



# Transportation Safety Solutions Workshop



**Welcome!**

Please type  
your name &  
organization  
in the chat  
feature.





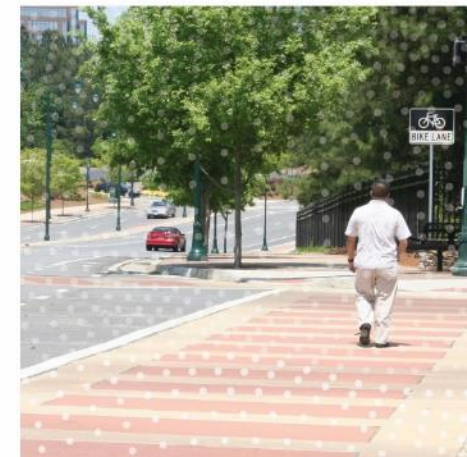
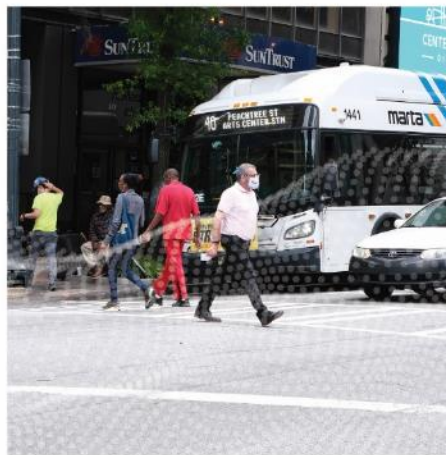
October 20, 2021

ATLANTA REGIONAL COMMISSION

# Regional Safety Strategy



*In Association with:*



# Welcome and Opening Remarks

Byron Rushing and Tejas Kotak

- Atlanta Regional Commission
- Co-Project Managers for ARC Regional Safety Strategy

Emphasis Area	Fatalities/year	Serious Injuries/year
Intersection Related	325	1744
Roadway Departure Related	175	645
Pedestrian and Bicycle Related	138	250
Older Driver Related	98	406
Motorcycle Related	74	325
Impaired Driving	57	226
Young Driver Related	51	378
Aggressive Driving	34	106
Distracted Driving	11	30

# Welcome and Opening Remarks

County	Intersection	Roadway Departure	Pedestrian and Bicycle
Barrow	●	●	
Carroll		●	
Cherokee	●	●	
Clayton			P
Cobb			
Coweta		●	
Dawson		●	
Dekalb			P
Douglas		●	
Fayette	●	●	B
Forsyth		●	
Fulton			
Gwinnett	●		
Henry		●	
Newton		●	
Paulding		●	
Rockdale		●	
Spalding		●	
Walton	●	●	



Sam Harris

[SHarris@dot.ga.gov](mailto:SHarris@dot.ga.gov)

Robert F. Dallas

[rdallas@rfdlaw.net](mailto:rdallas@rfdlaw.net)

To establish a regional safety vision for all modes

Identify actionable strategies and resources

Track our progress toward meeting regional safety targets

Promote better transportation project development

Promote a culture of safety



# Project Team

**Regan Hammond, AICP**  
Client Manager  
(VHB)



**Kirsten Mote, AICP**  
Technology  
(Modern Mobility Partners)



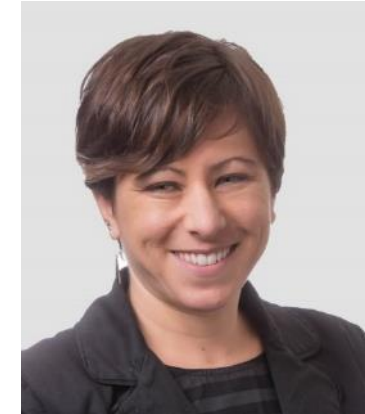
**Kristine Hansen-Dederick, AICP**  
Engagement  
(Sycamore Consulting Inc.)



**Frank Gross, PHD, PE**  
Project Manager  
(VHB)



**David Pickworth, PE**  
Deputy Project Manager  
(VHB)



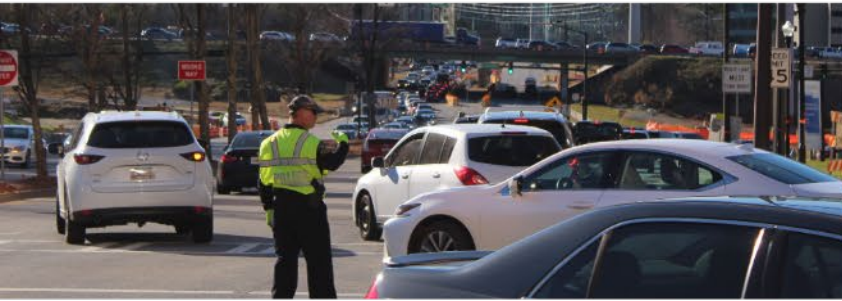
**Erin Thoresen, AICP**  
Implementation  
(Gresham Smith)

# Agenda

- I. Plenary 9:00 – 9:30
- II. Session 1 9:30 – 10:15
  - Roadway Departures
- III. Session 2 10:20 – 11:05
  - Intersections
- IV. Session 3 11:10 – 11:55
  - Bicycles and Pedestrians
- V. Lunch 11:55 – 12:30
- VI. Closing 12:30 – 1:00



# Regional Safety Strategy



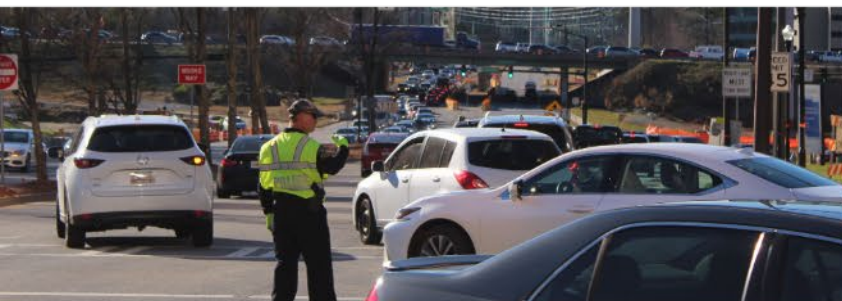
## Objective

Develop a strategy to address the safety of **all road users** through a **collaborative**, **multidisciplinary**, and **multimodal** approach.

*The road is a shared space—  
safety is a shared responsibility.*



# Regional Safety Strategy



## Regional Focus

MPO and State/  
Regional Partners

- Develop regional safety goals
- Support TIP and other regional plans
- Guide project prioritization and funding allocation
- Support safety performance monitoring and post-implementation evaluation

## Local Focus

Local Governments

- Identify safety emphasis areas and risk factors
- Develop evidence-based countermeasures
- Suggest local policies to support Vision Zero
- Provide guidance for project selection and prioritization

# ATLANTA REGIONAL COMMISSION

## REGIONAL VISION & LOCAL ASSISTANCE



# PLANNING FOR A DIVERSE REGION

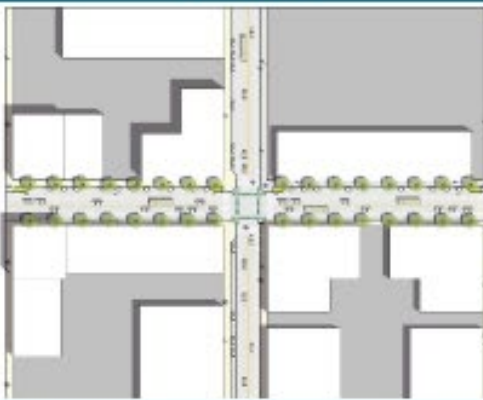
## DIFFERENT COMMUNITIES NEED DIFFERENT SOLUTIONS

- ~5 million residents
- ~8,000 square miles
- 20+ counties & 90+ municipalities
- Urban, suburban, rural, & exurban communities

