



Hillsborough TPO
Transportation
Planning Organization

Safety Treatment Effectiveness Evaluation

August 2026 CTST Meeting

How should the TPO allocate money toward safety?



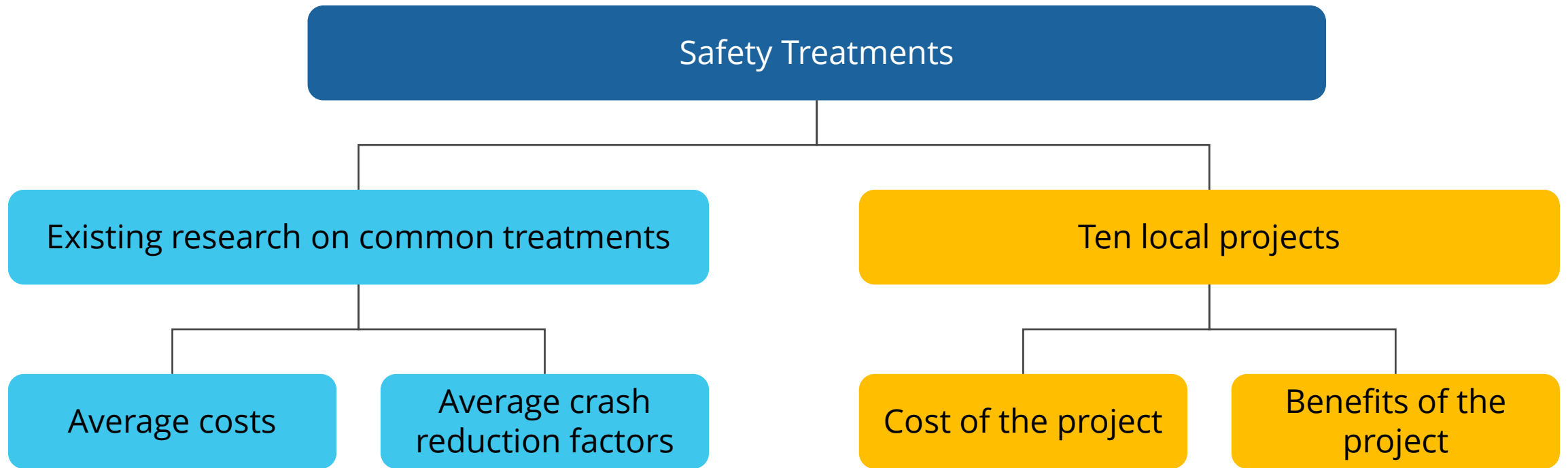
Many lower-cost treatments

VS.



A few higher-cost treatments

Two evaluations to help answer this question:



Research Treatment Overview

- Roundabout
- Raised Median
- Raised Crosswalk
- Raised Intersection
- Lane Narrowing
- Prohibit Right-Turn-On-Red
- Leading Pedestrian Interval
- Rapid Rectangular Flashing Beacon
- Pedestrian Hybrid Beacon
- Permissive Left-Turn to Protected Only
- Permissive Left-Turn to Flashing Yellow Arrow
- Automated Speed Enforcement Cameras
- Automated Section Speed Enforcement System
- Signal Progression to Reduce Speed

Research Treatments

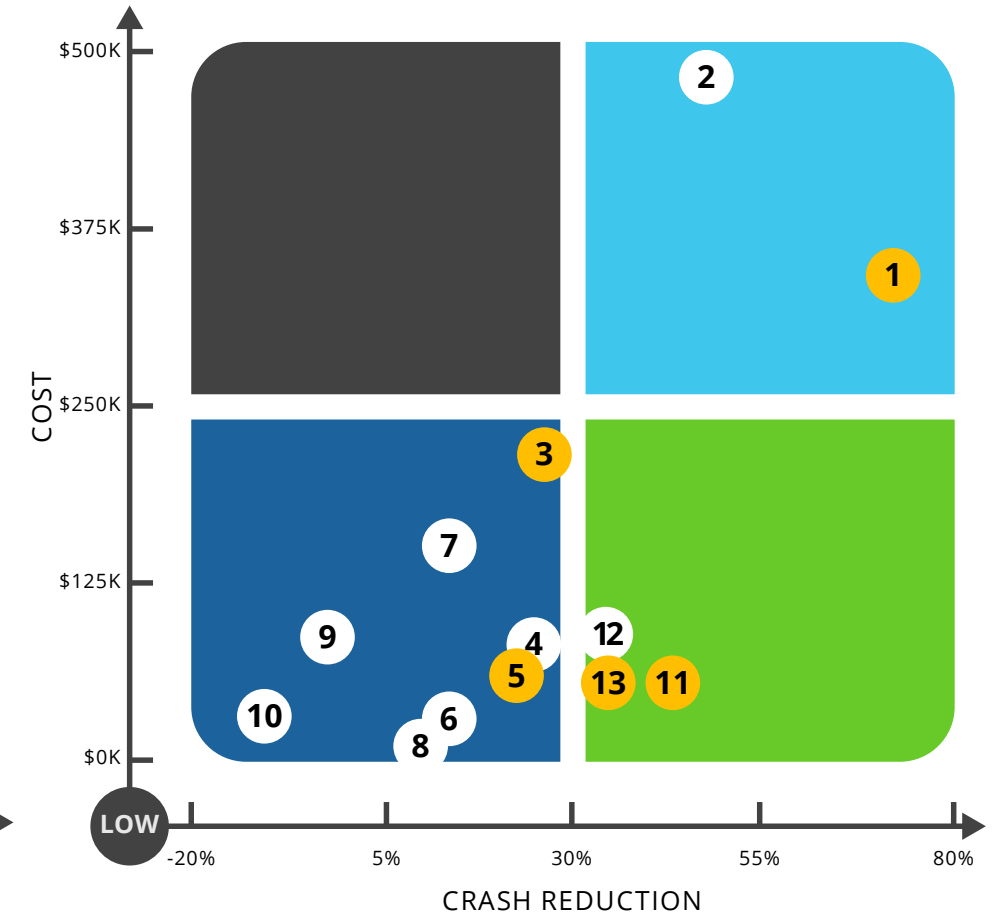
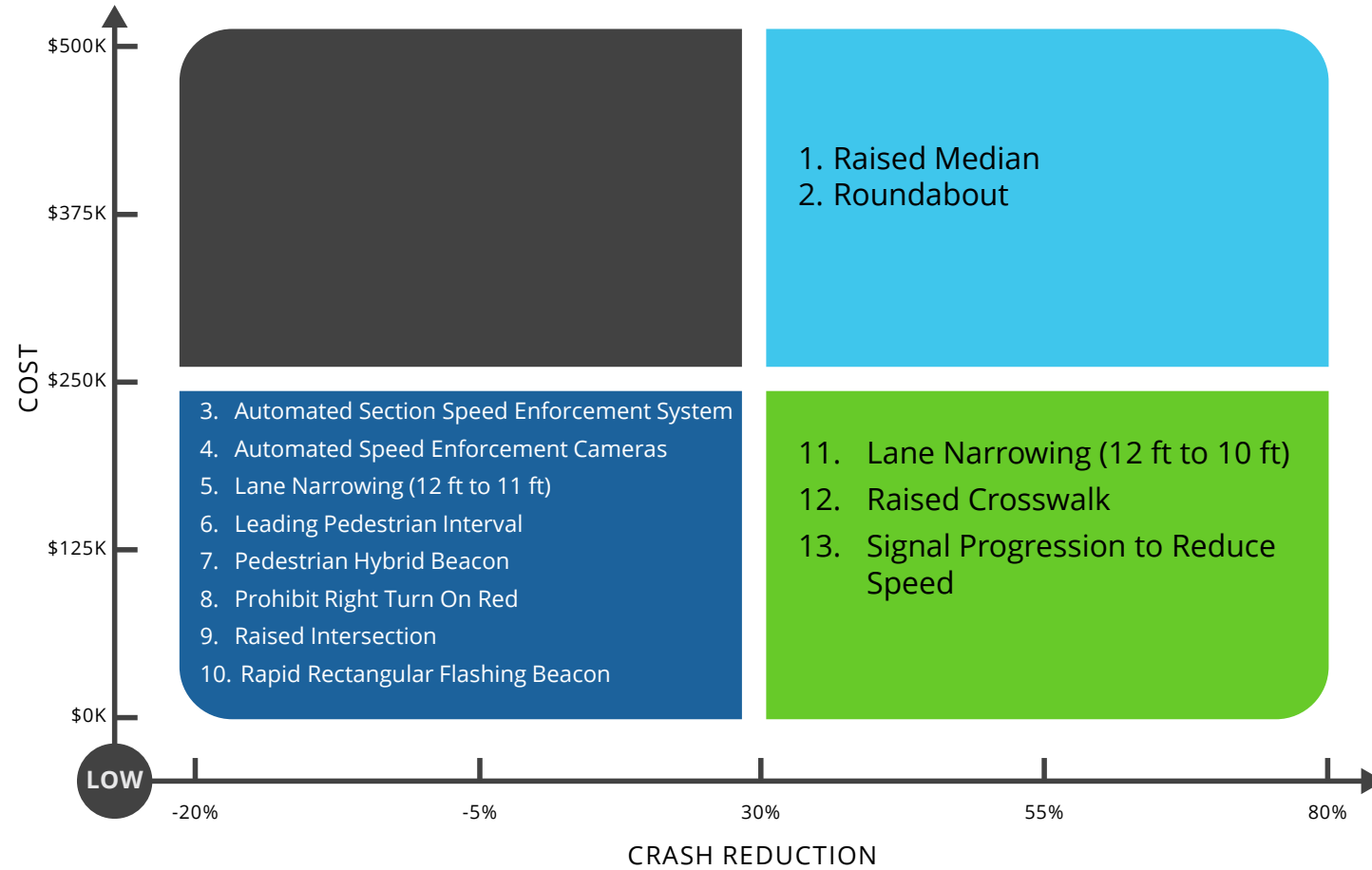
All Crash Types



