

STRIDE

Southeastern Transportation Research,
Innovation, Development and Education Center

T + H

Transportation + Health

Green Modes of Travel *- Part 2*

**THE
CITADEL**



CIVL 642 Public Health, Physical Activity, and Design of the Built Environment



Green modes of travel – part 2

1. MaaS – Mobility as A Service
2. Rideshare, Carshare pros/cons
3. Bike Share programs
4. Safe Routes to School (SRTS)
5. Walking school buses



What is MaaS? – Mobility as a Service modes include: public transit, ride-, car- or bike-sharing, taxi or car rental/lease, or combinations (usually as alt. to travel by private vehicle)

- i.) operators facilitates diverse menu of transport options
- ii.) focuses on serving unmet demand,
- iii.) generally involve new business models,
- iv.) generally describes shift away from personally owned modes of travel,
- v.) usually more convenient,
- vi.) usually more sustainable,
- vii.) meet user mobility needs & solve inconvenient parts of individual journeys,
- viii.) helps reduce congestion & constraints in network capacity.

Critical questions for MaaS?

1. Will MaaS travel modes provide measurable transportation congestion mitigation?
2. How will new mobility options impact usage of the existing transport system?
3. How does MaaS address needs of disadvantaged groups and lower-density, rural areas?
4. What are the impacts of new mobility options on the transportation workforce?
5. How do new mobility options interact with city logistics needs?
6. What are best practices for seamless trips from origin to destination across providers?
7. How can transport practitioners be better prepared to analyze & manage MaaS options?
8. How should transportation infrastructure & roadway networks be modified to accommodate MaaS travel modes?

MaaS: What are benefits of Uber & Lyft? –

1. Disruptive technologies: Often means taking money being made by an established industry & re-directing it elsewhere (ie. Airbnb)
2. Uber & Lyft have captured 70.5% of U.S. business traveler market, 2018 study by Certify
3. Savings to consumer for comparable trips: 50% in most markets
4. Better use of technology, integration with smart phone apps
5. Cashless fare collection, more convenient than taxis, better suited to demand surges
6. More customer-oriented, better personal service & additional convenience
7. Drivers & customers are able to rate one another: best model of supply & demand
8. Vehicle used for commerce and personal
9. 2016 Cato Inst, study for 150 cities w/ Uber: DUI arrests & traffic fatalities were lowered

MaaS: What are benefits of Carshare? –

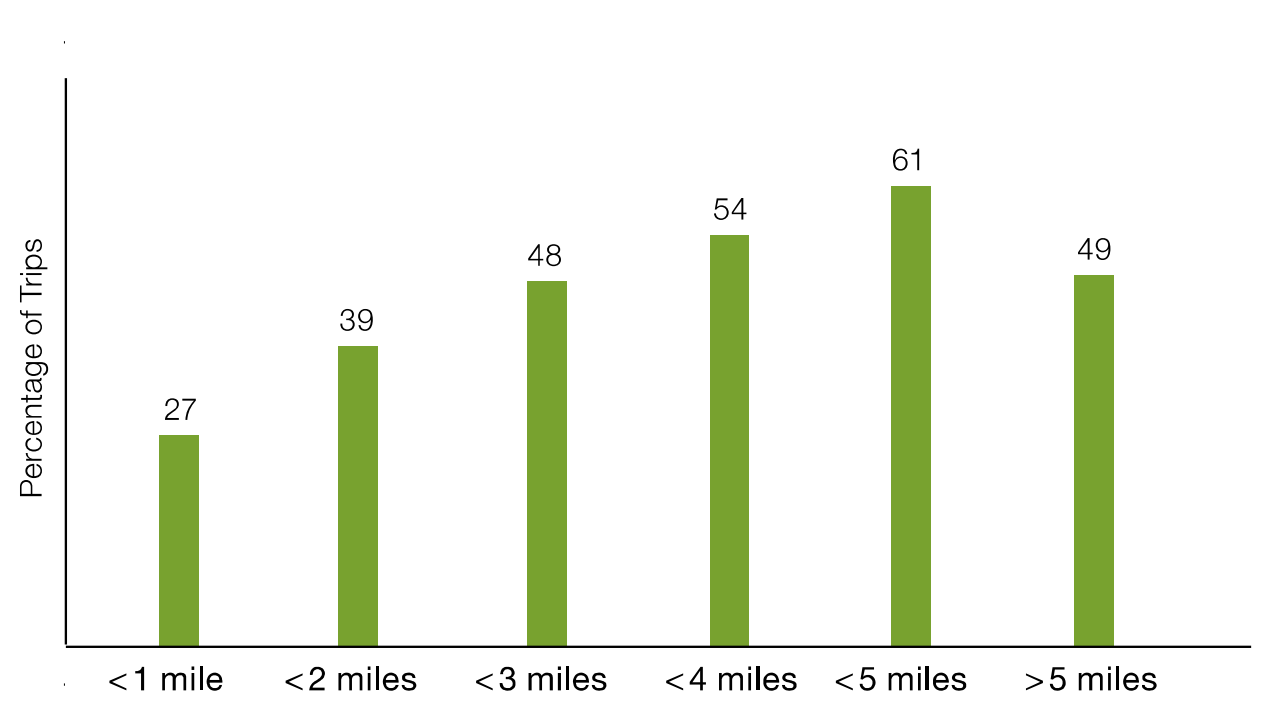
1. Evolving travel mode: Zipcar, Flexcar, City Car Club, City CarShare, etc
2. Expected to grow to \$6.2b in US & 12m members worldwide by 2020
3. Reduced fuel costs & Parking fees (demand)
4. increased personal security - company when you walk to and from the car park
5. better air quality and lower carbon emissions due to reduced traffic fumes
6. less congestion and shorter journeys due to fewer cars being on the road
7. fewer cars means less competition/need for parking spaces
8. Better use of technology, integration with smart phone apps
9. Cashless fare collection, more convenient than taxis,
10. Vehicle used for commerce and personal

