



Adding Continuous Truck Counts to the Regional Data Archive (PORTAL)

Regional Freight TAC Meeting
May 12, 2010

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PORTAL -- The Portland-Vancouver Metropolitan Region's Archived Data User Service (ADUS)

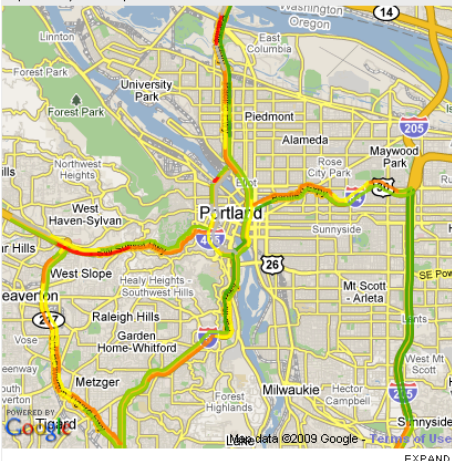


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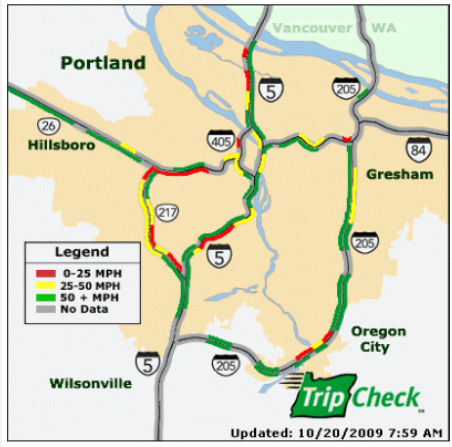
[Support]

Portal Dashboard

Expanded Systems Map

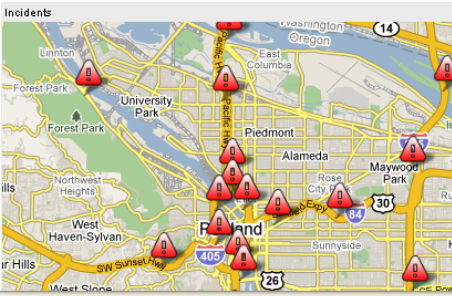


Speed Map

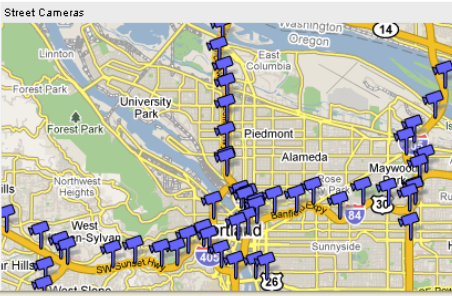


Updated: 10/20/2009 7:59 AM

Incidents



Street Cameras



Portal News

October 14, 2009
ITS LAB HOSTS TRANSPORT TECHNICAL ADVISORY COMMITTEE MEETING
 ITS LAB HOSTS TRANSPORT TECHNICAL ADVISORY COMMITTEE MEETING
 On October 14, 2009 TransPort Technical Advisory Committee visited the ITS Lab to meet with Prof. Kristin Tuttle, Prof. Chris Monsere, PORTAL team, and PSU students. Prof. Tuttle, Sathish Periasamy, Shreemoyee Sakar, Poonam Singh, and James Whiteneck had presentations on latest enhancements to PORTAL
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August 15, 2009
SHELLEY ROW, ITS JOINT PROGRAM OFFICE DIRECTOR, VISITS ITS LAB
 Dr. Kristin Tuttle led a debriefing of the PSU ITS Lab on August 26 for Shelley Row, ITS Joint Program Office Director. Students Huan Li (Detection of Bottleneck Activation Historically and in Real-Time), Alex Bigazzi ("Greening" PORTAL), Heba Wakiel (Developing Corridor-Level Truck Travel Time Estim
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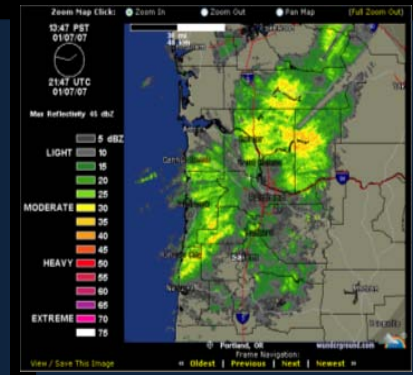
August 7, 2009
BERTINI APPOINTED DEPUTY ADMINISTRATOR OF THE RESEARCH AND INNOVATIVE TECHNOLOGY ADMINISTRATION AT THE US DEPARTMENT OF TRANSPORTATION
 Professor Bertini has been appointed the deputy administrator of the Research and Innovative Technology Administration at the US Department of Transportation. As the founding director of the Intelligent Transportation Systems Lab and the Oregon Transportation Research and Education Consortium, Bert
[Read More](#)

March 1, 2009
PORTAL PROJECT RELEASES A VIDEO DEPICTING 1,000 DAYS OF BOTTLENECKS ON NORTHBOUND I-5 IN PORTLAND
 The PORTAL project in the ITS Lab recently released a video depicting 1,000 days of bottlenecks on northbound I-5 in Portland. Using data collected from ODOT freeway sensors, the PORTAL team has developed a mechanism for identifying bottlenecks and characterizing their impact on freeway performance.
[Read More](#)

March 1, 2009
PORTAL USED FOR CORRIDOR SUMMARY
[Read More](#)



What's in the PORTAL Database?



