

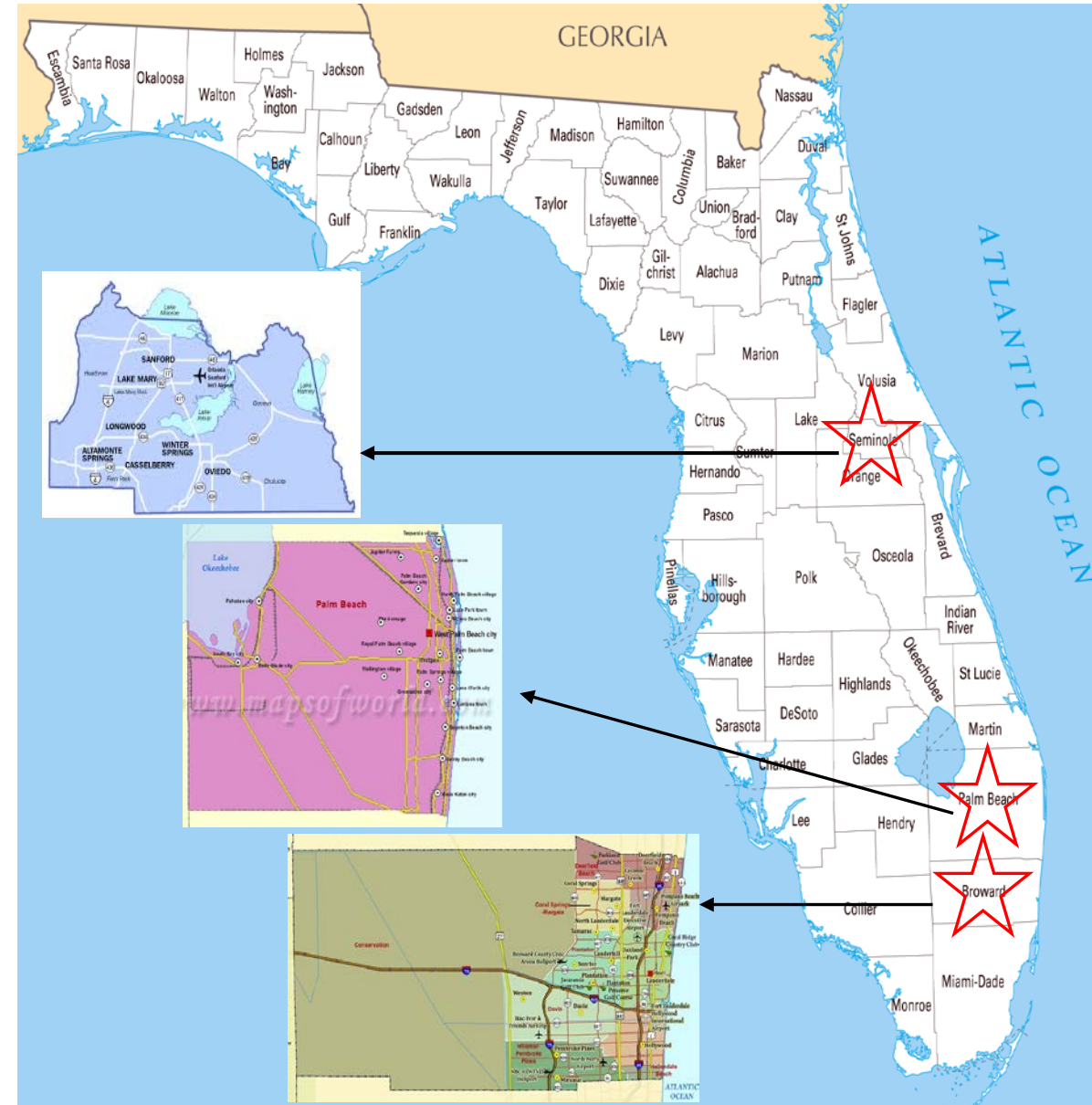
Arterial Performance Measure Reporting

Three Agencies Case Studies:
Issues
Solutions
Lessons learned moving forward

OPTIONS WITH INNOVATION AND TSM&O TECHNOLOGY

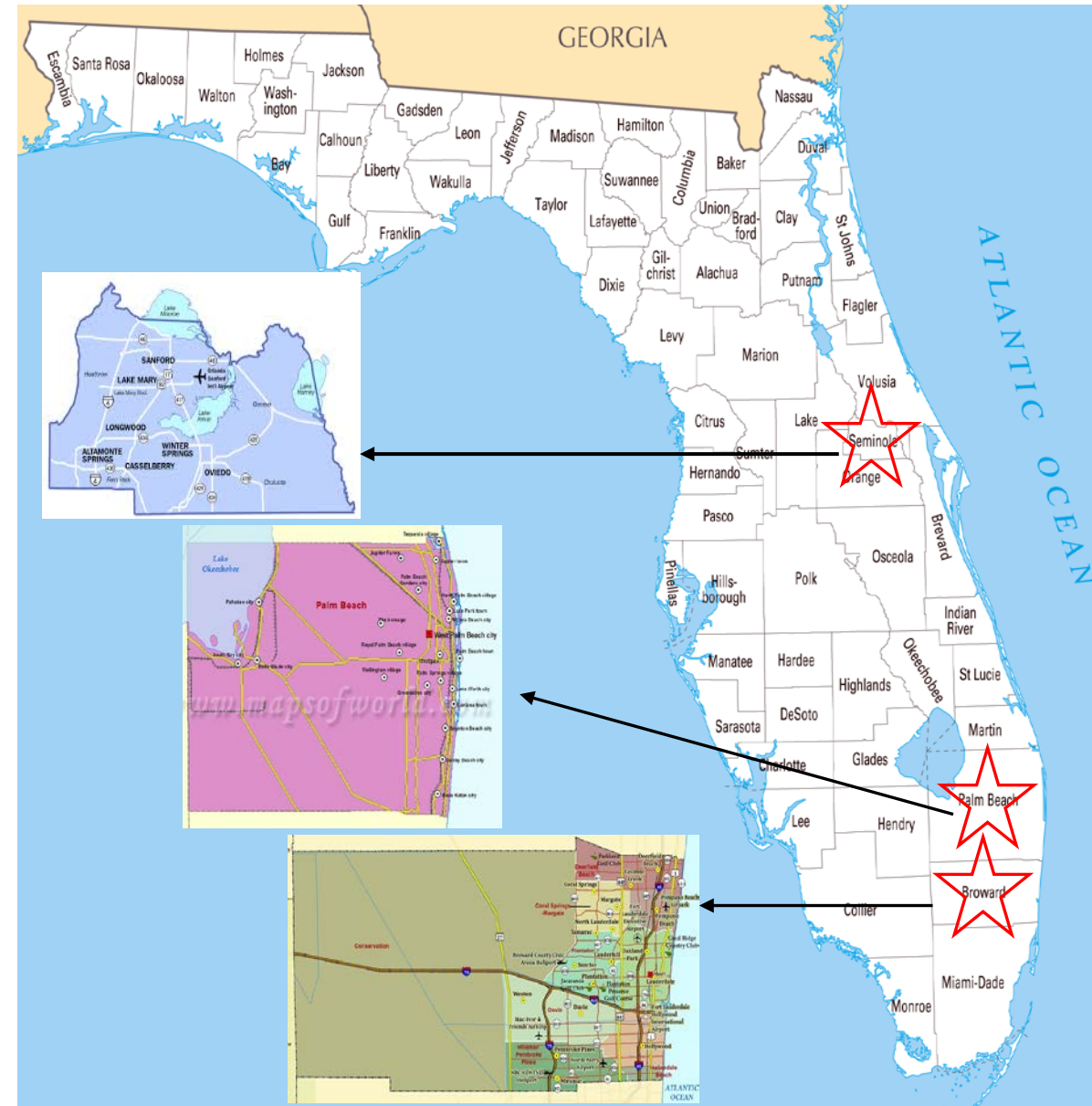
Three Agencies Efforts:

- FDOT District 4 AMP: Broward County
- FDOT District 4 AMP: Palm Beach County
- Seminole County
- Seminole County
 - Population, ~ 467,832
 - Number of Traffic Signals: ~ 396
 - Fiber communication primary communication
 - ATMS.now
- Palm Beach County
 - Population, ~ 1,485,491
 - Number of Traffic Signals: ~ 1,100
 - Fiber communication primary communication
 - ATMS.now
- Broward County
 - Population, ~ 1,951,260
 - Number of Traffic Signals: ~ 1,290
 - Fiber communication primary communication
 - ATMS.now