Cost per mile

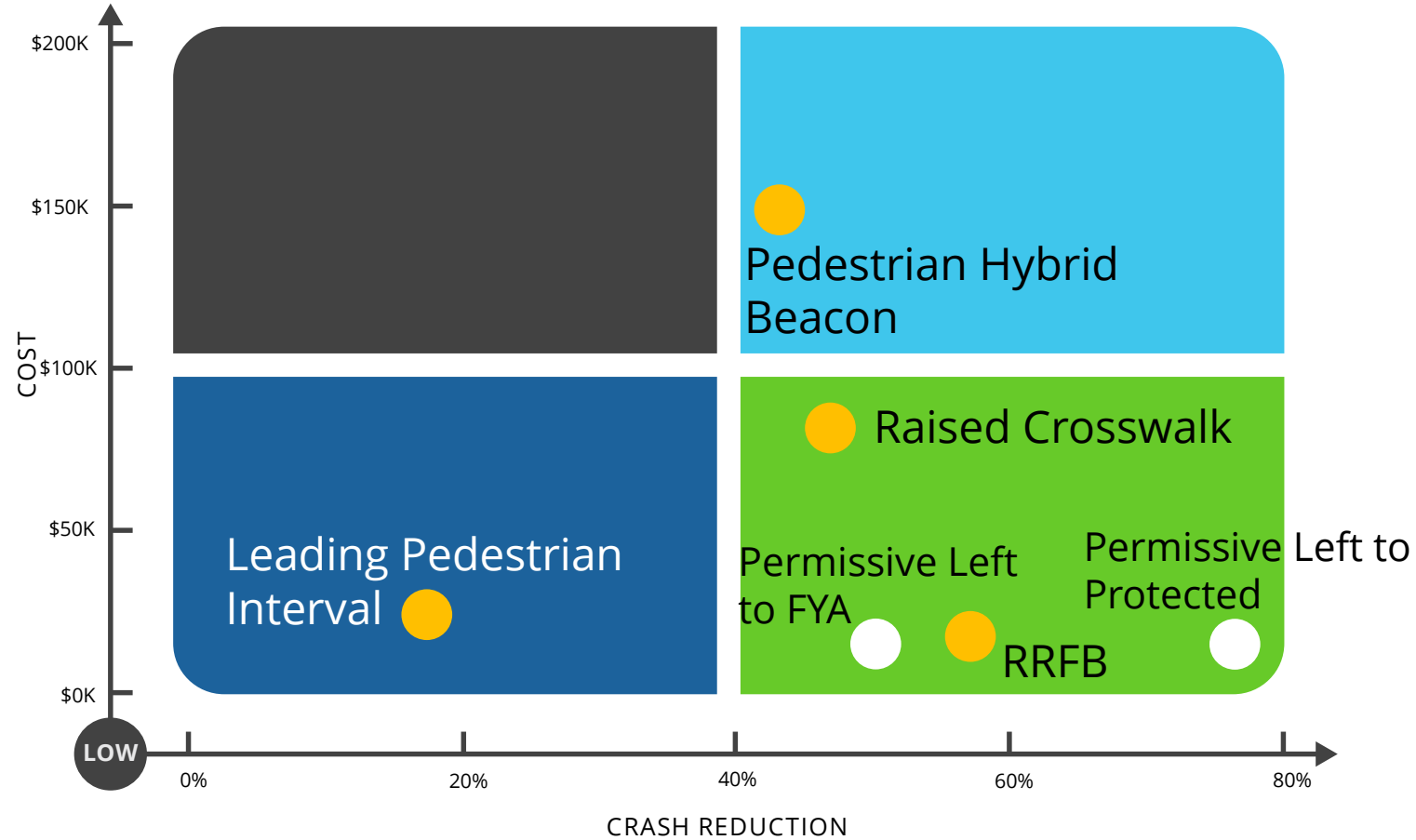


Cost per location



Research Treatments

Treatment-Specific Crashes



Research Treatments

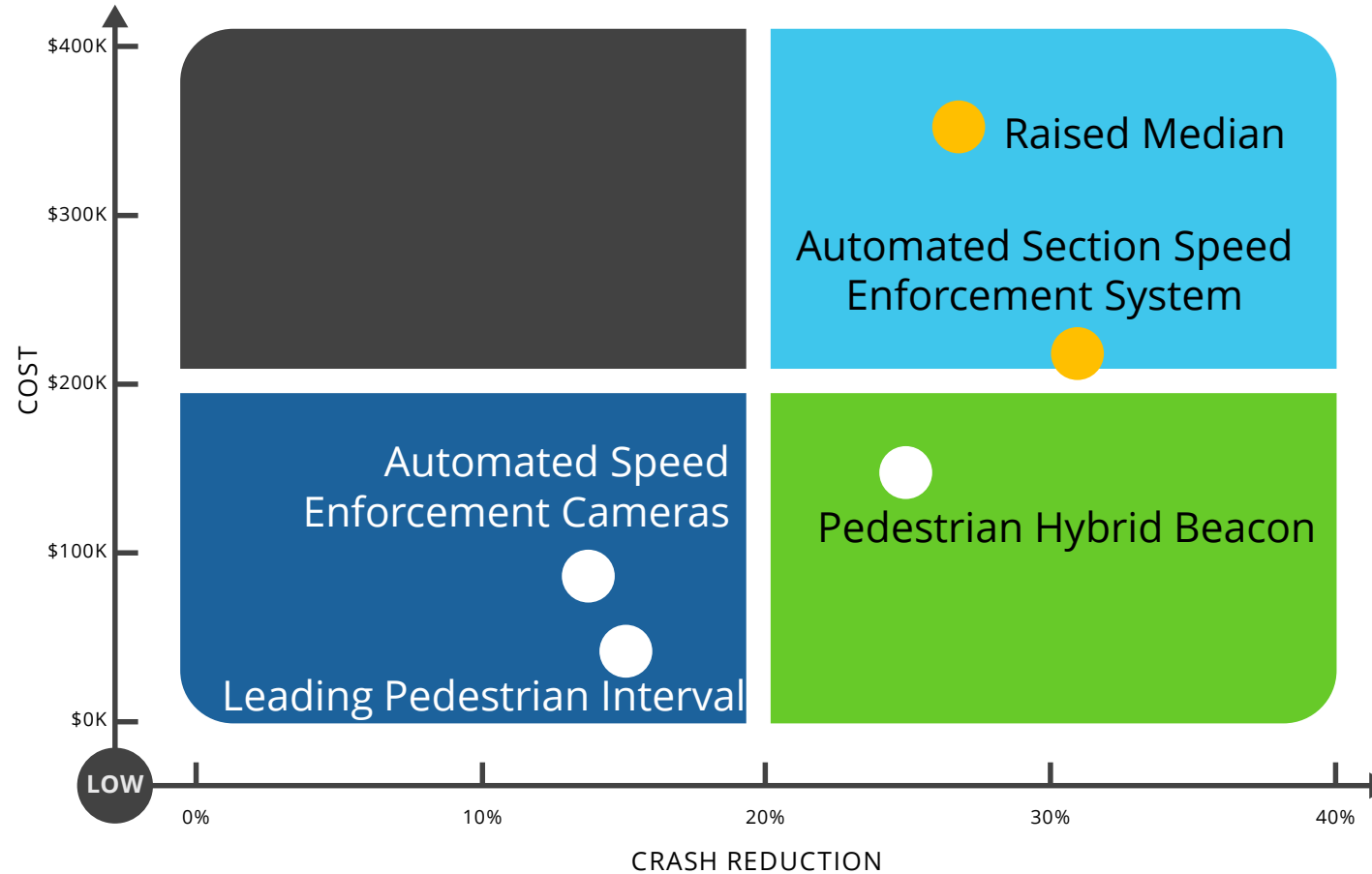
Injury Crashes



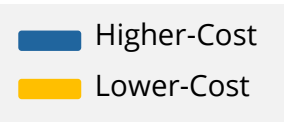
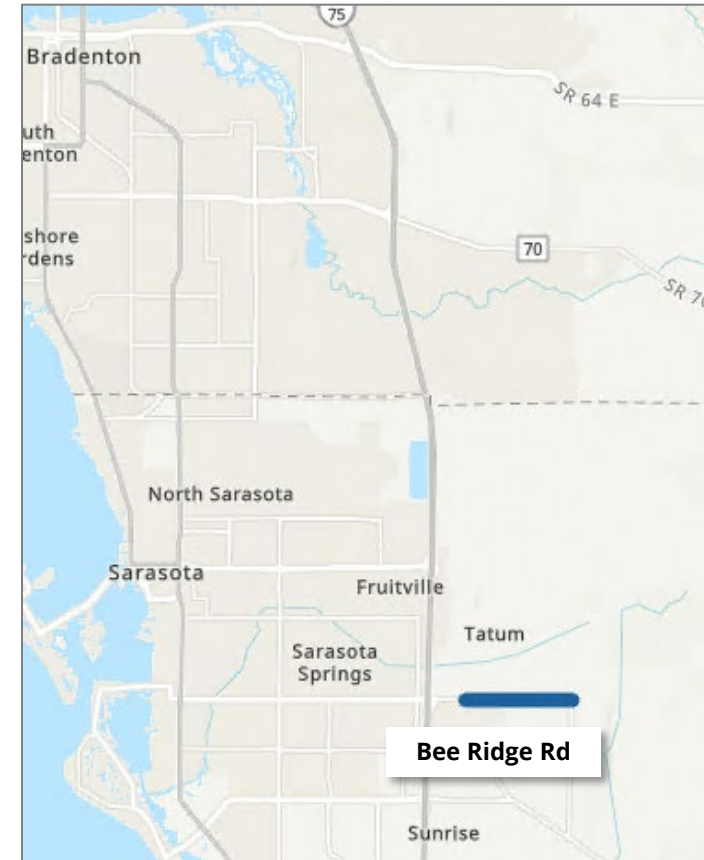
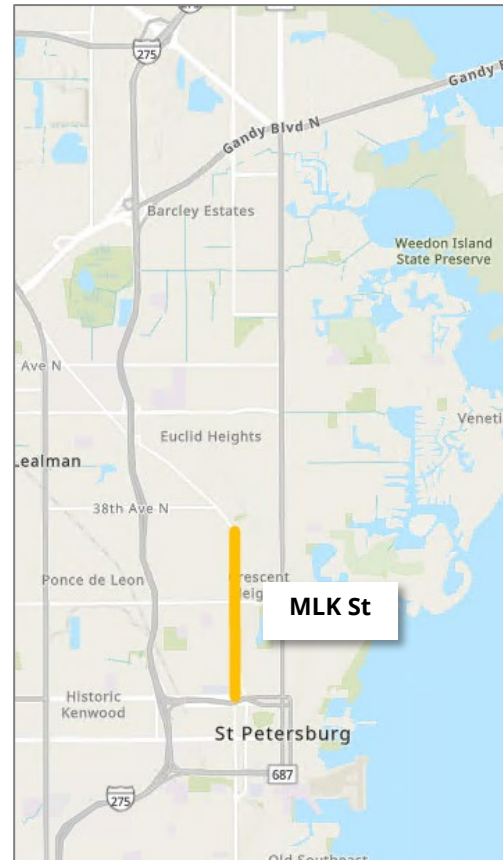
Cost per mile



Cost per location



Case Studies



Case Study Treatments

Project Name	Raised Crosswalk	RRFB	Bike Lanes	Speed Limit Reduction	Other Pedestrian Changes	Lighting	Curb Extension	Truck Apron	Lane Repurposing	Refuge Islands	Roundabout	Traffic Signal
15 th Street	✓	✓				✓						
Bayshore Boulevard			✓	✓	✓							
Fowler Avenue					✓	✓		✓				
Kennedy Boulevard							✓					
MLK Street		✓	✓						✓	✓		

