

SAFE STREETS FOR WALKING & BICYCLING: A regional action plan for reducing traffic fatalities in metropolitan Atlanta



IMPETUOUS FOR A SAFETY PLAN

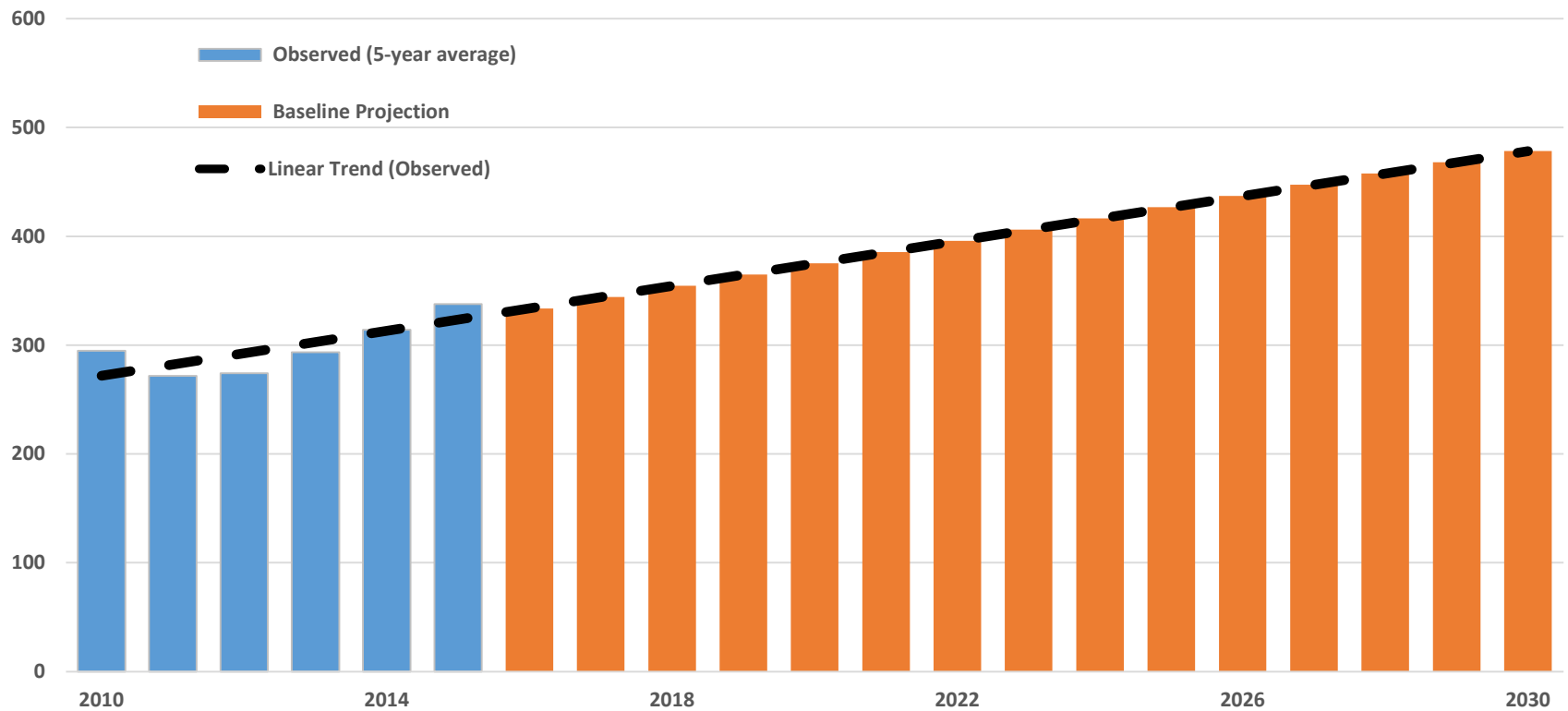
IMPROVING, BUT STILL RISKY

- **819** pedestrian fatalities in a decade
- **26th** highest metro Pedestrian Danger Index (PDI) nationally
- **Top 10** most dangerous *metro area* by crash numbers
- **Top 10** most dangerous *state* by PDI and crash numbers
- **Average** fatalities per capita (1.50), but twice the national average PDI (53.8) even with *marginal* PDI decrease (-12% from 2014)
- **Equity** and **mobility** issues stemming from lack of transportation access

