



Designing for Bicyclist Safety

Emphasis Upon Separated Bike Lanes and Intersections

SAFETY TRAINING WORKSHOP: APRIL 12-13 & 14-15, 2022





Dr. Charles E. Moreland COJ Director/Fire Chief Opening Remarks

- Joined the Jacksonville Fire and Rescue Department (JFRD) in 1990 at age 18
- Became the Department's first African-American Chief of the Rescue Division in 2003
- Responsible for 1,300 employees, most of whom are uniformed personnel
- Served more than 12 years as a member of JFRD's Hazardous Materials Team
- Completed his Doctoral studies at Nova Southeastern University, where he also earned a master's degree in public administration (MPA)
- Recipient of the 2009 Mark Fingeret EMS Administrator of the Year by the Florida Association of County EMS Providers
- Appointed by Florida's Surgeon General, Dr. Ana M. Viamonte Ros, to a four-year term on the State Department of Health's EMS Advisory Council
- 2008 recipient of the Marilyn Crook EMS Pioneer Award from the State of Florida's Bureau of EMS for his volunteer service as chairman of the Bureau's Data Committee
- Certified reserve officer with the Jacksonville Sheriff's Office and is a member of JFRD's S.W.A.T Medic Team



2020 Population:

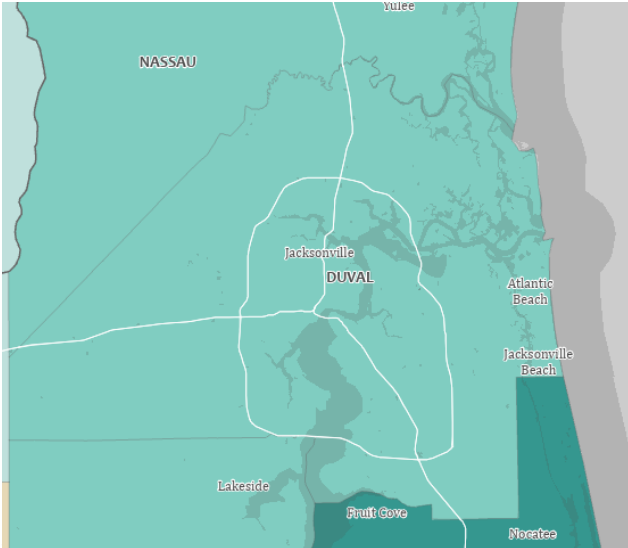
949,611

15.5% Growth Rate (2010-2020)

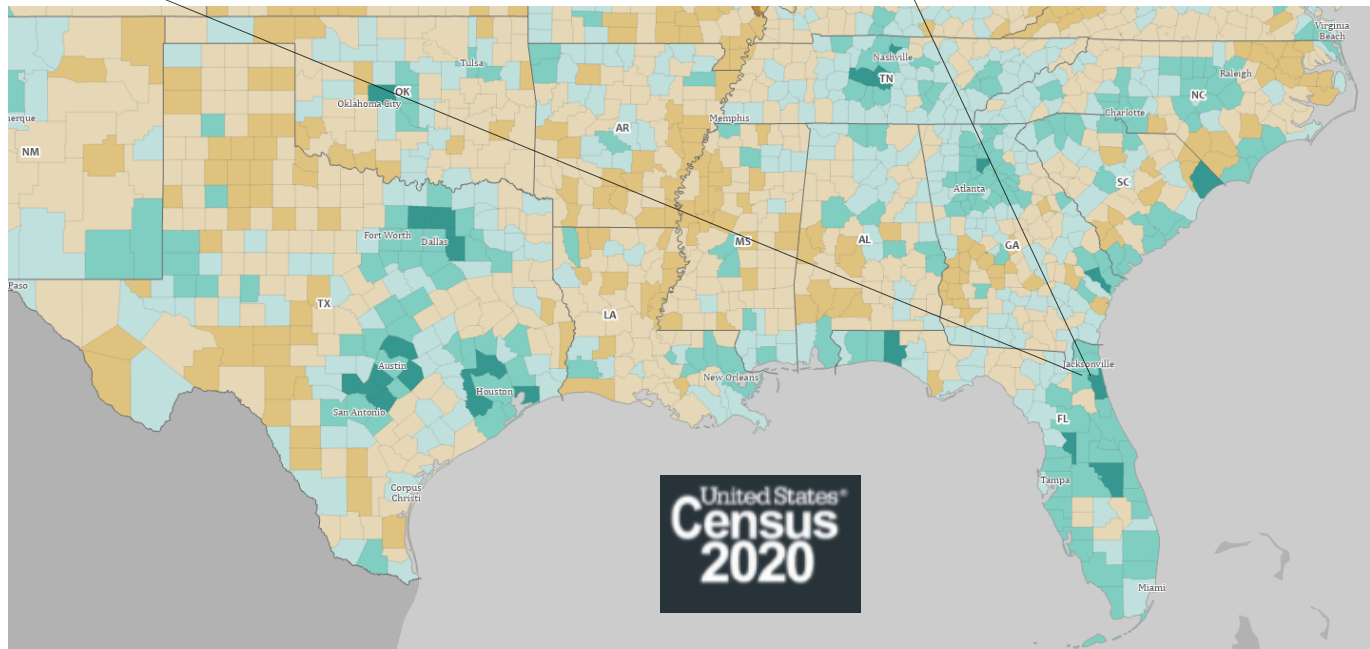
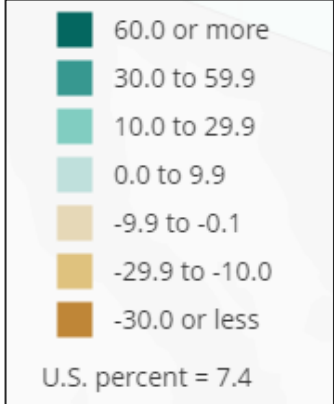
Projected 2030 Population:

1,096,801

Source: US Census Data

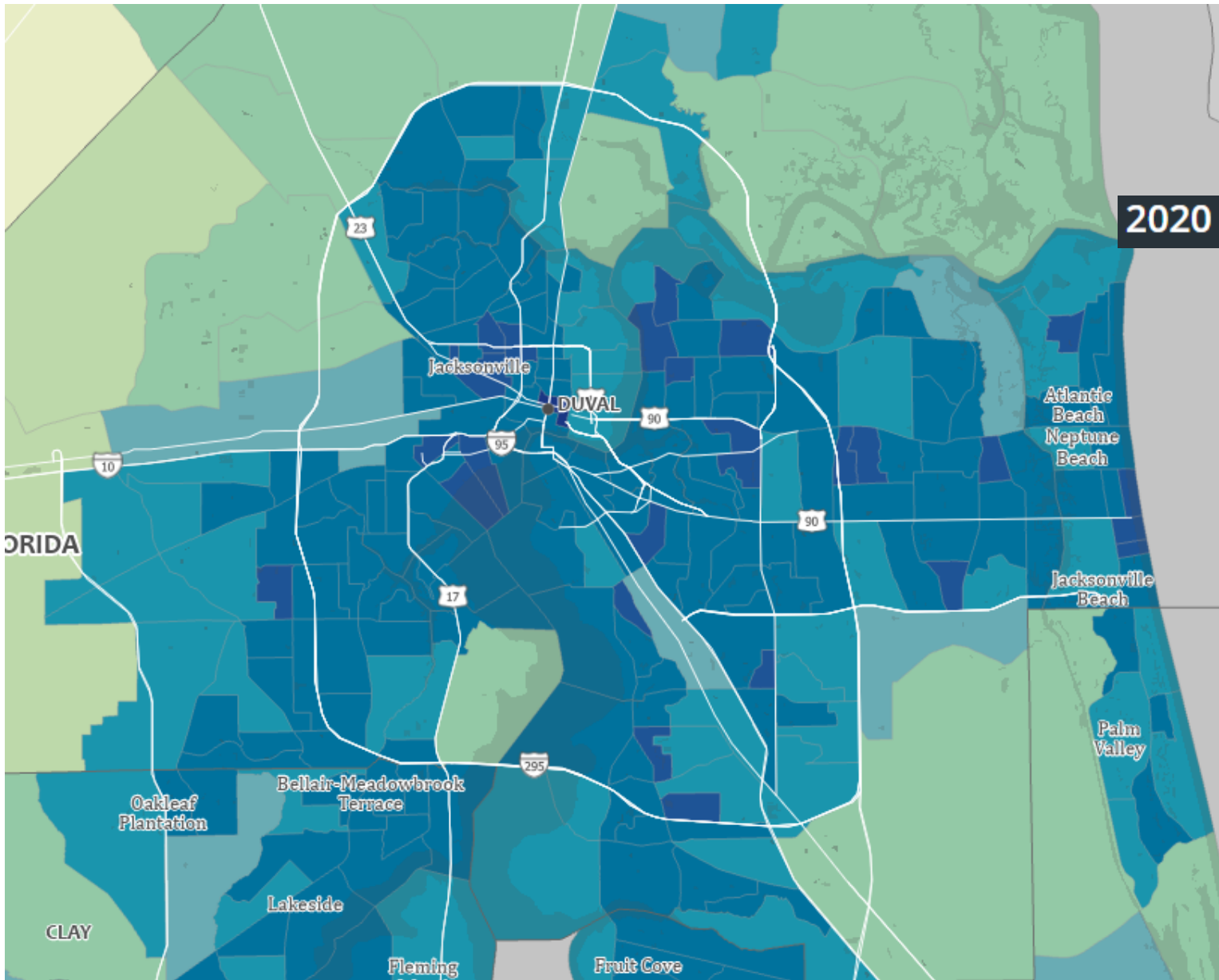


Percentage COJ population change between 2010 and 2020: Source census.gov

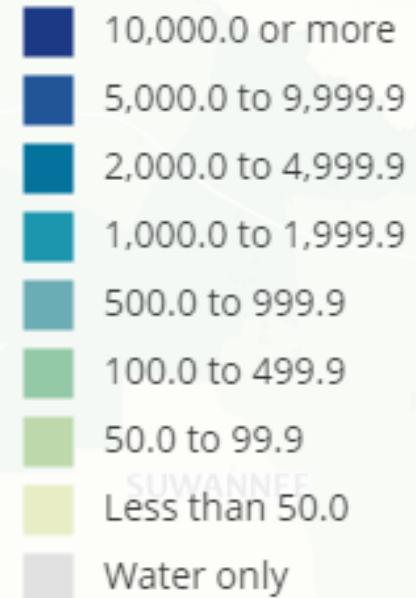


Population Density

2020 Census Demographic Data Map Viewer



Persons per square mile by census tract



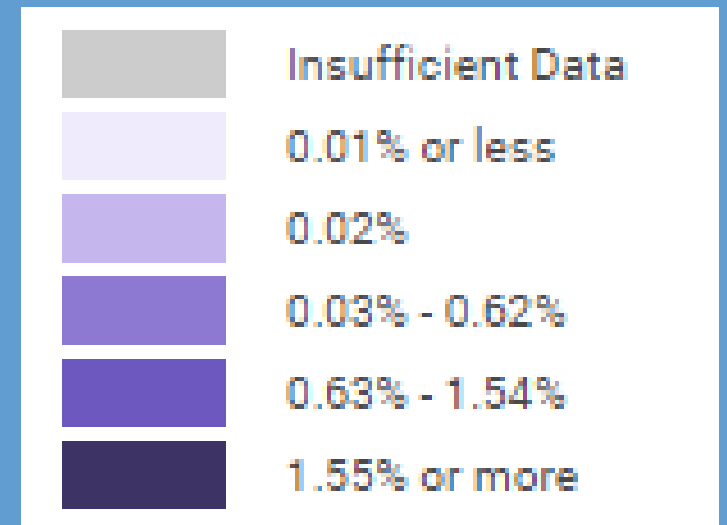
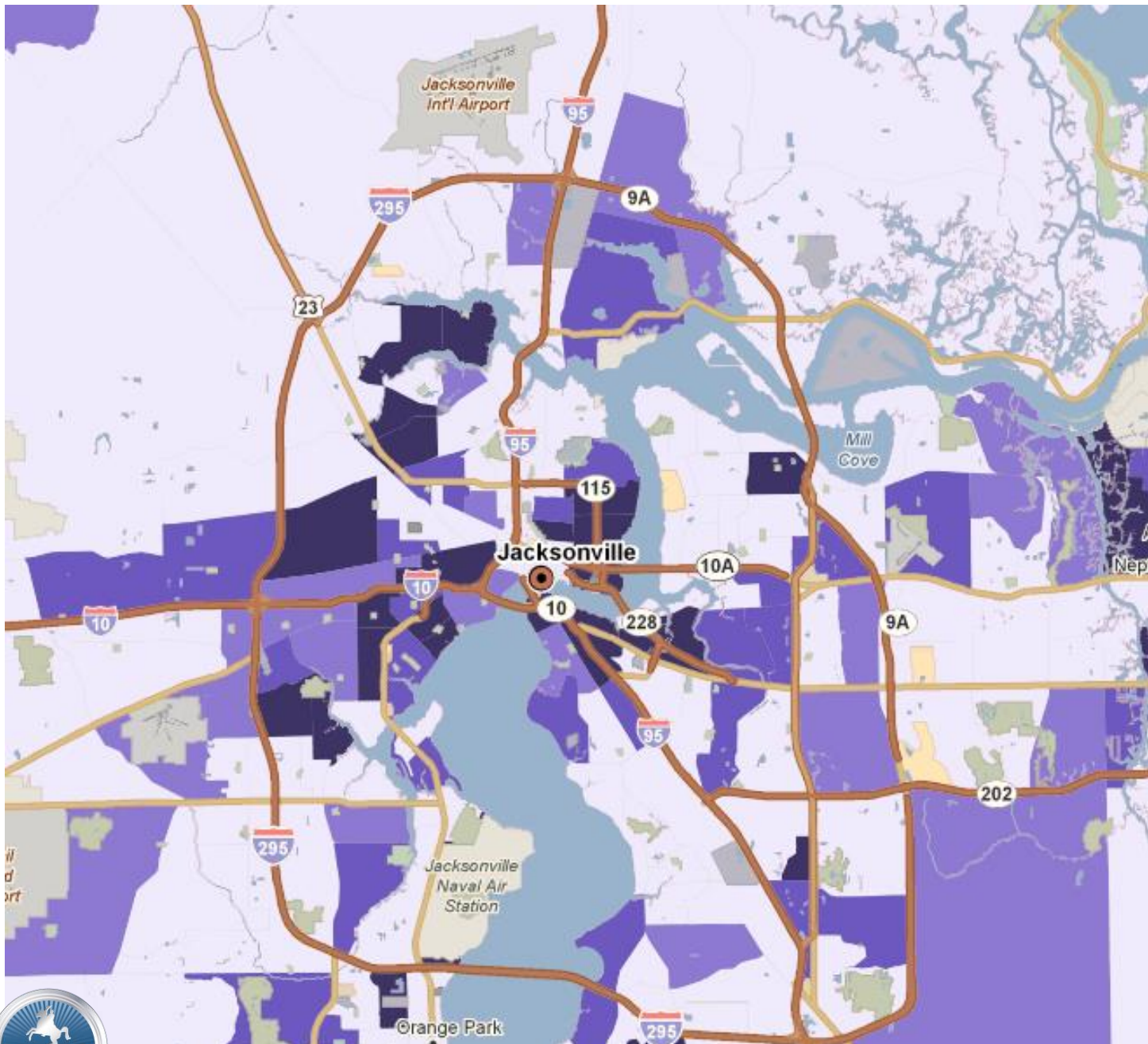
U.S. density = 93.7