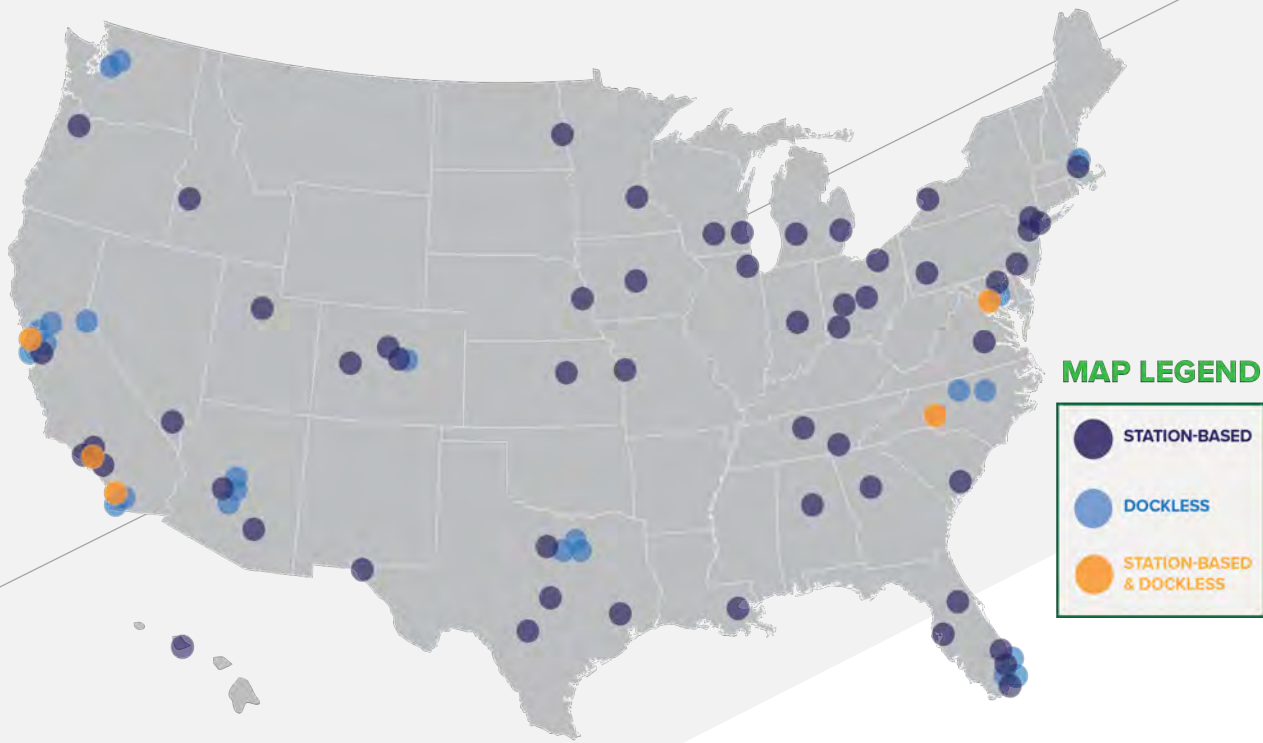


MaaS: What are benefits of bikeshare? –

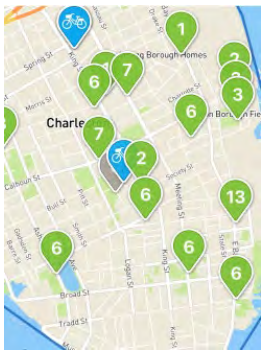
1. Measurable physical activity benefits
2. Large percentage of trips are short distance trips: 72% of trips less than 3-miles, & 60% of trips less than 2-miles are made by private vehicles (NHTS, 2009)
3. Reduced network congestion
4. More sustainable
5. Less air emissions
6. Less energy
7. Less demand for Parking
8. More network reliability

FIGURE 2 **Most Daily Trips in U.S. Are Within Easy Walking or Biking Distance**³



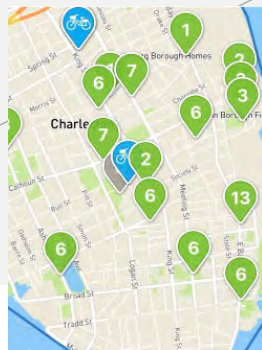


SOURCE: NACTO.ORG



gotcha

- over 60 bike share systems in US in 2017, 35m bike share trips were taken in U.S. in 2017, 25% more than in 2016
- Gotcha/Holy Spokes in Charleston, SC, 250 bikes, 30 hubs, 13,000 registered members. 2017 users logged 49,000 trips, 105,000 miles of travel, within downtown peninsula district, incorporating 8-square miles, or 5,120 acres.
- Gotcha – 16 bike share systems & total of 50 MaaS systems across US including: shared fleets of bikes, scooters, & low-speed electric vehicles



