

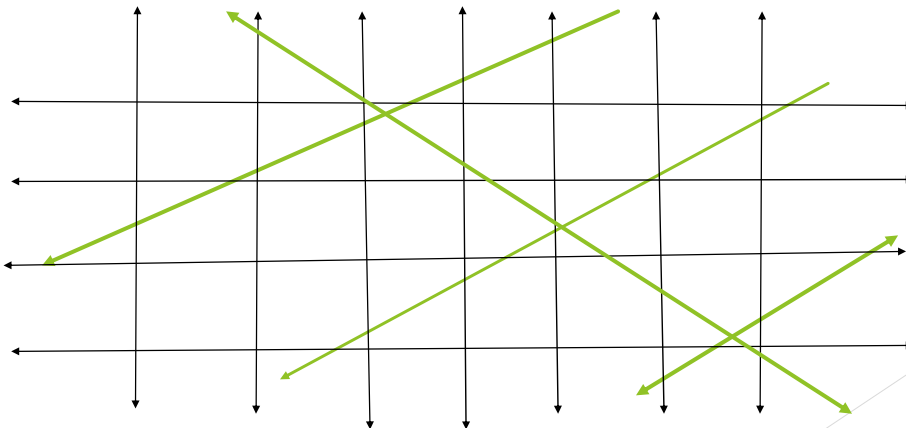
## Closing the Gap: The First, Last and Toughest Mile in Transportation

### Method for Linking Greenways and Trails with Public Transportation

- ▶ 2017 Florida Commuter Transportation Summit
- ▶ Sara Hendricks
- ▶ USF Center for Urban Transportation Research
- ▶ May 5, 2017



Wouldn't it be great if we could start from scratch?



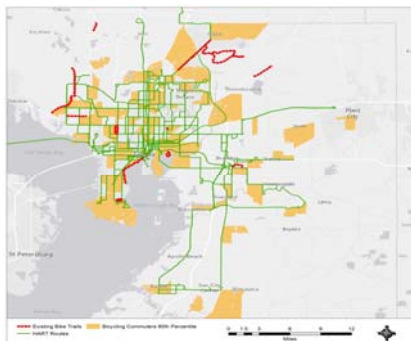
## How to prioritize locations for transit/trail improvements?

- ▶ Take advantage of opportunities where redevelopment funds or highway improvement funds are already planned to be used.
- ▶ Select locations already having highest travel activity

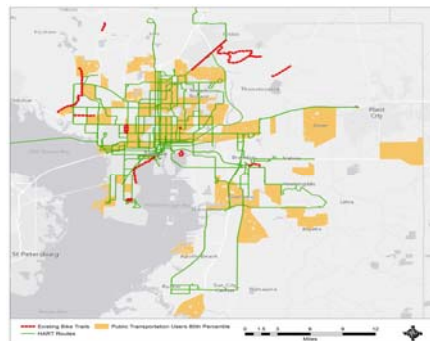


## How to prioritize locations for transit/trail improvements?

Census tracts with home locations having higher numbers of bicyclists



Census tracts with home locations having higher numbers of public transit riders



- ▶ Focus improvements near homes of bicyclists and transit riders



Recommend a method that is consistent, uniform, repeatable...

- “Enable low income people to access jobs.”
- “Enable adult students to access college and trade school campuses.”
- “Enable seniors to access recreation centers.”
- “Enable car-dependent suburban areas to access shopping opportunities.”

