

AMERICAN ASSOCIATION
OF STATE HIGHWAY AND
TRANSPORTATION OFFICIALS

AASHTO

ADOT

Exploring Predictive Network Screening Tools

April 16, 2021 1PM EST

Stephen Read, Virginia DOT & AASHTO Highway Safety Manual Steering Committee Chair

Kerry Wilcoxon & Saroja Devarakonda, Arizona DOT

Exploring Predictive Network Screening Tools

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This webinar series features innovative software tools for predictive network screening employed by state transportation agencies around the United States.

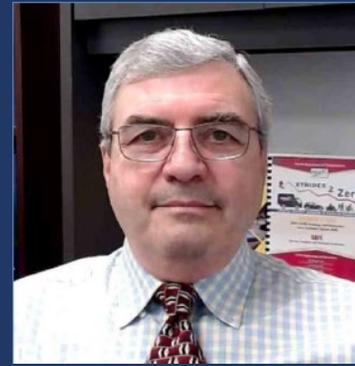
Kick-off webinars provide a high-level overview of the tools using a speed-dating format and subsequent webinars will provide a more detailed description and demonstration.

Stephen Read, Virginia DOT & AASHTO HSM Steering Committee Chair

Kerry Wilcoxon & Saroja Devarakonda, Arizona DOT



Shanshan Zhao, Ph.D. & Eric Jackson, Ph.D.
Connecticut DOT – CRSMS



Alan El-Urfali, P.E.
Florida DOT – SAS



Carla P. Anderson, P.E.
Kansas DOT – SafetyAnalyst



Eric Green, Ph.D. & Mike Vaughn
Kentucky TC – CDAT/RTool

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Exploring Predictive Network Screening Tools (Part 1)

Stephen Read, Virginia DOT & AASHTO HSM Steering Committee Chair

Kerry Wilcoxon & Saroja Devarakonda, Arizona DOT



Joe McCarthy & Keri Bohlmann
Wyoming DOT – Safety Portal



David Swenka, P.E. PTOE
Colorado DOT – DiExSys



Samuel Harris, P.E.
Georgia DOT – AASHTOWare
Safety Powered by Numetric



Katherine Beckett Suter, P.E., RSP2BI
Illinois DOT – Safety Tiers

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Exploring Predictive Network Screening Tools (Part 2)

Stephen Read, Virginia DOT & AASHTO HSM Steering Committee Chair

Kerry Wilcoxon & Saroja Devarakonda, Arizona DOT

ILLINOIS SAFETY TIERS: HISTORY AND FUTURE

APRIL 16, 2021

ILLINOIS DEPARTMENT OF TRANSPORTATION, BUREAU OF SAFETY PROGRAMS AND ENGINEERING

KATHERINE BECKETT SUTER, SENIOR SAFETY EVALUATION ENGINEER, PE, RSP2BI



Background

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)

- Passed in 2005
- Section 1401 amended Section 148 of Title 23 USC and created HSIP
- Required states to annually submit to FHWA a list of no less than 5% of highway locations with most pressing needs
- The IDOT 5% Report was created
 - BSPE was the Bureau of Safety Engineering, small
 - Used consultants to develop (CH2MHill > Jacobs)

Safety Tier History

First 5% Report released in 2006 for state roadways

- Highway Safety Manual (HSM) and Safety Analyst (SA) were not released until 2010
- 2006, 2008, 2009, 2010 did not use HSM or SA
- Methodology used was similar to their eventual approaches
- Safety Performance Functions (SPFs) were developed and used to calculate Potential for Safety Improvement (PSI) based on weighted KAB crashes
- 5% Local Report in 2014
- Introduced Safety Tiers in 2015 State Report
 - 2017 Local Report included Safety Tiers for local locations
 - 2020: Added CCOF, eliminated '5%' term

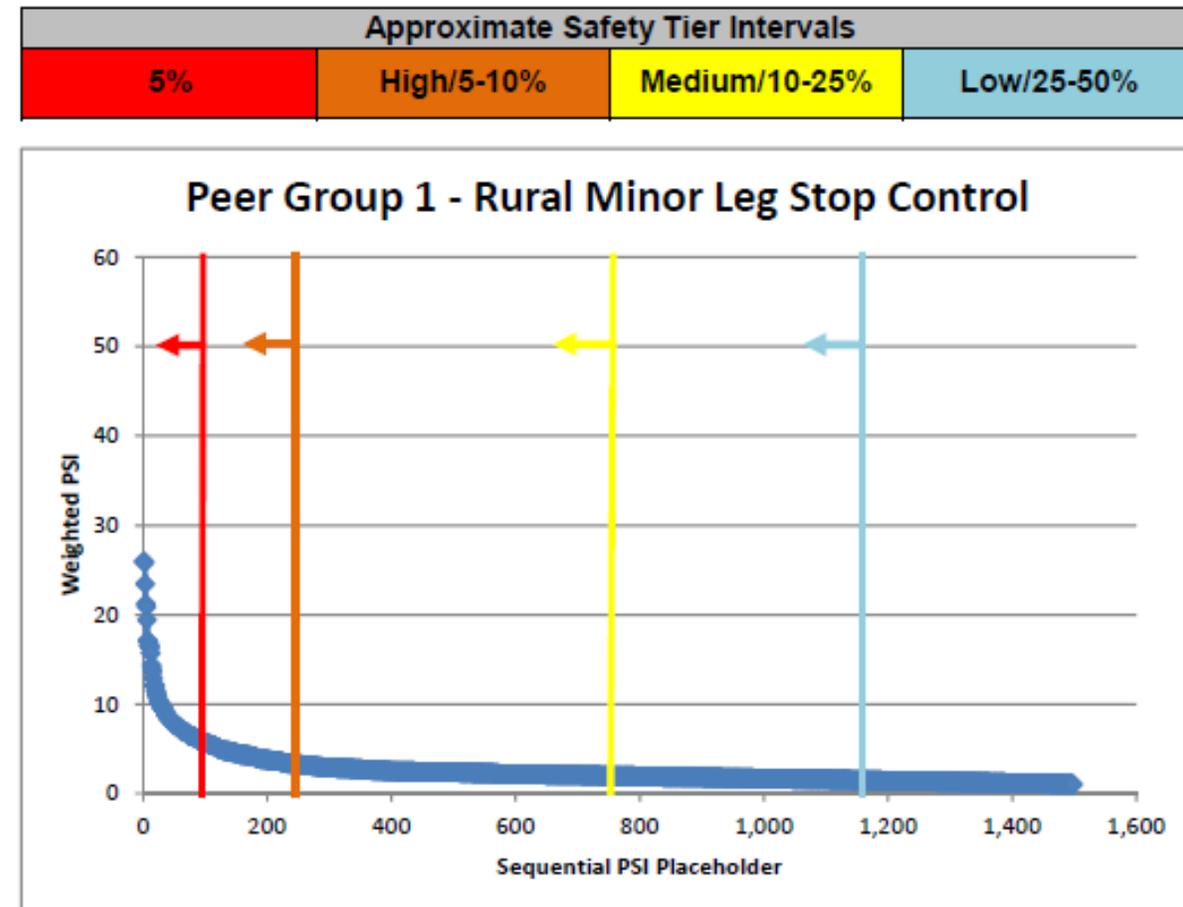
What Are Safety Tiers?

Based on PSI values, locations classified as:

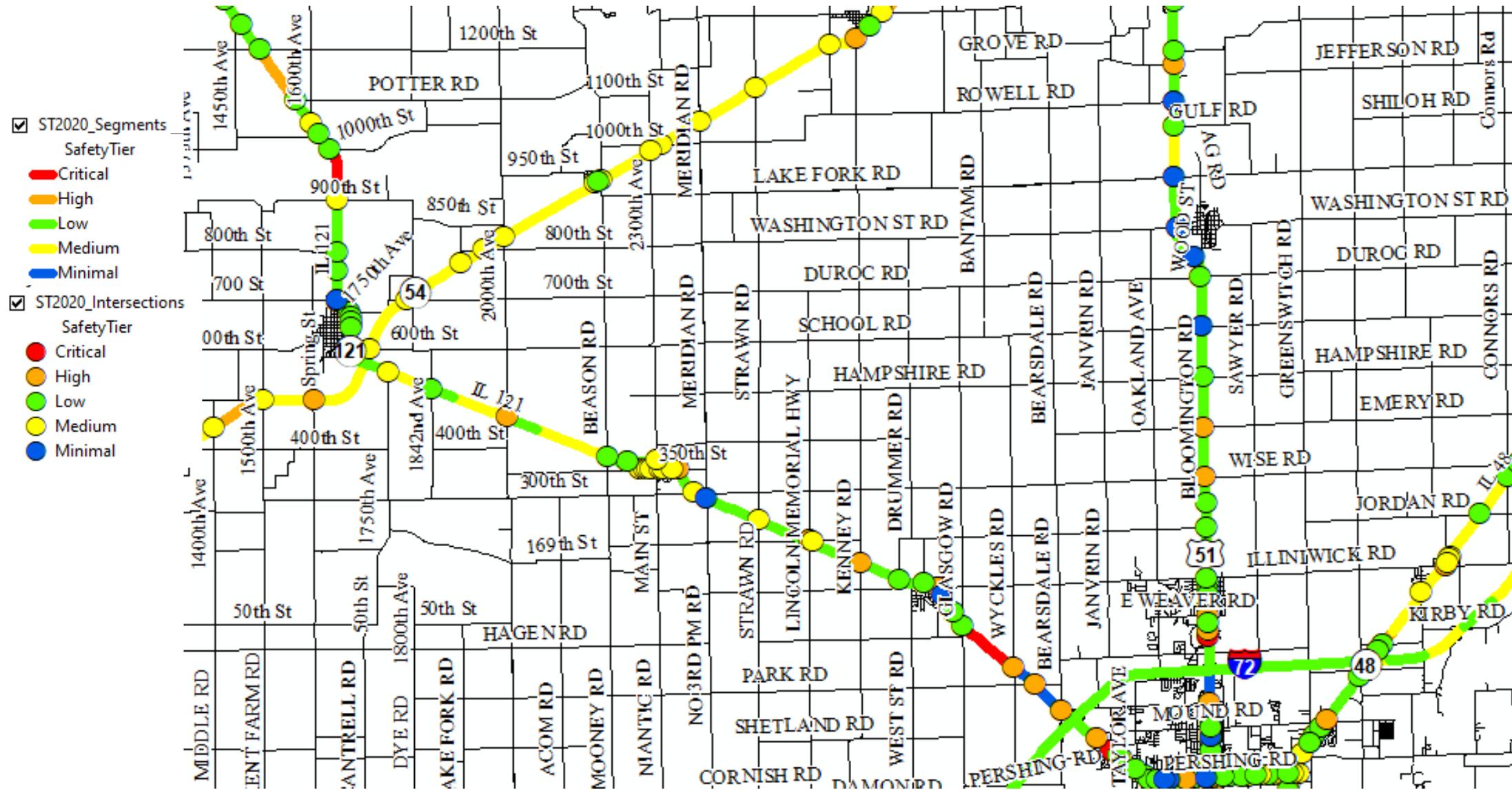
- Critical (Top 5%)
- High (5 – 10%)
- Medium (10 – 25%)
- Low (25 – 50%)
- Minimal (all others)

Allowed for districts/local agencies to be more proactive than reactive

- Increase project boundaries
- Identify new projects (systemic)



5% to Safety Tiers Difference



Deliverables

Report (how tiers were calculated, how to use, changes from previous tiers)

Complete Excel intersection spreadsheet and segment spreadsheet (100% Report)

GIS shapefiles

- IDOT makes available through ArcGIS Online

Safety Tiers: 2020 and beyond

Responded to feedback, critical locations no longer make up 5% of all locations

Introduced Crash Characteristic Overrepresentation Flag (CCOF)

- Locations with crash histories of overrepresentation of high-priority crash types
 - Angle, pedestrian, turning, ROR
 - Compared to other locations within their peer group and district
- Locations might not be critical or high, but could be if crashes aren't addressed
- Help identify systemic projects
- Available only for 2020 State Report
 - Update for local locations in development
- Always open to feedback from districts and local agencies to meet their needs and use

Central Office contact information:

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Colorado DOT Network Screening with DiExSys: Vision Zero Suite (VZS)



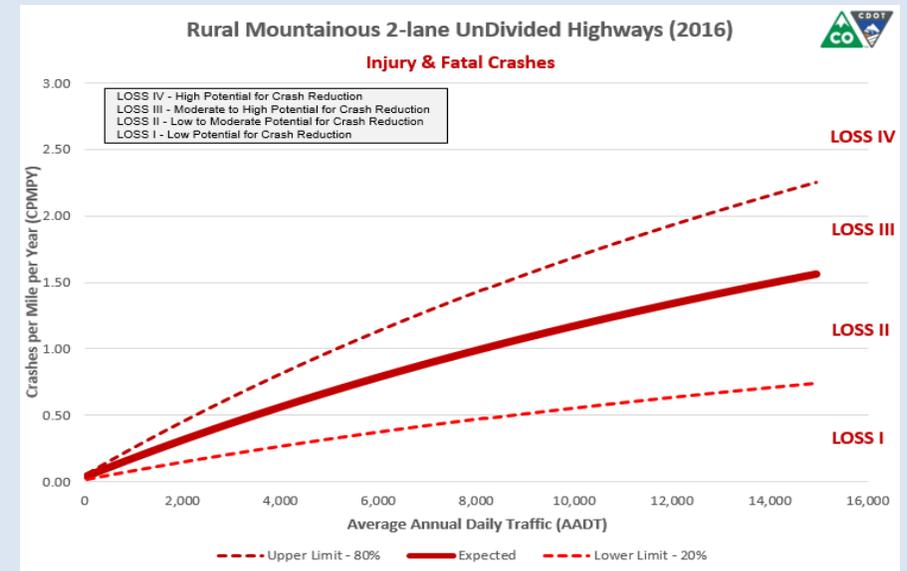
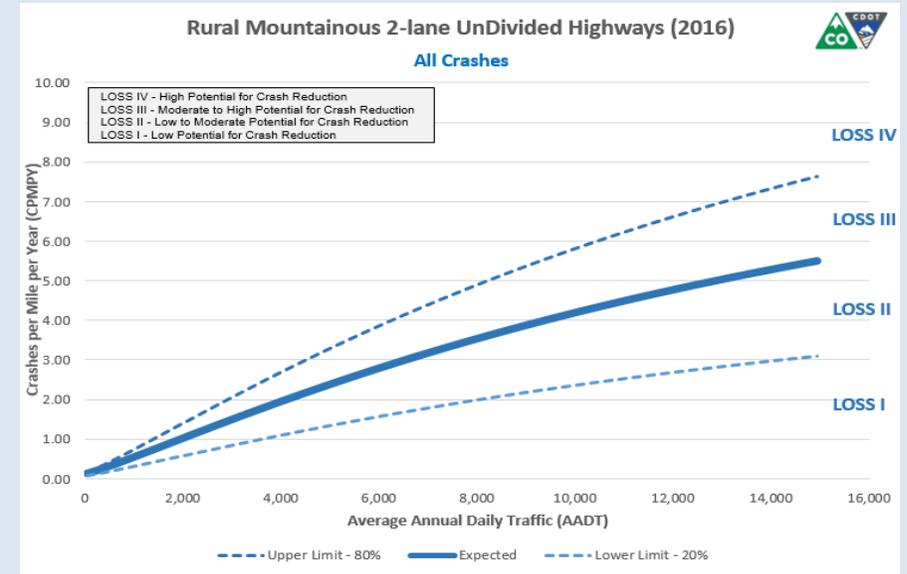
Safety Performance Functions (SPF)