Loop Detector Data

20 s count, lane occupancy,
speed from 500 detectors
(1.2 mi spacing)

002140

Days
Since July 2004
About +700 GB
6.9 Million
Detector Intervals

Incident Data

140,000 since 1999



VMS Data

19 VMS since 1999

Bus Data

1 year stop level data
140,000,000 rows



WIM Data

22 stations since 2005
30,026,606 trucks

Weather Data

Every day since 2004



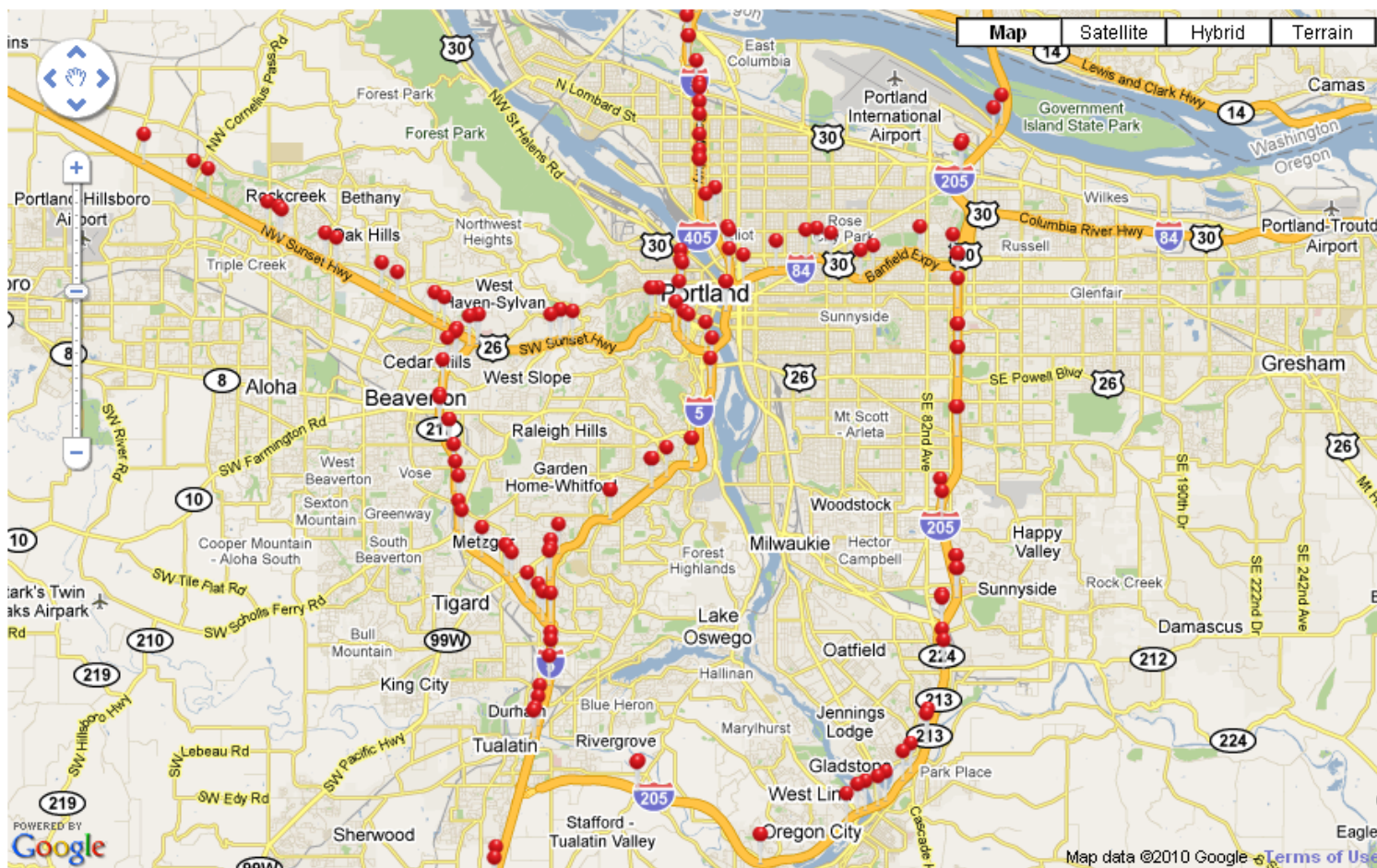
Crash Data

All state-reported crashes
since 1999 - ~580,000

Region One Stations Page

Station Select:

Please, click on a pin to explore a station or select a station from the list in the upper left hand corner and click go.

