

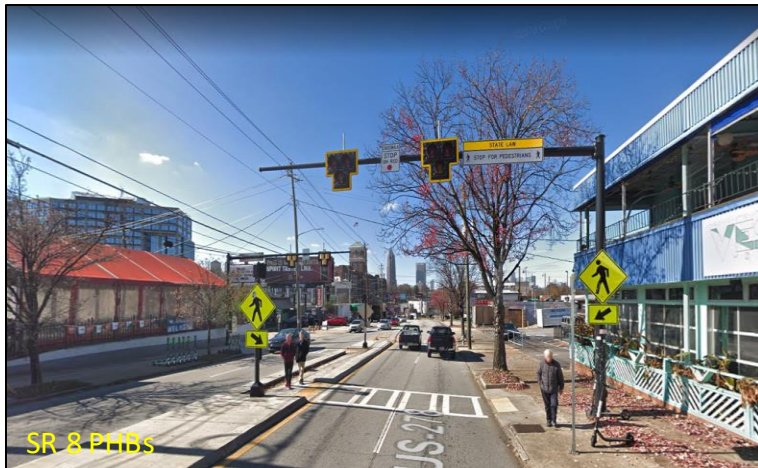


# GDOT Safety Engineering Program

Samuel Harris, PE & Jack Anninos, EIT

GA Bike Summit

September 17<sup>th</sup>, 2020



SR 8 PHBS



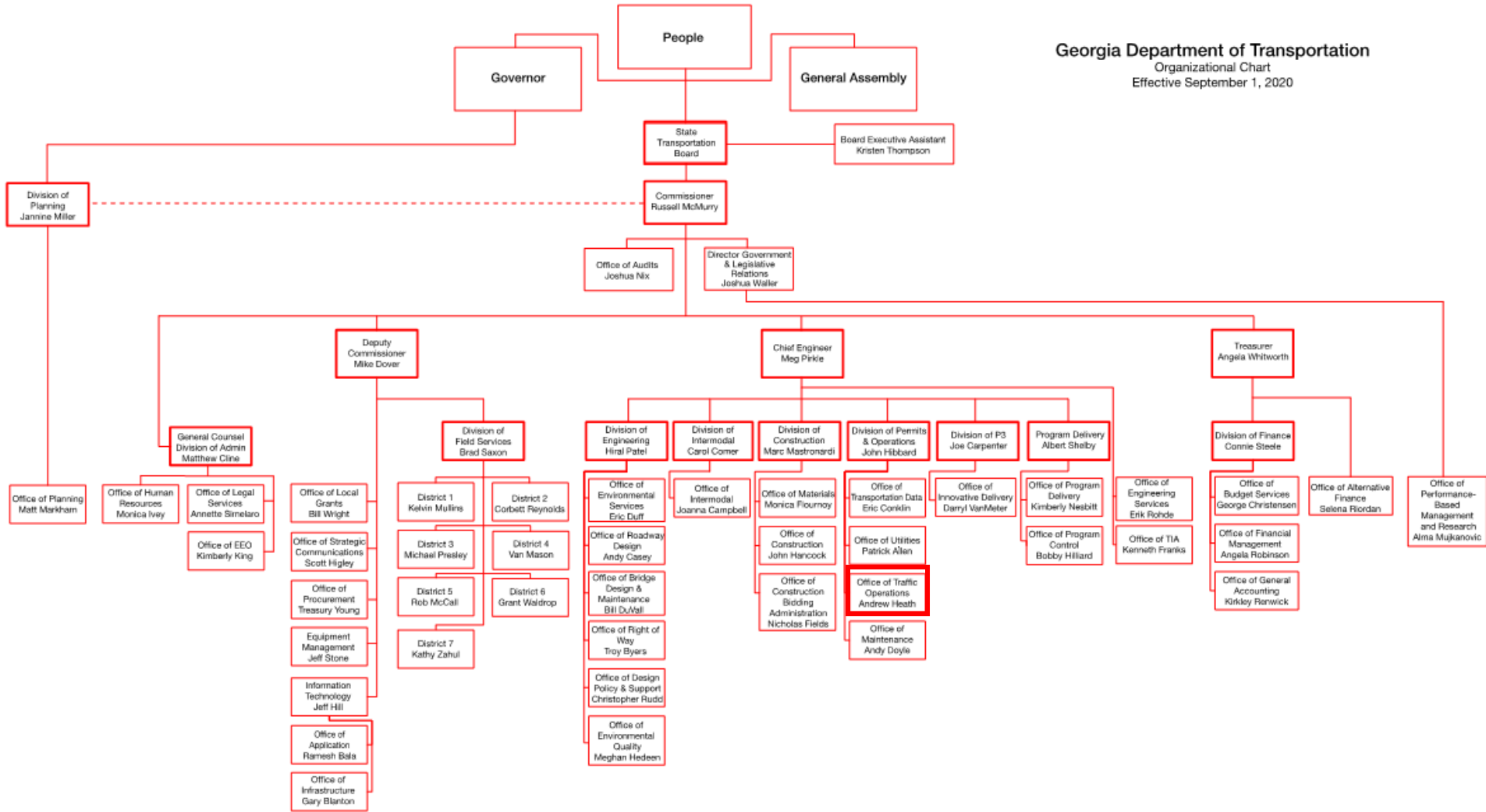
Multi use path with RRFB (Columbus)

# Three Takeaways

1. What is the GDOT Safety Engineering Program?
2. Crashes are lower during Covid-19
3. Numetric



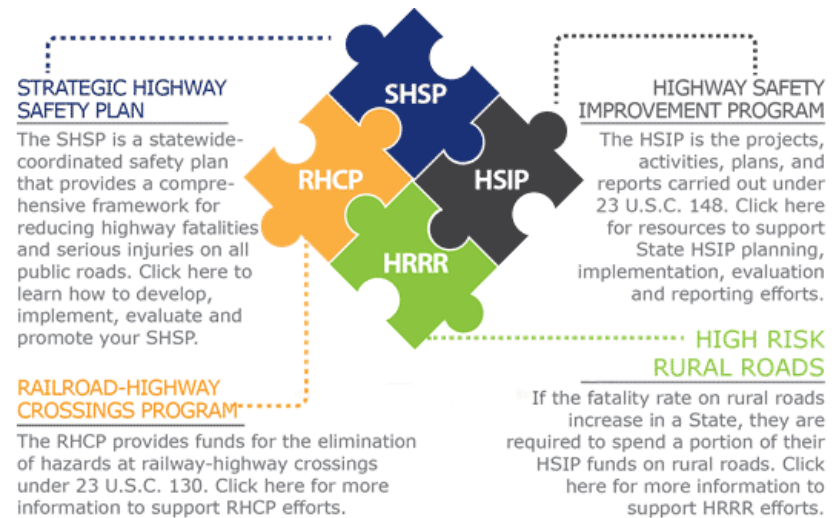
Georgia Department of Transportation  
Organizational Chart  
Effective September 1, 2020





# Highway Safety Improvement Program

- The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned roads and roads on tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance.