United States[®]
**Census
2020**



Bicycle Commuters

Percentage of residents that reported riding a bicycle to work: 2015-2019 American Community Survey (ACS)



Source: policymap.com/maps





Association between active commuting and incident cardiovascular disease, cancer, and mortality: prospective cohort study

Investigated the association between active commuting and incident cardiovascular disease (CVD), cancer, and all cause mortality.

Cycle commuting was associated with a lower risk of CVD, cancer, and all cause mortality.

Insider Article: People Who Bike to Work May Live Longer, According to New Research (Jan 2020)

This study is part of a collection of studies... which show cycling is associated with longer, healthier living.

Despite the health benefits... only 0.6% of Americans bike to work.

...Partially due to the lack of proper bike infrastructure

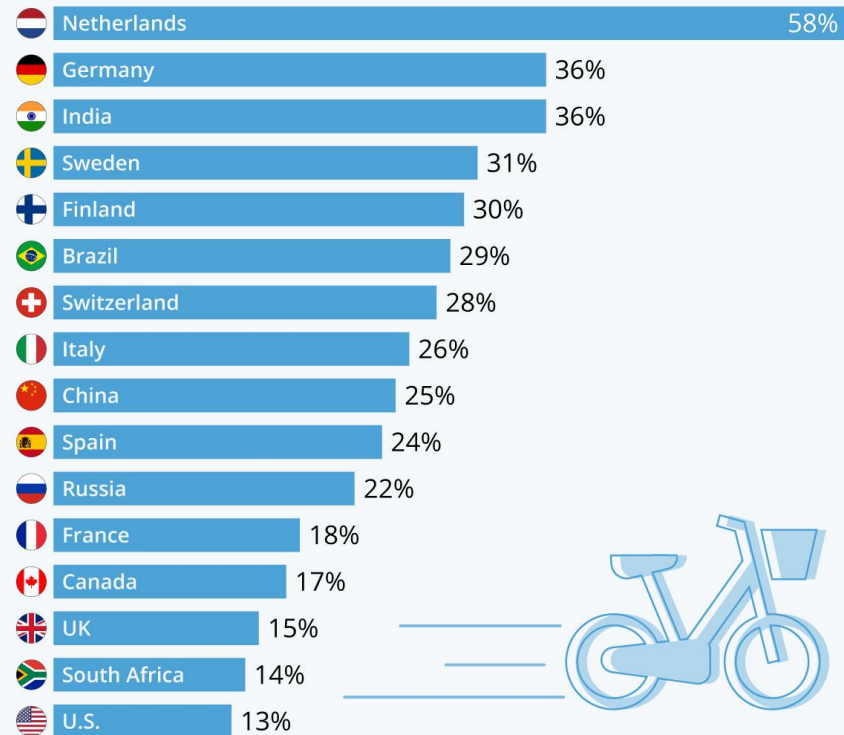


insider.com/people-who-bike-to-work-live-longer-says-study-2020-1



Where Cyclists Are Going Places

Share of respondents in selected countries who used their own bike for transportation twice a week or more



1,000-5,000 respondents per country, 18-64 y/o, surveyed Feb 2020 to Mar 2021. Representative of countries' online population.

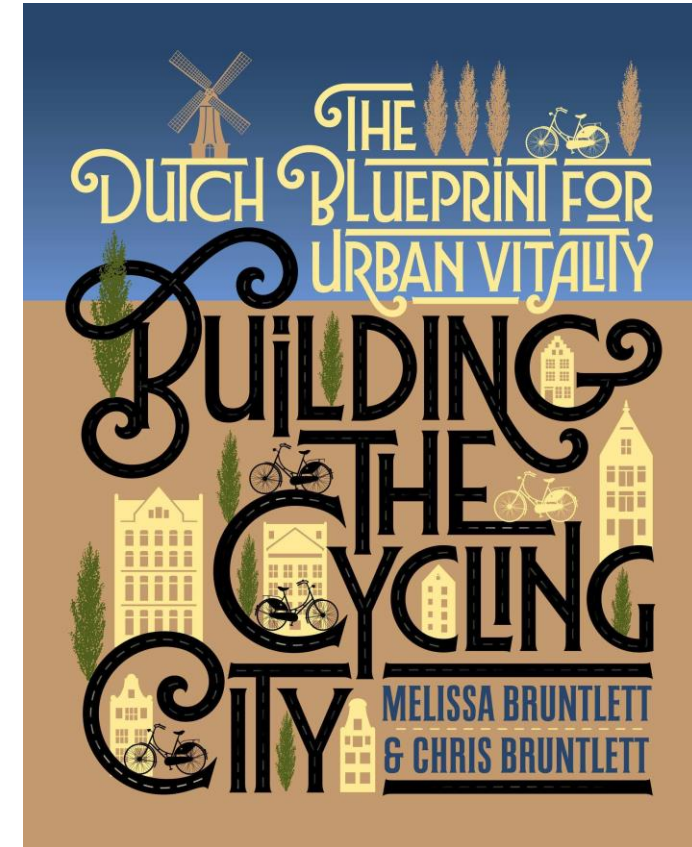
Source: Statista Global Consumer Survey



statista



Book: Building the Cycling City: The Dutch Blueprint for Urban Vitality

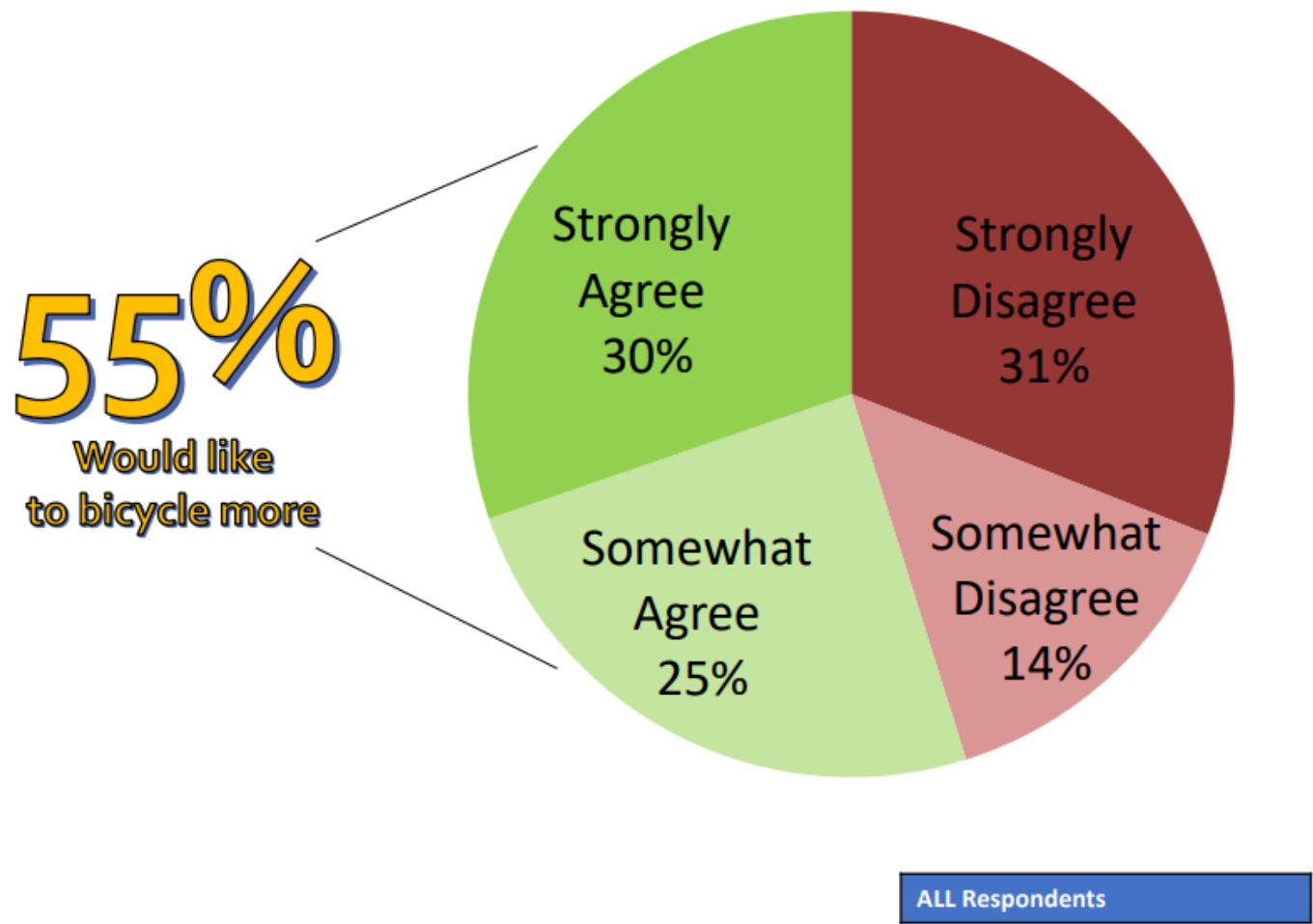


Cycling as a “solution to acute, 21st-century problems, including affordability, obesity, congestion, climate change, inequity, and social isolation.”



Frequency of Bicycling

I would like to travel by bike more than I do now.



2017 statistically valid survey

NCTCOG.ORG/BIKESURVEY



Agreed - "Would make me ride my bike more often"