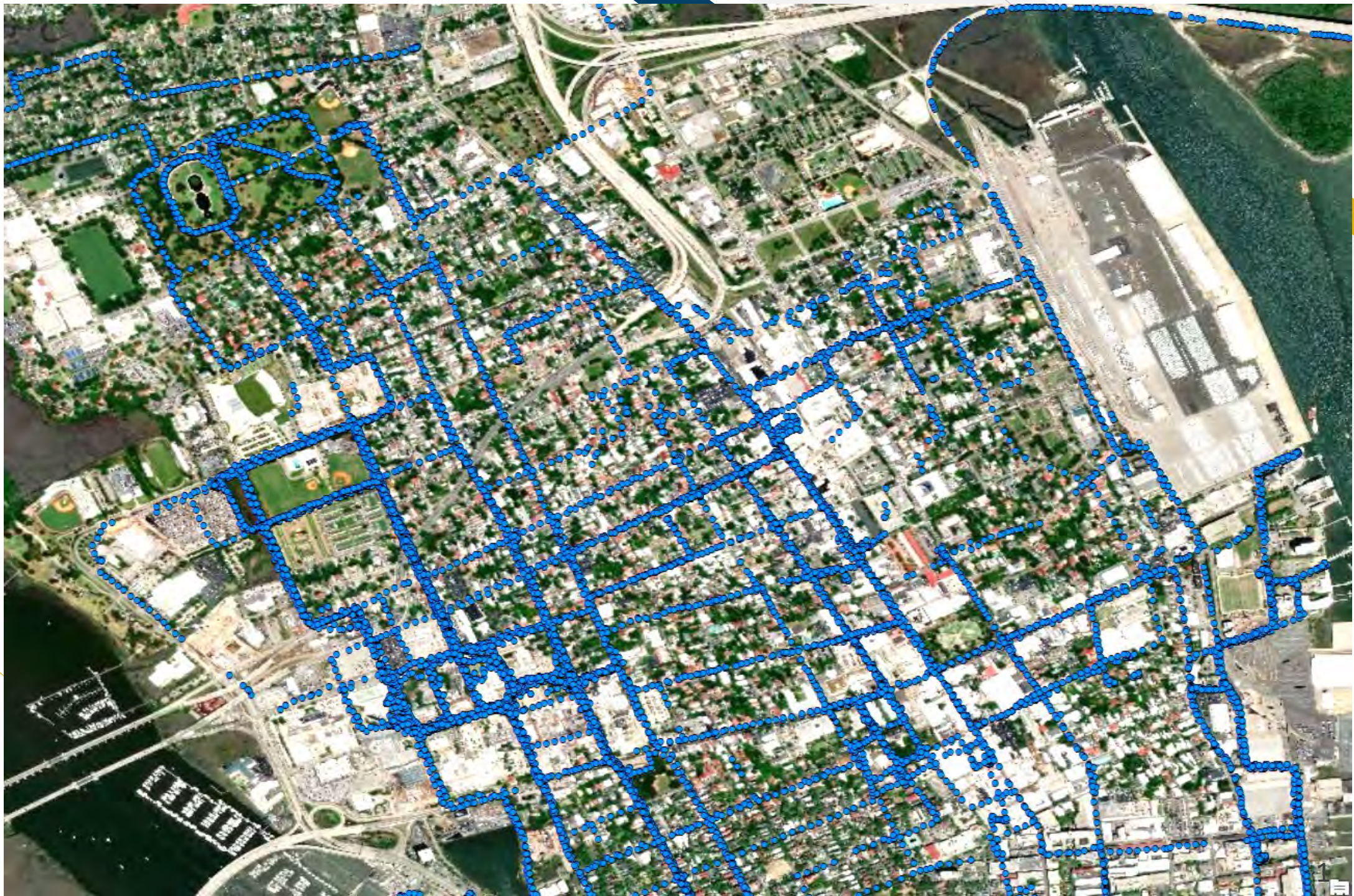
Anticipated outcomes include:

1. Evaluation of mode split of Bike Share trips within downtown peninsula district,
2. Determination of transportation infrastructure used in making bike share trips,
3. Analysis of roadway network bike use patterns, constraints & improvement needs,
4. Assessment of safety of bike share route choices,
5. Evaluation of bike share & local transit App for travel recommended routes and safety,
6. Evaluation of bike share transportation equity for at risk populations,
7. Potential for increasing bike share capture of 2-mile and 3-mile urban trips,
8. Potential for integrating bike share with other mode: transit, water taxi, shuttles, etc,
9. Potential for improving physical activity and public health outcomes.



