Task Force Meeting #3

Date: Tuesday, October 19, 2021

Time: 9:00 AM – 11:00 AM

Location: Virtual via GoToMeeting

- Georganna Gillette (Space Coast Transportation Planning Organization (Space Coast TPO))
- Sarah Kraum (SCTPO)
- Laura Carter (SCTPO)
- Steven Bostel (SCTPO)
- Mary Raulerson (Kittelson & Associates, Inc. (KAI))
- Sigal Carmenate (KAI)
- Chris Bame (KAI)
- Task Force invitees and attendees list attached

Introduction:

The purpose of this meeting was to share what the Project Team has learned since Task Force Meeting #2 through Focus Group Discussions, and to share and get feedback on the methodology for the network analysis for vulnerability and criticality of roadways. The meeting agenda included introductions, key takeaways from Focus Group Discussions, an interactive conversation about the network vulnerability and criticality analysis, community resiliency updates, and next steps.

Meeting Notes:

The meeting discussion was guided by a PowerPoint presentation, and feedback was via the Chat Box on GoToMeeting and by Task Force participants unmuting themselves and voicing their comments. Key discussion points from the meeting are listed below.

- As a point of clarification, the Florida Highway Patrol (FHP) does not close causeways at 40 mile per hour (MPH) wind speeds. The FHP closes causeways after a storm for post storm damage assessment.

- The Space Coast TPO will be using the 2100 National Oceanic and Atmospheric Administration (NOAA) high sea level rise curve as part of the Transportation Resiliency Master Plan (RMP) and moving forward.
- There are some roadways off the Brevard County functionally classified network that experience inundation and other impacts of shocks/stressors. In response to this comment, we will share the method and outcome of the network analysis with the Task Force to inform us of any vulnerable and critical roadways not being prioritized. The Space Coast TPO has discretion to decide what roadways to include for prioritization.
- In addition to the 100-year flood Federal Emergency Management Agency (FEMA) flood inundation layer being used for the vulnerability analysis, the 500-year flood dataset will be reviewed.
- The US Army Corp of Engineers released a draft of their Atlantic Coastal Study (SACS) for comment through mid-November. The Space Coast TPO will review the study and determine if it contains any information to use for the network analysis.
- Brevard County is specifically modelling stormwater flooding in some locations. A Task Force member proposed including this data in the analysis and being nimble to updated data in the future.
- Brevard County has a surface water protection ordinance that applies to within 50 feet of the Indian River Lagoon and manmade canals and within 200 feet of Lake Washington. This historic threshold aligns with the proposed 50 foot threshold for vulnerability to shoreline erosion.
- Florida Department of Transportation (FDOT) would like to protect the area within the clear zone from shoreline erosion, however they are limited by their ROW. Clear zone requirements will be reviewed considering the existing clear zones on segments of US 1 and SR A1A.
- In addition to shoreline erosion, overtopping of roadways at outfalls may also cause erosion or damage to the roadway. US 1 south of Malabar Road was specifically noted as a location where this may occur. US 1 will be included as part of the network analysis.
- It was shared that the Hazard Mitigation Grant Program (HMGP), including the Building Resilient Infrastructure and Communities (BRIC), is accepting applications to receive this funding. These funding sources provide aid for sustainable and resilient projects.
- Meeting Follow-up
    - The vulnerability and criticality analysis methodologies will be applied, and the results will be shared with the Task Force in early 2022 for comment.
    - The Space Coast TPO will meet with the Transportation Disadvantaged Groups after the Task Force has reviewed the network analysis to provide input on the methodology and the prioritized corridors.

The agenda, presentation, and the invitees/attendees lists are attached.

Invitees		
Name	**Agency/Organization**	**Attended**
Abby Johnson	St. Johns River Water Management District (SJRWMD)	N
Abigail Morgan	City of Cocoa	Y
Alexis “Lexi” Miller	Satellite Beach	Y
Alix Bernard	Cocoa - Planning	N
Amanetta Sommerville	Environmental Protection Agency (EPA)	Y
Bob Musser	Port Canaveral	Y
Brenda Defoe-Suprenant	Cape Canaveral	Y
Bryant Smith	Cocoa - Public Works	Y
Casey Lyon	FDOT	Y
Corrina Gumm	Brevard County - Public Works	Y
Courtney Barker	Satellite Beach	Y
Daniel Martoma	West Melbourne	N
Darcie Mcgee	Brevard County - Natural Resources	Y
David Wilkison	Melbourne	N
Deborah Coles	Brevard County	Y
Don Kean	Brevard County	N
Duane De Freese	Indian River Lagoon Council	Y
Eddy Galindo	Titusville	Y
Edward Fontanin	Brevard County - Utilities	N
Elizabeth Mascaro	Melbourne Beach	N
Holly Abeels	Florida Sea Grant/University of Florida (UF) / institute of Food and Agricultural Sciences (IFAS) Extension	N
Jane Hart	Brevard County - Planning	Y
Jared Francis	Cocoa Beach	Y
Jason Mahaney	Grant-Valkaria	Y
Jeffrey Ball	Brevard County - Planning	N
John Cooper	Rockledge	Y
John Scott	Brevard County - Emergency Management	N
Leo Angelero	Florida Department of Environmental Protection (DEP)	N
Lisa Morrell	Malabar	Y
Lori Cox	East Central Florida Regional Planning Council (ECFRPC)	Y
Marc Bernath	Brevard County	Y
Mark Ryan	Indian Harbour Beach	N

Invitees		
Name	**Agency/Organization**	**Attended**
Michael Casey	Indialantic	N
Mike McCabe	MTWCD	Y
Ntale Kajumba	EPA	Y
Rose Lyons	Brevard County	N
Steve Shams	FDOT	Y
Suzanne Sherman	Palm Bay	N
Tara McCue	ECFRPC	Y
Todd Corwin	Melbourne	N
Tom Frick	SJRWMD	N
Zac Eichholz	Cape Canaveral	Y

Transportation Resiliency Master Plan

Task Force Meeting #3 Agenda

Oct 19, 2021; 9:00 am - 11:00 am

Virtual via GoToMeeting

Please join my meeting from your computer, tablet or smartphone.

https://global.gotomeeting.com/join/865214157

You can also dial in using your phone.

United States: +1 (646) 749-3122

Access Code: 865-214-157

1. Introductions and Meeting Purpose

2. Focus Group Discussions Update for Each Shock/Stressor

3. Network Analysis Methodology – Vulnerable and Critical Corridors

4. Task Force attendees describe their communities' updates on resiliency (as times allows)

5. Next Steps

6. Open Discussion

RIDE the WAVE TO RESILIENCY

TRANSPORTATION RESILIENCY MASTER PLAN

TASK FORCE MEETING #3

OCTOBER 19, 2021

VIRTUAL VIA GOTOMEETING

9:00 AM – 11:00 AM

AGENDA

- Introductions and Meeting Purpose
- Focus Group Discussions Update
- Draft Network Analysis
- Communities Resiliency Updates (as time allows)
- Next Steps

RIDE the WAVE TO RESILIENCY

INTRODUCTIONS

- Study Team
- Attendees
  - Name
  - Agency/Organization

RIDE the WAVE TO RESILIENCY

What are our current conditions?