Variety of Issues

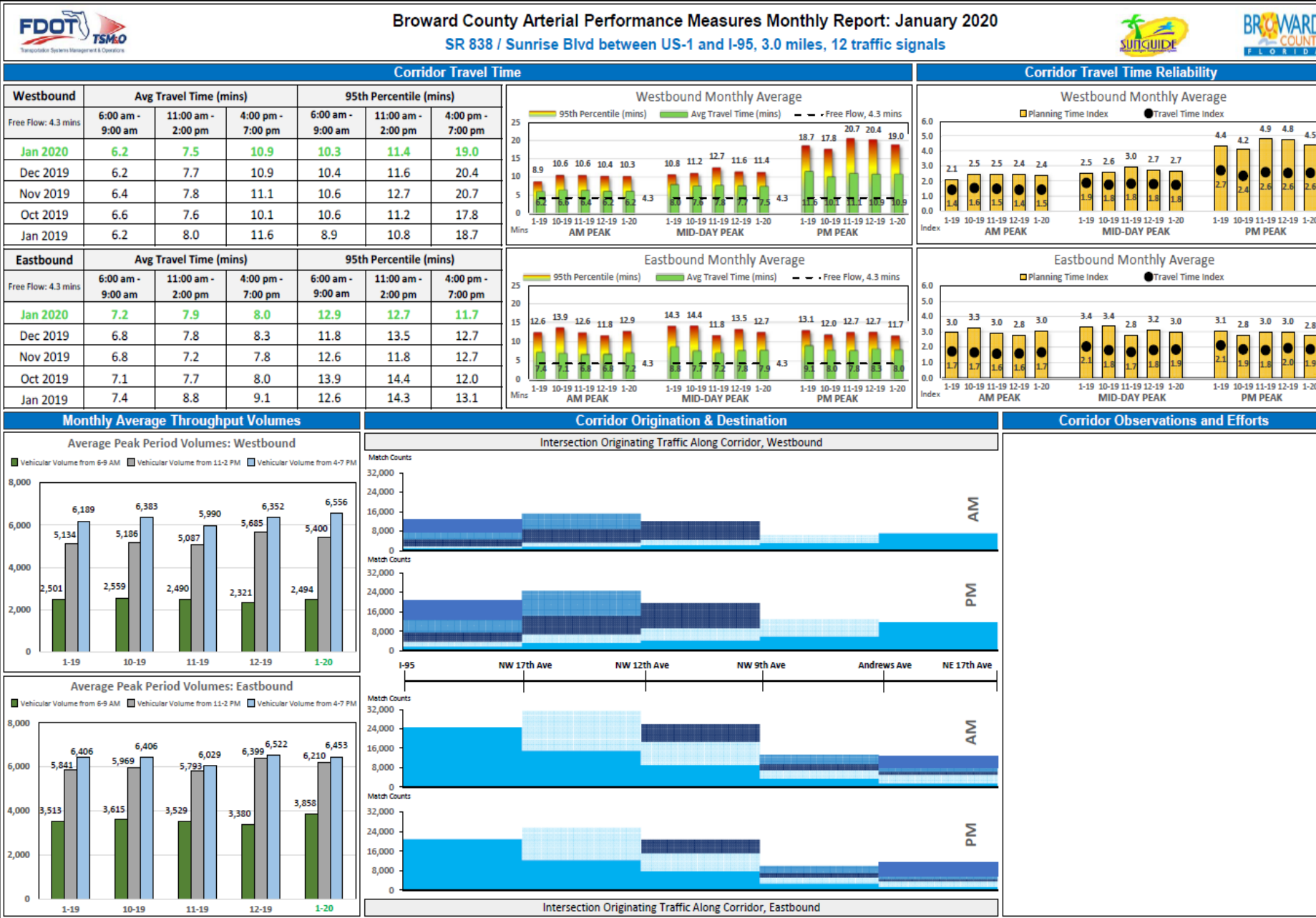
- How do we baseline and quantify our corridors using ITS equipment we've deployed?
- We have too much data!
- Where should we be focusing our efforts?
- Multiple hardware/software platforms, how do we consolidate the data?
- Software is constantly changing and evolving, we can't keep up!
- Do any of these ring a bell to you?
- Other issues?
- Let's talk details.....



Three Step Process: Quantify information, Baseline information and Actionable information

Broward Dashboard 2.0

- 15 Routes of Significance identified and reported.
- Produced by the team after the 1st of every month.



Data Sources:

- BlueTOAD Data
- MVDS Stations

Report Information Displayed:

- Volumes
- Corridor Origination and Destination
- Travel Time Reliability
 - Travel Time Index
 - Planning Time Index

Impacted Teams/Audience:

