

# Using Crash Data to Prioritize Enforcement and Outreach Efforts

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## **Background**

- AASHTOWare Safety powered by Numetric
- Partnering with Tennessee Department of Transportation since 2021
- Approximately 300 Users
- Numetric receives weekly data updates from TDOT
  - Crash Data TITAN → TRIMS DB → AASHTOWare Safety (Numetric)
  - Crash Data available from January 1, 2015 to current
- AASHTOWare Safety Suite of Applications:
  - Dashboards
  - Crash Query
  - Network Screening
  - Sliding Window Analysis
  - Safety Analysis
  - Crash Tree Diagrams
  - Collision Diagrams



### **Roadway Safety Management Process**

# HSM Part B - Roadway Safety Management Process

- 1. Network Screening
- 2. Diagnosis
- 3. Countermeasure Selection
- 4. Economic Appraisal
- 5. Project Prioritization
- 6. Safety Effectiveness Evaluation

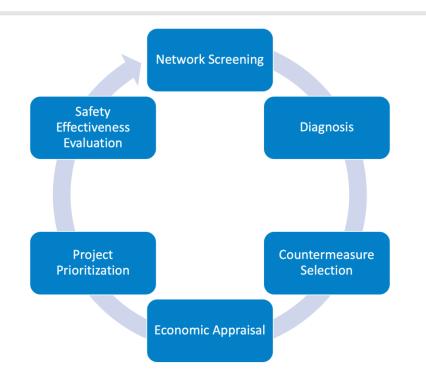


Figure 1. HSM 6-step Roadway Safety Management Process



## Safe System Approach

### Principles of a Safe System Approach

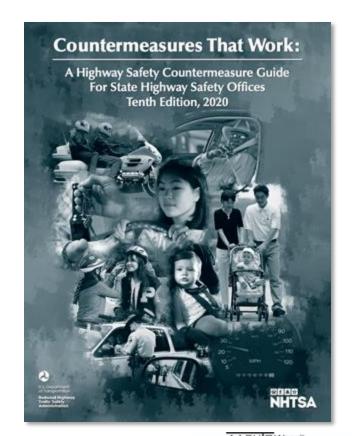
- Humans Make Mistakes
- Humans are Vulnerable
- Responsibility is Shared
- Safety is Proactive
- Redundancy is Crucial





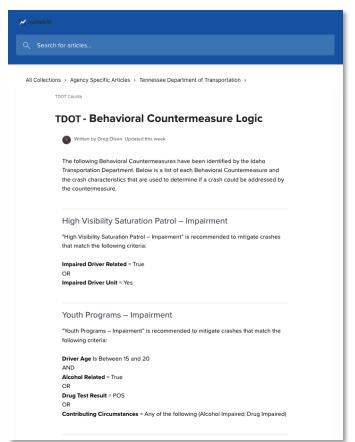
## **Behavioral Countermeasures**

- High Visibility Saturation Patrol Impairment
- Youth Programs Impairment
- Enforcement of Drug Impaired Driving
- Short Term, High Visibility Seat Belt Law Enforcement
- Short Term, High Visibility Child Restraint/Booster
   Law Enforcement
- High Visibility Speed Enforcement
- High Visibility Cell Phone and Distracted Driving Enforcement
- Law Enforcement Roles Older Drivers
- Impaired Pedestrian Patrol
- Bicycle Enforcement Strategies





## **Behavioral Countermeasure Logic**



#### Short Term, High Visibility Seat Belt Law Enforcement

"Short Term, High Visibility Seat Belt Law Enforcement" is recommended to mitigate crashes that match the following criteria:

#### Unbelted Related = True

OR

Protective Device Name = Any of the following (None, Shoulder Belt Only, No Belts in Use, Air Bag Activated-No Belts in Use, Non-Activated Air Bag-No Belts in Use) AND

 $\label{eq:continuous} \textbf{Unit Type} = \text{Any of the following (Pickup, SUV/Crossover, Van - 1 to 8 seats, Van - 9 to 15 seats, Cargo Van, Car)}$ 

#### AND

Age ≥ 7

### Short Term, High Visibility Child Restraint/Booster Law Enforcement

"Short Term, High Visibility Child Restraint/Booster Law Enforcement" is recommended to mitigate crashes that match the following criteria:

Protective Device Name = Any of the following (None, Shoulder Belt Only, No Belts in Use, Air Bag Activated- No Belts in Use, Non-Activated Air Bag- No Belts in Use) AND

Unit Type = Any of the following (Pickup, SUV/Crossover, Van - 1 to 8 seats, Van - 9 to 15 seats, Cargo Van, Car)

#### AND

Age is between 0 and 6

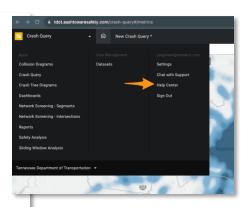
#### High Visibility Speed Enforcement

"High Visibility Speed Enforcement" is recommended to mitigate crashes that match the following criteria:

 $\label{lower} \textbf{Contributing Circumstances} = \texttt{Any of the following (Speed Too Fast For Conditions or Exceeded Posted Speed)}$ 

