

Presenter Introduction

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- **Research Interests:**

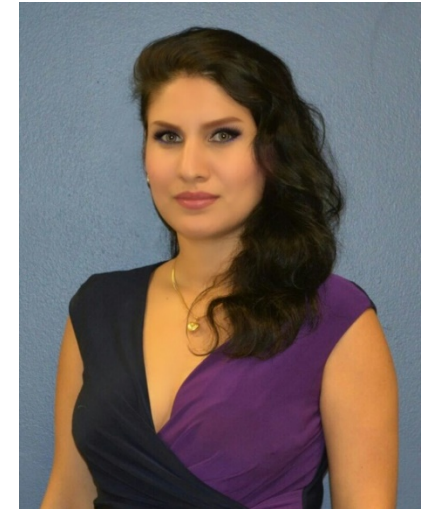
- Connected vehicle technology
- Traffic Modeling
- Intelligent Transportation Systems
- Traffic Operation

- **Dissertation Title:**

Methods for Utilizing Connected Vehicle Data in Support of Traffic Management

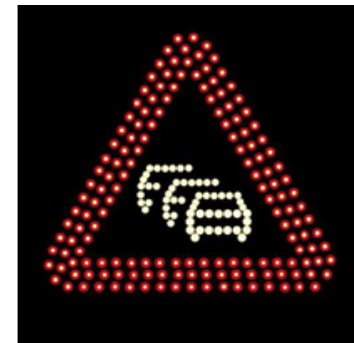
- **Selected Honors / Awards:**

- Best Student Paper Award, TRB 15th International Conference on Managed Lanes, 2016
- WTS International Southwest Award, WTS International, 2016
- Third Place, 3 Minute Thesis Competition-Mobility Category, 2016 UTC Conference, 2016
- University-Wide Scholarship Award, Florida International University, 2015
- Helene M. Overly Memorial Scholarship, WTS South Florida Chapter, 2015
- Student Government Association (SGA) Award, Florida International University, 2014



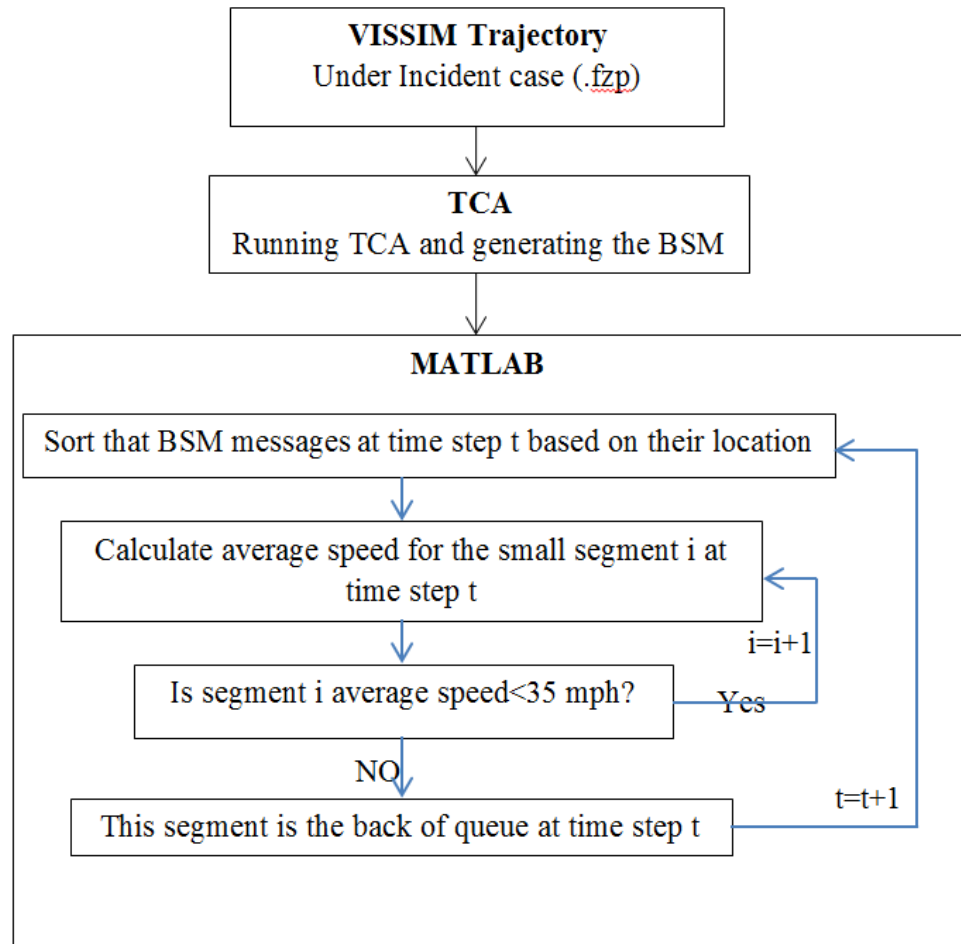
Background

- Rear-end collisions - caused by slow/stopped traffic
- Queue warning systems (QWS) : Timely reaction of drivers facing the queue
- Connected vehicles-based BOQ estimation:
Faster and more accurate