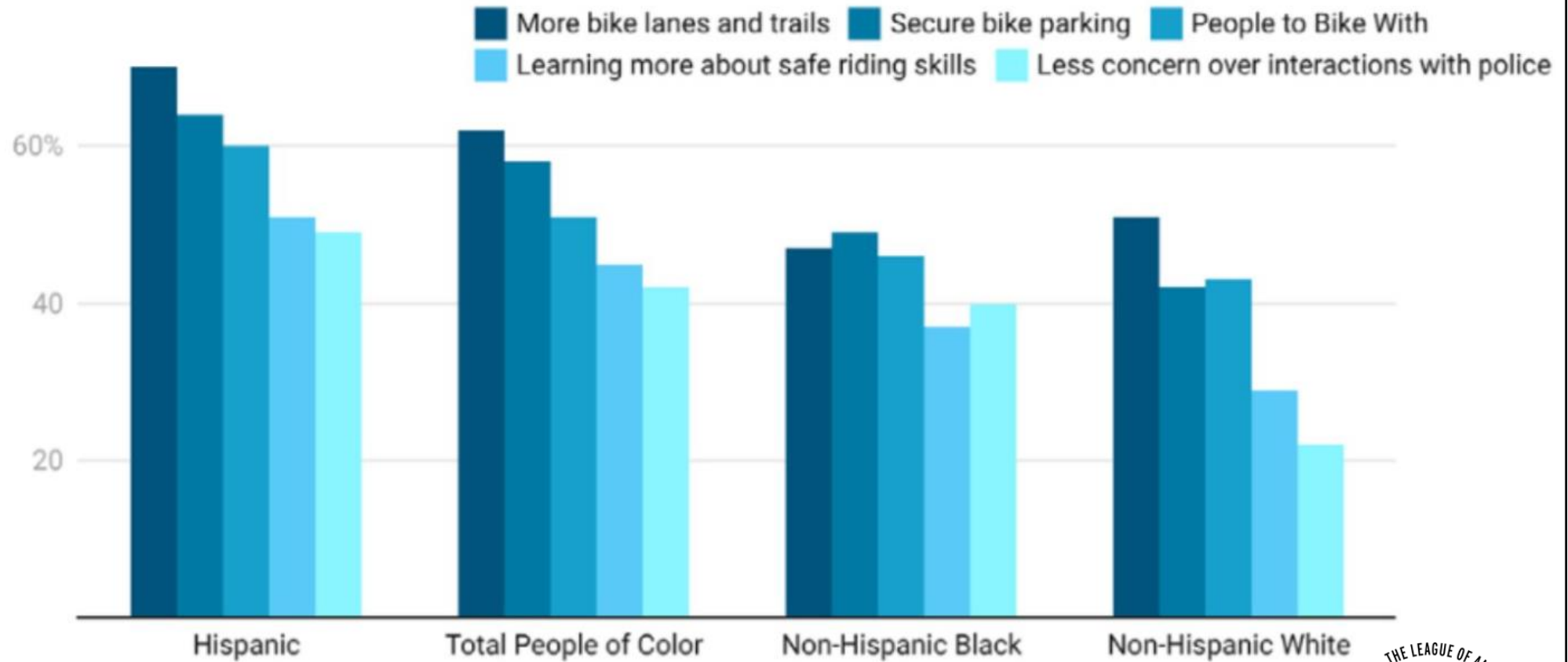
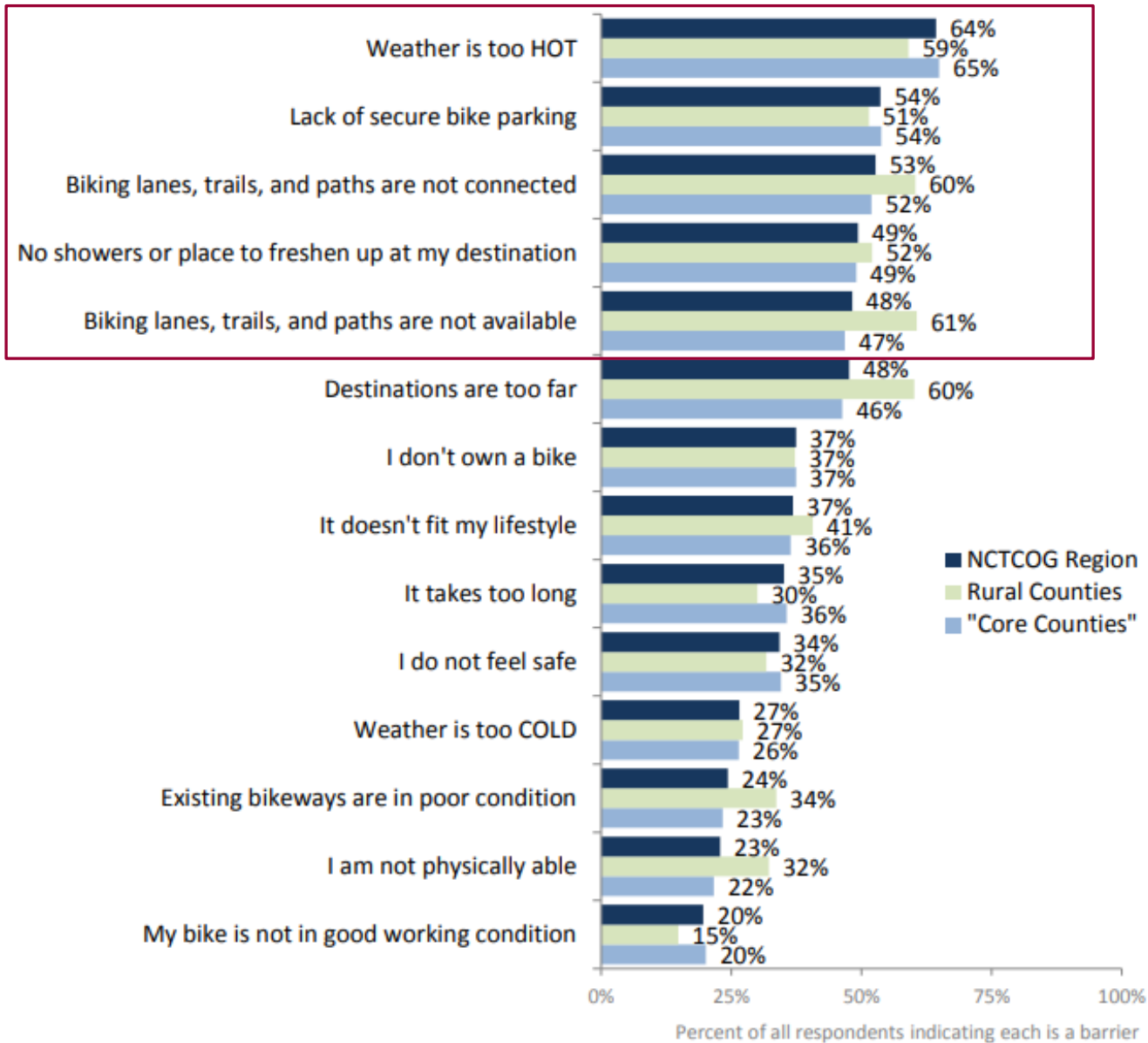


Chart: The League of American Bicyclists Source: The League of American Bicyclists Created with Datawrapper



Figure 16: Bicycling Barriers

Do any of the following prevent you from riding a bike more often than you currently do:



SOURCE:



2017 statistically valid survey


NCTCOG.ORG/BIKESURVEY



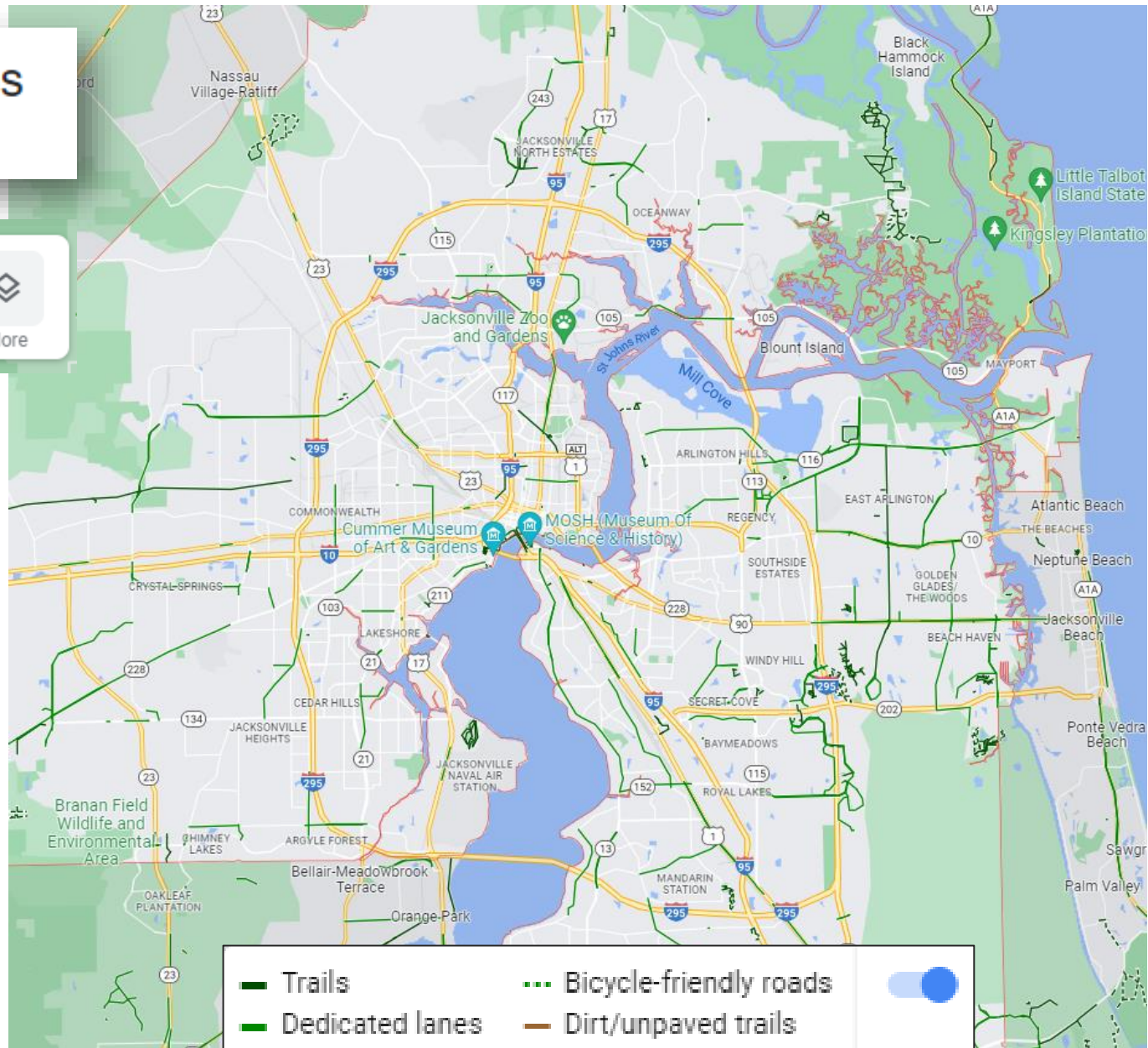


Google Maps

Google Maps Website



Terrain Traffic Transit **Biking** More



 Trails	 Bicycle-friendly roads	
 Dedicated lanes	 Dirt/unpaved trails	



Location of Bicycle/Pedestrian Fatalities and Incapacitating Injuries

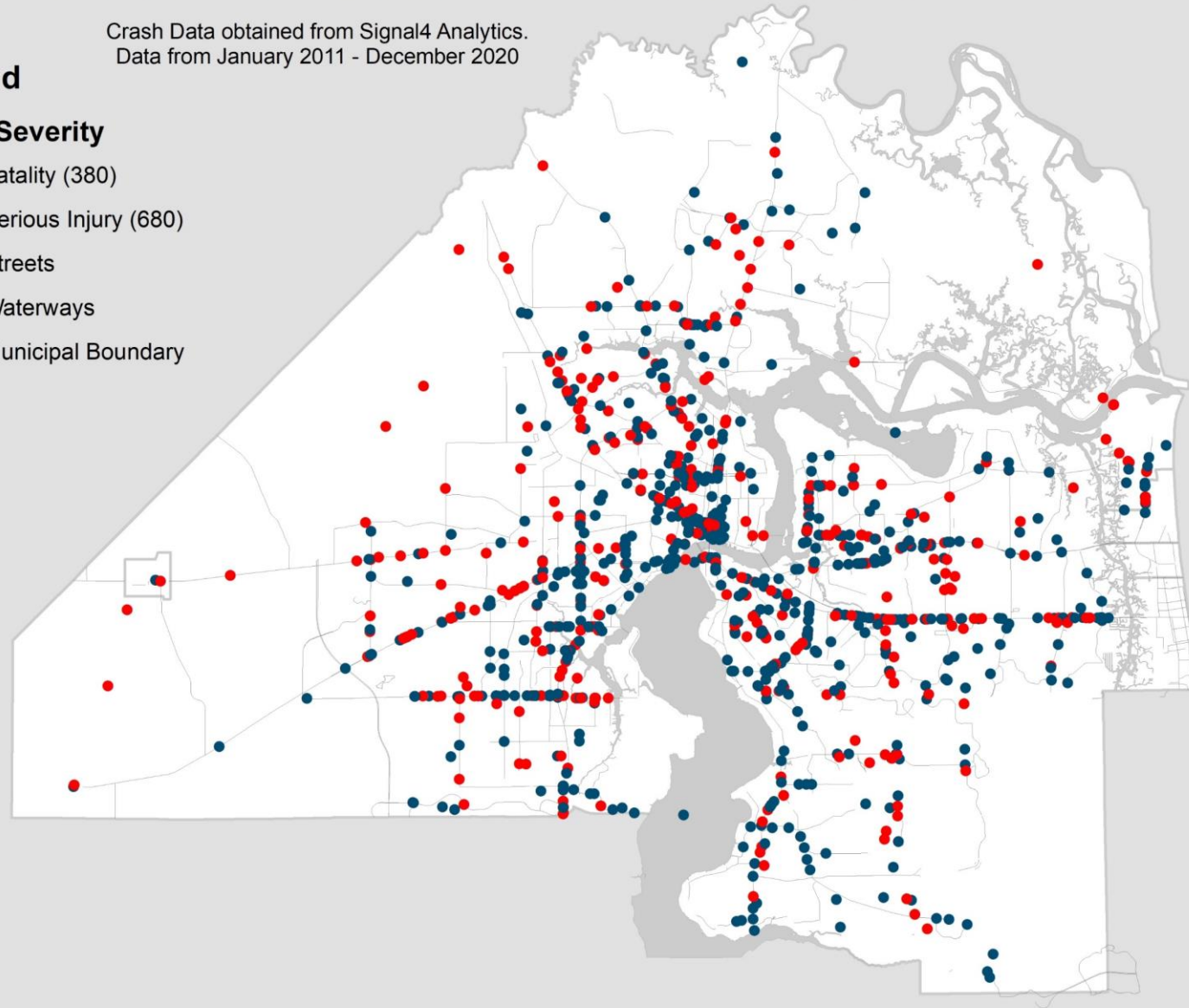
Crash Data obtained from Signal4 Analytics.
Data from January 2011 - December 2020