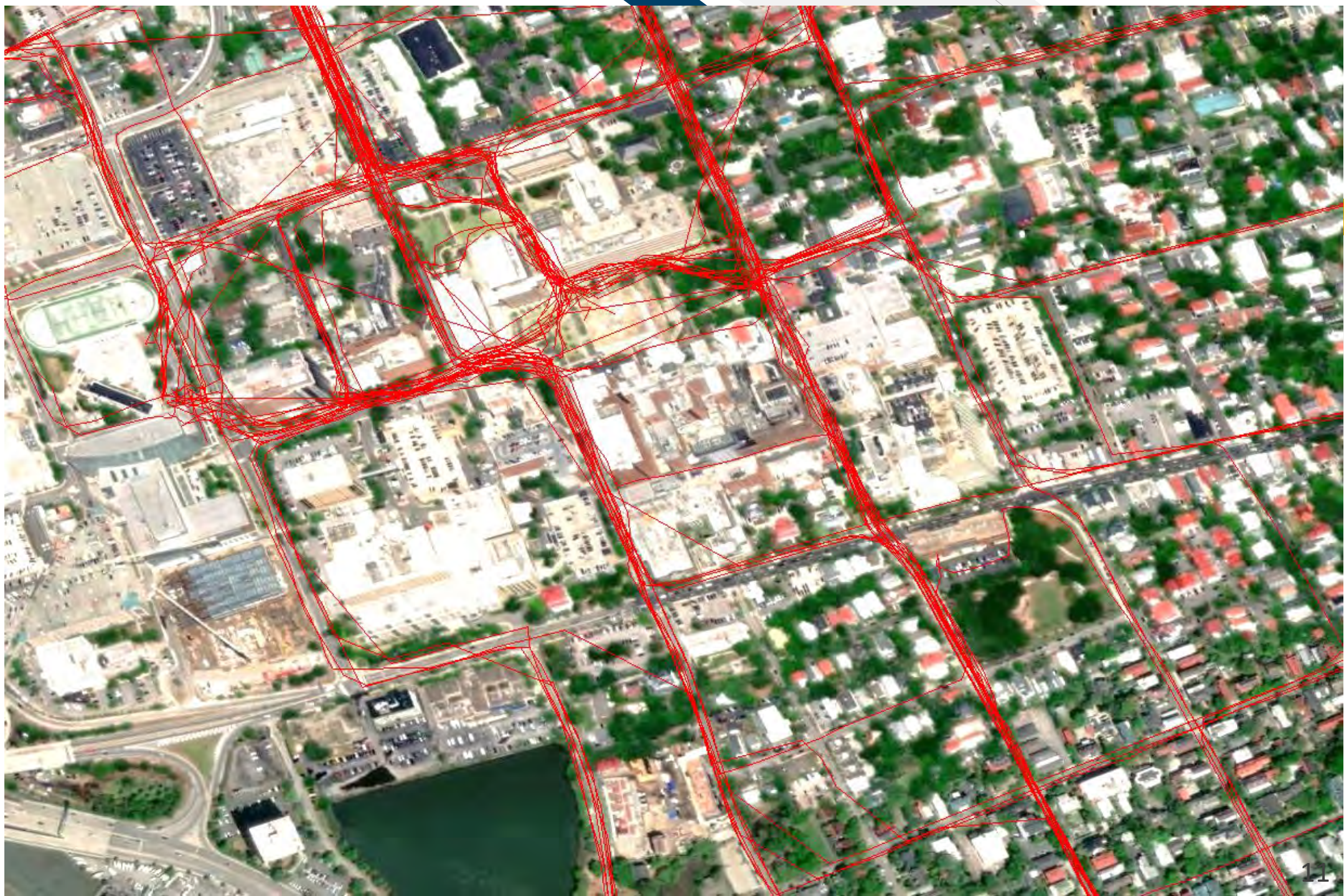
Raw Data

(GPX file
from GPS
unit)
Geocode
d In
ArcMap



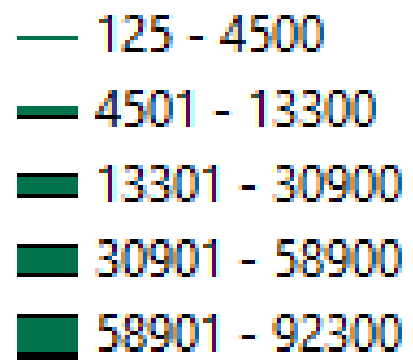


Routes created from Geocoded GPX Points



Transportation

Traffic Volume (AADT)





Transportation

Speed (MPH)