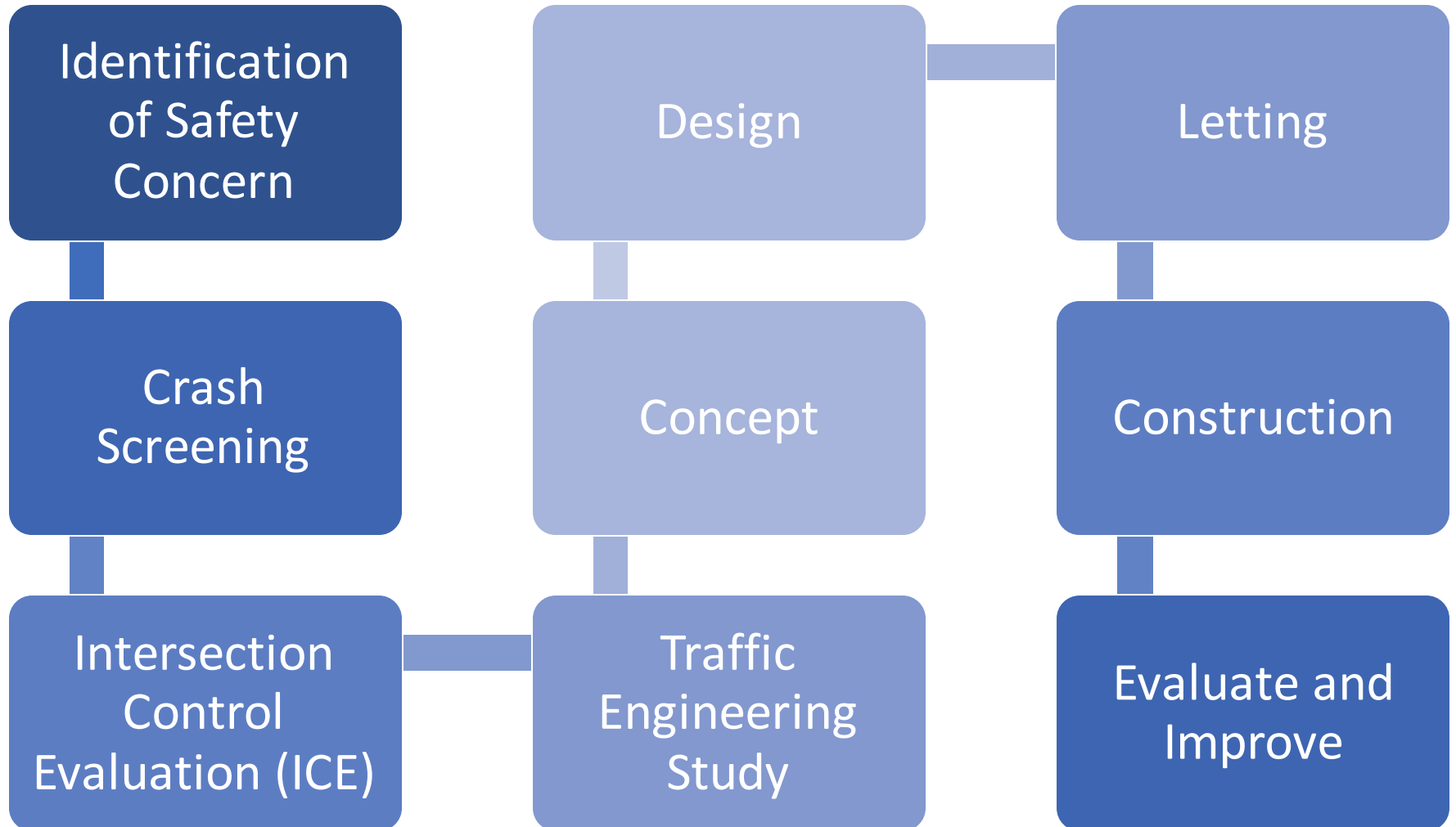


## Goals of the Program

- Eliminate fatalities and reduce the number of injury crashes on Georgia roadways by using a safety data driven approach.

## Objectives of the Program

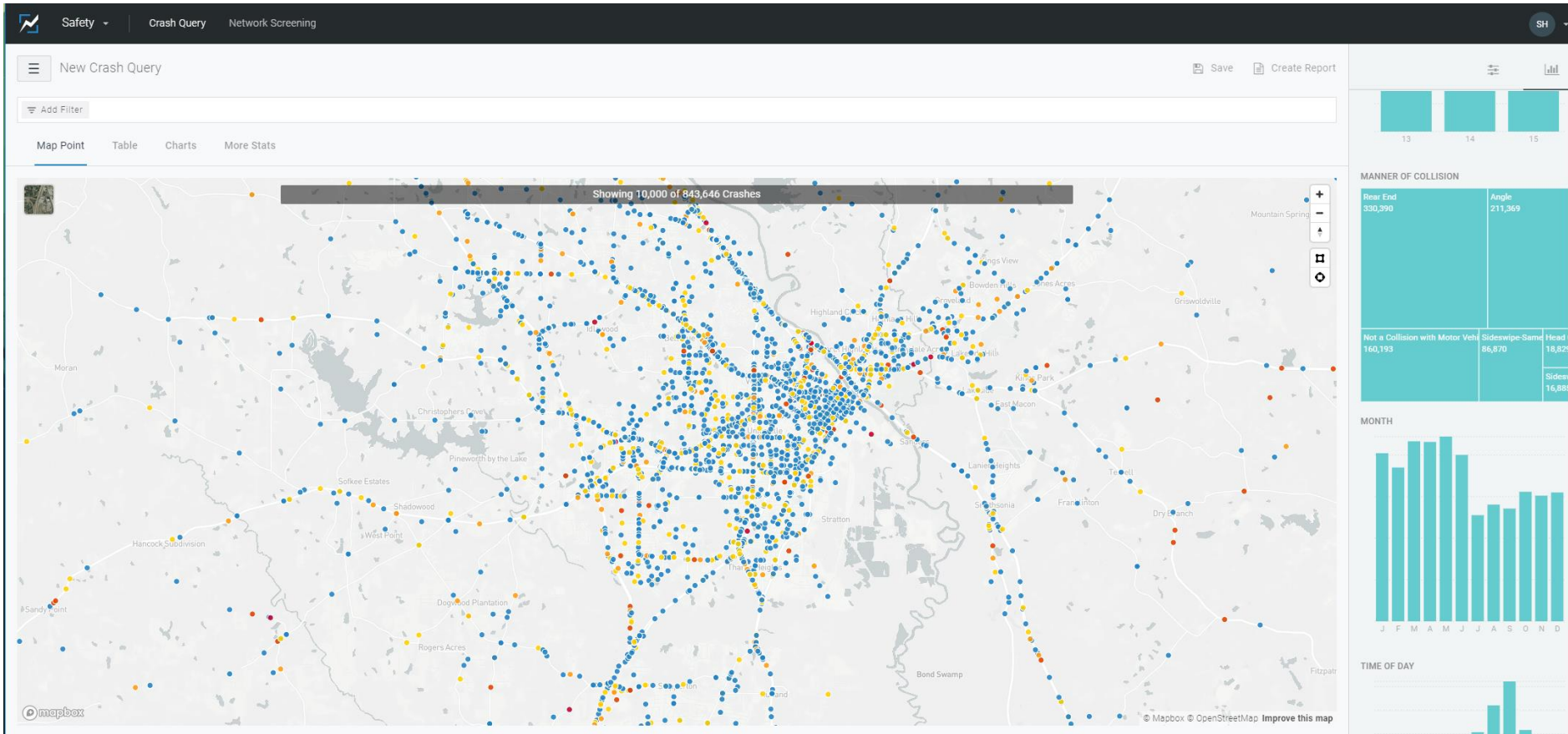
- Eliminate all roadway fatalities
- Reduce pedestrian, vehicle, and bicycle serious injuries
- Reduce roadway or lane departure crashes
- Reduce intersection crashes
- Reduce off-system crashes
- Reduce crashes on High Risk Rural Roads
- Align goals with stakeholders/partners and HSIP reports



