High Friction Surface Treatment

A Safe Roads Strategy

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FDOT

TARGET ZERO
FATALITIES & SERIOUS INJURIES

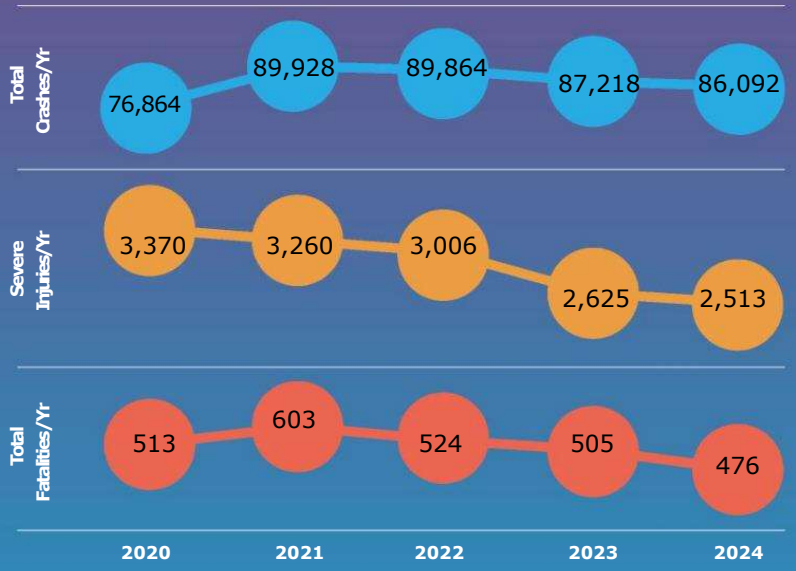
2024 Safety Facts at a Glance

FDOT TARGET ZERO FATALITIES & SERIOUS INJURIES

86,092 total crashes
2,513 total severe injuries
476 total fatalities

▲ Increase from 2023 ▼ Decrease from 2023

Five-Year Statistics



*Based on Signal 4 Data as of 1/16/2025

From 2023 to 2024, fatalities decreased **5.7%**

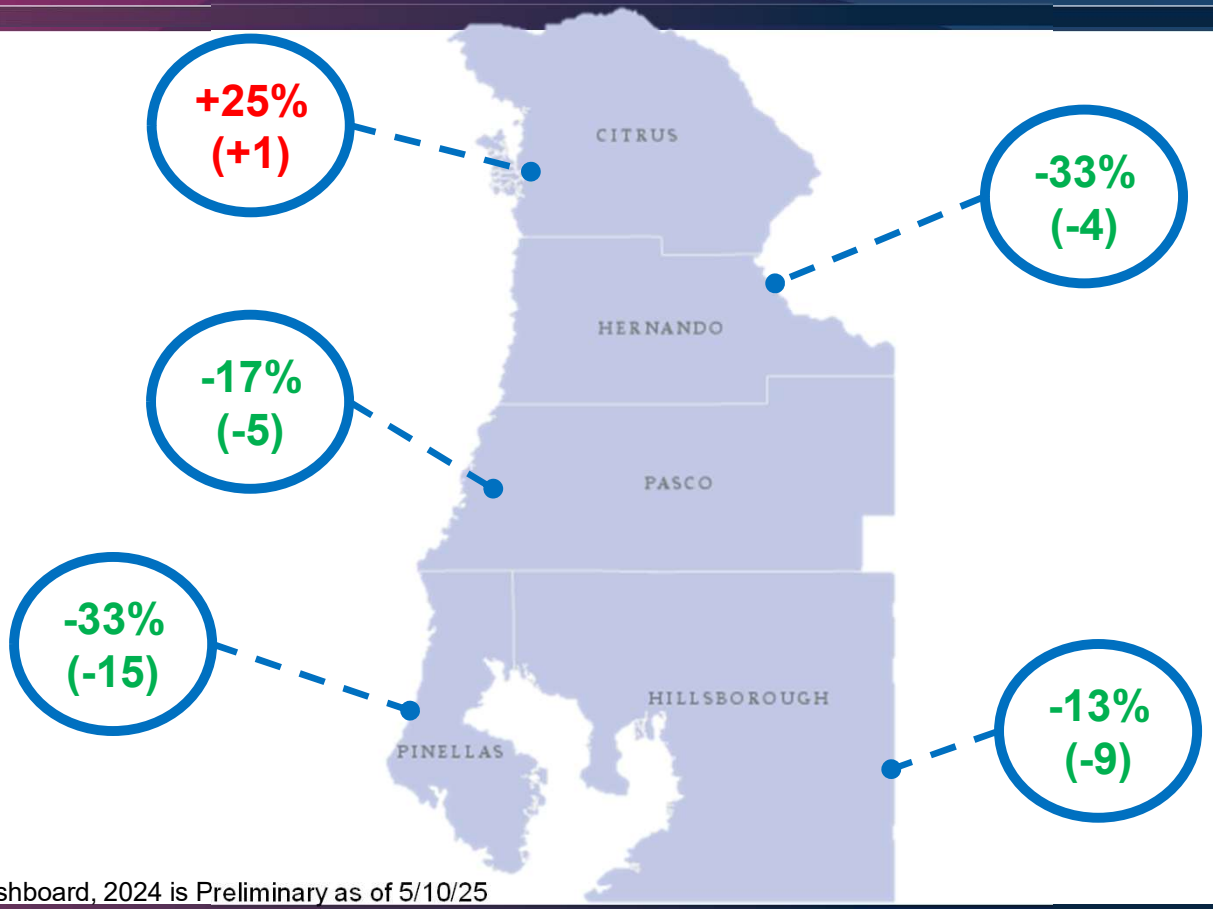
From 2023 to 2024, Serious Injuries decreased **4.2%**