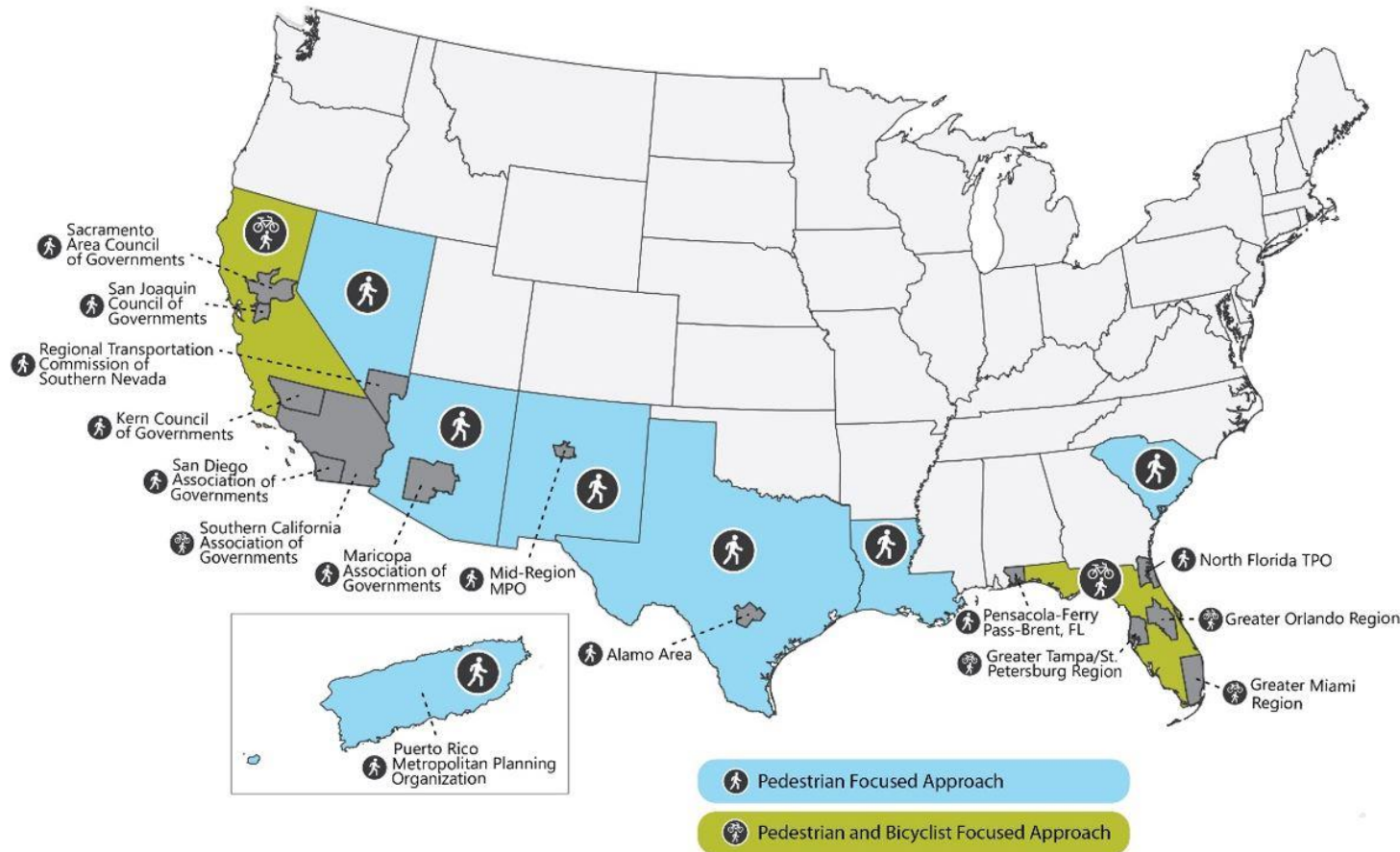
Legend

Crash Severity

- Fatality (380)
- Serious Injury (680)
- Streets
- Waterways
- Municipal Boundary



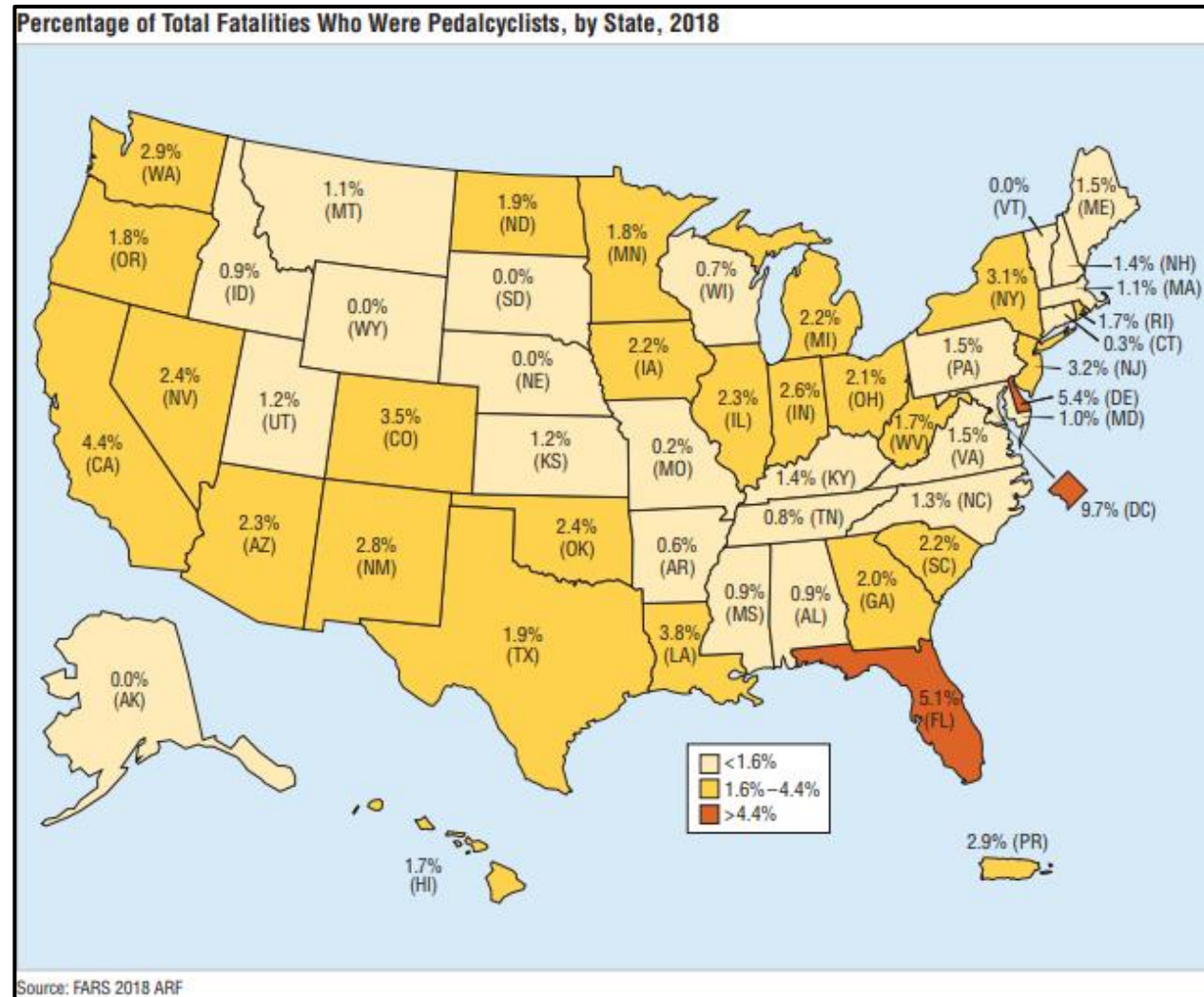
FHWA-Designated Focus States and Focus Cities:



- Designated when bike-ped fatalities are consistently higher than the national average
- Florida (*Focus State*) and Jacksonville (*Focus City*) both designated

Most Recent Data: 2018-2019

National Highway Traffic Safety Administration (NHTSA)



Most Recent Data: 2018-2019

National Highway Traffic Safety Administration (NHTSA)



Traffic Safety Facts
2018 Data

July 2020 (revised) DOT HS 812 884

 **Bicyclists and Other Cyclists**

The cover features a group of five cyclists riding on a paved path. The title 'Traffic Safety Facts' is in large yellow font, and '2018 Data' is in white. A yellow bar at the bottom left contains the date and report number. The NHTSA logo is on the left, and the title 'Bicyclists and Other Cyclists' is in large black font on the right.



Traffic Safety Facts
2019 Data

October 2021 DOT HS 813 197

 **Bicyclists and Other Cyclists**

The cover features a group of five cyclists riding on a paved path. The title 'Traffic Safety Facts' is in large yellow font, and '2019 Data' is in white. A yellow bar at the bottom left contains the date and report number. The NHTSA logo is on the left, and the title 'Bicyclists and Other Cyclists' is in large black font on the right.

In 2018:

- Pedalcyclist fatalities were highest in Florida (161), California (155), and Texas (69). Every other State had 30 or fewer pedalcyclist fatalities.

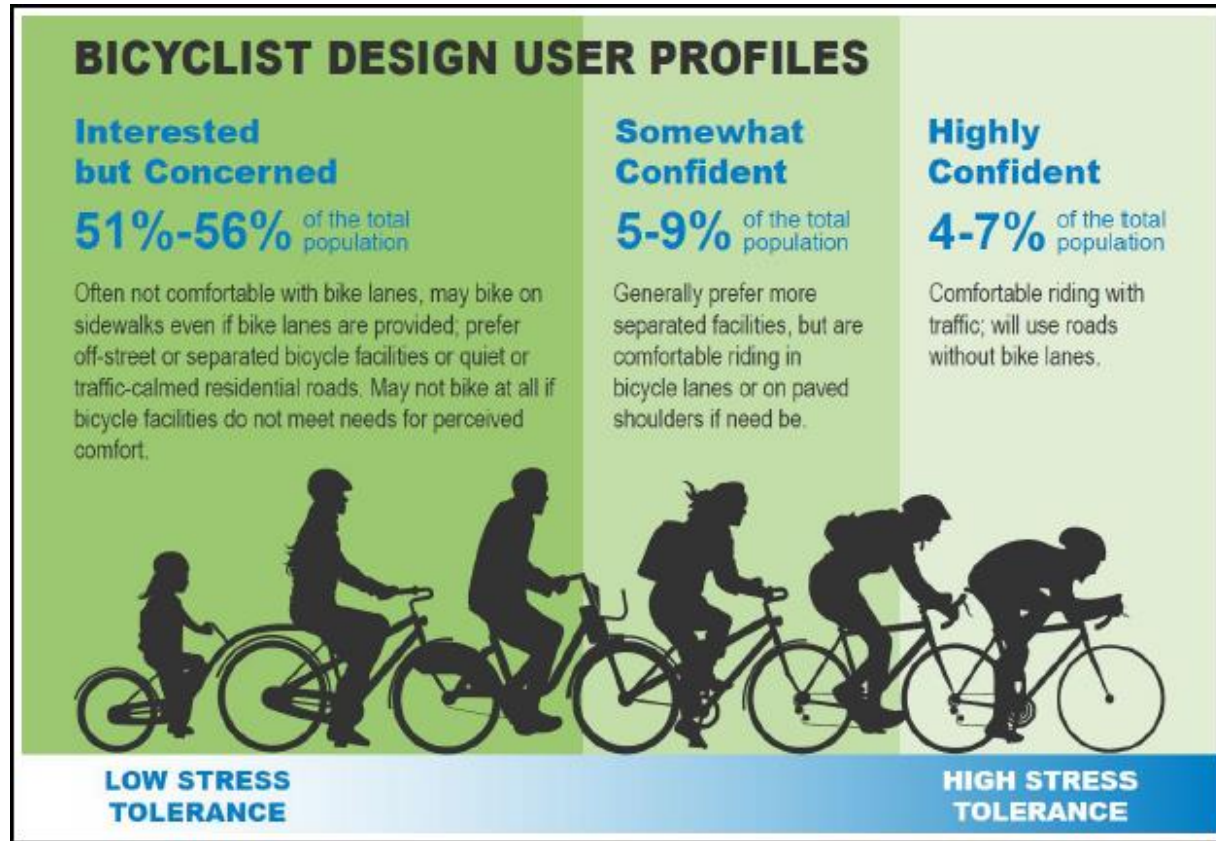
- Among large cities, the city with the highest pedalcyclist fatality rates was Tucson (1.09 pedalcyclist fatalities per 100,000 people), followed by Jacksonville (0.99 pedalcyclist fatalities per 100,000 people).