#### High Visibility Cell Phone and Distracted Driving Enforcement

"High Visibility Cell Phone and Distracted Driving Enforcement" is recommended to





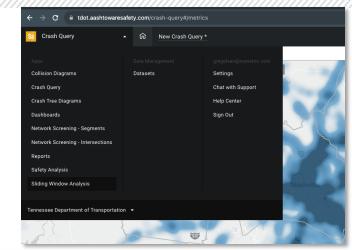
## **Sliding Window Analysis**

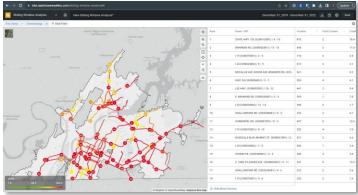
### Purpose of Sliding Window Analysis

- It is a frequency-based Network Screening approach that helps users determine where the most crashes are occurring along their roadway network in a given sized window.
- Users can determine the size of the window they would like to use to segment their roadways.
- Users can apply filters to narrow down their search criteria.

## Sliding Window Analysis Deliverables

- On-demand Network
   Screenings
- Network Screening Reports
- Spreadsheet downloads









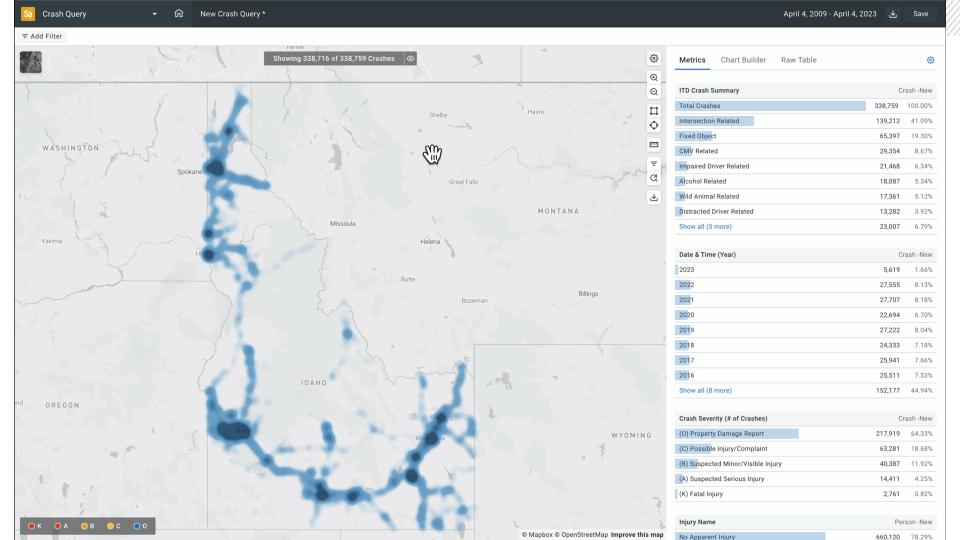


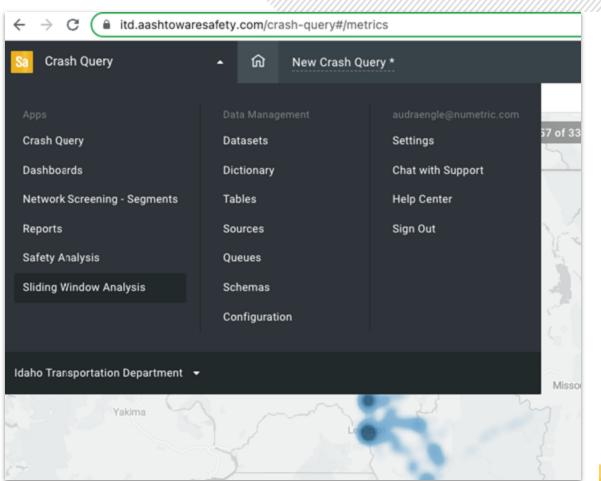


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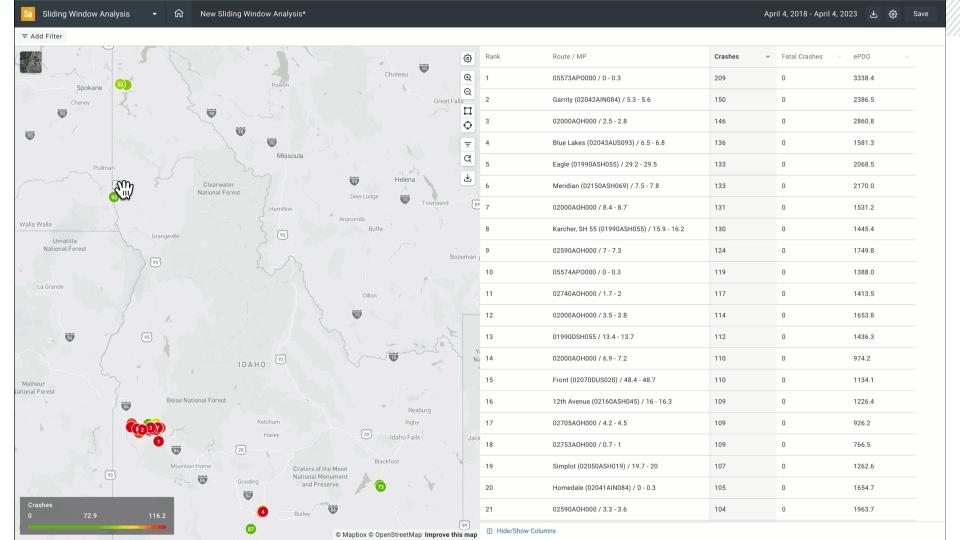