URBAN CORE



URBAN



SUBURBAN



RURAL



RURAL TOWN





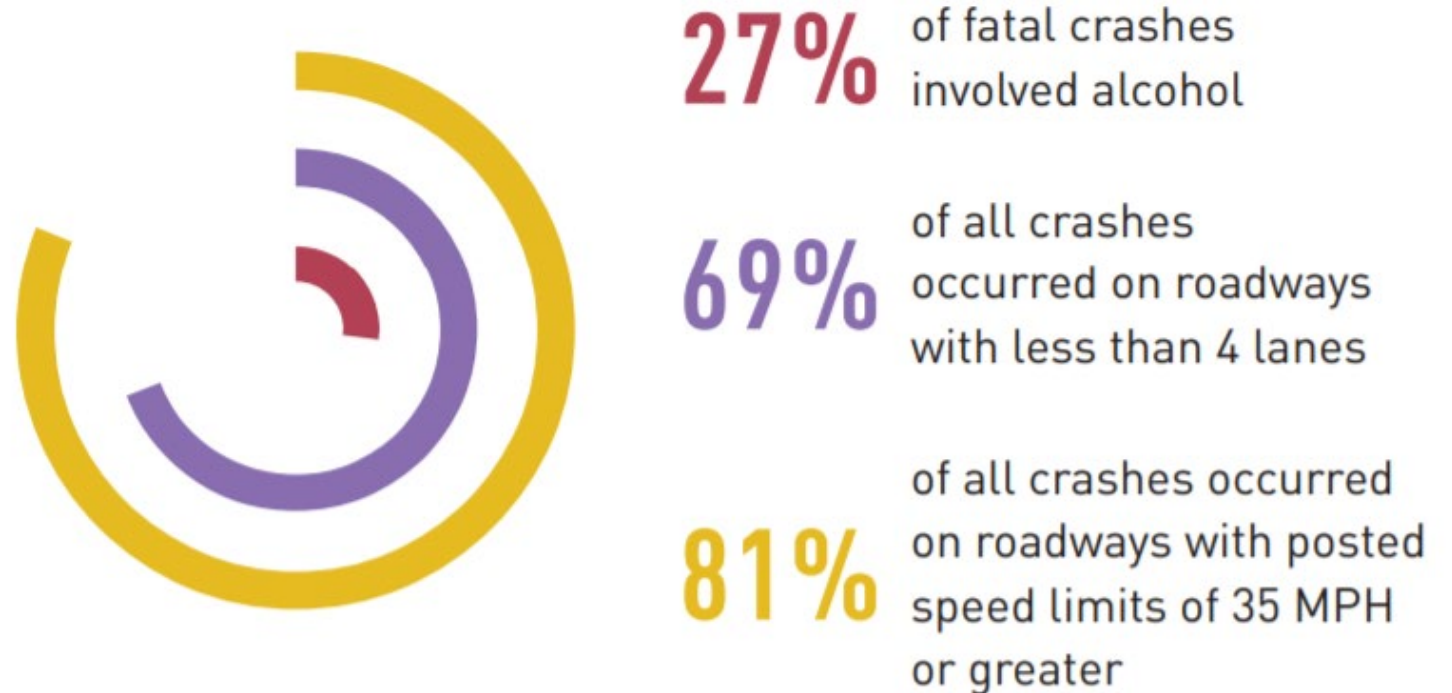
# METROPOLITAN PLANNING ORGANIZATION

## REGIONAL LONG-RANGE TRANSPORTATION PLAN



**“Increase the safety of the transportation system for motorized and non-motorized users.”**

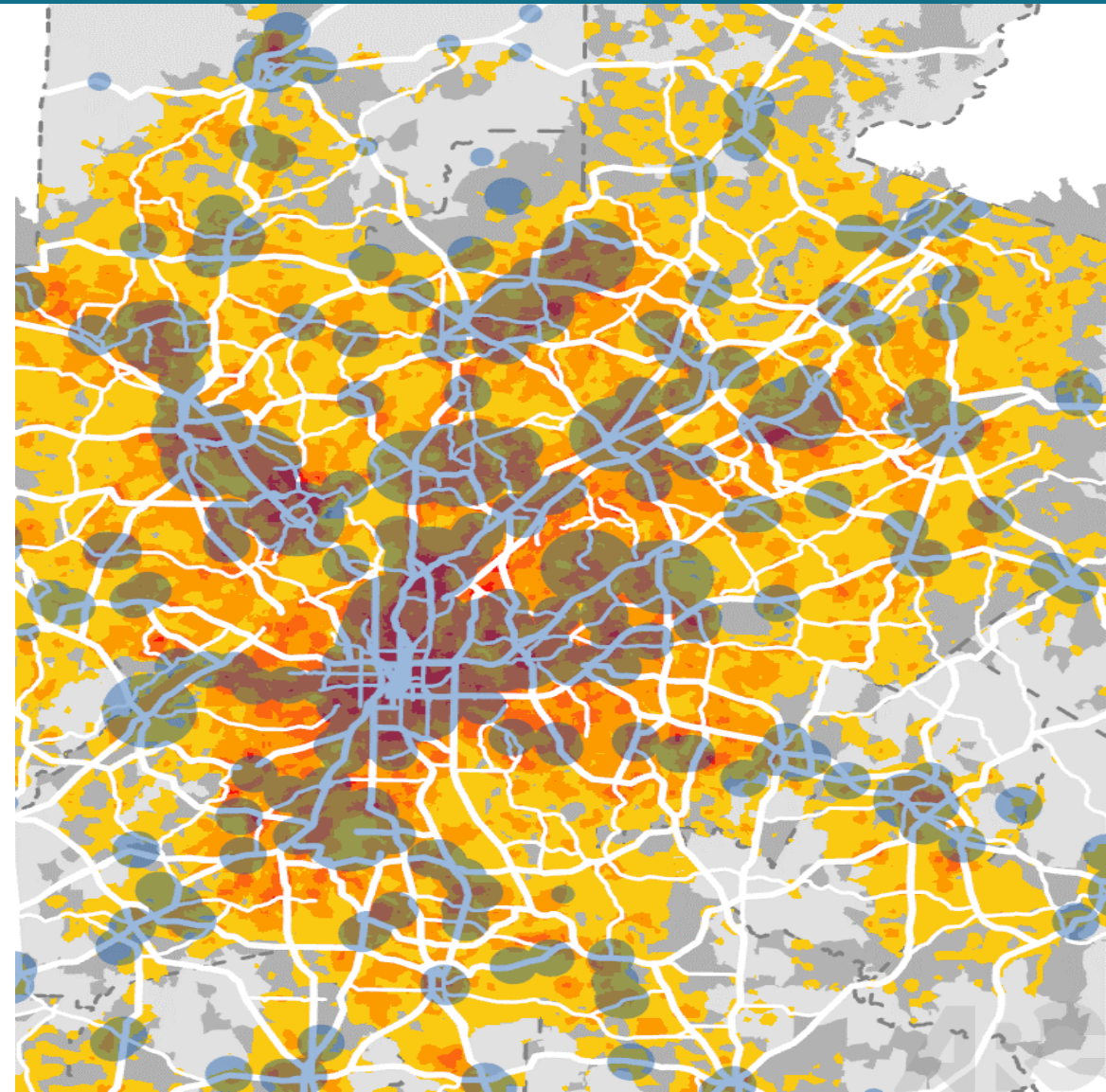
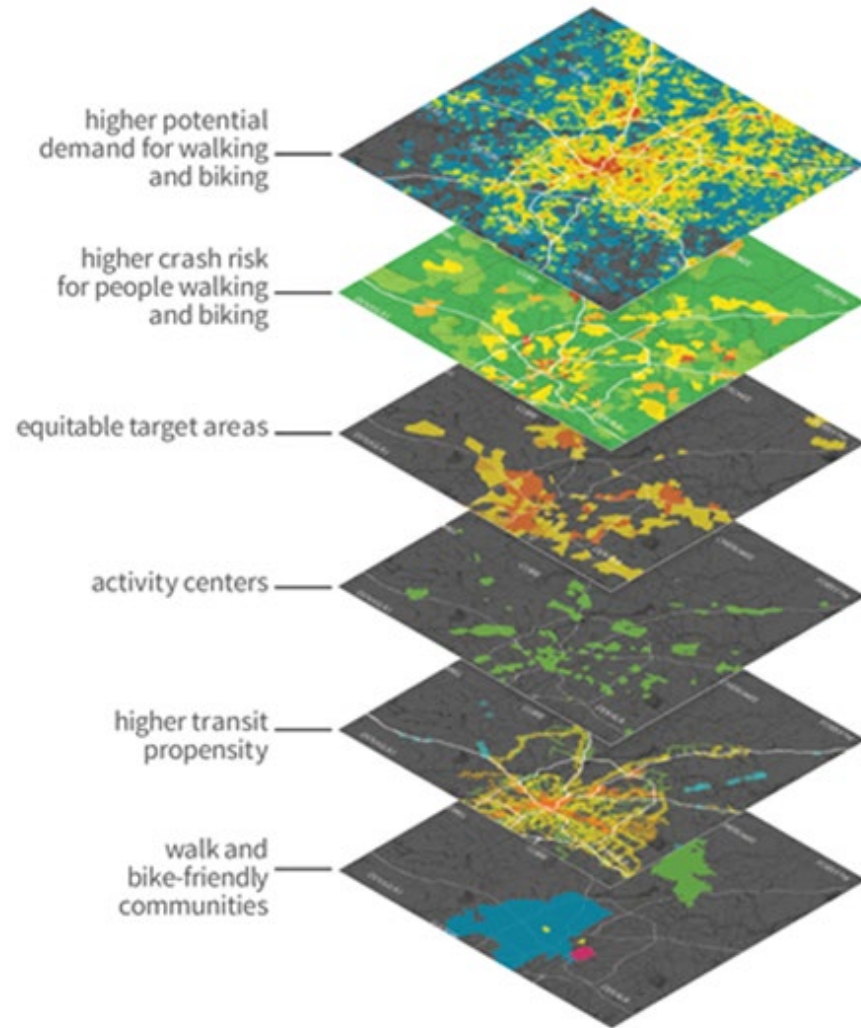
### SAFETY SNAPSHOT OF THE ATLANTA REGION<sup>1</sup>





# DATA-DRIVEN REGIONAL PLANNING

## RESEARCH FOR PLANNING & FUNDING



# PRIORITIZING SAFER STREETS

## CONNECTING FUNDING TO DESIGN TOOLS





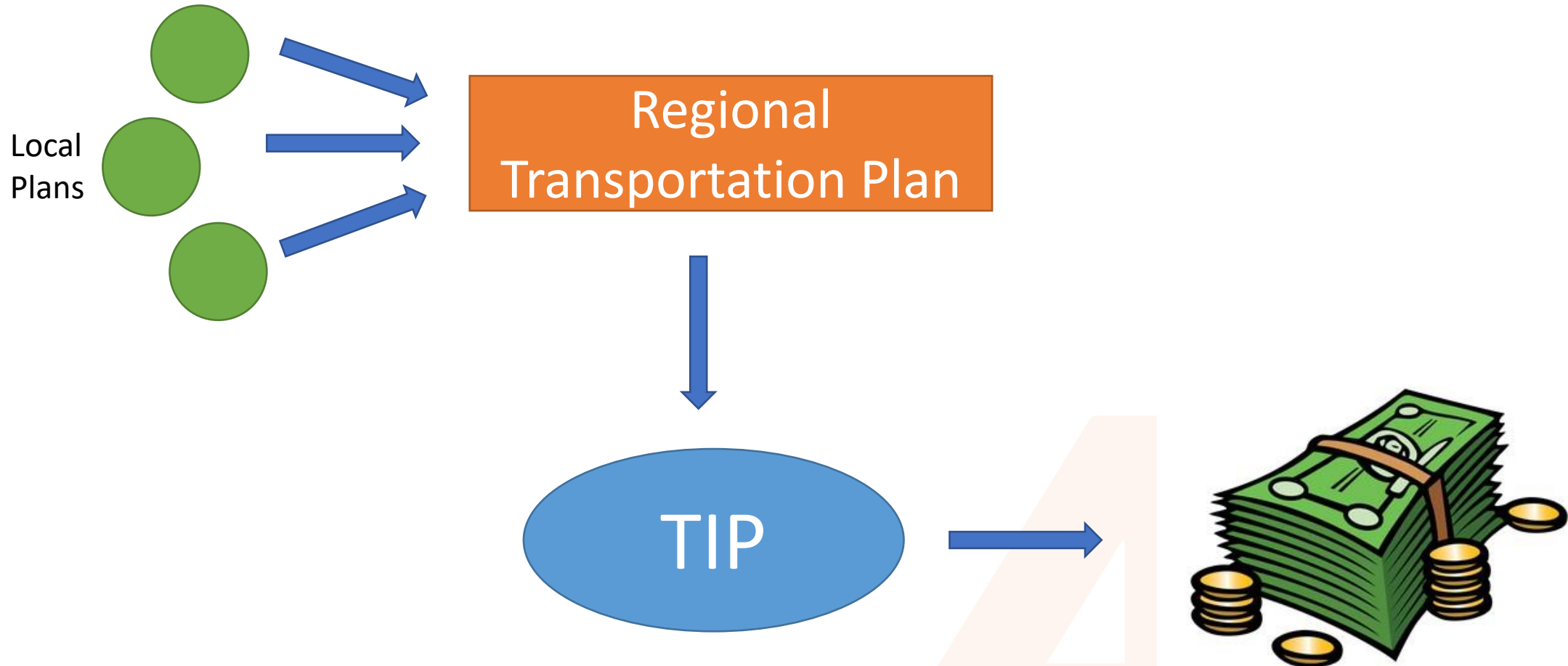
# REGIONAL COLLABORATION

## REGIONAL LONG-RANGE TRANSPORTATION PLAN

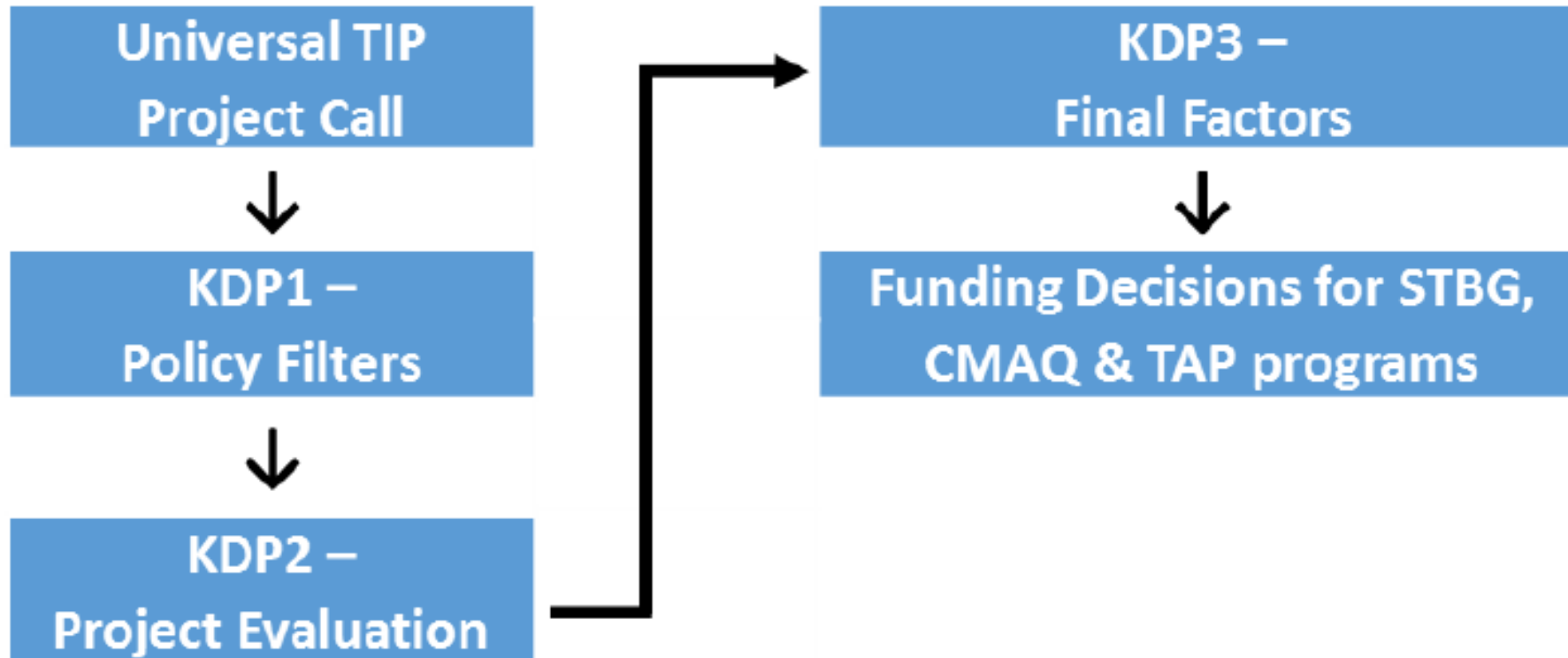


- **Regional Framework:**  
Establish regional priorities and policy to guide funding and technical assistance investments.
- **Local Frameworks:**  
Support local partners in enhancing and expanding policy, programs, and infrastructure.