2016 rank	Metro area	Pedestrian deaths (2005-2014)	Annual pedestrian fatalities per 100,000	2016 Pedestrian Danger Index
1	Cape Coral-Fort Myers, FL	165	2.55	283.1
2	Palm Bay-Melbourne-Titusville, FL	142	2.59	235.2
3	Orlando-Kissimmee-Sanford, FL	575	2.58	234.7
4	Jacksonville, FL	379	2.74	228.7
5	Deltona-Daytona Beach-Ormond Beach, FL	191	3.19	228.2
6	Lakeland-Winter Haven, FL	161	2.61	200.6
7	Tampa-St. Petersburg-Clearwater, FL	821	2.88	192.0
8	Jackson, MS	109	1.90	189.6
9	Memphis, TN-MS-AR	246	1.84	153.3
10	North Port-Sarasota-Bradenton, FL	150	2.08	148.2
11	Miami-Fort Lauderdale-West Palm Beach, FL	1,508	2.61	145.1
12	Bakersfield, CA	205	2.39	132.8
13	Birmingham-Hoover, AL	150	1.32	132.1
14	Little Rock-North Little Rock-Conway, AR	110	1.53	127.9
15	Houston-The Woodlands-Sugar Land, TX	1,026	1.65	127.2
16	Phoenix-Mesa-Scottsdale, AZ	814	1.88	125.1
17	Detroit-Warren-Dearborn, MI	693	1.61	124.2
18	Riverside-San Bernardino-Ontario, CA	858	1.97	123.4
19	Baton Rouge, LA	167	2.05	120.6
20	McAllen-Edinburg-Mission, TX	115	1.43	118.8
21	Las Vegas-Henderson-Paradise, NV	401	2.00	117.7
22	Augusta-Richmond County, GA-SC	119	2.07	114.8
23	Albuquerque, NM	194	2.16	113.6
24	Tulsa, OK	137	1.44	110.5
25	Dallas-Fort Worth-Arlington, TX	888	1.32	110.4
26	Atlanta-Sandy Springs-Roswell, GA	819	1.50	107.2
27	Raleigh, NC	165	1.39	106.7
28	San Antonio-New Braunfels, TX	421	1.88	104.5
29	Stockton-Lodi, CA	137	1.95	102.9
30	Modesto, CA	96	1.84	102.0
31	Greenville-Anderson-Mauldin, SC	162	1.92	101.2
32	Winston-Salem, NC	84	1.30	99.7
33	Charlotte-Concord-Gastonia, NC-SC	317	1.38	98.5
34	Louisville/Jefferson County, KY-IN	194	1.55	96.7

CURRENT TRAJECTORY

DRAMATICALLY INCREASING DEATHS & INJURIES



SAFETY IN AN INSTITUTIONAL CONTEXT

CHANGING FRAMEWORKS FOR MPOs

- **U.S. Department of Transportation:**
“Every transportation agency...has the responsibility to improve conditions and opportunities for walking and bicycling”
- **Metropolitan Planning Organizations:**
“Provide for consideration of projects and strategies that will...increase the safety of the transportation system for motorized and nonmotorized users”.
- **ARC board:**
“Conduct investigations into the causes and location of fatalities and injuries within the Atlanta region and recommend an appropriate course of action for the agency to follow in improving safety outcomes on our transportation system for all users...”

Statewide and Nonmetropolitan Transportation Planning Rules

- Number of non-motorized fatalities and non-motorized serious injuries.
- Anticipated effect of the Transportation Improvement Program (TIP) toward achieving adopted targets.