46 th Street		✓		✓	✓						✓	
Fletcher Avenue		✓	✓	✓						✓		
Himes Avenue		✓	✓							✓		
Bee Ridge Road											✓	
Sheldon Road					✓							✓

Lower-Cost
 Higher-Cost

Benefits Considered

Monetized Benefits



Number and severity of crashes



Average travel time



Travel time reliability



Property value

Non-Monetized Benefits



Change in common crash type



Change in operating and posted speed



Change in traffic volume and diversion

General Methodology

- Three years before and after
- Due to COVID-19 impacts, 2020 was excluded
- Control sites with similar characterizes were selected for comparison

Control Site and Description	Corresponding Project(s)
Dale Mabry Highway (Bay to Bay Boulevard to Henderson Boulevard)	Bayshore Boulevard, 46 th Street, 15 th Street, Fletcher Avenue, Himes Avenue
16 th Street (5 th Avenue N to 34 th Avenue N)	MLK Street
Fruitville Road (Lakewood Ranch Boulevard to Lorraine Road)	Bee Ridge Road
Busch Boulevard at 56 th Street	Fowler Avenue, Sheldon Road
Twiggs Street at Pierce Street, Morgan Street, Florida Avenue, and Tampa Street	Kennedy Boulevard

Crash data can help reveal which safety treatments are worth investing in



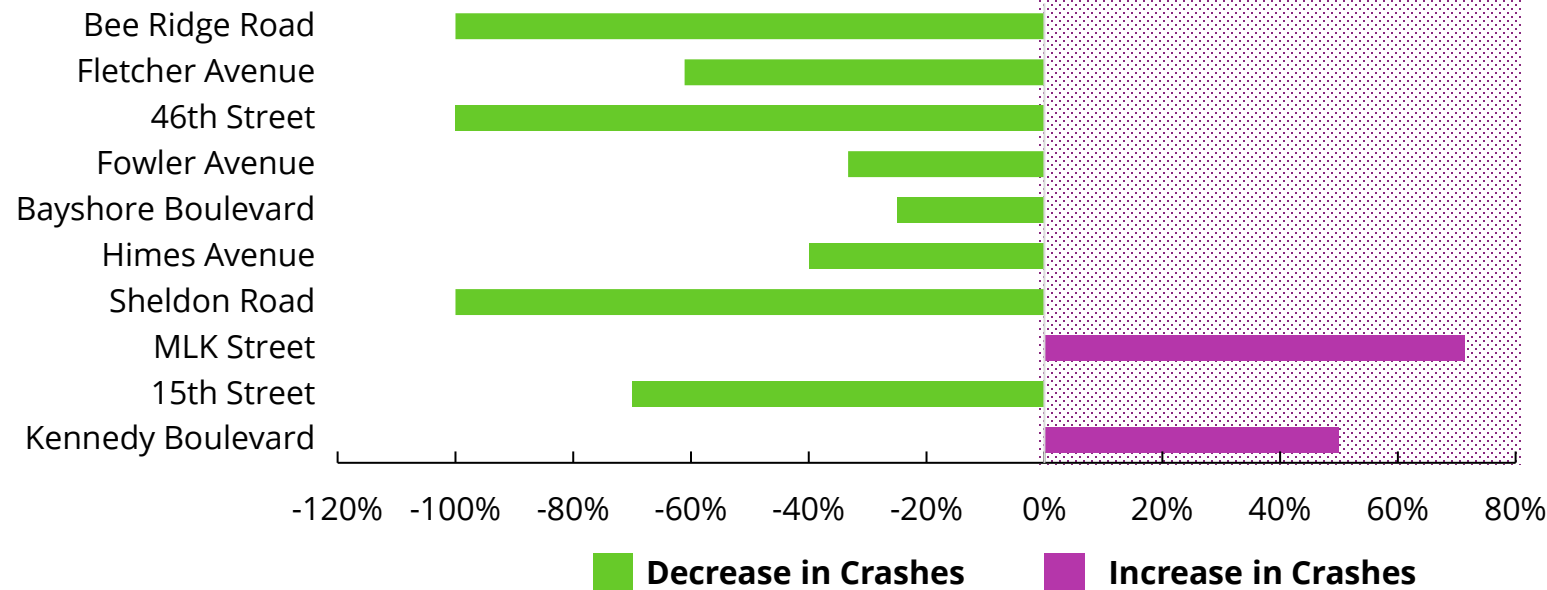
Compared average annual crashes before and after project



Used KABCO scale for monetization

Injury Severity	Cost per Injury
Fatal	\$13,200,000
Incapacitating	\$1,254,700
Non-incapacitating	\$246,900
Possible	\$118,000
None	\$5,300

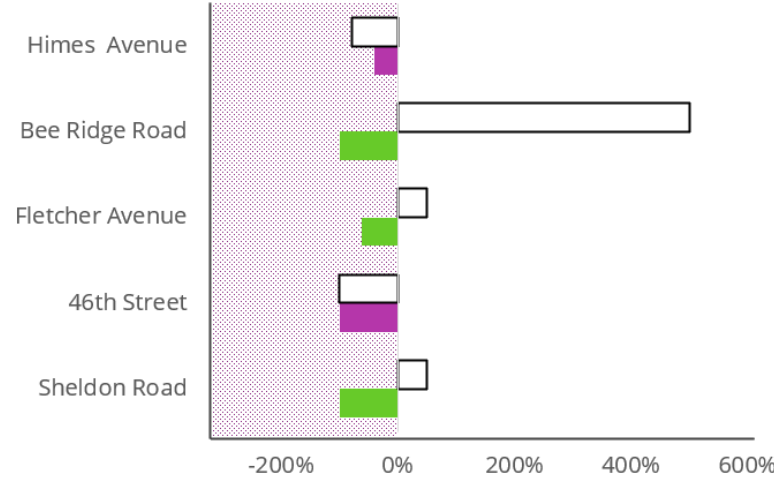
% Change in Average Annual Fatal/Serious Injury Crashes



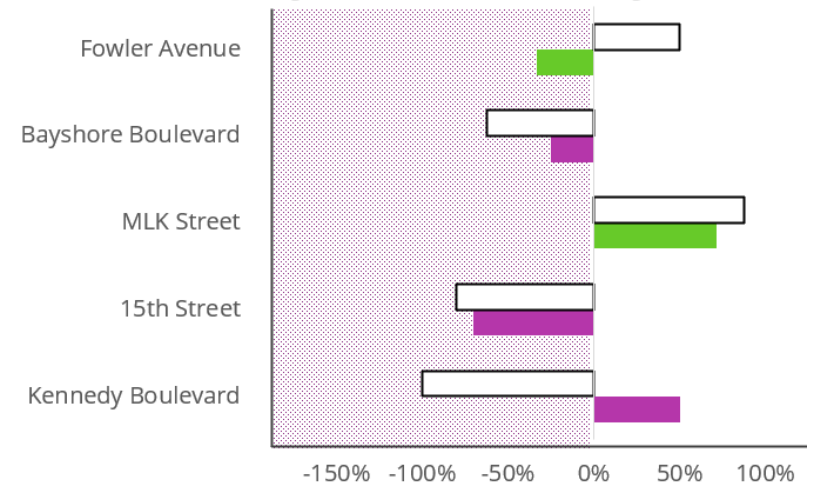
Crash data can help reveal which safety treatments are worth investing in

