Speed Management Through Signal Timings

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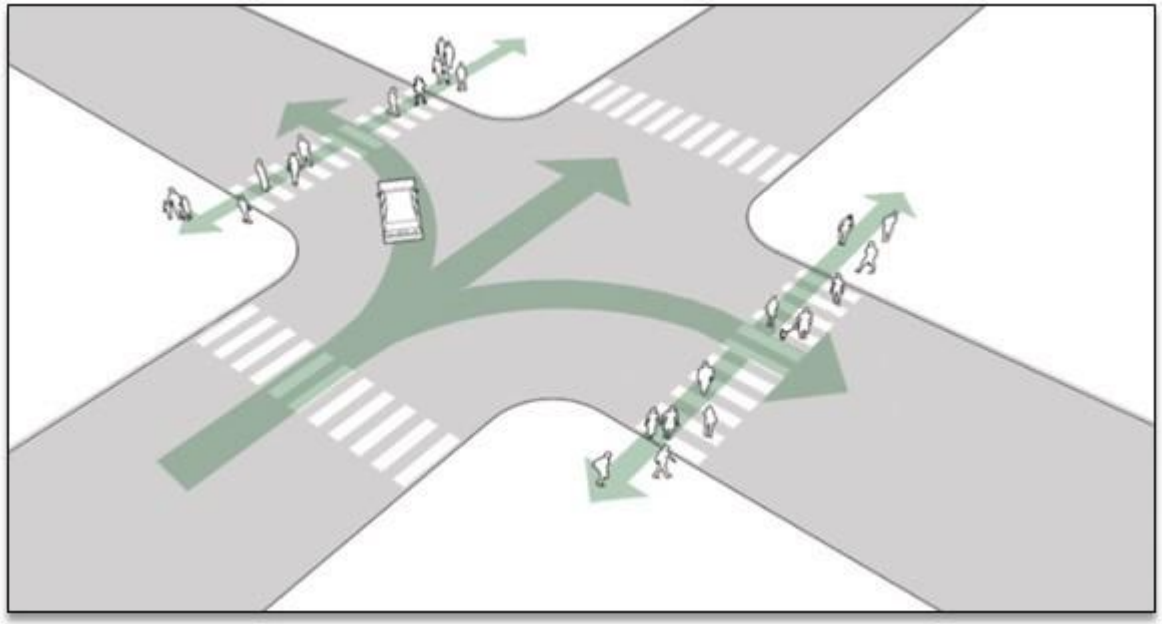
Reducing speeds on arterials:

- District Secretary's Challenge
- Zero Cost and Immediately Effective
- Traffic Operation's Systematic Approach
- Moving Needle Towards Vision Zero

US 41 from Tallevast Rd to Orlando Ave

- **Highest Fatality per Mile in District 1**
  - **31 Fatalities** in 5-year period
  - 264 Serious Injury in 5-year period
  - Heavy Pedestrian Traffic / Pedestrian Crashes
- **Speed Limit = 45 MPH & 50 MPH**
  - Average Speed 45 MPH & 50 MPH
  - 85th Percentile Speed 55 MPH & 60 MPH

