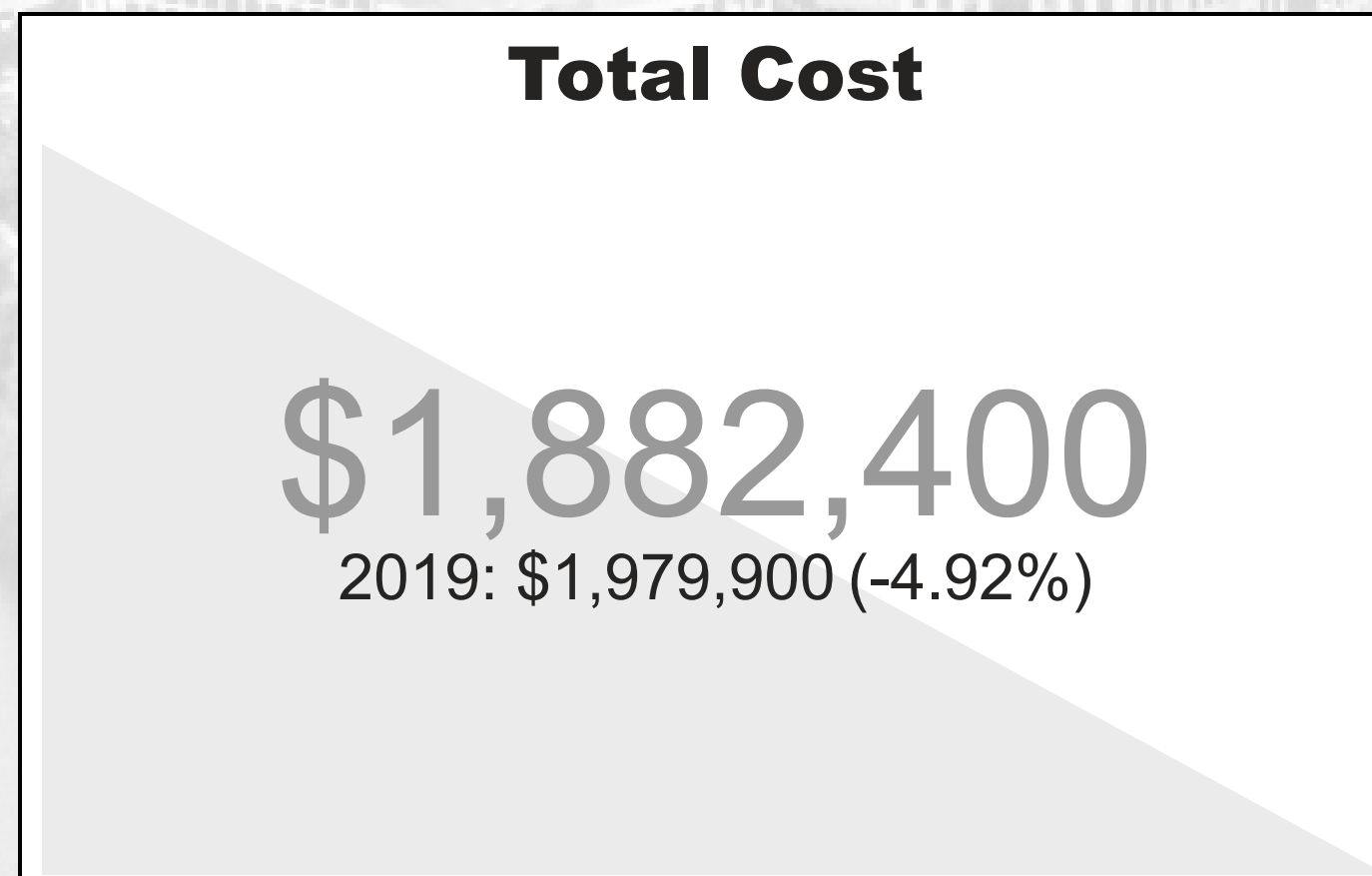