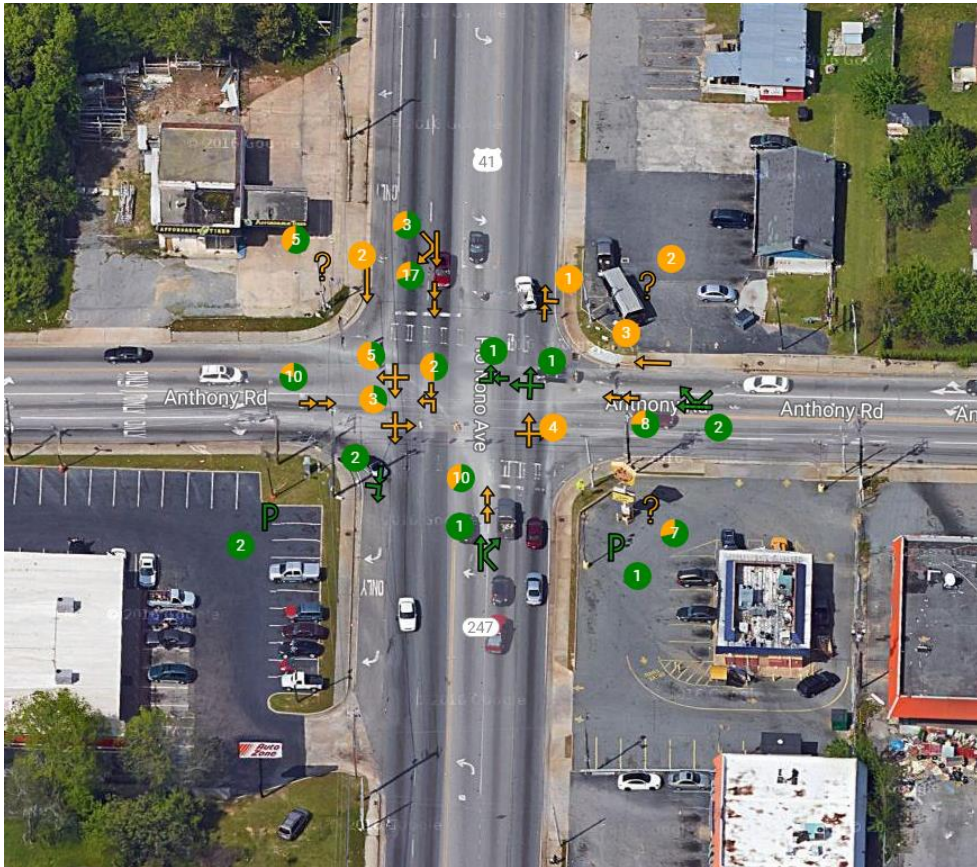
# Identification of Safety Concern

- Data driven approach to identify and confirm a safety need.
- Some of the other ways safety concerns are identified
  - Citizens
  - Districts/Local Agencies
  - Politicians
  - Upper Management at GDOT
  - Road Safety Audit
  - GDOT Safety Engineering Program internal and external staff

# Crash Screening



# Crash Screening



## SR 1 at Oak Grove Road, Carroll County Preliminary Safety Analysis

**Project Origin** This location was brought to the attention of Senator Mike Dugan from a local county commissioner due to concerns about the safety of the intersection and proximity of a small educational academy to the east of the intersection.

District 6 completed a Traffic Engineering Study in July 2018 to evaluate the safety of the intersection due to citizen inquiries and evaluate this location for potential safety project funding.

**Sight Distance** The existing sight distance was measured as part of the TE Study completed by District 6.

There are no significant horizontal curves at this location. There is a vertical curve that limits the sight distance to the north on SR 1.

### Left Turn from Oak Grove Road to SR 1

Direction	Required Sight Distance	Existing Sight Distance
Left	610 ft	580 ft
Right	610 ft	1800 ft

### Right Turn from Oak Grove Road to SR 1 Sight Distance

Direction	Required Sight Distance	Existing Sight Distance
Left	530 ft	580 ft

**Volumes** Turning movement counts collected May 15, 2018 as part of the Traffic Engineering Study completed by District 6.

		424 (814) [17300]					
		(0)	(50)	(764)	(0)	SR 1	
EB Oak Grove Road		0	54	370	0	SR 1	
		Peds				Peds	0 (0)
WB Oak Grove Road		(29)	27			2018 Intersection Daily	
					18,500	Entering Volume (est)	
SR 1		(0)	0			0 (0)	
		(63)	32			0 (0)	
WB SR 1		(0)	0			WB Oak Grove Road	
						Peds	0 (0)
			78	946	0	0	
			(34)	(630)	(0)	(0)	
		1024 (664) [17500]					

**Crash History** Collision data collected from 2014 – 2018. See crash diagram for additional details.

Crash Data: Enter most recent 5 years of crash data		Crash Severity			
		PDO	Injury Crash*	Fatal Crash*	
Crash Type	Angle	3	8	0	69%
	Head-On	0	0	0	0%
	Rear End	2	0	0	13%
	Sideswipe - same	0	0	0	0%
	Sideswipe - opposite	0	1	0	6%
	Not Collision w/Motor Veh	2	0	0	13%
TOTALS		7	9	0	16

\* Number of crashes resulting in injuries / fatalities, not number of persons.