Enhance Livable Communities

Improve transit/trail connectivity

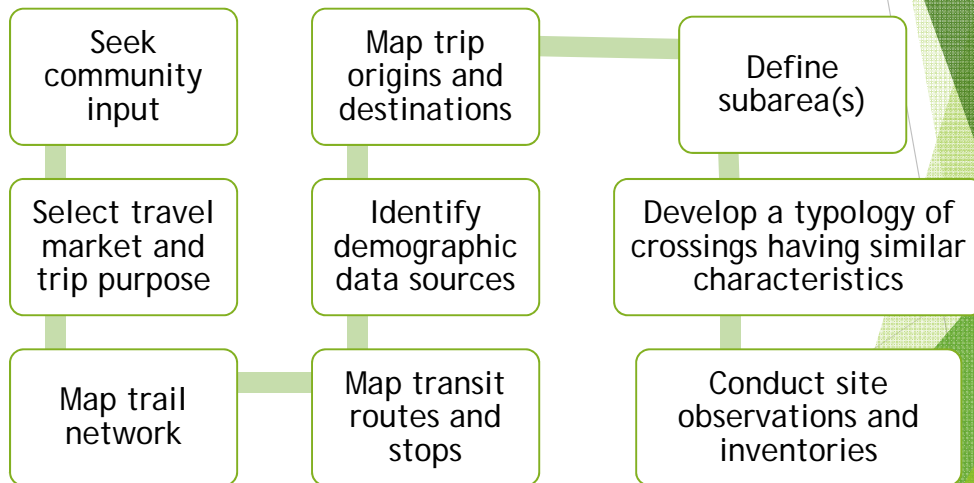
Select travel market and trip purpose of interest

Use GIS analysis to identify transit/trail links that connect O/D

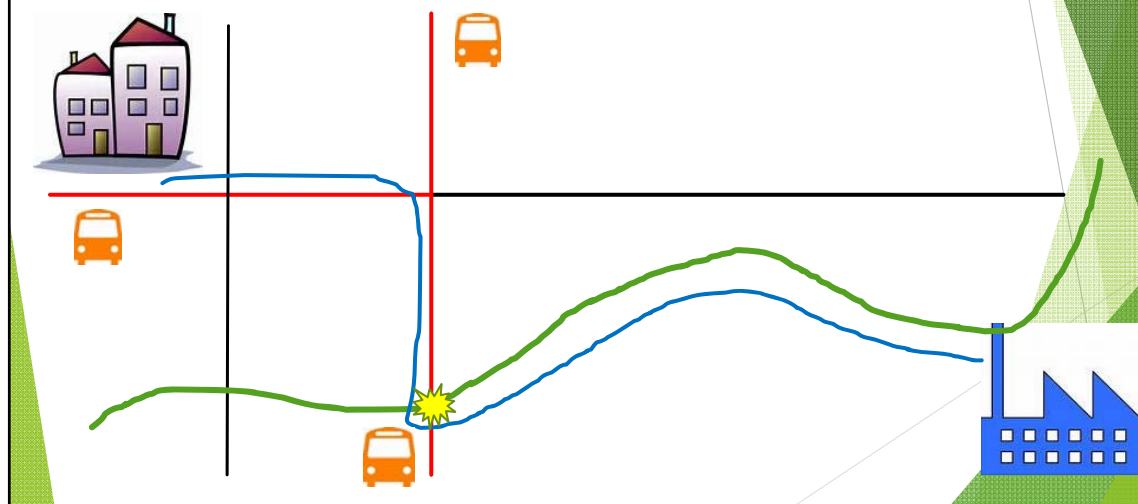
## Selected Study Area Hillsborough and Pinellas Counties, Florida