Colorado Specific SPFs created from Colorado Crash Data (5 to 10 years) by facility type (urban/rural terrain, lanes, highway/freeway)

12 segments types
20 intersection types
5 interchange ramp intersections

Each type has an SPF for total crashes (KABCO) and an SPF for injury and fatal crashes (KABC)

74 total models, more in development





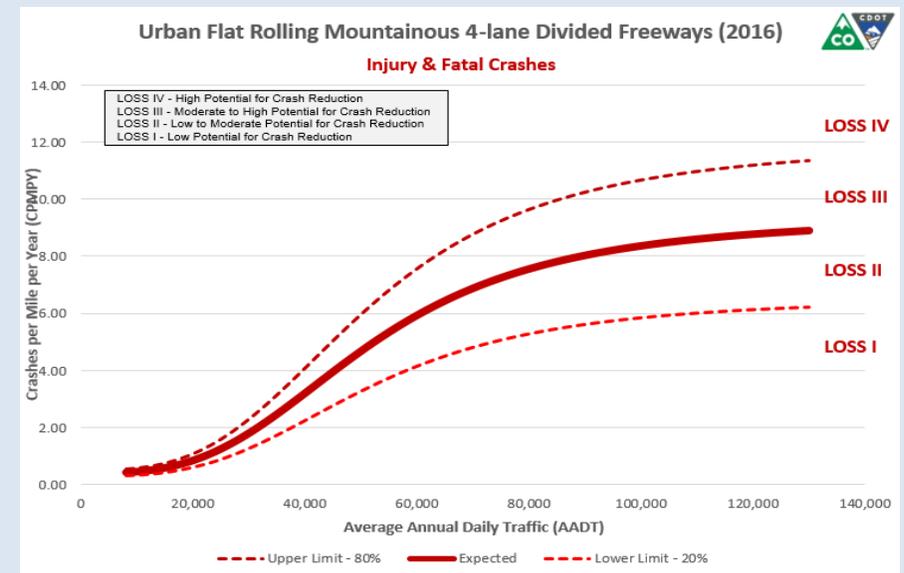
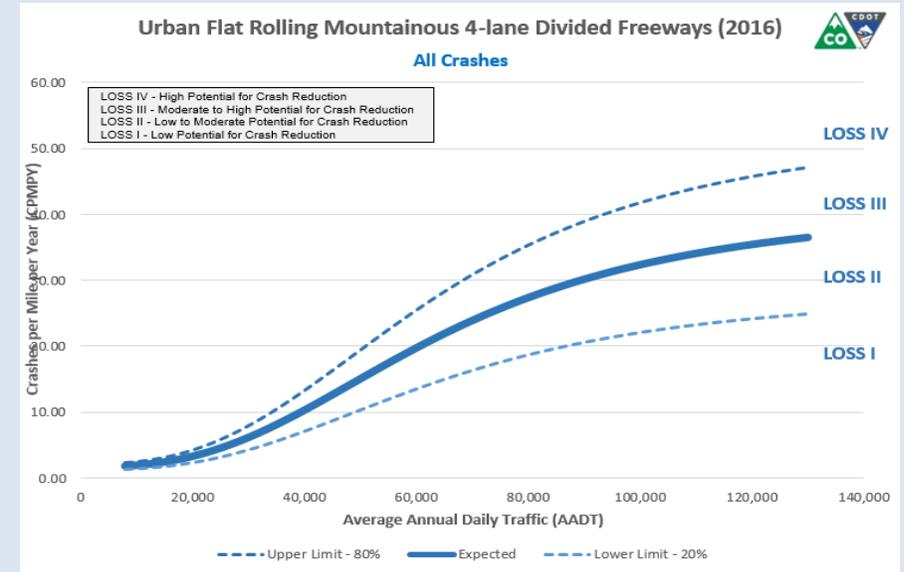
Level of Service of Safety (LOSS)

LOSS 1 - Low potential for crash reduction (Below 20th Percentile)

LOSS 2 - Low to moderate potential for crash reduction (20th Percentile to Mean/Expected)

LOSS 3 - Moderate to high potential for crash reduction (Mean/Expected to 80th Percentile)

LOSS 4 - High potential for crash reduction (Above 80th Percentile)



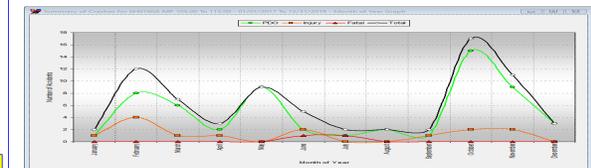
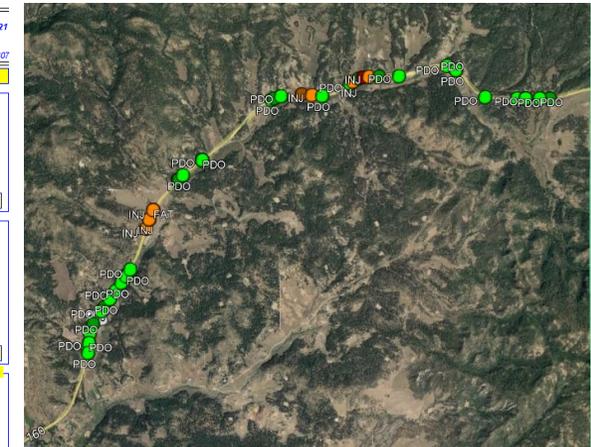
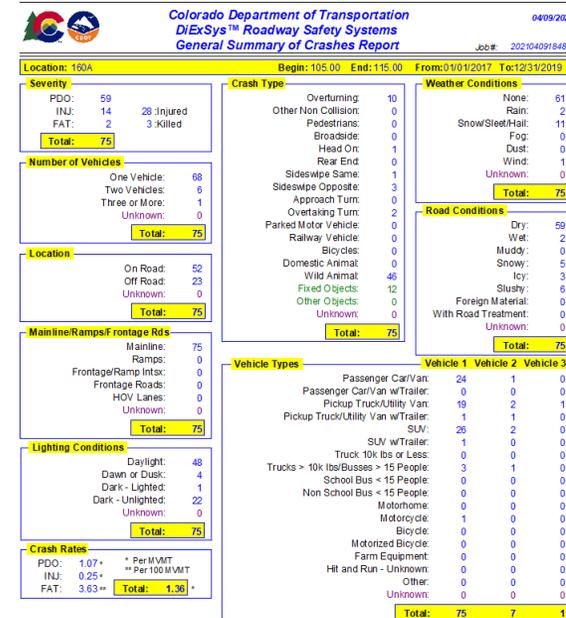
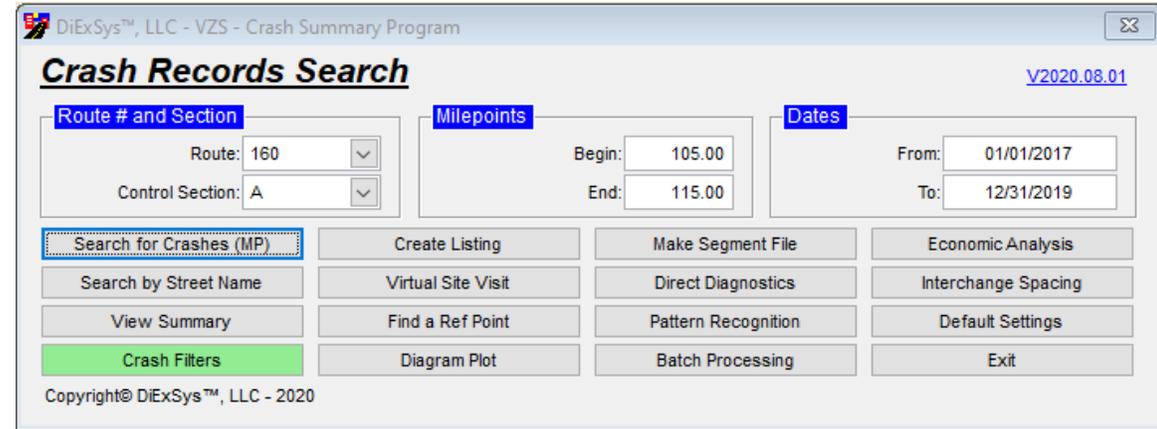


DiExSys: VZS Program

Crash Query Program Features:

- Search by Linear Referencing System (LRS, Highway/Milepoint)
- Search by crash data location fields (Off System Locations)
- Summaries/Listings
- Graphs/Charts
- Economic Analysis (Benefit Cost)
- Crash Mitigation/Reduction Factors

All customized to agencies crash and roadway data

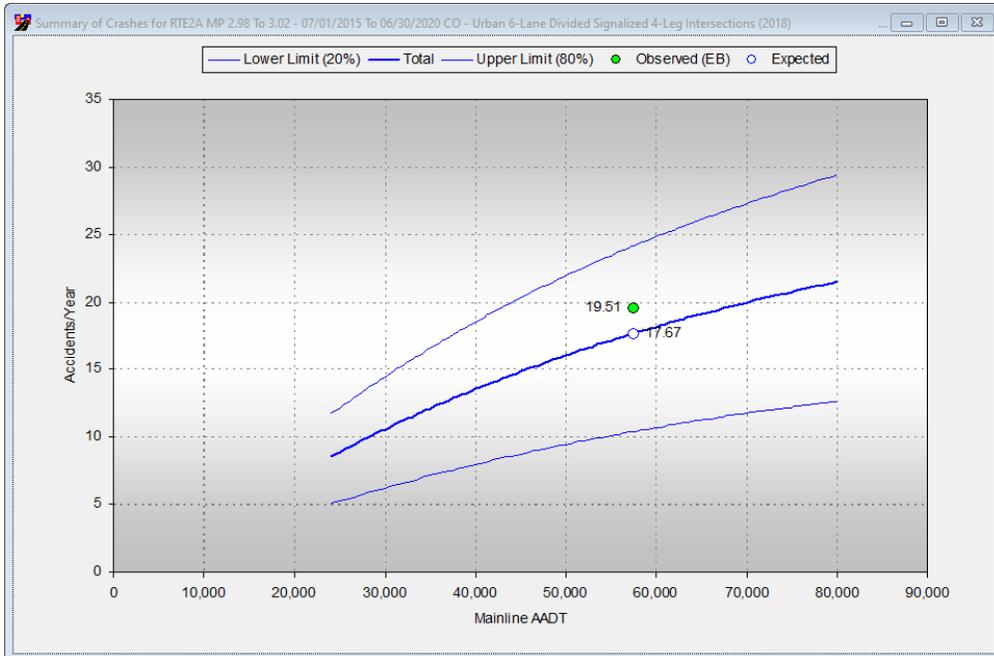




DiExSys: VZS Program

Safety Analysis Features:

- SPF Analysis
- Empirical Bayes Corrected
- Diagnostics Norms
- Crash Pattern Analysis



Colorado Department of Transportation
DiExSys™ Roadway Safety Systems
Direct Diagnostics (Spot Location) Analysis

04/09/2021
Job #: 20210409174848

Location File: DIRECT_DIAGNOSTICS_FOR_RTE2A_00298_00302 Cutoff: 5 Acc's @ 95%

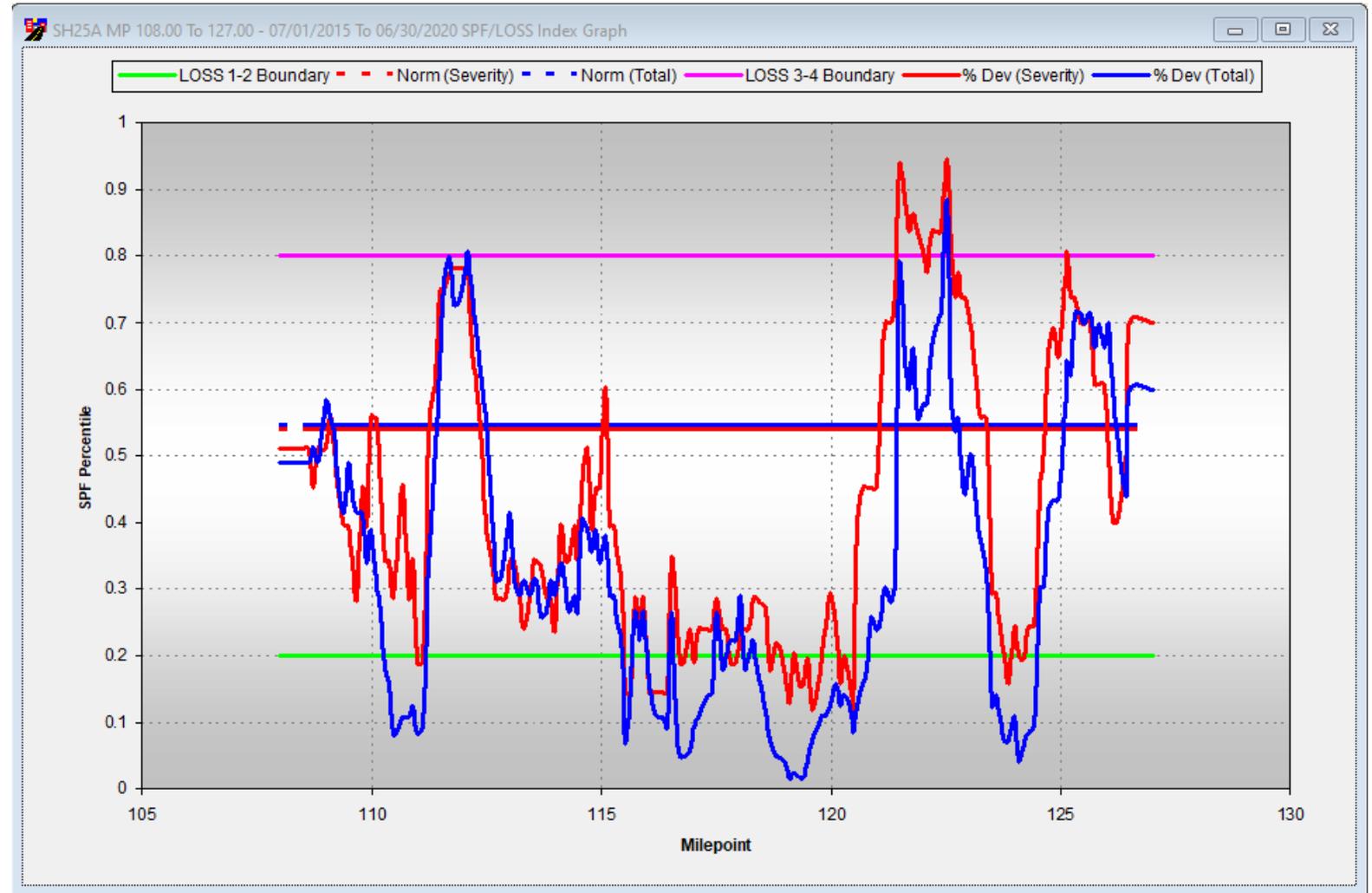
CATEGORY	Statewide Average		This Location		Probability
	# Crashes	%	# Crashes	%	%
Property Damage Only (PDO)	2,920	75.24%	69	70.41%	16.07%
Injury (INJ)	957	24.66%	29	29.59%	89.27%
Fatal (FAT)	4	0.10%	0	0.00%	N/A
Persons Injured	1,356		33		
Persons Killed	4		0		N/A
Single Vehicle Accidents	154	3.97%	4	4.08%	65.10%
Two Vehicle Accidents	3,257	83.92%	85	86.73%	81.33%
Three or More Vehicle Accidents	470	12.11%	9	9.18%	23.74%
Unknown Number of Vehicles	0	0.00%	0	0.00%	N/A
On Road	3,736	96.26%	94	95.92%	50.04%
Off Road	145	3.74%	4	4.08%	69.59%
Off Road Left	67	1.73%	3	3.06%	90.97%
Off Road Right	71	1.83%	1	1.02%	46.28%
Off Road at Tee	4	0.10%	0	0.00%	N/A
Off Road in Median	3	0.08%	0	0.00%	N/A
Unknown Road Location	0	0.00%	0	0.00%	N/A
Overturning	26	0.67%	0	0.00%	N/A
Other Non Collision	5	0.13%	0	0.00%	N/A
Vehicle Cargo or Debris	5	0.13%	0	0.00%	N/A
Pedestrian	51	1.31%	11	11.22%	100.00%
Broadside	406	10.46%	16	16.33%	97.46%
Head On	10	0.26%	0	0.00%	N/A
Rear End	2,229	57.43%	33	33.67%	0.00%
Sideswipe (Same Direction)	338	8.71%	10	10.20%	76.71%
Sideswipe (Opposite Direction)	10	0.26%	0	0.00%	N/A
Approach Turn	613	15.79%	19	19.39%	86.62%
Overtaking Turn	12	0.31%	1	1.02%	96.26%
Parked Motor Vehicle	3	0.08%	1	1.02%	99.73%
Railway Vehicle	0	0.00%	0	0.00%	N/A
Bicycle or Pedal Cycle	34	0.88%	3	3.06%	98.89%