% CHANGE IN AVERAGE ANNUAL FATAL/SERIOUS INJURY CRASHES

Outcomes for Higher-Cost Projects



Outcomes for Lower-Cost Projects



% Change in Average Annual Fatal/Serious Injury Crashes

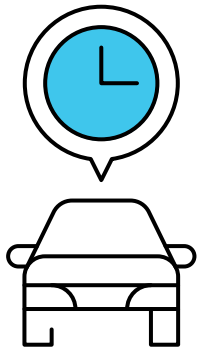
■ Project - Crash increase is less than the control

■ Project - Crash increase is greater than the control

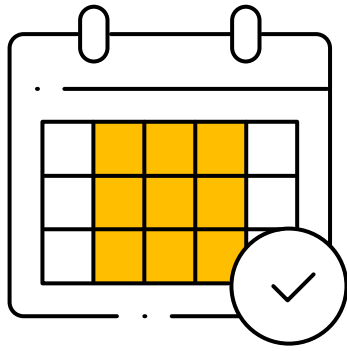
Control Site

Changes in travel time helps capture mobility impacts of safety treatments

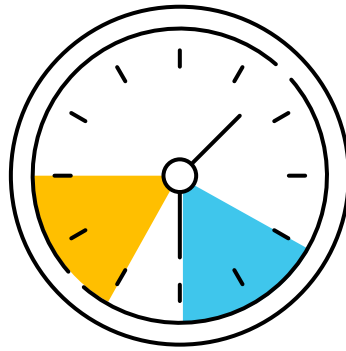
Data Collected



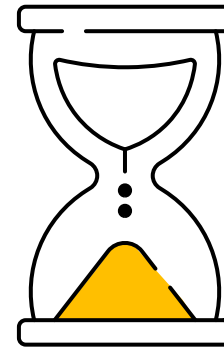
Travel time data
from RITIS



Tuesday-
Thursday



7AM-9AM
4PM-6PM



15 Minute
Averaging

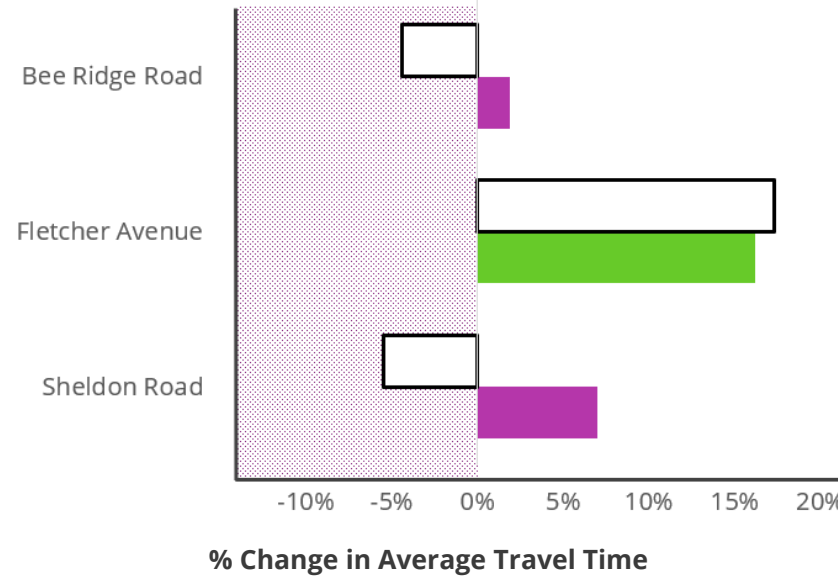


USDOT Benefit Cost
Analysis Monetization
Framework

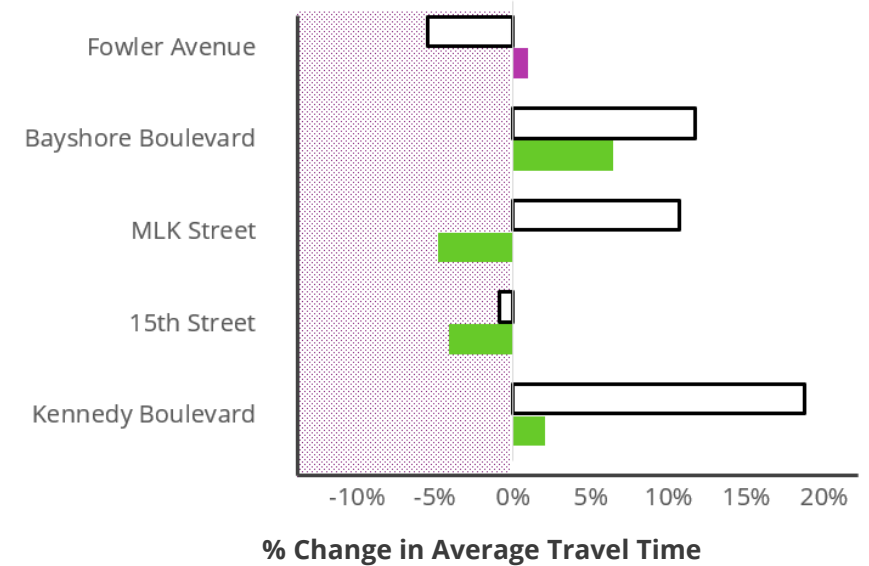
Changes in travel time helps capture mobility impacts of safety treatments

**% CHANGE IN
AVERAGE
TRAVEL TIME**

Outcomes for Higher-Cost Projects



Outcomes for Lower-Cost Projects



 Project - Travel time change is greater than the control

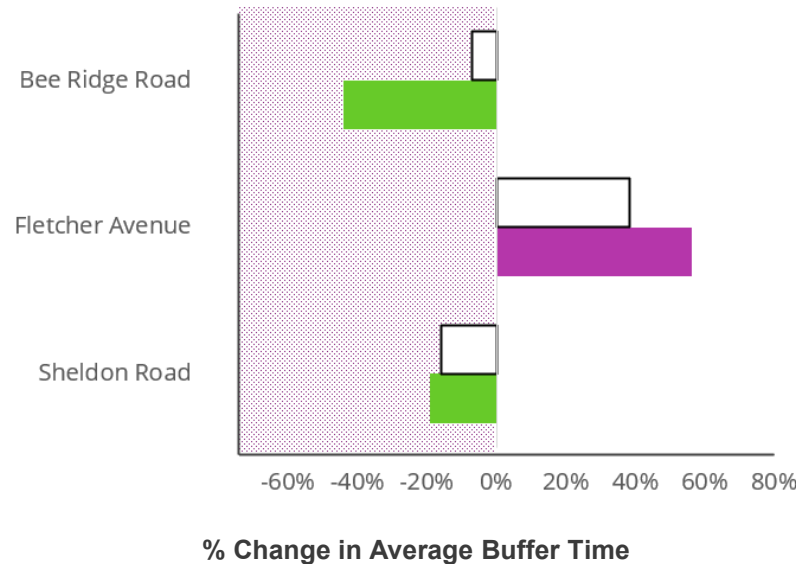
 Project - Travel time change is less than the control