- Below 20
- 20 - 55
- 26 - 35
- 36 - 50
- 50 - 65





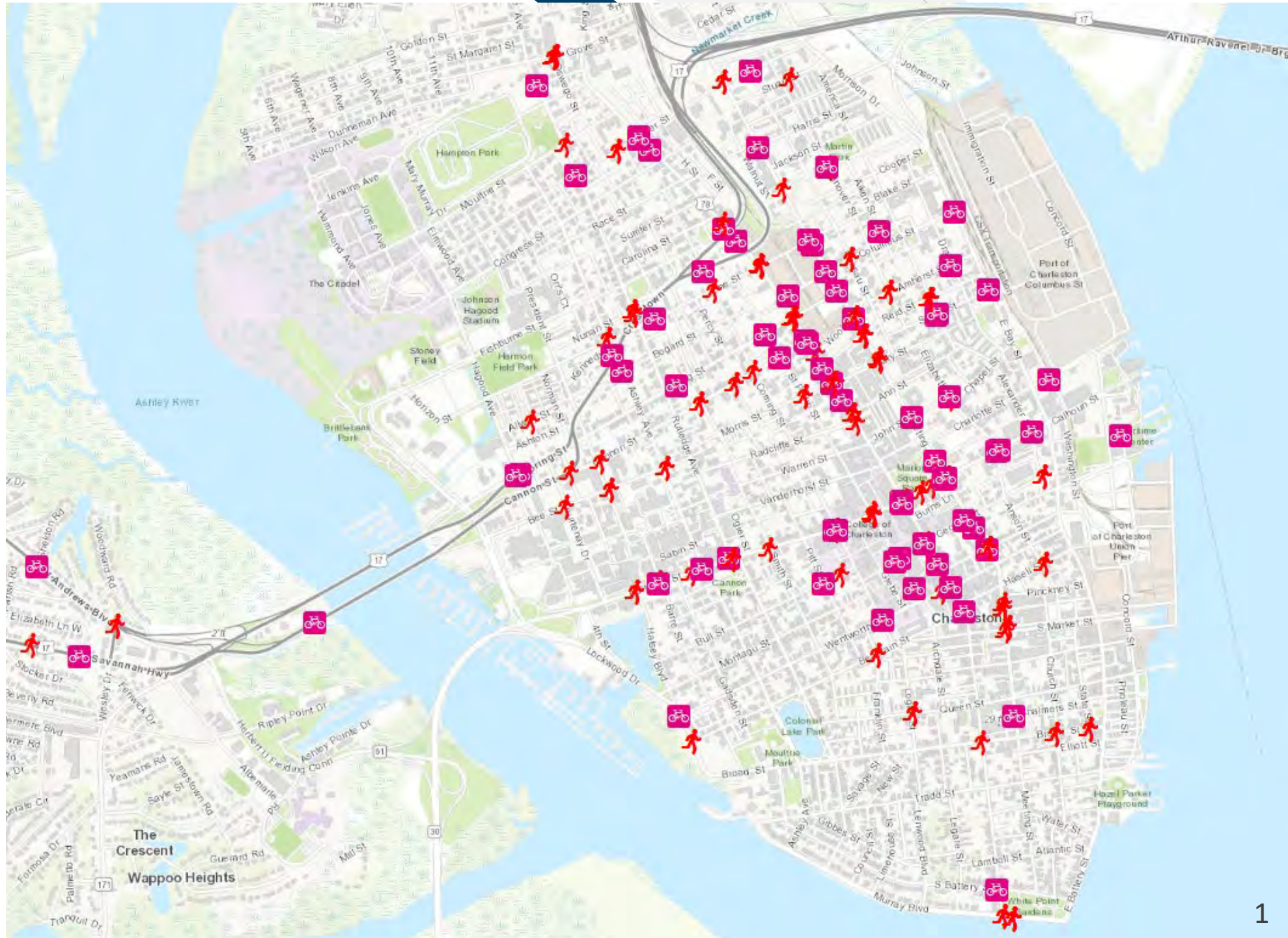
Transportation Safety

Crashes (2017 & 2018)





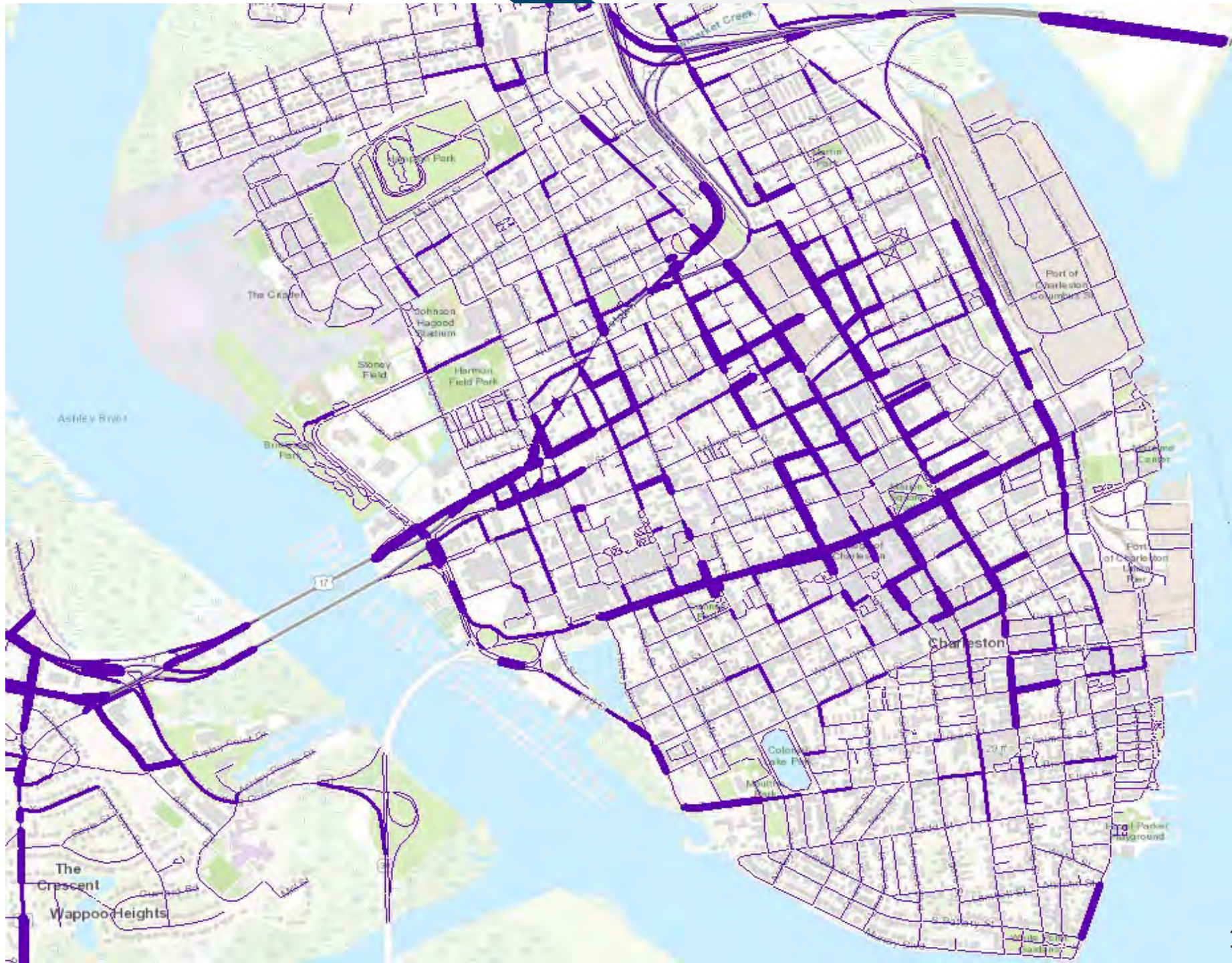
Transportation
Safety
Vehicle/Ped &
Veh/Bike Crashes



Routes With Crashes

No of Crashes
(2017/2018)