Task 3: Data Collection and Analysis

- Feedback on engagement strategy/help engage others
- Information/data on current conditions
- Continuity from best existing programs/work
- Information/data on future conditions
- Input on definitions of shocks/stressors

Task 4: Define Shocks and Stressors

What future events potentially put our people/infrastructure at risk?

- Define shocks/stressors
- Feedback on scenarios/projections

What infrastructure are more important to protect?

- Advise on identifying the top corridors impacted by the six shocks/stressors & their importance

Task 5: Transportation Resiliency Master Plan Development

What actions should we take to protect our high-priority infrastructure?

- Implementing strategies
- Identify barriers to implementation

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FOCUS GROUP DISCUSSIONS UPDATE

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FOCUS GROUP & STAKEHOLDER ONE-ON-ONE DISCUSSIONS

Hurricanes 7/19

- Andrew Sussman, Hurricane Program Manager at FDEM

Sea Level Rise/Flooding; Hurricanes/High Winds/Storm Surge/Shoreline Erosion 8/3

- Bach McClure
- Brad Kroetch
- Casey Lyon
- Darcie McGee
- Dr. Randy Parkinson
- Jane Hart
- Jared Francis
- Karl Christiansen
- Mike McGarry
- Tara McCue
- Tim Leech

High Winds/Storm Surge/Erosion FDOT District Five Maintenance 09/17

- Doug Shockley
- Hector Matos

Intelligent Transportation System (ITS)

- Jeremy Dilmore, FDOT District Five TSM&O Program Engineer **7/16**
- Rich Ataman, Intelligent Transportation System Operator at Brevard County **9/20**
- Jared Francis, City Engineer, City of Cocoa Beach **9/20**
- Sheryl Bradley, TSM&O Manager FDOT **9/20**

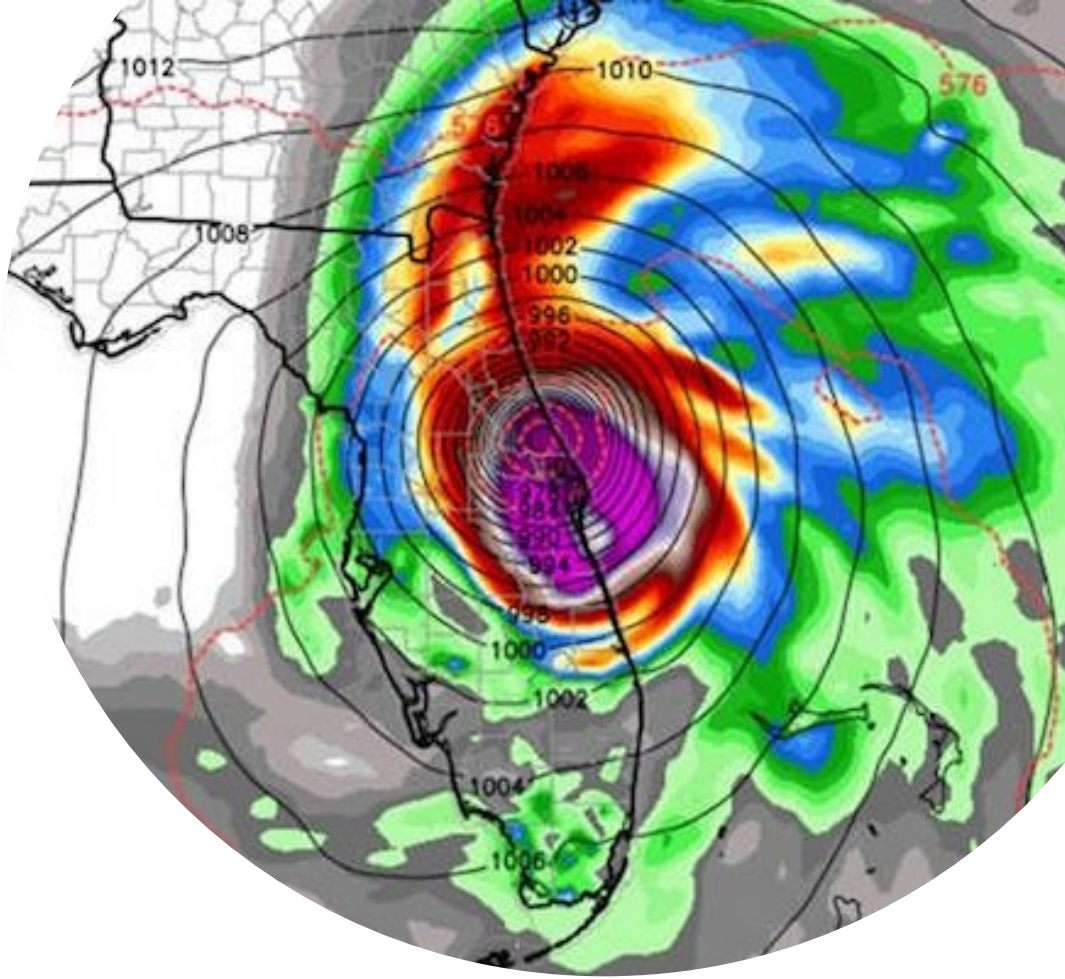
Heat/Drought/Fire

- Evan Hall, Land Management Specialist, EELs **7/22**
- Patrick Voltaire, Assistant Chief of Fire Operations at Brevard County **10/6**
- Mark Schollmeyer, Fire Chief at Brevard County **10/13**
- Sheryl Bradley and Nathan Mozeleski, ITS/Traffic Project Engineer **10/14**
- Dylan Gavagni, Park Manager at Florida Park Service – St. Sebastian **10/14**

RIDE the WAVE TO RESILIENCY

HURRICANES

- **Increased population growth** as people relocate bring challenges related to evacuations during storms
- **Roads and bridges** also function as **storm surge barriers**
- Regardless of hurricane category, **should prepare for the worst** scenarios
- Mitigation strategies can look like hardening and raising/elevating, but also **policy and programmatic:**
  - Increased preparation for emergency management
  - Supporting resiliency building codes
  - Fostering interagency and multijurisdictional collaboration



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HURRICANES

- Important to distinguish **facilities vulnerable to these shocks/stressors** but also the **criteria that gives facilities importance**
- Historically, causeways designed to withstand **Category 3 hurricanes**
- Corridors should be **prioritized for evacuation routes and access** to facilities like PAFB, Port Canaveral, and KSC

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SEA LEVEL RISE (SLR)/FLOODING