Signal Timing Plan Objectives

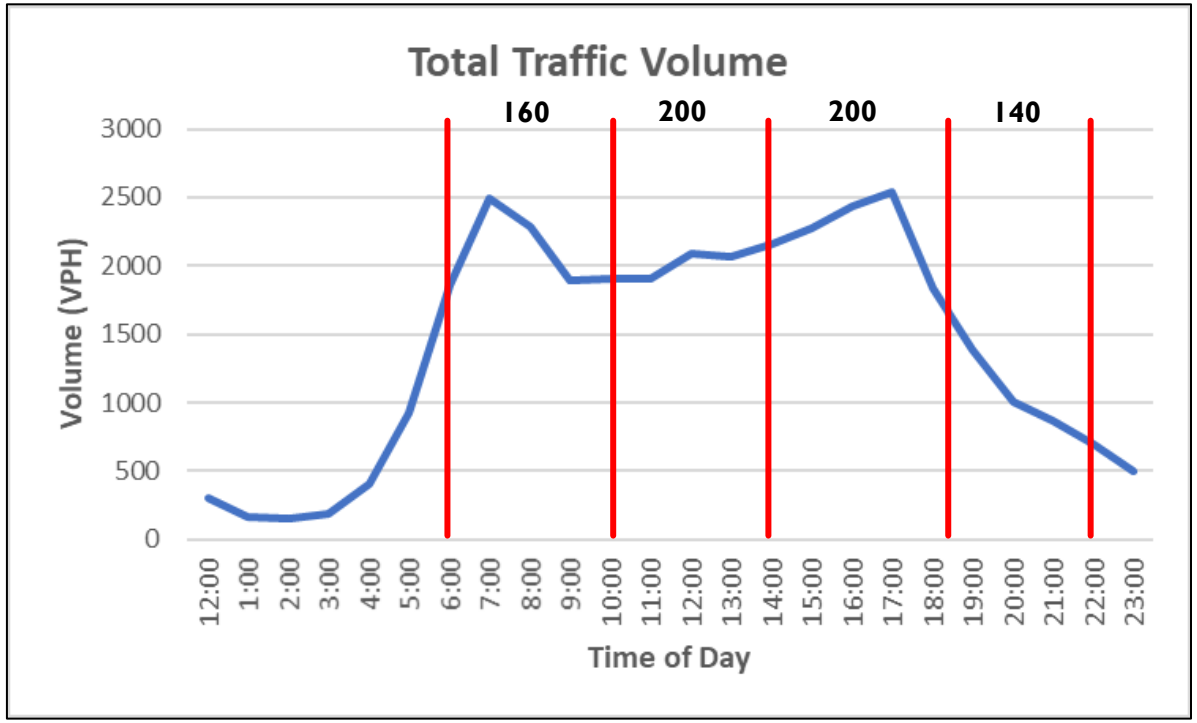


- **Reduced Cycle Lengths (20% - 30%)**
  - Reduce Green Bands
  - Reduce Pedestrian Delay
- **Reduced Progression Speed**
  - Removes Incentive to Speed
- **Leading Pedestrian Intervals (LPI)**
  - Implemented 5 Second LPI to Improve Pedestrian Safety
- **Overnight Coordinated Pattern**
  - Platooned vehicles
  - Predictable gaps for pedestrians

Goals / Performance Measures

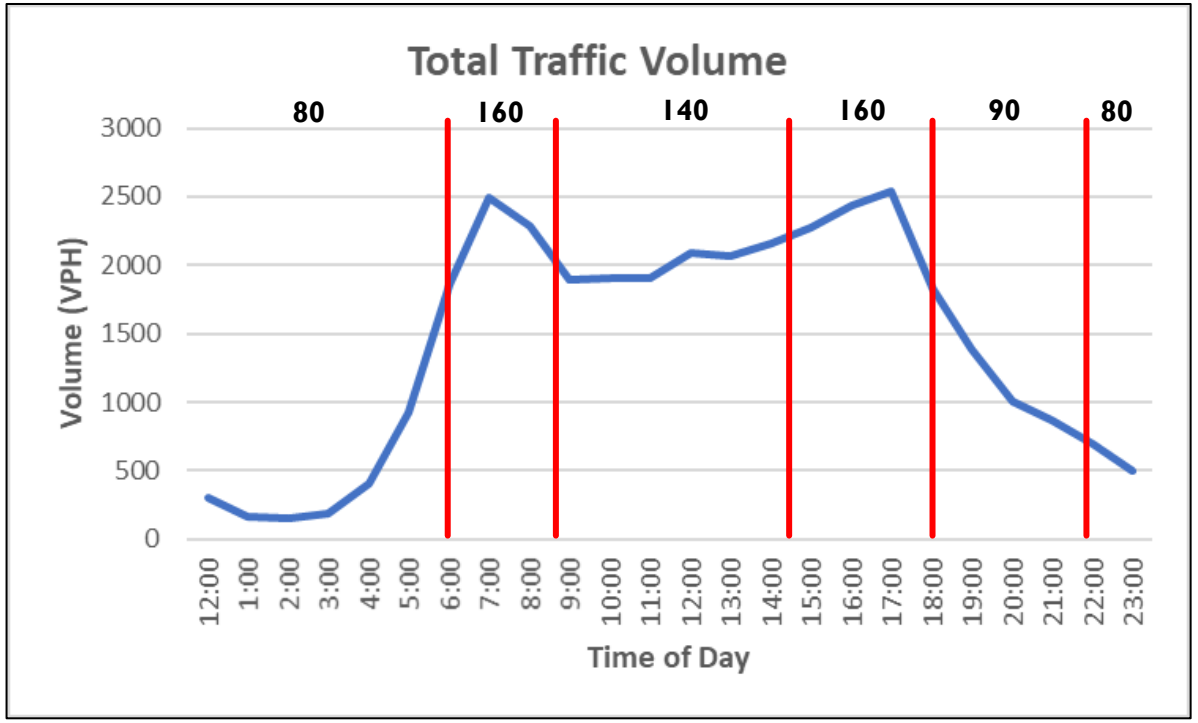
- **Crowdsourced / MVDS Speed Data**
  - Average and 85th Percentile Speeds
  - Ineffective at Providing Insights on Top Speeders
- **Bluetoad Travel Time**
  - Before / After Operational Analysis
  - Operation and Safety Balance using Benefit to Cost Analysis
- **Monitor Performance and Safety Report**
  - Speed and Travel Time Analysis
  - Crash Trend Analysis