- 0 - 2
- 3 - 5
- 6 - 10
- 11 - 25
- 26 - 86



Transportation Biking facilities

Multi_Use_Path



Bike_Lane



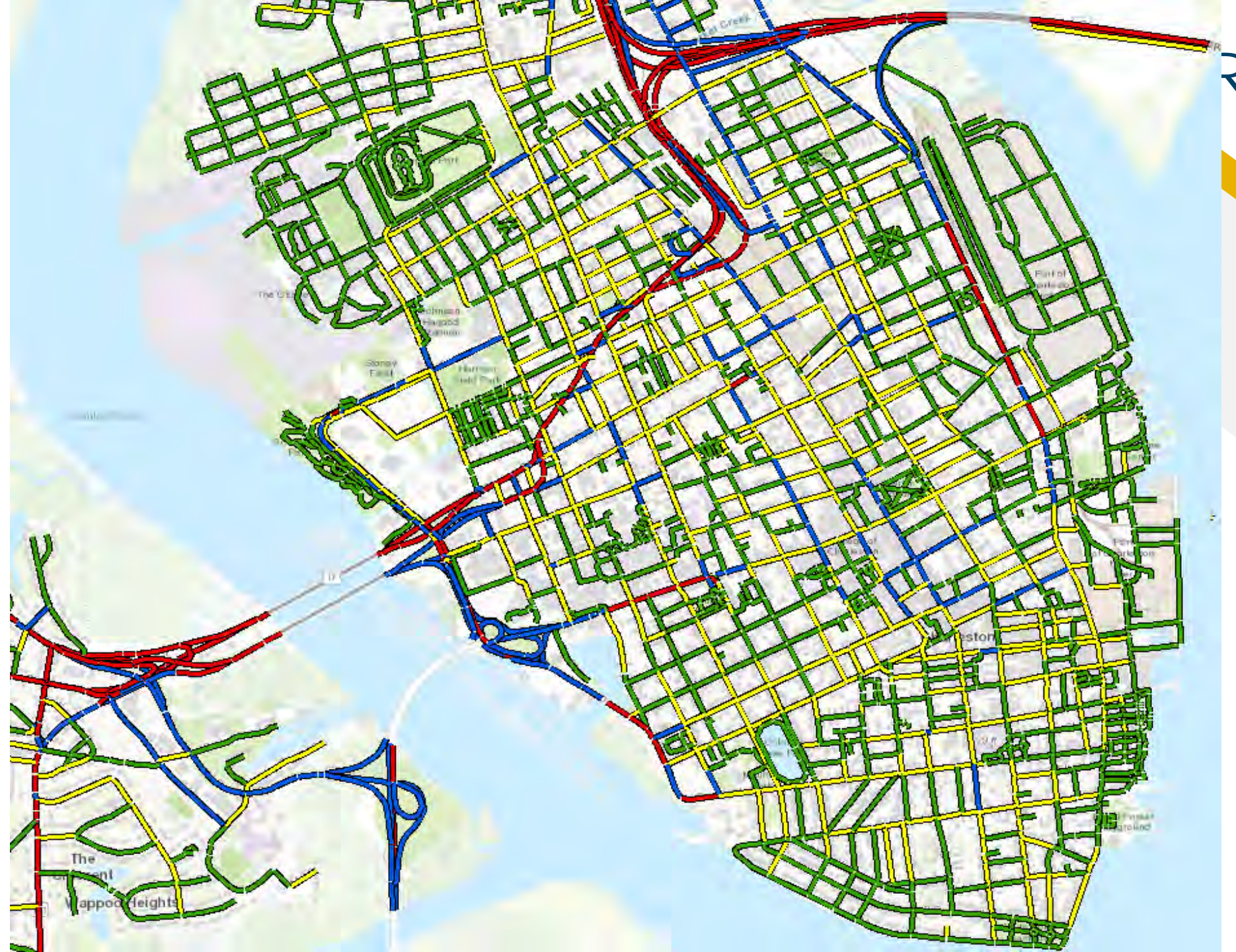
Bike_Route



Bike Level of Service (BLOS)