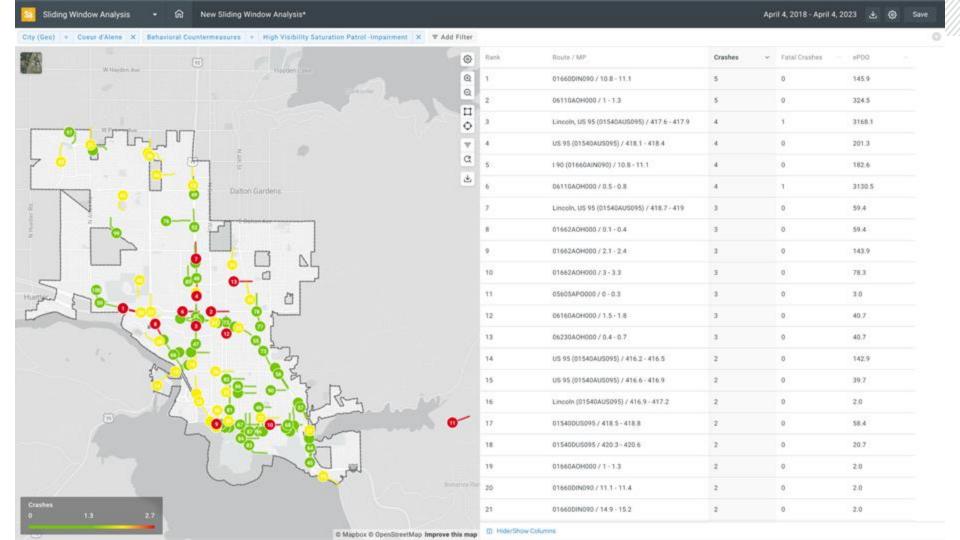
# Sliding Window Analysis

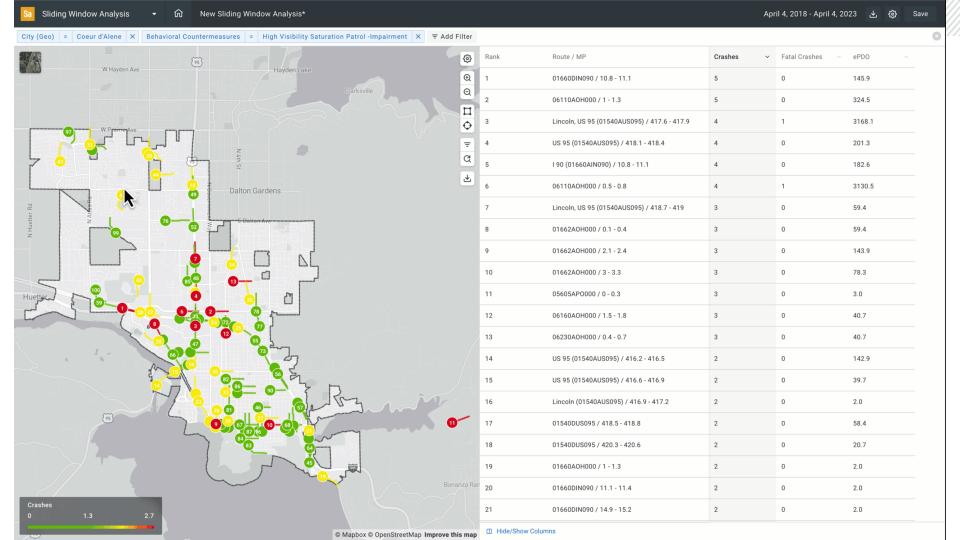


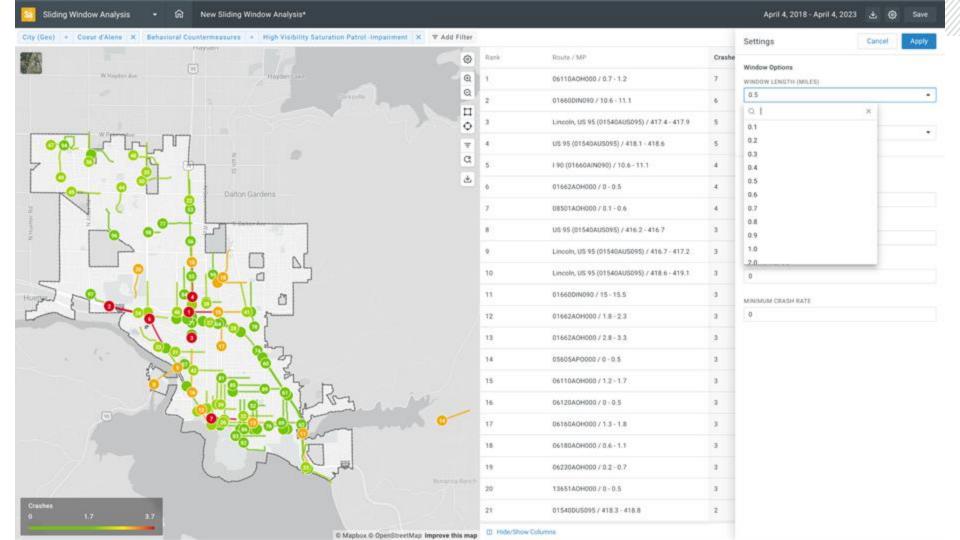


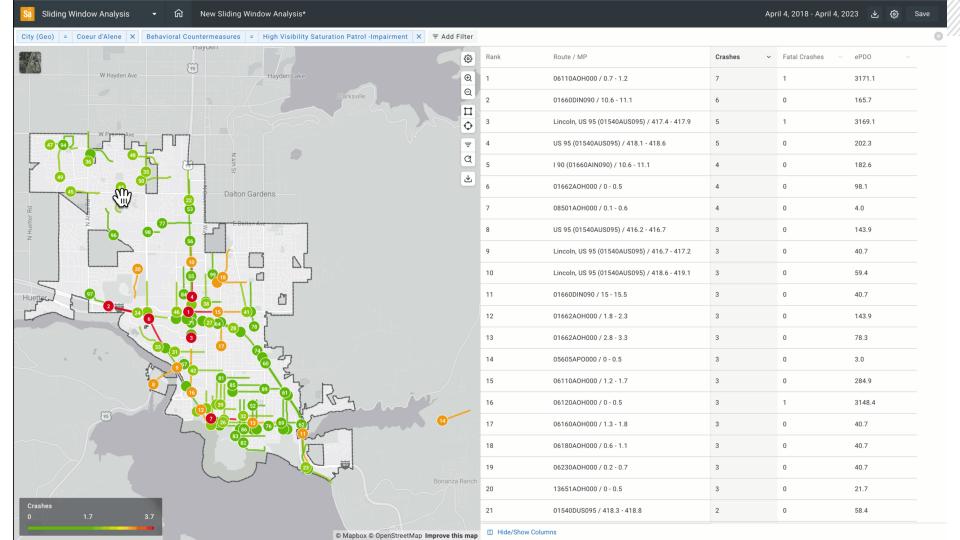


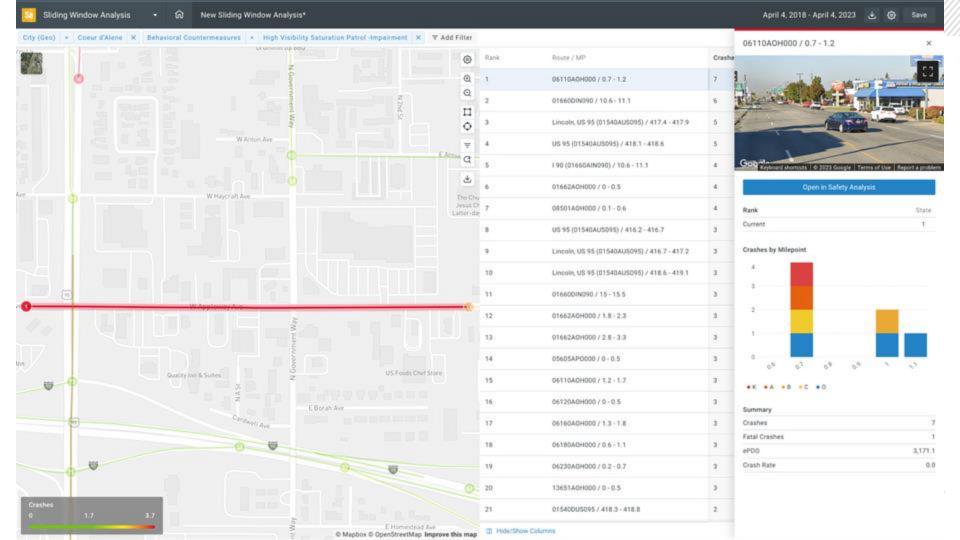


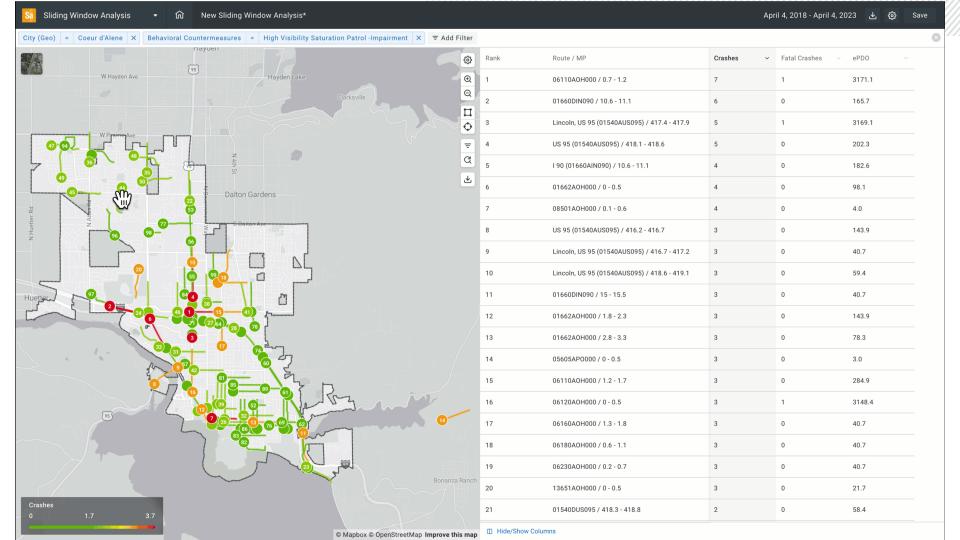


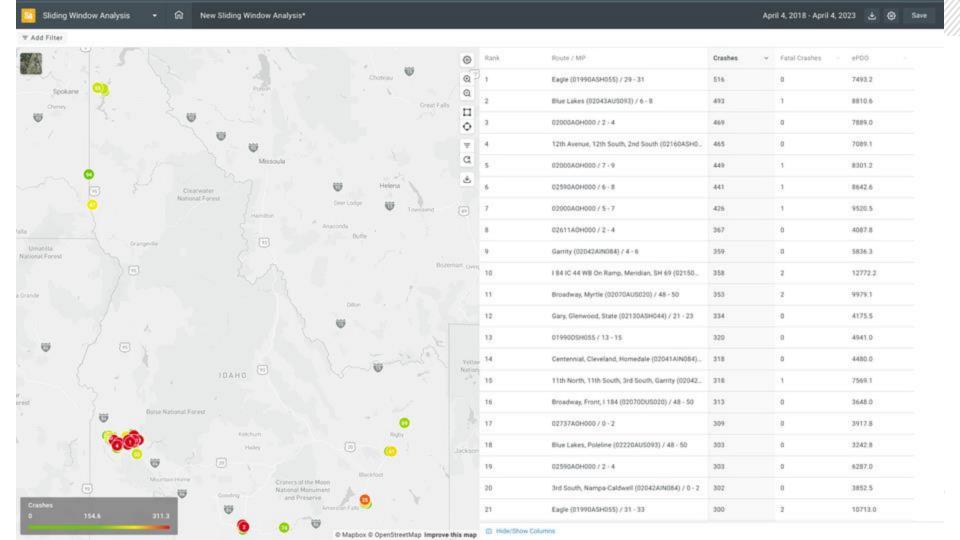