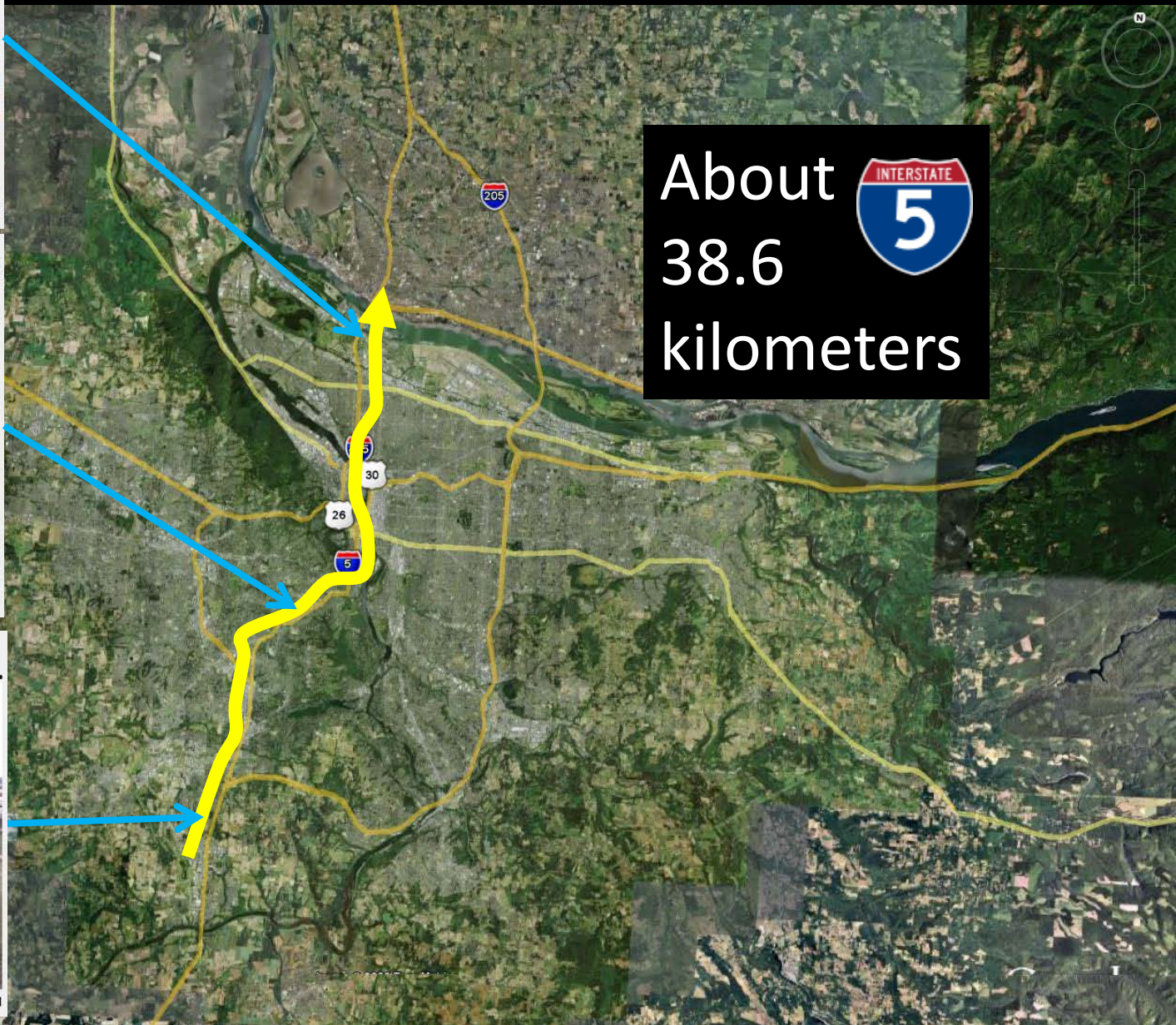



Freeway Performance Measures



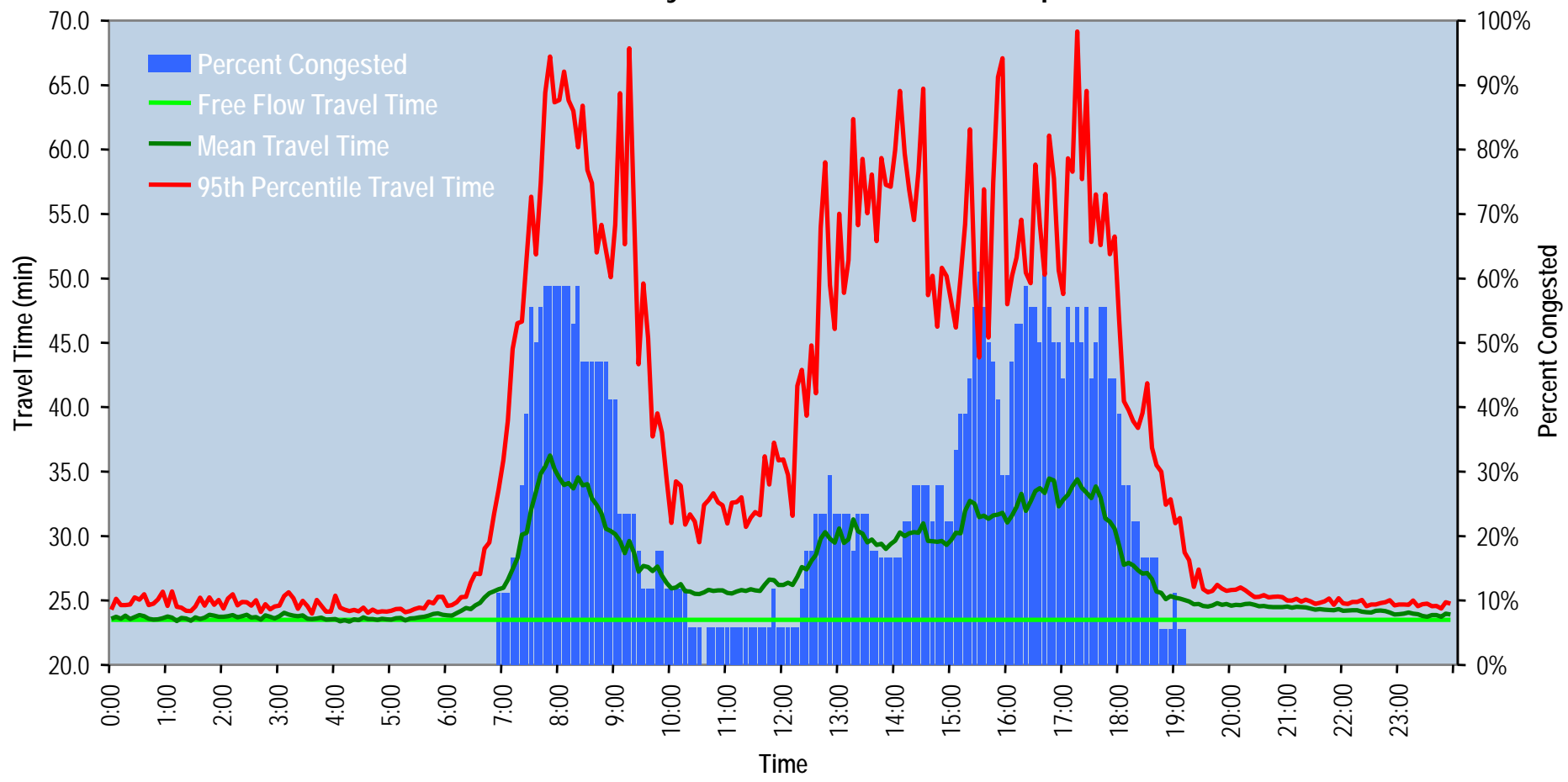
- Volume (Counts)
- Speed
- Occupancy
- Vehicle Miles Traveled
- Vehicle Hours Traveled