# Transportation Improvement Program

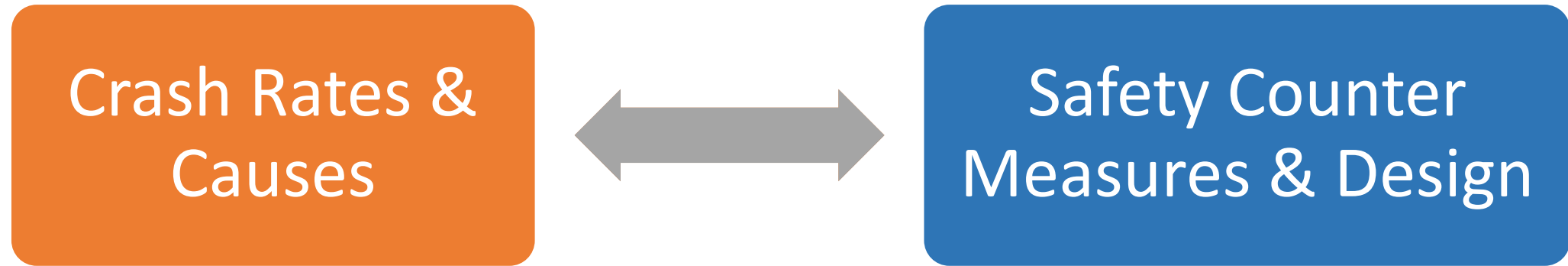


# Key Decision Point Framework



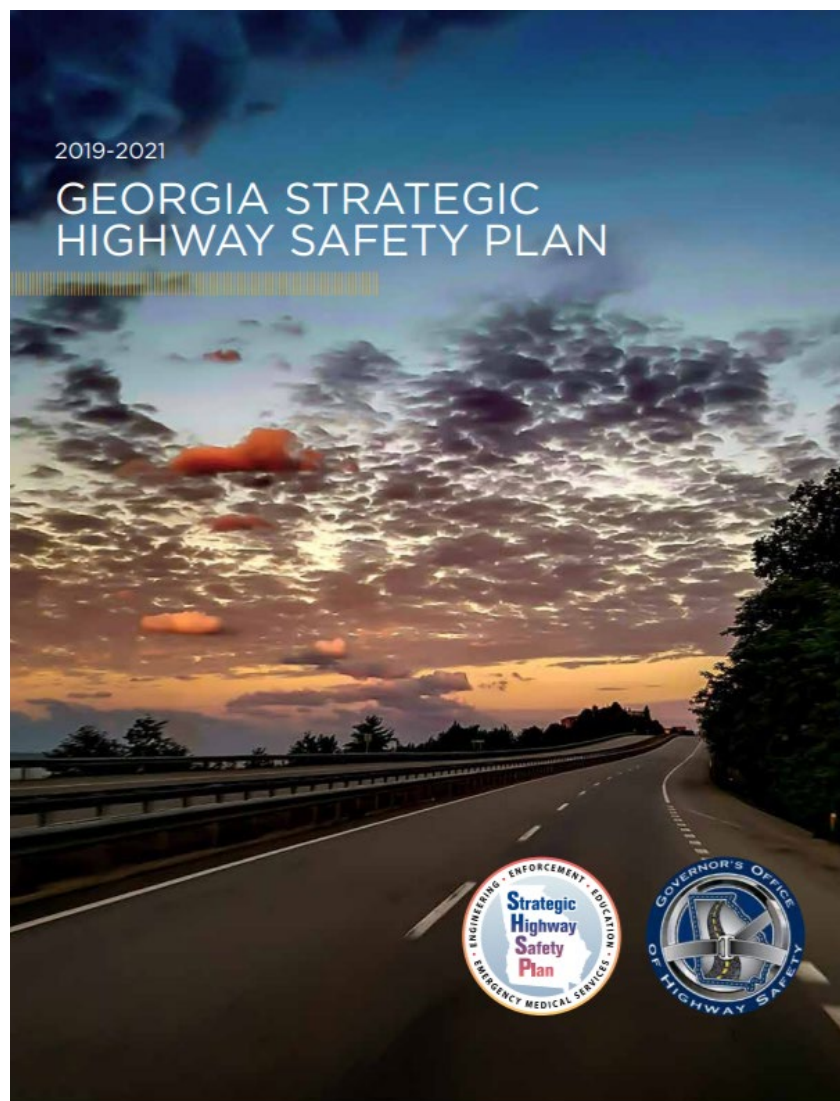


# Safety Evaluation

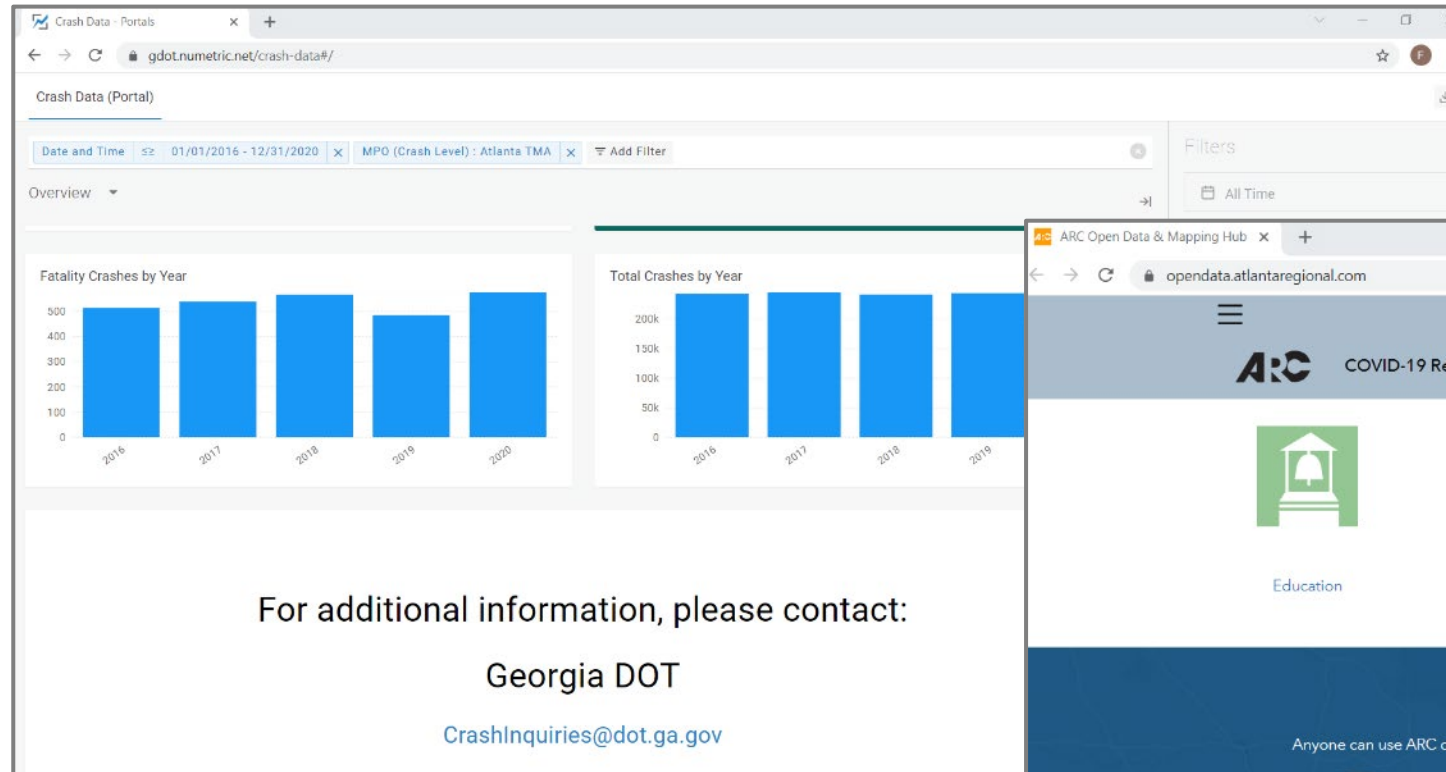


APC

# Highlights: Ongoing Safety Initiatives

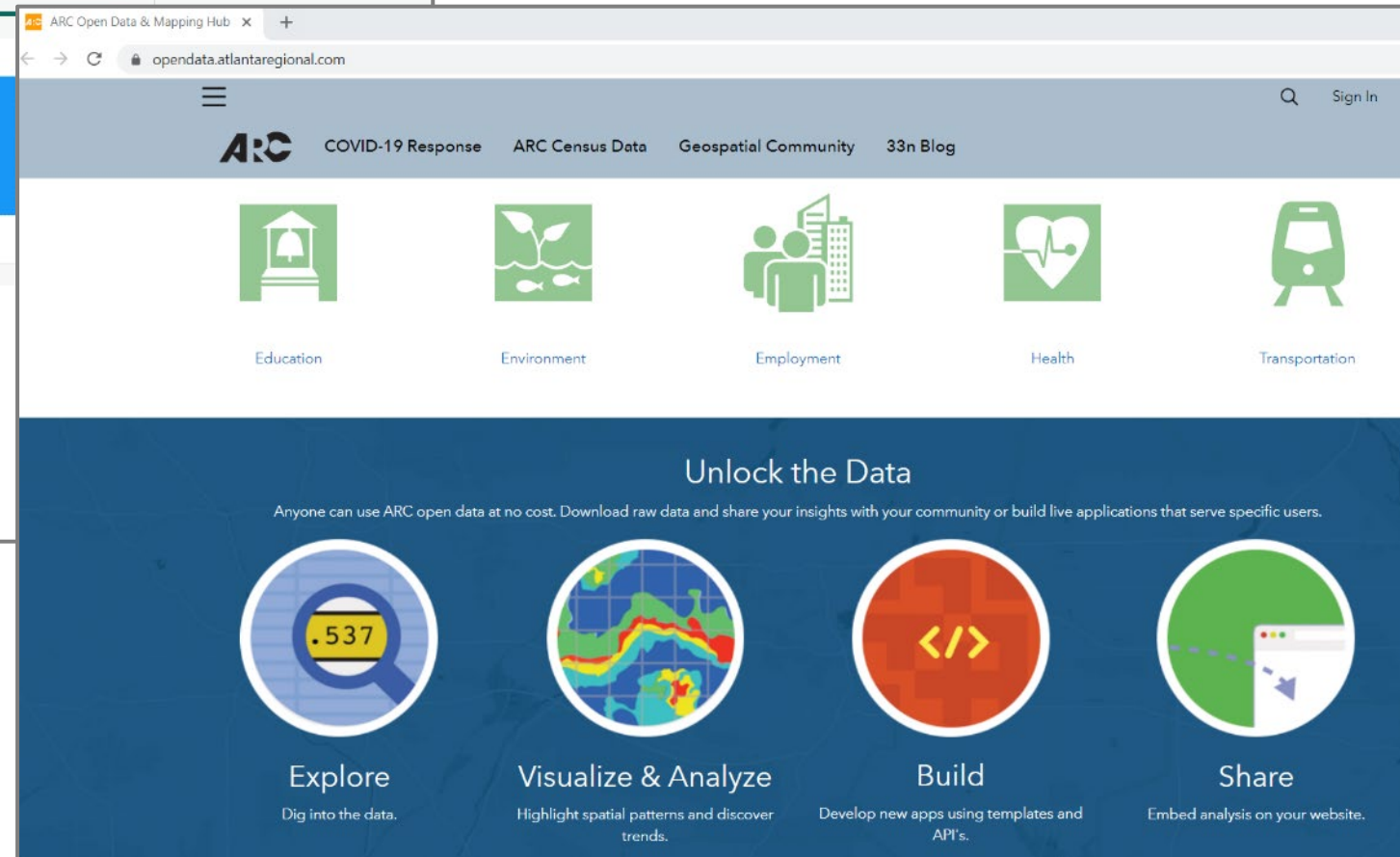


# Highlights: Data Access and Tools



GDOT Numetric  
Crash Data Portal

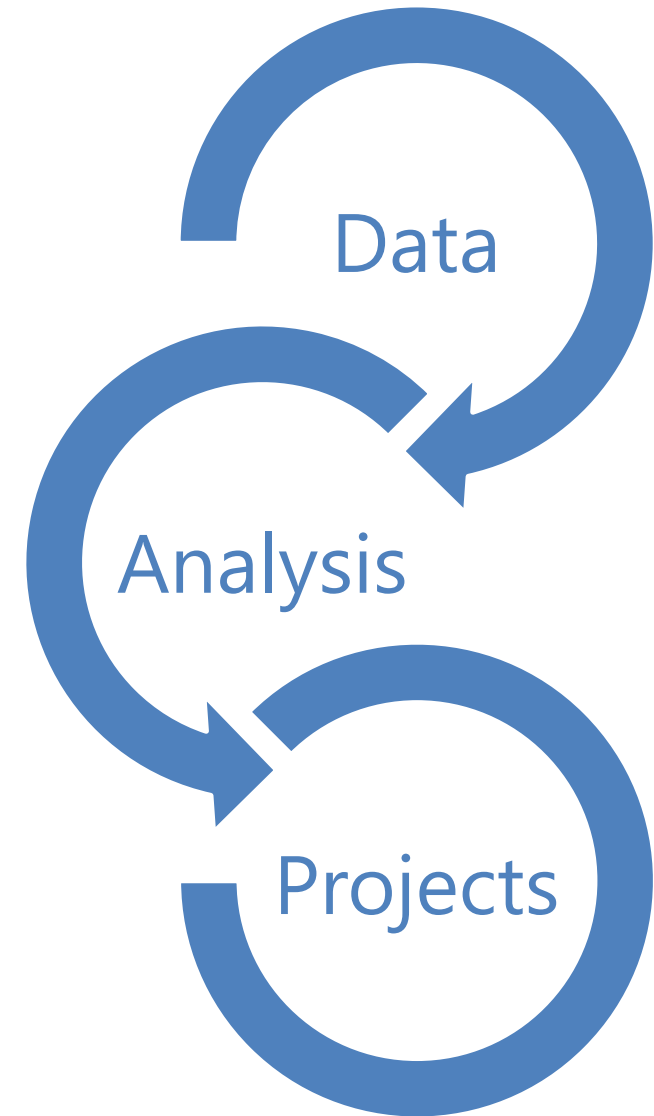
ARC Open  
Data Portal





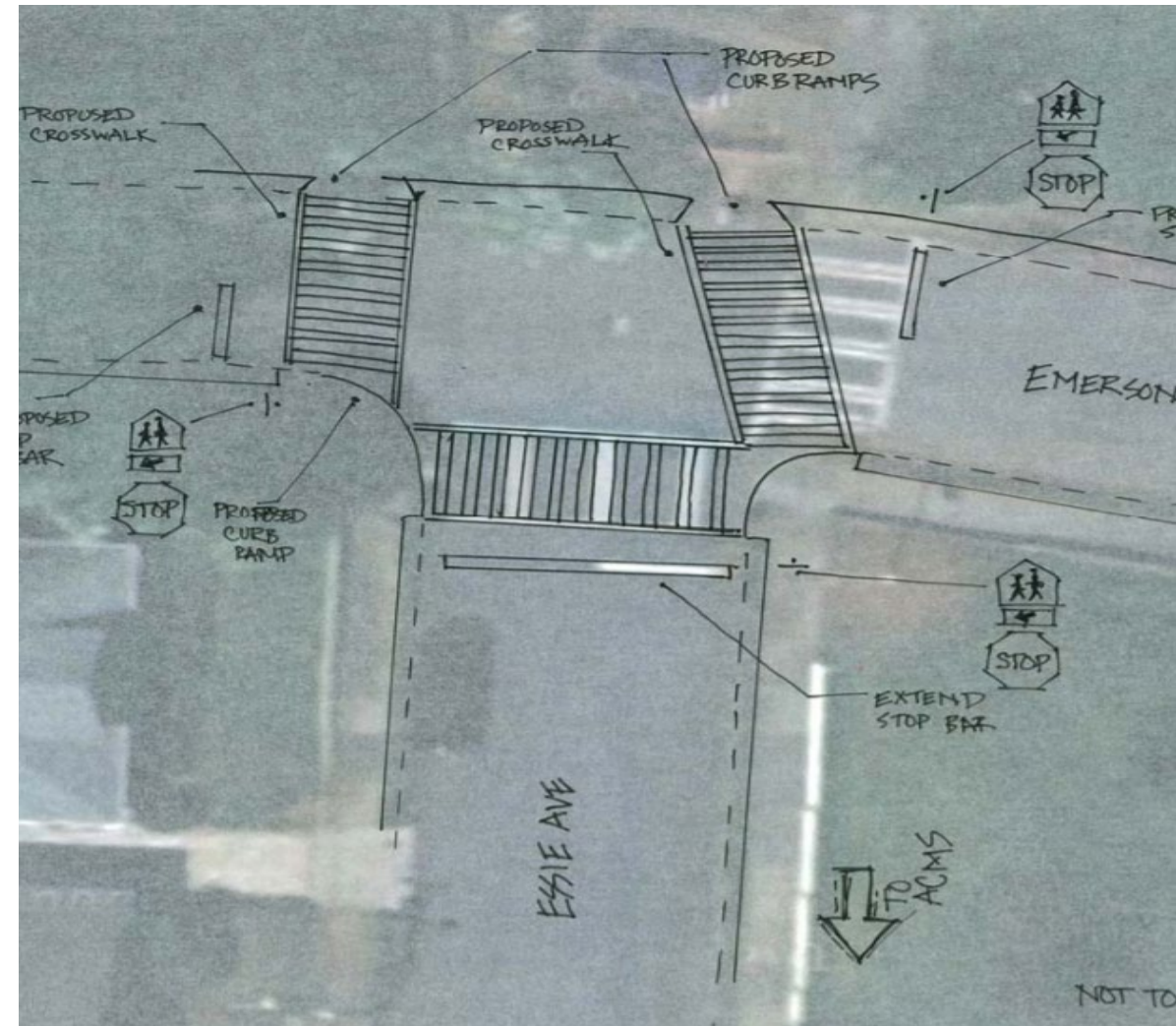
# Highlights: Funding Opportunities

- Highway Safety Improvement Program
  - Federal-aid program to achieve significant reduction in traffic fatalities and serious injuries on public roads
- Quick Response Program
  - Small projects up to \$200,000 identified through District Offices
- Off-System Safety Program
  - Funded through the federal safety program to enhance safety on local routes through low-cost countermeasures (striping, sign replacement, rumble strips)
- *Forthcoming: Safety Lump Sum Program*
  - Intended to fund projects that are costlier than QR projects but not as complex as some of the HSIP requirements



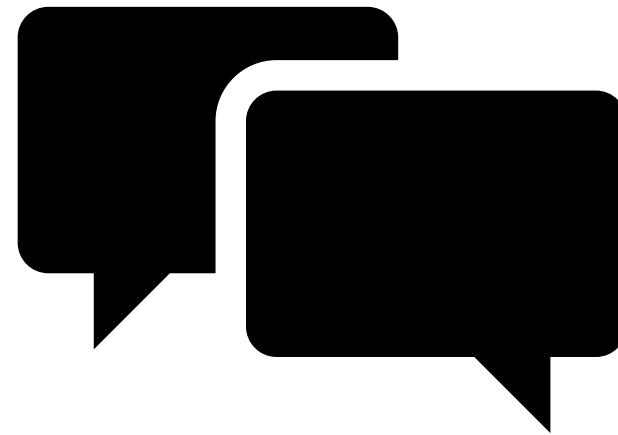
# Highlights: Funding Opportunities

- Railroad-Highway Crossings Program
  - Provides funds to eliminate hazards at railway-highway crossings
- Safe Routes to School
  - Funds development of SRTS programs; schools in the program with a SRTS plan are eligible to apply for funding for infrastructure projects
- GOHS Education and Awareness Programs
  - Funds innovative programs to address highway safety issues in identified categories, including bicycle and pedestrian safety, among others
- Other Federal-aid Funds



Source: Atlanta Charter Middle School Safe Routes to School Travel Plan

# Questions



# Session 1

## Roadway



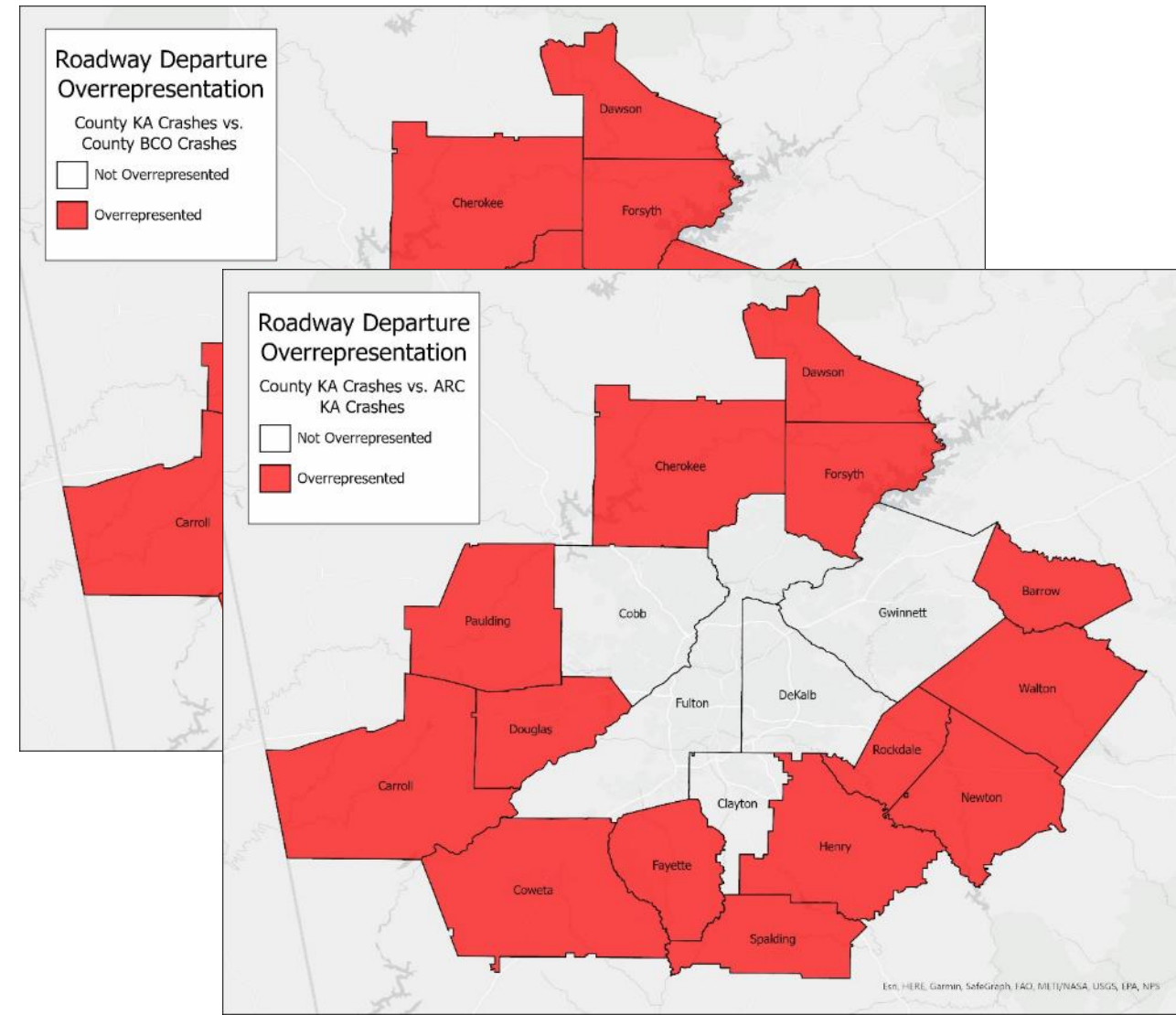
# Session 1: Roadway

- Context
- Solutions



# Roadway Departures: Context

- 230,000+ total crashes **PER YEAR!**
  - ~**600 people killed** each year