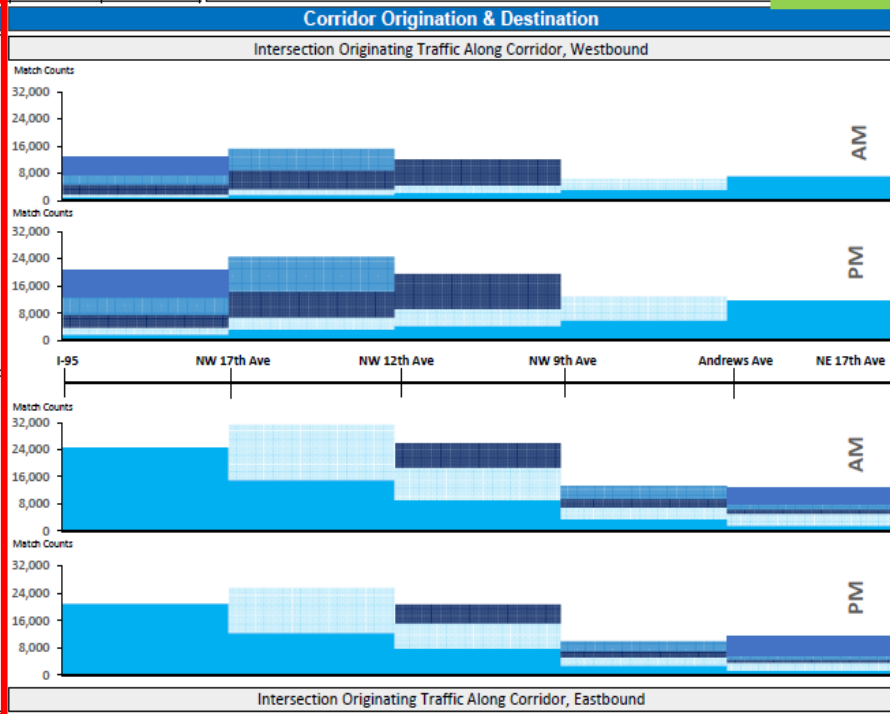
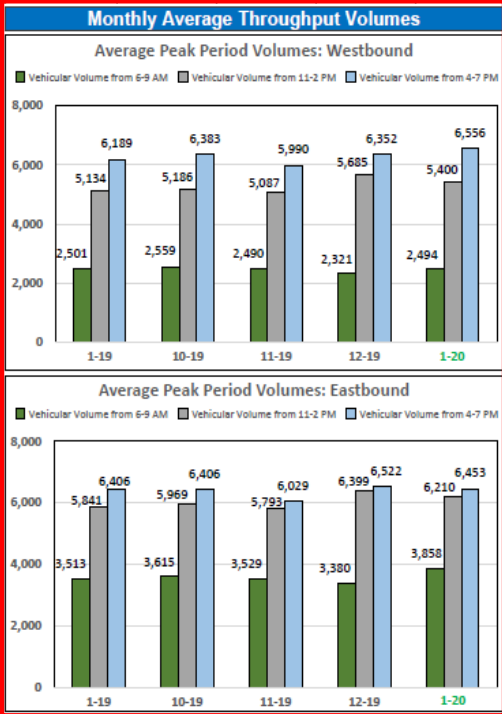
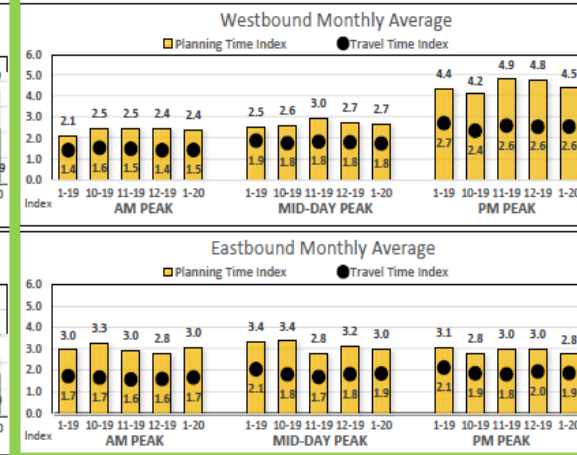
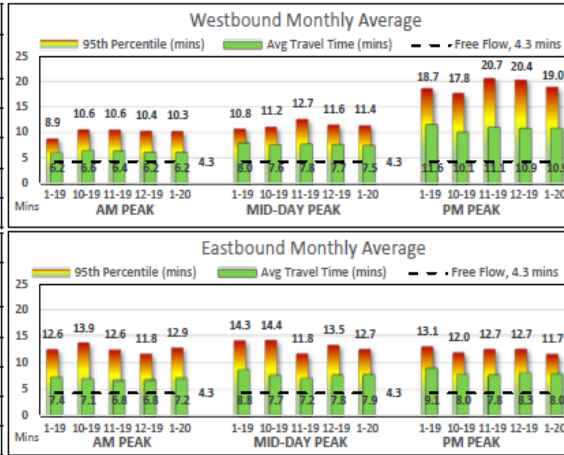
- County Traffic Engineers
- Project PM's
- Consulting Engineers

Corridor Travel Time

Corridor Travel Time Reliability

Westbound	Avg Travel Time (mins)			95th Percentile (mins)		
	6:00 am - 9:00 am	11:00 am - 2:00 pm	4:00 pm - 7:00 pm	6:00 am - 9:00 am	11:00 am - 2:00 pm	4:00 pm - 7:00 pm
Free Flow: 4.3 mins						
Jan 2020	6.2	7.5	10.9	10.3	11.4	19.0
Dec 2019	6.2	7.7	10.9	10.4	11.6	20.4
Nov 2019	6.4	7.8	11.1	10.6	12.7	20.7
Oct 2019	6.6	7.6	10.1	10.6	11.2	17.8
Jan 2019	6.2	8.0	11.6	8.9	10.8	18.7

Eastbound	Avg Travel Time (mins)			95th Percentile (mins)		
	6:00 am - 9:00 am	11:00 am - 2:00 pm	4:00 pm - 7:00 pm	6:00 am - 9:00 am	11:00 am - 2:00 pm	4:00 pm - 7:00 pm
Free Flow: 4.3 mins						
Jan 2020	7.2	7.9	8.0	12.9	12.7	11.7
Dec 2019	6.8	7.8	8.3	11.8	13.5	12.7
Nov 2019	6.8	7.2	7.8	12.6	11.8	12.7
Oct 2019	7.1	7.7	8.0	13.9	14.4	12.0
Jan 2019	7.4	8.8	9.1	12.6	14.3	13.1



Corridor Observations and Efforts

Observation	Effort
AM	
PM	

Issues:

- Which routes in our AMP program need attention?
- Which time period/direction have reoccurring issues (roadway at capacity)?
- What insights can we glean from the data?

Solutions:

- Evaluate all 15 identified corridors (consolidated information)
- Verify PM Westbound timing plans.
- Re-evaluate mid-day timing plans; this corridor & all corridors.