Hillsborough County had the highest decrease by 21.3% (-49) in fatalities

Citrus County had the highest increase 26.9% (+7) in fatalities

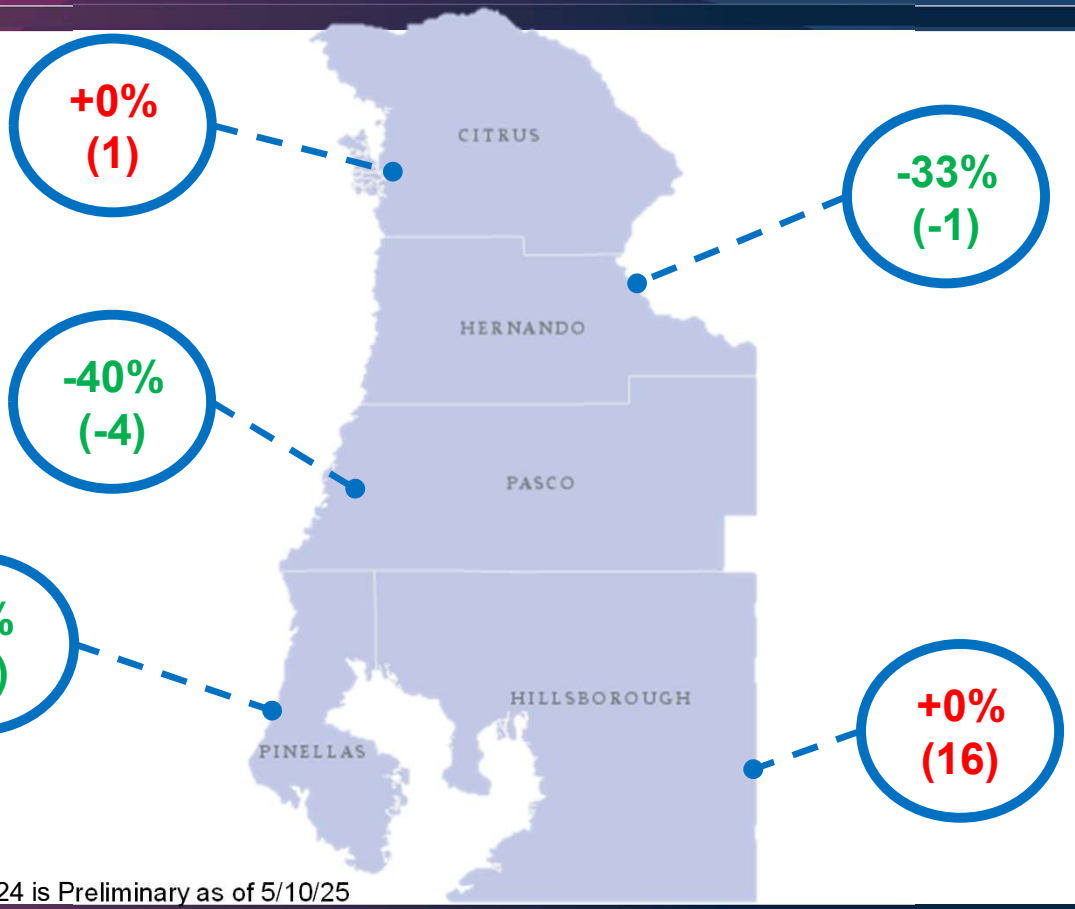
Pinellas → -3% (-4)
Hernando → No change
Pasco → +19.5% (+17)