- Current **SLR scenarios don't show growing intensities** of **precipitation events or tidal** events happening now
- For SLR, should use **2040, 2070, 2100 NOAA High Curves**
- Can expect portions of SR A1A and US 1 to flood regularly
- **Causeways are critical** and must be prioritized for mitigation strategies
- South Brevard County communities isolated with fewer east-west connections
- **Critical segments specifically identified during work sessions**

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HIGH WINDS/STORM SURGE/EROSION

- After 2001 and 2004 storms, used **FEMA money to harden roadways**, yet waves constant chip away at shorelines and even small storms eroding shoreline over time
- **Eroded roadways require a long process to be rebuilt**
- **Causeways eroding** over time and mitigation strategies must be determined
- **Open to exploring proactive strategies** rather than reacting
  - Experimenting with **wave attenuation devices (WADs)** and other complementing strategies
- **US 1 less than 50’ from water**
- **SR A1A outfalls are at risk**
- FHP closes causeways at 40 mph winds; **FDOT maintenance cannot travel above 35 mph winds**

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INTELLIGENT TRANSPORTATION SYSTEM (ITS)

- The Space Coast TPO **ITS Master Plan is a good starting place** to understand critical infrastructure
- Vulnerabilities include **cyber security and staffing/resources**
  - May only have one ITS staff persons at an agency
- Without getting into the details of specific security vulnerabilities, can **focus on the impacts other shocks/stressors have on ITS systems**

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INTELLIGENT TRANSPORTATION SYSTEM (ITS)

- Critical corridors include **US 1, SR A1A and SR 520**
- For cyber security, **physical security is the biggest risk**
- Brevard County deploys **backup generators at intersections** at cabinets; inventory of about 60 to give to municipalities as needed
- **Signal head damage** is mostly from **wind events**
- **RTMC facilitates rerouting** as events occur
- If no access to systems, **staff sent out to survey the areas and bring information back** to main office and assess damage

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FIRE/HEAT/DROUGHT

- **Smoke management critical to preserving visibility on roadways** (particularly for north-south corridors) and preventing smoke at hospitals, airports, schools
- **Have had to shut down I-95** in Brevard County because of fire in Indian River County
- **EOC plays a key role in messaging** the public to reduce calls to dispatch center
- **Roads** can act as **fire break**
- **Wetland wildfires** can burn for long without being noticed until “whiteout” smoke is on the roadway

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FIRE/HEAT/DROUGHT

- Florida Highway Patrol determines to close highway; **fire trucks need full access on roadway without fear of being struck in low visibility**
- **Critical roadways for emergency vehicles** are **I-95, US 1, all east-west corridors in Brevard County**
- In **worst case** of county-wide fire, **evacuations are higher priority than fire truck access**

- **Large water plant in Cocoa is critical asset**; worst case scenario is power failure
- **Hazardous materials spill have occurred,** and can shut down roads for longer periods than fires
- **There are public lands that do not currently have controlled burns**

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FIRE/HEAT/DROUGHT

- **Wind direction, wind speeds, temperature, and humidity** all play a role in the start and spread of wildfires
- The **wildland and urban interface** are the places where natural and developed land meet and fires can be particularly dangerous

- In Florida, **green and dead vegetation are susceptible to fire and grassfires on the St. John River can burn over the waterline**
- Examples of corridors traversing wildland and urban interface are **SR 528, US 1, and US 192 west of I-95**
- **Dryness and drought** create conditions where **more fires spark on medians and grassy shoulders**

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FIRE/HEAT/DROUGHT

- Discussed **in relation to ITS in Brevard County**
- Emergency vehicles have **mounted CCTV devices and static devices throughout Brevard County, like I-95**
- Testing underway for **regional coordinated management systems to synchronize green signals when rerouting and diverting traffic for State and non-State roads**
- **Response to events have two components: hardware and operational team support**
  - Roadway weather information stations located in Brevard County provide roadway condition information for teams to determine the best response on case-by-case basis
- **Lightning and grounding are also big disruptors** to detect and provide information to motorists

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FIRE/HEAT/DROUGHT

- **Geotextile webbing is used on pedestrian trails** on natural lands but highly susceptible to fires
- **Florida Forest Service burns hundreds of acres of land** each year to prevent wildfires
  - Still, **can expect 5-7 fires** that require interventions every year
- **Building more infrastructure impacts hydrology** which leads to adverse effects on habitats
- **Varying daily weather conditions** can make smoke from **small fires engulf roadways and reduce visibility**
- **Box culverts can exacerbate smoke on roadways** if they are not maintained properly
- **Roadways through and near conservation lands that are not managed** at risk of wildfire impacts

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TASK FORCE DISCUSSION

Feedback on what we have heard

Do you have any additional info/insight about the impacts of the shocks/stressors on the transportation system?

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DRAFT NETWORK ANALYSIS

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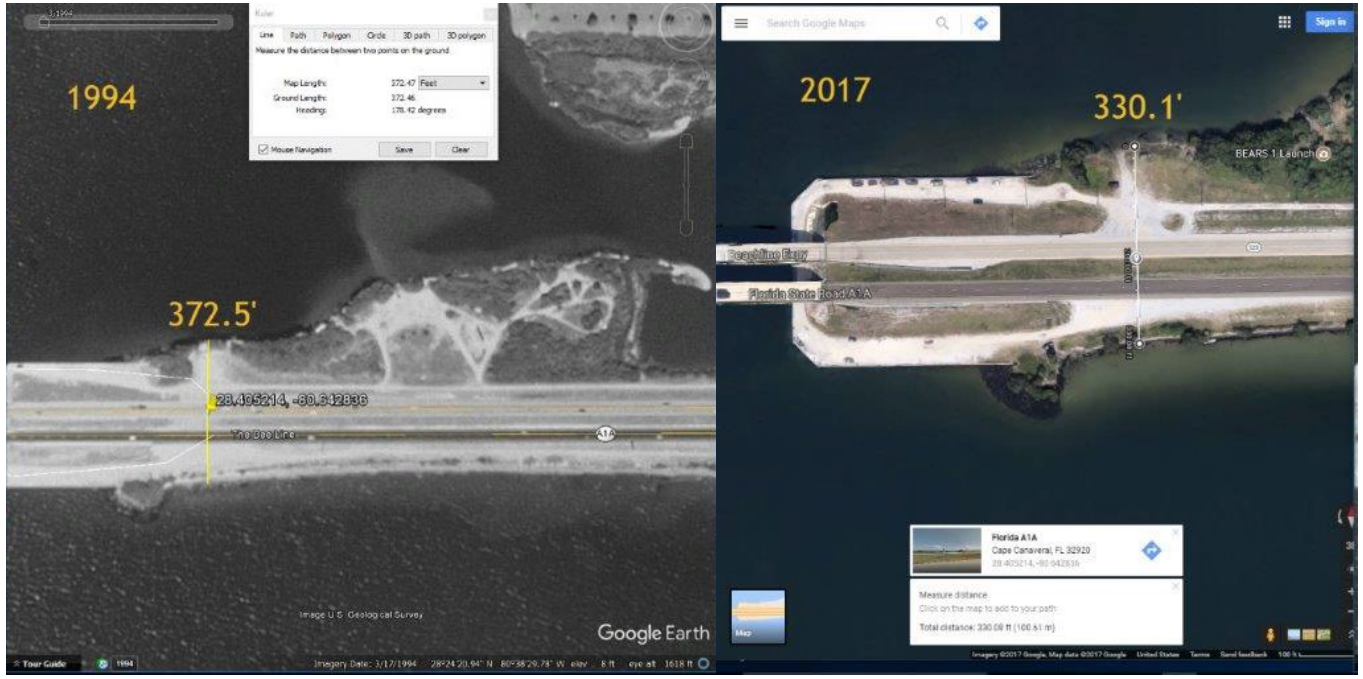
HOW WE DEFINED SHOCKS/STRESSORS SCENARIOS