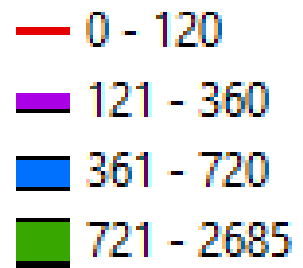
BLOS

- A
- B
- C
- D
- E
- F

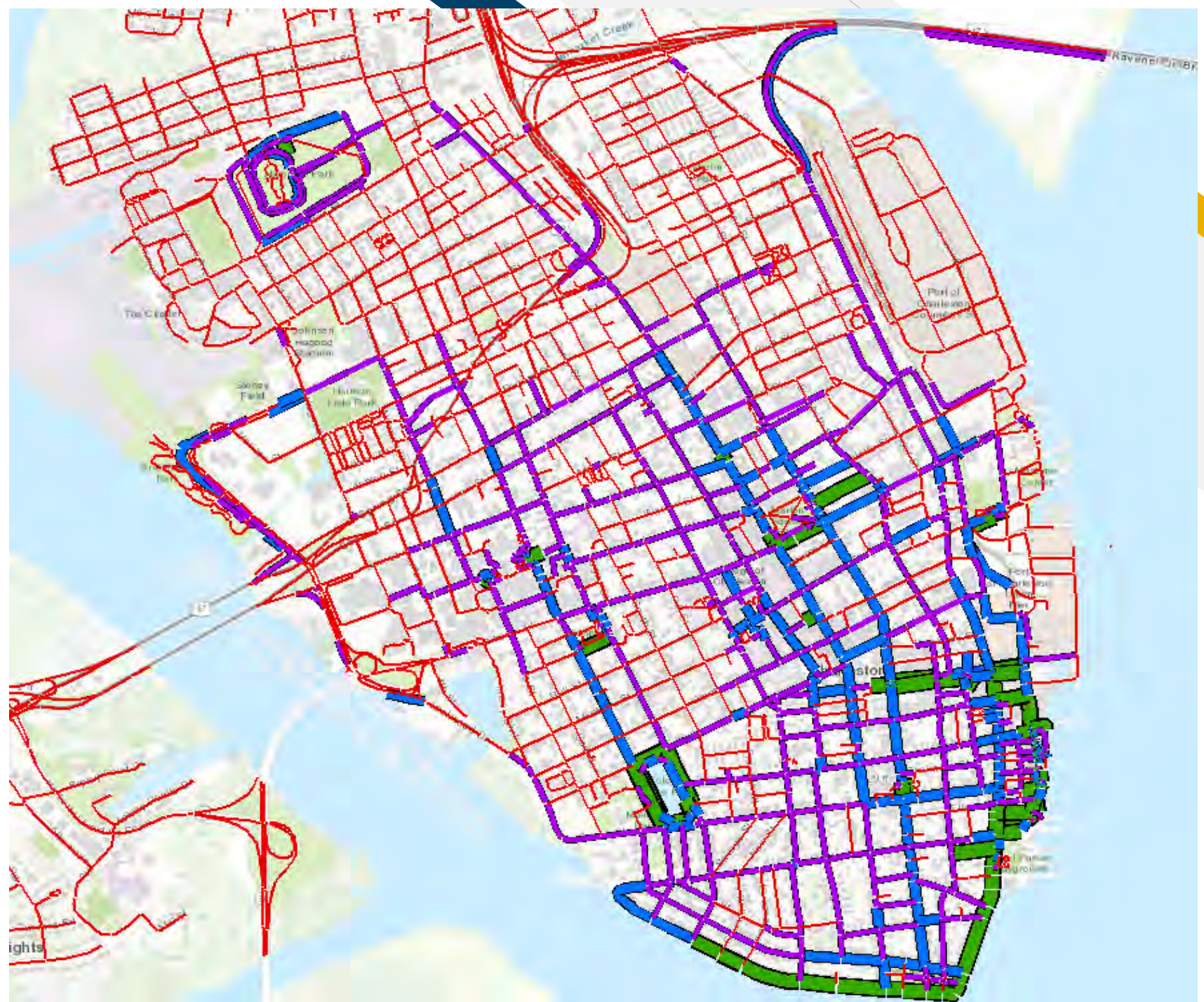


Aggregated bike routes

All Users

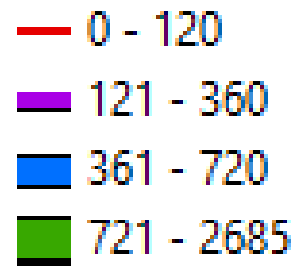


**Trips per
Month
(April 2018)**

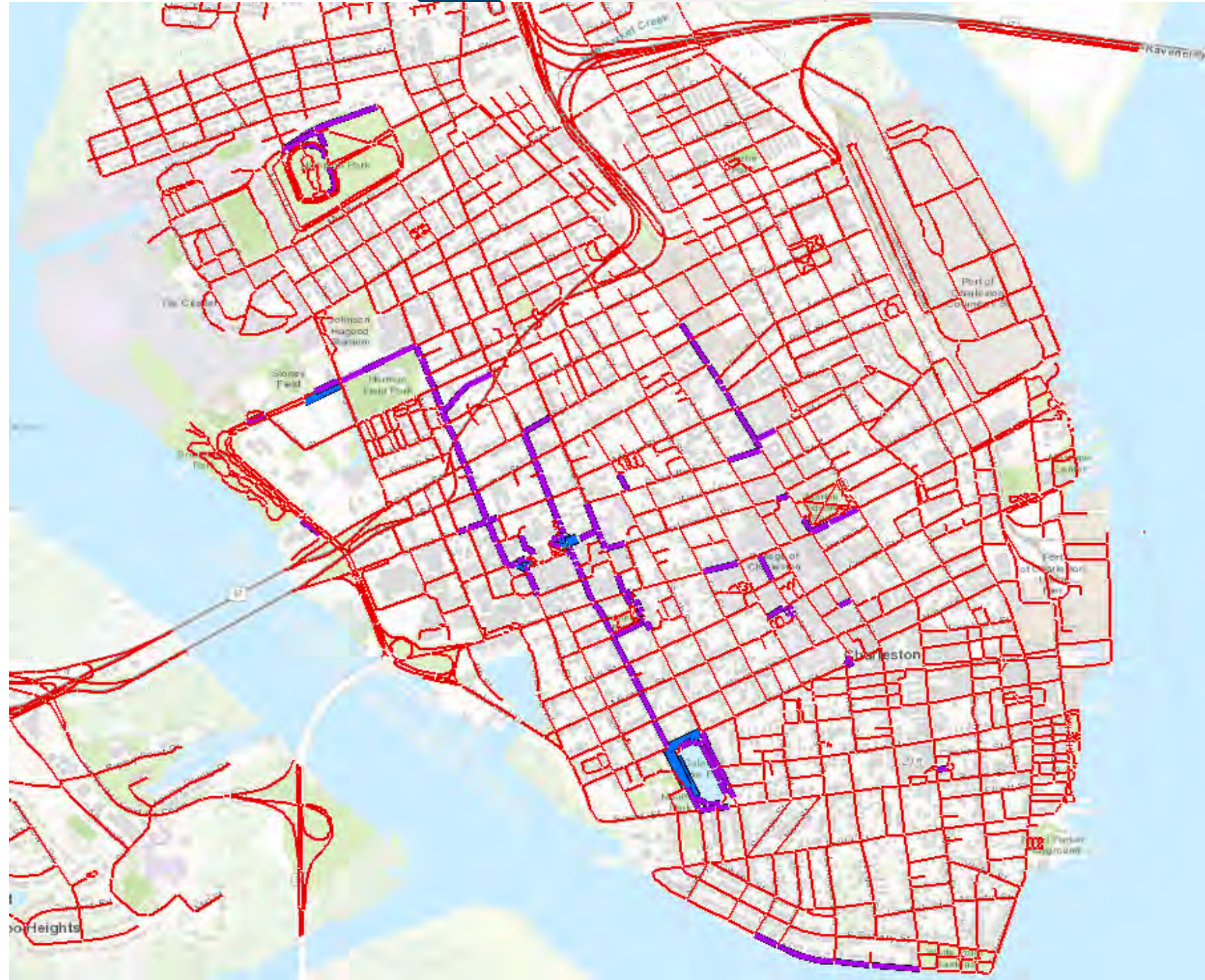


Aggregated bike routes

Local Users

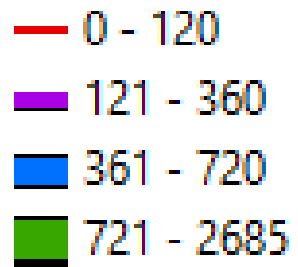


Trips per
Month
(April 2018)