COJ's Top Bike-Ped Goal

Develop a connected and safe pedestrian and bicycle network, comfortable for users of

ALL AGES AND ABILITIES



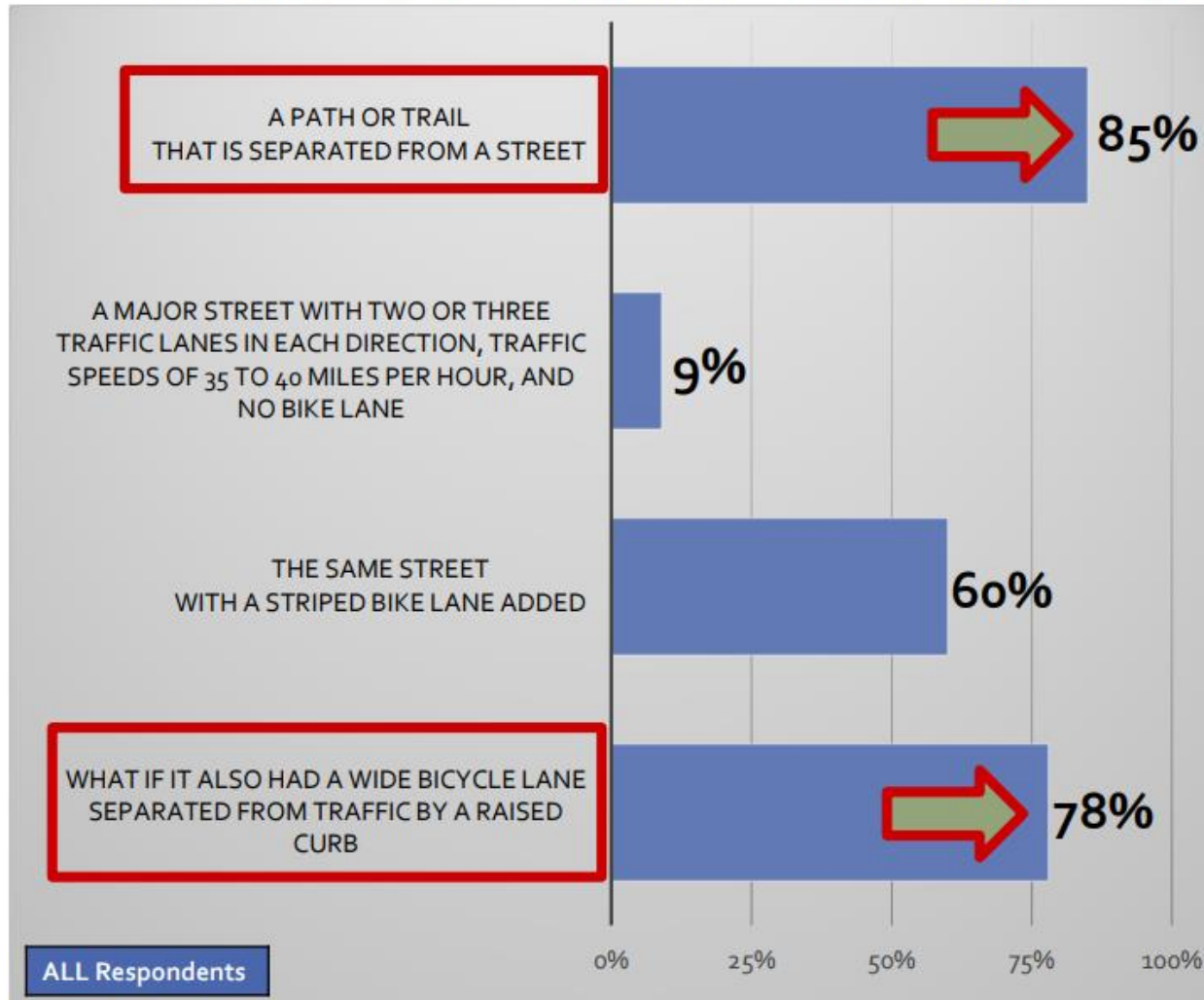
SOURCE: FHWA BIKEWAY SELECTION GUIDE



Level of Comfort

How comfortable are you riding a bike on the following?

Percent of ALL respondents reporting they would feel "VERY COMFORTABLE" or "SOMEWHAT COMFORTABLE"



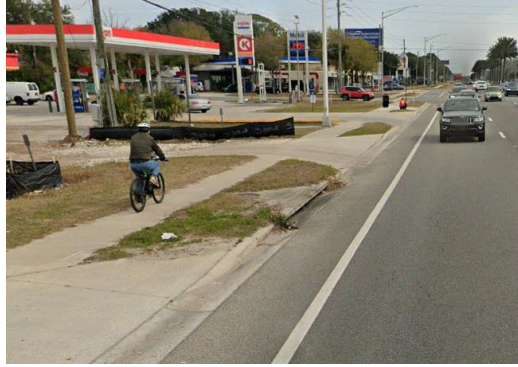
SOURCE:



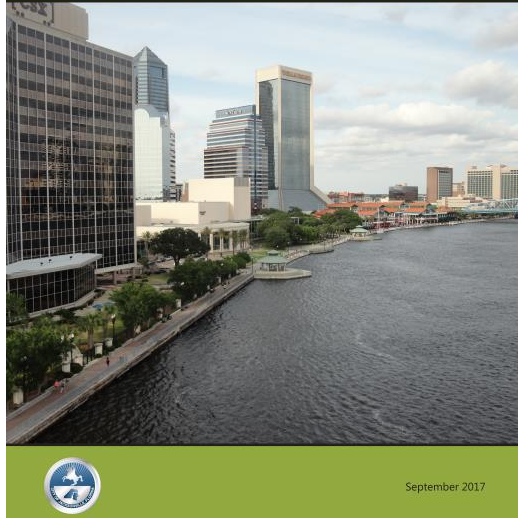
2017 statistically valid survey

[NCTCOG.ORG/BIKESURVEY](https://www.nctcog.org/bikesurvey)





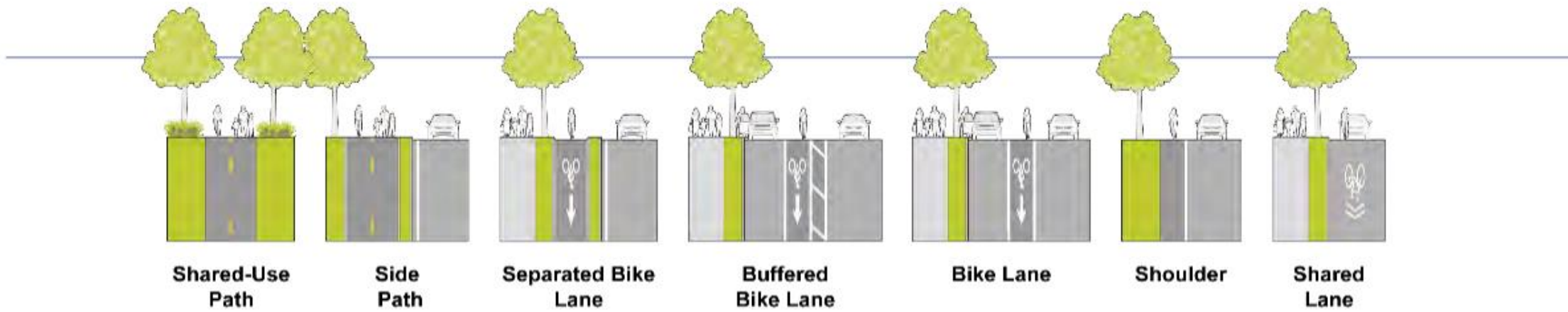
CITY OF JACKSONVILLE, FLORIDA
Pedestrian and Bicycle Master Plan



“A significant number of bicyclists were observed using the sidewalk rather than the roadway. Of the total 250 bicyclists observed during the counts, almost 150 were riding on the sidewalk.”

-COJ Pedestrian and Bicycle Master Plan (2017) pg. 20





+ SEPARATION FROM TRAFFIC **-**



51-56%



5-9%

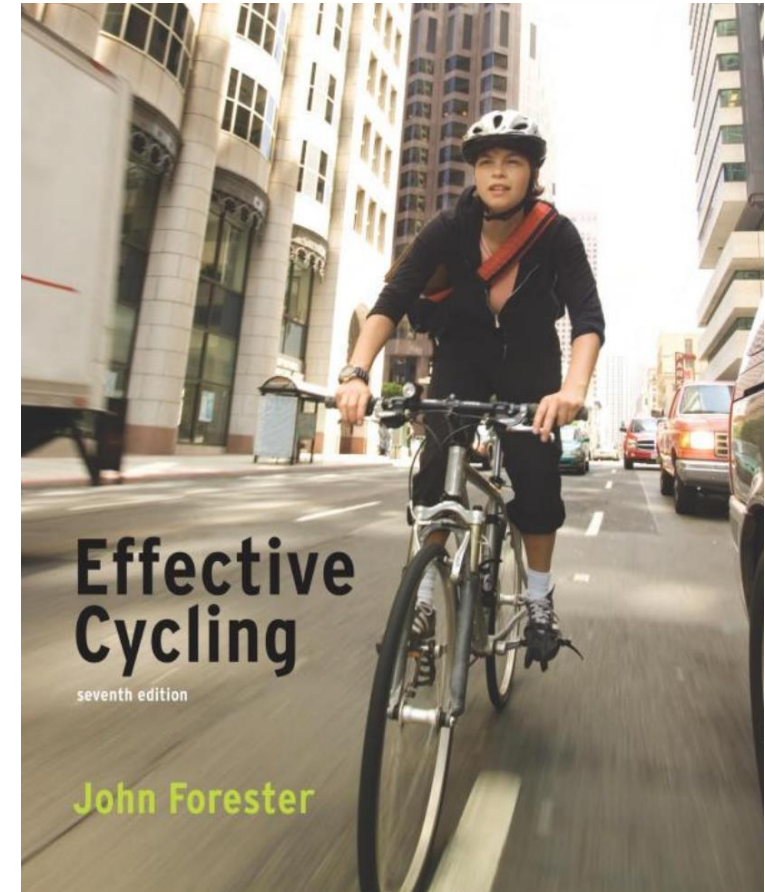


4-7%



John Forester

“...the California government decided to "make cycling safe" by establishing a system of laws and facilities that would **impose the childish cyclist-inferiority system of operation upon all cyclists.**”



▶ Vehicular cycling...is faster and more enjoyable, so that the plain joy of cycling overrides the annoyance of even heavy traffic.