# Stage 1 - Screening

## Signalized

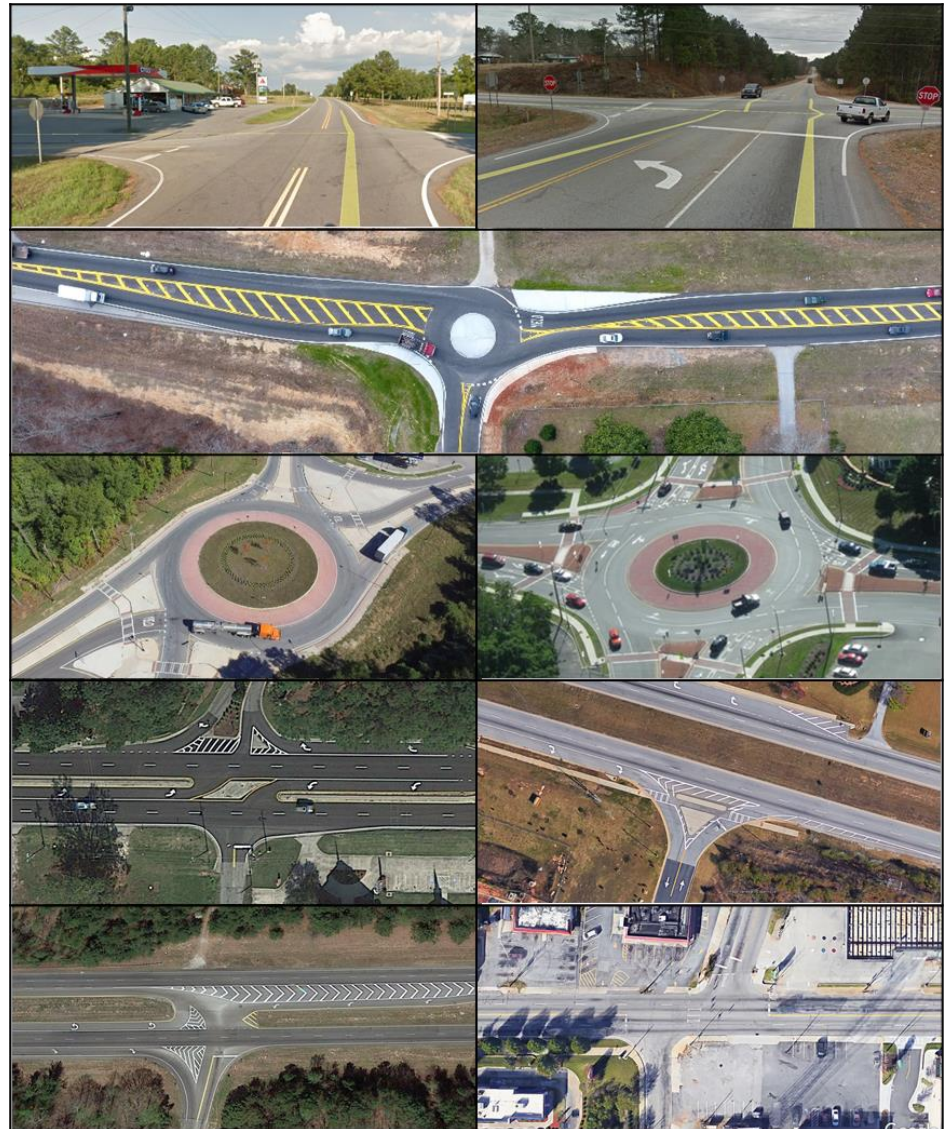


- Signal
- Median U-Turn
- RCUT
- Displaced Left Turn (CFI)
- Continuous Green-T
- Jughandle
- Diamond Interchange (signal)
- Quadrant Roadway
- Diverging Diamond
- Single Point Interchange
- Turn Lane Improvements
- Other

# Stage 1 - Screening

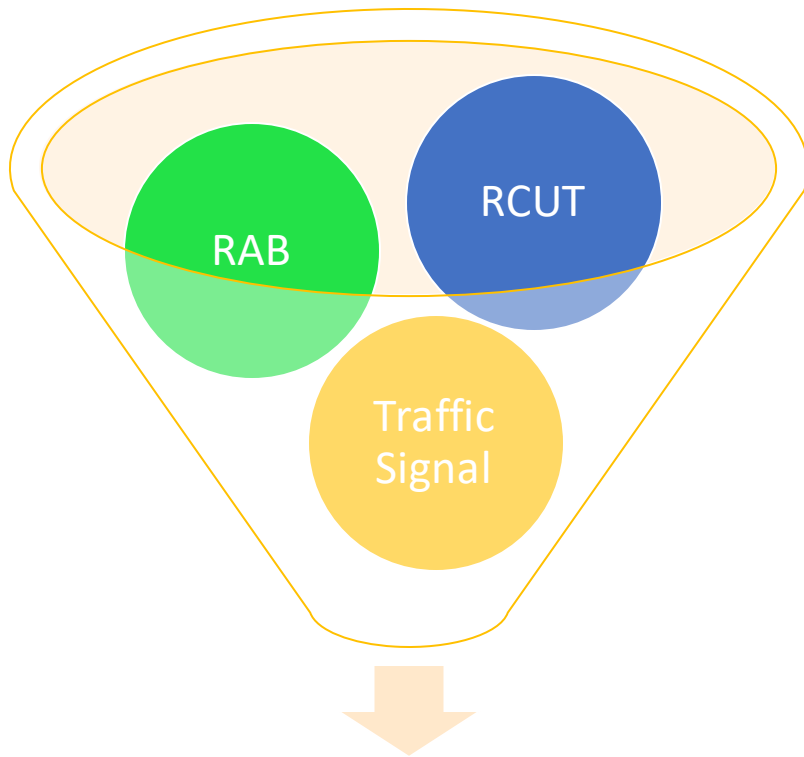
## Unsignalized

- Minor Stop
- All-Way Stop
- Mini Roundabout
- Single Lane Roundabout
- Multilane Roundabout
- RCUT
- RIRO w/Downstream U-Turn
- High-T (unsignalized)
- Offset-T Intersections
- Diamond Interchange (Stop)
- Diamond Interchange (RAB)
- Turn Lane Improvements
- Other



## Stage 2 – Alternative Selection

Shortlist of Alternatives  
from Stage 1



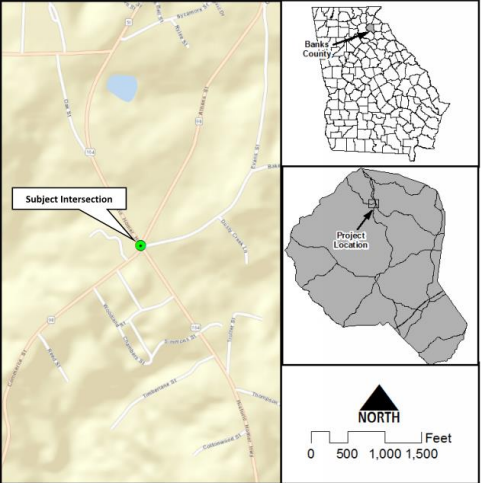
- Total Project Cost
- Traffic Operations
- Safety Analysis
- Environmental Impacts
- Stakeholder Posture

Preferred Alternative


# Traffic Engineering Study and Concept Report

Traffic Engineering Study  
SR 164 (Historic Homer Highway) at SR 98




**Traffic Engineering Study**  
SR 98 AND SR 164  
Banks County, Georgia



Requested by: Georgia Department of Transportation, District 1  
Date Prepared: October 7, 2019  
Prepared by: David L. Pickworth



David Pickworth, PE  
Telephone Number: (404) 417-4072  
E-mail Address: dpickworth@vhb.com

Georgia Department of Transportation

**Project Concept Report**

Project Type: Safety P.I. Number: 0014159  
GDOT District: 3 County: Butts  
Federal Route Number: N/A State Route Number: 16  
Project Number: N/A

This project proposes to convert the intersection of SR 16 at Higgins Road to a single lane roundabout.

**Submitted for approval:** *Jonathan D. Reid* 09/25/2019  
Jonathan Reid, PE Arcadis U.S., Inc. Date

State Program Delivery Administrator \_\_\_\_\_ Date

GDOT Project Manager \_\_\_\_\_ Date

**Recommendation for approval:**

State Environmental Administrator \_\_\_\_\_ Date

State Traffic Engineer \_\_\_\_\_ Date

Project Review Engineer \_\_\_\_\_ Date

State Utilities Engineer \_\_\_\_\_ Date

District Engineer \_\_\_\_\_ Date

MPO Area: This project is consistent with the MPO adopted Regional Transportation Plan (RTP)/Long Range Transportation Plan (LRTP).

Rural Area: This project is consistent with the goals outlined in the Statewide Transportation Plan (SWTP) and/or is included in the State Transportation Improvement Program (STIP).