DATA-DRIVEN SAFETY ANALYSIS

SYSTEMIC APPROACH TO PRIORITIZING RISK

Systemic Safety Analysis:

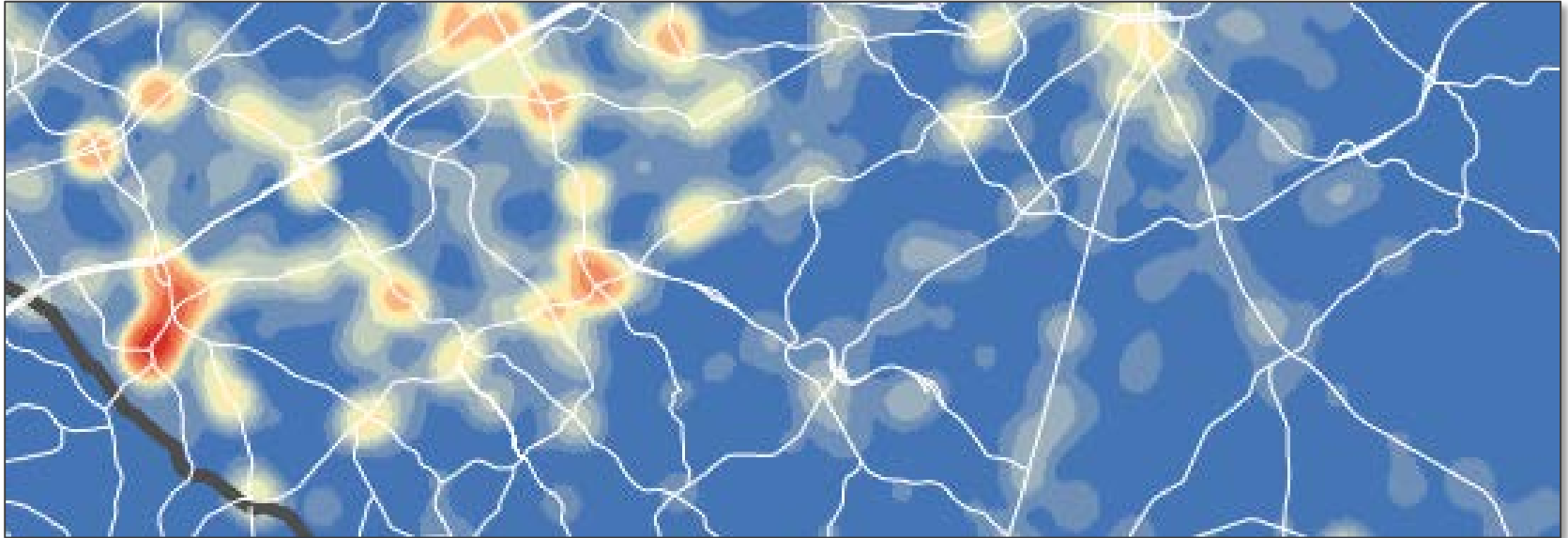
- Assessing crash and roadway data in combination to identify high-risk roadway features.
- Focuses on risk for severe crashes without high crash frequency or history.
- Accounts for widely dispersed crashes when location and frequency fluctuate over time.
- Balances “hot spot” (sites with high crash frequency) approach.
- Supports low-cost or high-return countermeasures in wider but targeted areas.

Criterion Type	Network Screening			Systemic			Countermeasure-Driven			Complete Streets			Mode Shift			Benefit-Cost Analysis	
	B	I	A	B	I	A	B	I	A	B	I	A	B	I	A	B	I/A
Number of fatal and serious injuries for past three to five years in project location (along segment or at intersection) in geospatial format (GIS)	•	•	•	•	•	•	•	•	•	•	•	•				•	•
Average Daily Traffic		•	•			•			•			•					•
Roadway characteristics (e.g., number of lanes, functional class, lighting, medians, bike lanes, sidewalks, shoulder width)		•	•		•	•			•	•	•	•					•
Collision factors for crashes occurring in past three to five years (i.e., roadway departure, intersection, bicycle, pedestrian, light condition)		•	•		•	•	•	•	•		•	•					
Safety countermeasures integrated into project (see FHWA Nine Proven Countermeasures, Crash Modification Factors Clearinghouse and other FHWA safety guidance)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Anticipated mode shift from auto VMT to transit, bike, pedestrian modes													•	•	•		
Anticipated fatality/injury reduction from project based on Crash Modification Factors or HSM predictive method			•				•	•	•							•	•