Change in Pedestrian Fatalities: 2023 to 2024



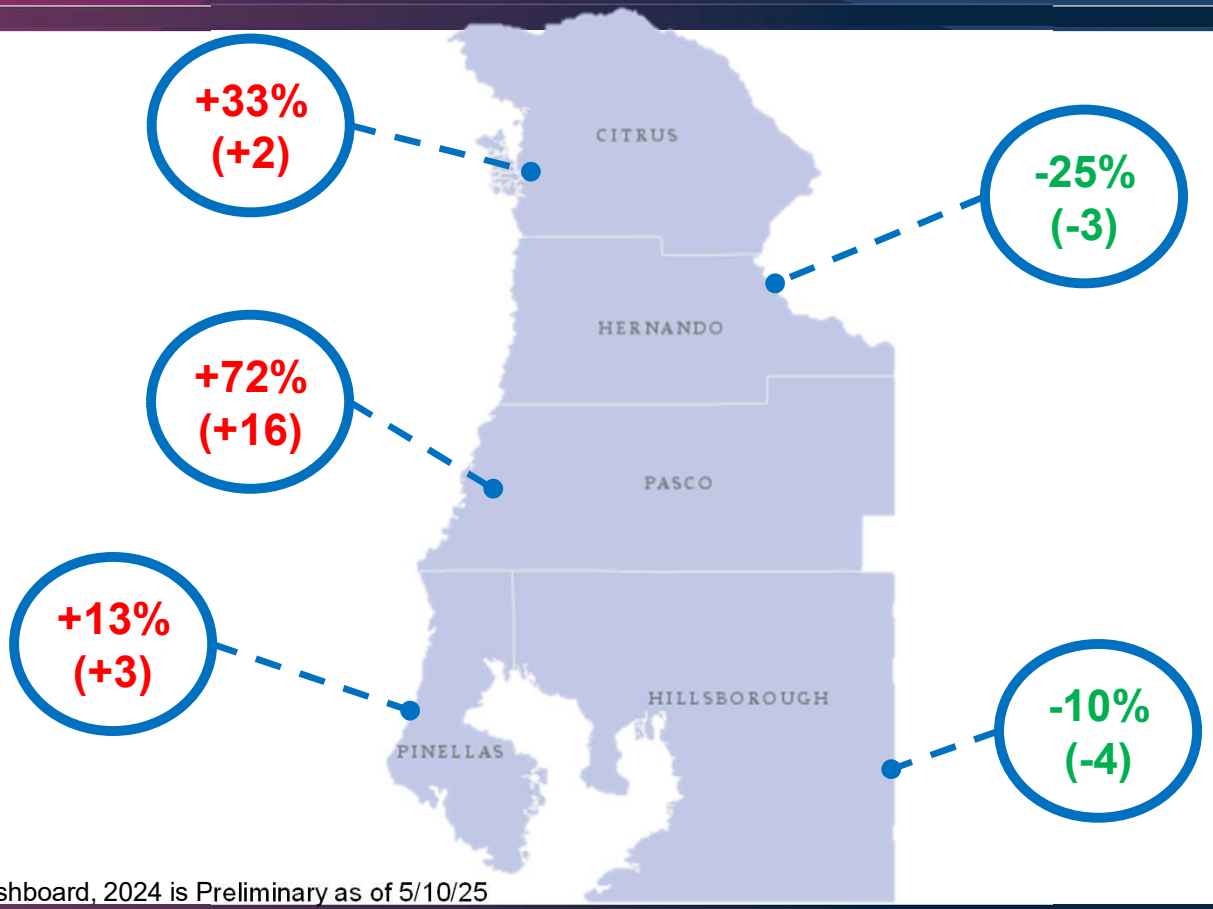
Source: FLHSMV Crash Dashboard, 2024 is Preliminary as of 5/10/25

Change in Bicyclist Fatalities: 2023 to 2024



Source: FLHSMV Crash Dashboard, 2024 is Preliminary as of 5/10/25

Change in Motorcyclist Fatalities: 2023 to 2024



Source: FLHSMV Crash Dashboard, 2024 is Preliminary as of 5/10/25

District 7 Emphasis Area Trends

Fatal Crashes 2023	Fatal Crashes 2024		Emphasis Area	Serious Injury Crashes 2023	Serious Injury Crashes 2024	
120	78	-35%	Impaired Driving	151	129	-14.57
161	127	-21.18%	Distracted Driving	586	553	-5.64%
102	94	-8.16%	Unrestrained	237	193	-17.36%
55	68	+21.14%	Speeding/Aggressive	148	169	+14.19%
156	121	-22.43%	Pedestrians	232	229	-1.29%
174	176	+1.15%	Intersections	913	849	-7.01%
112	78	-30.36%	Aging Road Users	537	396	-26.2%
163	137	-15.95%	Lane Departure	636	612	-3.77%
49	30	-38.78%	Teen Drivers	244	176	-27.87%
107	129	+20.56%	Motorcycle/Scooter	392	369	-5.86%
2	2	0%	Rail Crossings	1	3	+200%
44	33	-25.00%	Bicyclists	167	199	+19.16%
32	26	-20.69%	Commercial Vehicles	104	94	-9.62%
9	12	+28.57%	Drowsy/Ill Driving	122	110	-9.84%
16	11	-31.25%	Work Zones	39	31	-15.07%

FDOT

*Based on Signal 4 Data as of 1/16/2025

TARGET ZERO FATALITIES & SERIOUS INJURIES

What are the safety challenges?