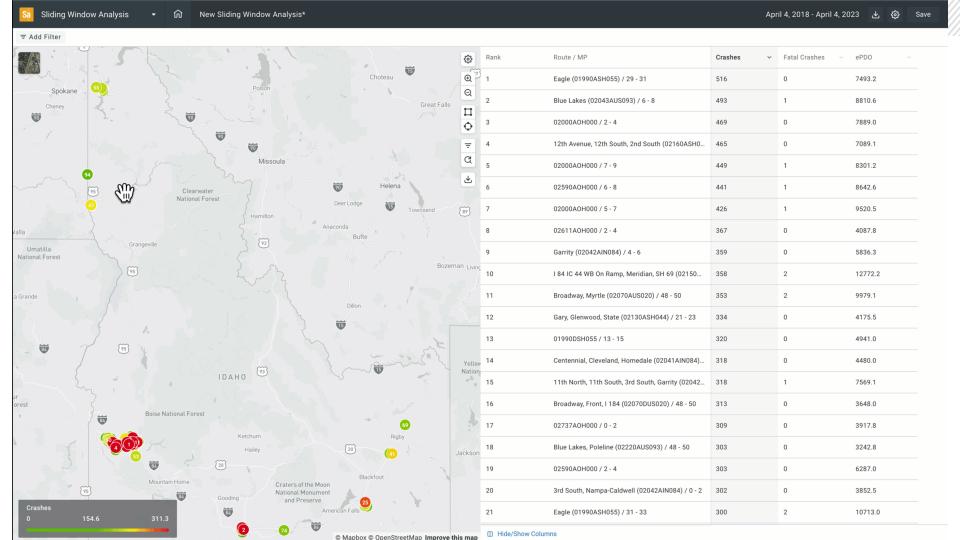


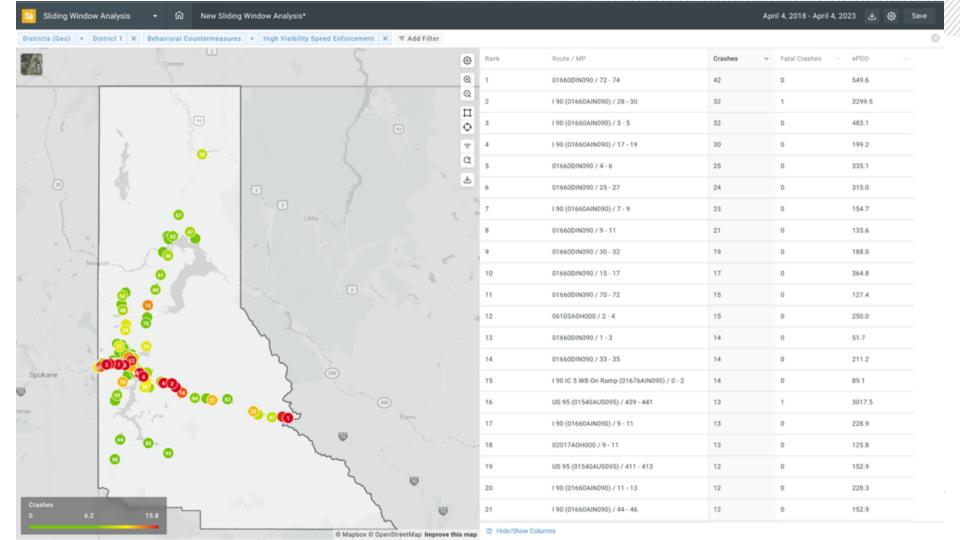


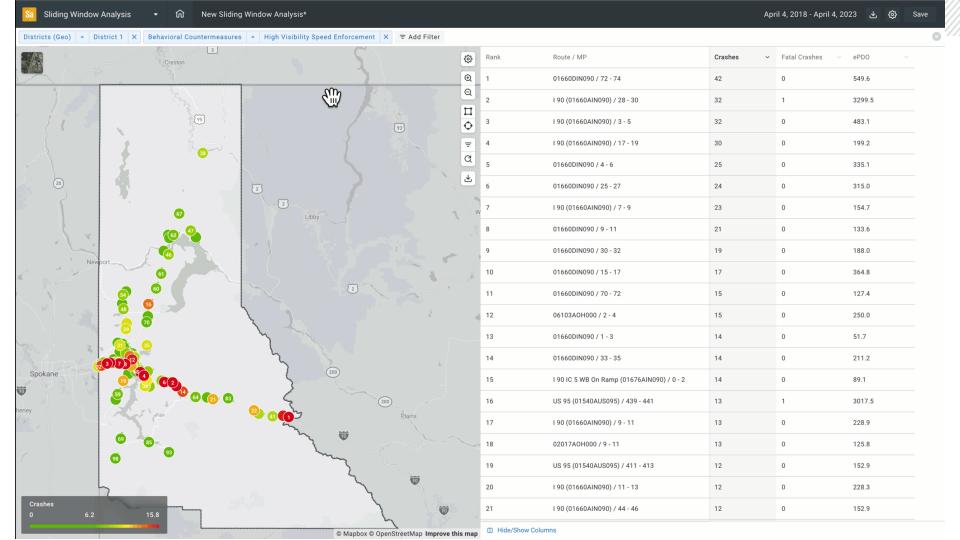


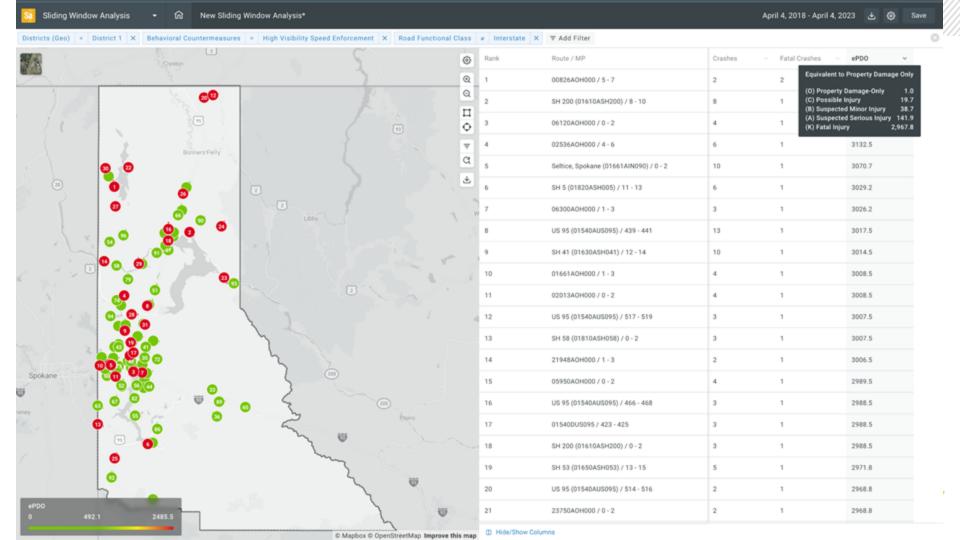


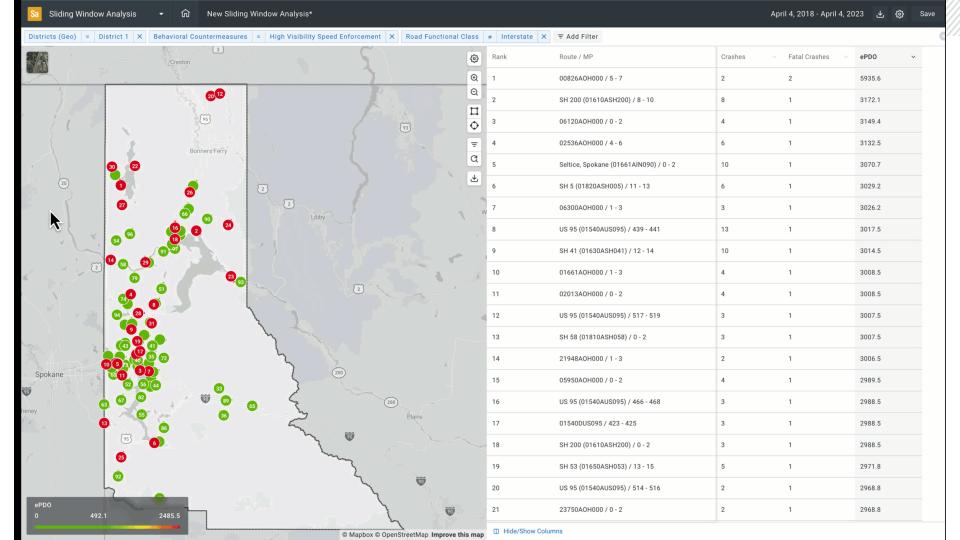


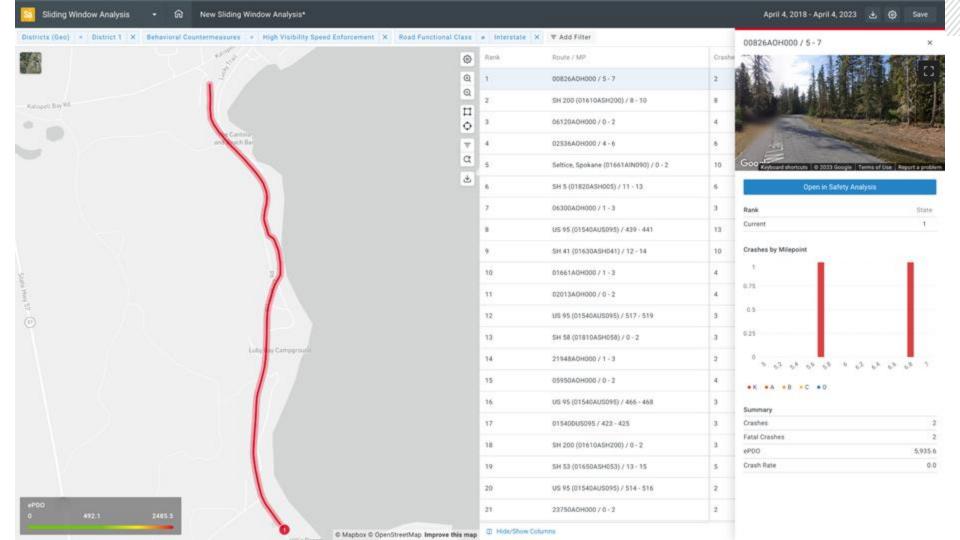


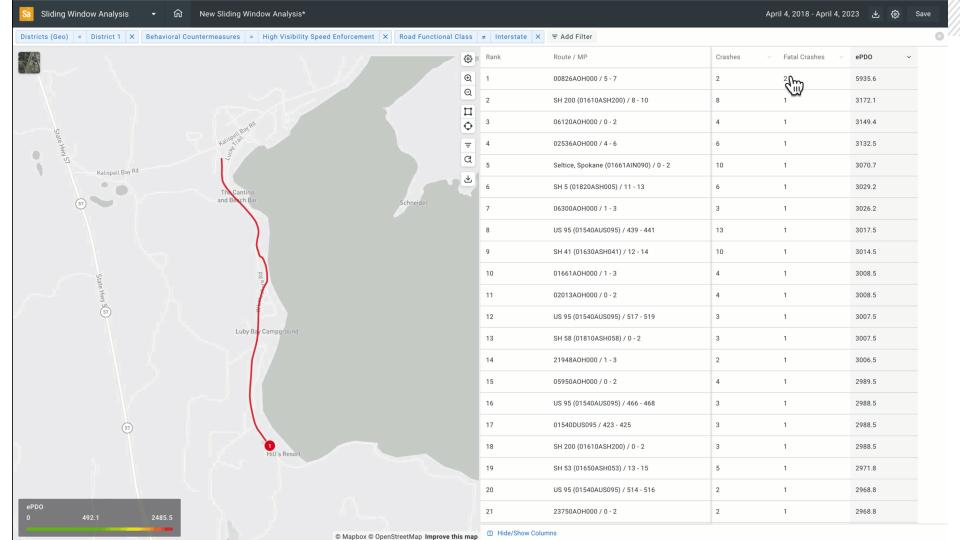


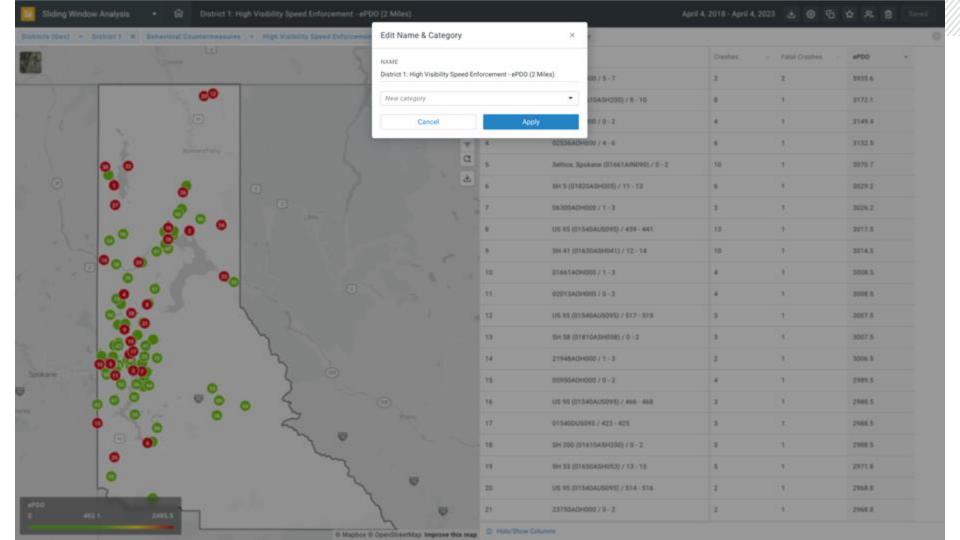


