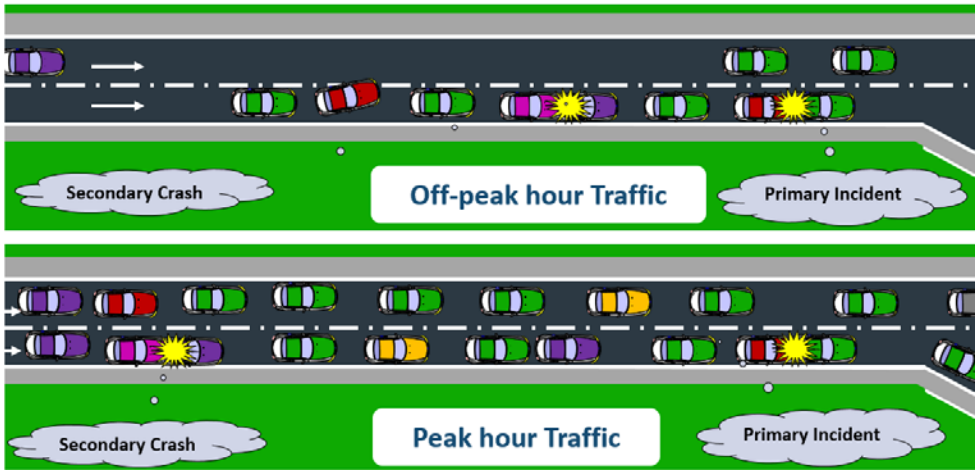
2018 FSITE & WTS South Florida Chapter Annual Meeting
October 30, 2018

Impact of Primary Incident Spatiotemporal Thresholds Influence on the Detection of Secondary Crashes

Shark Tank Poster Competition



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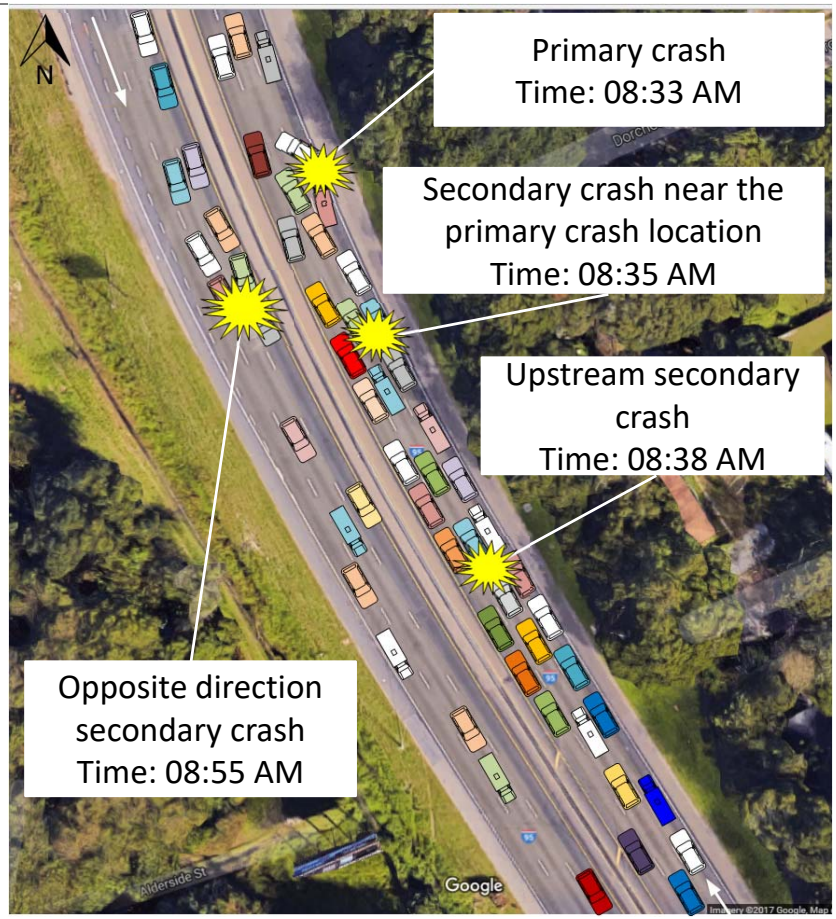
Advancing Women in Transportation
South Florida Chapter

Secondary Crash

A traffic incident is considered a secondary crash if it occurred as a result of a prior incident.