## Steps in Method to Link Trails with Public Transportation



## What makes a transit/trail connection important?



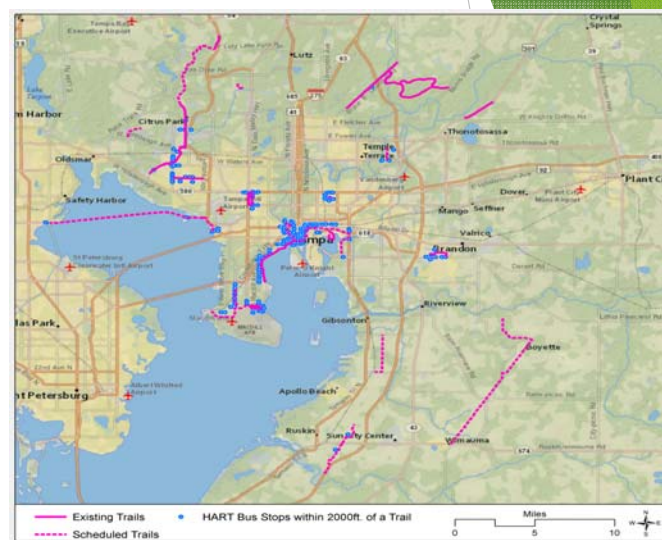


## Map the trail network

- ▶ In Hillsborough County there are several existing trails.
- ▶ County government and MPOs play a prominent role in trail development.
- ▶ Data were mapped using GIS spatial analysis



## Map transit routes and locations of stops near trails



## Hillsborough Trail Locations within 2000 feet of HART Bus Stops

Trail Name	Description/Limits	Jurisdiction	Status	Length in miles
Upper Tampa Bay Trail Phases I, II, III	Memorial Highway/Montague St to Peterson Road	Hillsborough	Existing	7.0
Town 'N Country Greenway Trail	Sheldon Road to south of George Road	Hillsborough	Existing	2.0
South Tampa Greenway	MacDill Trail at Gadsden Park	Tampa	Existing	1.5
Bruce B. Downs Trail	Amberly Drive to Hunters Green Blvd, parallels Bruce B. Downs Blvd.	Tampa	Existing	4.4

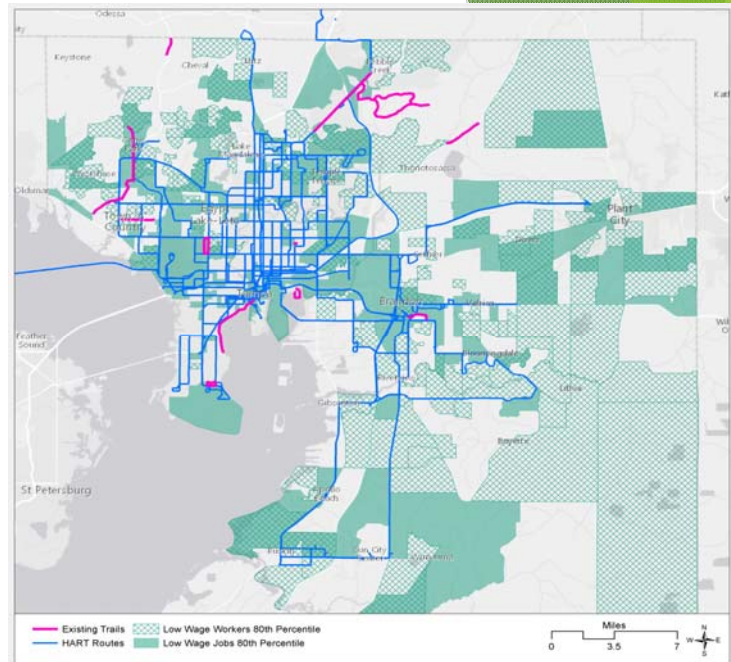
## Identify data sources to describe location of travel market and trip destination

[https://edg.epa.gov/data/Public/OP/SLD/SLD\\_userguide.pdf](https://edg.epa.gov/data/Public/OP/SLD/SLD_userguide.pdf)

Category	Market	Description	Data
Design	Walkable neighborhoods	Communities with greater intersection density are more supportive of non-motorized and public transit modes. By identifying walkable areas, investments in these areas may support increase use of public transit and nonmotorized modes.	EPA Smart Location Database
Density	Transit supportive areas	Enhancing bicycle and transit connections in areas with transit supportive population and employment densities are more likely to improve the rider and bicyclist access to goods, services and employment opportunities.	EPA Smart Location Database Residential and Employment Density Calculations
Transit service	Transit service areas	Locations with better transit service offer greater transit accessibility to employment and other destinations. Areas with greater service frequency and access to transit stops would enhance bicyclist access to more destinations	EPA Smart Location Database Jobs Transit Accessibility Calculation