DiExSys: VZS Program

Safety Analysis Features Supporting Network Screening:

- SPF/LOSS or Freeway/Highway Corridors
- Crash Pattern Analysis or Freeway/Highway Corridors





DiExSys: VZS Program

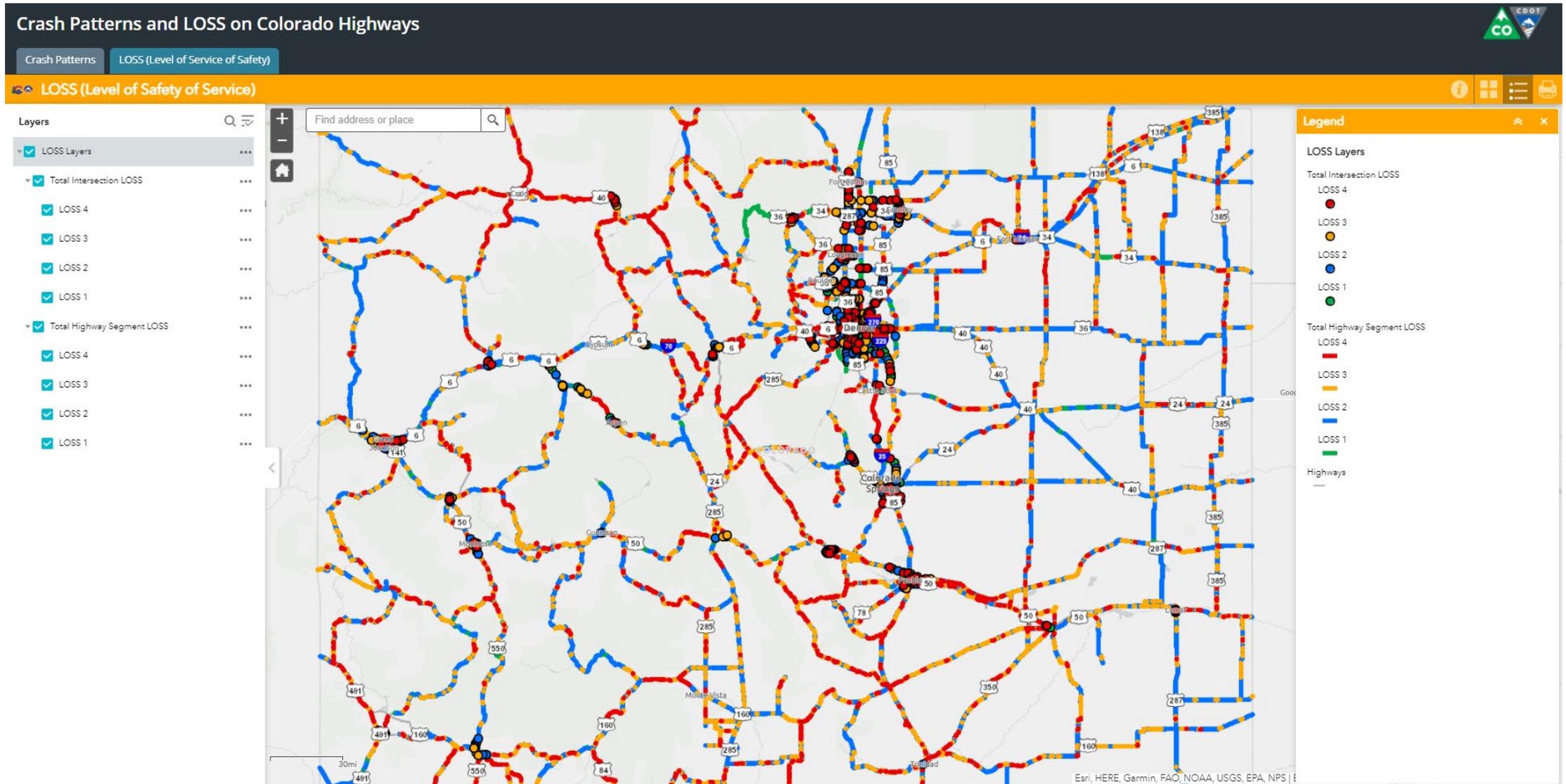
Safety Analysis Features Supporting Network Screening:

- SPF/LOSS or Freeway/Highway Corridors
- Crash Pattern Analysis or Freeway/Highway Corridors
- Create Batch Files

Hwy	Csec	Bmp	Emp	Beg_date	End_date	Pdo	Inj	Fat	Total	Aadt	Pct_dev_s	Loss_s	Pct_dev_t	Loss_t	Score
25	A	108.00	108.00	07/01/2015	06/30/2020	26	11	2	39	36667	0.5097	2	0.4889	2	173.73
25	A	108.00	109.00	07/01/2015	06/30/2020	26	11	2	39	36667	0.5097	2	0.4889	2	173.73
25	A	108.10	109.11	07/01/2015	06/30/2020	26	10	3	39	36667	0.5097	2	0.4889	2	173.73
25	A	108.20	109.21	07/01/2015	06/30/2020	28	9	3	40	36667	0.4523	2	0.5128	2	156.43
25	A	108.30	109.31	07/01/2015	06/30/2020	26	9	4	39	36667	0.5097	2	0.4889	2	173.73
25	A	108.40	109.41	07/01/2015	06/30/2020	27	9	4	40	36667	0.5097	2	0.5128	2	176.45
25	A	108.50	109.51	07/01/2015	06/30/2020	30	9	4	43	36667	0.5097	2	0.5834	3	185.00
25	A	108.60	109.61	07/01/2015	06/30/2020	28	10	4	42	36667	0.5604	3	0.5608	3	201.54
25	A	108.70	109.70	07/01/2015	06/30/2020	28	9	4	41	36667	0.5097	2	0.5363	2	179.22
25	A	108.80	109.80	07/01/2015	06/30/2020	26	8	4	38	36667	0.4470	2	0.4541	2	148.03
25	A	108.90	109.89	07/01/2015	06/30/2020	25	7	4	36	36667	0.3942	2	0.4143	2	126.82
25	A	108.99	109.99	07/01/2015	06/30/2020	28	7	4	39	36667	0.3942	2	0.4889	2	134.73
25	A	109.09	110.09	07/01/2015	06/30/2020	27	7	3	37	36667	0.3419	2	0.4388	2	112.96
25	A	109.19	110.19	07/01/2015	06/30/2020	27	7	2	36	36667	0.2861	2	0.4143	2	94.37
25	A	109.29	110.28	07/01/2015	06/30/2020	24	10	2	36	36667	0.4523	2	0.4143	2	145.79
25	A	109.39	110.38	07/01/2015	06/30/2020	22	10	1	33	36667	0.3942	2	0.3381	2	119.53
25	A	109.49	110.48	07/01/2015	06/30/2020	21	12	2	35	36667	0.5604	3	0.3883	2	182.65
25	A	109.59	110.58	07/01/2015	06/30/2020	18	12	2	32	36667	0.5554	3	0.3067	2	172.89
25	A	109.69	110.67	07/01/2015	06/30/2020	18	10	2	30	36667	0.4523	2	0.2660	2	132.22
25	A	109.79	110.77	07/01/2015	06/30/2020	16	8	2	26	36667	0.3419	2	0.1796	1	90.14
25	A	109.89	110.87	07/01/2015	06/30/2020	15	8	2	25	36667	0.3419	2	0.1593	1	88.71
25	A	109.99	110.97	07/01/2015	06/30/2020	11	8	1	20	36667	0.2861	1	0.0802	1	67.57
25	A	110.09	111.07	07/01/2015	06/30/2020	10	10	1	21	36667	0.3942	2	0.0934	1	100.81
25	A	110.19	111.17	07/01/2015	06/30/2020	10	11	1	22	36667	0.4523	2	0.1079	1	120.68
25	A	110.29	111.28	07/01/2015	06/30/2020	13	8	1	22	36667	0.2861	2	0.1079	1	69.25
25	A	110.39	111.38	07/01/2015	06/30/2020	13	9	1	23	36667	0.3419	2	0.1245	1	86.36
25	A	110.49	111.48	07/01/2015	06/30/2020	13	7	0	20	36667	0.1892	1	0.0802	1	41.97
25	A	110.59	111.58	07/01/2015	06/30/2020	14	7	0	21	36667	0.1892	1	0.0934	1	42.75
25	A	110.69	111.68	07/01/2015	06/30/2020	18	11	0	29	36667	0.3942	2	0.2436	2	111.41
25	A	110.79	111.78	07/01/2015	06/30/2020	20	14	0	34	36667	0.5604	3	0.3638	2	180.28
25	A	110.89	111.88	07/01/2015	06/30/2020	25	15	0	40	36667	0.6136	3	0.5128	2	217.03
25	A	110.99	111.98	07/01/2015	06/30/2020	27	18	0	45	36667	0.7480	3	0.6282	3	293.76
25	A	111.09	112.08	07/01/2015	06/30/2020	34	18	0	52	36667	0.7480	3	0.7607	3	314.22
25	A	111.19	112.19	07/01/2015	06/30/2020	36	19	0	55	36667	0.7761	3	0.7992	3	336.92
25	A	111.29	112.29	07/01/2015	06/30/2020	31	19	0	50	36667	0.7828	3	0.7273	3	327.88
25	A	111.39	112.39	07/01/2015	06/30/2020	31	19	0	50	36667	0.7828	3	0.7273	3	327.88
25	A	111.49	112.49	07/01/2015	06/30/2020	33	19	0	52	36667	0.7828	3	0.7607	3	333.60
25	A	111.59	112.59	07/01/2015	06/30/2020	36	19	0	55	36667	0.7828	3	0.8062	4	342.11
25	A	111.69	112.69	07/01/2015	06/30/2020	35	16	0	51	36667	0.6592	3	0.7444	3	269.12
25	A	111.79	112.79	07/01/2015	06/30/2020	33	15	0	48	36667	0.6136	3	0.6896	3	240.28
25	A	111.89	112.90	07/01/2015	06/30/2020	31	13	0	44	36667	0.5097	2	0.6054	3	187.87

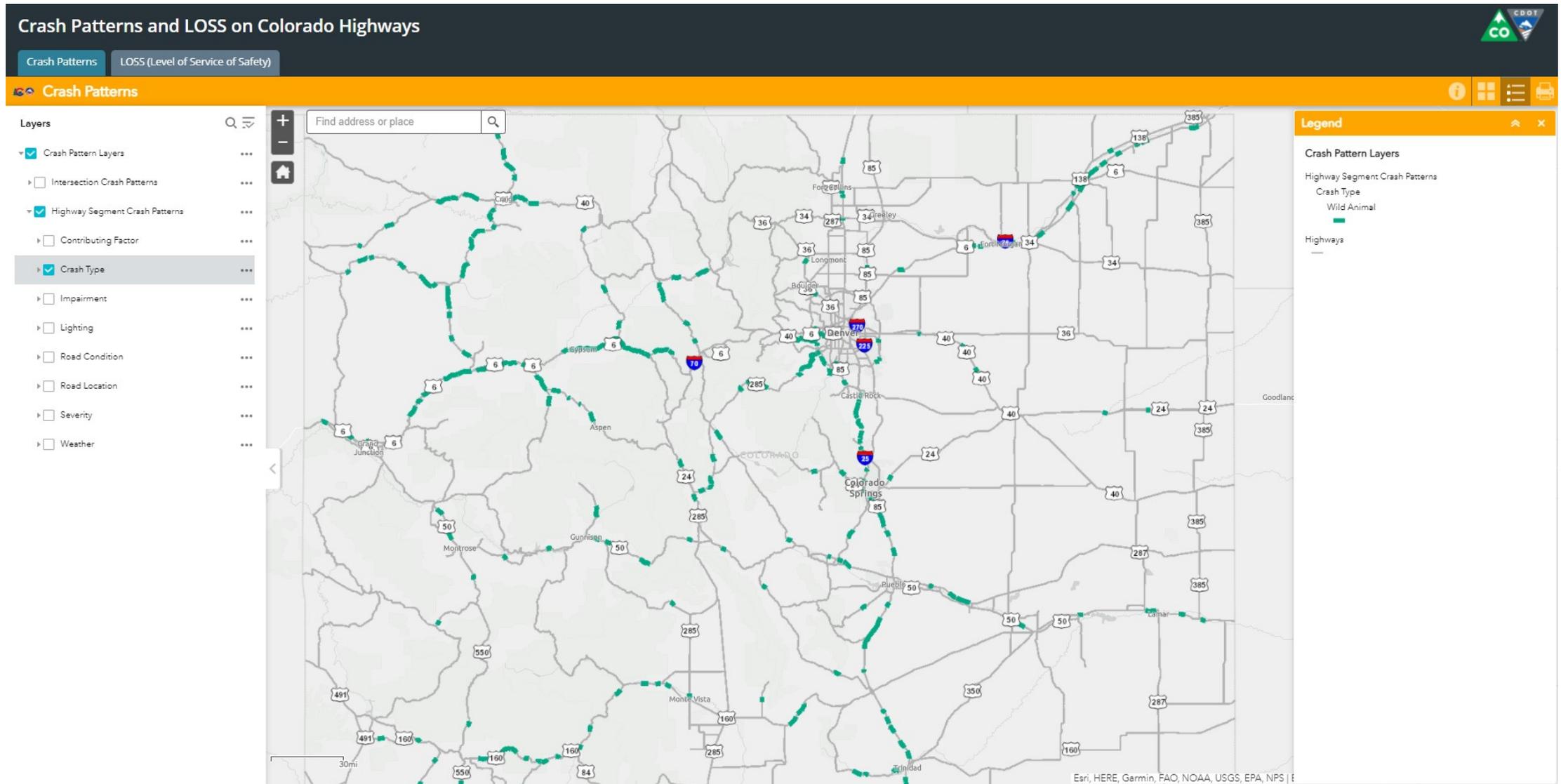


Colorado Network Screening (LOSS)





Colorado Network Screening (Crash Patterns)





Contact Information and Links

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<https://www.codot.gov/safety/traffic-safety/programs-and-analysis>
<https://cdot.maps.arcgis.com/home/index.html>

Thank you!