Lessons Learned:

- Verified with baselining
- Actionable based on data
- Uncovered the unknown using the data insights

Three Step Process: Quantify information, Baseline information and Actionable information

Palm Beach Dashboard 2.0

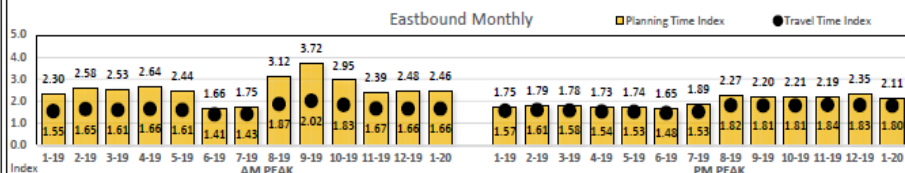
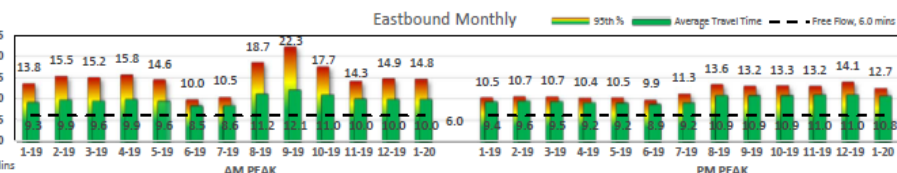
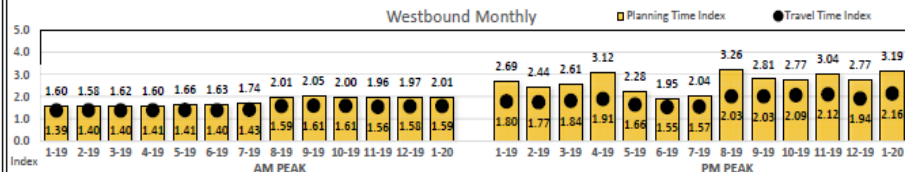
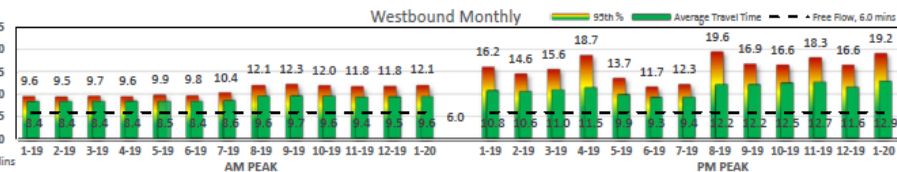


Palm Beach County Arterial Performance Measure Monthly Report: January 2020 Indiantown Road: US-1 to Florida's Turnpike, 4.5 miles, 14 traffic signals

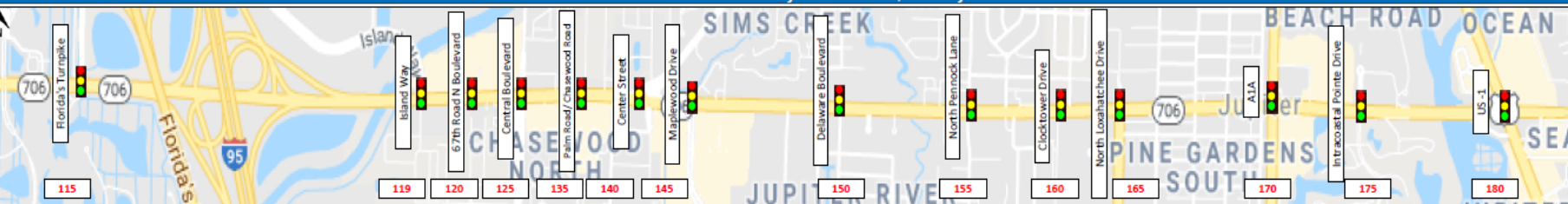


Corridor Travel Time Information

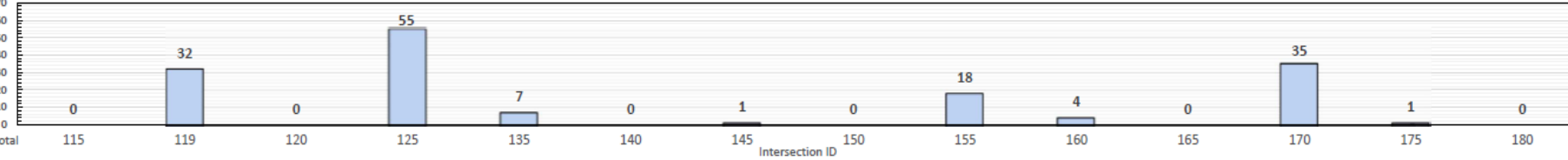
Corridor Travel Time Reliability Information



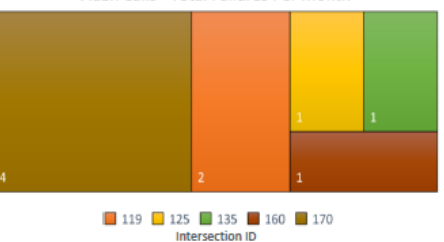
Traffic Controller Alarm Data by Intersections, Monthly Total



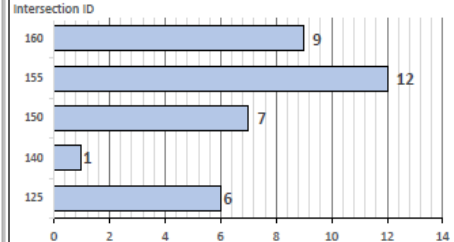
Vehicle Detection Failure - Total Failures Per Month