- John Forester

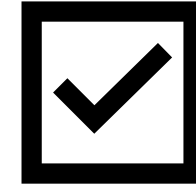




SOURCE: FHWA BIKEWAY SELECTION GUIDE



Bike lane on St Johns and Beach Blvd



Checking a Box

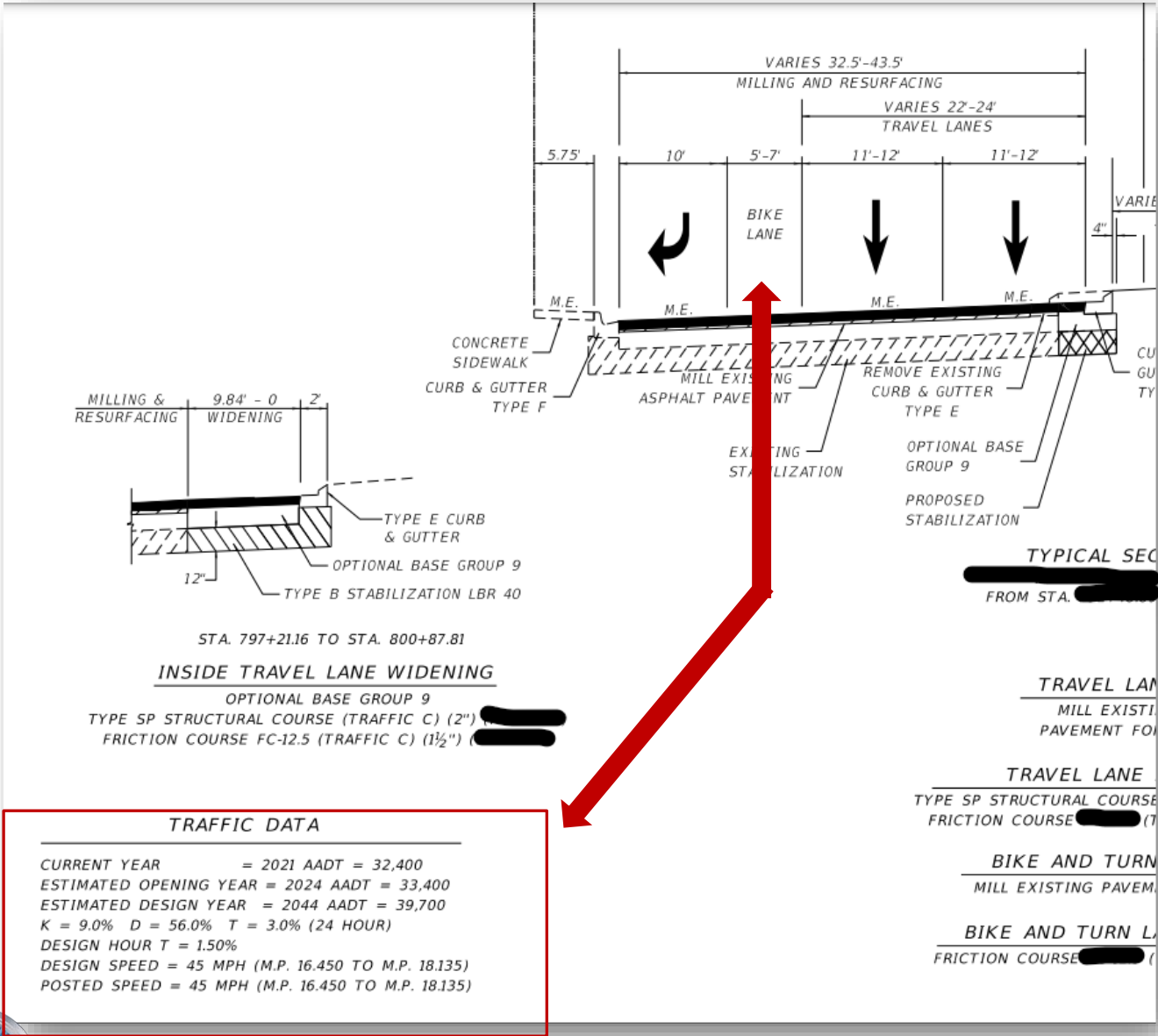


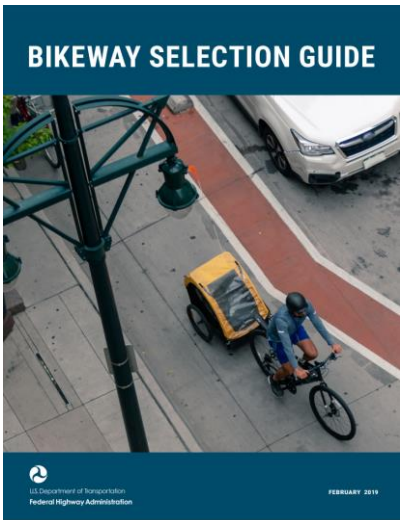
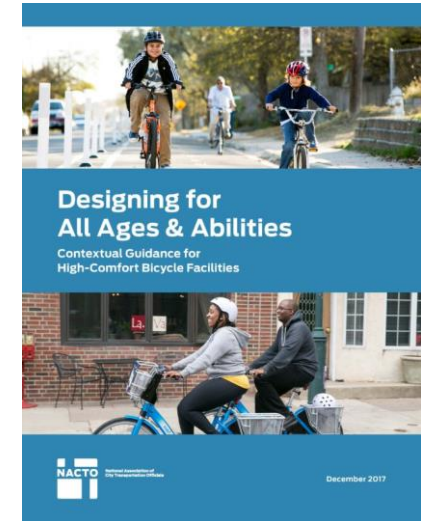
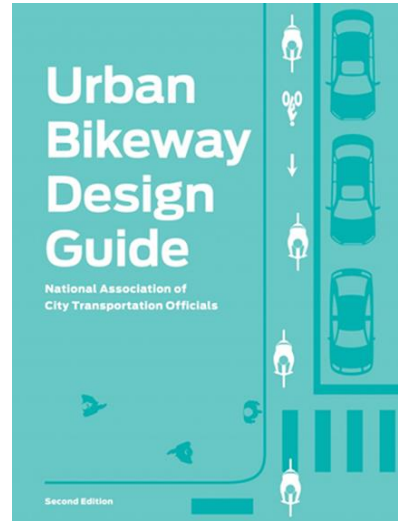
Look familiar?
Hint: previous slide



COMMON DESIGNS:

DESIGN USER IS
 "HIGHLY CONFIDENT"
 4-7% (AT BEST)







Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways

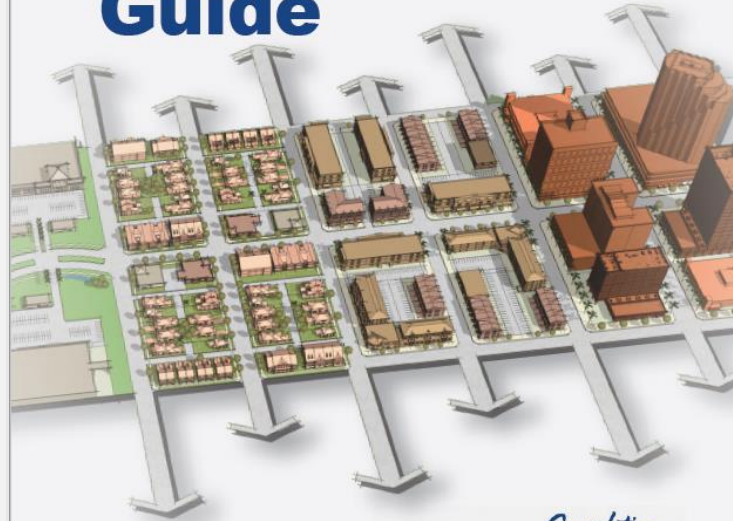
(Commonly known as the Florida Greenbook)

<https://www.fdot.gov/roadway>

FDOT Office
Office of Design
Topic # 625-000-015

Date of Publication
2018 Edition

FDOT Context Classification Guide



July 2020



Complete Streets Handbook

The Florida Department of Transportation
4/25/17 EXTERNAL DRAFT



Context Sensitive Streets Standards Committee (CSSSC)

Background:

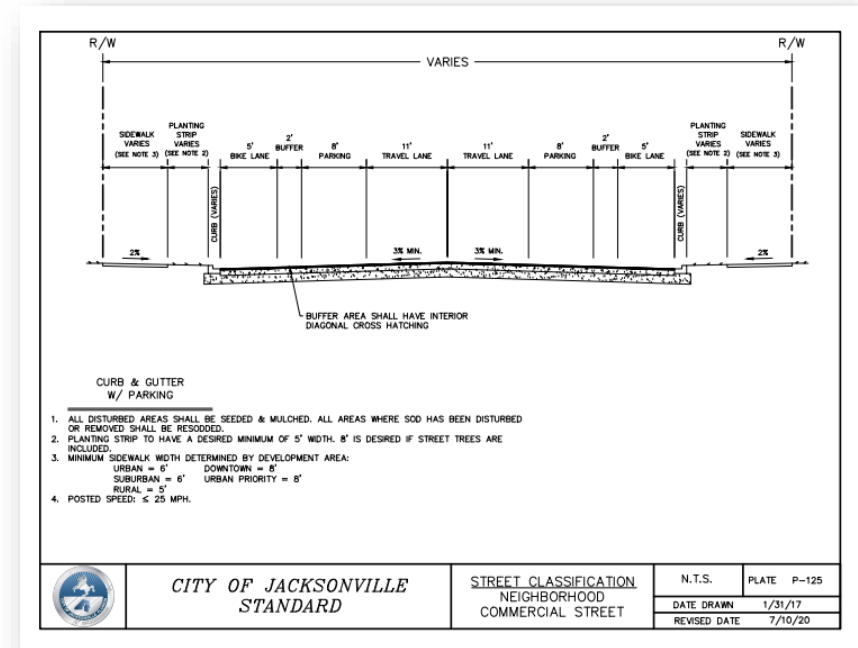
13-Member committee established by Ordinance 2013-185-E

Purpose:

Created to review and revise City standard specifications, City standard details and the Land Development Procedures Manual (LDPM) and recommend amendments to the Ordinance Code and 2030 Comprehensive Plan relating to transportation, traffic engineering and roadway design, including but not limited to parking, sidewalks, bicycle and pedestrian use and transit, and advise the appropriate Council committee of its decisions.

Deliverables:

Typical cross sections now included in the LDPM.



Lucas Cruse, AICP

- Engineer & Planner
- Researcher & Educator
- Father & Advocate



BEFORE

AFTER



Travel Time Impacts based on 2018 Traffic Study (Anticipated At Peak)

	Anticipated Travel Time (minutes) from 2018 Traffic Model	
	Prior Lane Configuration	New Configuration
Motorists (NB AM)	4.6	4.8
Motorists (NB PM)	4.9	5.1
Motorists (SB AM)	4.9	5.4
Motorists (SB PM)	5.2	6.6
Bicyclists (All)	18	9 - 11



For motorists, instead of taking a little over 5 minutes to travel the corridor at the very busiest time of the day, it was anticipated to take 6½ minutes.





Motor Vehicle Volumes Within Southbound Lane Removal (Typical Weekday)

November 2017 (pre)	November 2018 (post)	November 2019 (post)
18,661	19,067	19,077

Motor Vehicle Speeds – Southbound direction

Pre-conversion	Post-conversion
41 mph – 24hr average	35 mph – 24hr average
44 mph – 10pm-11pm	38 mph – 10pm-11pm

Year (1st Qtr)	Employment	Total Wages	Absolute Wage Growth	% Change in Wages	Average Wage Annualized
2018	707	8,044,979			45,516
2019	723	9,233,243	1,188,265	15%	51,083



Active Transportation Return on Investment

Rails-to-Trails Conservatory

- Active transportation infrastructure has **4x** the annual economic return of investment
- Case study: Lincoln, Nebraska, one dollar invested in trails is linked to **\$2.94** in reduced medical costs

NYCDOT “Bronx Hub” Case Study

- New York DOT implementation of separated bike lanes and pedestrian infrastructure saw a **50%** increase in sales by the third year after implementation

Source: NYCDOT: The Economic Benefits of Sustainable Streets



Source: Green Lane Project



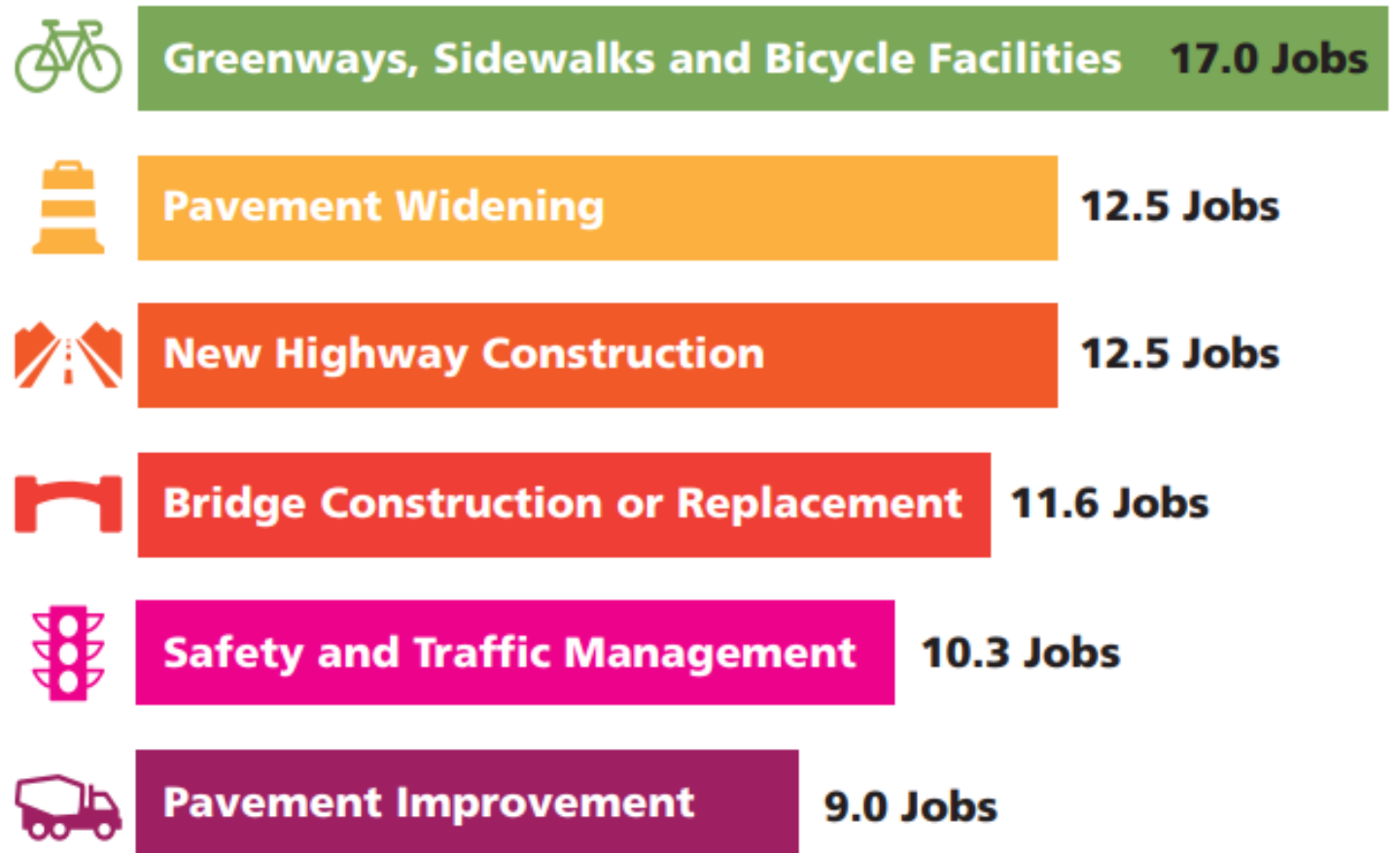
Active Transportation Return on Investment

- “Active transportation projects are cheaper to build and offer a higher job creation ratio than other transportation projects.”

