



Minnesota's WIM Systems, an Update

Benjamin J. Timerson, P.E.
Minnesota Department of Transportation
NATMEC 2010

Your Destination...Our Priority



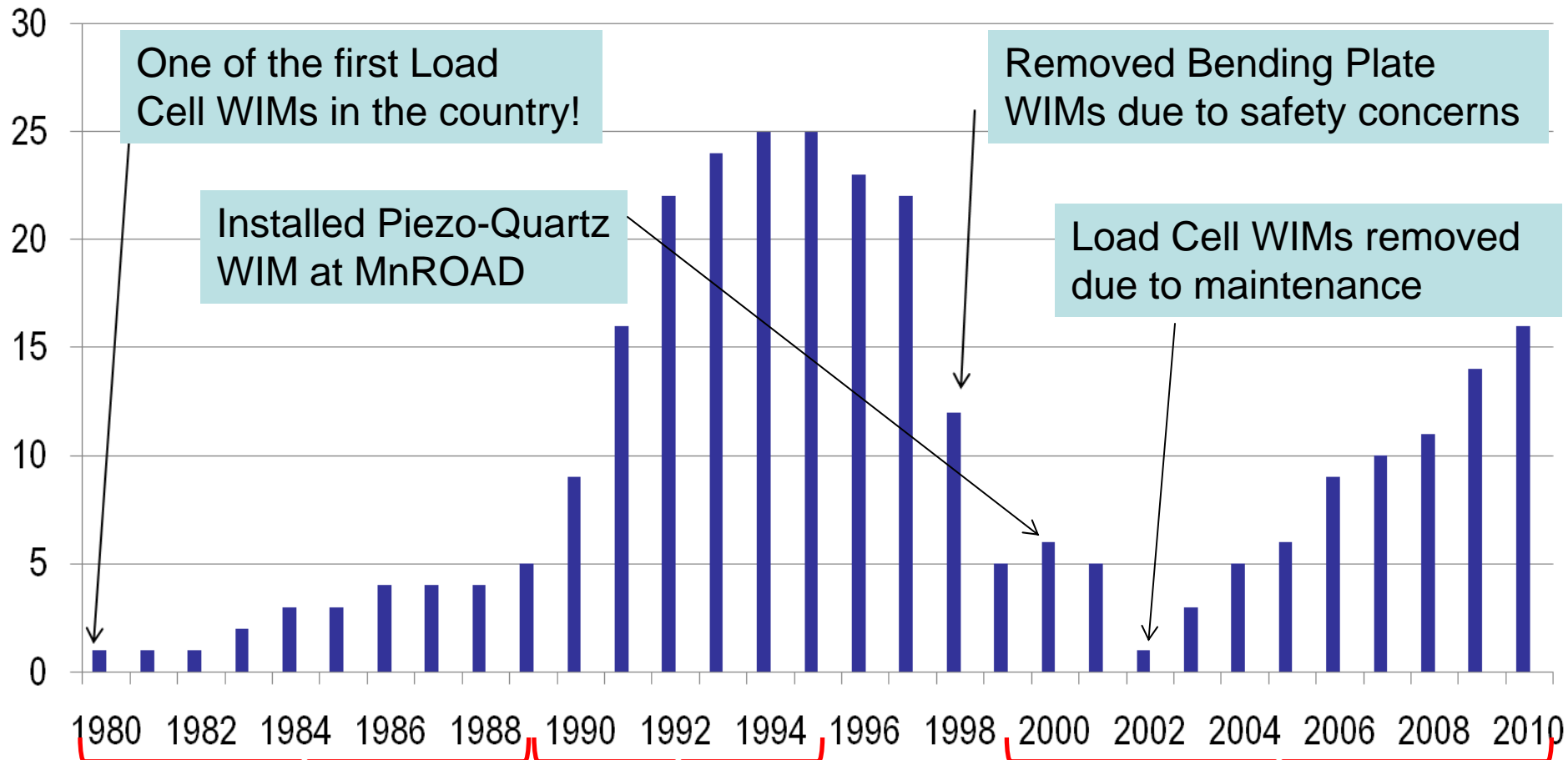
Overview

- Mn/DOT WIM Program : Past & Present