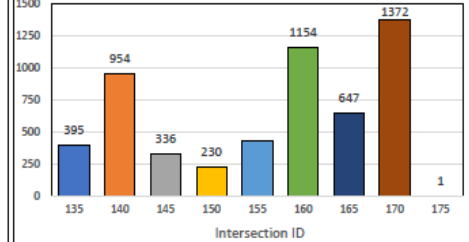
Flash Calls - Total Failures Per Month



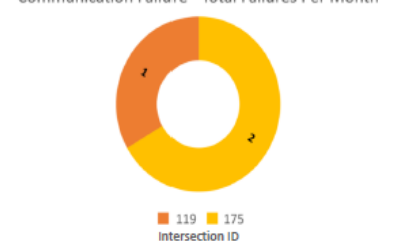
Pedestrian Detector Failure - Total Failures Per Month



Out of Sync Controllers - Count of Sync Issues Per Month



Communication Failure - Total Failures Per Month



- 15 Routes of Significance identified and reported.
- Produced by the team after the 1st of every month.

Data Sources:

- RITIS data
- ATMS.now

Information Displayed:

- Historical Travel Times
- Travel Time Reliability
 - Travel Time Index
 - Planning Time Index
- Top 5 Alarms triggered

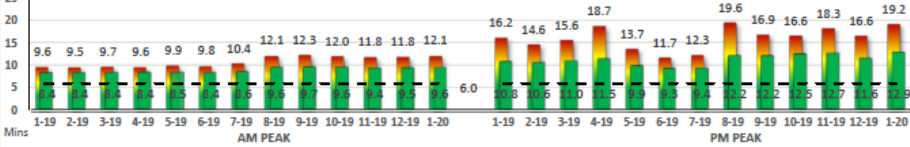
Impacted Teams/Audience:

- County Traffic Engineers
- Project PM's
- Consulting Engineers

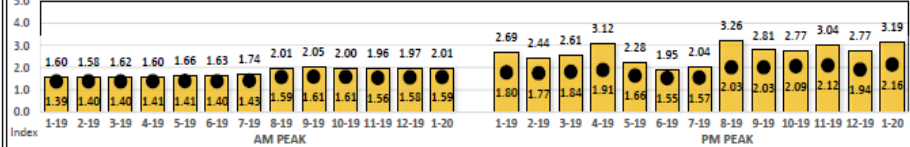
Corridor Travel Time Information

Corridor Travel Time Reliability Information

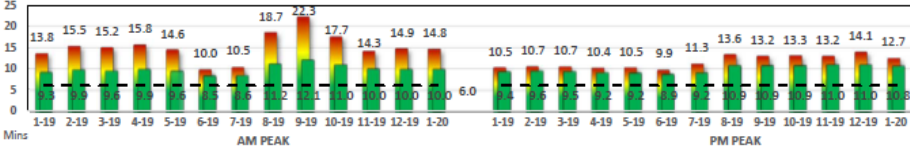
Westbound Monthly



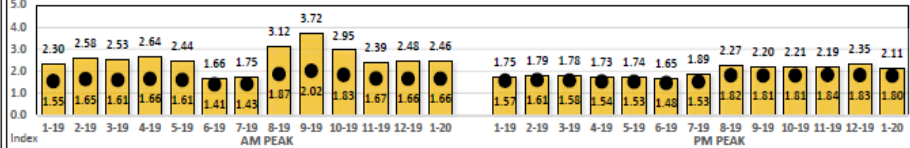
Westbound Monthly



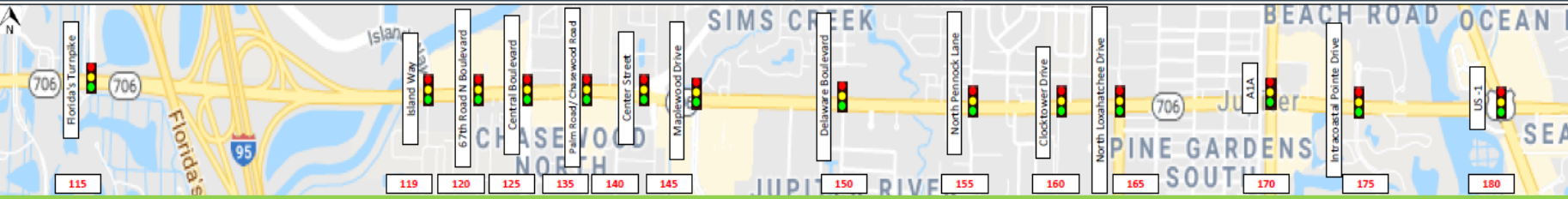
Eastbound Monthly



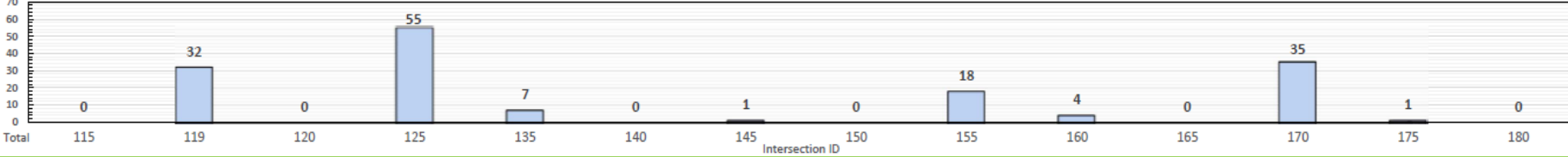
Eastbound Monthly



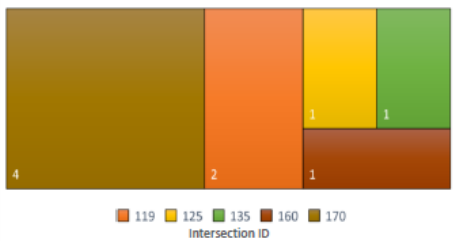
Traffic Controller Alarm Data by Intersections, Monthly Total