- Travel Time
- Delay
- Reliability

Interstate 5 Northbound



About  38.6 kilometers

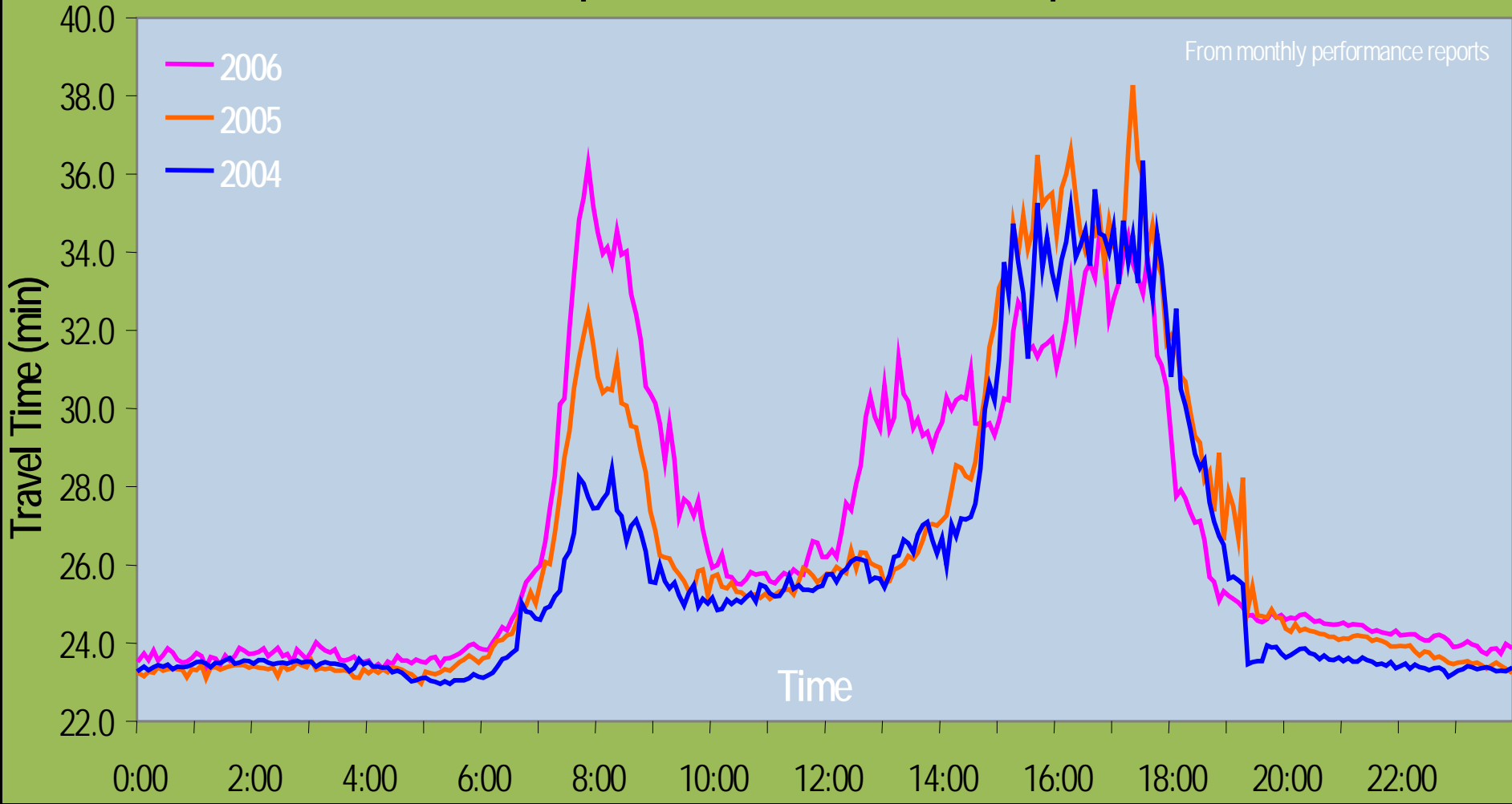
Estimated Monthly Travel Time I-5 North September 2006