FY 2026 Highway Safety Matrix – Ranking Florida Counties
Based on Total Actual Serious Injury and Fatalities During 2019-2023

Group II - Population of 50,001 to 200,000 - 15 Counties

County	Aging Road Users (Drivers 65+)	Distracted Driving	Impaired Driving	Motorcyclists	Occupant Protection	Pedestrian or Bicyclist	Speeding or Aggressive Driving	Teen Drivers	Work Zones
Citrus FY26	3	5	4	5	7	6	15	6	1
Hernando FY26	1	2	2	1	4	5	7	1	2

= Highest 40% in a category

Year to Year Comparison

County	Aging Road Users (Drivers 65+)	Distracted Driving	Impaired Driving	Motorcyclists	Occupant Protection	Pedestrian or Bicyclist	Speeding or Aggressive Driving	Teen Drivers	Work Zones	Average Rank
Citrus FY24	2	1	2	2	3	4	3	3	2	2.4
Citrus FY25	2	1	2	2	5	4	7	2	2	3.0
Citrus FY26	3	5	4	5	7	6	15	6	1	6.4
Hernando FY24	1	3	3	1	5	3	1	1	1	2.1
Hernando FY25	1	3	1	1	3	3	3	1	1	1.9
Hernando FY26	1	2	2	1	4	5	7	1	2	2.8

- Citrus is highest 40% for fatalities and serious injuries for all emphasis areas, except speeding and aggressive driving.
- Hernando is highest 40% for fatalities and serious injuries for all emphasis areas.

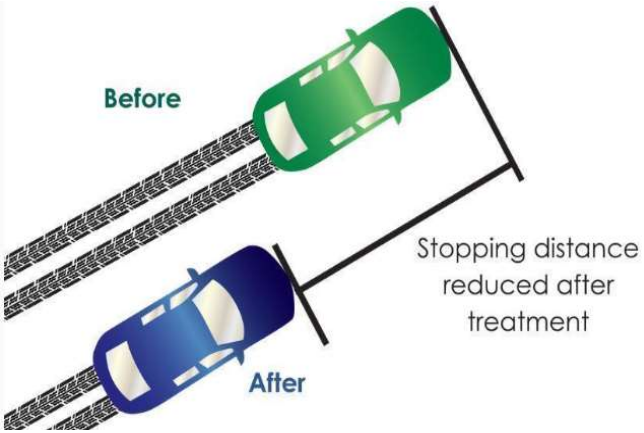
= Top 3 Category for County

= Higher Rank Year-to-Year

= Lower Rank Year-to-Year

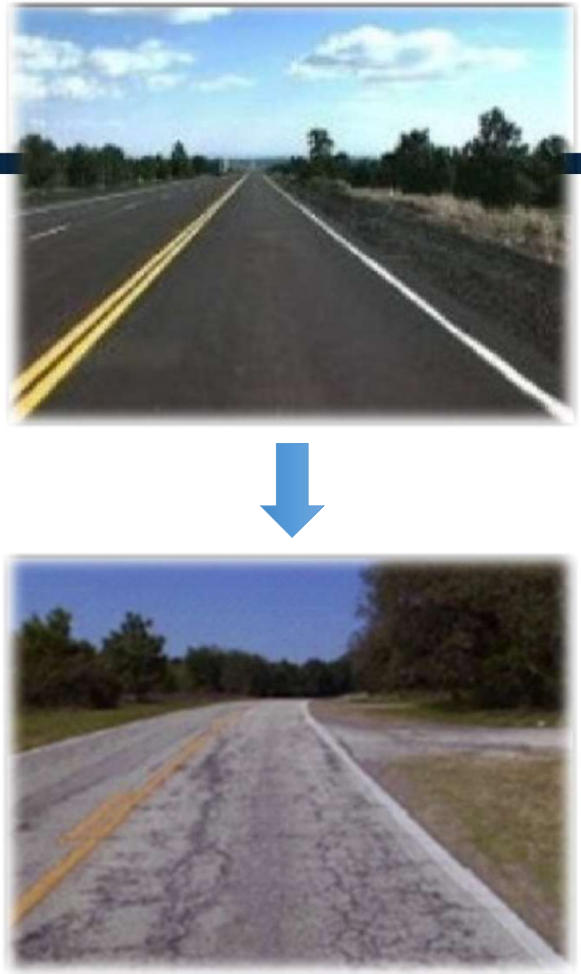
What is HFST

- **High Friction Surface Treatment (HFST):**
  - The application of very **high-quality aggregate to the pavement** using a polymer binder to restore and/or maintain pavement friction
  - Helps motorists maintain **better control in both dry and wet driving conditions**
  - **Reduces stopping distance**
  - **Increase expected stopping behaviors (stop before stop bar)**
  - **Reduce improper stopping behaviors (occupancy crosswalks)**
  - **Reduce the risk of vehicle-pedestrian conflicts**