WYDOT Network Screening

A quick review of notable agency predictive network screening tools



Agency Overview

- Wyoming Department of Transportation (WYDOT)
- Keri Bohlmann
 - WYDOT
 - Keri.Bohlmann@wyo.gov
 - 307-777-4257
- Joe McCarthy
 - Traffic Records Project Manager
 - Joe.McCarthy@wyo.gov
 - 970-412-4022

Tool Overview

- Company: ITIS Corp – OnSafety Portal
- Specific Tools: HSM Network Processor, SMS, report engine
- In use for 5+ years
- Oracle based processing, Web-based access
- Applies HSM Predictive to entire roadway network

Key Features

- Main features of the HSM Processing
 - Applies HSM Predictive on entire network; segments and intersections
 - Facility types to identify models
 - Have used non-HSM models
 - Applies available site-specific CMFs
 - EB correction – calculates expected (future) crashes
 - Annual update; 5-year history, re-calibration
 - Weighted severity scores segments and intersections
 - Calculates expected crash reduction for treatments

Key Features

- Main capabilities of the Safety Management System
 - Screening – crash concentrations (segment and intersection)
 - Diagnosis – historical crash types and risk features
 - Visualization
 - Prioritizing locations to consider (highest potential for reduction)
 - Prioritizing safety treatments (based on expected B/C, crash reduction)
- Three levels of information and visualization
 - On-screen info
 - 1-click reports
 - Analysis tools

WYDOT Screening Approach

- Looking for “worst” 1-mile segments and intersections
 - Worst-of-the-worst
 - Highest concentration of fatal/serious crashes and/or of all crashes
 - Grouped by facility type, e.g.
 - Rural/urban
 - Signalized/non-signalized
- Specific studies also done
 - Run-off-road, High speed rural intersections, winter-weather, wild animal

STM

Safety Portal

Treatment Library
Safety Locations
Treatment Locations

Data Query
MapViews

Scoring Functions

Segment "Hot Spot" table

Intersection Ranking Table

HSM Processing (Intersections)

HSM Processing (Segments)

Consolation Table (Segments)

Consolation Table (Intersections)

ETL Consolidation

Roadway Features

Crash Data

Populating the HSM Table

Public Road LRS

Roadway Feature
Tables

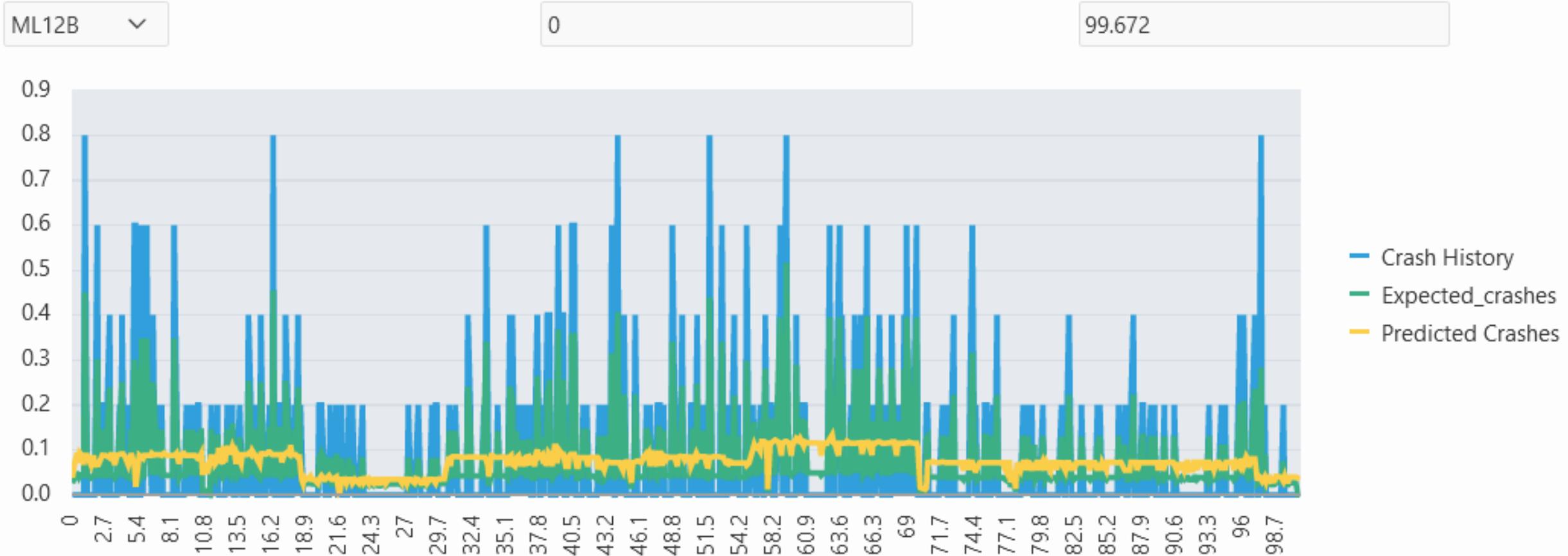
Crash Data System

HSM Predictive Processing

One row for each 1/10th mile
of public roadway network



Example of HSM Output



WYDOT's SMS — Safety Locations

- Location
- Context
- HSM Scores
- Risk factors (from HSM CMFs)

Cancel
Apply Changes
Add Treatment Location
HWS Segment Report
HWS Crash Report Summary

Review Safety Location

Route
ML2000B

RM Range
0 to 17.494

From RM: 11.113 To RM: 11.319

Selected Road Name
WY 22

Full Roadway Name (at FRM)
WY 22

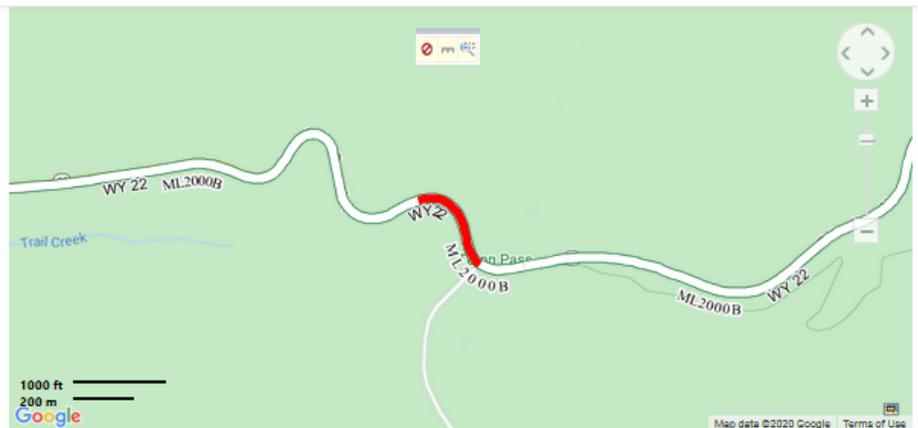
District:
3

Reason Added:
2014 APR CURVE STUDY TOP 300

Status:
REVIEWED

Note:
2014 CURVE STUDY
STATEWIDE CURVE SIGING PROJECT NO. B179039.

64 of 2000



Trail Creek

WY 22 ML2000B

Map data ©2020 Google | Terms of Use

To Start RM To End RM Move to center

Satellite Roads

Safety Scoring (HSM)

Date Pulled	Segment Length	From Rm	To Rm	Facility Type	Si Score	Si Compare	Si Rating	Expected Critical Crashes Per Mile Per Year	Serious Crashes	Damage Crashes	Risk Level
06/01/2020	.206	11.1	11.4	Ru/Mt2	.72	12.09	4	.66	1.91	9	-
06/01/2020	.206	11.1	11.4	Ru/Mt2	.72	12.09	4	.66	1.91	9	-
05/30/2020	.206	11.1	11.4	Ru/Mt2	.72	12.09	4	.66	1.91	9	-
05/29/2020	.206	11.1	11.4	Ru/Mt2	.72	12.09	4	.66	1.91	9	-
02/19/2020	.206	11.1	11.4	Ru/Mt2	.9	15.07	4	.66	1.91	9	6.9
02/19/2020	6.206	11.1	17.4	Ru/Mt2	.38	6.38	4	.28	.81	3.81	7.2
08/05/2019	.206	11.1	11.4	Ru/Mt2	.9	15.13	4	.66	1.91	9.01	6.9

1 - 7

Crash Factors / Crash Types

Crash Factor Name	Over Representation	Prevalence

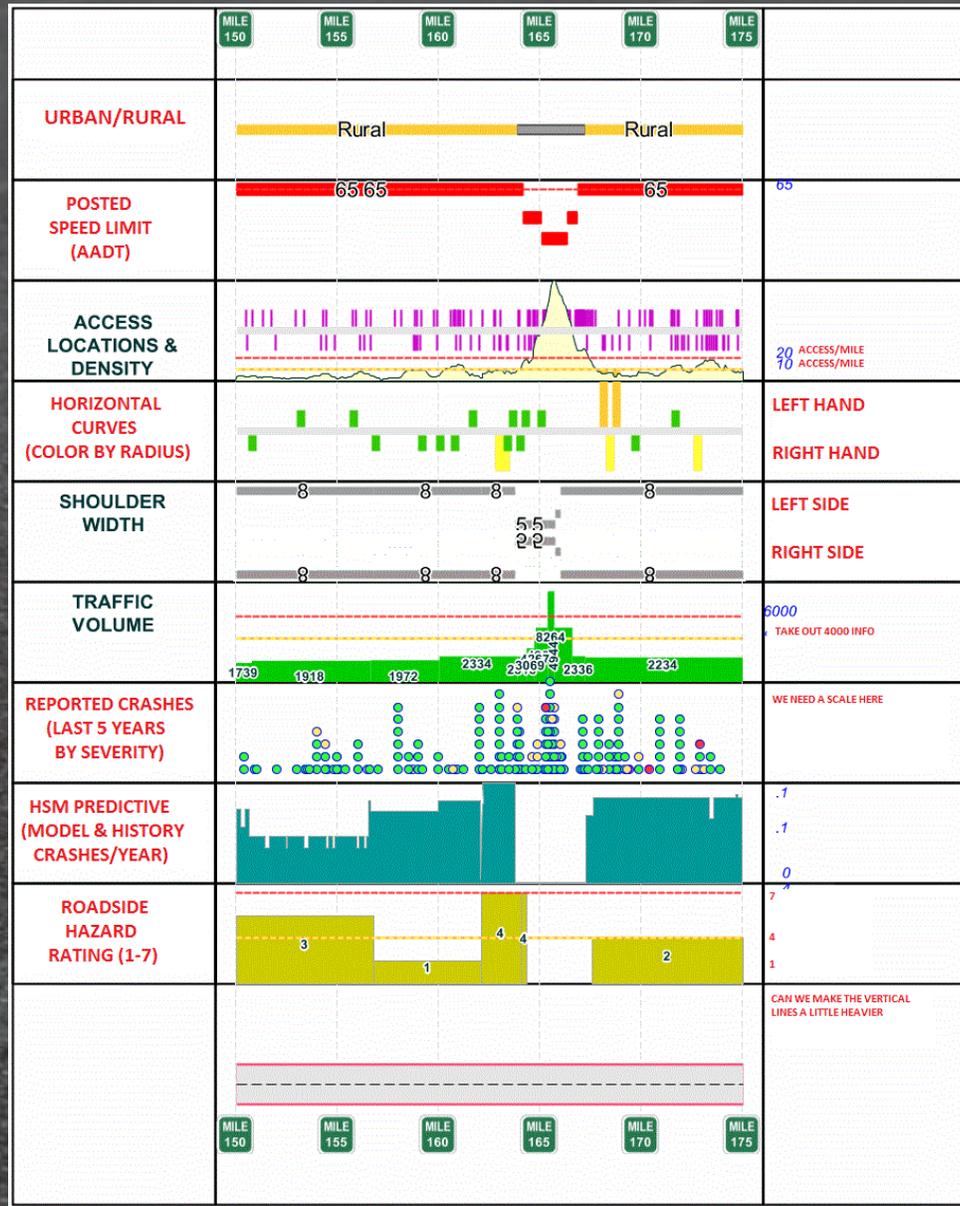
1 - 5

Risk Levels

Risk Parameter	Risk Level

1 - 2

Diagnostic Visualization

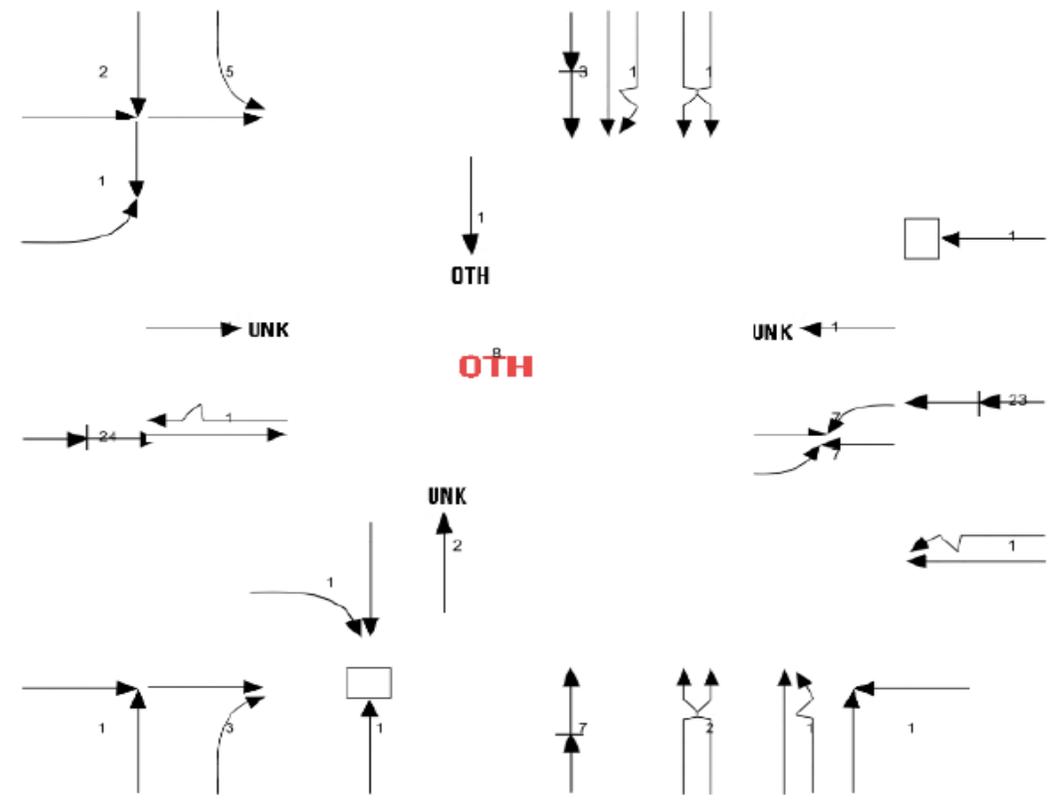


Collision Diagram

Intersection ID:104315

Intersection Names:DELL RANGE BLVD@CONVERSE AVE

Crash types are based on a grid format and are not indicative of crash location



WYDOT's SMS — Treatment Locations

- Location
- Proposed treatment
- Expected lifecycle cost
- Expected crash reduction
- Expected B/C
- Feeds programming
- Captures completion

Treatment Location

Road Name: WY 135

Route: ML708B

RM Range: 0 to 34.59 | From RM: 0.000 | To RM: 34.587

Full Roadway Name: WY 135

District: 5 | Segment Length: 34.587 miles

Treatment: SIGN -- NO PASSING

Benefit / Cost: 3527.2 | Lifecycle Cost: 2800 | CMF: 0.95

Location Type: SEGMENT ENDPOINTS

Crash Type: ALL

Status: PLANNED - STIP

Year: 2019

Note: PLACED 33 NO PASSING ZONE SIGNS AND 33 PASS WITH CARE SIGNS. THIS WORK IS SCHEDULED TO BE COMPLETED ON PROJECT B199005. THIS PROJECT WAS LET ON AUGUST 8, 2019 WITH A COMPLETION DATE OF OCTOBER 31, 2020.