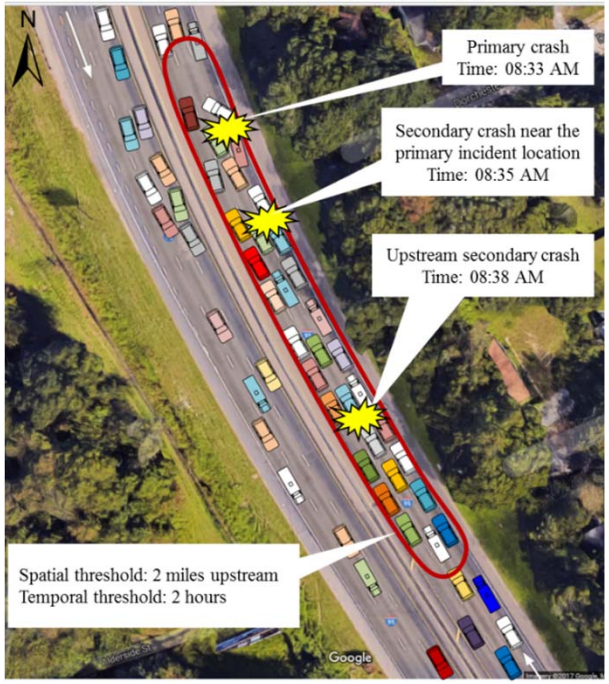
Secondary crashes occur:

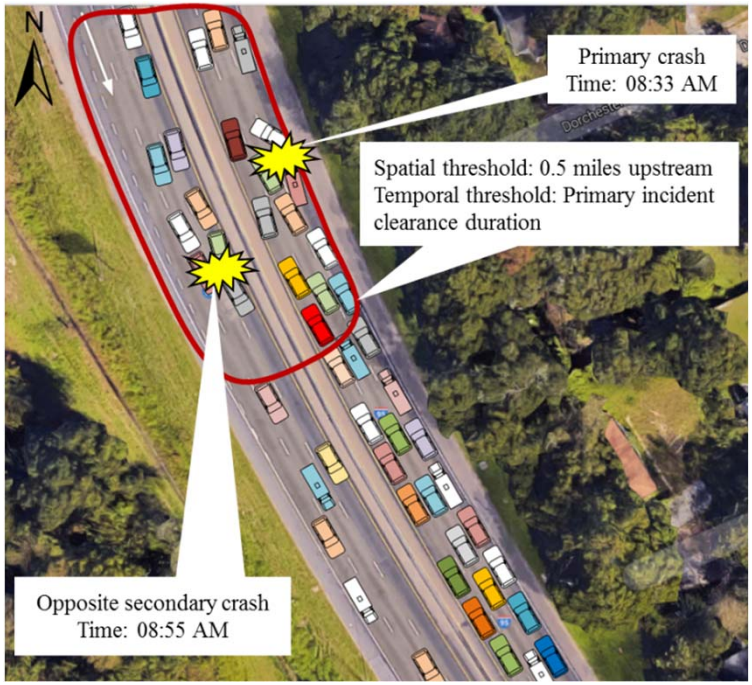
- At the scene of the primary incident
- Within the queue
  - Upstream of the primary incident
  - In the opposite direction of the primary incident due to driver distraction



Study Rationale & Objective

- Static method identifies SCs based on fixed spatiotemporal thresholds.
- This one-size-fits-all approach does not yield reliable results.