Lyman and Bertini, 2007

Travel Time Comparison, Northbound I-5, September 2004-2006

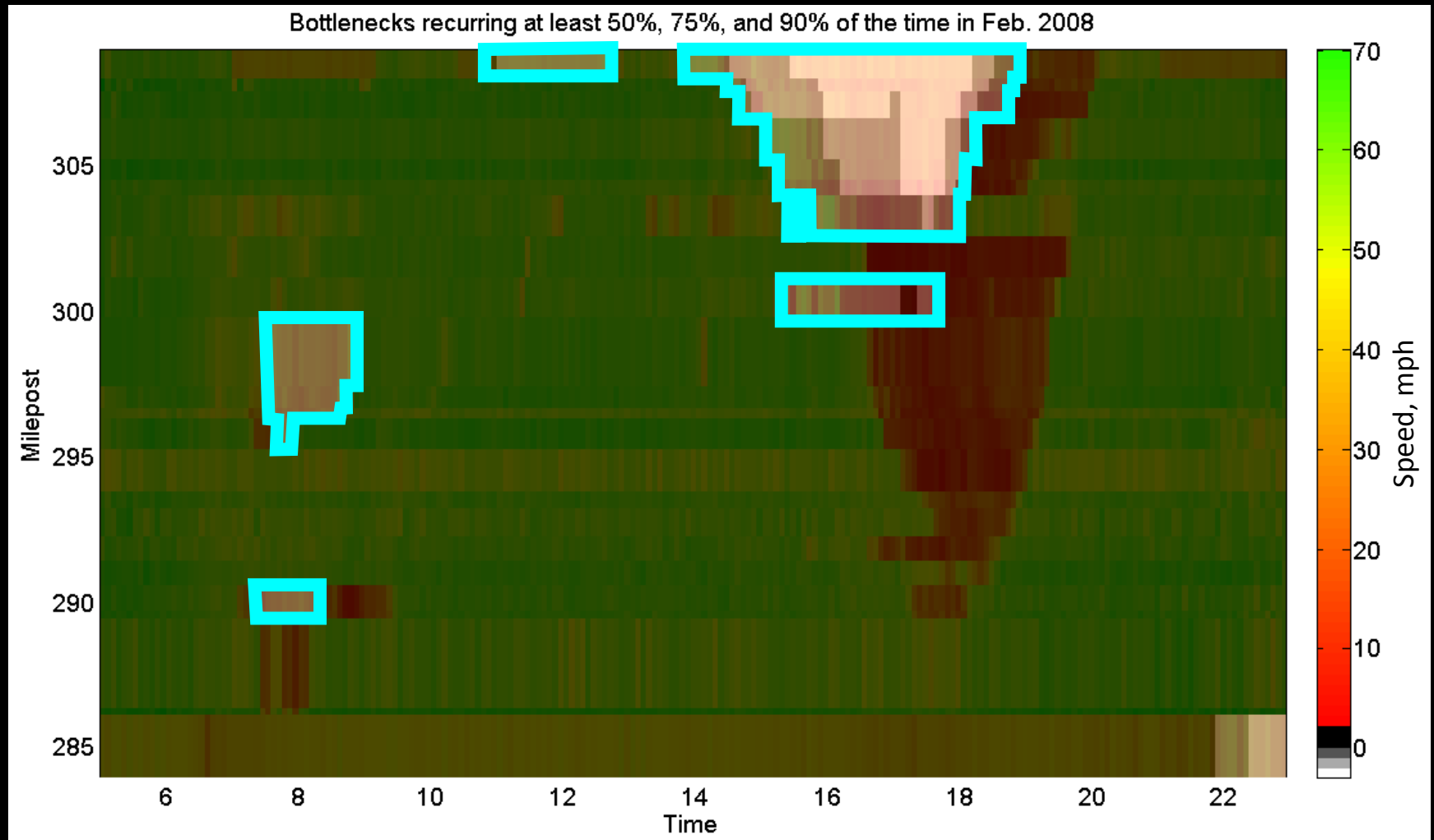
From monthly performance reports