Before / After Weekday Timing Plans for Northern Section



Previous

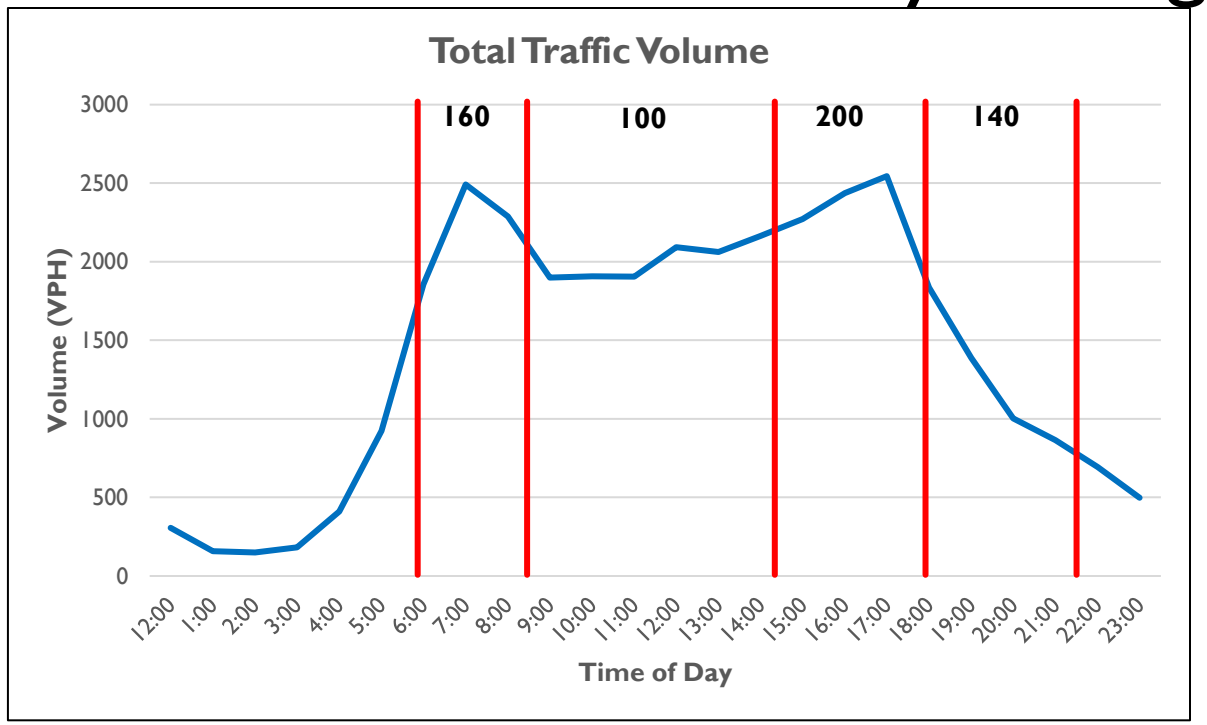
- Reduce Cycle Lengths



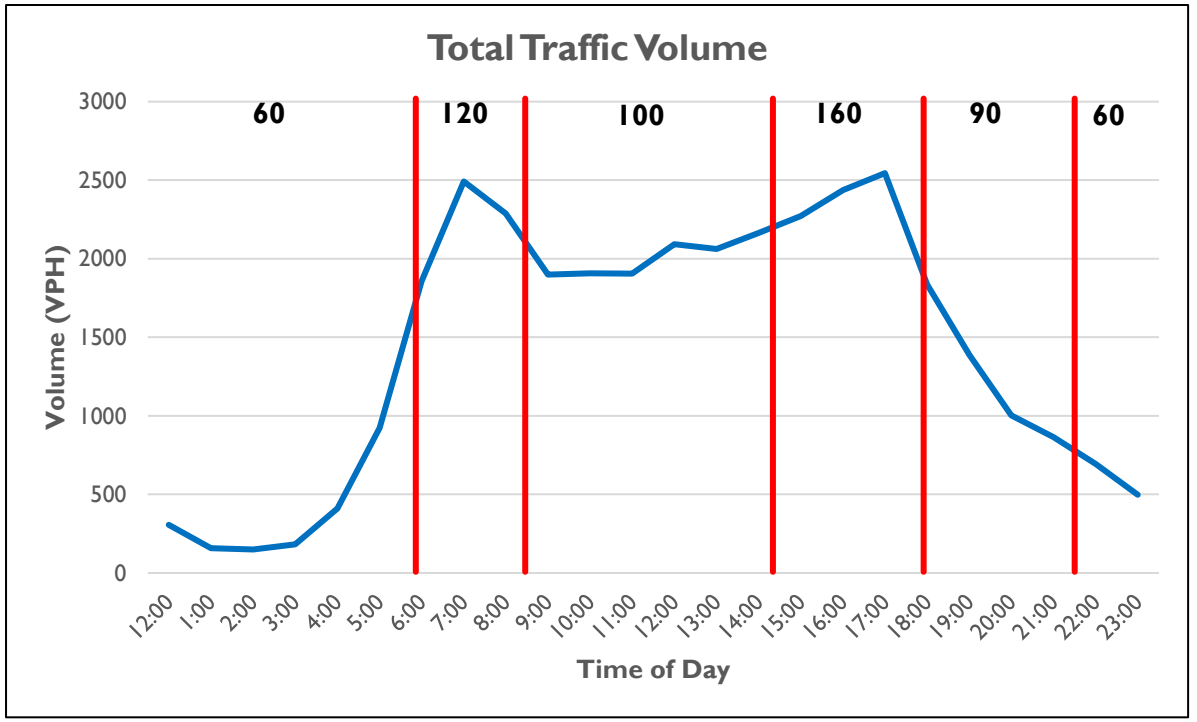
New Timings

- **Reduce Amount of Time in Longer Cycle Lengths**

Before / After Weekday Timing Plans for Southern Section



Previous



New Timings

- North and South Systems Remain Coordinated during PM Peak

Speed and Travel Time Comparison

- **Speed Data Comparison**
  - 4-8 MPH Speed Reduction
  - 7-15% Speed Reduction

5. NB Weekday Average Speed Comparison						
	Before	Oct	Nov	Dec	Jan	% Difference
AM Peak Plan (6:00 - 10:00)	42.5	42	41.9	42.1	40.5	-4.7%
Midday Plan (10:00 - 14:00)	39.5	38.7	37.5	37.7	35.9	-9.1%
PM Peak Plan (14:00 - 18:30)	40.8	38.2	37.6	37.8	36.9	-9.6%
Evening Plan (18:30 - 22:00)	41	40.1	40.5	35.9	35	-14.6%

- **Travel Time Data Comparison**
  - 20-90 Second Travel Time Increase
  - 4-20% Travel Time Increase

SB Weekend Average Travel Time Comparison							
	Before	Oct	Nov	Dec	Jan	Difference (Sec)	% Difference
AM Peak Plan (7:00 - 9:30)	6.9	7.4	7.4	7.3	7.5	36	8.7%
Midday Plan (9:30 - 18:00)	7.85	8.5	8.5	8.4	8.7	51	10.8%
PM Peak Plan (18:00 - 23:00)	7.57	8.3	8.3	8.1	8.2	37.8	8.3%