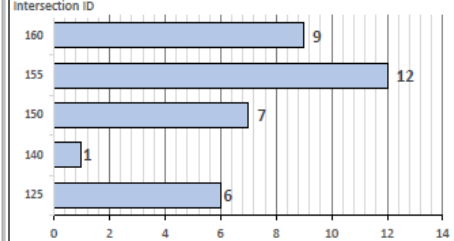
Vehicle Detection Failure - Total Failures Per Month



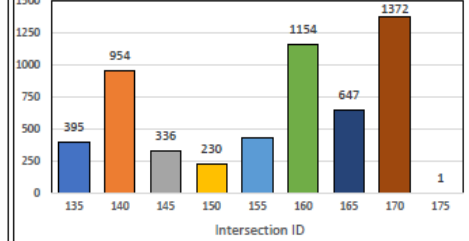
Flash Calls - Total Failures Per Month



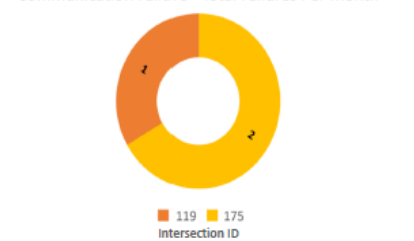
Pedestrian Detector Failure - Total Failures Per Month



Out of Sync Controllers - Count of Sync Issues Per Month



Communication Failure - Total Failures Per Month



Issues:

- Which routes are impacted seasonally?
- Too much data! (alarms)
- What insights can we glean from the data?

Solutions:

- Evaluate corridors trends
- Focus manpower/efforts from alarm results
- Alarm data, specific

Lessons Learned:

- Re-think corridor type
- 30 alarms, focused on 5
- Uncovered the unknown on alarms

Three Step Process: Quantify information, Baseline information and Actionable information

Seminole County 1.0

- 15 Routes of Significance identified and reported.
- Produced by the team after the 1st of every month.

Data Sources:

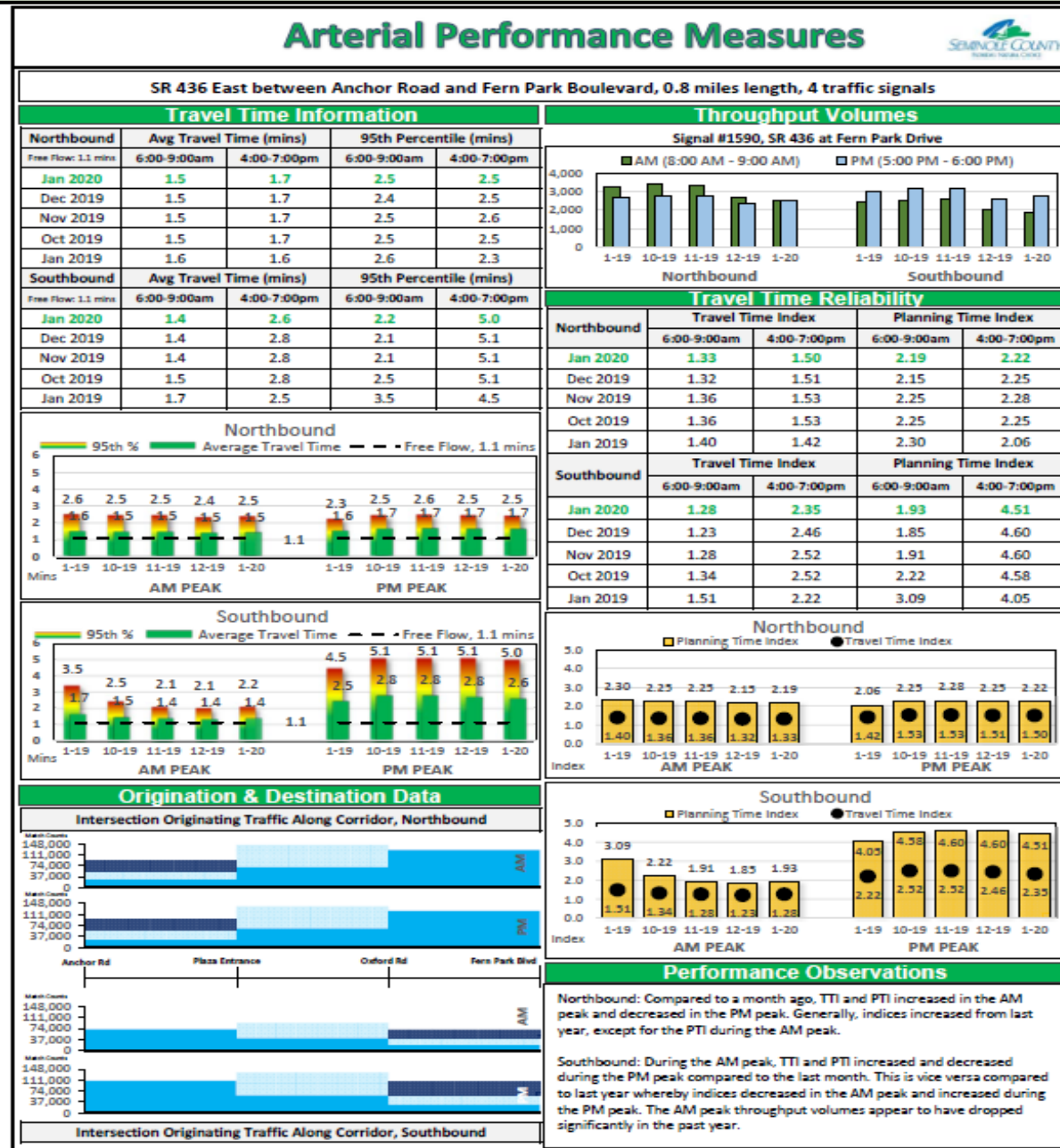
- BlueTOAD data
- ATSPM volume data (Intersection level)