  - ~**3150 seriously injured** each year
- 
- 22,000+ RwD crashes **PER YEAR!**
  - ~**175 people killed** each year
  - ~**650 seriously injured** each year





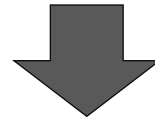
# Roadway Departures: Risk Factors

- Traffic volume
- Speed
  - Posted vs. design vs. operating
- Cross-section
  - Lane and shoulder width
  - Median width / type
- Horizontal curvature
  - Superelevation
  - Advance warning
- Pavement
  - Condition
  - Friction
- Delineation
  - Centerline presence
  - Edgeline presence
- Lighting presence
- Roadside features
  - Sideslope design
  - Clear zone

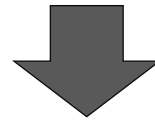


# Roadway Departures: Countermeasures

1<sup>st</sup> - Keep vehicles on the road



2<sup>nd</sup> - Reduce the potential for crashes



3<sup>rd</sup> - Minimize the severity



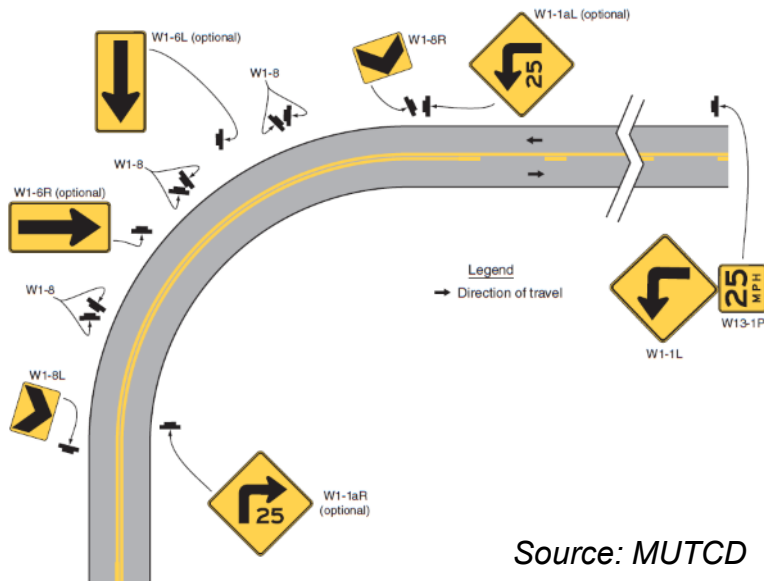
# Roadway Departures: Countermeasures

- Curve Signing
- Pavement Markings
- Friction Treatments
- Rumbles

1<sup>st</sup> - Keep vehicles on the road

2<sup>nd</sup> - Reduce the potential for crashes

3<sup>rd</sup> - Minimize the severity



Source: MUTCD

# Roadway Departures: Countermeasures

- Shoulders
- SafetyEdge<sup>SM</sup>
- Center Line Buffer
- Clear Zone
- Traversable Slopes

1<sup>st</sup> - Keep vehicles on the road

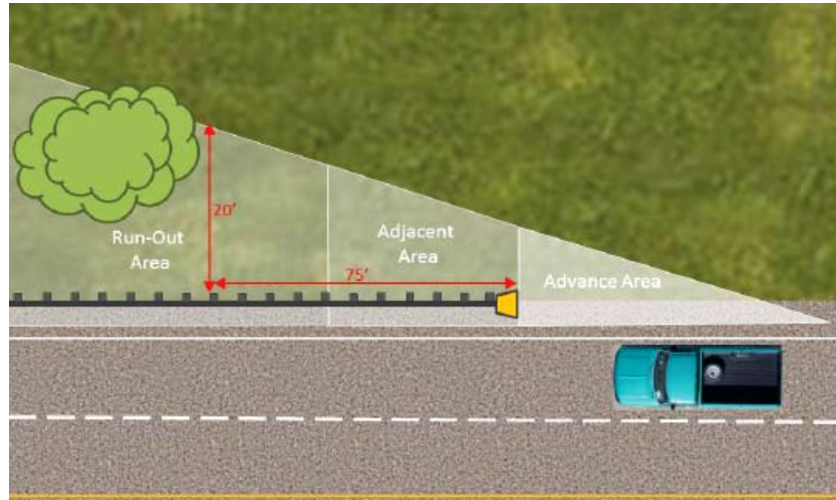


2<sup>nd</sup> - Reduce the potential for crashes



3<sup>rd</sup> - Minimize the severity

# Roadway Departures: Countermeasures



- Breakaway Devices
- Barriers

1<sup>st</sup> - Keep vehicles on the road



2<sup>nd</sup> - Reduce the potential for crashes

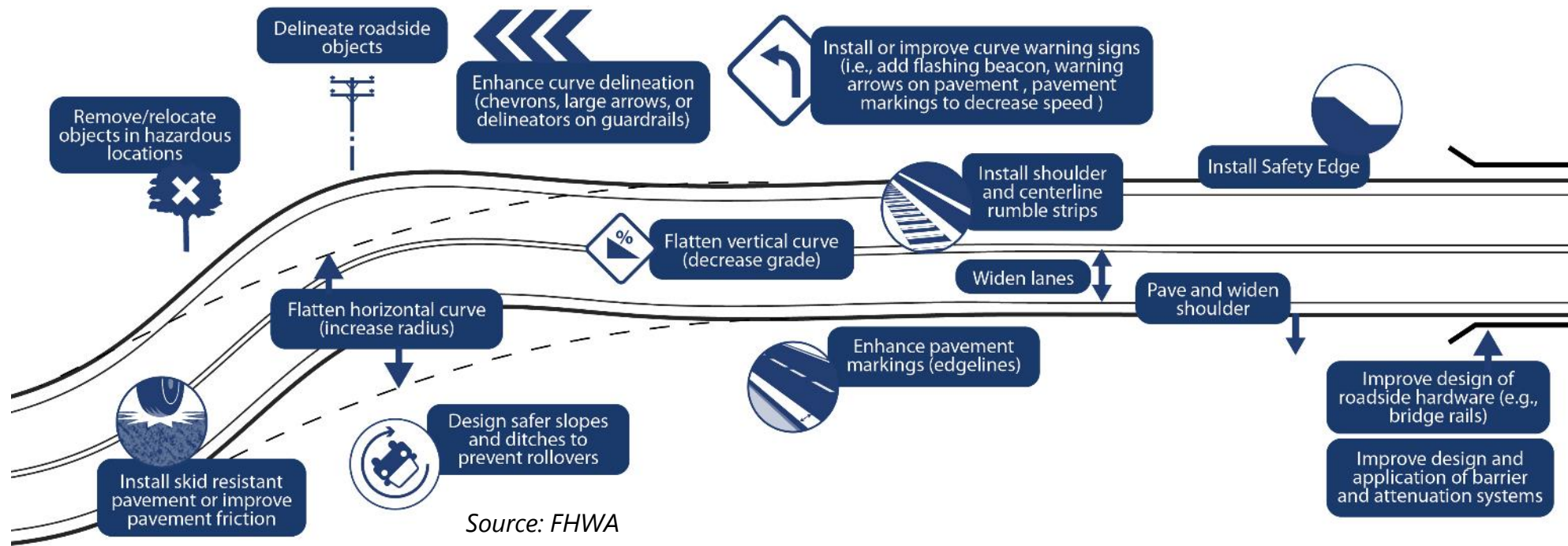


3<sup>rd</sup> - Minimize the severity



# Session 1: Breakouts

- Reality check:
  - Do these strategies work?
  - Where do they work best?
  - Who benefits (and who doesn't)?
  - What are challenges?
  - What would improve implementation?
- What is your experience?
  - Success stories/stumbling blocks
- What's missing?
- What are other roadway-related safety issues?