- **Monitor Performance and Safety Report**
  - Speed and Travel Time Analysis
  - Crash Report Analysis

SB Weekday Average Number of Stops Comparison			
	Before	After	Difference
AM Peak Plan (6:00 - 10:00)	4	4.8	0.8
Midday Plan (10:00 - 14:00)	3.5	4.6	1.1
PM Peak Plan (14:00 - 18:30)	4.3	5.2	0.9
Evening Plan (18:30 - 22:00)	2.8	4.6	1.8


Fatality
Retiming
FATALITIES (12 MONTH MOVING AVERAGE)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Jan-20
Mar-20
May-20
Jul-20
Sep-20
Nov-20
Jan-21
Mar-21
May-21
Jul-21
Sep-21
Nov-21
Jan-22
Mar-22
May-22
Jul-22
Sep-22
Nov-22
Jan-23
Mar-23
May-23
Jul-23
Sep-23
Nov-23
Jan-24
Mar-24


Incapacitating Injury
Retiming
NUMBER OF CRASHES WITH INCAPACITATING INJURY
0
1
2
3
4
5
6
7
8
9
Jan-20
Mar-20
May-20
Jul-20
Sep-20
Nov-20
Jan-21
Mar-21
May-21
Jul-21
Sep-21
Nov-21
Jan-22
Mar-22
May-22
Jul-22
Sep-22
Nov-22
Jan-23
Mar-23
May-23
Jul-23
Sep-23
Nov-23
Jan-24
Mar-24


Injury
Retiming
NUMBER OF CRASHES WITH INJURY
30
25
20
15
10
5
0
Jan-20
Mar-20
May-20
Jul-20
Sep-20
Nov-20
Jan-21
Mar-21
May-21
Jul-21
Sep-21
Nov-21
Jan-22
Mar-22
May-22
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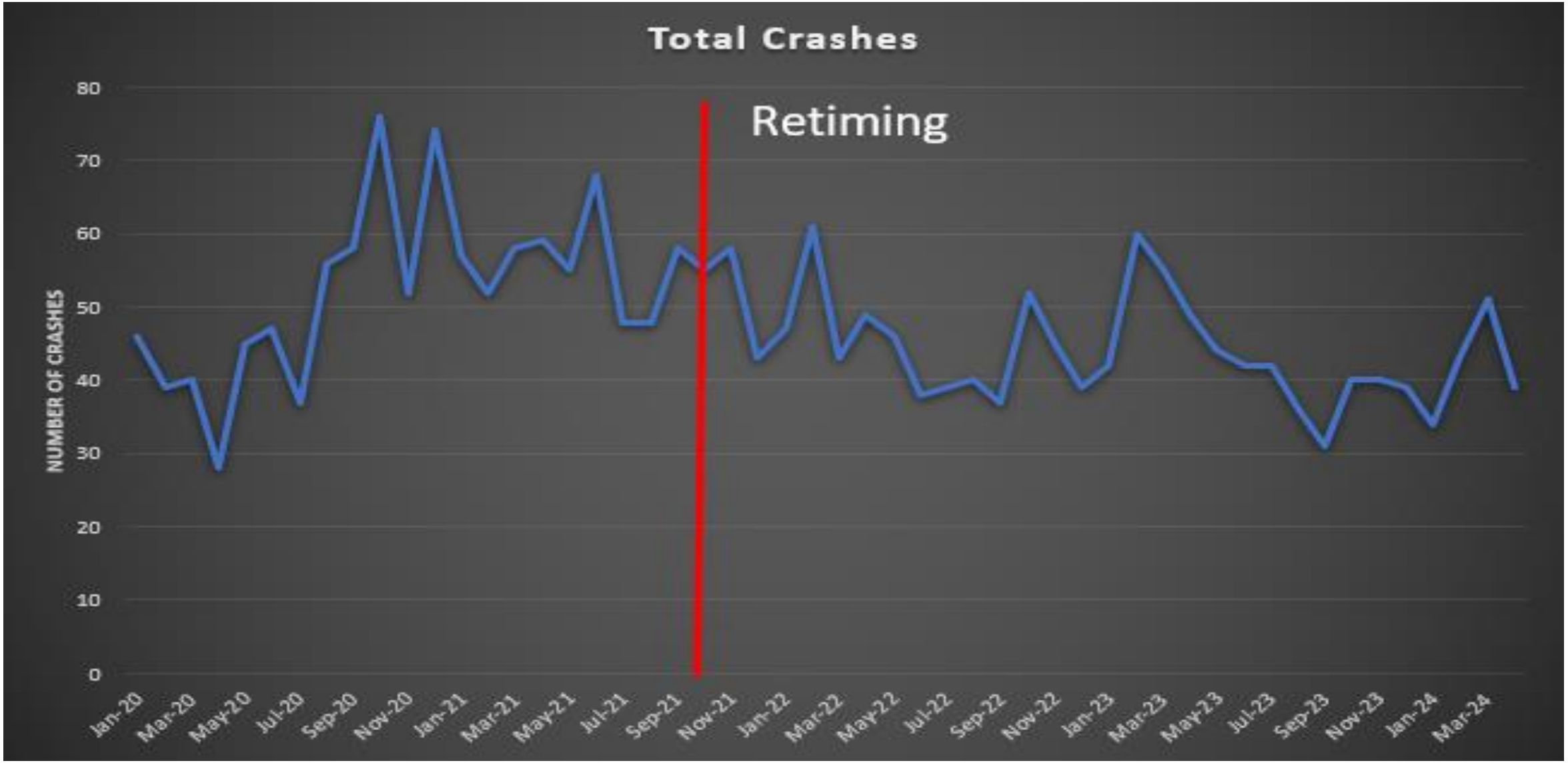
Total Crashes
Retiming
NUMBER OF CRASHES
80
70
60
50
40
30
20
10
0
Jan-20
Mar-20
May-20
Jul-20
Sep-20
Nov-20
Jan-21
Mar-21
May-21
Jul-21
Sep-21
Nov-21
Jan-22
Mar-22
May-22
Jul-22
Sep-22
Nov-22
Jan-23
Mar-23
May-23
Jul-23
Sep-23
Nov-23
Jan-24
Mar-24