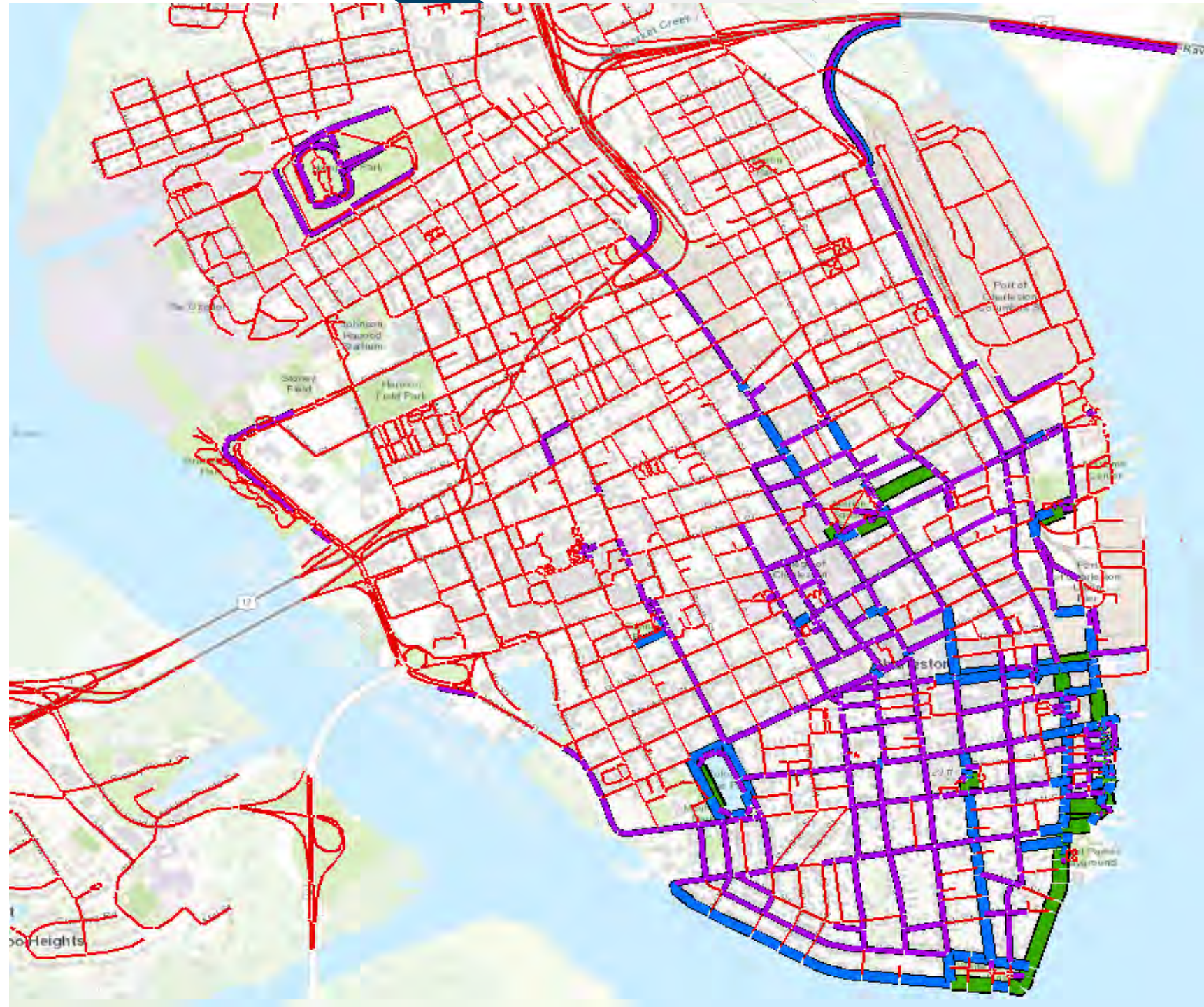


Aggregated bike routes

Visitors

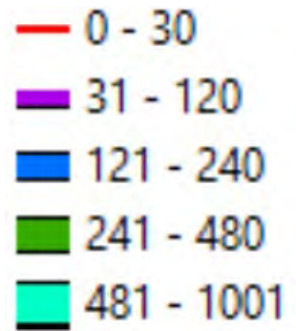


Trips per
Month
(April 2018)



Aggregated bike routes

Local Users (Modified Color Scheme)



Trips per Month
(April 2018)





Safe Route to Schools (SRTS)

1. Nationally, 10%–14% of car trips during morning rush hour are for school travel.
2. SRTS initiatives improve safety and levels of physical activity for students.
3. Sidewalks, street crossings, bike facilities, crossing guards, etc.
4. USDOT SRTS <https://www.transportation.gov/mission/health/Safe-Routes-to-School-Programs>
5. Walking School Busses <http://www.walkingschoolbus.org/>

SafeRoutes
National Center for Safe Routes to School





Green Modes of Travel

– *Part 2*

Thank You.

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