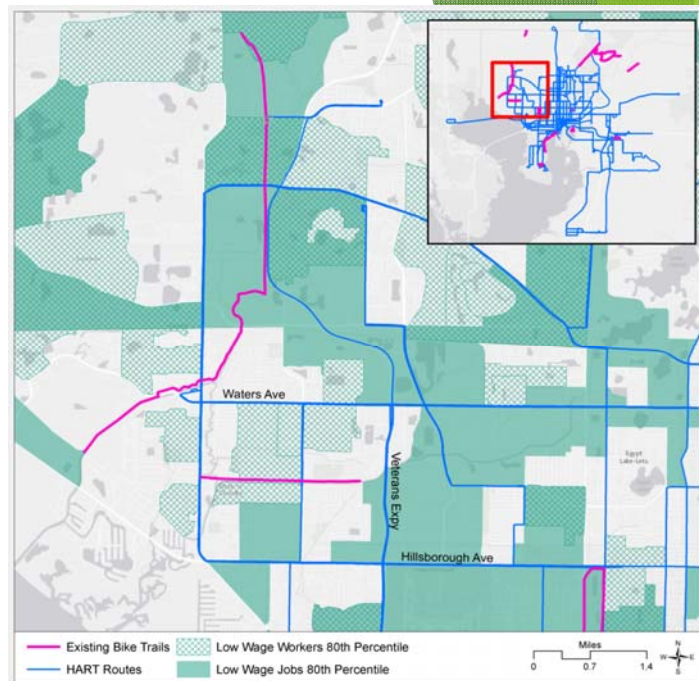
## Map concentrations of home and work locations

- Areas between job and home locations warrant a closer look, especially if these areas contain transit service that overlaps with trails.



## Define a subarea within which to look closer

- Upper Tampa Bay Trail was selected to evaluate first.
  - Longer length
  - On fringe of transit service area: creates transportation value of the trail
  - Using EPA SLD, more jobs were accessible within a 45-minute transit trip
  - Trail alignment not redundant with streets





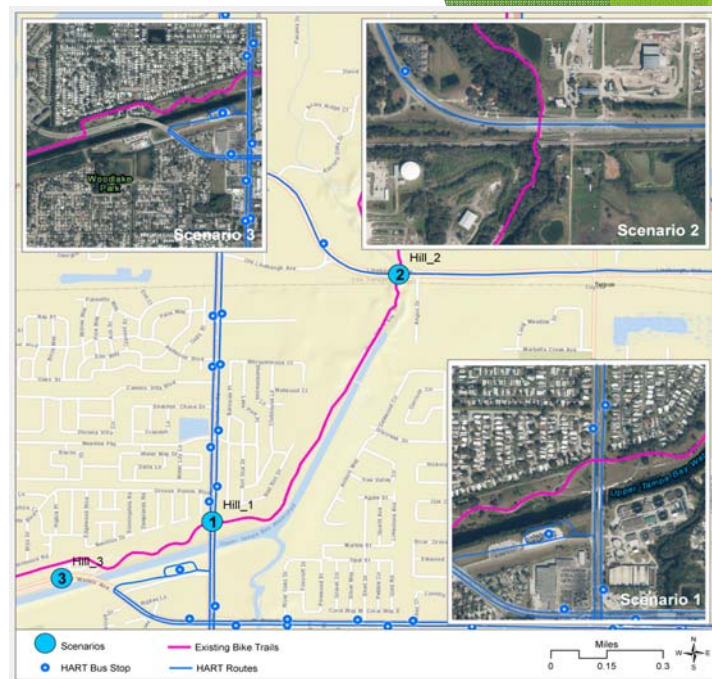
## Develop a typology that organizes transit/trail crossings into sets having similar characteristics