State Transportation Planning Administrator \_\_\_\_\_ Date

# Design and Let to Construction



# Evaluate and Improve



Roadside Design Improvement at Curves



Reduced Left-Turn Conflict Intersections



Systemic Application of Multiple Low Cost Countermeasures at Stop-Controlled Intersections



Leading Pedestrian Interval



Local Road Safety Plan



USLIMITS2



Enhanced Delineation and Friction for Horizontal Curves



Longitudinal Rumble Strips and Stripes on Two-Lane Roads



Median Barrier



Safety Edges



Backplates with Retroreflective Borders



Corridor Access Management



Dedicated Left- and Right-Turn Lanes at Intersections



Roundabouts



Yellow Change Intervals



Medians and Pedestrian Crossing Islands in Urban and Suburban Areas



Pedestrian Hybrid Beacon



Road Diet

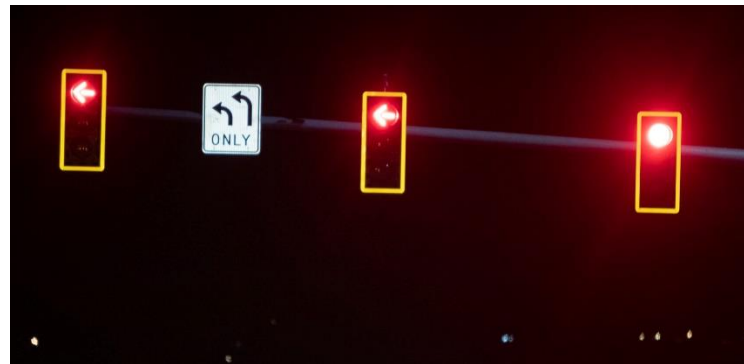


Walkways

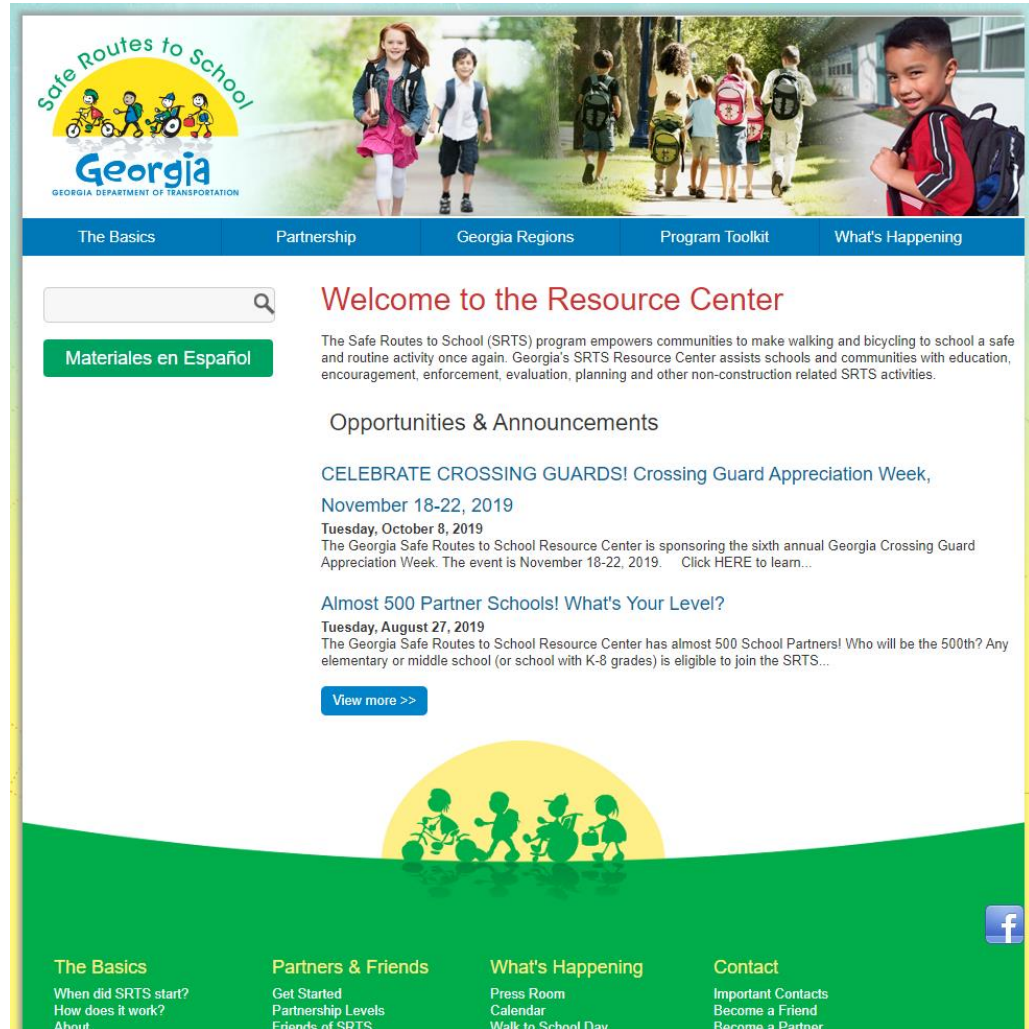


Road Safety Audit

# Safety Focused Equipment



# Safe Routes to School (SRTS)

The screenshot shows the homepage of the Georgia Safe Routes to School Resource Center. At the top is a banner with the SRTS logo and a photo of children walking to school. Below the banner is a navigation menu with links: The Basics, Partnership, Georgia Regions, Program Toolkit, and What's Happening. A search bar is located on the left. A green button labeled 'Materiales en Español' is positioned below the search bar. The main content area features a 'Welcome to the Resource Center' heading, followed by a paragraph describing the program's mission. Below this are two sections: 'Opportunities & Announcements' with a sub-heading 'CELEBRATE CROSSING GUARDS! Crossing Guard Appreciation Week, November 18-22, 2019' and a date 'Tuesday, October 8, 2019'; and another section 'Almost 500 Partner Schools! What's Your Level?' with a date 'Tuesday, August 27, 2019'. A 'View more >>' button is located below the second section. At the bottom of the page is a footer with four columns of links: 'The Basics' (When did SRTS start?, How does it work?, About), 'Partners & Friends' (Get Started, Partnership Levels, Friends of SRTS), 'What's Happening' (Press Room, Calendar, Walk to School Day), and 'Contact' (Important Contacts, Become a Friend, Become a Partner). A Facebook icon is visible in the bottom right corner.

# Road Safety Audit (RSA)



## GDOT Road Safety Audits

The ultimate result of a successful RSA should be a blueprint for concise actionable items. The RSA should result in a road safety action/implementation plan with specific short, intermediate & long-term solutions. Each action plan should include safety countermeasures with estimated benefits measured in terms of lives saved and serious injuries prevented.