Location: US 41 from Tallevast Rd to Orlando Ave

Treatments included:

- Signal Retiming
- Median Modifications
- High-visibility of Law Enforcement Partners

50% reduction of fatal crashes

50% reduction in fatal and serious injury crashes

34% reduction in all fatal crashes

Before-period*: 6 fatal crashes per year
47 serious injury crashes per year

After (20 months): 3 fatal crashes (per year)
22 serious injury crashes per year

Less crashes increases reliability of the corridor

*Study included five years (2016-2021) prior to installation.
After study period - 11/2021 to 6/30/2023

Overnight Impact on Pedestrians and Bicyclists

- 3 Years Before Implementation (9/15/2019-9/15/2022)

Fatal	Incapacitating Injury	Non-incapacitating Injury	Possible Injury	Injury	Non-traffic Fatality
4	2	3	1	0	0

- After Implementation (9/15/2022-Present)

Fatal	Incapacitating Injury	Non-incapacitating Injury	Possible Injury	Injury	Non-traffic Fatality
0	0	1	0	0	0

- Charts display Ped/Bike crashes only, but there have been zero Fatal crashes during the overnight pattern since implementation.

Next Steps

- **Expand to New Corridors**
  - **Lee County**
  - **Sarasota County**
  - **Polk County**
- **Identify Prime Corridors**
  - Spare Capacity / Saturation
  - Overnight crash history
- **Automated Traffic Signal Performance Measures**
  - Yellow and Red Actuations
  - Active Arterial Management
- **Adjust Approach to Signal Timings**
  - Shift Focus from Strictly Operational Improvements

Bicycle Crash – 03/02/2022

- **Bicyclist hit by Southbound Vehicle**
- **Incapacitating Injury**
  - Carried to Hospital
  - Expected to Make Full Recovery
- **Nearly all Pedestrian and Bicycle Crashes Resulted in a Fatalities**
  - Excluding Turning Vehicles

Thank you!

Contact Information:

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