- Flooding: FEMA FIRM 100 Year Flood Plain
- Sea Level Rise: 2100 NOAA High Curve
- Storm Surge/Wind: Hurricane Category 3
- Erosion: Corridors 50’+ from water (further discussion occurring to confirm)
- Fire: Undeveloped lands near corridors
- ITS: cyber and physical security being handled by ITS managers; used as type of mitigation strategy



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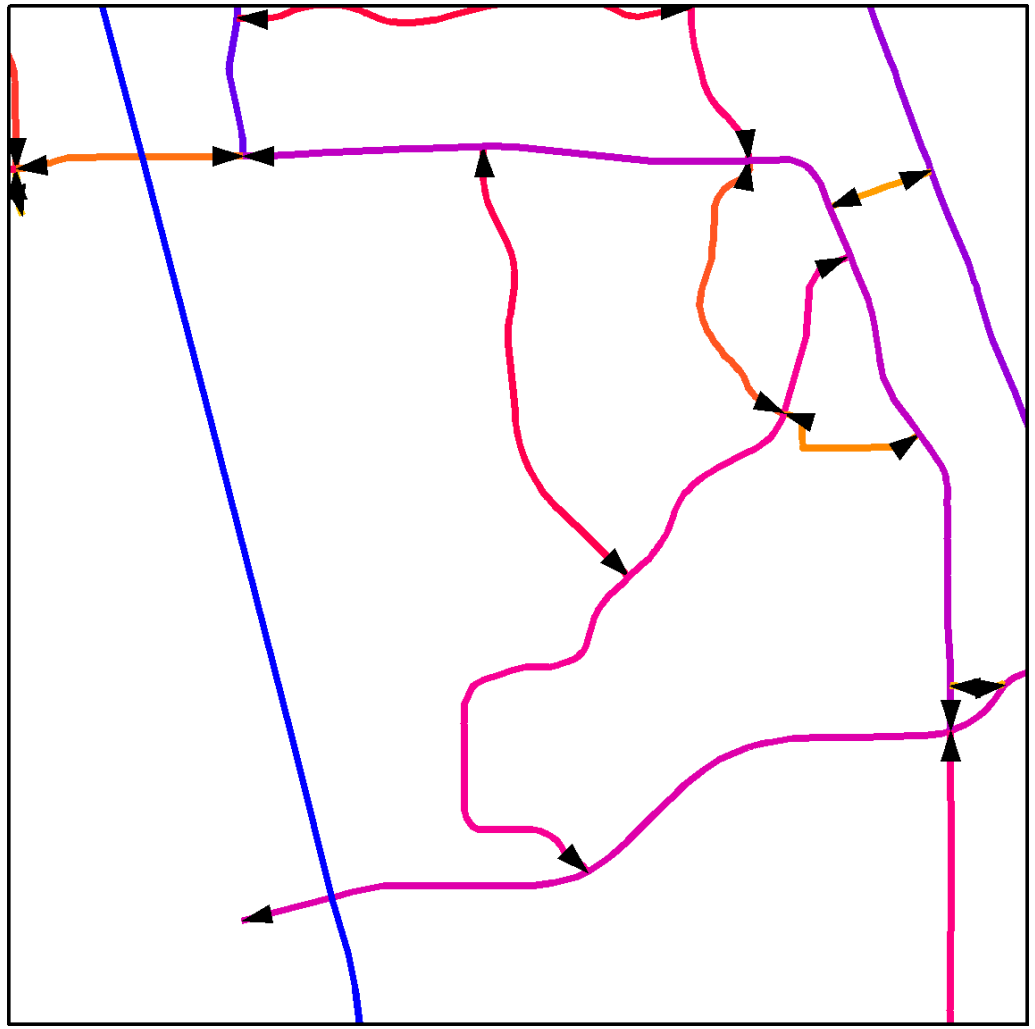
DEFINING IMPORTANT CORRIDORS IMPACTED BY SHOCKS/STRESSORS

- **Vulnerability** – the magnitude of shocks/stressors impact to different parts of transportation corridors
- **Criticality** – determining which impacted roadways serve a critical population, function, or destination to develop mitigation strategies for

RIDE the WAVE TO RESILIENCY

TRANSPORTATION NETWORK



Functionally classified roads in Brevard county are divided into **322 corridors**

Most corridors are between **1 and 4 miles** long

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VULNERABILITY ANALYSIS

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VULNERABILITY ANALYSIS METHODOLOGY

- Determined amount of corridor being impacted by shocks/stressor (length in miles)
- > 0 & < ¼ mi impacted as “Vulnerable”
  - About 50% of all corridors
- ≥ ¼ mi impacted as “Most Vulnerable”
  - About 20% of all corridors