- ▶ Categorizing by some shared characteristics helps deal with large numbers of candidate crossings to prioritize
  - ▶ Helps generalize operating conditions and attributes as they affect bicyclists and pedestrians
  - ▶ Enables development of general improvement concepts
- ▶ We developed three types or scenarios:
    1. Where a trail and a transit route intersect and connect (scenario 1)
    2. Where a trail and a transit route intersect but do not connect (scenario 2)
    3. Where a trail and transit route are aligned close to each other but do not intersect (scenario 3)

## Three transit/trail crossing locations were selected for further evaluation

### Hillsborough County

1. HART Bus Route 39 with Upper Tampa Bay Trail at Sheldon Road
2. HARTflex Town 'N Country with Upper Tampa Bay Trail at Linebaugh Avenue
3. HART Northwest Transfer Center with Upper Tampa Bay Trail at Channel Park Trailhead by W. Waters Avenue Bridge





## Transit/Trail Crossing Inventory Tool

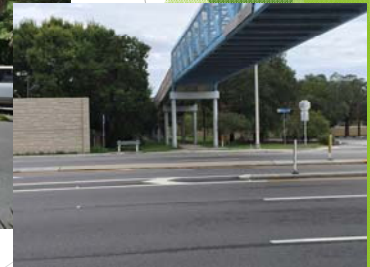
- ✓ Template is available for download
- ✓ Modifiable by user
- ✓ Can be completed in field using tablet PC
- ✓ Design Guidelines Resources:
  - AASHTO. 2012. Guide for the Development of Bicycle Facilities. 4<sup>th</sup> Edition.
  - AECOM. 2011. Miami-Dade County Trail Design Guidelines and Standards: Ludlam Trail Case Study. Prepared for Miami-Dade County Park and Recreation Department. Miami, FL. June. <http://www.miamidade.gov/parks/masterplan/library/trail-design-report.pdf>
  - Petritsch, Theodore A. and Christopher B. Fellerhoff. 2014. "Shared Use Path—Roadway Intersections; Guidelines for Assigning Priority and Determining Traffic Control at Shared Use Path/Roadway Intersections, Pinellas County, FL." Lutz, FL: Sprinkle Consulting. August. [http://www.pinellascounty.org/mpo/Traffic%20Studies/10\\_A\\_Trail%20Guidelines%20Report.pdf](http://www.pinellascounty.org/mpo/Traffic%20Studies/10_A_Trail%20Guidelines%20Report.pdf)
  - University of North Carolina Highway Safety Research Center. 1999. "Trail Intersection Design Guidelines." Tallahassee, FL: Florida Department of Transportation. Revised. <http://atfiles.org/files/pdf/trailintersect.pdf>.
  - Florida Department of Transportation. 2016. Plans Preparation Manual. Vol.1. Chapter 8. Topic #625-000-007. Tallahassee, FL: FDOT. January 1. <http://www.dot.state.fl.us/rddesign/PPMManual/2016/Volume1/Chap08.pdf>

## Hillsborough Scenario 3: HART Northwest Transfer Center and Upper Tampa Bay Trail at W. Waters Avenue Bridge



## Observations about transit/trail connectivity

- ▶ Trail locations may not be optimal for transportation.
- ▶ System redundancy is important to bicyclists and pedestrians.
- ▶ Many trails are closed at sunset.
- ▶ On-street roadway improvements link trails to transit.



## Recommendations to strengthen transit/trail connectivity

- ▶ Consider transit/trail linkages at the transportation planning stage.
- ▶ Signs, maps, brochures, websites, and mobile phone apps should cross-promote transit and trails.
- ▶ Develop and promote a multimodal route finding system





## Recommendations to strengthen transit/trail connectivity

- ▶ Use local knowledge to identify needed amenities
- ▶ Provide bikes **in** buses
- ▶ Provide additional trail access points
- ▶ Include transit riders on the BPAC and a BPAC representative on transit advisory committees



## Questions?

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Here is the link to the report:

<http://www.nctr.usf.edu/wp-content/uploads/2016/02/FDOT-BDV26-977-03-rpt.pdf>