# Session 2

## Intersections



# Session 2: Intersections

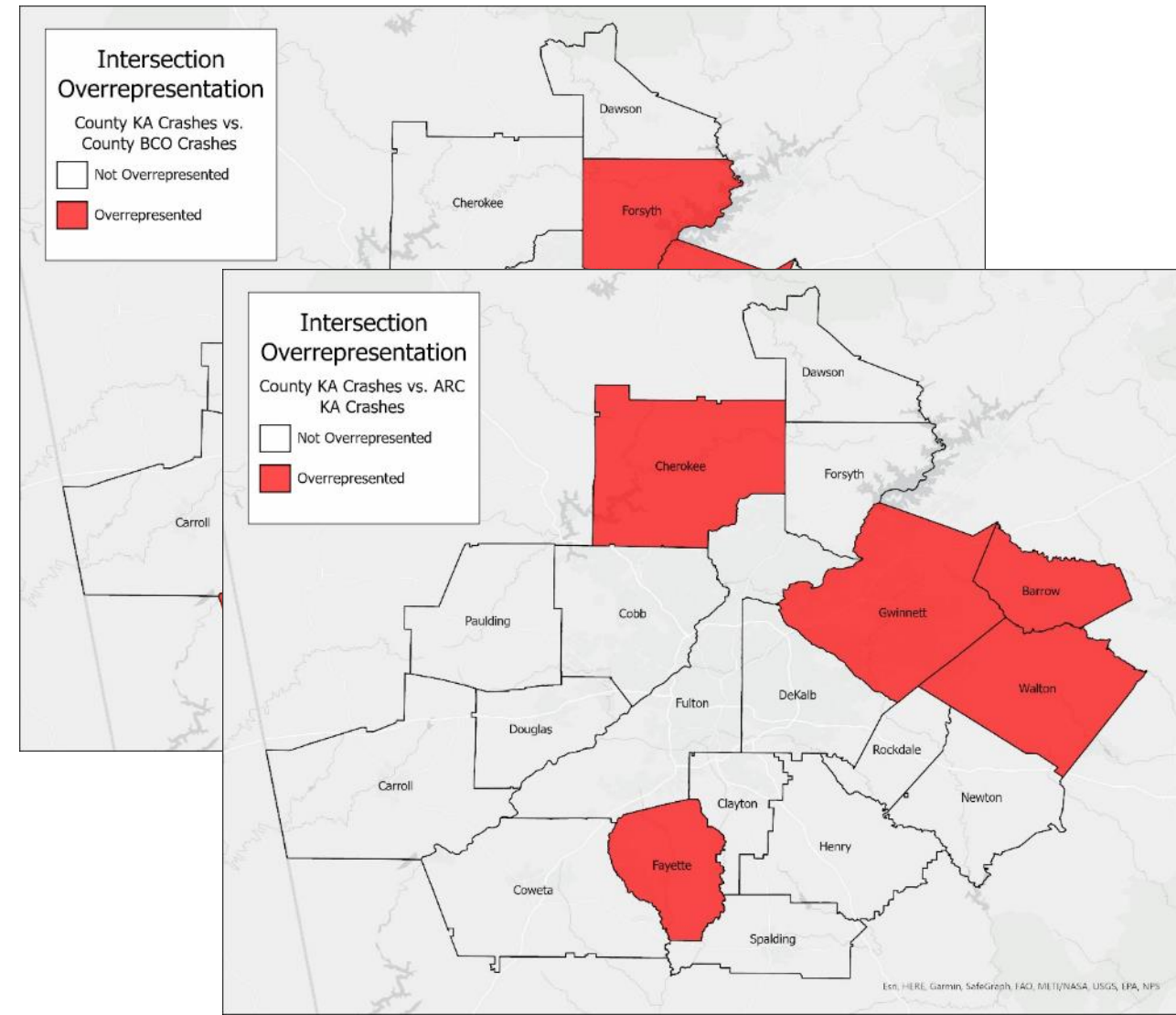
- Context
- Solutions





# Intersections: Context

- 230,000+ total crashes **PER YEAR!**
- ~**600 people killed** each year
- ~**3150 seriously injured** each year
- 116,000+ intersection crashes **PER YEAR!**
- ~**325 people killed** each year
- ~**1700 seriously injured** each year

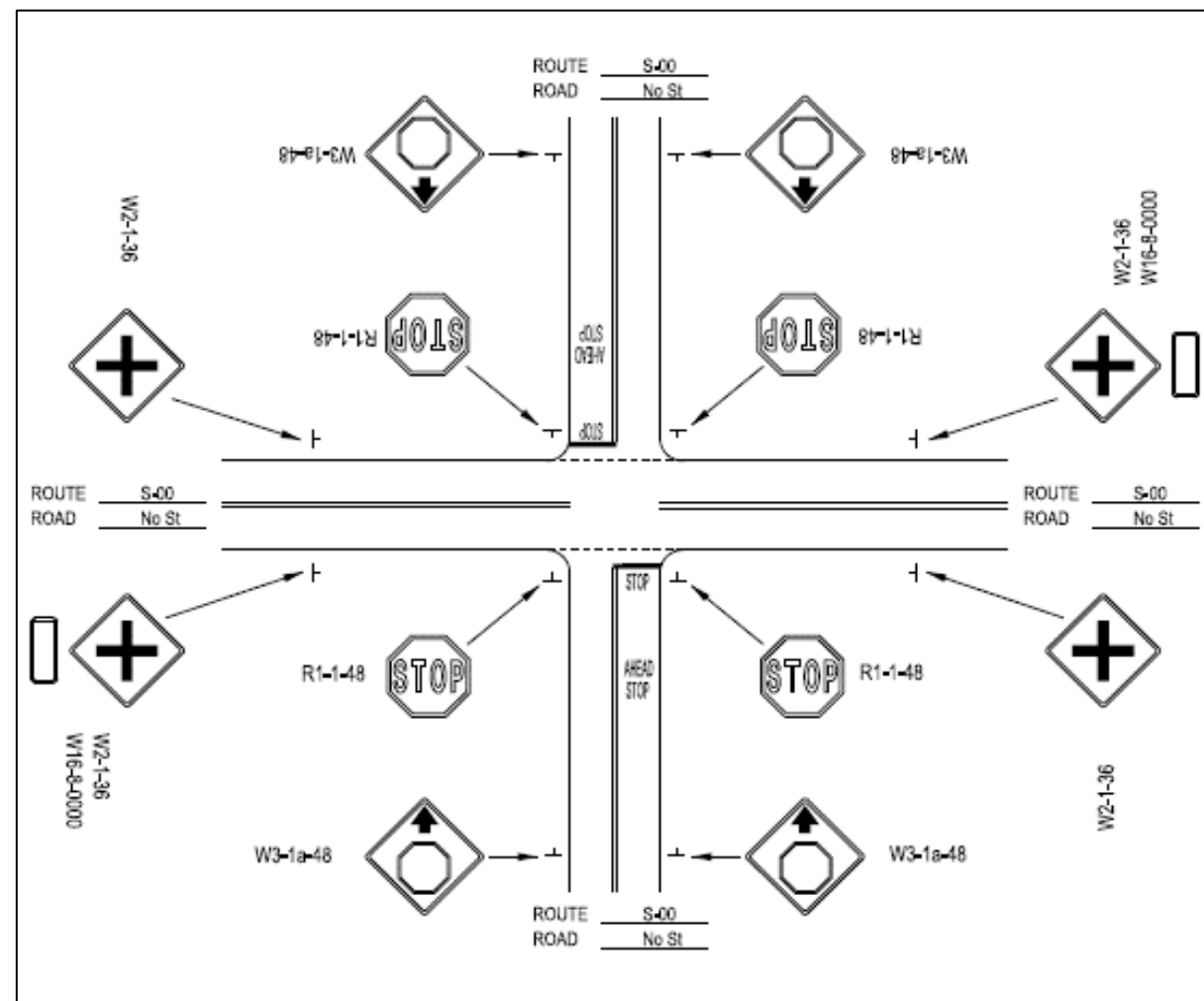
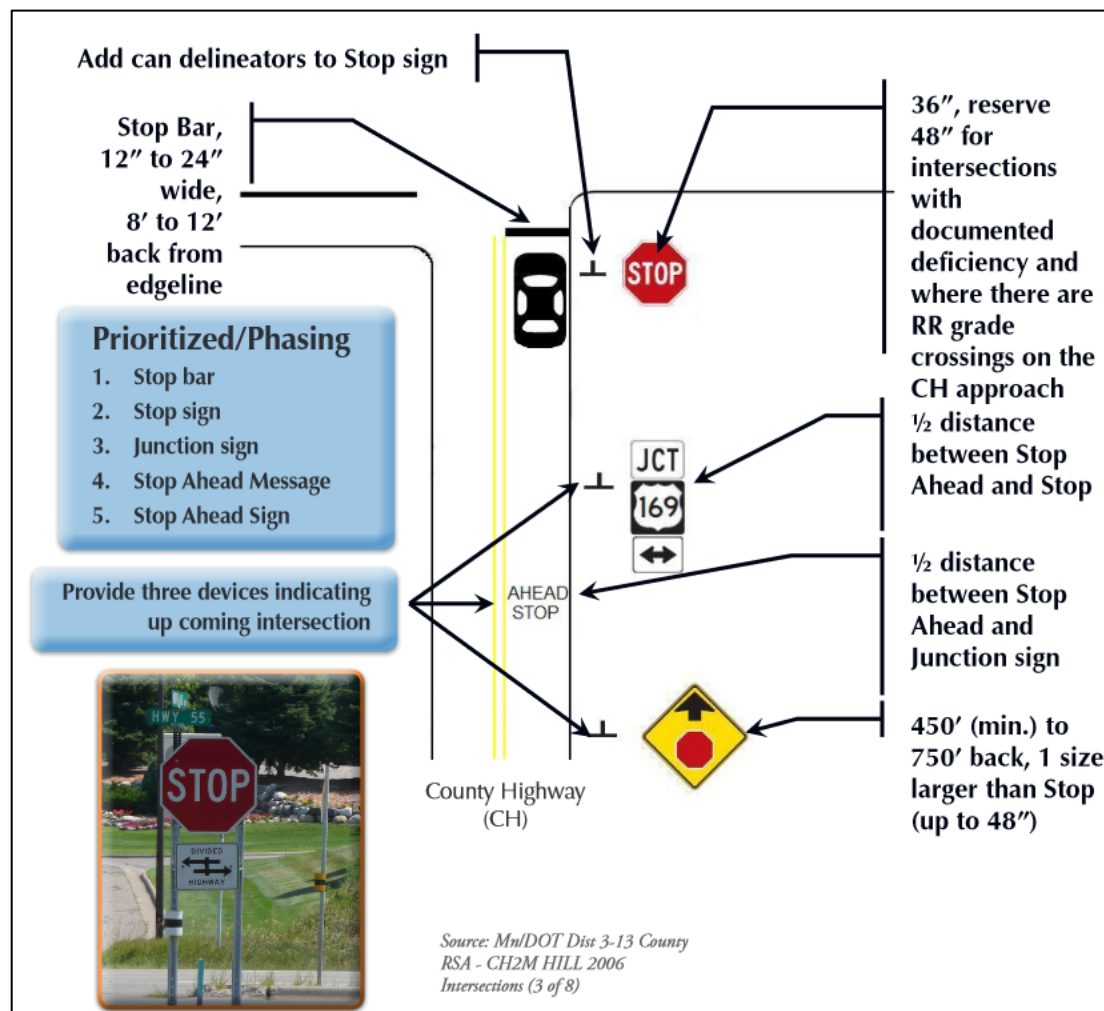