 Control Site

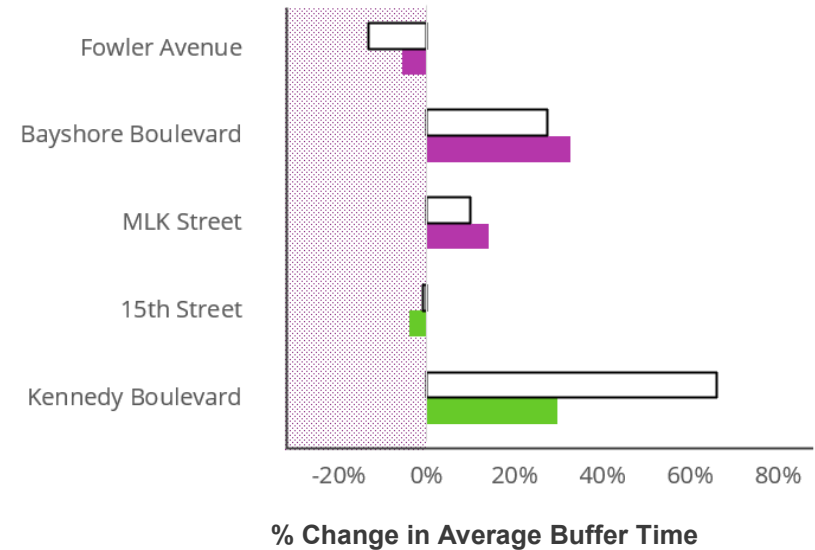
Projects don't just affect total travel time, they can influence reliability, too

% CHANGE IN AVERAGE BUFFER TIME

Outcomes for Higher-Cost Projects



Outcomes for Lower-Cost Projects

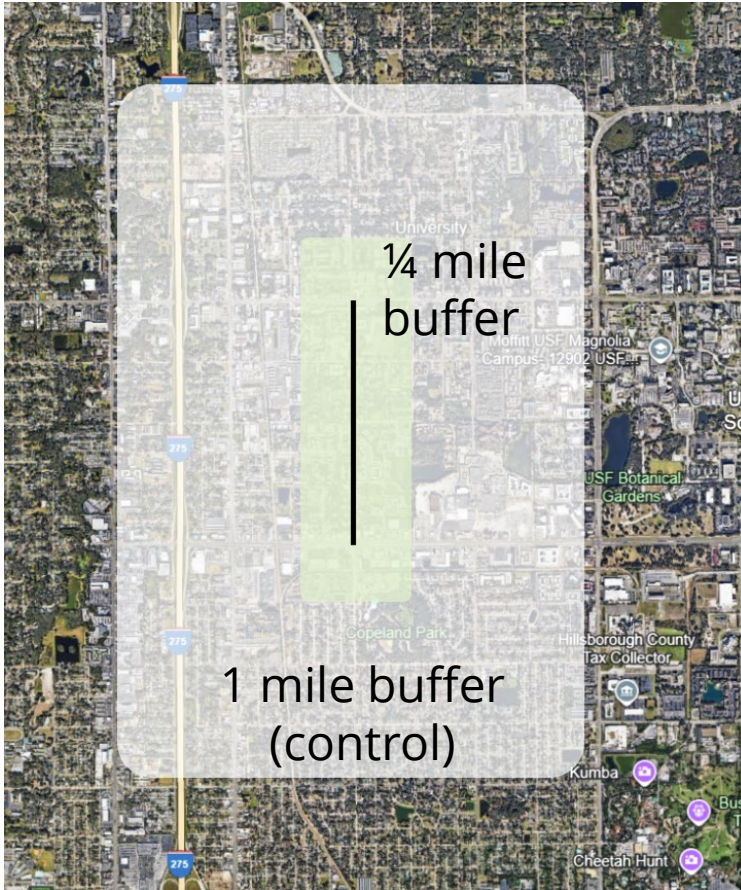


■ Project - Buffer time change is greater than the control

■ Project - Buffer time change is less than the control

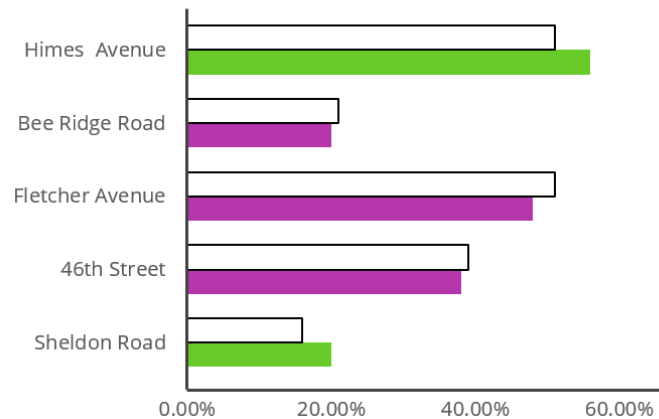
Control Site

Property values reflect broader community impacts of safety investments



% CHANGE IN TOTAL JUST VALUE

Outcomes for Higher-Cost Projects



% Change in Total Just Value

Outcomes for Lower-Cost Projects



% Change in Total Just Value

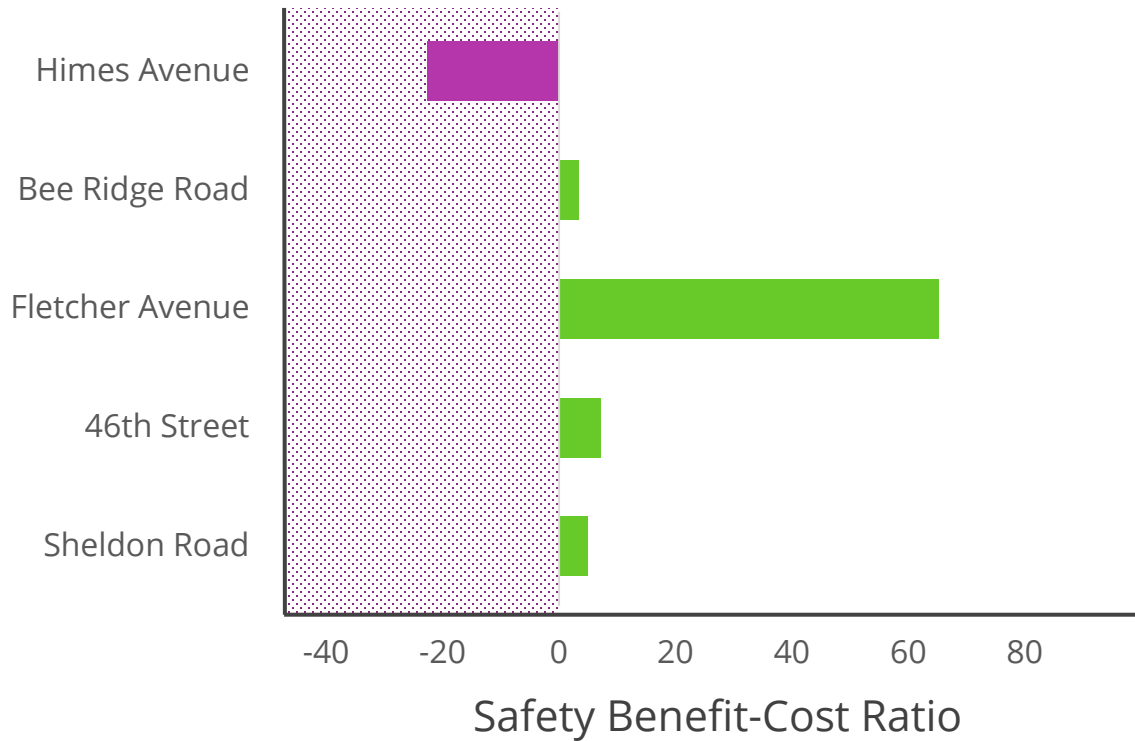
■ 1/4-mile buffer - Just value change is less than the control