236 of 2000

Treatment Location Map

2 mi 5 km

Move to start | Move to end | Move to center

Satellite | Roads

Stat Scores

Date Pulled	Lifecycle Benefit	Annl Crtl Rdctn	Risk Level
11/02/2020	9876239	.14738	1.5
06/01/2020	8447961	.12606	3.9
08/05/2019	6395550	.14295	3.9

1 - 3

Crash Factors / Crash Types

Search

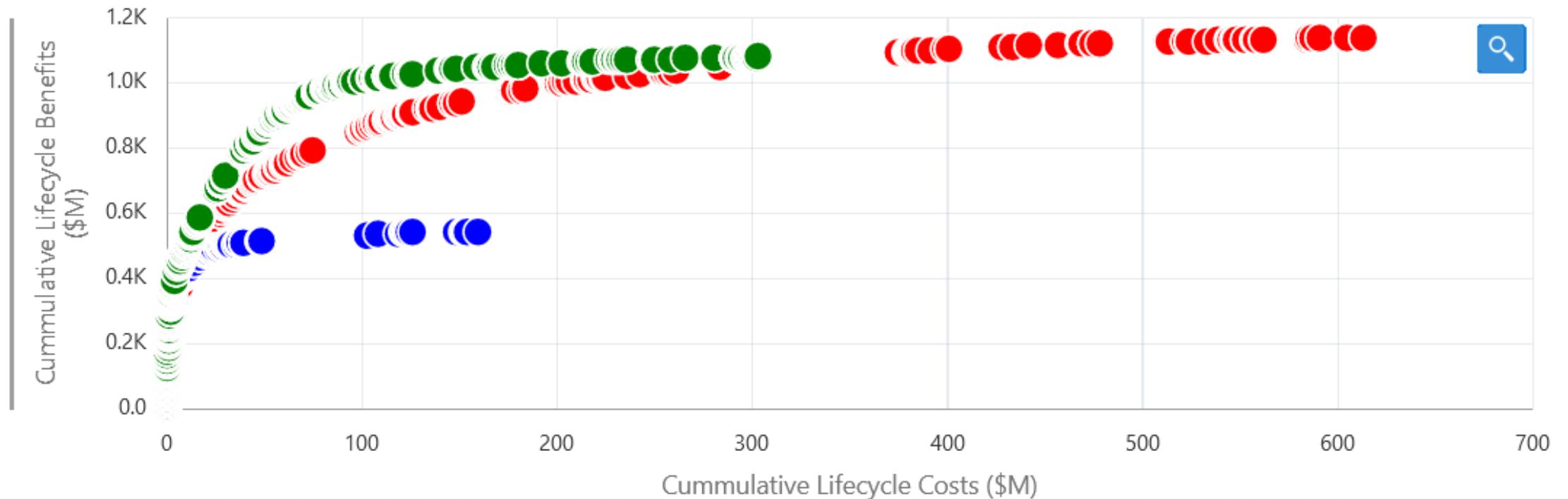
Risk Levels

Risk Parameter	Risk Level
VERTICAL GRADE	1.52
RIGHT SHOULDER WIDTH	1.13

Selecting Effective Treatments

Statewide Safety Status

Treatment Cummulative Benefits vs Cumulative Costs



Conclusions

- The tools support strategic directions
 - Data driven optimization
 - Performance measure
- Systematic HSM calculations
 - Integrated into hot spots, scoring, benefit calculations
 - Screening, treatment selection, programming
- Actual benefits of the tools:
 - At all project kick off and recon meetings, the safety report is reviewed and discussed. Safety discussions are driven by the HSM safety scores. (A low score means little or no discussion takes place.)
 - By forcing everyone to review the safety report and data, it helps engineers make safety related decisions (in theory).
 - Unfortunately, some of the engineers try to make the report fit their wants.
 - It does, however, give others the tools to say no, that treatment is not justified.
 - Having the tool is forcing the safety conversation on every project.

Questions?

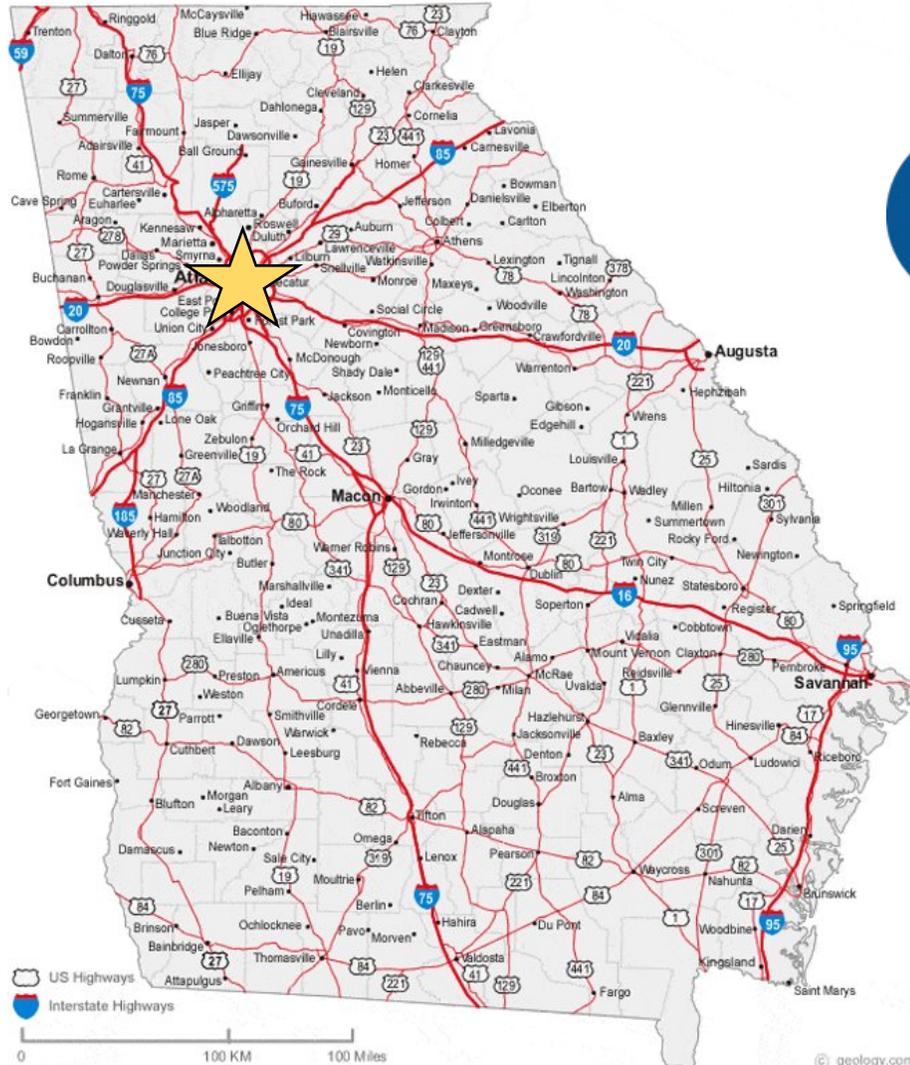
- Wyoming Department of Transportation (WYDOT)
- Keri Bohlmann
 - WYDOT
 - Keri.Bohlmann@wyo.gov
 - 307-777-4257
- Joe McCarthy
 - Traffic Records Project Manager
 - Joe.McCarthy@wyo.gov
 - 970-412-4022
- OnSafety Portal by ITIS Corp.



Network Screening Speed Dating



Agency Overview



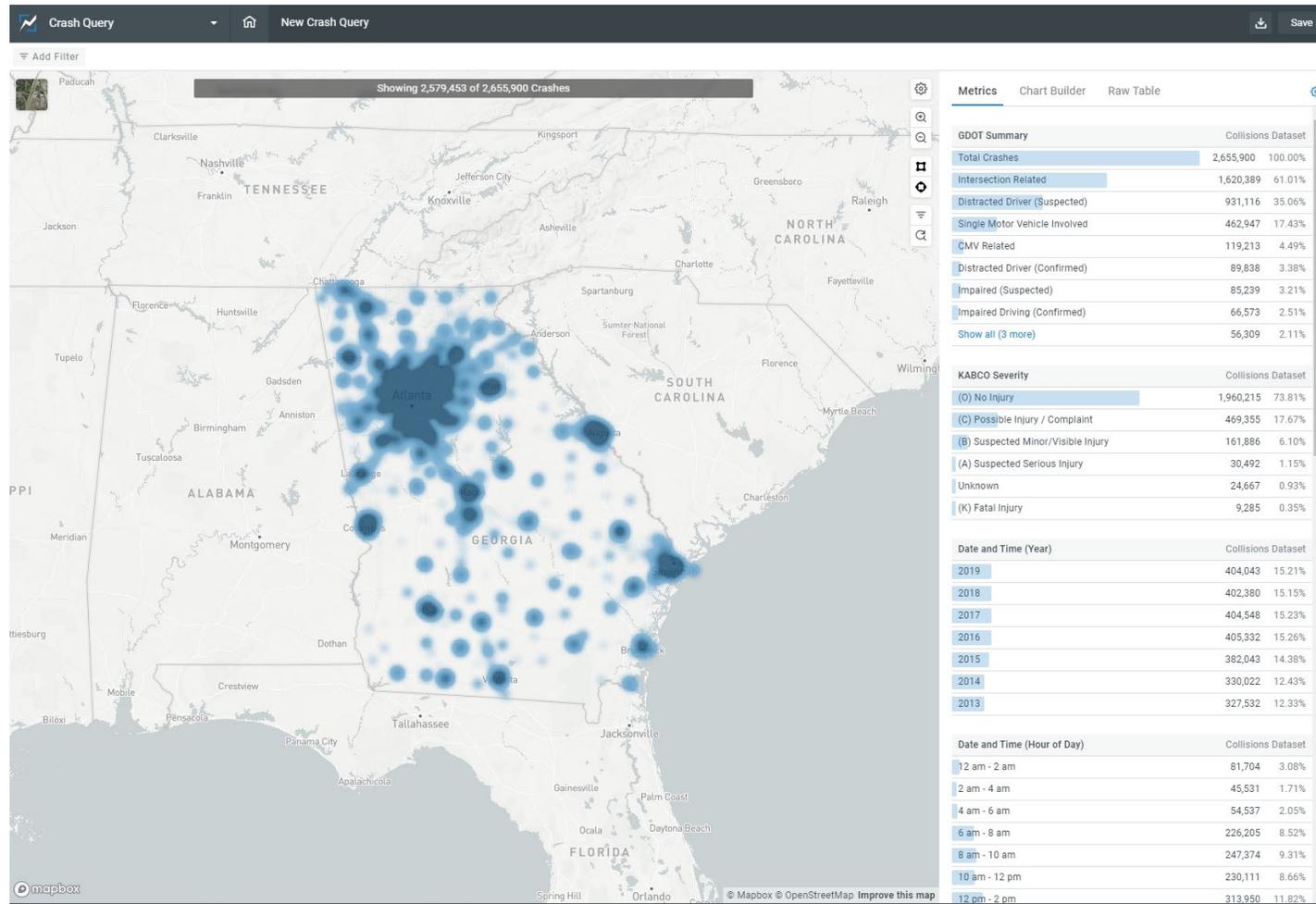
Contact Information

Samuel Harris, PE

State Safety Engineering Manager

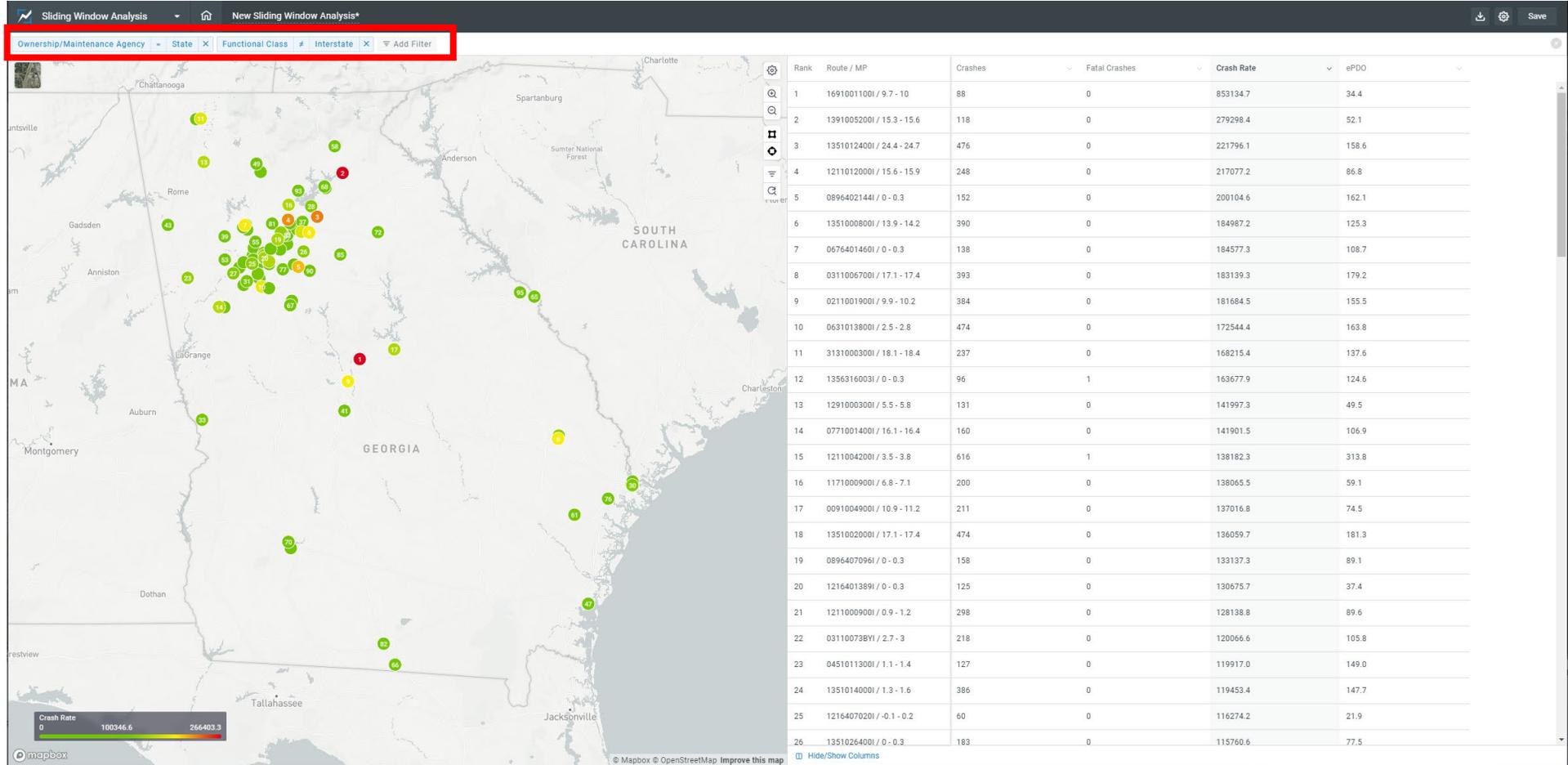
sharris@dot.ga.gov

Tool Overview





Key Features



Sliding Window Analysis
New Sliding Window Analysis*

Ownership/Maintenance Agency
State
Functional Class
Interstate
Add Filter

Rank	Route / MP	Crashes	Fatal Crashes	Crash Rate
1	16910011000 / 9.7 - 10	88	0	853134.7
2	13910052000 / 15.3 - 15.6	118	0	279298.4
3	13510124000 / 24.4 - 24.7	476	0	221796.1
4	12110120000 / 15.6 - 15.9	248	0	217077.2
5	08964021440 / 0 - 0.3	152	0	200104.6
6	13510008000 / 13.9 - 14.2	390	0	184987.2
7	06764014600 / 0 - 0.3	138	0	184577.3
8	03110067000 / 17.1 - 17.4	393	0	183139.3
9	02110019000 / 9.9 - 10.2	384	0	181684.5
10	06310138000 / 2.5 - 2.8	474	0	172544.4
11	31310003000 / 18.1 - 18.4	237	0	168215.4
12	13563160030 / 0 - 0.3	96	1	163677.9
13	12910003000 / 5.5 - 5.8	131	0	141997.3
14	07710014000 / 16.1 - 16.4	160	0	141901.5
15	12110042000 / 3.5 - 3.8	616	1	138182.3
16	11710009000 / 6.8 - 7.1	200	0	138065.5
17	00910049000 / 10.9 - 11.2	211	0	137016.8
18	13510020000 / 17.1 - 17.4	474	0	136059.7
19	08964070960 / 0 - 0.3	158	0	133137.3
20	12164013890 / 0 - 0.3	125	0	130675.7
21	12110009000 / 0.9 - 1.2	298	0	128138.8
22	03110073800 / 2.7 - 3	218	0	120066.6
23	04510113000 / 1.1 - 1.4	127	0	119917.0
24	13510140000 / 1.3 - 1.6	386	0	119453.4
25	12164070200 / -0.1 - 0.2	60	0	116274.2
26	13510264000 / 0 - 0.3	183	0	115760.6

