

Real-Time Crash Risk Visualization Tool for Traffic Safety Management

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Trustee Chair, Pegasus Professor & Dept. Chair



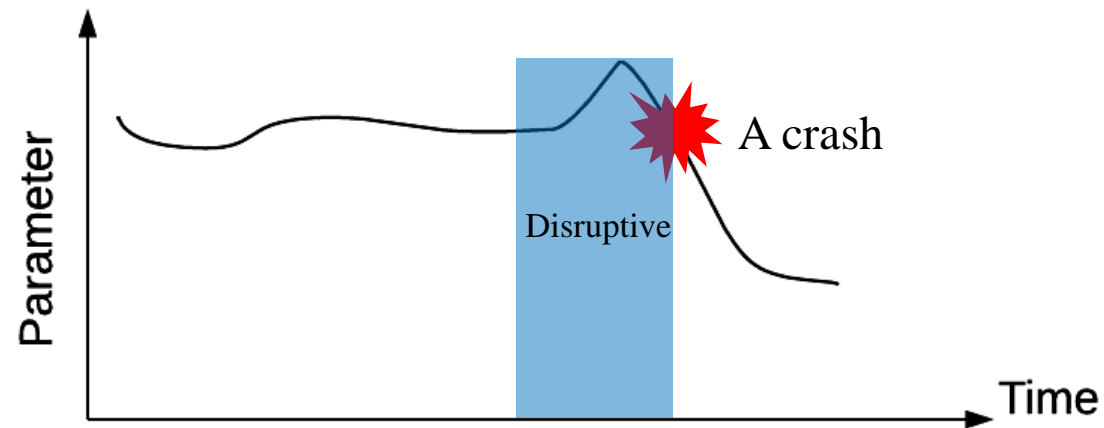
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"Power Safer Roads for Smarter Cities"