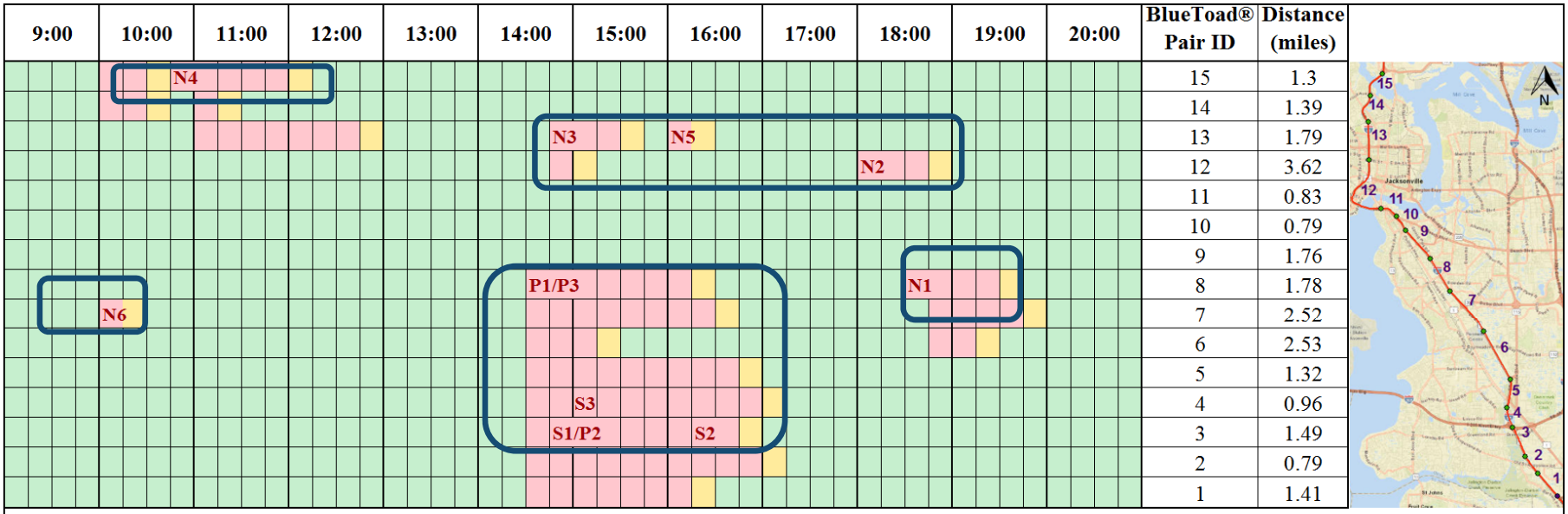




Objective: Investigate the impact of primary incident spatiotemporal thresholds influence on the detection of SCs

Dynamic Method

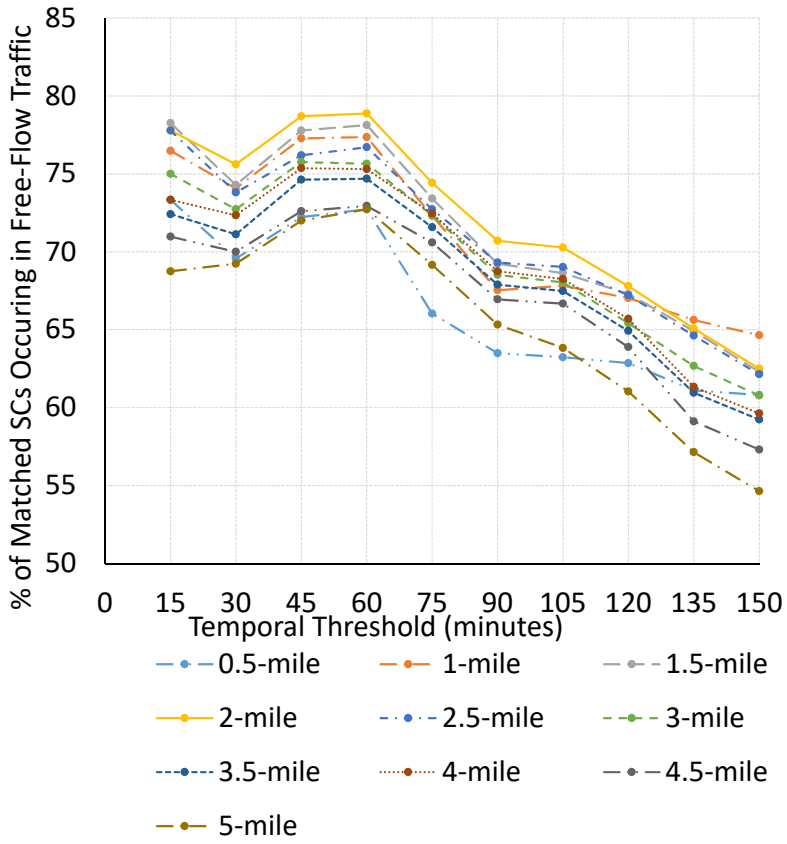
Identify SCs using speed data collected from BlueToad® pairs



Key

Speed dropped below normal speed	P-Primary Incident
Speed came back to normal speed	S-Secondary Crash
Normal speed	N-Normal Incident

Dynamic vs. Static Methods



- Static method of 2-mile-2-hr threshold is more accurate during congested periods.
- During peak hours, ~85% of SCs identified using dynamic method were matched with the static method results.
- During off-peak hours, ~70% of SCs identified using dynamic method were matched with the static method results.

Conclusions

- The static method consistently underestimated SC-frequencies for smaller spatiotemporal thresholds.
- The static method consistently overestimated SC-frequencies for larger spatiotemporal thresholds.
- The prevailing traffic conditions play a crucial role in causing SCs.
- 78% of SCs occurred during congested period.
- Using flexible spatiotemporal thresholds for peak & off-peak hours will improve SC identification process.

Thank You!

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