RIDE the WAVE TO RESILIENCY

PROCESS TO DETERMINE VULNERABILITY

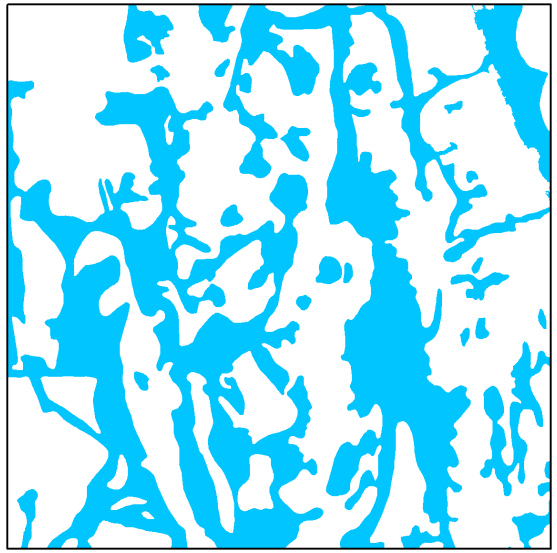
Impact Area of Shock/Stressor

+

Transportation Infrastructure

→

Vulnerable Transportation Infrastructure



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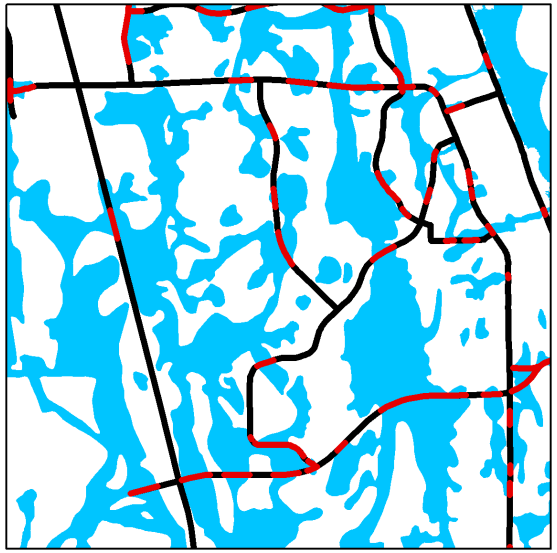
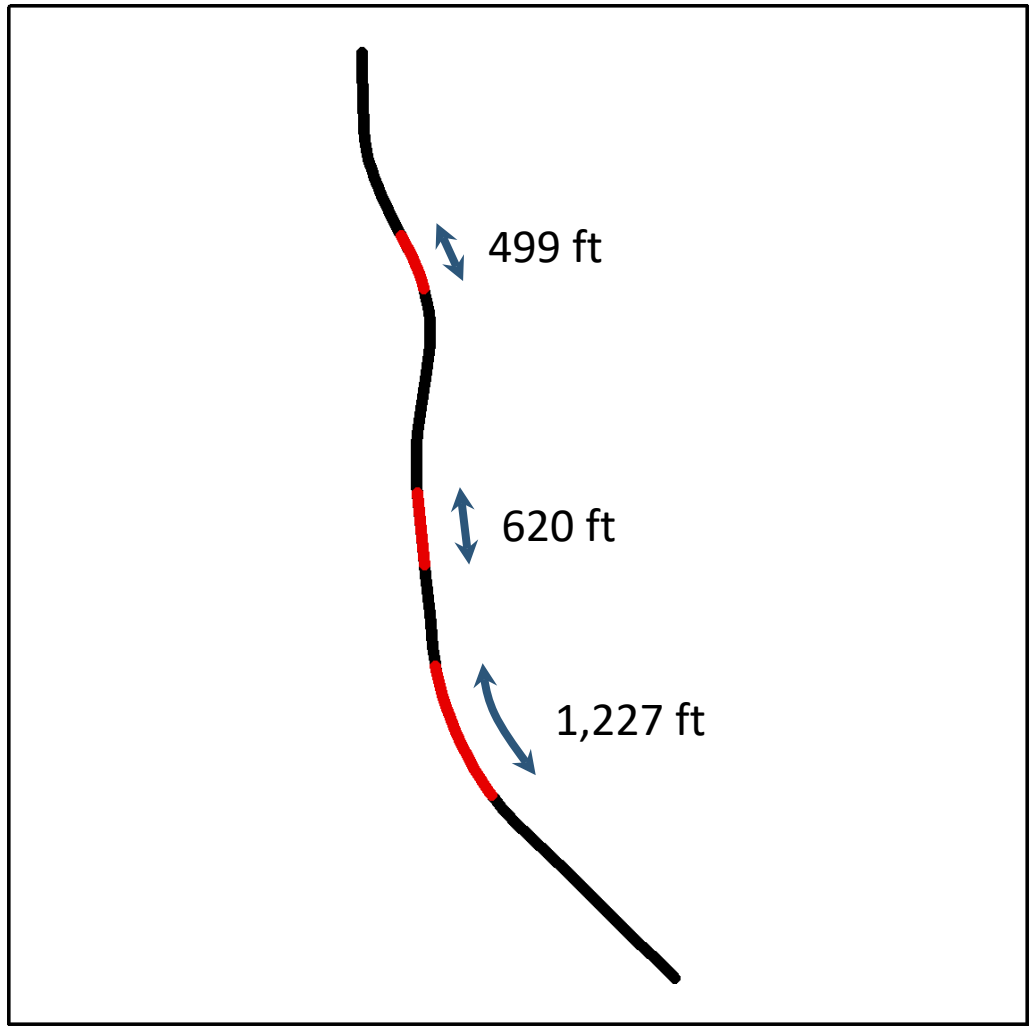


RIDE the WAVE TO RESILIENCY

IDENTIFYING VULNERABLE SEGMENTS OF THE CORRIDOR



Corridor A

2,346 ft = 0.44 mi vulnerable along corridor

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VULNERABILITY CRITERIA

Not Vulnerable	Vulnerable	Most Vulnerable
None of the corridor is within the impact area of the shock/stressor	**> 0 & < 1/4 mile** of the corridor is within the impact area of the shock/stressor	**≥ 1/4 mile** of the corridor is within the impact area of the shock/stressor

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CRITICALITY ANALYSIS

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CRITICALITY ANALYSIS METHODOLOGY

- Critical Population
  - Transportation Disadvantaged Population (TD Population) score
  - Poor and Struggling
  - Zero Car Households
  - Persons of Color
  - Households Including a Person with a Disability
  - Persons Over 65
- Critical Function
  - Functional Classification
  - AADT
  - Evacuation Route
  - Transit Route
- Critical Destinations
  - Major destinations/economic drivers
    - Hospitals
    - Port/Airports
    - PAFB
    - Government Centers
  - Activity Centers defined in Bicycle/Pedestrian Master Plan