Settings Cancel Apply

Window Options

WINDOW LENGTH (MILES) 0.3

OVERLAP HANDLING

Ignore Overlaps

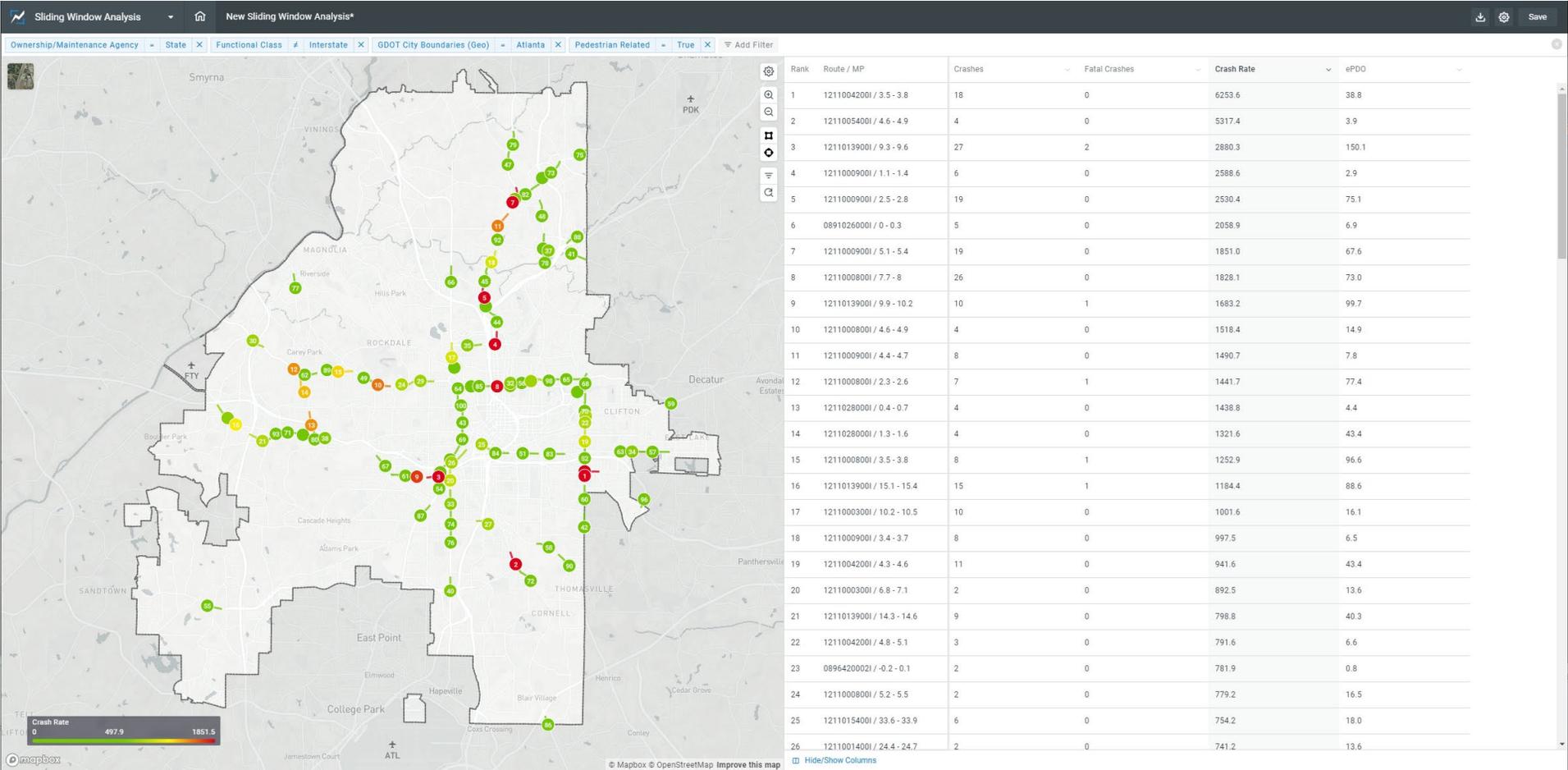
Limiting Values

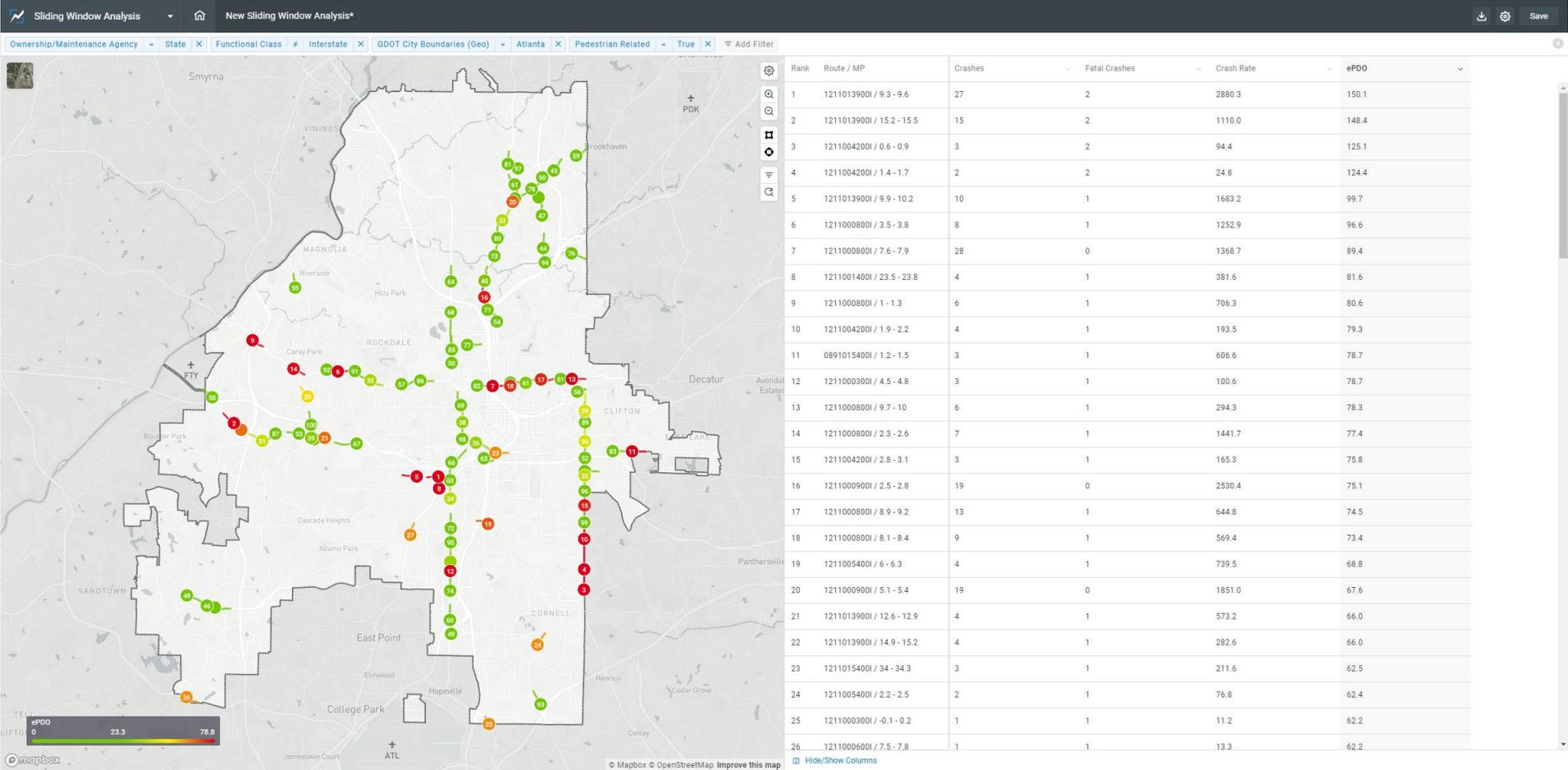
MINIMUM CRASHES

MINIMUM FATAL CRASHES

MINIMUM EPDO

MINIMUM CRASH RATE





Sliding Window Analysis | New Sliding Window Analysis*

Ownership/Maintenance Agency | State | Functional Class | Interstate | GDOT City Boundaries (Geo) | Atlanta | Pedestrian Related | True | Add Filter

Mapbox | OpenStreetMap | Improve this map

Rank	Route / MP	Crashes	Fatal Crashes	Crash Rate
1	12110139001 / 9.3 - 9.6	27	2	2880.3
2	12110139001 / 15.2 - 15.5	15	2	1110.0
3	12110042001 / 0.6 - 0.9	3	2	94.4
4	12110042001 / 1.4 - 1.7	2	2	24.8
5	12110139001 / 9.9 - 10.2	10	1	1683.2
6	12110008001 / 3.5 - 3.8	8	1	1252.9
7	12110008001 / 7.6 - 7.9	28	0	1368.7
8	12110014001 / 23.5 - 23.8	4	1	381.6
9	12110008001 / 1 - 1.3	6	1	706.3
10	12110042001 / 1.9 - 2.2	4	1	193.5
11	08910154001 / 1.2 - 1.5	3	1	606.6
12	12110003001 / 4.5 - 4.8	3	1	100.6
13	12110008001 / 9.7 - 10	6	1	294.3
14	12110008001 / 2.3 - 2.6	7	1	1441.7
15	12110042001 / 2.8 - 3.1	3	1	165.3
16	12110009001 / 2.5 - 2.8	19	0	2530.4
17	12110008001 / 8.9 - 9.2	13	1	644.8
18	12110008001 / 8.1 - 8.4	9	1	569.4
19	12110054001 / 6 - 6.3	4	1	739.5
20	12110009001 / 5.1 - 5.4	19	0	1851.0
21	12110139001 / 12.6 - 12.9	4	1	573.2
22	12110139001 / 14.9 - 15.2	4	1	282.6
23	12110154001 / 34 - 34.3	3	1	211.6
24	12110054001 / 2.2 - 2.5	2	1	76.8
25	12110003001 / -0.1 - 0.2	1	1	11.2
26	12110006001 / 7.5 - 7.8	1	1	13.3

12110139001 / 9.3 - 9.6

Open in Safety Analysis

Rank: State Current 1

Crash Severity Chart

Summary

- Crashes: 27
- Fatal Crashes: 2
- ePDO: 150.1
- Crash Rate: 2880.3

Roadway Details (MP 9.27 - 9.36)

- AADT: 16200.0
- Functional Class: Minor Arterial
- Urban/Rural: Urbanized Area
- Posted Speed: 45

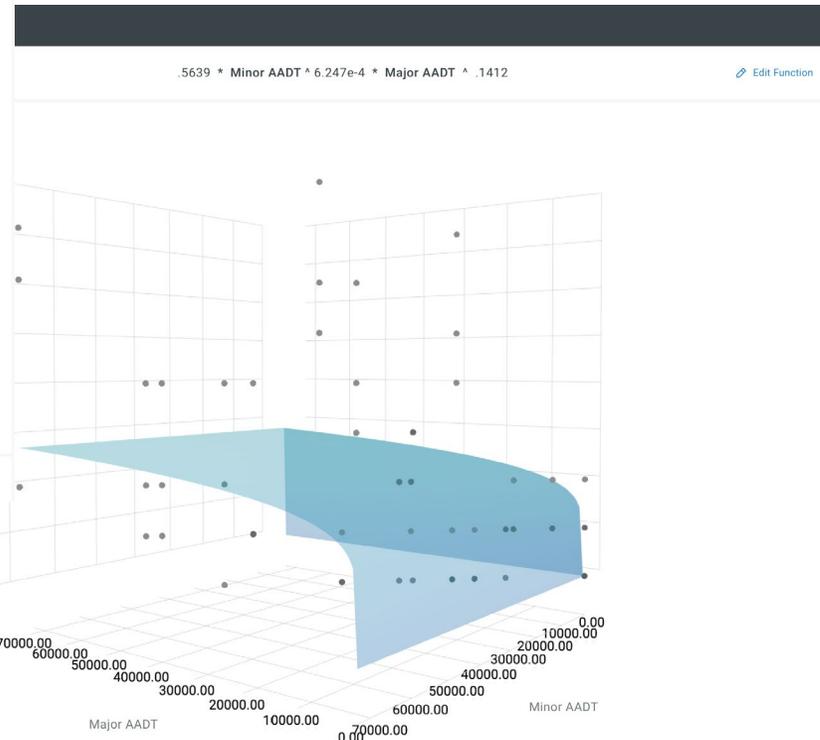
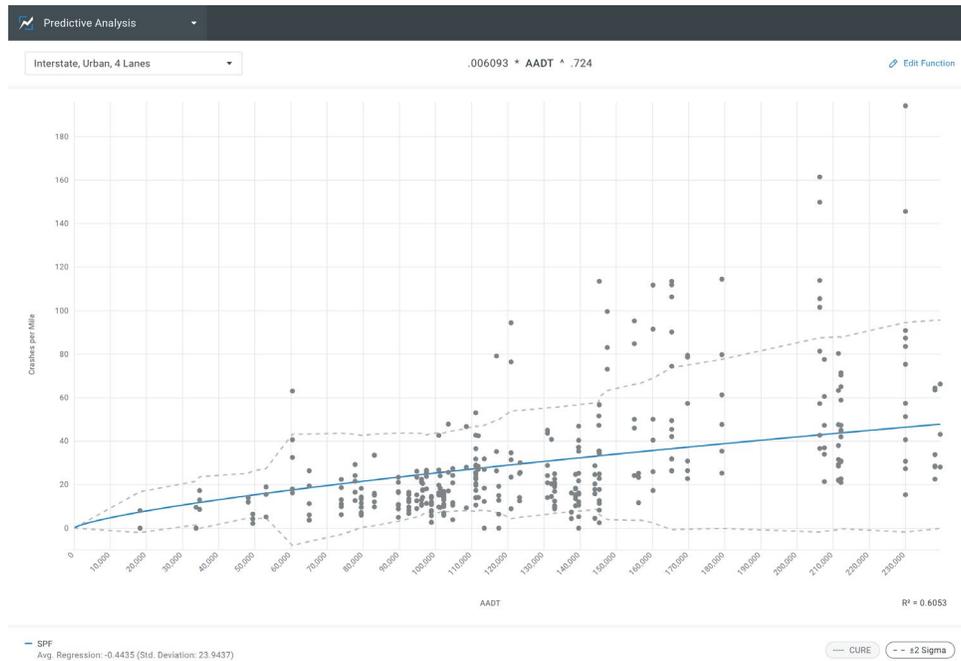
Roadway Details (MP 9.36 - 9.46)