Lyman and Bertini, 2007



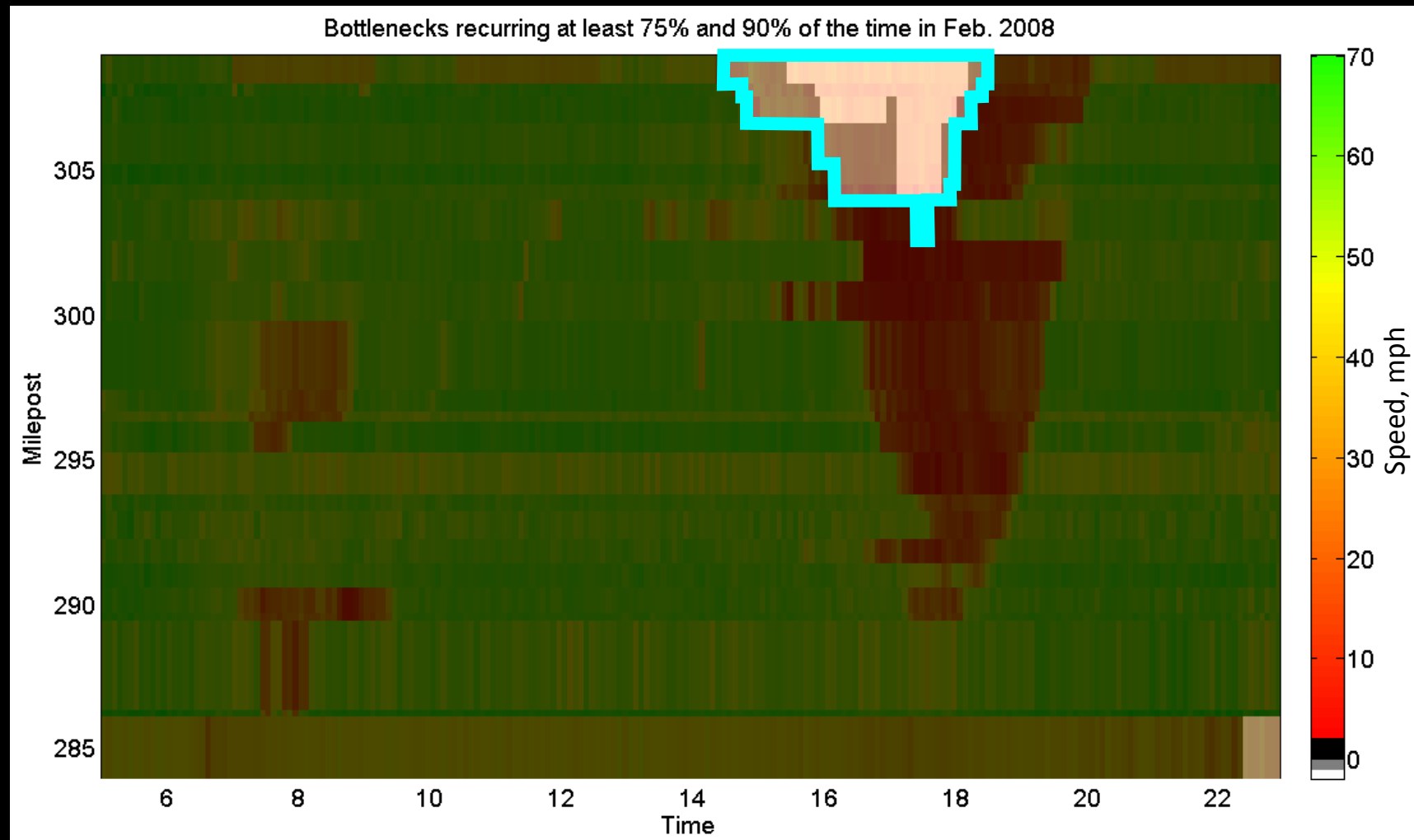
Systematically Identifying Bottlenecks



Wieczorek, J., Huan, I., Fernandez-Montezuma, R., Bertini, R.L. (2009)