# Intersections: Risk Factors

- Traffic volume
- Speed
  - Posted vs. design vs. operating
- Traffic control device
  - Type
  - Visibility
- Sight distance
  - To/from intersection
- Skew angle
- Turn lanes
  - Left, Right, TWLTL
- Signing/delineation
  - Wayfinding
  - Advance warning
- Context
  - Along or near horizontal curve
  - Adjacent commercial development
- Signals
  - Left-turn phasing
  - # signal heads vs. lanes
  - Backplates
  - Right-turn-on-red
  - Overhead vs. pedestal



## Intersections: Countermeasures



## Enhance Signing and Delineation

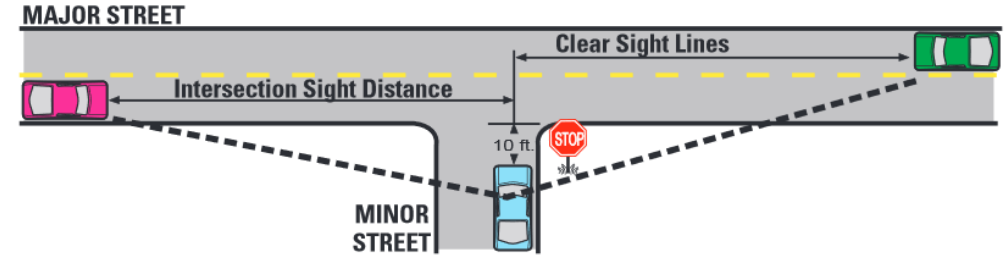
Source: SCDOT



# Intersections: Countermeasures

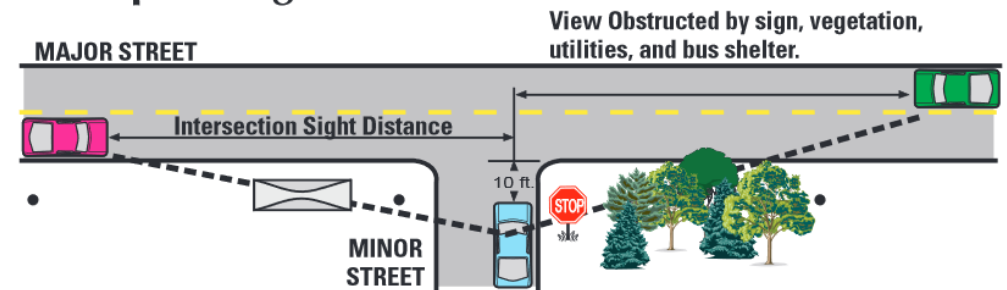


## Adequate Sight Distance



Speed	30	35	40	45	50	55	60	65
Intersection Sight Distance	325 ft 7 sec.	400 ft 8 sec.	475 ft 8 sec.	550 ft 8 sec.	650 ft 9 sec.	725 ft 9 sec.	880 ft 10 sec.	950 ft 10 sec.

## Inadequate Sight Distance



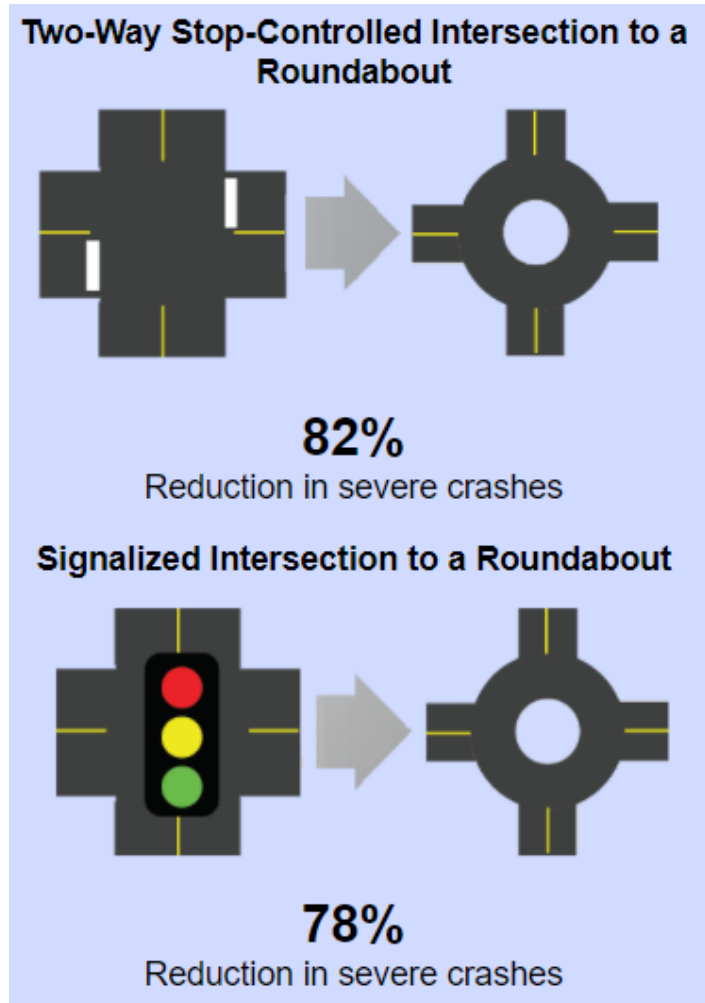
Source: NCHRP Report 383 – Intersection Sight Distance  
Iowa Highway Safety Management System, and  
AASHTO Green Book

Intersections (4 of 8)

Improve Sight Distance



# Intersections: Countermeasures



Source: FHWA



Modify Intersection Geometry or Traffic Control



# Intersections: Countermeasures

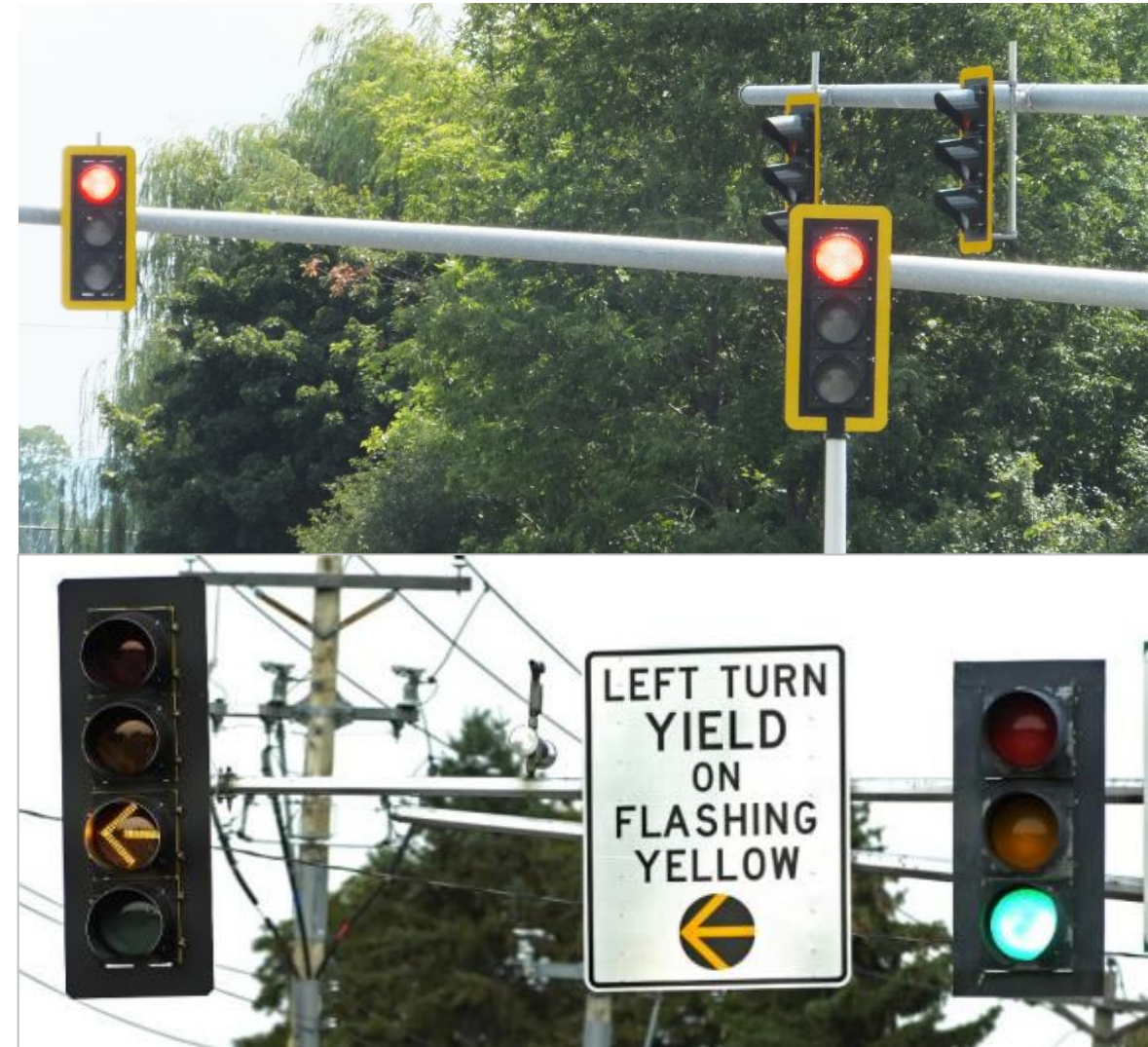


Modify Intersection Geometry or Traffic Control



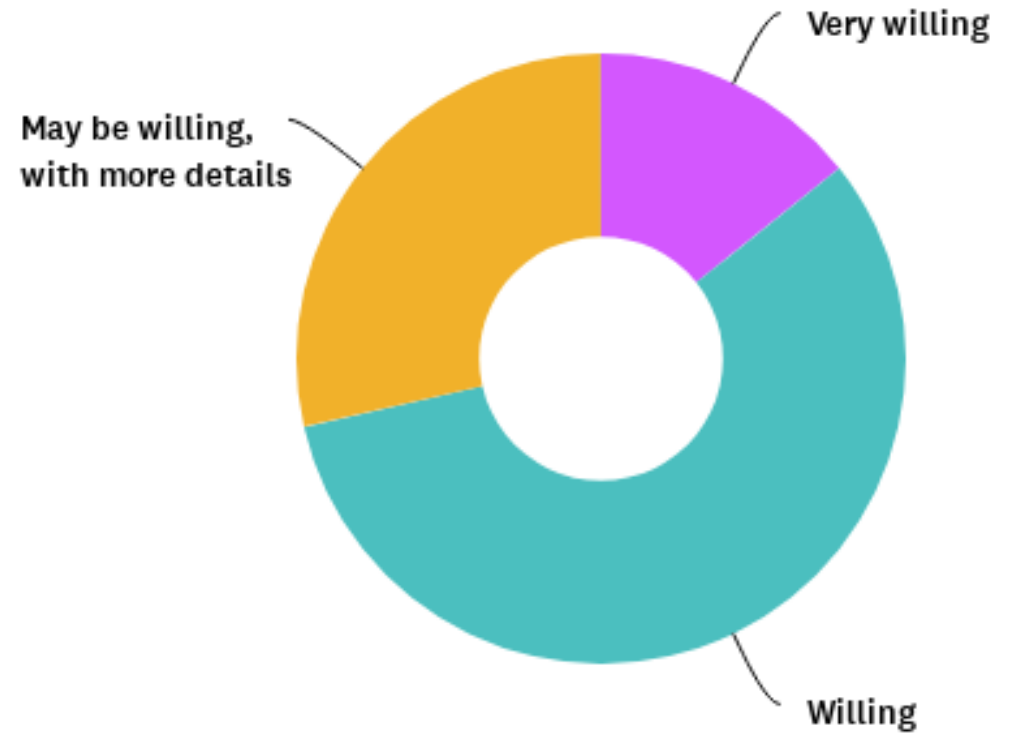
# Intersections: Countermeasures

- Improve signal visibility
  - Ensure # signal heads  $\geq$  # approach lanes
  - Install retroreflective backplates
  - Upgrade to 12-inch LED lenses
- Improve signal timing
  - Provide adequate signal clearance timing
  - Convert permissive left-turn phasing to protected or protected-permissive left-turn phasing
  - Install flashing yellow arrow
  - Implement Adaptive Signal System
- Other
  - Prohibit right-turn-on-red
  - Manage speeds along corridors
  - Red light indicators / cameras



# Session 2: Breakouts

- What is your experience?
  - Success stories/stumbling blocks
- Reality check:
  - Do these strategies work?
  - Where do they work best?
  - Who benefits (and who doesn't)?
  - What are challenges?
  - What would improve implementation?
- What's missing?



Willingness to trade congestion relief  
and travel times for safety.