- Reporting
- Research
- Future Goals





Minnesota WIM History



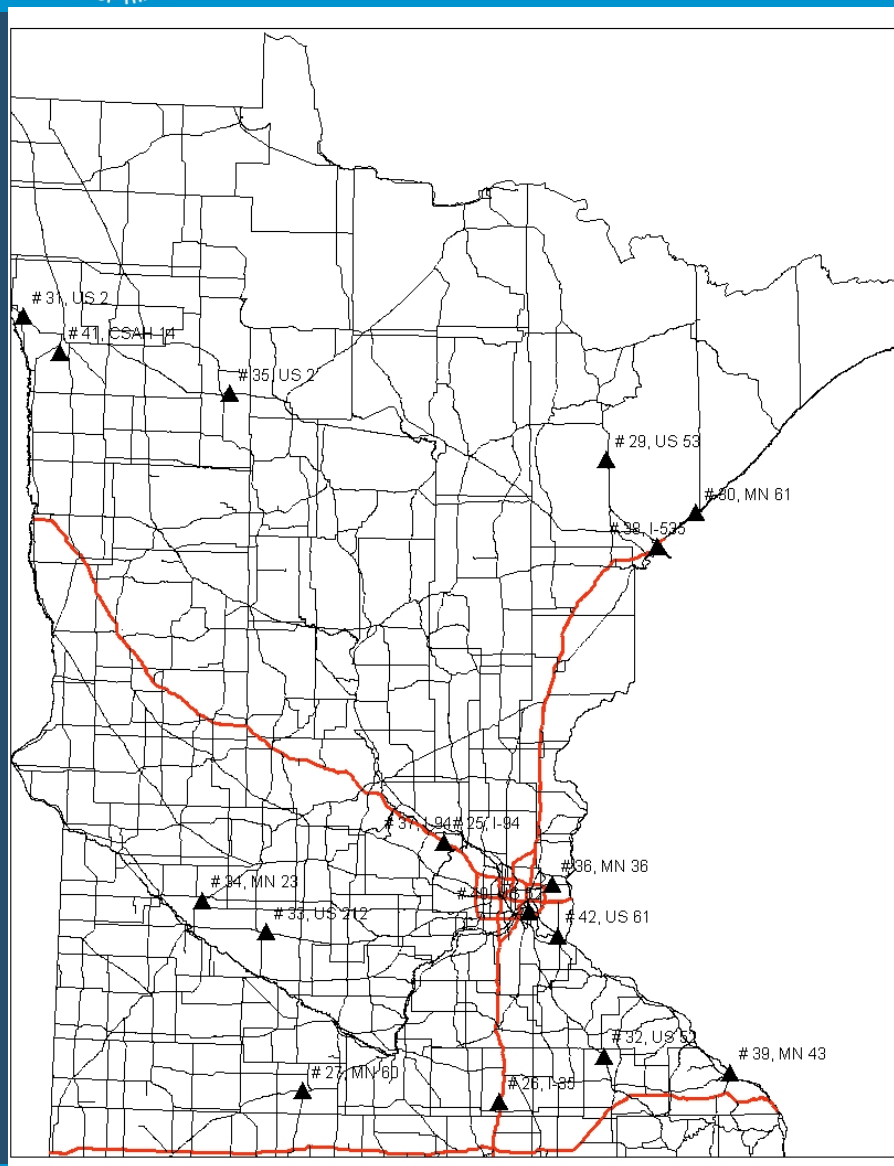
Load Cells

Bending Plates

Piezo-Quartz



Minnesota WIM Sites 2010





REPORTS

Why monthly reports?