Source: Rails-to-Trails Conservancy 2019

- A 2012 study commissioned AASHTO Officials found that active transportation projects created 17 jobs (design, engineering and construction) per \$1 million spent, **more than any other type of project.**

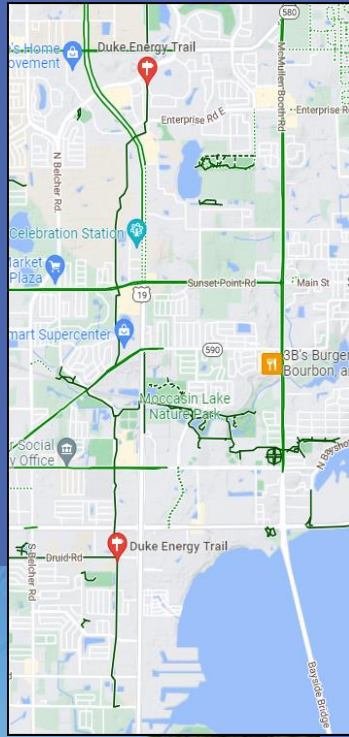
Transportation Investments Jobs Created Per Million Dollars Spent



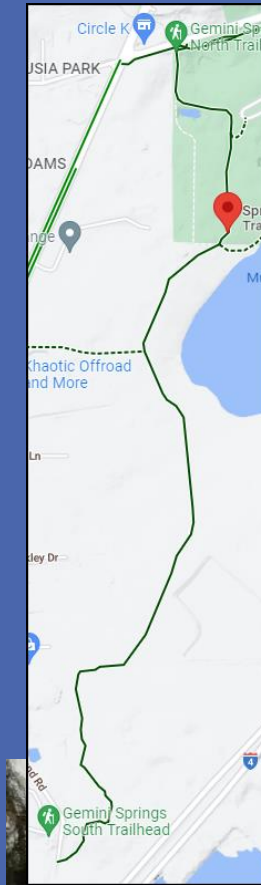
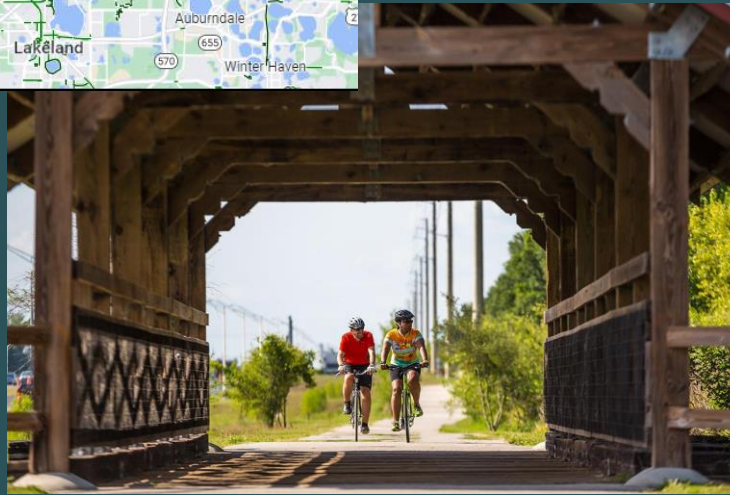
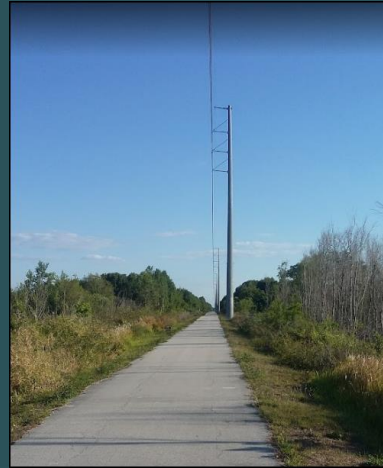
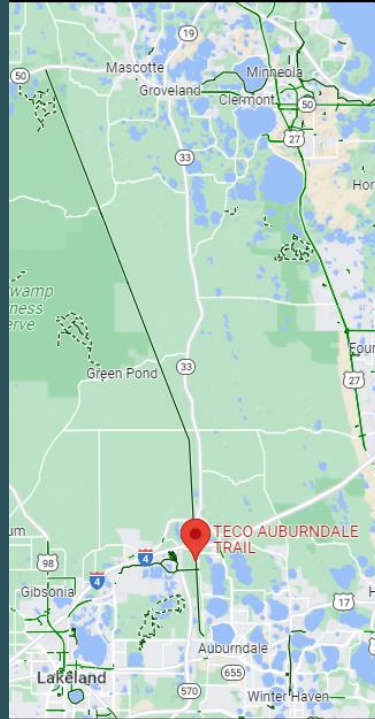
Source: AASHTO Average Direct Jobs by Project Type (2012)



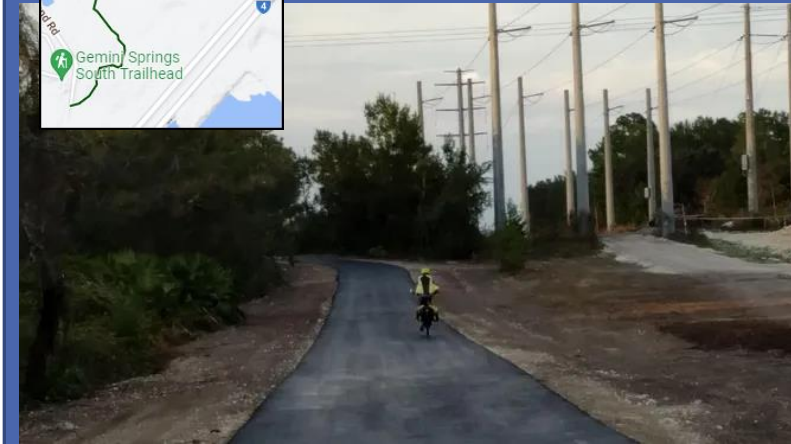
**PINELLAS COUNTY, FLORIDA:
DUKE ENERGY TRAIL: 4.1 MILES**



**AUBURNDALE, FLORIDA: TECO
GAS AUBURNDALE TRAIL:
6.6 MI**



**VOLUSIA COUNTY,
FLORIDA:
SPRING-TO-SPRING
TRAIL: VARIES**



Location of Bicycle/Pedestrian Fatalities and Incapacitating Injuries

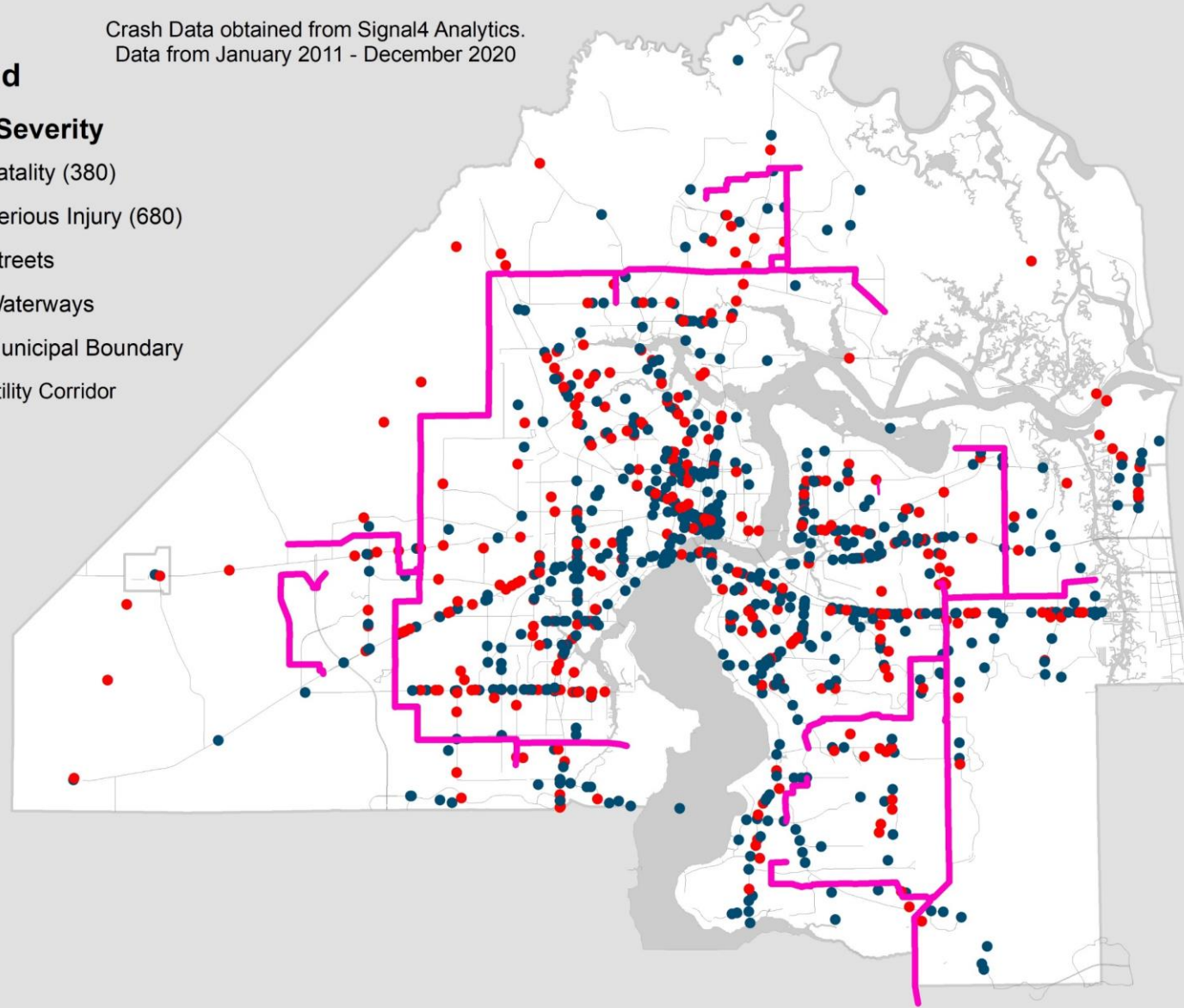
Crash Data obtained from Signal4 Analytics.
Data from January 2011 - December 2020



Legend

Crash Severity

- Fatality (380)
- Serious Injury (680)
- Streets
- Waterways
- Municipal Boundary
- Utility Corridor



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On the Ground

As the On-Street Bikeway & Trails Network Grows, “Friends-of-Trail” groups & committees like the Bicycle Pedestrian Advisory Committee (BPAC) continue to be critical advocates for bike-ped programs and projects



facebook.com/bpacfriends/

Friends of BPAC



“Friends Of” Trail Groups

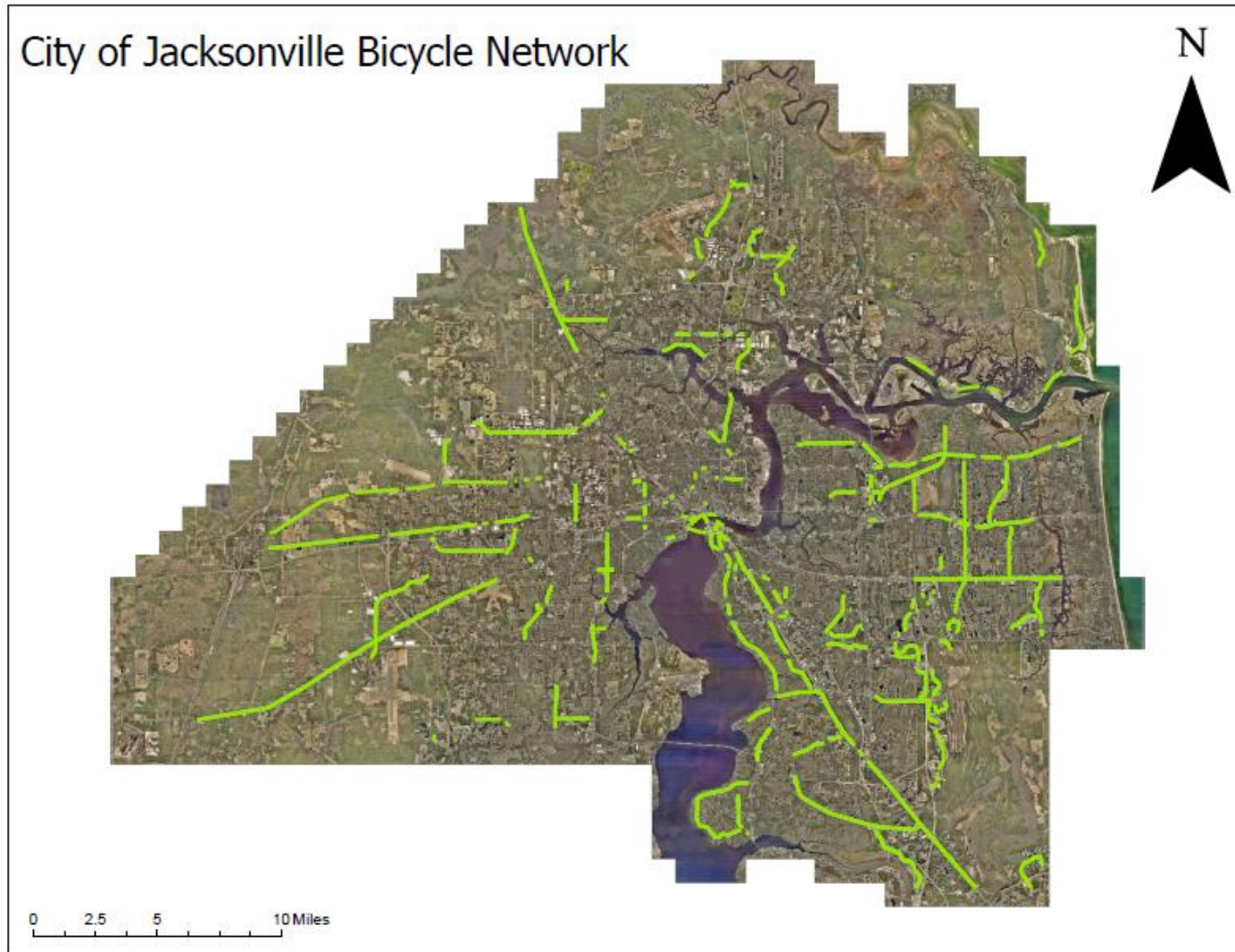
- Key to community involvement
- Trail amenities, trail events, wayfinding signage, branding, etc.
- Conduit between elected officials, city staff, and residents



- [youtube.com/watch?v=sdJlyqcyFSE](https://www.youtube.com/watch?v=sdJlyqcyFSE)
- [facebook.com/watch/?v=10153836414658704](https://www.facebook.com/watch/?v=10153836414658704)
- [youtube.com/watch?v=-kAy2hIOy24](https://www.youtube.com/watch?v=-kAy2hIOy24)
- [youtube.com/watch?v=T7JqUgW8x-U](https://www.youtube.com/watch?v=T7JqUgW8x-U)