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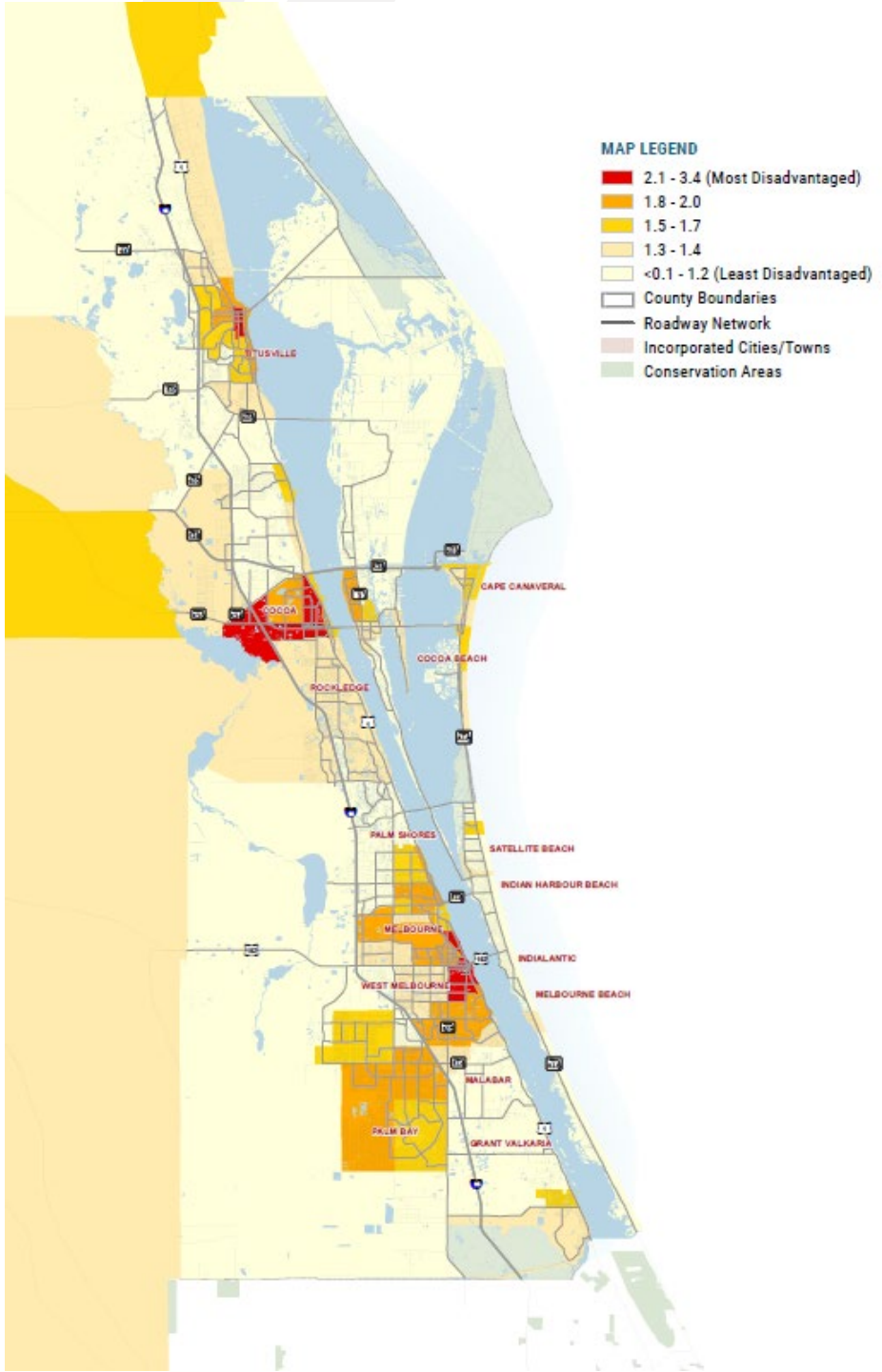
TRANSPORTATION DISADVANTAGED POPULATIONS

Criteria considered:

- ❑ Overburdened renters
- ❑ Population under age 18 in a single-parent household
- ❑ Population with a disability
- ❑ Population under age 10
- ❑ Population over age 75
- ❑ Workers without vehicle access
- ❑ Population with limited English proficiency
- ❑ Low-income population
- ❑ Communities of Color (All races and ethnicities beside White Non-Hispanic)



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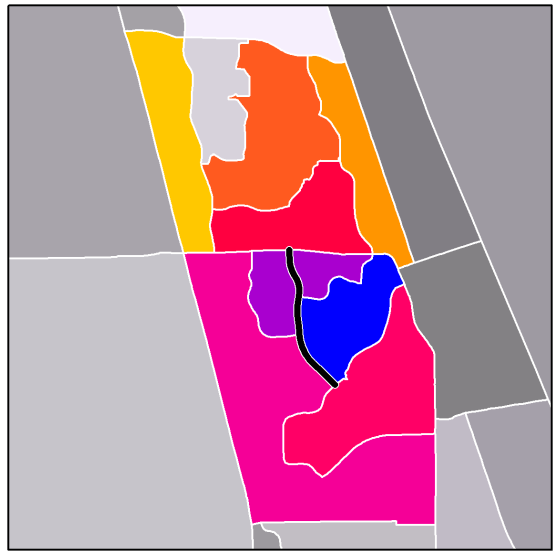
CRITICAL POPULATION

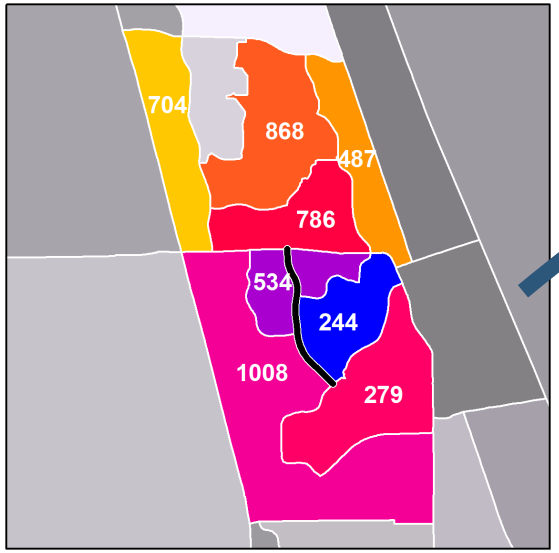
- **Critical Population** must meet one of the following criteria:
  - Top 20% of corridors serving any one of the five populations:
    - Poor and Struggling
    - Zero Car Households
    - Persons of Color
    - Households Including a Person with a Disability
    - Persons Over 65
  - Maximum TD Population score along the corridor is > 2
- **Most Critical Population:**
  - Top 20% of corridors serving > 1 of the five populations