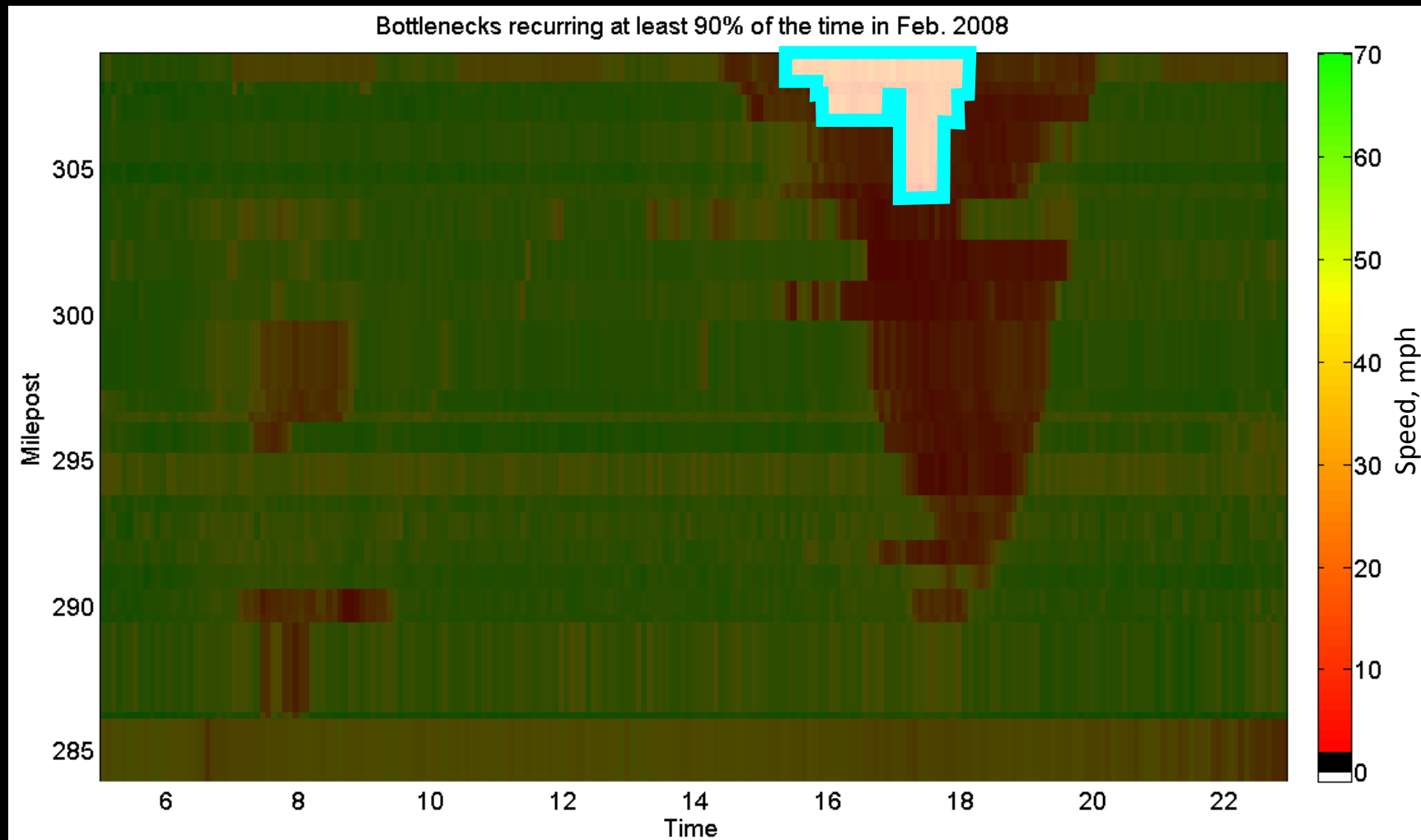
Systematically Identifying Bottlenecks



Wieczorek, J., Huan, I., Fernandez-Montezuma, R., Bertini, R.L. (2009)



Systematically Identifying Bottlenecks



Wieczorek, J., Huan, I., Fernandez-Montezuma, R., Bertini, R.L. (2009)

Limitations of Existing Detection

- Only on freeways
 - *Efforts to add arterial streets underway*
- No information about type of vehicles
- Hardware and firmware upgrades not cost effective

This Project

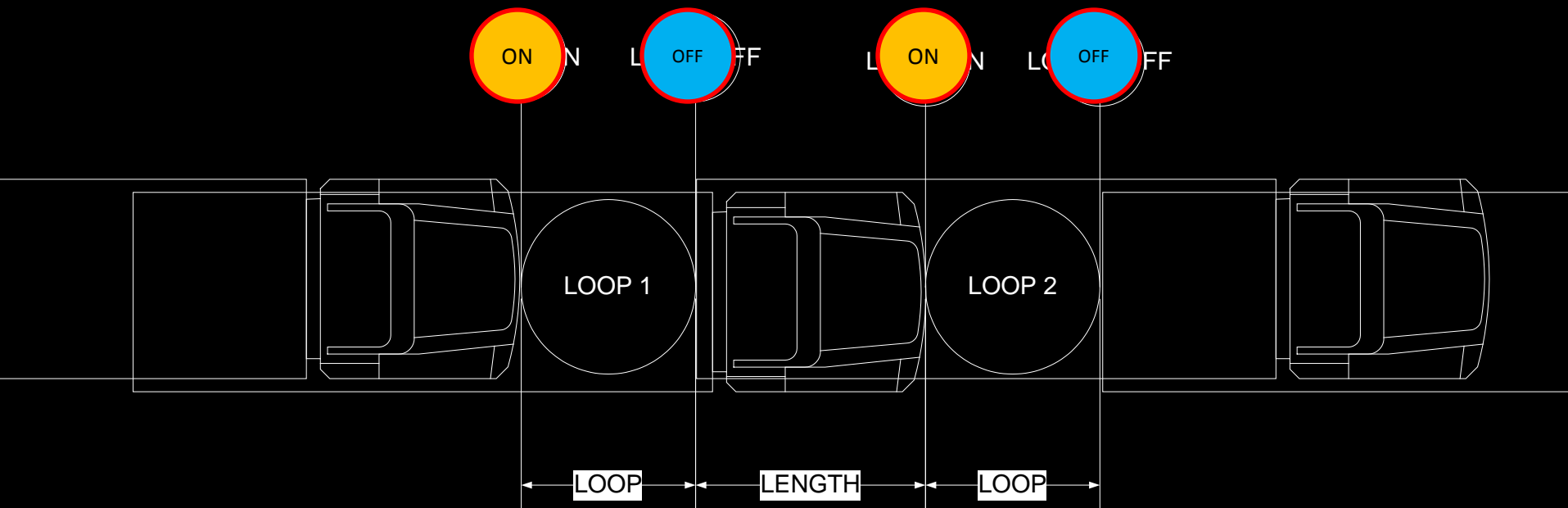
- Develop system for permanent truck counts
 - 20-second intervals, 24 hours per day, 365 days per year
 - Explore freeway and arterial applications
- Likely uses of data
 - Measuring performance specific to freight
 - Transportation modeling in support of freight
 - Possible operational enhancements