Bikeways and Trails Network Inventory: Overview



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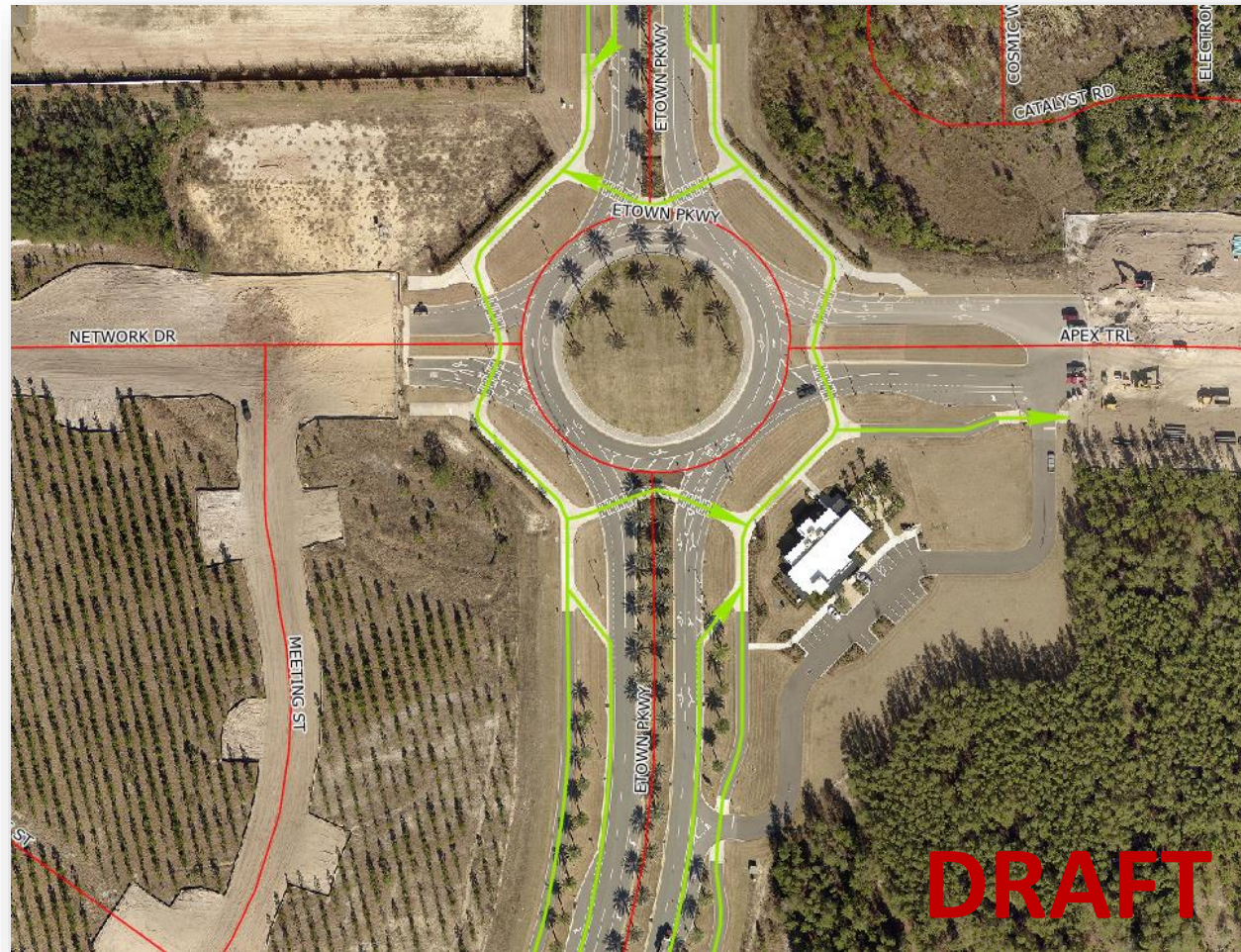
Bikeways and Trails Network Inventory: Attributes

FACILITY_TYPE	STREET_NAME	FROM	TO	LENGTH_LF	STATUS	OWNERSHIP	MAINTENANCE	TYPE_OF_SEPARATION	SIDE_OF_ST	DIRECTION	GREEN PAINT	SHARROWS	FUNCTIONAL_CLASS
SHARED LANES					PLANNED	COJ	COJ	FLEXPOSTS	NORTH	1-WAY ONE SIDE	YES	YES	LOCAL
BIKE LANE (UNBUFFERED)					FUNDED	STATE	STATE	CURB	SOUTH	1-WAY BOTH SIDES	NO	NO	COLLECTOR
BUFFERED BIKE LANE					EXISTING	OTHER	OTHER	PLANTERS	WEST	2-WAY ONE SIDE	N/A	N/A	MINOR ARTERIAL
PROTECTED BIKE LANE								PARKING	EAST	2-WAY BOTH SIDES	UNKNOWN	UNKNOWN	MAJOR ARTERIAL
SHARED OR MULTI-USE PATH								BOLLARDS	BOTH				N/A
RECREATIONAL PATH								RAISED BUMPS					
								OTHER					

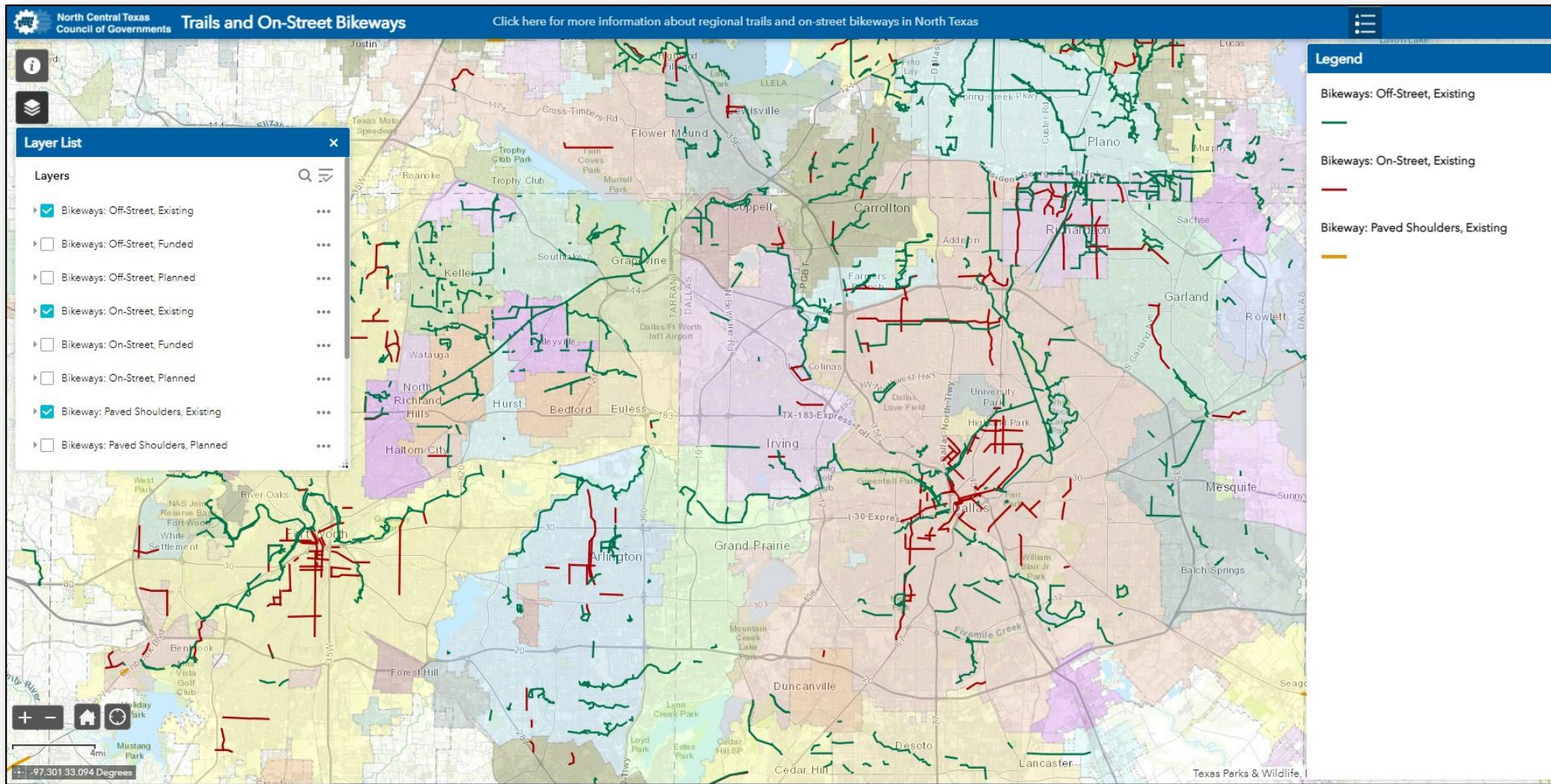
DRAFT



Bikeways and Trails Network Inventory: Accurate Alignments



Bikeways and Trails Network Inventory: Interactive Map



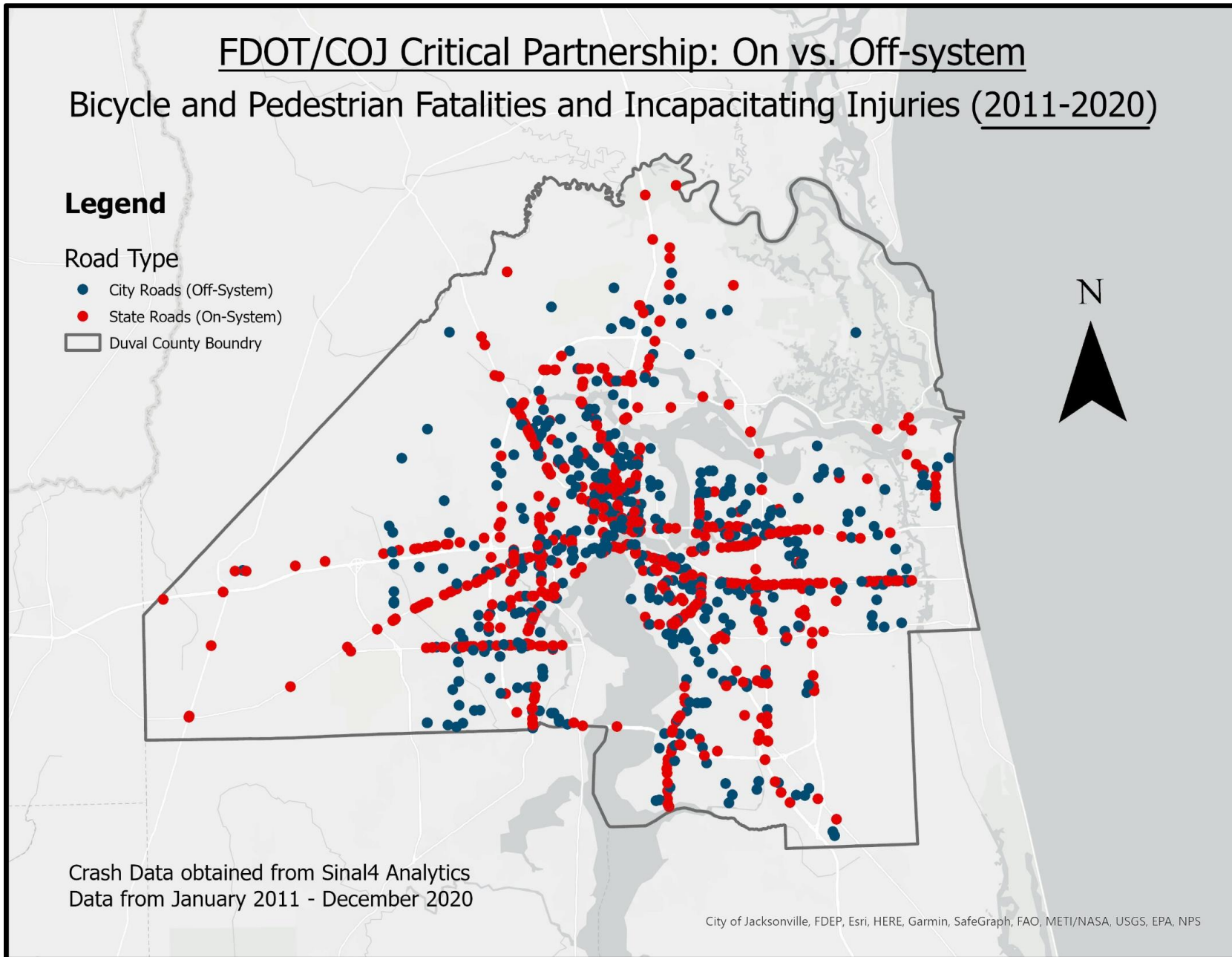
FDOT/COJ Critical Partnership: On vs. Off-system

Bicycle and Pedestrian Fatalities and Incapacitating Injuries (2011-2020)

Legend

Road Type

- City Roads (Off-System)
- State Roads (On-System)
- Duval County Boundry



Crash Data obtained from Sinal4 Analytics
Data from January 2011 - December 2020

City of Jacksonville, FDEP, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS





CONTACT:

Matt Fall
Bicycle-Pedestrian Coordinator
MFall@coj.net