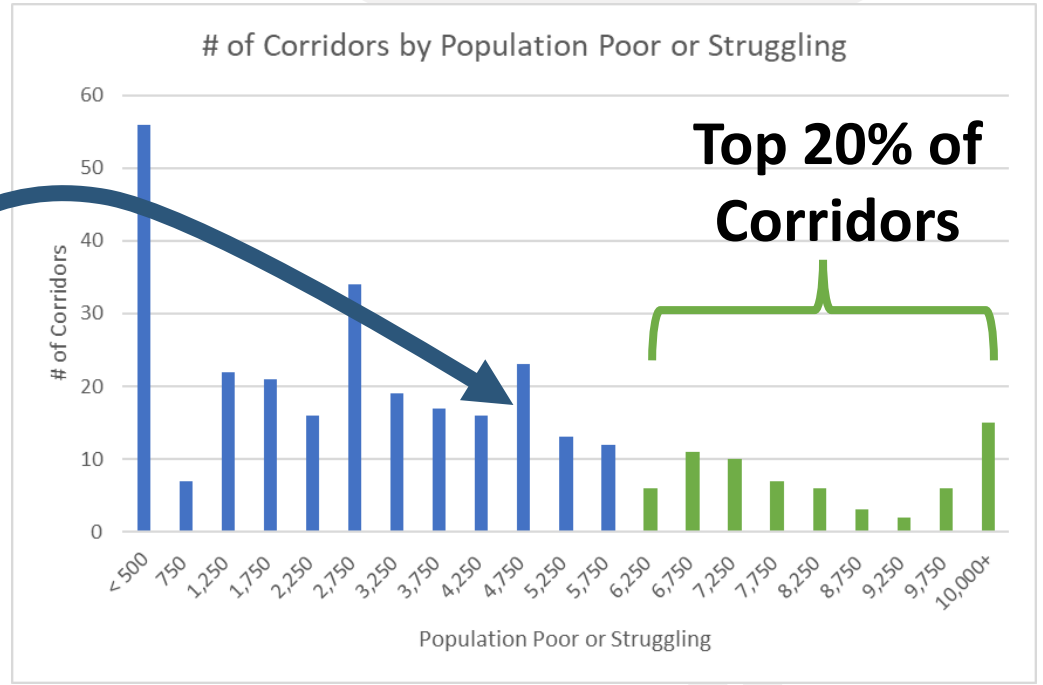
RIDE the WAVE TO RESILIENCY

PROCESS TO DETERMINE CRITICAL POPULATION

Census Block Groups within 1 Mile of the Corridor → Add the Population/ Households in the Census Block Groups → Summarize for County







4,910 people who are poor or struggling live in a Census Block Group within 1 mile of this corridor

RIDE the WAVE TO RESILIENCY

CRITICAL POPULATION CRITERIA

Not Critical	Critical	Most Critical
Maximum **TD Population Score < 2** along the corridor **AND** Corridor does **not** serve the **Top 20%** of critical population groups	Maximum **TD Population Score > 2** along the corridor **OR** Corridor does serve the **Top 20%** of critical population groups	Corridor serves the **Top 20%** of **at least 2** critical population groups

RIDE the WAVE
TO RESILIENCY

CRITICAL FUNCTION

- **Causeways, I-95, and all east-west connections** serve special functions and considered **“Most Critical”**
- The corridors with **an Evacuation Route** were also considered **“Most Critical”**
- **“Critical Corridors”** met one of the following:
  - Corridors with SCAT route
  - AADT>40,000
  - Functional Class of a Primary Arterial or larger

RIDE the WAVE TO RESILIENCY

CRITICAL FUNCTION CRITERIA

Not Critical	Critical	Most Critical
All **other** corridors not meeting Critical or Most Critical criteria	Corridors with a **SCAT route** **OR** Corridors with a functional classification of a **Principal Arterial or larger** **OR** Corridors with an **AADT > 40,000**	Corridors serving a **special function** (Interstate, Causeways, East-West Connections) **OR** Corridors that are an **evacuation route**

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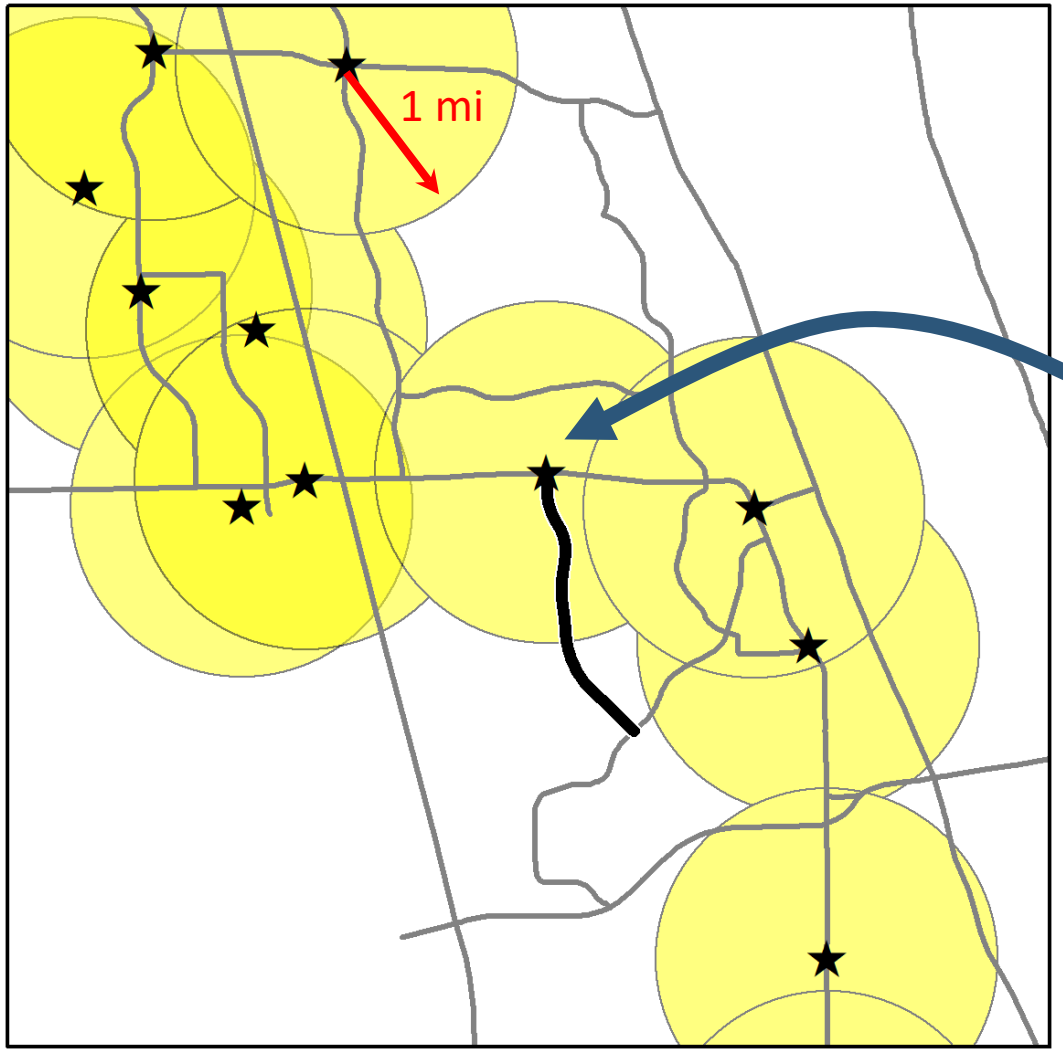
CRITICAL DESTINATIONS

- Corridors with **> 1 major destination or > 1 activity center** within 1-mile were considered **“Most Critical”**
- The corridors with **one major destination or activity center** within 1-mile were considered **“Critical”**