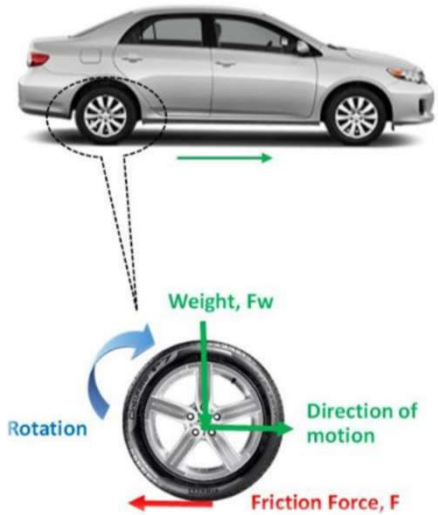
Why HFST?

- Pavement friction is the force that resists the relative motion between a vehicle and a pavement surface.
- **Pavement friction may deteriorate over time**
  - Surface texture polishing by vehicle tires
  - Surface material property changes due to traffic and weather loadings
- Measuring, monitoring, and maintaining pavement friction are critical in pavement and safety management.
  - Especially at locations where vehicles are frequently turning, slowing, and stopping



Where do we do it?

- **Pavement friction is a significant factor contributing to traffic crashes**
  - Keep safely in the lanes when a vehicle changes direction
  - Shorten braking distance to avoid potential collisions
  - Reduce injury severity even if a collision happens
- **High friction demand facilities**
  - High-speed roads
  - Curves
  - Intersections
  - Wet surface
- **Pavement Condition is good – Flexible or Rigid Pavement**



Source: DOI: 10.3390/vehicles2010004

Pavement Friction & Safety?

- **Friction Management**
  - Recently added to list of **proven safety countermeasures**
  - Measuring, monitoring, and maintaining pavement friction can **prevent & reduce fatal and serious injury crashes at locations where friction is critical**
  - Typical method of measuring friction on roadway networks takes sample data generally not on curves or intersections and result in **gaps in the data**
  - **Best practice** for targeting more efficient and effective installations of friction-enhancing treatments

Visualization of CFM data through a curve with an intersection in 30-foot averaged intervals

Source: US Department of Transportation Federal Highway Administration (FHWA)

Proven Benefits of Increased Friction

CMF and percent crash reduction by surface condition for a 10-unit increase in SFN40

Roadway Facility	Surface Condition	CMFx regression coefficient (β_1)	CMF for 10-unit SFN40 increase [1]	Standard Error CMF	% Crash reduction
Expressways	Total Wet	-0.0270	0.763	0.0109	23.7
	Total Dry	-0.0135	0.873	0.0078	12.6
Freeways	Total Wet	-0.0088	0.916	0.0152	8.4
	Total Dry	-0.0023	0.977	0.0106	2.3
Urban Arterials	Total Wet	-0.0479	0.619	0.0198	38.1
	Total Dry	-0.0348	0.706	0.0150	29.4
Rural Multilane Highways	Total Wet	-0.0251	0.778	0.0179	22.2
	Total Dry	-0.0251	0.778	0.0178	22.2
Rural 2-lane, 2-way Road	Total Wet	-0.0467	0.627	0.0575	37.3
	Total Dry	-0.0354	0.702	0.0343	29.8

Data from Florida, North Dakota, Texas, Virginia, and Washington State

https://highways.dot.gov/sites/fhwa.dot.gov/files/2023-06/FHWA%20Characterizing%20Road%20Safety%20Performance%20Using%20Pavement%20Friction.pdf

Best method for collecting data - SCRIM

- **SCRIM** (Sideway-force Coefficient Routine Investigation Machine)
- Continuously collected **~2,100 miles** of GPS-linked **friction and texture data, geometry** (curve, grade, crossfall), and **video in 14 days**.
- Can travel 15mph to 55mph for a range of 45-150 miles in one tank of water. No traffic control needed.