Methods for Defining Trucks



- Manual (e.g. visual)
- Axle Sensors
- Vehicle Length
- Machine Vision
- Other Technologies

Dual-loop configuration

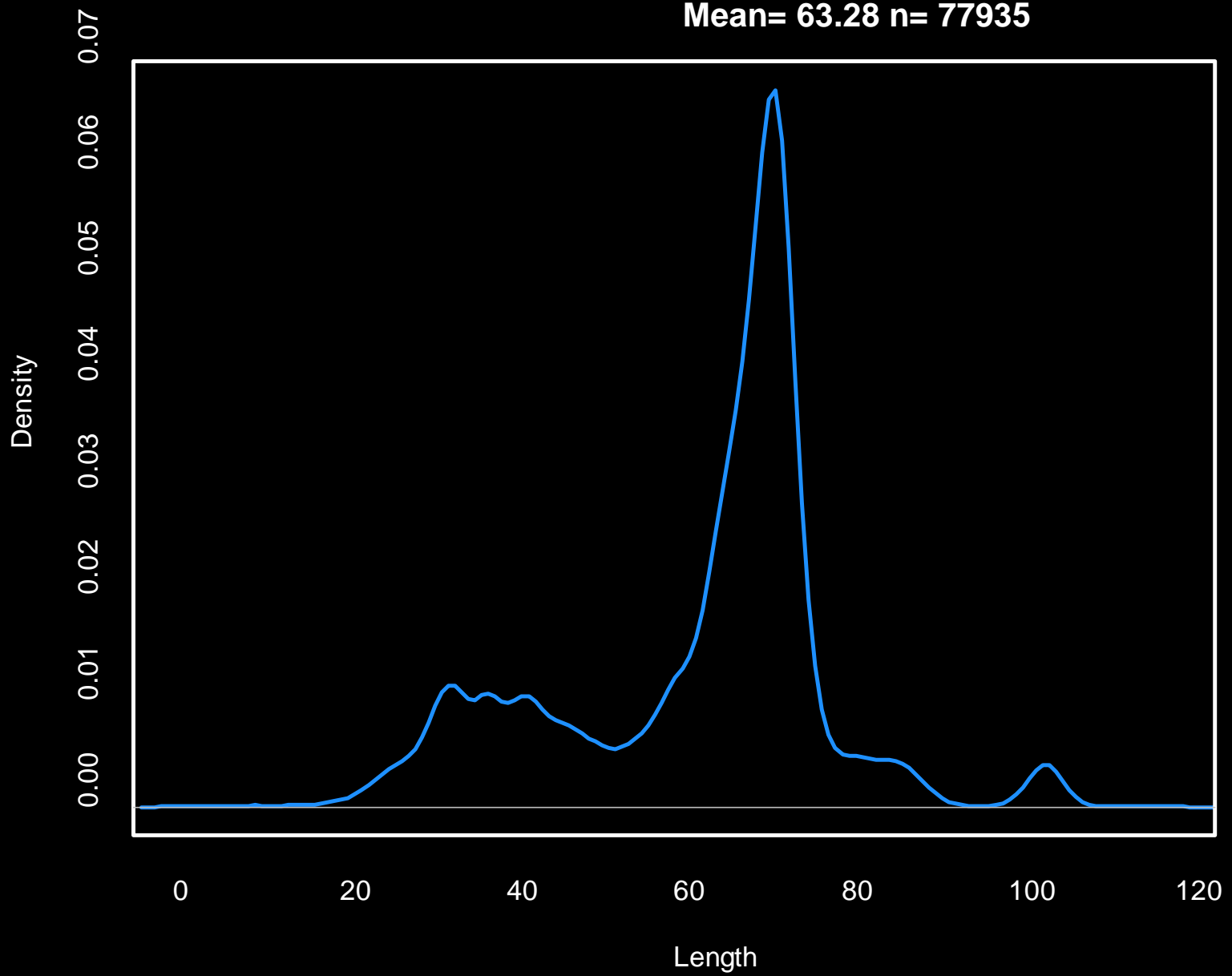


$$v_{off} = \frac{L_{loop} + L_{int}}{t_{off2} - t_{off1}}$$

$$L_{veh} = v_{off} (t_{off2} - t_{off1}) - L_{loop}$$

Vehicles Classification	Range of Length (in ft)		
	FHWA	ODOT	WSDOT
Passenger vehicles (PV)	Less than 13	Less than 20	Less than 26
Single unit trucks (SU)	13 to 35	20 to 35	26 to 39
Combination trucks (CU)	36 to 61	36 to 60	40 to 65
Multi-trailer trucks (MU)	62 to 120	61 to 150	> 65

All Trucks
Mean= 63.28 n= 77935



Next Steps

- Identify test locations
- Develop independent hardware and software
 - Working with OSU Industrial Engineering faculty D. Kim and D. Porter
- Validate and fine tune method
- Deploy and integrate



Questions?



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