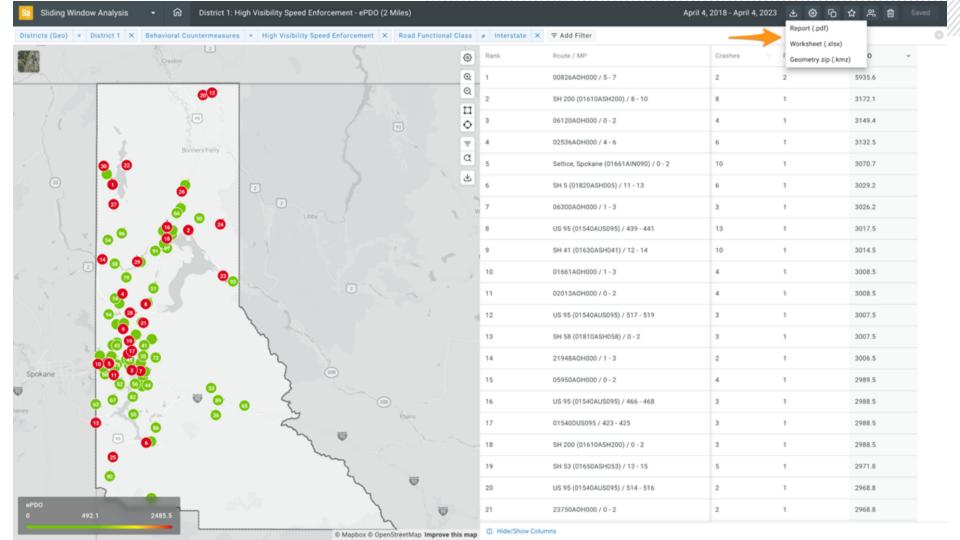


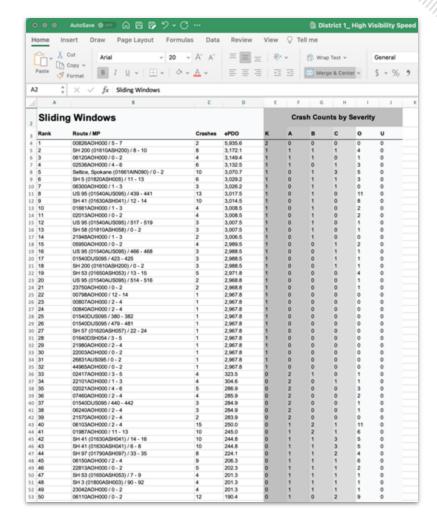












SLIDING WINDOWS REPORT

#### District 1: High Visibility Speed Enforcement -ePDO (2 miles)

Created on April 5, 2023 Created by Audra Engle Data extents: April 2, 2018 to April 2, 2023 Ranking Metric: ePDO



#### Applied Filters

Districts (Geo) | \* | District 