*RSS Elected Official Survey*



# Session 3

## Pedestrians and Bicycles

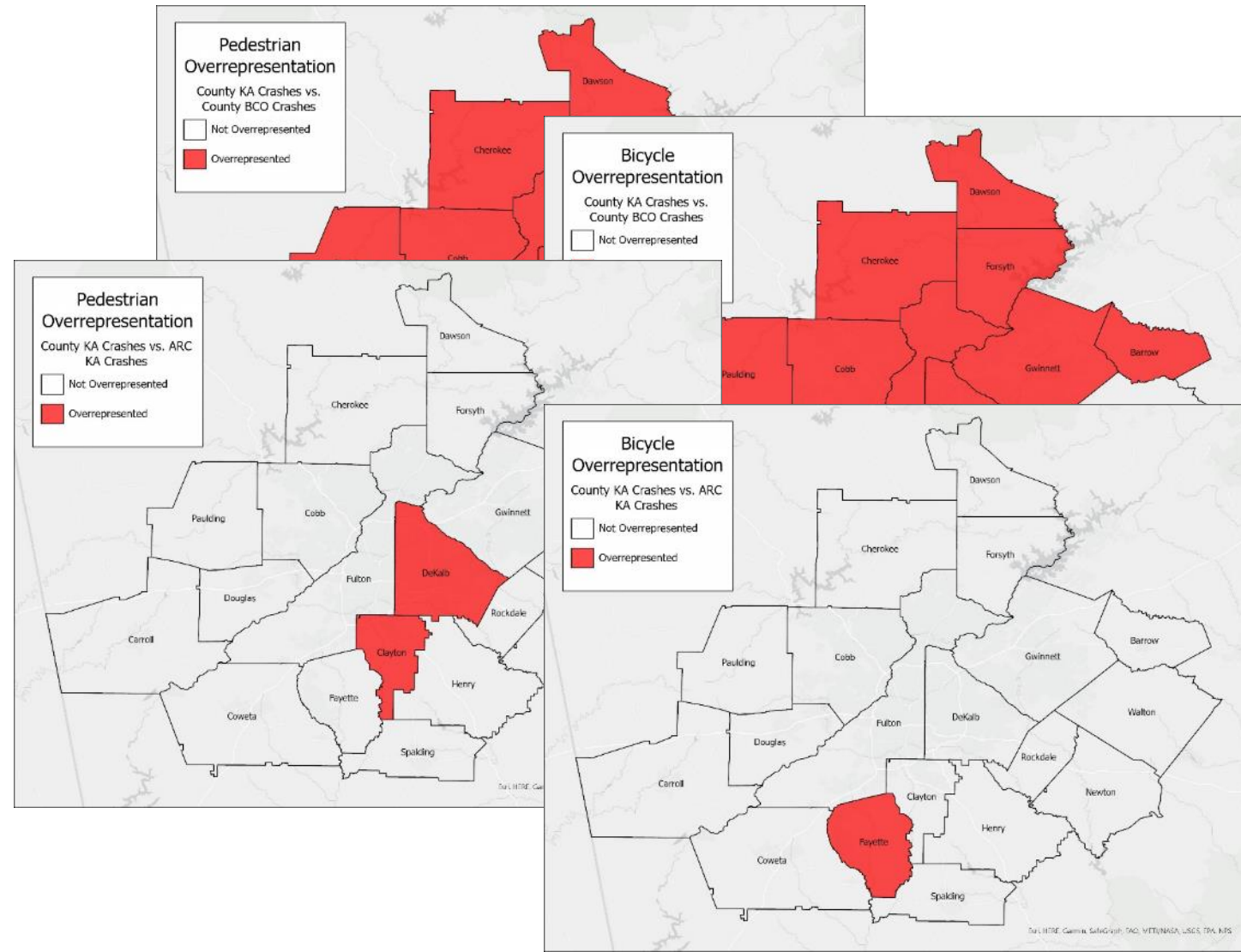
# Session 3: Pedestrians and Bicycles

- Context
- Solutions



# Pedestrians and Bicycles: Context

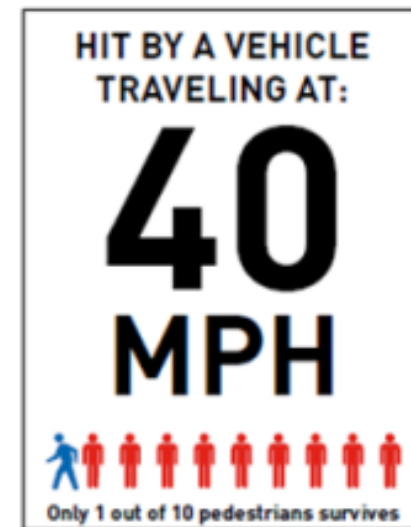
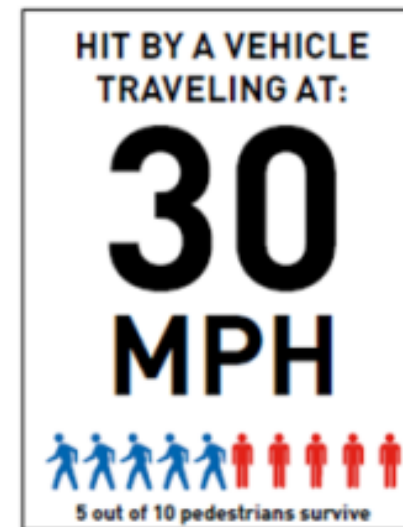
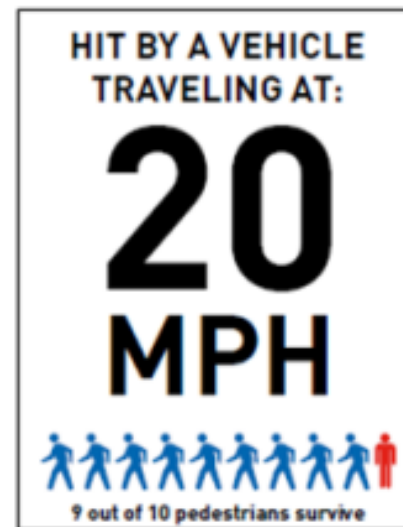
- 230,000+ total crashes **PER YEAR!**
- ~**600 people killed** each year
- ~**3150 seriously injured** each year
- 2,100+ ped/bike crashes **PER YEAR!**
- ~**140 people killed** each year
- ~**250 seriously injured** each year





# Pedestrians and Bicycles: Risk Factors

- Exposure
- Speed
- Crossing distance
  - Pavement width
  - Number of lanes
  - Median type
- Conflicts
  - Number of approaches
  - Intersection control
  - Driveways
- Lack of facilities
  - Sidewalks
  - Crosswalks
  - Bike lanes



Source: Seattle DOT



# Pedestrians and Bicycles: Risk Factors

- Visibility
  - Sight distance
  - Lighting
- Accessibility/Usability
  - ADA
  - Distance to crossing (block length)
  - Adjacent land use
- Signals
  - Phasing type
  - Right-turn-on-red
  - Pedestrian signal/type



# Pedestrians and Bicycles: Risk Factors



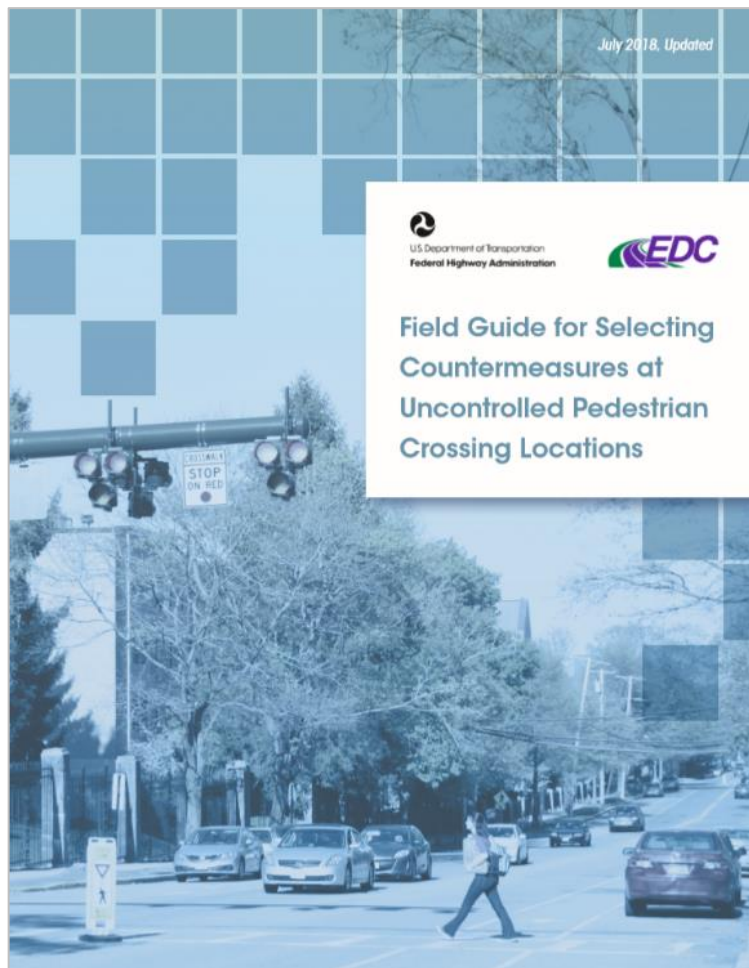
57	<b>Chapter 9</b> Case Example 1: Seattle Department of Transportation
57	Background and Motivation
57	Step 1: Define Study Scope
58	Step 2: Compile Data
59	Step 3: Determine Risk Factors
59	Step 4: Identify Potential Treatment Sites
60	Other Steps and Lessons Learned to Date
62	<b>Chapter 10</b> Case Example 2: Oregon Department of Transportation
62	Background and Motivation
63	Step 1: Define Study Scope
63	Step 2: Compile Data
63	Step 3: Determine Risk Factors
64	Step 4: Identify Potential Treatment Sites
64	Step 5: Select Potential Countermeasures
64	Step 6: Refine and Implement Treatment Plan
65	Other Steps and Lessons Learned to Date
66	<b>Chapter 11</b> Case Example 3: Arizona Department of Transportation
66	Background and Motivation
66	Step 1: Define Study Scope
66	Step 2: Compile Data
67	Step 3: Determine Risk Factors
68	Step 4: Identify Potential Treatment Sites
69	Step 5: Select Potential Countermeasures
69	Step 6: Refine and Implement Treatment Plan
69	Other Steps and Lessons Learned to Date
71	<b>Chapter 12</b> Case Example 4: California Department of Transportation
71	Background and Motivation
71	Step 1: Define Study Scope
71	Step 2: Compile Data
72	Step 3: Determine Risk Factors
72	Step 4: Identify Potential Treatment Sites
72	Step 5: Select Potential Countermeasures
73	Other Steps and Lessons Learned to Date

# Pedestrians and Bicycles: Risk Factors

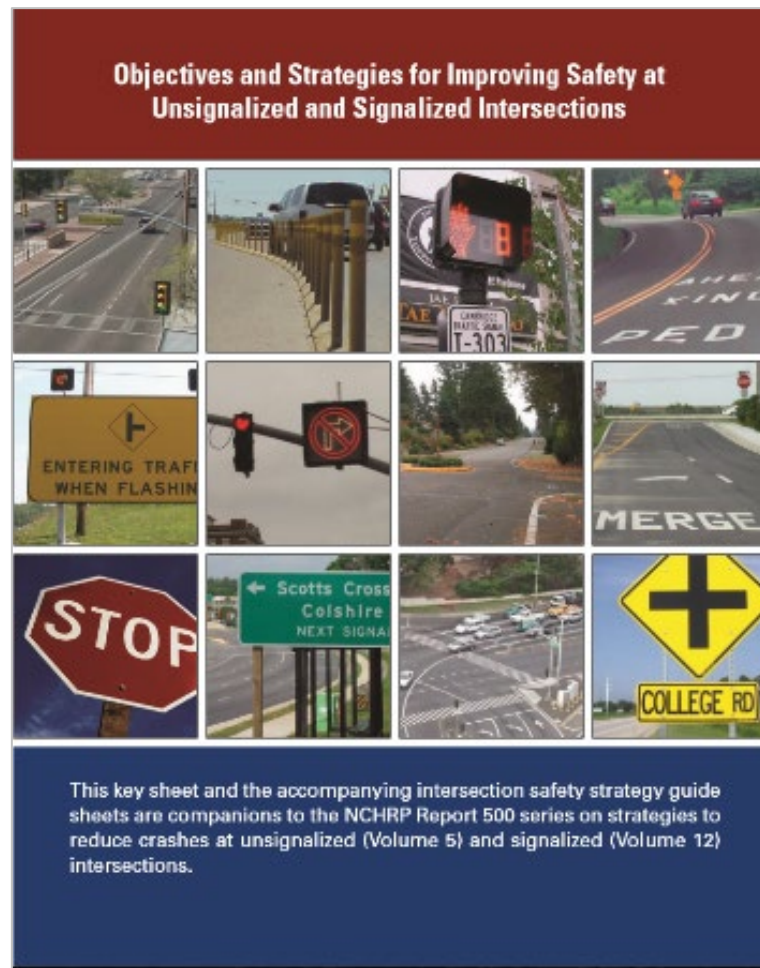
Variable/Risk Factors	Intersections	Segments
Traffic volume	Positive (generally positive but not linear)	Positive (generally positive but not linear)
High-turning volumes	Unknown threshold	Unknown at present
Functional classes—arterials and collectors compared with local streets	Positive	Positive
Proportion of truck/bus traffic in traffic stream	Positive (crash severity)	Positive (crash severity)
Proportion of local streets at intersection (potential surrogate for AADT)	Negative	Unknown at present
Pedestrian volume	Positive (but not linear)	Positive (but not linear)
Number of legs > 3 (may also be partial traffic surrogate)	Positive	Unknown at present
Total lanes on largest leg (5+)	Positive	Unknown at present
No median/median island	Positive (less certain than for segments)	Positive
Presence/number of transit stops	Positive	Positive