30%
On wet roads

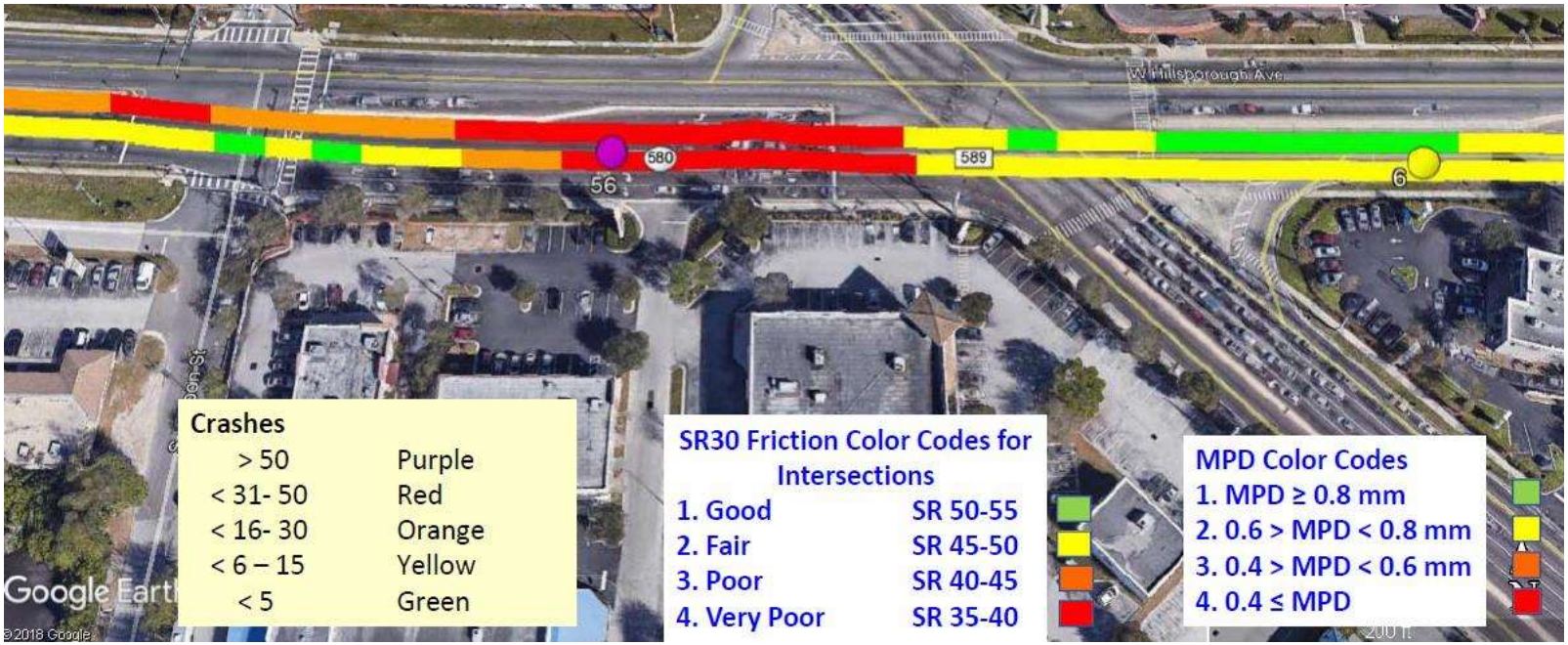
40%
Fatalities

20%
On dry roads

BCR ~ 13:1 to 35:1

Pilot SCRIM Data Applications in D7

- District 7 linked crash data with continuous friction measurements and road safety assessments to select intersections for High Friction Surface Treatment (HFST)