Report Information Displayed:

- Historical Travel Times
- Travel Time Reliability
 - Travel Time Index
 - Planning Time Index
 - Origination/Destination

Impacted Teams/Audience:

- County Traffic Engineers
- Project PM's
- Consulting Engineers



Arterial Performance Measures



SR 436 East between Anchor Road and Fern Park Boulevard, 0.8 miles length, 4 traffic signals

Travel Time Information				
Northbound	Avg Travel Time (mins)		95th Percentile (mins)	
Free Flow: 1.1 mins	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Jan 2020	1.5	1.7	2.5	2.5
Dec 2019	1.5	1.7	2.4	2.5
Nov 2019	1.5	1.7	2.5	2.6
Oct 2019	1.5	1.7	2.5	2.5
Jan 2019	1.6	1.6	2.6	2.3

Throughput Volumes				
Signal #1590, SR 436 at Fern Park Drive				
AM (8:00 AM - 9:00 AM) PM (5:00 PM - 6:00 PM)				
Northbound		Southbound		
1-19	10-19	11-19	12-19	1-20

Travel Time Reliability				
Northbound	Travel Time Index		Planning Time Index	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Jan 2020	1.33	1.50	2.19	2.22
Dec 2019	1.32	1.51	2.15	2.25
Nov 2019	1.36	1.53	2.25	2.28
Oct 2019	1.36	1.53	2.25	2.25
Jan 2019	1.40	1.42	2.30	2.06

Southbound	Travel Time Index		Planning Time Index	
	6:00-9:00am	4:00-7:00pm	6:00-9:00am	4:00-7:00pm
Jan 2020	1.28	2.35	1.93	4.51
Dec 2019	1.23	2.46	1.85	4.60
Nov 2019	1.28	2.52	1.91	4.60
Oct 2019	1.34	2.52	2.22	4.58
Jan 2019	1.51	2.22	3.09	4.05

Origination & Destination Data				
Intersection Originating Traffic Along Corridor, Northbound				
Anchor Rd	Plaza Entrance	Oxford Rd	Fern Park Blvd	
AM				
PM				

Intersection Originating Traffic Along Corridor, Southbound				
Anchor Rd	Plaza Entrance	Oxford Rd	Fern Park Blvd	
AM				
PM				

Performance Observations

Northbound: Compared to a month ago, TTI and PTI increased in the AM peak and decreased in the PM peak. Generally, indices increased from last year, except for the PTI during the AM peak.

Southbound: During the AM peak, TTI and PTI increased and decreased during the PM peak compared to the last month. This is vice versa compared to last year whereby indices decreased in the AM peak and increased during the PM peak. The AM peak throughput volumes appear to have dropped significantly in the past year.

Issues:

- Deployed ITS equipment last 10 years, how are we doing?
- Where should we be focused?
- Software is changing, how should we incorporate?

Solutions:

- Baseline our information
- Impacting our signal retiming efforts
- Consolidate software information into 1 report

Lessons Learned:

- Verification of efforts
- Need more information
 - ATSPM's
- Flexibility: ATSPM's

Quick Conclusions:

1) Identify Objectives and Definitions of Success **per Audience**

- Summary of data into 1 location versus multiple software platforms and vendors
- “Big data” becomes noise

2) Focus of our efforts

- Are we doing the right things?
- What new can we start doing?

3) Can we be ready for new software/technology and data?

- Flexibility of our information
- ATSPM's
- Connected vehicle datasets

Questions ?

Thank you!

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561-839-1537

ADDITIONAL CREDIT TO:

FDOT-DISTRICT FOUR

PALM BEACH COUNTY TRAFFIC ENGINEERING

BROWARD COUNTY TRAFFIC ENGINEERING

SEMINOLE COUNTY

LIAN WOLFE OF COKE CONSULTING, LLC