### Typical Steps in the GDOT Road Safety Audit (RSA) Process



	Step	Each <b>BOLD</b> word represents a key section in your RSA Report and Presentation.
<input type="checkbox"/>	Step 1: Project Identification	<p>GDOT or a local government typically identifies the need for one or more intersections, segments or projects to be assessed and makes the RSA request. If there is an existing project at the location, then the question should be asked if the RSA is still warranted. Site selection should be manageable enough for review to take place over a day or two and not too great in scale or scope. More specifically, urban location candidates should include 5 or less major intersections. A major intersection is one categorized by the need for an Intersection Control Evaluation (ICE) or warrant analysis. Urban location candidates should not exceed one mile in length while rural location candidates can be up to 5 miles long if the number of major intersections remains below 5. For interstates, the RSAs can be longer but should not exceed more than 7 miles or include more than one interchange.</p> <p>The <b>LOCATION</b> is recommended by the GDOT District or a data driven selection is made based on analysis of crash data sorted by type and/or severity. Each District should agree on up to 2 potential RSA locations each fiscal year. Any locations proposed by the District should be locations where concerns have been recognized, but the District has been unable to arrive at a ready solution.</p> <p>NOTE: Reference the priority corridors listed in the Pedestrian Safety Action Plan (once verified) as one source of data when considering RSA locations.</p> <p>The State Office of Traffic Operations must conduct a minimum of 14 RSAs per year statewide as required by the Chief Engineer.</p>
<input type="checkbox"/>	Step 2: RSA Team Development	<p>After the location is selected, a multidisciplinary team is assembled generally consisting of engineers, planners, law enforcement, and other specific disciplines as needed (i.e., pedestrian, bike experts, schools, etc.). The team is selected and organized by the RSA Team Leader. The <b>RSA TEAM LEADER</b> is the individual(s) designated by GDOT ultimately responsible for facilitating and completing the RSA. This includes sending out invitations to prospective team members. Every effort should be made to ensure law enforcement participates in the RSA process to include a non-engineering perspective on the team. The Governor's Office of Highway Safety (GOHS) is an excellent resource for reaching out to law enforcement if there are any difficulties in doing so.</p> <p>Teams include a minimum of 5, but typically no more than 10 persons from the following: Facilitator, District Traffic Engineer or designee, Office of Traffic Operations (TMC), safety consultant from TMC, district maintenance, FHWA Safety Engineer, Design Office, Office of Design Policy &amp; Support, State Bicycle/Pedestrian Engineer, District Construction, local government, law enforcement or EMS. The RSA team leader contacts the potential team members to determine dates that they are available for the assessment. With this information, a pre-meeting date is scheduled, along with the field review normally both conducted during the same day.</p>

# LOCAL ROAD SAFETY PLANS:

Your Map to Safer Roadways

No matter what your resources, a Local Road Safety Plan will guide you to data-driven solutions and safer roads.

[https://safety.fhwa.dot.gov/provencountermeasures/local\\_road/](https://safety.fhwa.dot.gov/provencountermeasures/local_road/)

### Identify Stakeholders

- Law Enforcement
- Public Health
- EMS
- Elected Officials



### Choose Proven Solutions

- Chevrons
- Roundabouts
- Targeted Enforcement
- Crosswalks

Chevron signs reduce nighttime crashes by 25%.

### Use Safety Data

- Crashes
- Maintenance Logs
- Safety Audits
- Traffic Violations

In 2017, over 50% of fatalities occurred on rural roads, but just 19% of Americans live in rural areas.

### Implement Solutions

- Education & Enforcement
- Capital Projects
- Maintenance Work

Safer Roads Ahead



Help Get People Home Safely

More than 75% of all roads are maintained by local agencies.



# **Upcoming Bicycle Related Efforts**

- Rumble Strip Policy
  - Reevaluating policies for bicycle safety
  - Edge line rumble strip policies for bicycles
  - Shoulder widening projects
- Georgia State Bicycle Map
  - Analyzing bicycle routes from safety perspective
  - More comprehensive and accessible map
  - USBR Signage initiatives
- Ongoing 2020 Bicycle Fatality Study
  - Analyzing fatal bicycle crashes for trends in data
  - Program recommendations based on crash details
  - Time of Day, Manner of Collision, Road Type, Speed Analysis



# **Covid-19 Impacts on Traffic Safety**

## Effect of COVID-19 on Traffic Safety

### “Shelter-In-Place” Order

- On **April 2<sup>nd</sup> 2020**, Governor Kemp issued a statewide “Shelter-in-Place” executive order to help slow the spread of COVID-19.
- The order applied to all Georgia residents and visitors and remained in effect until April 23 at 11:59 p.m. (22 days).
- On **April 24<sup>th</sup>**, the following businesses were allowed to open: gyms, fitness centers, bowling alleys, body art studios, barbers, cosmetologists, hair designers, nail care artists, estheticians, their respective schools, and massage therapists.
- On **April 27<sup>th</sup>**, and subject to specific social distancing and sanitation mandates, theaters, private social clubs and restaurant dine-in services were also allowed to reopen.

# Effect of COVID-19 on Traffic Safety

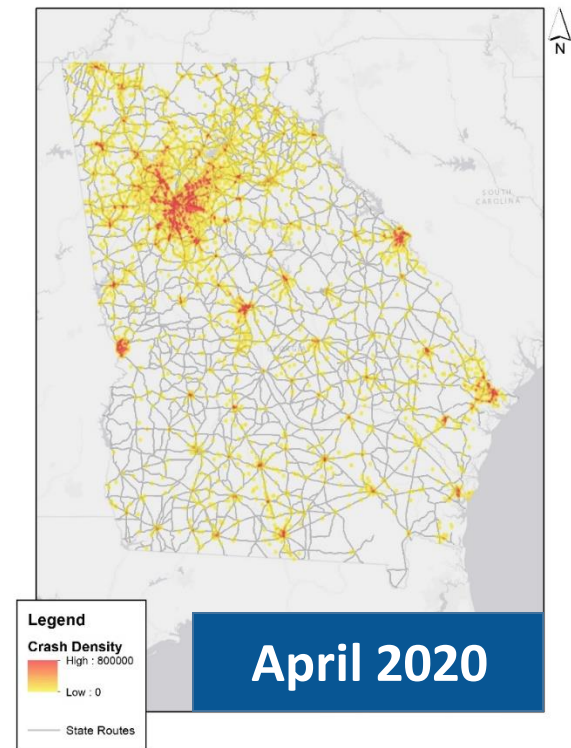
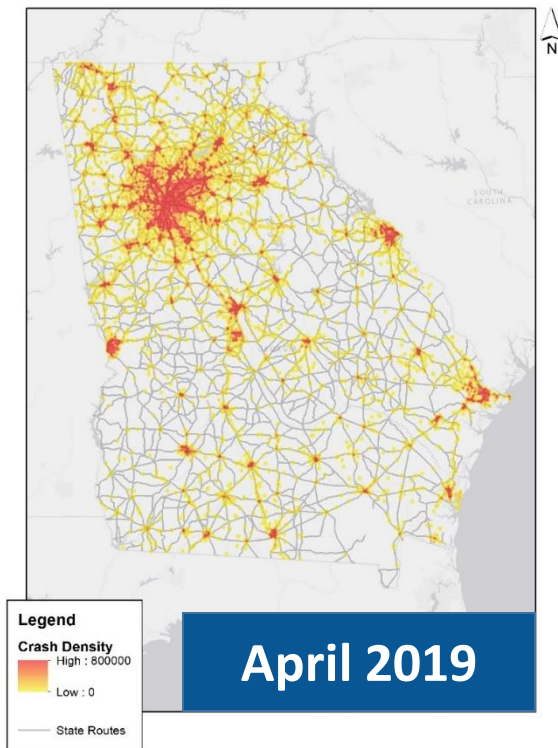
## Reduction in Number of Collisions and Injuries/Fatalities

Accident Type	(March 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2019)	Transitional (March 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2020)	(April 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2019)	During Shelter (April 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2020)
K – Fatal Crashes	91	106	82	69
A – Serious Injury Crashes	354	365	392	266
B – Suspected Minor or Visible Injury	1,509	1,399	1,658	912
C – Possible Injury or Complaint	4,670	3,647	4,775	1,744
O – No Apparent Injury	22,355	18,648	22,487	9,140
<b>All</b>	<b>28,979</b>	<b>24,165</b>	<b>29,395</b>	<b>12,129</b>
<b>% Reduction</b>	<b>17%</b>		<b>59%</b>	