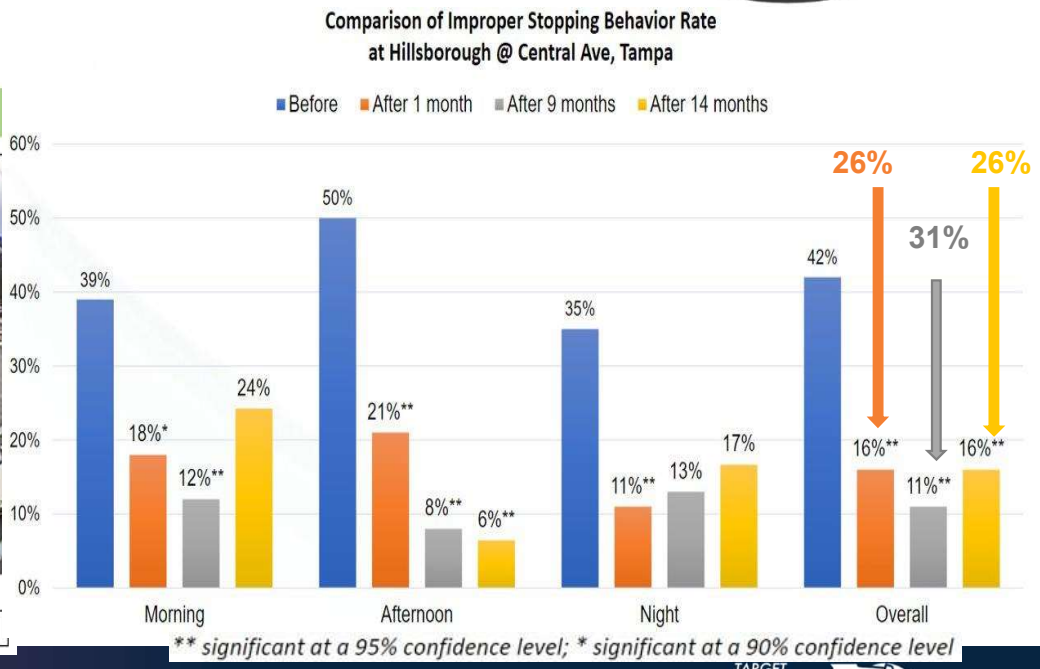


HFST Construction

HFST Construction

HFST Evaluation of Pilot Projects

- D7 teamed with FHWA DC HQ to pilot HFST at 3 signalized intersections starting 2019
- HFST Locations can be intersections, ramps, or curves.
- *Before and After* video evaluations pilot projects - Findings adopted by FHWA for national roll out on 10/26/22.
- Similar effects at two other intersections.



What next?

	Crash Severity						Crash Type			
Intersection Wet Weather and Rear End Crashes	**Fatality**	**Incapacitating Injur**	**Non-Incapacitating Injur**	**Possible Injury**	**No Injury**	**Total**	**Wet Road**	**Rear End**	**Rank**	
US 19 at Forest Oaks Blvd		6	24	21	96	147	26	140	310.5	1
SR 50/Cortez Blvd at Mariner Blvd		3	16	28	109	156	37	138	291.5	2
US 19 at SR 50/Cortez Blvd	1	5	14	18	96	134	25	119	265	3
US 19 at Spring Hill Drive		6	13	16	75	110	12	106	233.5	4
US 19 at CR 578		4	14	14	90	122	17	112	226	5
US 19 at Northcliffe Blvd		5	15	15	58	93	17	90	210.5	6
SR 50/Cortez Blvd at Sunshine Grove Rd		7	7	10	70	94	30	89	196	7
SR 50/Cortez Blvd at US 41	1	1	7	15	89	113	21	104	185	8
SR 50/Cortez Blvd at Brookridge Central Blvd/Barclay Ave			12	12	89	113	29	101	173	9
US 19 at Applegate Dr	1	2	11	10	62	86	20	77	164	10
US 41 at Powell Rd		5	8	13	41	67	24	54	162	
SR 574 at Barclay Ave		2	3	17	64	86	23	74	153	

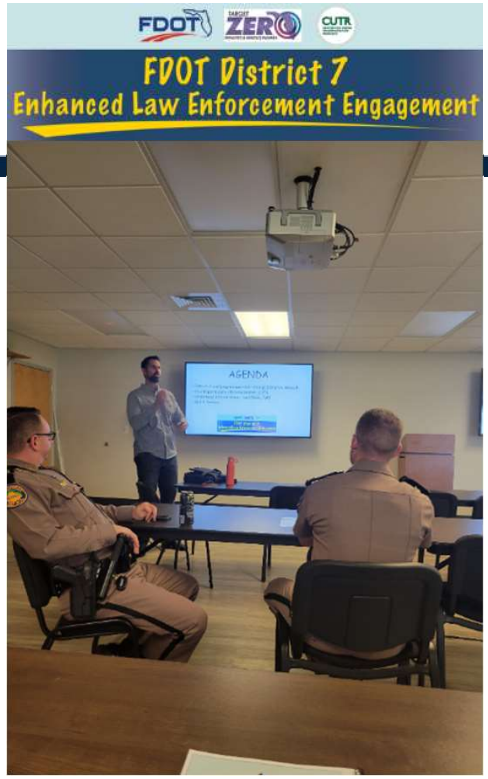
- Screening additional locations for this treatment and developing a priority ranking.

INSIGHT INTO COMMUNITIES

Community Traffic Safety Team (CTST)

- West Central CTST – Hernando and Citrus (monthly)
- CTST Mega Meeting (annual)
- Drive Safe Hernando Campaign HCFR
- Bike Helmet Fitting Training to Hernando & Citrus Health Department
- Cooter Carnival
- Good Neighbor Trail Grand Opening
- And more…

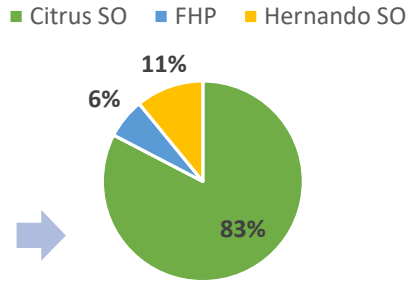
Collaboration and Enhanced Engagement with Law Enforcement Partners



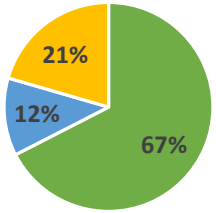
- **25 Participating Agencies Districtwide**
- **Targets Specific Violations** on state roadways
  - Speeding
  - DUI
  - Wrong Way
  - Intersection
  - Aggressive Driving
  - Seatbelt
  - Work Zone

Jul 1, 2024 – March 30, 2025

Warnings → 23,075



Citations → 15,510



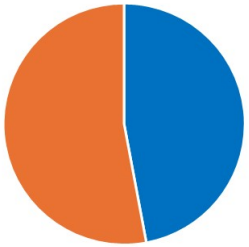
Both exceeded last year's ELEE total

What are the safety challenges?