Queue warning symbol with LED technology
(Source: Gunnar Lind (2002))

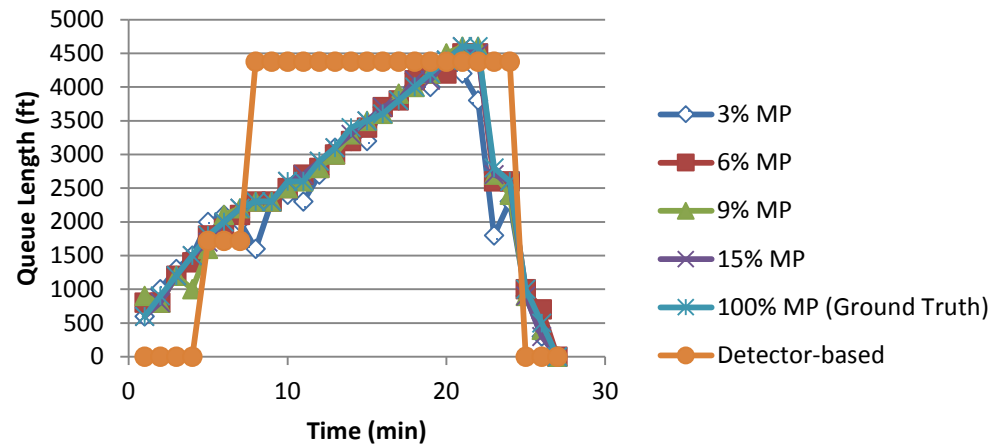
BOQ Estimation Methodology



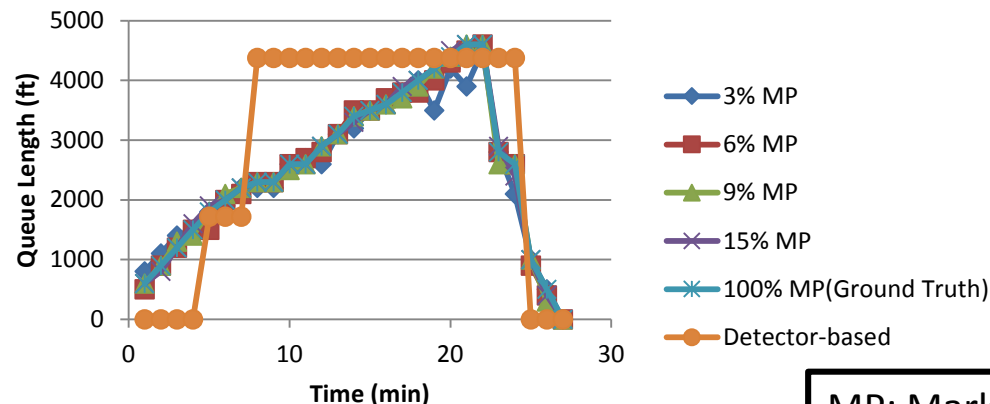
Results

- Estimated queue lengths: connected vehicle-based vs detector-based and ground truth

Worst TCA Run



Median TCA Run



MP: Market Penetration

Results

- T-test Conducted for Determining the Effect of Queue Warning System on the Number of Rear-end Conflicts Resulted from the SSAM (Surrogate Safety Assessment Model)

SSAM Measure	Compliance with the queue warning System	Mean	Replications	t-value	t-critical	Significance	Mean difference	Difference Percentage (%)
Rear-end Conflicts	0% (No Queue Warning)	6589.164	100	NA	NA	NA	NA	NA
	2%	6589.164	100	0.039	1.66	No	6.492	0.10
	5%	6136.208	100	1.321	1.66	No	226.478	3.56
	10%	6332.944	100	1.472	1.66	No	256.22	3.89
	15%	6238.954	100	2.201	1.66	Yes	350.21	5.31
	20%	6235.652	100	2.212	1.66	Yes	353.512	5.37
	30%	6228.446	100	2.331	1.66	Yes	360.718	5.47
	50%	6097.12	100	2.359	1.66	Yes	492.164	7.47
	70%	6095.17	100	2.37	1.66	Yes	493.992	7.50