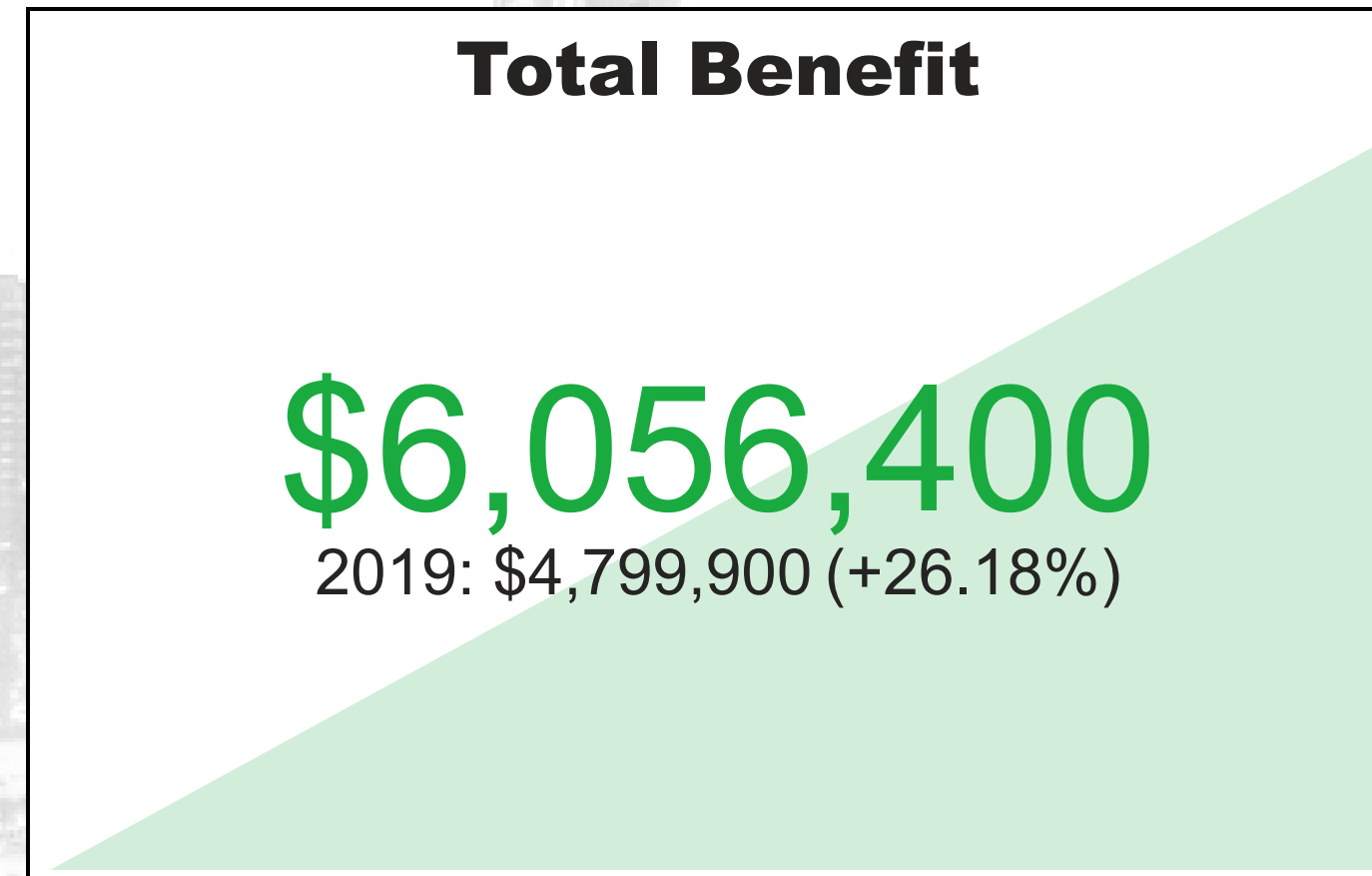