SYSTEMIC vs HOTSPOT ANALYSIS

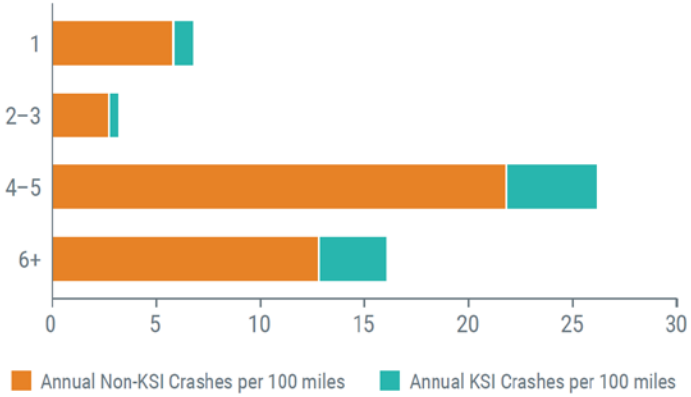
ACCOUNTING FOR DISTRIBUTION & FREQUENCY



HOTSPOT v SYSTEMIC COMPARISON	10 CRASHES PER 1/2 MILE		2 CRASHES PER 1/2 MILE	
	<i>Crashes</i>	<i>%</i>	<i>Crashes</i>	<i>%</i>
Total crashes within hotspots	1,559	21%	5,329	70%
Total crashes outside hotspots	6,008	79%	2,238	30%
Total crashes	7,567	100%	7,567	100%
KSI crashes within hotspots	160	13%	787	64%
KSI crashes outside hotspots	1,076	87%	449	36%
Total KSI crashes	1,236	100%	1,236	100%

CORRIDOR-SCALE ASSESSMENT

DETERMINING CRASH RISK SCORES



PEDESTRIANS

Number of Lanes	Weighted Crashes	Weighted Crash Rate per 10 Miles	Crash Risk Score
1	227	4.9	0
2	7,856	2.5	0
3	720	23.3	3
4	4,976	22.8	3
5	603	58.3	5
6+	1,540	17.1	3