Real-Time Safety

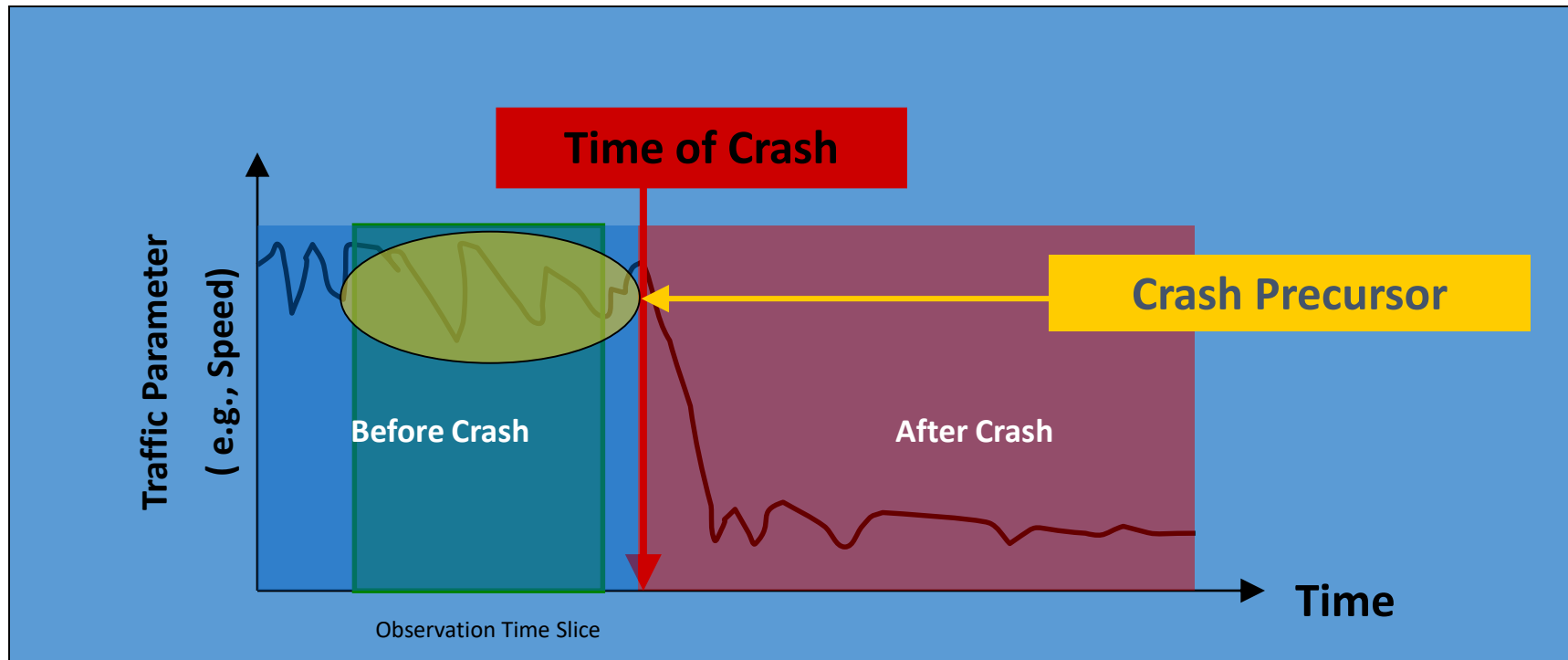
- Real-time safety analysis



- Implementation
 - Understanding the microscopic crash mechanisms
 - Estimating crash likelihood in real-time
 - Improving traffic safety in real-time