# 2020 Benefit-Cost Analysis

## Benefit

<b>COVID-19 Timing Adjustment Benefit</b> <b>\$2,832,800</b> 2019: \$0
<b>Signal Remote Reset Benefit</b> <b>\$30,700</b> 2019: \$0
<b>UT Football</b> <b>\$76,600</b> 2019: \$467,100 (-83.6%)
<b>Trail of Lights</b> <b>\$30,400</b> 2019: \$317,500 (-90.43%)
<b>SR Remote Investigation</b> <b>\$1,293,100</b> 2019: \$1,237,600 (+4.48%)
<b>Lane Closure Response</b> <b>\$1,207,300</b> 2019: \$1,176,400 (+2.63%)
<b>Signals on Flash Response</b> <b>\$585,500</b> 2019: \$666,200 (-12.11%)

## Benefit-Cost Ratio





# Appendix and Supporting Documentation

[Click below for more information](#)

[COVID-19 Cost-Benefit Memo](#)

[2019 Annual Report](#)

[Remote Resetting Memo](#)

[Arterial Coordinator Memo](#)

COVID-19 Response	
Value	Variable
856	Intersection
1	Occupancy
20.56	TXDOT Road User Costs
47	Impacted Days
5500	Average Volume
45%	% Of cycle stopped
2500	Impacted Users
22	Average Cycle Reduction
10	Average split time %
4.9	Delay Savings

Lane Closure Response	# of Incidents	Delay (hrs)
Arterial lane closures - major-major	306	53.33
Arterial lane closures - major-minor	306	40
Total annual delay (hrs)	28560	
Value of time (Source: TxDOT) (\$)	\$30.12	
Annual delay savings (\$)	\$ 860,227.20	
Highway Lane Closure Response	# of Incidents	Delay (hrs)
Highway lane closures	41	281
Total annual delay (hrs)	11521	
Value of time (Source: TxDOT) (\$)	\$30.12	
Annual delay savings (\$)	\$ 347,012.52	
<b>Grand Total</b>	<b>\$ 1,207,239.72</b>	

Special Event Management							
Event		Dates	Total Attendance	Multimodal Reduction	Critical Corridor Average Travel Time (min)	Travel Time Savings (min) per Vehicle	Event Benefit
UT Football	vs. UTEP	9/12	20,000	20%	20.48	2.868	\$ 15,356.32
	vs. TCU	10/3	20,000	20%	20.56	2.879	\$ 15,415.76
	vs. Baylor	10/24	20,000	20%	20.58	2.881	\$ 15,426.96
	vs. West Virginia	11/7	20,000	20%	20.75	2.906	\$ 15,558.44
	vs. Iowa State	11/27	20,000	20%	19.79	2.770	\$ 14,833.29
Trail of Lights		11/28-1/3	39,600	20%	20.43	2.860	\$ 30,318.77

Remote Response Capabilities	
Total SRs handled by MMC	9112
Total SRs that do not result in a dispatch	6356
Total SRs that result in a dispatch	2756
Avg time spent by signal tech dispatch (incl. travel) (hr)	1.5
Total time savings for signal tech (hrs) (No tech dispatched)	9534
Loaded cost for signal tech (\$/hr)	\$ 100.00
Annual Technician Cost Savings (\$)	\$ 953,400.00
Avg time spent by signal eng to respond to a request (hr)	1.0
Avg time spent by signal eng to dispatch signal tech (hr)	0.5
Total time savings for signal eng (hrs) (with tech dispatch)	1615.0
Loaded cost for signal eng (\$/hr)	\$ 125.00
Annual Engineer Cost Savings (\$)	\$ 201,875.00
Response Cost Savings Subtotal (\$)	\$ 1,155,275.00
Remote Investigation Capabilities	
Total SRs that result in a dispatch	2756
Average time saved by signal tech troubleshooting (hrs)	0.5
Total time savings for signal tech (hrs)	1378.0
Loaded cost for signal tech (\$/hr)	\$ 100.00
Investigation Cost Savings Subtotal (\$)	\$ 137,800.00
<b>Grand Total</b>	<b>\$ 1,293,075.00</b>

	Total Signal Outages	Outages Identified by MMC	Vehicle Delay Saved (hrs)	Cost Savings by MMC
January	119	43	1286	\$ 38,730.46
February	129	42	1256	\$ 37,829.76
March	146	62	1854	\$ 55,843.93
April	165	103	3080	\$ 92,772.97
May	171	64	1914	\$ 57,645.34
June	147	70	2093	\$ 63,049.59
July	160	64	1914	\$ 57,645.34
August	136	35	1047	\$ 31,524.80
September	209	69	2063	\$ 62,148.89
October	145	50	1495	\$ 45,035.42
November	128	23	688	\$ 20,716.30
December	82	25	748	\$ 22,517.71
<b>2020 Total</b>	<b>1737</b>	<b>650</b>	<b>19438</b>	<b>\$ 585,460.51</b>

[Arterial Coordinator Dashboard](#)

[COVID-19 Dashboard](#)

[Detection Dashboard](#)

[D4 Dashboard](#)