NETWORK-SCALE ASSESSMENT

IDENTIFY HIGH-RISK, NOT JUST HISTORY

RISK FACTORS

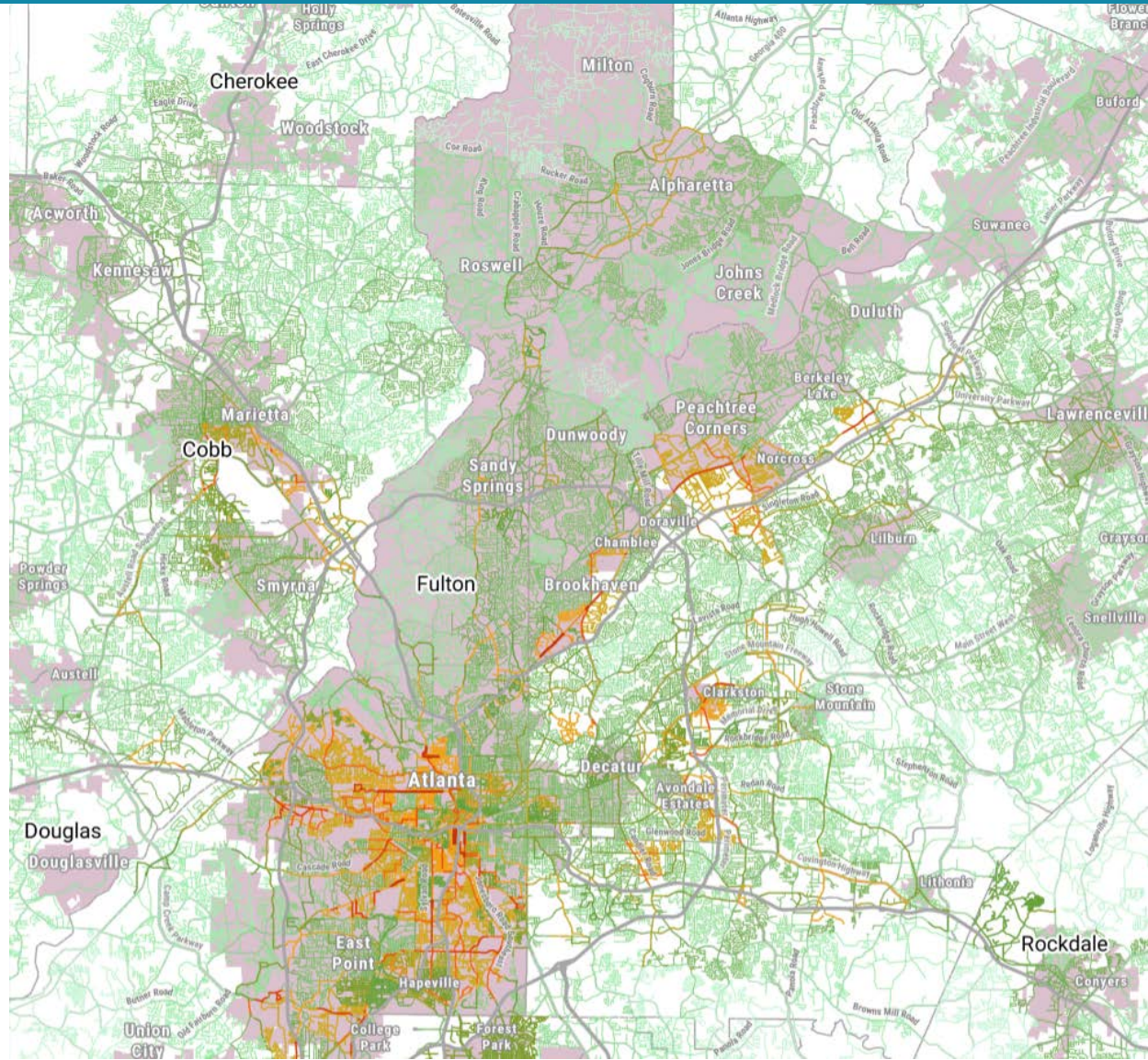
- Speed
- Number of Lanes
- Lighting
- Crossings

DEMAND

- Travel patterns and exposure to risk
- Lack of travel due to risk

POLICY PRIORITIES

- Equity
- Mass Transit
- Economic Opportunity



LINKING RISK TO COUNTERMEASURES

FOCUSING ON EVIDENCE-BASED TOOLS



Medians and Pedestrian Crossing Islands



Pedestrian Hybrid Beacon



Road Diet



Sidewalks



USLIMITS2



Leading Pedestrian Interval



Rectangular Rapid Flashing Beacons



Crosswalk Visibility Enhancements



Street Lighting



Separated Bike Lanes



Neighborhood Greenway/Bike Boulevard



Traffic Calming

Green: FHWA Proven Safety Countermeasures
Orange: Additional countermeasures recommend by national and state agencies

LINK RISK TO ROADWAY DESIGN

COUNTERMEASURES via COMPLETE STREETS



**Reduce speeds to
less than 30 MPH**

OR

**Separate modes by
space and time**

INSTITUTIONALIZING SAFETY

FOCUSING PROCESSES ON SAFER OUTCOMES

Measure	Metric	Nature of Metric	Sponsor Provided	Percent of Score	<i>Safe Streets</i> proposed changes:
Improved Safety	1) Serious injury + fatality crashes	GEARS database	No	33%	Eliminate in lieu of systemic (or predictive) risk measures
	2) Walking Crash Risk	from Walk. Bike. Thrive!	No	33% (50%)	Shift to roadway-level risk measures
	3) Safety counter-measures proposed	Crash Modification Factors derived from proven USDOT safety countermeasures.	Yes	33%	Update with ped- or bike-specific measures that better account for mode and crash risks

ESTABLISHING A REGIONAL VISION RESEARCH & POLICY IN KEY FOCUS AREAS



Byron Rushing

Bicycle & Pedestrian Program Manager
Atlanta Regional Commission

www.atlantaregional.org/bikeped