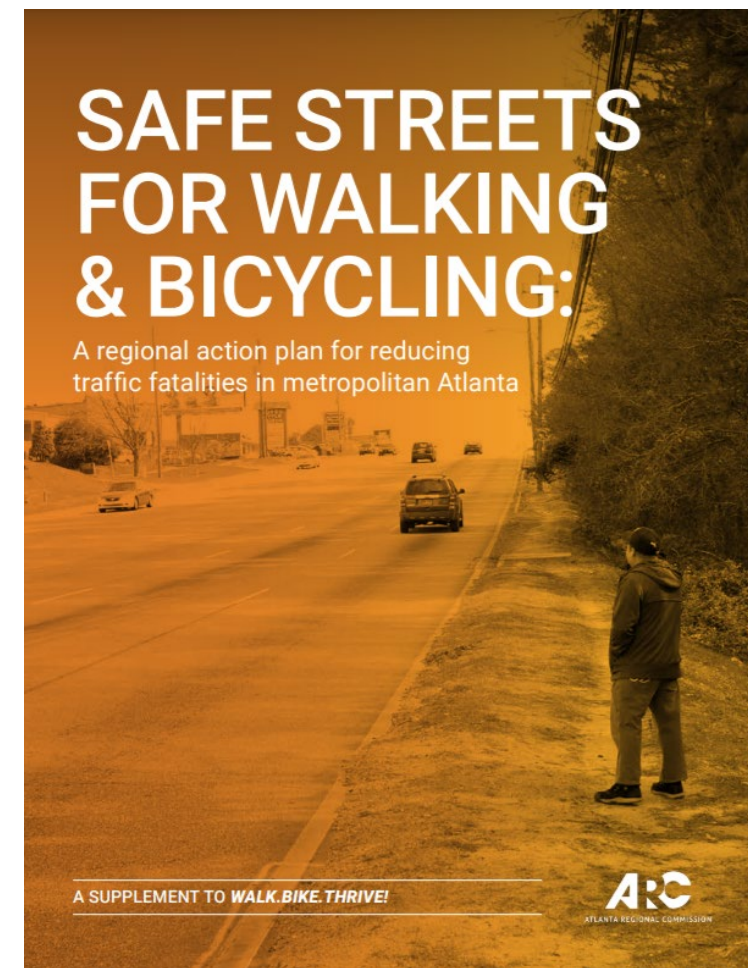
# Pedestrians and Bicycles: Countermeasures



[https://www.fhwa.dot.gov/innovation/everydaycounts/edc\\_4/STEP-field-guide.pdf](https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/STEP-field-guide.pdf)



[https://safety.fhwa.dot.gov/intersection/other\\_topics/fhwasa08008/inter\\_guide\\_key.pdf](https://safety.fhwa.dot.gov/intersection/other_topics/fhwasa08008/inter_guide_key.pdf)
















































<https://cdn.atlantaregional.org/wp-content/uploads/arc-safe-streets-webview-revjan20.pdf>



Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	① 2 4 5 6	① 5 6 7 9	① 5 6 ⑦ ⑨	① 4 5 6	① 5 6 7 9	① 5 6 ⑦ ⑨	① 4 5 6 7 9	① 5 6 7 9	① 5 6 ⑨
3 lanes with raised median (1 lane in each direction)	<p>Given the set of conditions in a cell,</p> <p># Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.</p> <p>● Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.</p> <p>○ Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*</p> <p>The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.</p> <p>1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs</p> <p>2 Raised crosswalk</p> <p>3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line</p> <p>4 In-Street Pedestrian Crossing sign</p> <p>5 Curb extension</p> <p>6 Pedestrian refuge island</p> <p>7 Rectangular Rapid-Flashing Beacon (RRFB)**</p> <p>8 Road Diet</p> <p>9 Pedestrian Hybrid Beacon (PHB)**</p>								
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)									
4+ lanes with raised median (2 or more lanes in each direction)									
4+ lanes w/o raised median (2 or more lanes in each direction)	① ③ 5 6 7 8 9	① ③ 5 ⑥ 7 8 9	① ③ 5 ⑥ 8 ⑨	① ③ 5 ⑥ 7 8 9	① ③ 5 ⑥ ⑦ 8 ⑨	① ③ 5 ⑥ 8 ⑨	① ③ 5 ⑥ ⑦ 8 ⑨	① ③ 5 ⑥ 8 ⑨	① ③ 5 ⑥ 8 ⑨

Refer to Field Guide for Selecting Countermeasures at **Uncontrolled Pedestrian Crossing Locations**

[https://www.fhwa.dot.gov/innovation/everydaycounts/edc\\_4/STEP-field-guide.pdf](https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/STEP-field-guide.pdf)

Pedestrian Crash Countermeasure for Uncontrolled Crossings	Safety Issue Addressed				
	Conflicts at crossing locations	Excessive vehicle speed	Inadequate conspicuity/ visibility	Drivers not yielding to pedestrians in crosswalks	Insufficient separation from traffic
Crosswalk visibility enhancement					
High-visibility crosswalk markings*					
Parking restriction on crosswalk approach*					
Improved nighttime lighting*					
Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line*					
In-Street Pedestrian Crossing sign*					
Curb extension*					
Raised crosswalk					
Pedestrian refuge island					
Pedestrian Hybrid Beacon					
Road Diet					
Rectangular Rapid-Flashing Beacon					

Refer to Field Guide for Selecting Countermeasures at **Uncontrolled Pedestrian Crossing Locations**

[https://www.fhwa.dot.gov/innovation/everydaycounts/edc\\_4/STEP-field-guide.pdf](https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/STEP-field-guide.pdf)

# Pedestrians and Bicycles: Countermeasures

Suitable for Signalized Intersections Only (or where signal is added)	Suitable for Unsignalized (Locations Only midblock or intersection)	Suitable for Either Signalized or Unsignalized Crossing Locations (including midblock)
<ul style="list-style-type: none"><li>• Leading pedestrian interval</li><li>• Longer pedestrian phase</li><li>• Restricted left turn (protected crossing phase)</li></ul>	<ul style="list-style-type: none"><li>• In-roadway yield-to-pedestrian (R1-6) sign/gateway</li><li>• Advance stop/yield bar and R1-5/5a sign</li><li>• PHB</li></ul>	<ul style="list-style-type: none"><li>• High visibility crosswalk</li><li>• Traffic calming (raised device)</li><li>• Median crossing island</li><li>• Reduce number of lanes road diet</li><li>• Curb extension and parking restriction</li><li>• Location-specific lighting improvement</li></ul>

Refer to NCHRP Report 893: Systemic Pedestrian Safety Analysis

<https://www.trb.org/Publications/Blurbs/178087.aspx>

# Pedestrians and Bicycles: Countermeasures



Source: Safe Streets for Walking & Bicycling





# Session 3: Breakouts

- What is your experience?
  - Success stories/stumbling blocks
- Reality check:
  - Do these strategies work?
  - Where do they work best?
  - Who benefits (and who doesn't)?
  - What are challenges?
  - What would improve implementation?
- What's missing?
- What are multimodal (transit) considerations?

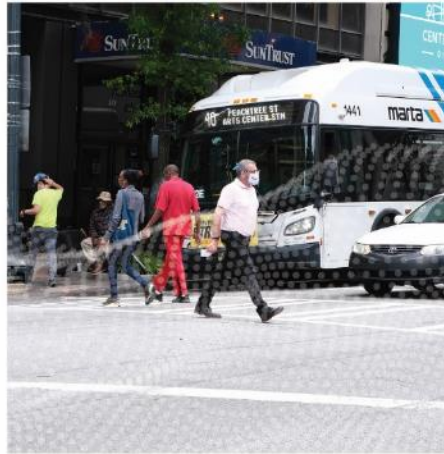


Please be back by 12:30pm!

Grab lunch and join us for  
wrap-up while you eat

# Wrap-Up

- Session highlights
- Next steps
- Closing remarks





# Session Highlights

## Roadway

- Driver behavior, speed, distracted driving major issues despite the countermeasures
- Clear zones creating environment for speeding
- Implementation challenges – urban, ROW, opposition to rumble strips
- Education and outreach VERY important
- Context is important
- Other tools – USLIMITS2, advance warning



# Session Highlights

## Intersections

- Education is important
- Pedestrian challenges at roundabouts
- Visibility enhancements – lighting, reflective backplates
- Multi-modal considerations
- Signalization/allowing different movements on the same signal can be very dangerous.
- GDOT ICE tool
- Political support is important
- Leading pedestrian intervals or pedestrian scrambles





# Session Highlights

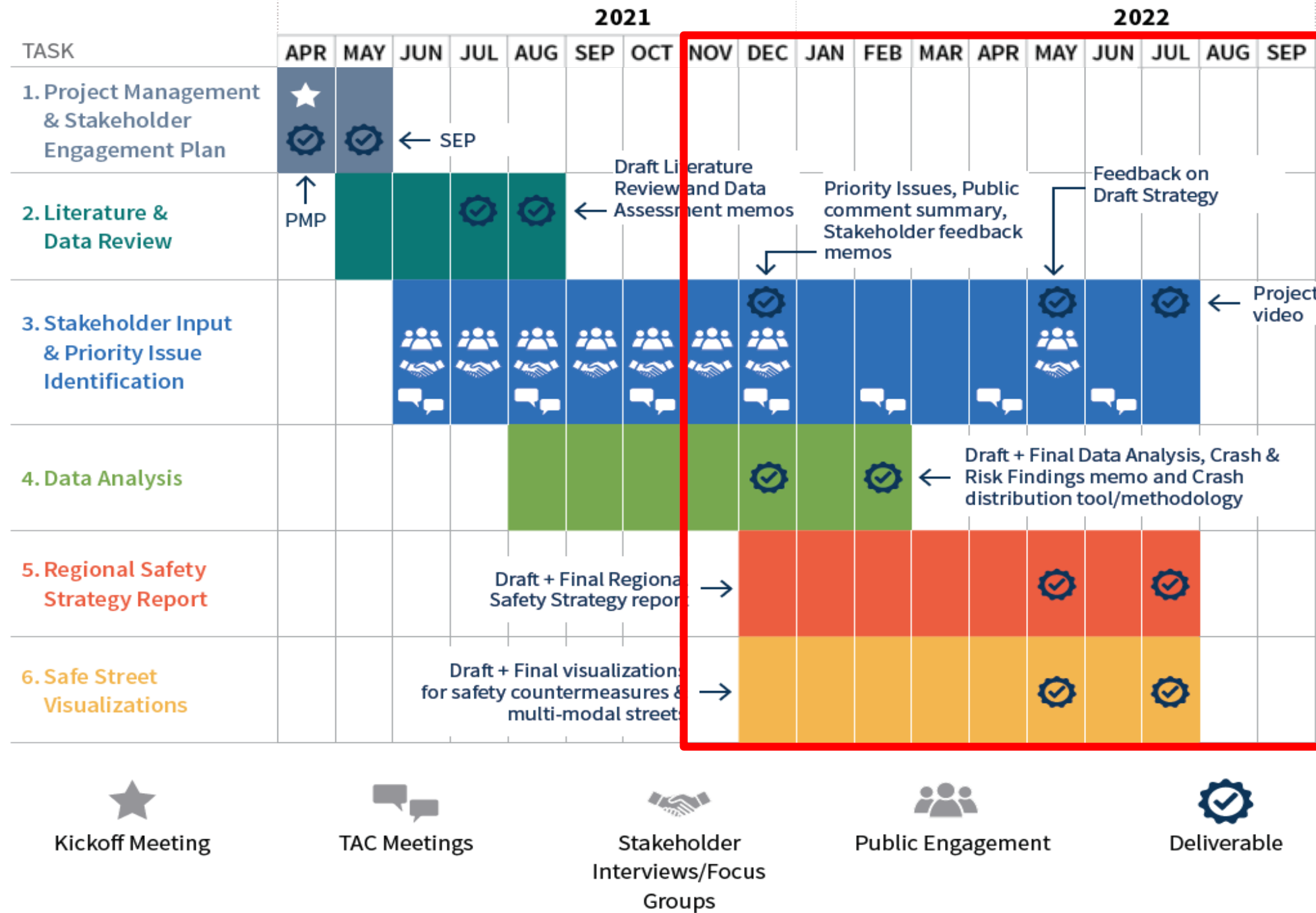
## Pedestrian and Bicyclists

- Education is important
- Public perception
- Partnering with advocacy groups
- LOCAL FEEDBACK for LOCAL SOLUTIONS
- Lack of basic infrastructure (sidewalks, bike lanes, etc) is a huge problem
- FUNDING is an issue
- Multi-modal considerations, transit
- Important to consider the user, what information they have to make decisions





# Next Steps



# Closing Remarks

17. Place a check next to the challenge(s) your organization faces in the implementation of safety measures. (check all that apply)

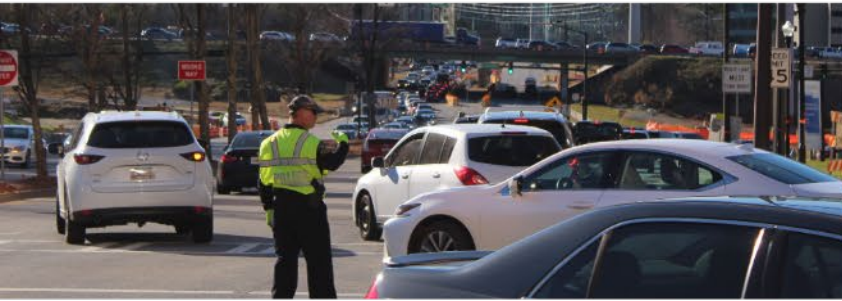
- ☐ Funding
- ☐ Political opposition or reluctance
- ☐ Public opposition or reluctance
- ☐ Conflicts with other transportation objectives (roadway speed vs. safety)
- ☐ Safety is not a priority for the public we serve
- ☐ Interjurisdictional coordination issues
- ☐ Interagency coordination issues
- ☐ Other (please specify)

- <https://www.surveymonkey.com/r/ARCRSS>
- <https://www.surveymonkey.com/r/RSSelectedOfficial>

8. Sometimes improvements in safety can mean a decrease in roadway speed, potentially impacting congestion and travel times. How willing are you, as an elected official, to support implementation of safety improvements with these potential trade-offs?

- ☐ Very willing
- ☐ Willing
- ☐ May be willing, with more details
- ☐ Not willing at all
- ☐ Neutral

# Thank You



## Questions

Byron Rushing

RSS Project Manager

Atlanta Regional Commission

470-378-1628

[brushing@atlantaregional.org](mailto:brushing@atlantaregional.org)

Tejas Kotak

RSS Deputy Project Manager

Atlanta Regional Commission

470-378-1560

[Tkotak@atlantaregional.org](mailto:Tkotak@atlantaregional.org)