- AADT: 16200.0
- Functional Class: Minor Arterial
- Urban/Rural: Urbanized Area
- Posted Speed: 45

Roadway Details (MP 9.46 - 9.506)

- AADT: 16200.0

Predictive Analysis – EB / SPF Creation

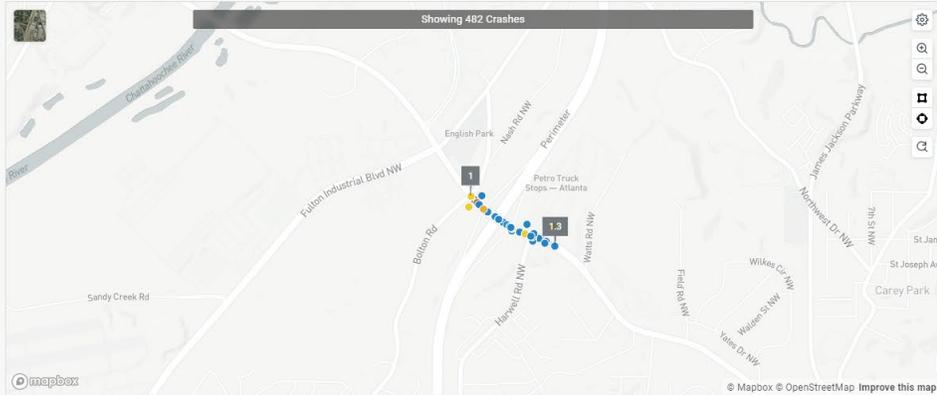


[Back](#)

Route 1211000800, MP 1 - 1.3

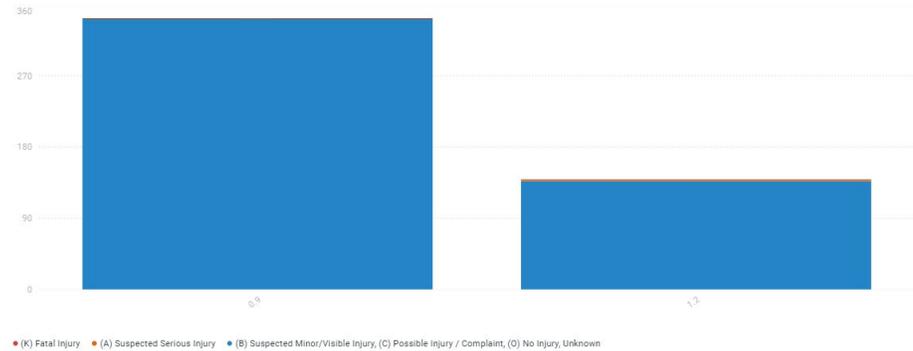
[Select A Treatment](#)

▼ Add Filter



Milepoint Summary

Crashes | Cost



Countermeasures **Metrics** Raw Table

GDOT Summary

Collisions Dataset

Total Crashes	482	100.00%
Distracted Driver (Suspected)	150	31.12%
CMV Related	105	21.78%
Intersection Related	97	20.12%
Impaired (Suspected)	23	4.77%
Single Motor Vehicle Involved	16	3.32%
Impaired Driving (Confirmed)	5	1.04%
Pedestrian	5	1.04%
Show all (3 more)	7	1.45%

KABCO Severity

Collisions Dataset

(O) No Injury	320	66.39%
(C) Possible Injury / Complaint	83	17.22%
Unknown	56	11.62%
(B) Suspected Minor/Visible Injury	20	4.15%
(A) Suspected Serious Injury	3	0.62%
(K) Fatal Injury	0	0.00%

Date and Time (Year)

Collisions Dataset

2019	128	26.56%
2018	183	37.97%
2017	171	35.48%
Show all (4 more)	0	0%

Date and Time (Hour of Day)

Collisions Dataset

12 am - 2 am	13	2.70%
2 am - 4 am	9	1.87%
4 am - 6 am	12	2.49%
6 am - 8 am	43	8.92%
8 am - 10 am	49	10.17%
10 am - 12 pm	58	12.03%
12 pm - 2 pm	51	10.58%
2 pm - 4 pm	75	15.56%



Legend														
Potential Candidates														
New candidates by revised Sliding Window analysis														
2013 - 2021 February														
Searching														
Source	County	Route	Limits	length (mi)	Notes	K	A	B	C	O	Total	ePDO	ePDO per mile	KAB ePDO per mile
Ped	Dougherty	1 SR 520 Bus / W Oglethorpe Blvd	from S Madison St to N Broadway St	1.1	some intersections might I	4	17	55	245	652	969	6283	5712	4099
Int / Ped	Dougherty	2 SR 520 (major intersections)	from SR 300 to S County Line Rd	6		3	13	41	75	235	364	3979	3979	3400
New	Dougherty	3 SR 520 Bus / W Oglethorpe Blvd	from S Cleveland St to S Monroe St	0.9		2	8	21	73	216	318	2622	2913	2301
Ped	Tift	4 SR 520 / 5th St	from S Central Ave to Harold Couch Rd	1	GOASIS 20-4027 Operation screening. Counts available	3	1	32	101	402	536	2934	2934	2070
New	Dougherty	5 SR 520 / N Slappy Blvd	from 6th Ave to SR 234	1		1	7	42	185	585	819	3412	3412	1979
Sliding W	Dougherty	6 SR 520 N Slappy Blvd	from Liberty Expy WB ramp to 14th Ave	1		0	12	39	192	711	954	3548	3548	1957
Ped	Dougherty	7 S Mock Rd (off system)	from Pearce Ave to Duitman Rd	1		4	0	4	20	52	76	1969	1969	1825
New	Dougherty	8 SR 234 / Gillionville Rd	from N Westover Blvd to N Dalewood Dr	1		2	5	22	100	259	386	2524	2524	1806
Ped	Terrell	9 SR 45 / SR 520	from Mechanicsville St to S Main St	1.1		2	6	24	33	138	201	2232	2029	1767
Sliding W	Dougherty	10 Dawson Rd (off system)	from Pointe N Blvd to Meredyth Dr	1.2		0	9	55	202	694	960	3625	3021	1671
Ped	Worth	11 SR 33 / N Main St	from SR 520 to E Pine St	0.9		2	2	5	26	173	206	1458	1620	1295
Int	Lowndes	12 SR 133 / St Augustine Rd	from Lankford Dr to SR 38	0.9		2	1	9	56	290	356	1701	1890	1282
New	Lowndes	13 SR 7 BUS	from E Valley St to south of Griffin Ave	1.1		2	1	15	72	305	393	1914	1740	1163
Int	Dougherty	14 SR 3	south of SR 234 to north of Honeysuckle Dr	1.3		2	3	8	23	90	124	1519	1168	1018
Sliding W/Int	Lowndes	15 SR 7 / S Patterson St	from Old US 41 to Copeland Rd	1.1		1	2	22	18	36	78	1204	1094	986
Int	Lowndes	16 SR 7 BU	from Northside Dr to E Park Ave	1		0	4	26	128	539	697	2049	2049	924
Int	Decatur	17 SR 1 / Tallahassee Hwy	1 mile stretch north and south of intersection at Woodhull Rd	1.2		2	0	8	6	20	34	1085	905	865
Ped	Lowndes	18 SR 38	from Riverside Rd to Briarwood Rd	1.2		2	0	6	17	54	77	1128	940	830
Int	Lowndes	19 SR 38 / E Hill Ave	from Leon St to Blanchard St	1.1		1	3	5	20	57	85	974	886	750
Int	Lowndes	20 SR 125 / Bemiss Rd	from Skipper Bridge Rd to Hidden Hills Dr	1		0	4	13	52	196	265	1087	1087	652

Crash Query | New Crash Query * | Save

GDOT District Boundaries (Geo) | 5 | Ownership/Maintenance Agency | State | Functional Class | Interstate | Pedestrian Related | True | Add Filter

Showing 614 Crashes

Mapbox © OpenStreetMap. Improve this map

Metrics | Chart Builder | **Raw Table**

GDOT Summary | Collisions Dataset

Pedestrian	614	100.00%
Total Crashes	614	100.00%
Intersection Related	410	66.78%
Distracted Driver (Suspected)	123	20.03%
Distracted Driver (Confirmed)	66	10.75%
Impaired (Suspected)	53	8.63%
CMV Related	26	4.23%
Impaired Driving (Confirmed)	21	3.42%
Show all (3 more)	3	0.49%

KABCO Severity | Collisions Dataset

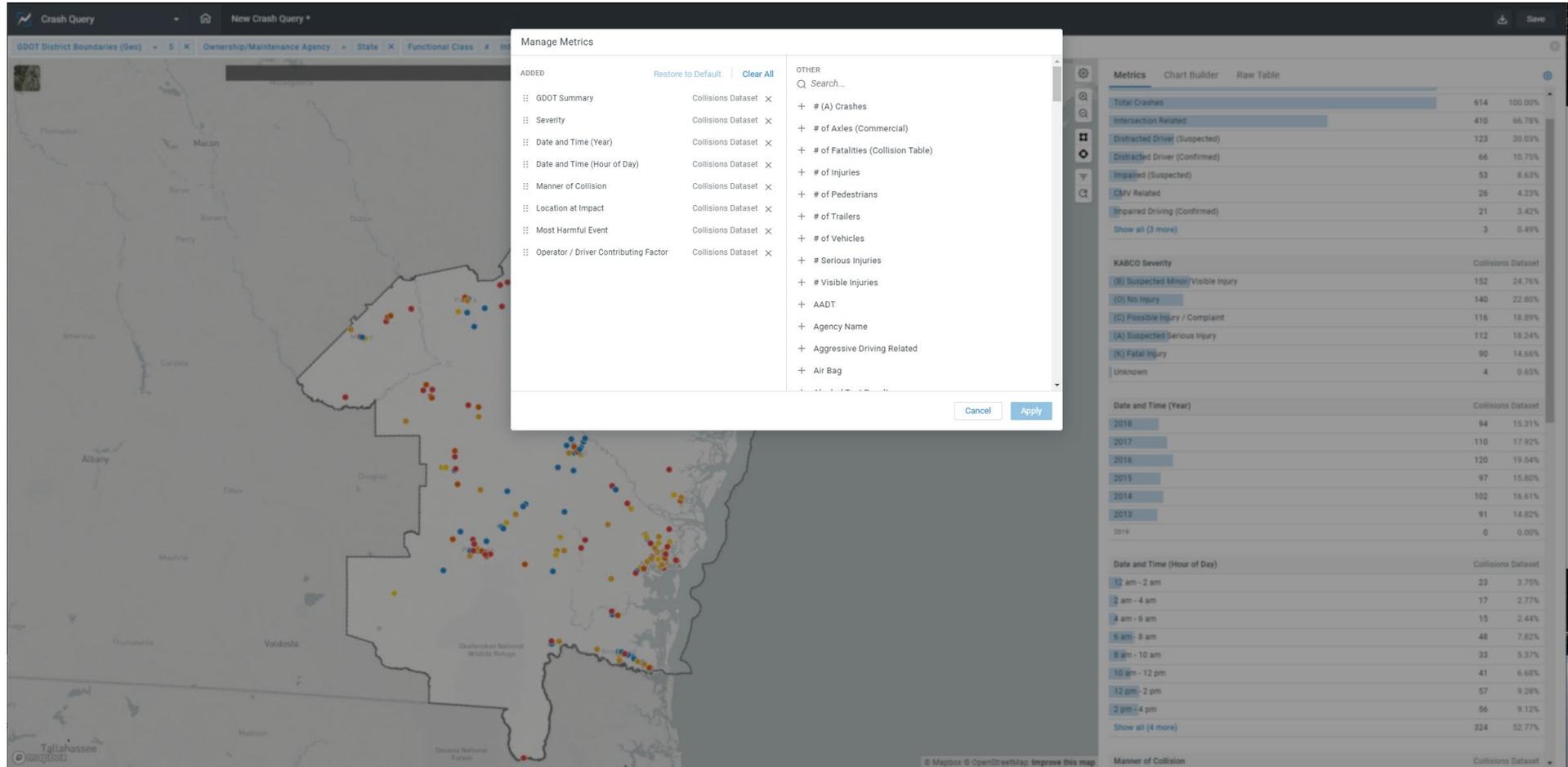
(B) Suspected Minor/Visible Injury	152	24.76%
(D) No Injury	140	22.80%
(C) Possible Injury / Complaint	116	18.89%
(A) Suspected Serious Injury	112	18.24%
(K) Fatal Injury	90	14.66%
Unknown	4	0.65%

Date and Time (Year) | Collisions Dataset

2018	94	15.31%
2017	110	17.92%
2016	120	19.54%
2015	97	15.80%
2014	102	16.61%
2013	91	14.82%
2019	0	0.00%

Date and Time (Hour of Day) | Collisions Dataset

12 am - 2 am	23	3.75%
2 am - 4 am	17	2.77%
4 am - 6 am	15	2.44%
6 am - 8 am	48	7.82%
8 am - 10 am	33	5.37%
10 am - 12 pm	41	6.68%
12 pm - 2 pm	57	9.28%
2 pm - 4 pm	56	9.12%



The screenshot displays the GDOT Crash Query interface. A map of Georgia is shown with various colored dots representing crash locations. A 'Manage Metrics' dialog box is open in the center, listing various metrics that can be added to the query. On the right side, a 'Metrics' panel shows a table of selected metrics with their counts and percentages.