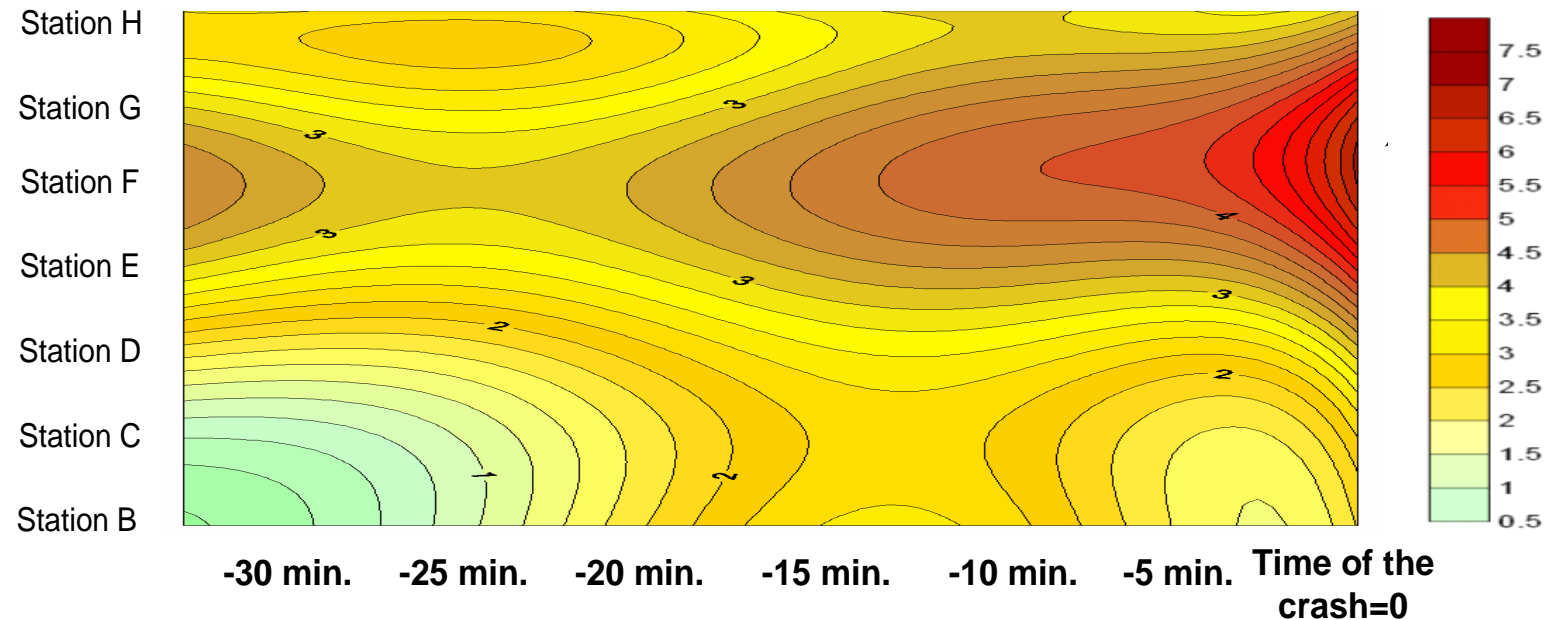
Proactive Perspective of Traffic Safety

- What patterns are we looking for?
 - Developing a Hybrid Detailed Crash Prediction System Using ITS Data on I-4 and Evaluating the Application Strategies
 - Speed profile before/after crash on I-4



Proactive Perspectives of Traffic Safety

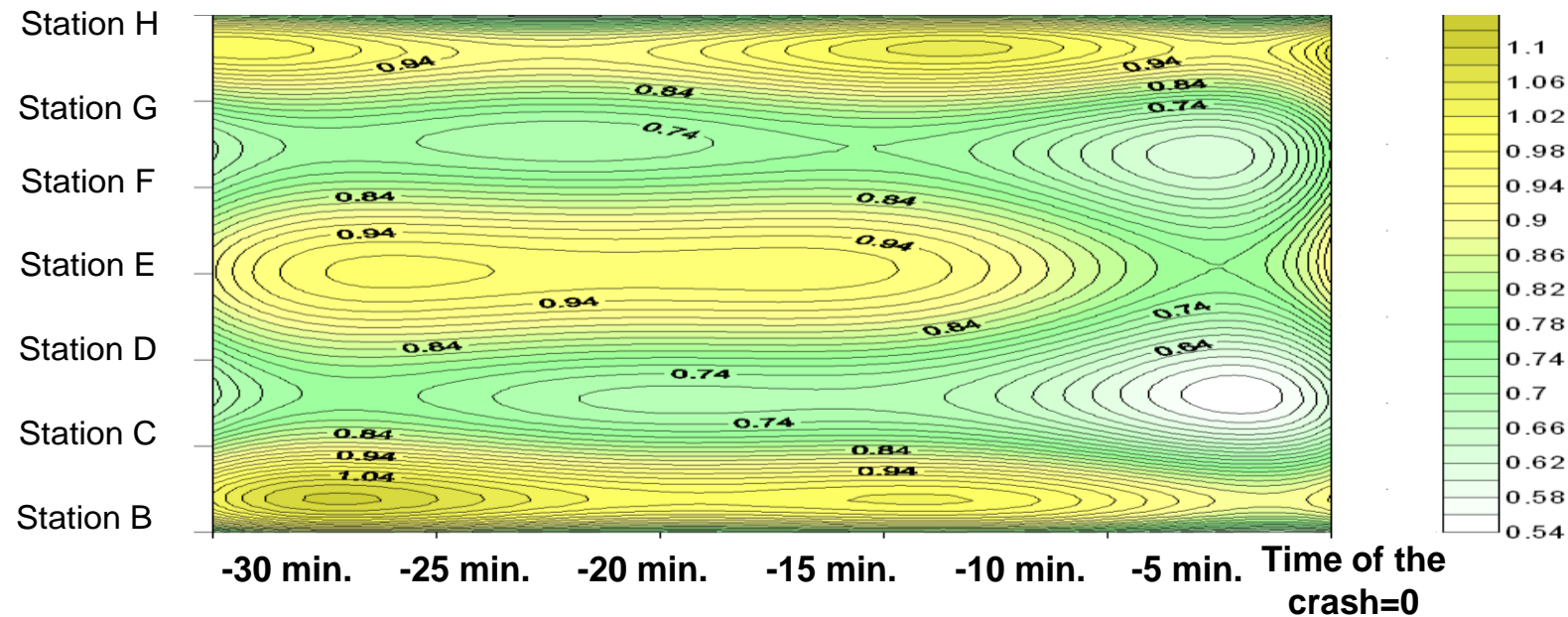
- Real-time crash risk for I-4



Hazard Ratio: Contour plots of hazard ratios corresponding to coefficient of variation in speed (42 model outputs)