■ 1/4-mile buffer - Just value change is greater than the control

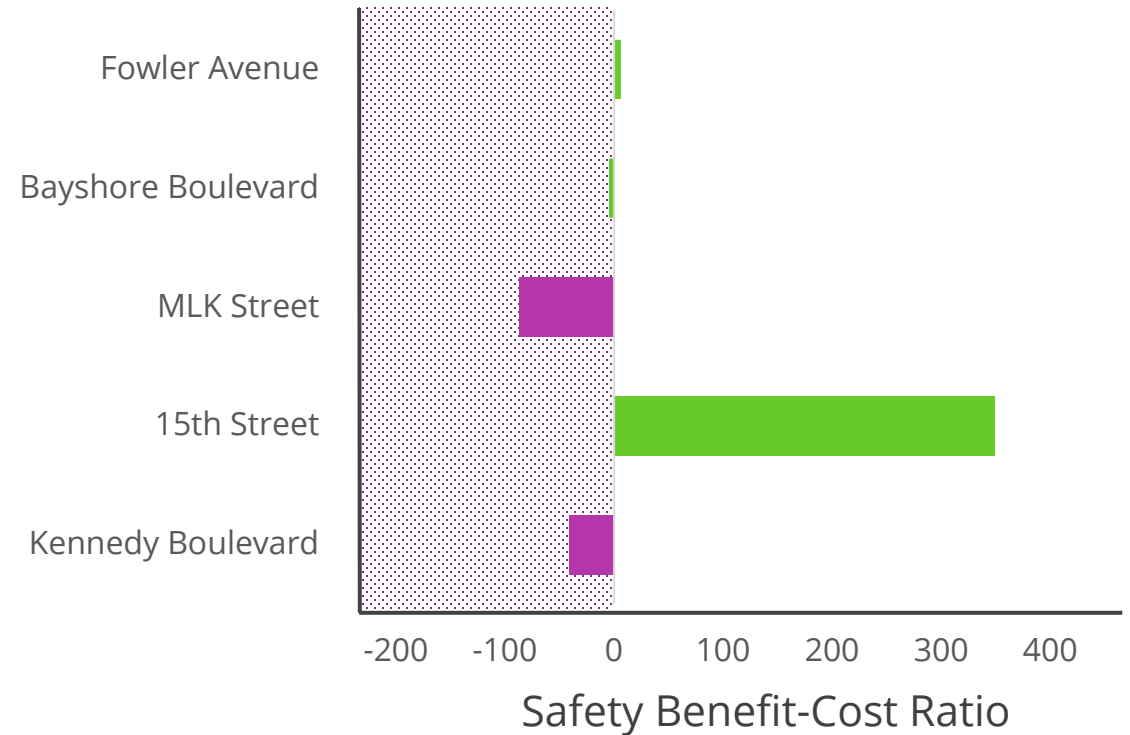
□ Control Site (1-mile buffer)