RIDE the WAVE TO RESILIENCY

PROCESS TO DETERMINE CRITICAL DESTINATIONS



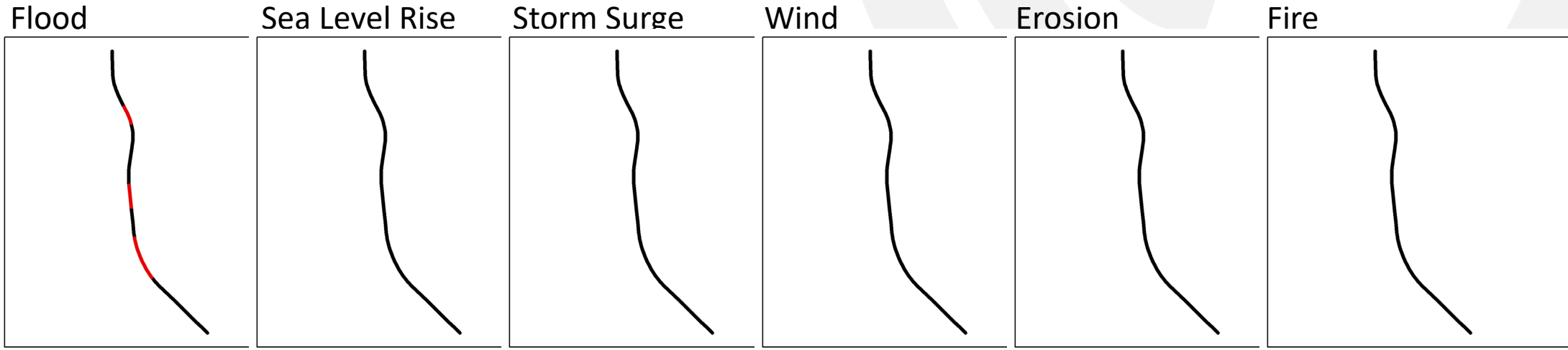
1 activity center or key destination is within 1 mile of the corridor

CRITICAL DESTINATIONS CRITERIA

Not Critical	Critical	Most Critical
All other corridors	Corridors that have 1 major destination or activity center within 1-mile	Corridors that have more than 1 major destination or activity center within 1-mile

RIDE the WAVE TO RESILIENCY

IDENTIFICATION OF KEY CORRIDORS



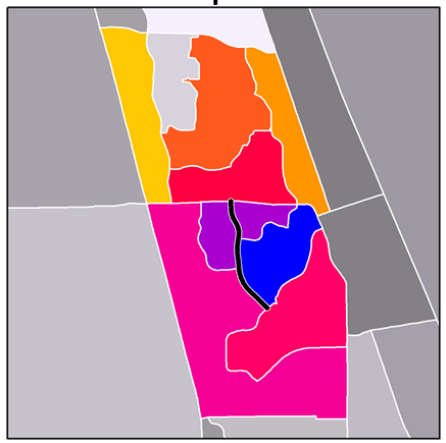
Miles Vulnerable	0.4	0.0	0.0	0.0	0.0	0.0
Vulnerable/ Most Vulnerable	Most Vulnerable	Not Vulnerable	Not Vulnerable	Not Vulnerable	Not Vulnerable	Not Vulnerable
Score	2	0	0	0	0	0

RIDE the WAVE TO RESILIENCY

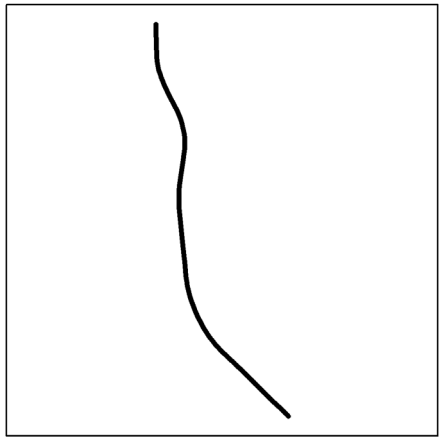
Vulnerability Score = **2**

IDENTIFICATION OF KEY CORRIDORS

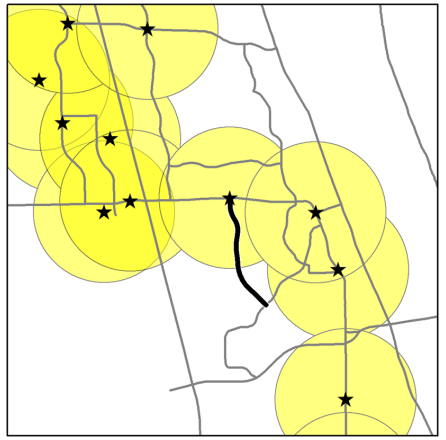
Critical Population



Critical Function



Critical Destination

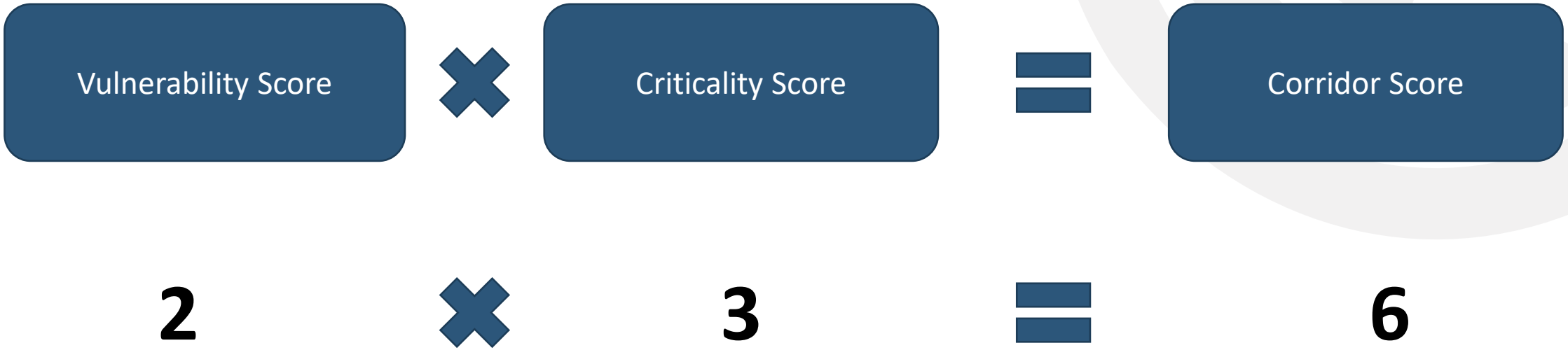


Critical/ Most Critical	-	Most Critical	Critical
Score	0	2	1

RIDE the WAVE TO RESILIENCY

Criticality Score = 3

IDENTIFICATION OF KEY CORRIDORS



TASK FORCE DISCUSSION

Do you have any feedback on…

- **On how the shocks/stressors were defined?**
- **About how vulnerability was determined?**
- **Concerning measures used to define criticality?**

RIDE the WAVE TO RESILIENCY

COMMUNITIES RESILIENCY UPDATES

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TO RESILIENCY

TASK FORCE DISCUSSION

Are there any initiatives or activities in your community related to transportation resiliency?

In other communities of Brevard County?

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NEXT STEPS

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NEXT STEPS

- Finalize key critical corridors
- Mitigation strategies for top corridors related to shock/stressor
- Transportation Disadvantaged Populations meetings – December 2021
- Task Force Meeting 4 – March 2022
    - Present key corridors and discuss mitigation strategies

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Thank you!

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