Proactive Perspectives of Traffic Safety

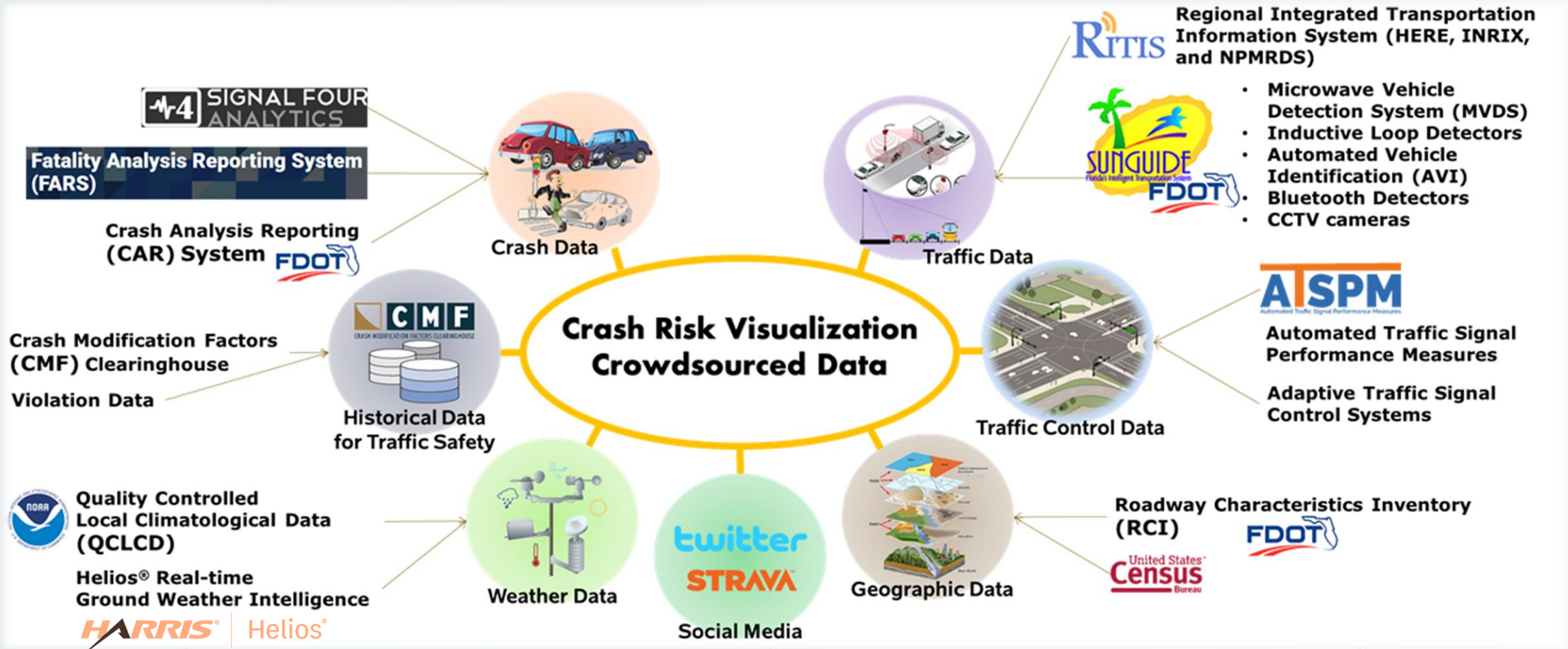
- Real-time crash risk for I-4



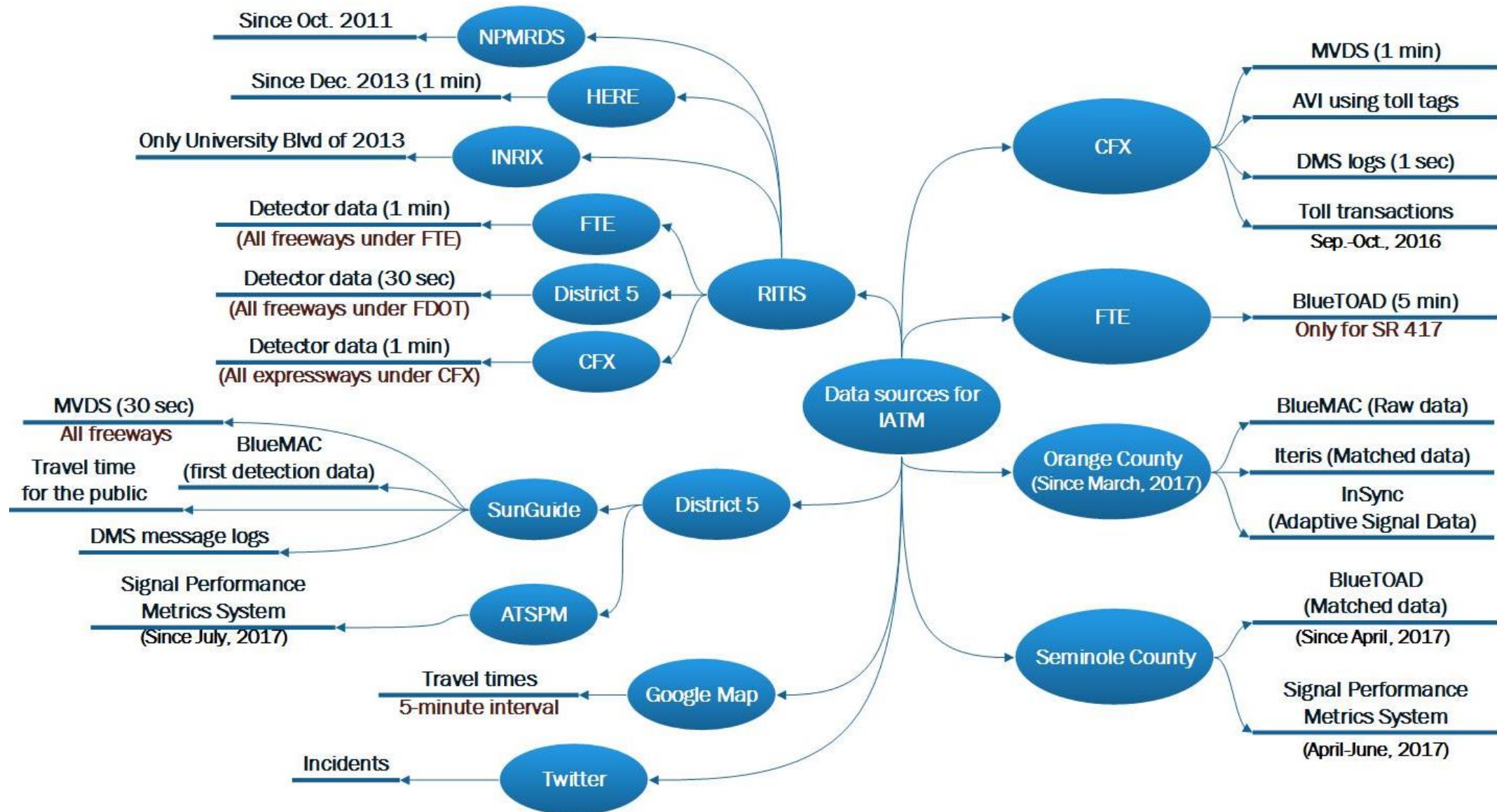
Hazard Ratio: Contour plots of hazard ratios corresponding to coefficient of variation in speed (42 model outputs)

DATA-INFORMED TOOLS

Most data sources used in our system are *public*.