1 | Behavioral Countermeasures (Crashes) | \* | High Visibility Speed Enforcement |
Road Functional Class (Sliding Windows) | # | Interstate |

D b				
Rank Filtered / State	Route / MP	Crashes	Fatal Crashes	ePDO
1/	00826A0H000 / 5 - 7	2	2	5,935.6
2 /	SH 200 (01610ASH200) / 8 - 10	8	1	3,172.1
3 /	06120A0H000 / 0 - 2	4	1	3,149.4
4/	02536A0H000 / 4 · 6	6	1	3,132.5
5/	Seltice, Spokane (01661AIN090) / 0 - 2	10	1	3,070.7
6 /	SH 5 (01820ASH005) / 11 - 13	6	1	3,029.2
7/	06300A0H000 / 1 - 3	3	1	3,026.2
8 /	US 95 (01540AUS095) / 439 - 441	13	1	3,017.5
9 /	SH 41 (01630ASH041) / 12 - 14	10	1	3,014.5
10/	01661A0H000 / 1 - 3	4	1	3,008.5
11/	02013A0H000 / 0 · 2	4	1	3,008.5
12 /	US 95 (01540AUS095) / 517 - 519	3	1	3,007.5
13 /	SH 58 (01810ASH058) / 0 - 2	3	1	3,007.5
14/	21948A0H000 / 1 - 3	2	1	3,006.5



## Safe System Approach

### Principles of a Safe System Approach

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- Humans are Vulnerable
- Responsibility is Shared
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