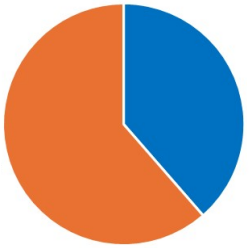
Fatal crashes are also as frequent on local roads.

(2019-2023)

Citrus County Fatal Crashes

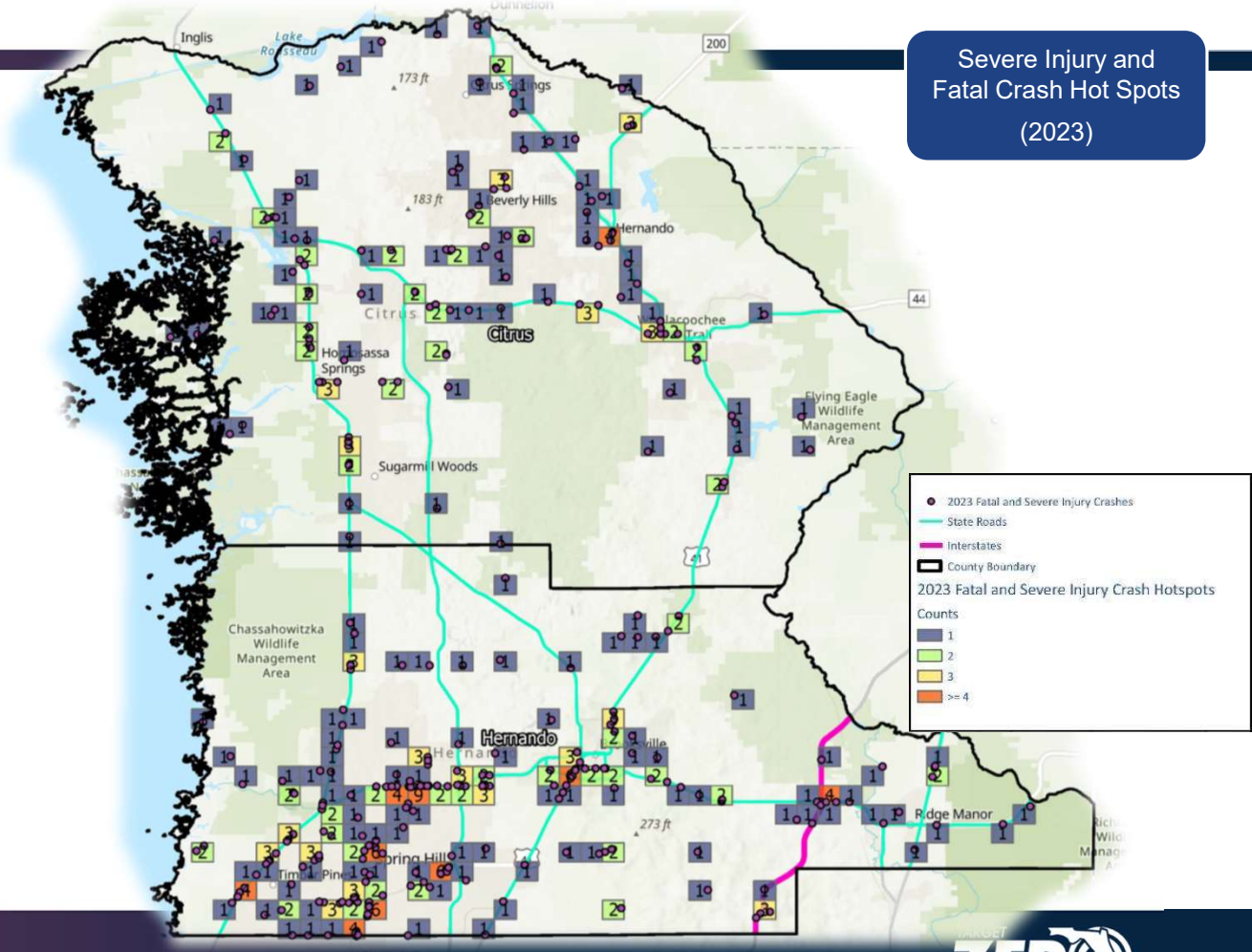


Hernando County Fatal Crashes



Severe Injury and Fatal Crash Hot Spots

(2023)



FDOT

TARGET ZERO FATALITIES & SERIOUS INJURIES


BUCKLE UP!
EVERY TRIP, EVERY TIME.
DRIVING SAFELY IN THE Sunshine State!
FDOT
TARGET ZERO
FATALITIES & SERIOUS INJURIES
Thank You!
Questions?