Summary of Data and Sources



REAL-TIME CRASH RISK VISUALIZATION

for Operators

UCF-SST

 Real-Time Crash Risk

Freeway Arterial

Top 5 High-Risk Arterial Segments

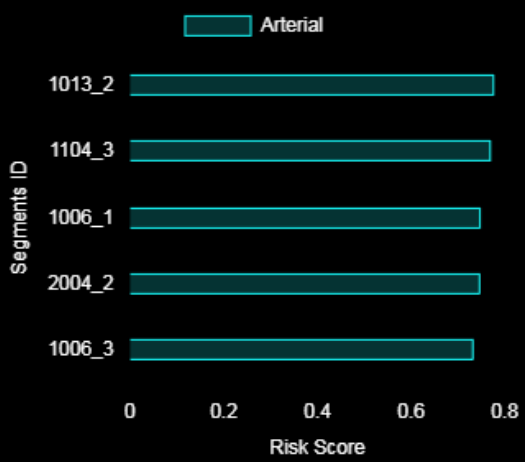
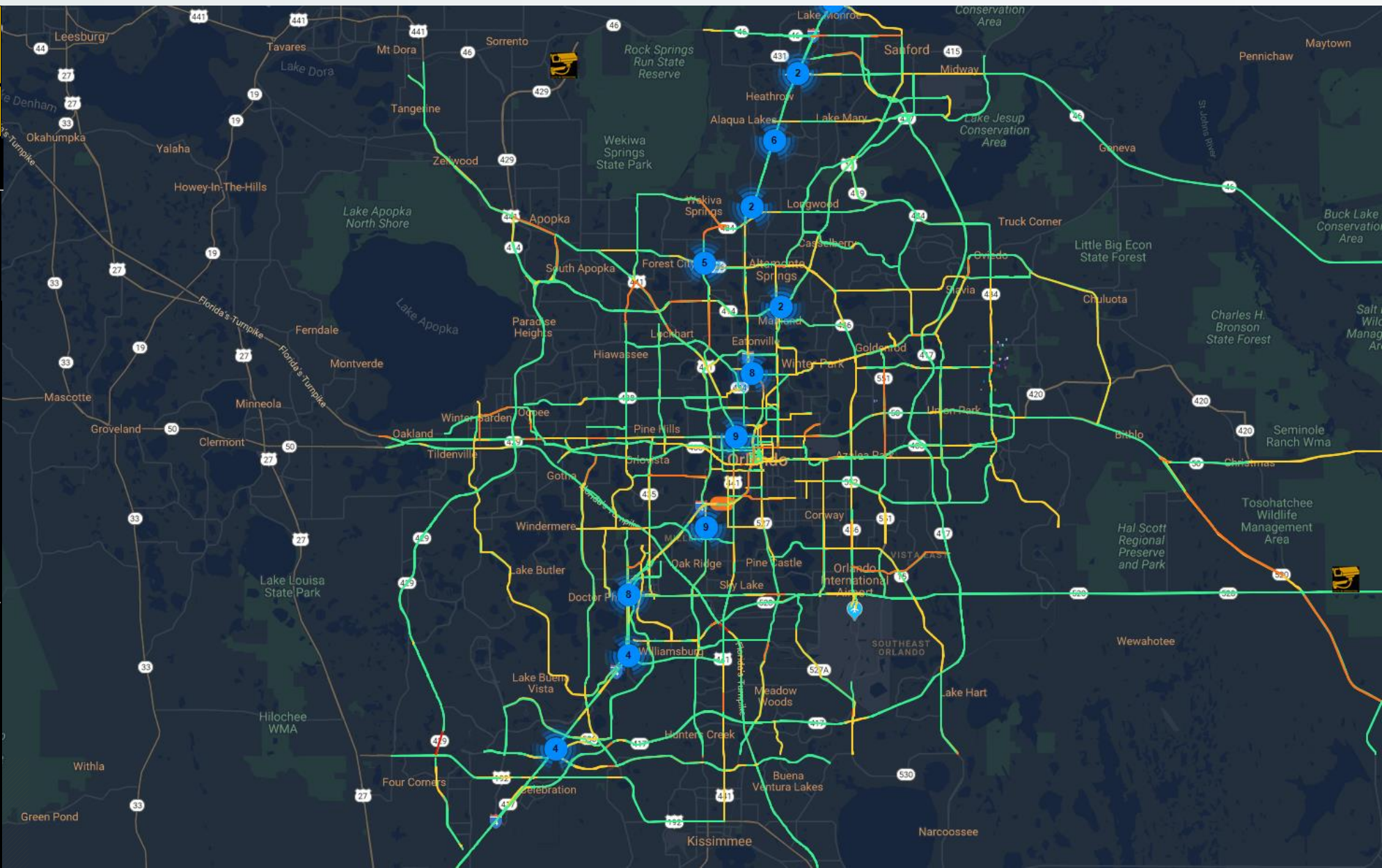