Manage Metrics Dialog:

- ADDED:**
 - GDOT Summary (Collisions Dataset)
 - Severity (Collisions Dataset)
 - Date and Time (Year) (Collisions Dataset)
 - Date and Time (Hour of Day) (Collisions Dataset)
 - Manner of Collision (Collisions Dataset)
 - Location at Impact (Collisions Dataset)
 - Most Harmful Event (Collisions Dataset)
 - Operator / Driver Contributing Factor (Collisions Dataset)
- OTHER:**
 - # (A) Crashes
 - # of Axles (Commercial)
 - # of Fatalities (Collision Table)
 - # of Injuries
 - # of Pedestrians
 - # of Trailers
 - # of Vehicles
 - # Serious Injuries
 - # Visible Injuries
 - AAADT
 - Agency Name
 - Aggressive Driving Related
 - Air Bag

Metrics Panel Table:

Metric	Count	Percentage
Total Crashes	614	100.00%
Intersection Related	410	66.78%
Distraacted Driver (Suspected)	123	20.03%
Distraacted Driver (Confirmed)	66	10.75%
Impaired (Suspected)	53	8.63%
CMV Related	26	4.23%
Impaired Driving (Confirmed)	21	3.42%
Show all (3 more)	3	0.49%
KABCO Severity		
(B) Suspected Minor/Visible Injury	152	24.76%
(D) No Injury	140	22.80%
(C) Possible Injury / Complaint	116	18.89%
(A) Suspected Serious Injury	112	18.24%
(K) Fatal Injury	90	14.66%
Unknown	4	0.65%
Date and Time (Year)		
2018	94	15.31%
2017	110	17.92%
2016	120	19.54%
2015	97	15.80%
2014	102	16.61%
2013	91	14.82%
2019	0	0.00%
Date and Time (Hour of Day)		
12 am - 2 am	23	3.75%
2 am - 4 am	17	2.77%
4 am - 6 am	15	2.44%
6 am - 8 am	48	7.82%
8 am - 10 am	33	5.37%
10 am - 12 pm	41	6.68%
12 pm - 2 pm	57	9.28%
2 pm - 4 pm	56	9.12%
Show all (4 more)	324	52.77%

Crash Query
New Crash Query *

GDOT District Boundaries (Geo)
Ownership/Maintenance Agency = State
Functional Class = Interstate
Pedestrian Related = True
Add Filter

Showing 614 Crashes

Metrics | Chart Builder

- Total Crashes
- Intersection Related
- Distracted Driver (Suspected)
- Distracted Driver (Confirmed)
- Impaired (Suspected)
- CMV Related
- Impaired Driving (Confirmed)
- Show all (3 more)

KABCO Severity

- (B) Suspected Minor/Visible Injury
- (O) No Injury
- (C) Possible Injury / Complaint
- (A) Suspected Serious Injury
- (K) Fatal Injury**
- Unknown

Date and Time (Year)

- 2018
- 2017
- 2016
- 2015
- 2014
- 2013
- 2019

Date and Time (Hour of Day)

- 12 am - 2 am
- 2 am - 4 am
- 4 am - 6 am
- 6 am - 8 am
- 8 am - 10 am
- 10 am - 12 pm
- 12 pm - 2 pm
- 2 pm - 4 pm
- Show all (4 more)

Manner of Collision

Severity: (K) Fatal Injury

Crash Details

Collision ID	7016663
Agency Name	Savannah Police Department
Date and Time	Dec 24, 2018 - 8:23 PM
Area: County	Chatham
Ownership/Maintenance Agency	State
Roadway (From Crash Report)	Sr 204
MilePoint	6.09
Intersecting Roadway	Abercorn Frontage Rd
# of Vehicles	1
Manner of Collision	Not a Collision with Motor Vehicle
Location at Impact	On Roadway - Non-Intersection
Light Conditions	Dark-Not Lighted
Surface Condition	Dry
KABCO Severity	(K) Fatal Injury
# Fatal (K) Collisions	1
# of Fatalities (Person Table)	1
# Serious Injuries	0
# Visible Injuries	0
# Complaint Injuries	0

Countermeasures

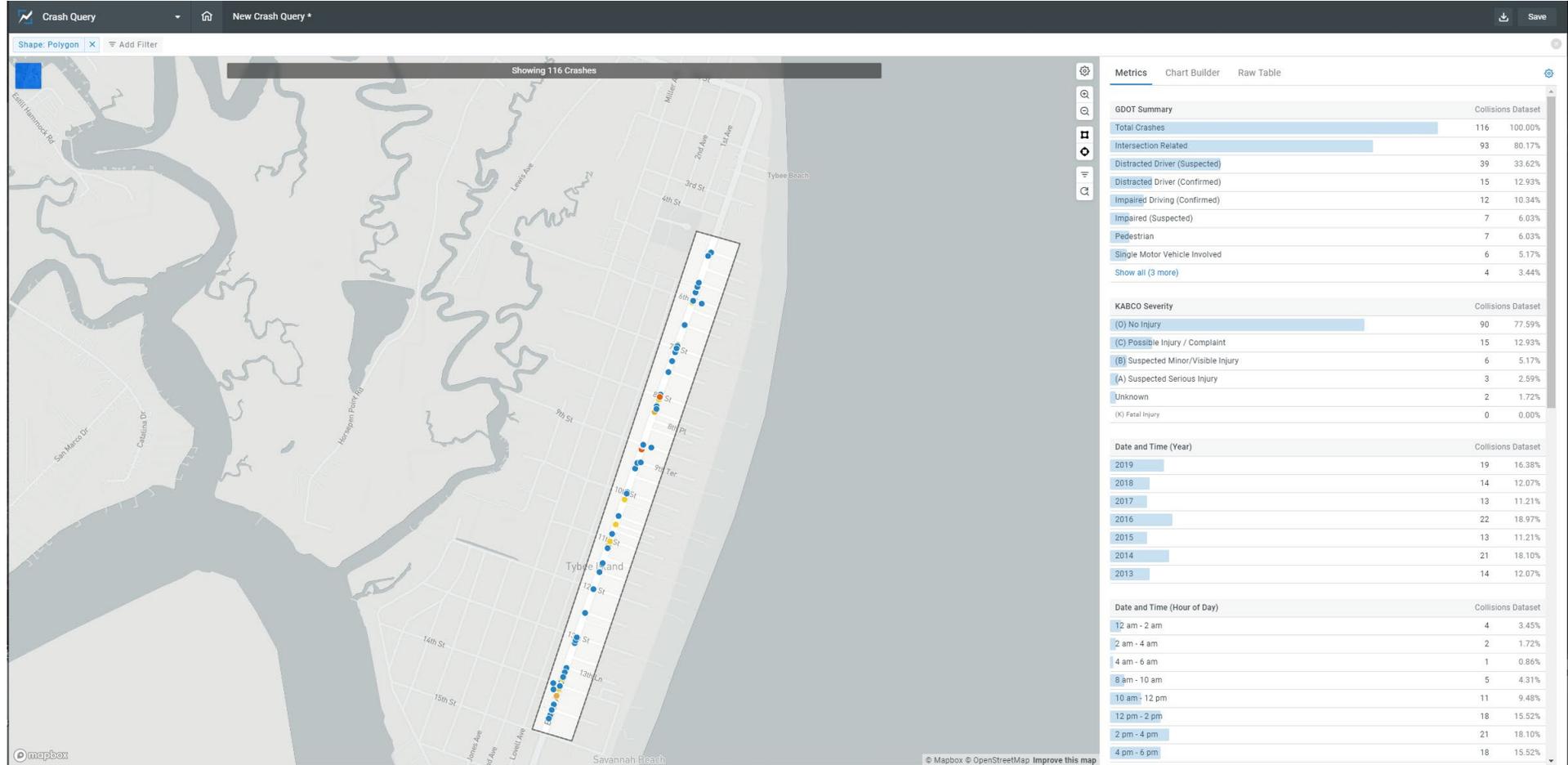
All Countermeasures: Lighting Improvements (Non-Intersection), Countermeasure: Lighting Improvements (Non-Intersection), Countermeasure: Pedestrian Control (Non-Intersection), Countermeasure: Pedestrian Control (Non-Intersection)

Crash Narrative

date 24 December 2018 while on uniformed patrol in a marked Savannah Police vehicle I responded to the listed address at the listed time in reference to a report of a motor ve... [Read More](#)

Roadway Details

AADT	29200
Functional Class	Principal Arterial - Other
Urban/Rural	Urbanized Area
Speed Limit	45



COMPARISON REPORT

Speed Dating Demo

Created on April 8, 2021

Created by Samuel Harris

Data extents: January 1, 2018 to December 31, 2019



Applied Filters

GDOT District Boundaries (Geo) = 5 Ownership/Maintenance Agency = State
 Functional Class ≠ Interstate Pedestrian Related = True

Time Ranges

1	January 1, 2018 - December 31, 2018 (365 days)	94 Crashes
	K: 18 (19.1%) A: 19 (20.2%) B: 21 (22.3%) C: 22 (23.4%) O: 14 (14.9%)	
2	January 1, 2019 - December 31, 2019 (365 days)	
	K: 0 (0.0%) A: 0 (0.0%) B: 0 (0.0%) C: 0 (0.0%) O: 0 (0.0%)	

K = (K) Fatal Injury, A = (A) Suspected Serious Injury, B = (B) Suspected Minor/Visible Injury, C = (C) Possible Injury / Complaint, O = (O) No Injury

Change Overview (annualized)

▼ -19 (100%) Serious Crashes	▼ -18 (100%) Fatal Crashes	▼ \$245.1M (100%) Crash Cost
---------------------------------	-------------------------------	---------------------------------

Crash Counts & Cost (annualized)	1	2	+ / -	1	2	+ / -
(K) Fatal Injury	18	0	-18	\$188.6M	\$0	-\$188.6M
(A) Suspected Serious Injury	19.1	0	-19.1	\$43.1M	\$0	-\$43.1M
(B) Suspected Minor/Visible Injury	21.1	0	-21.1	\$10.5M	\$0	-\$10.5M
(C) Possible Injury / Complaint	22.1	0	-22.1	\$2.4M	\$0	-\$2.4M
(O) No Injury	14	0	-14	\$336.9K	\$0	-\$336.9K

Top Differentiators	1	2	+ / -
GDOT Summary: Pedestrian	100%	0%	-100%
GDOT Summary: Total Crashes	100%	0%	-100%
Manner of Collision: Not a Collision with Motor Vehicle	80.9%	0%	-80.9%
Operator / Driver Contributing Factor: No Contributing Factors	63.8%	0%	-63.8%
Location at Impact: On Roadway - Non-Intersection	52.1%	0%	-52.1%

GDOT Summary	1	2	+ / -
Bicycle	0%	0%	0%
CMV Related	2.1%	0%	-2.1%
Distracted Driver (Confirmed)	10.6%	0%	-10.6%

Dashboards County Dashboard

Add Filter

County Overview **SHSP Areas** Location Overview Intersection Detail Route Detail Crash Attributes Time of Crashes Driver Behavior Notes

SHSP Focus Areas

For an explanation of the SHSP Areas, please see our [GDOT - SHSP Focus Area Filters Article](#).

Note: Crashes can overlap and be counted within multiple SHSP focus areas.

SHSP Emphasis Areas	Total Crashes	K Crashes	A Crashes	B Crashes	C Crashes	O Crashes	Fatalities
Aggressive Driving	95,439	779	2,160	9,798	17,490	64,323	889
Bicycle	4,911	74	358	1,871	1,289	1,290	83
CMV Related	119,213	1,056	1,770	8,059	17,415	90,428	1,175
Distracted Driver (Confirmed)	89,838	203	805	5,216	18,010	65,131	227
Distracted Driver (Suspected)	931,116	669	3,951	32,221	193,463	697,606	854
Hit & Run	312,119	552	2,029	10,135	36,752	251,081	608
Impaired (Suspected)	85,239	2,846	2,264	4,652	11,328	63,448	3,190
Impaired Driving (Confirmed)	66,573	1,203	3,313	12,575	12,629	36,646	1,332
Intersection Related	1,620,389	4,997	18,173	100,977	303,889	1,179,673	5,353
Motorcycle	28,758	987	3,459	10,594	5,895	7,642	1,009
Older Driver (55-64)	507,771	1,853	5,454	29,207	98,569	370,113	2,114
Older Driver (65+)	369,765	1,782	4,204	24,722	68,473	268,955	1,910
Pedestrian	22,640	1,464	2,494	6,363	6,062	5,713	1,540
Roadway Departure	430,500	3,417	9,319	43,783	52,789	315,825	3,629
Secondary Crash	41,600	61	312	1,601	5,730	33,379	72
Young Driver	348,688	870	3,949	25,058	66,873	250,953	962

Columns CSV 16 Results

Filters

Date: All Time

Measure: Records Row Count

Area: City
Select...

KABCO Severity
Select...

SHSP Emphasis Areas
Select...

Ownership/Maintenance Agency
Select...

511 (Real-Time Traffic Info)	
Alternative Intersections	▼
Crash Reporting	
Emergency	▼
Express Lanes	▼
Georgia Commute Options	
Maps	▼
Road & Traffic Data	
Safety & Operation	▼
Travel Programs	▼
Weekend Lane Closures: Metro Atlanta	

Crash Reporting



GDOT Crash Data Dashboard

The GDOT Crash Data Dashboard provides crash and vehicle data from crashes that occurred on Georgia's public roads, as well as information regarding the various safety campaigns throughout the state of Georgia. This dashboard provides data visualizations, crash mapping, and easy-to-use filtering, which allows you to find the crash data for your city, county, or region. Additionally, crash type filters can help find specific crash types, like pedestrian or bicycle involved, distracted driver related, and more. This dashboard contains crashes that occurred over the last 5 years.

[View dashboard overview](#) if assistance is needed.

[View Dashboard](#)



Request Your Crash Report

Police crash reports are available through the BuyCrash system.

[Start Request](#)

A Crash Report can be purchased directly via [BuyCrash.com](#) or by submitting a request to GDOT via the [GDOT Request Form](#).



Coordinate with Our Technical Team

Georgia DOT is the designated state agency for managing and storing the states crash reports in the GEARS database. Users can use the link to request access to GEARS crash data, request support for Local Law Enforcement, or request technical assistance.

Contact GEARS at Gears.Support@LexisNexisRisk.com, Phone (866) 495-4206.

Date and Time of Incident 01/01/2015 - 12/31/2019 Add Filter

Overview Who Why When Where Where-Map View Glossary of Terms

The data displayed in this dashboard includes the years 2015-2019 by default. This can be modified by changing or removing the date filter in the filter bar above. Additionally, users can click on any chart to filter further. All data presented is based upon applied filters.

User Tip: System response is improved when an Area filter (County or City) is applied.

Drive Alert Arrive Alive



Total Crash Count for All Filtered Crashes: 1,997,395

Fatal Crash Count for All Filtered Crashes: 7,086

Number of Injuries for All Filtered Crashes: 725,748

Number of Fatalities for All Filtered Crashes: 7,672

Filters

All Time

Measure: Records Row Count

Area: County

Select...

Area: City

Select...

MPO

Select...

KABCO Severity

Select...

SHSP Emphasis Areas

Select...

Ownership/Maintenance Agency

Select...

Driver Age Group

Select...

Driver Gender

Select...



To view Georgia's Strategic Highway Safety Plan click [Here](#)

Conclusions

- Why was the tool selected?
- What are the benefits of the tool?
- How has the tool impacted decision-making?

Questions?

Samuel Harris, PE

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Discussion

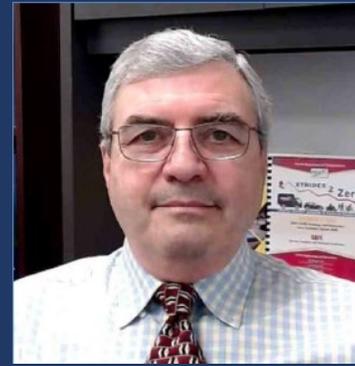
For additional information go to
www.highwaysafetymanual.org or
contact Kelly Hardy, P.E. at
khardy@aaashto.org

Stephen Read, Virginia DOT & AASHTO HSM Steering Committee Chair

Kerry Wilcoxon & Saroja Devarakonda, Arizona DOT



Shanshan Zhao, Ph.D. & Eric Jackson, Ph.D.
Connecticut DOT – CRSMS



Alan El-Urfali, P.E.
Florida DOT – SAS



Carla P. Anderson, P.E.
Kansas DOT – SafetyAnalyst



Eric Green, Ph.D. & Mike Vaughn
Kentucky TC – CDAT/RTool

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ADOT

Exploring Predictive Network Screening Tools (Part 1)

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Kerry Wilcoxon & Saroja Devarakonda, Arizona DOT



Joe McCarthy & Keri Bohlmann
Wyoming DOT – Safety Portal



David Swenka, P.E. PTOE
Colorado DOT – DiExSys



Samuel Harris, P.E.
Georgia DOT – AASHTOWare
Safety Powered by Numetric



Katherine Beckett Suter, P.E., RSP2BI
Illinois DOT – Safety Tiers

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Exploring Predictive Network Screening Tools ... The Next Generation Coming Soon!

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