- Cost reduction of **\$66,000,000** per day

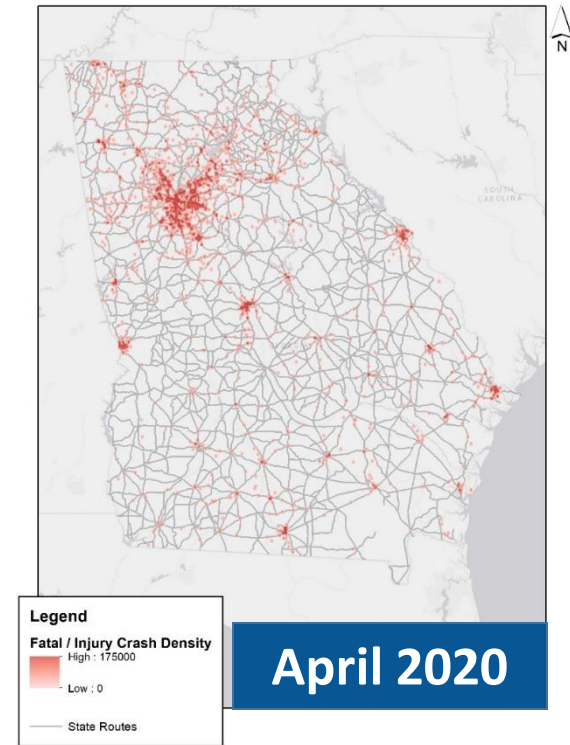
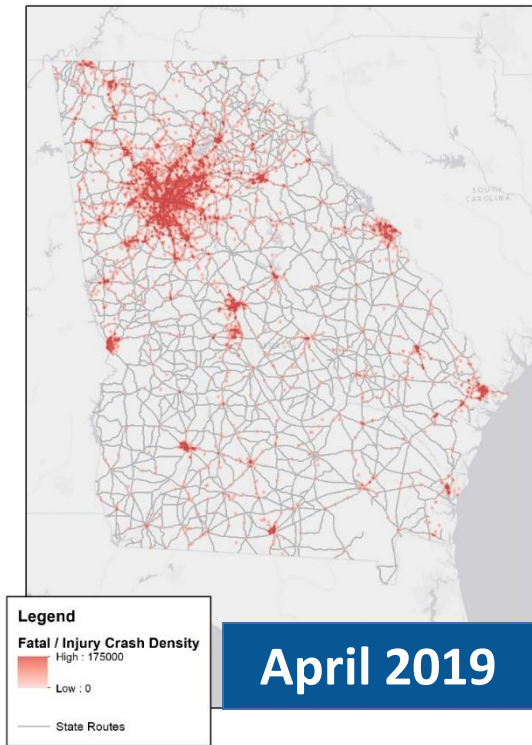
# Effect of COVID-19 on Traffic Safety

## Crash Density in Georgia



# Effect of COVID-19 on Traffic Safety

## Density of Injury / Fatal Crashes in Georgia



## Bicycle Crashes

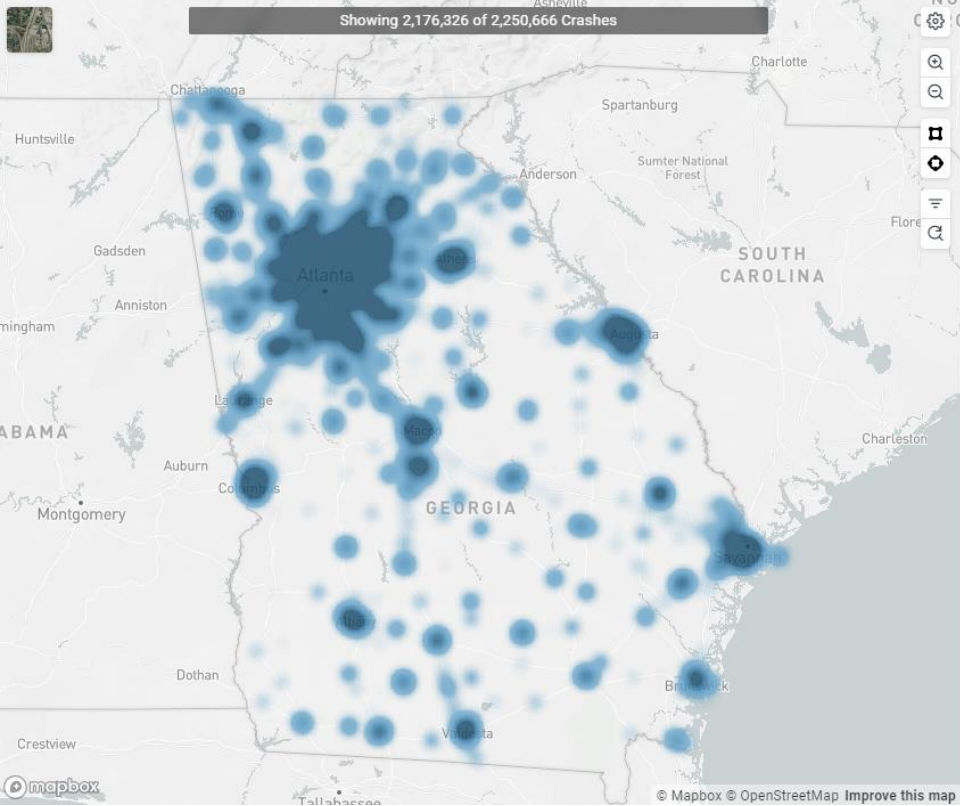
Bicycle Crash Severity	Before Order (March 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2019)	Before Order (March 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2020)	After Order (April 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2019)	After Order (April 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2020)
K – Fatal Crashes	1	1	0	3
A – Serious Injury Crashes	3	6	4	1
B – Suspected Minor or Visible Injury	14	14	21	16
C – Possible Injury or Complaint	16	10	7	5
O – No Apparent Injury	14	20	20	18
All	48	51	52	43
% Reduction	-6%		17%	