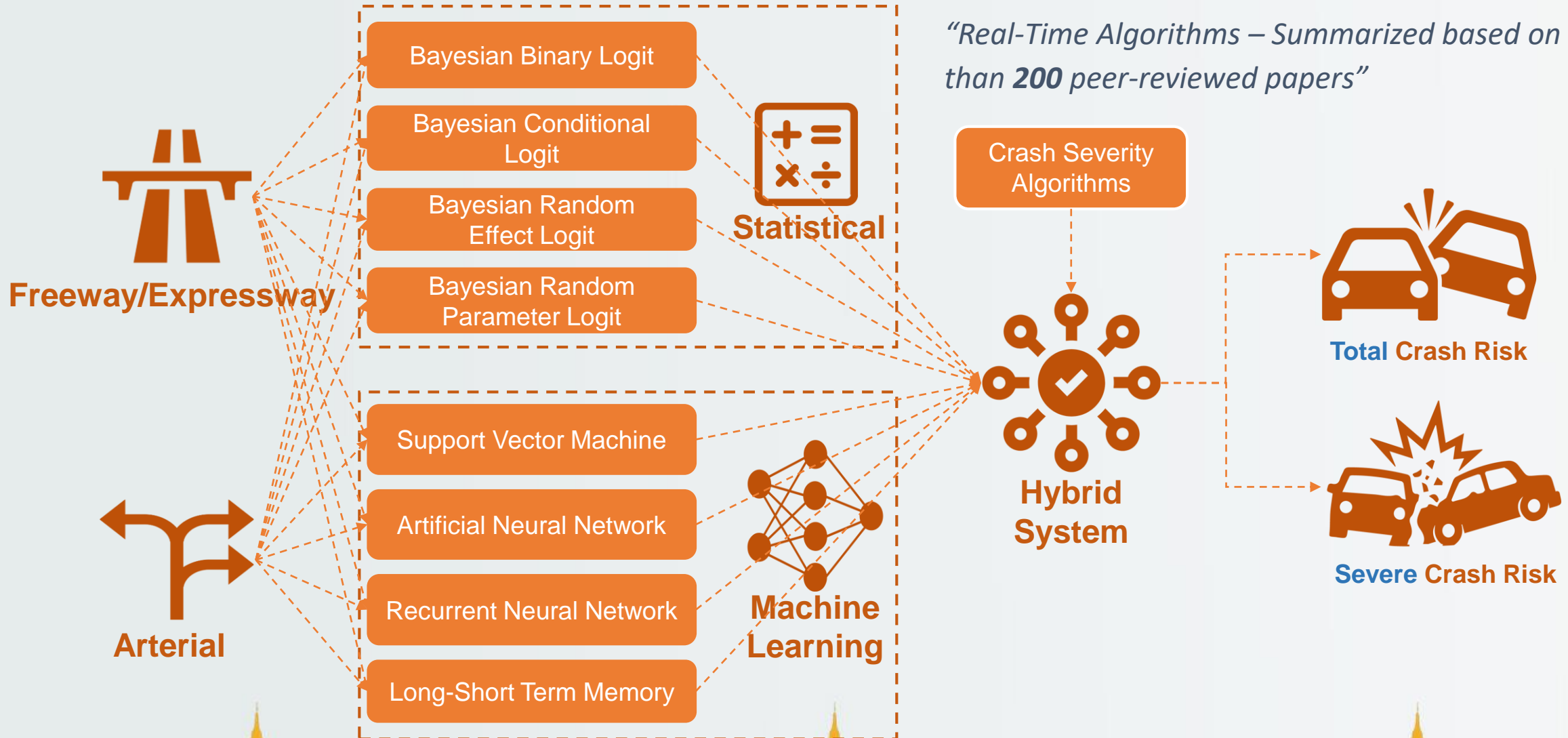
Chart Detail

 Real-Time Status

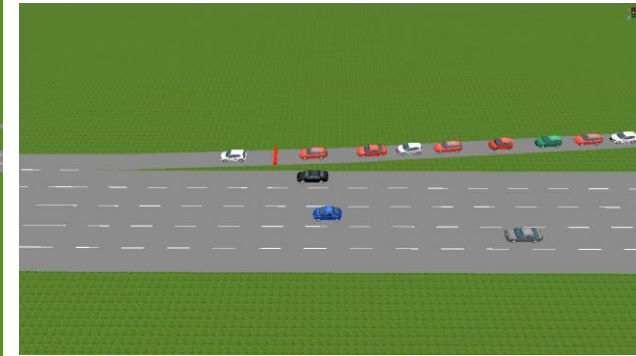
 Pro-Active Traffic Mgmt



REAL-TIME CRASH RISK VISUALIZATION for Operators

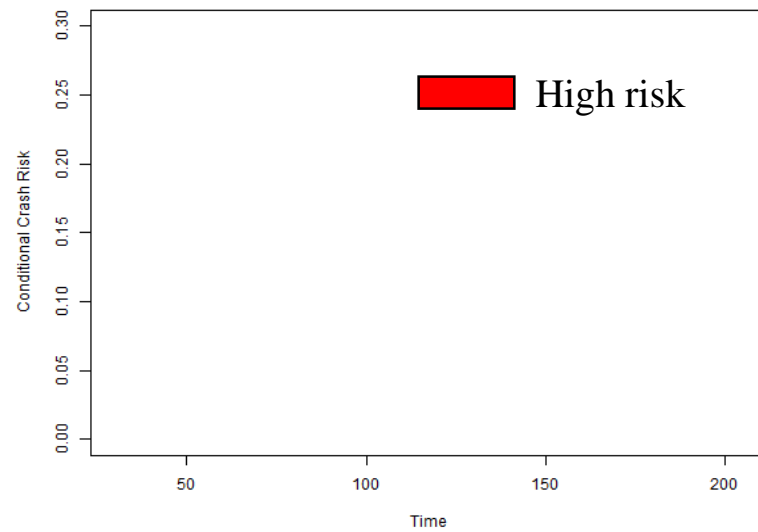


Impact of VSL and RM

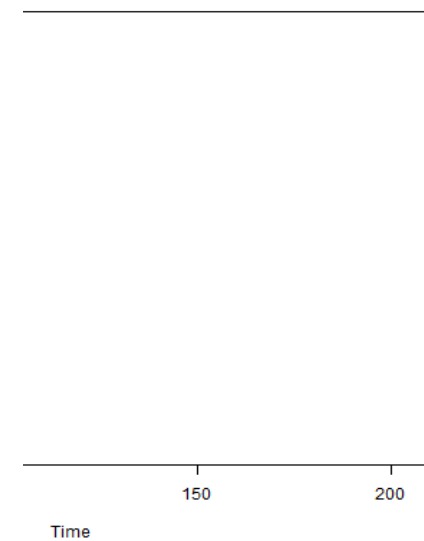


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Conditional Crash Risk

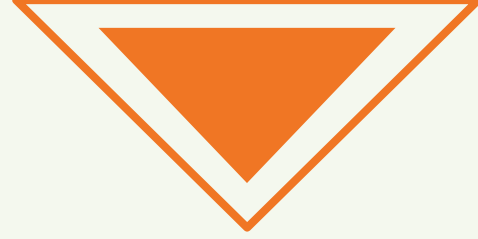


Odds Ratio



Concluding Remarks

- Public and Private data
- Real-time, historical (static) and other data
- Infrastructure and Vehicle based data
- State-of-the-art and state-of-the-practice
- Seamless usability
- Challenges:
 - Base Map
 - Coordination with numerous agencies
 - Data uniformity
 - Adoption



Thank You

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