Safety Benefit Cost Summary

Outcomes for Higher-Cost Projects



Outcomes for Lower-Cost Projects

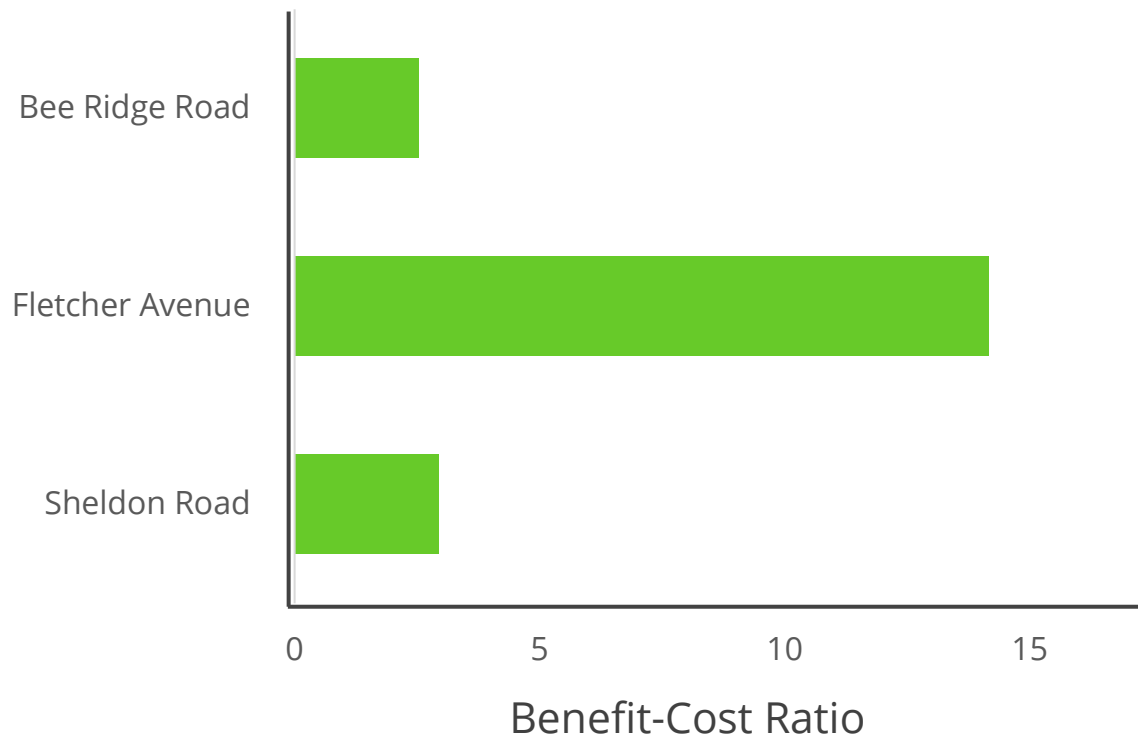


■ Benefit Cost Ratio < 0

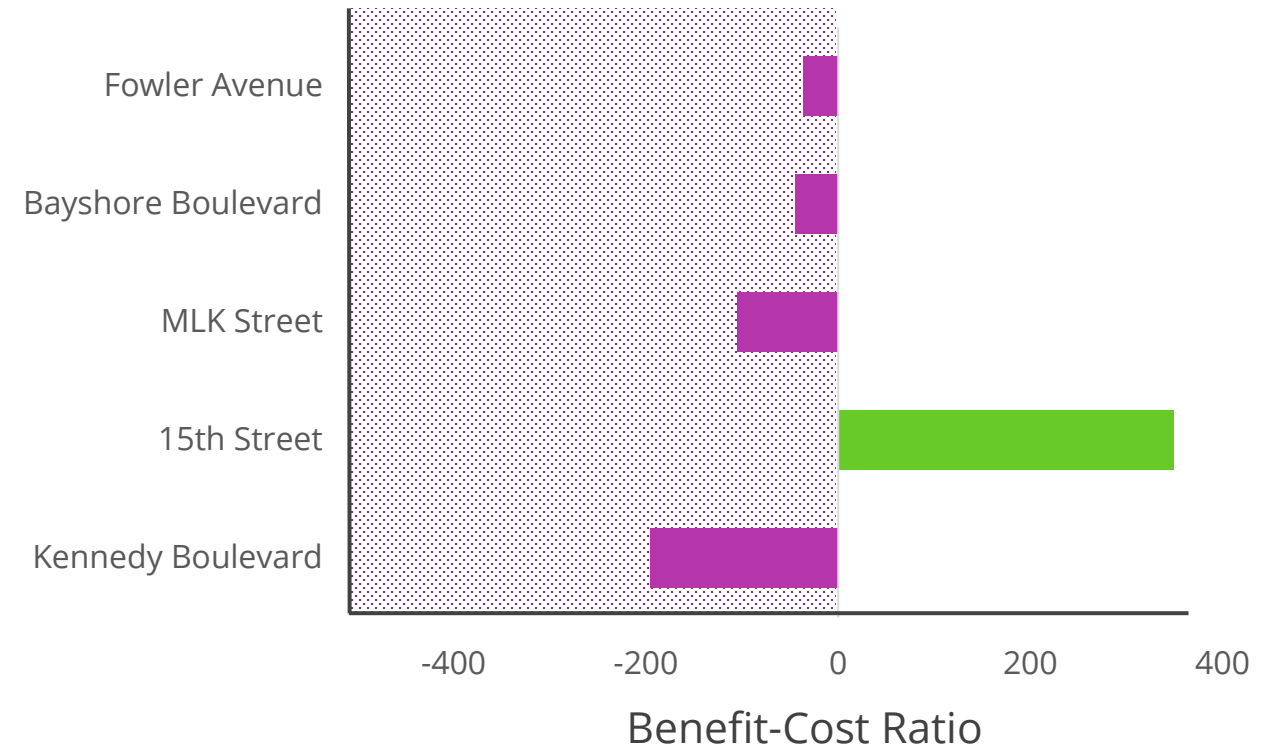
■ Benefit Cost Ratio > 0

Overall Benefit Cost Summary

Outcomes for Higher-Cost Projects



Outcomes for Lower-Cost Projects



■ Benefit Cost Ratio < 0

■ Benefit-Cost Ratio > 0

Traffic Volume

Changes in AADT were compared for each project and its control

Increase in AADT + decrease in travel time = 😊

Decrease in AADT + increase in travel time = 😞

% CHANGE IN AVERAGE AADT

Higher-Cost Outcomes

Bee Ridge 😞

Fletcher 😐

Sheldon 😞

Lower-Cost Outcomes

Fowler 😐

Bayshore 😐

MLK 😊

15th 😊

Kennedy 😞

Transit

Average daily ridership for all bus stops within a corridor compared for each applicable project and its control

% CHANGE IN AVERAGE DAILY RIDERSHIP

Higher-Cost Outcomes

Fletcher



46th



Himes



Sheldon



Lower-Cost Outcomes

Fowler



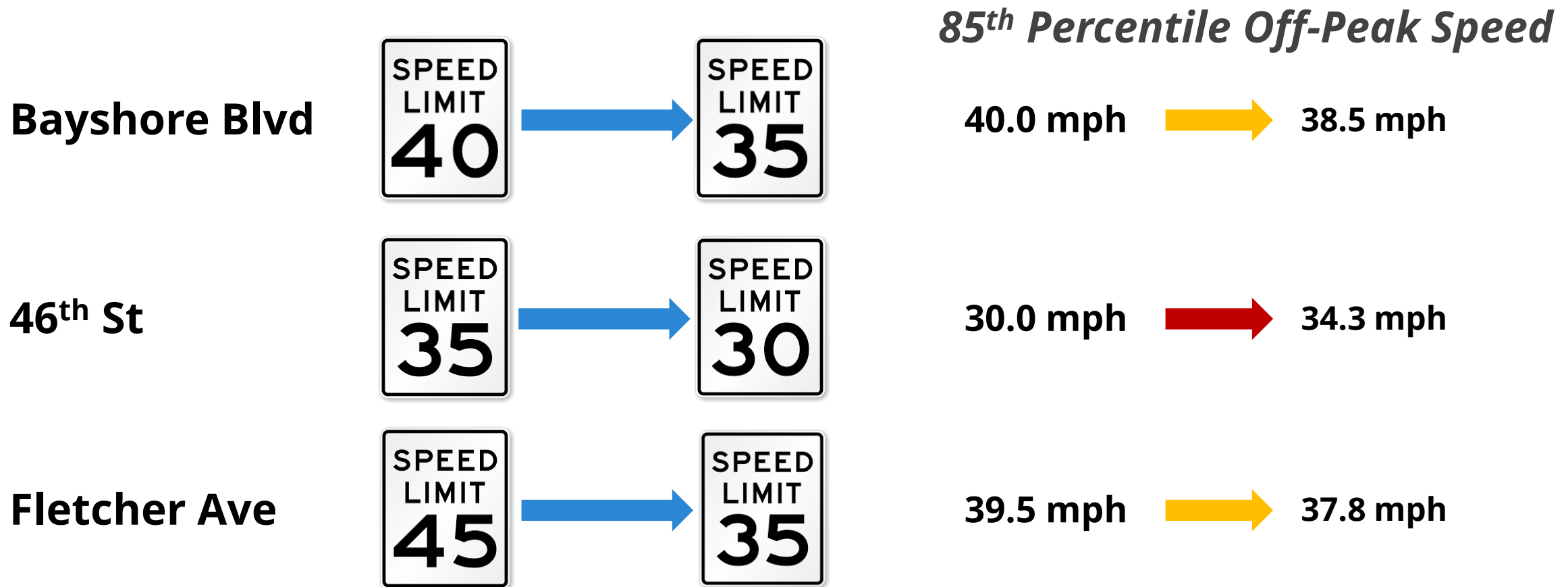
15th



Kennedy



Three of the case studies included a speed limit reduction



The best CRF to Cost ratio depends on the crash type

All Crashes:

- Lane Narrowing (12 ft to 10 ft)
- Raised Crosswalk
- Signal Progression to Reduce Speed

Pedestrian Crashes:

- Raised crosswalk
- Rectangular Rapid Flashing Beacon

Left-turn Crashes:

- Permissive left-turn to protected only

Injury Crashes:

- Pedestrian Hybrid Beacon

The most effective safety treatment depends on context, not just cost

15th Street

- Lower-cost pedestrian treatments
- Strongest safety outcomes
- Temporary lower-cost fixes can be better than waiting for more funding

Kennedy Boulevard

- Lower-cost: curb extensions implemented during resurfacing
- Cost-efficient way to proactively improve safety

Bee Ridge Road

- Roundabouts reduced serious injury crashes to zero
- Higher-cost, but consistent and significant safety benefit

Key Findings

- Overall, higher-cost treatments performed better than lower-cost
- Lower-cost treatments can still be highly effective and offer better cost efficiency
- Lower-cost treatments can be particularly helpful when balancing vehicle mobility goals
- Lower-cost treatments can be incorporated into ongoing projects, proactively improving safety

Potential Next Steps

- Areas for future research
 - More focused case studies
 - Isolate individual treatments and/or contexts
- Identify and refine potential lower cost safety treatments for specific safety challenges
- Prioritize higher cost projects for more generalized safety challenges
- Include before & after data collection/analysis in projects
- Incorporate these lessons learned into TPO products (e.g. Priority List) where applicable



Hillsborough TPO
Transportation
Planning Organization

Questions?

<https://planhillsborough.org/safety-treatment-effectiveness-evaluation/>

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