## Pedestrian Crashes

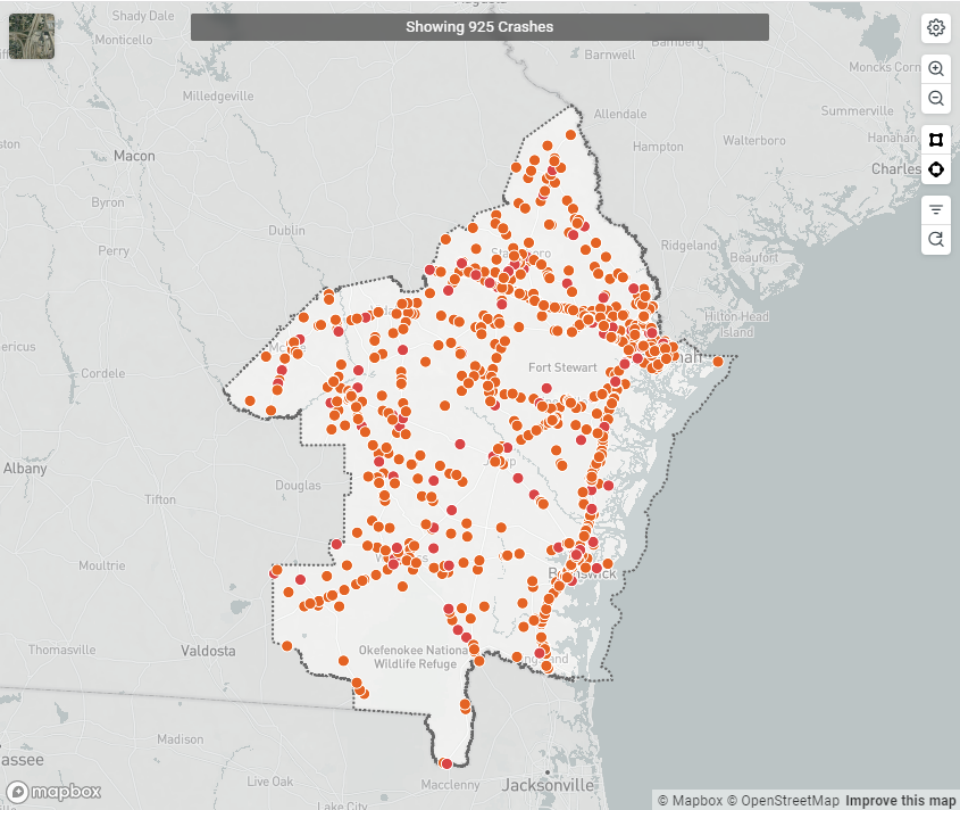
Pedestrian Crash Severity	Before Order (March 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2019)	Before Order (March 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2020)	After Order (April 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2019)	After Order (April 2 <sup>nd</sup> - 23 <sup>rd</sup> , 2020)
K – Fatal Crashes	14	19	6	4
A – Serious Injury Crashes	11	22	14	16
B – Suspected Minor or Visible Injury	39	26	40	25
C – Possible Injury or Complaint	34	30	34	14
O – No Apparent Injury	46	36	63	16
All	144	133	157	75
% Reduction	8%		52%	



**numetric**<sup>TM</sup>

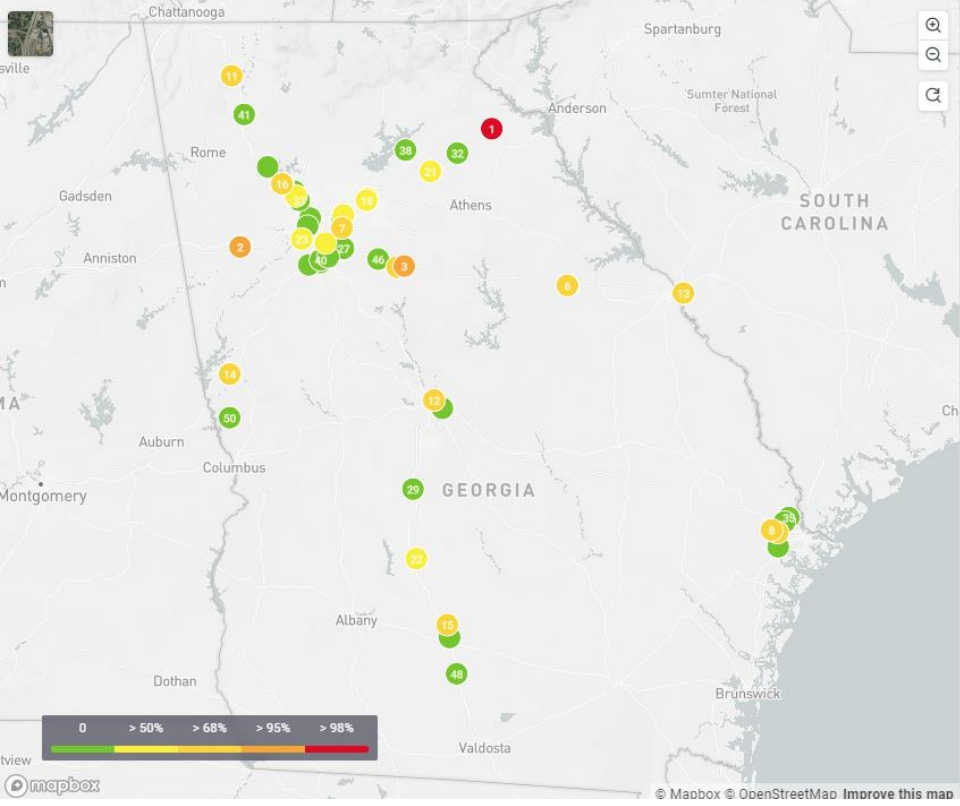


Summary		
Total Crashes		2,250,666
Fatal Crashes		7,432
CMV Crashes		100,985
Pedestrian Crashes		19,735
Cyclist Crashes		4,128
Motorcycle Crashes		24,796
Distracted Driver Crashes		107,880
Impaired Driver Crashes		59,210
KABCO Severity		
(O) No Injury	1,591,951	70.73%
(C) Possible Injury / Complaint	334,739	14.87%
(B) Suspected Minor/Visible Injury	148,750	6.61%
Unknown	92,401	4.11%
(A) Suspected Serious Injury	75,393	3.35%
(K) Fatal Injury	7,432	0.33%
Date and Time (Year)		
2013	327,057	14.53%
2014	329,779	14.65%
2015	381,938	16.97%
2016	405,204	18.00%



Metrics Chart Builder Raw Table Manage Metrics

Summary		
Total Crashes		925
Fatal Crashes		131
CMV Crashes		925
Pedestrian Crashes		27
Cyclist Crashes		1
Motorcycle Crashes		18
Distracted Driver Crashes		10
Impaired Driver Crashes		71
KABCO Severity		
(A) Suspected Serious Injury	794	85.84%
(K) Fatal Injury	131	14.16%
(B) Suspected Minor/Visible Injury	0	0.00%
(C) Possible Injury / Complaint		
(D) No Injury		
Unknown		
Date and Time (Year)		
2013	147	15.89%
2014	123	13.30%
2015	199	21.51%
2016	180	19.46%
2017	174	18.81%
2018	102	11.02%



Segments Sliding Windows Settings

Rank	Route / MP	Crashes	Fatalities	Crash Rate	ePDO
1	1196403208I / -0.6 - 0.4	3	0	10527.8	3.0
2	0456402018I / -0.5 - 0.5	1	0	10523.7	1.0
3	2176402175I / -0.6 - 0.4	6	0	6531.9	6.0
4	2176402170I / -0.5 - 0.5	2	0	5027.0	9.2
5	0456402021I / -0.6 - 0.4	2	0	4995.4	2.0
6	3016402219I / -0.6 - 0.4	1	0	4562.0	1.0
7	0896407112I / -0.6 - 0.4	6	0	4347.0	6.0
8	0516404114I / -0.6 - 0.4	4	0	3862.0	4.0
9	3016402220I / -0.6 - 0.4	2	0	3509.3	21.9
10	0516404150I / -0.5 - 0.5	1	0	3358.1	1.0
11	3136401534I / -0.6 - 0.4	2	0	3122.5	21.9
12	0216404004I / -0.6 - 0.4	9	0	2988.6	23.3
13	2456415040I / -0.4 - 0.6	2	0	2895.5	95.3
14	2856403009I / -0.6 - 0.4	2	0	2748.5	2.0

[Hide/Show Columns](#)

# Three Takeaways

1. What is the GDOT Safety Engineering Program?
2. Crashes are lower during Covid-19
3. Numetric



# Questions?

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