- Request from Minnesota State Patrol
- Provide one unified report for all groups including:
 - Enforcement
 - Materials
 - Bridge
 - Traffic
 - Freight and Commercial Vehicle Operations



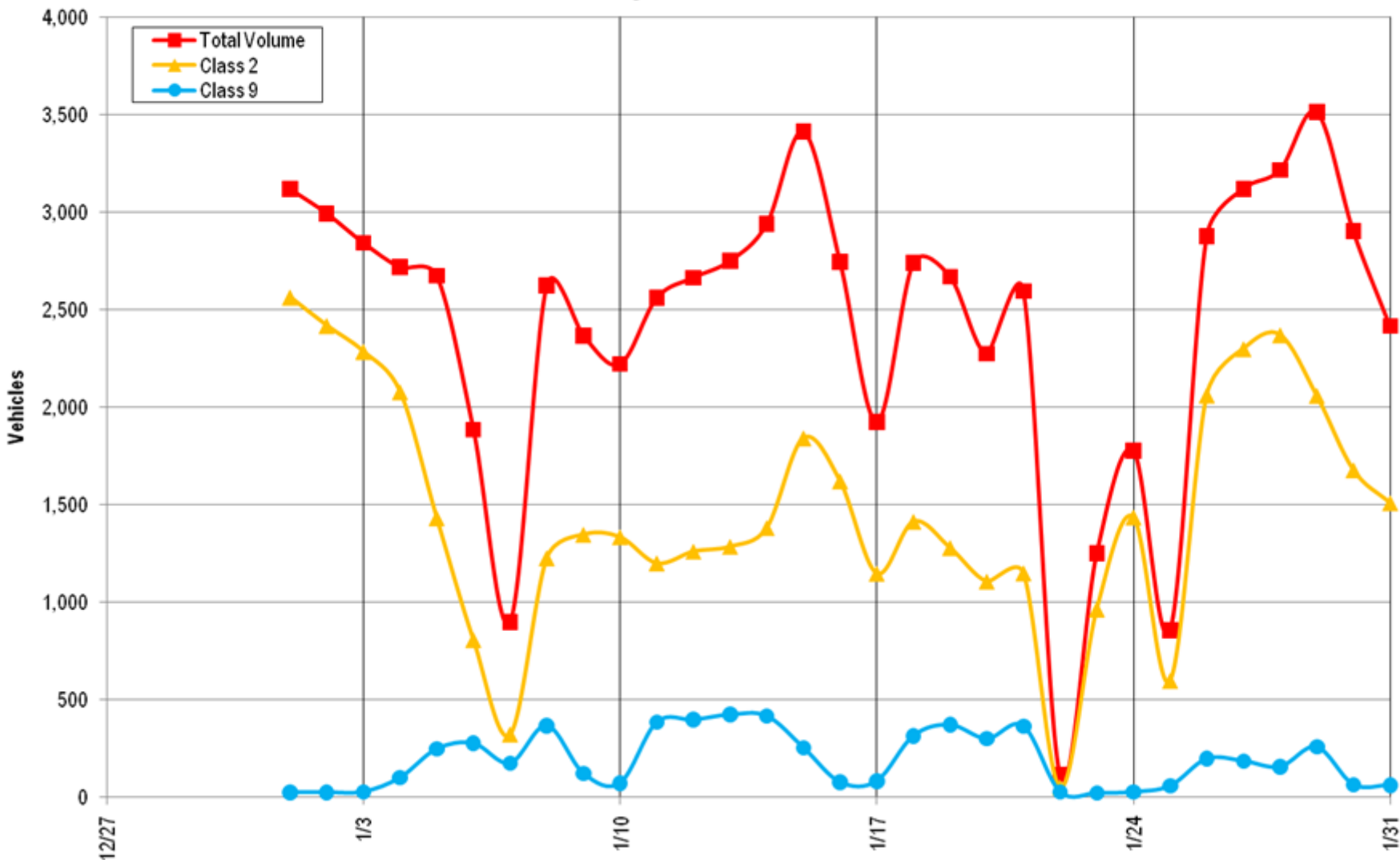


VOLUME & VEHICLE CLASS

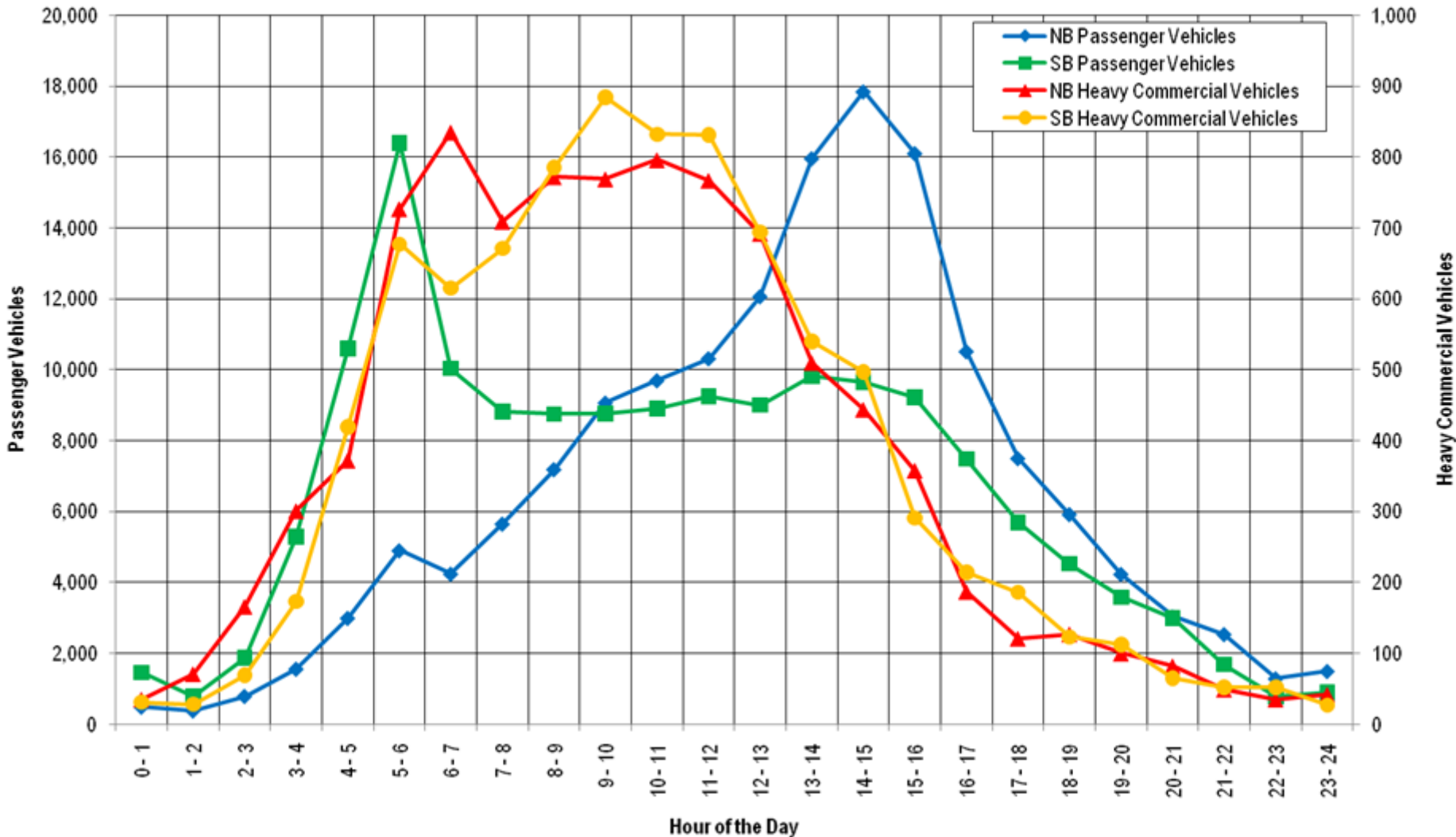
- Monthly Average Daily Traffic (ADT)
- Monthly Heavy Commercial Average Daily Traffic (HCADT)
- Day of the week and hourly data



Daily Volume Review



Directional Data





ENFORCEMENT

Overweight Vehicles

- Normal Load Limits

- 20,000# for Single Axle

- 80,000# Gross Vehicle Weight w/o permit

- Winter Load Increase (+10%)

- 22,000# for Single Axle

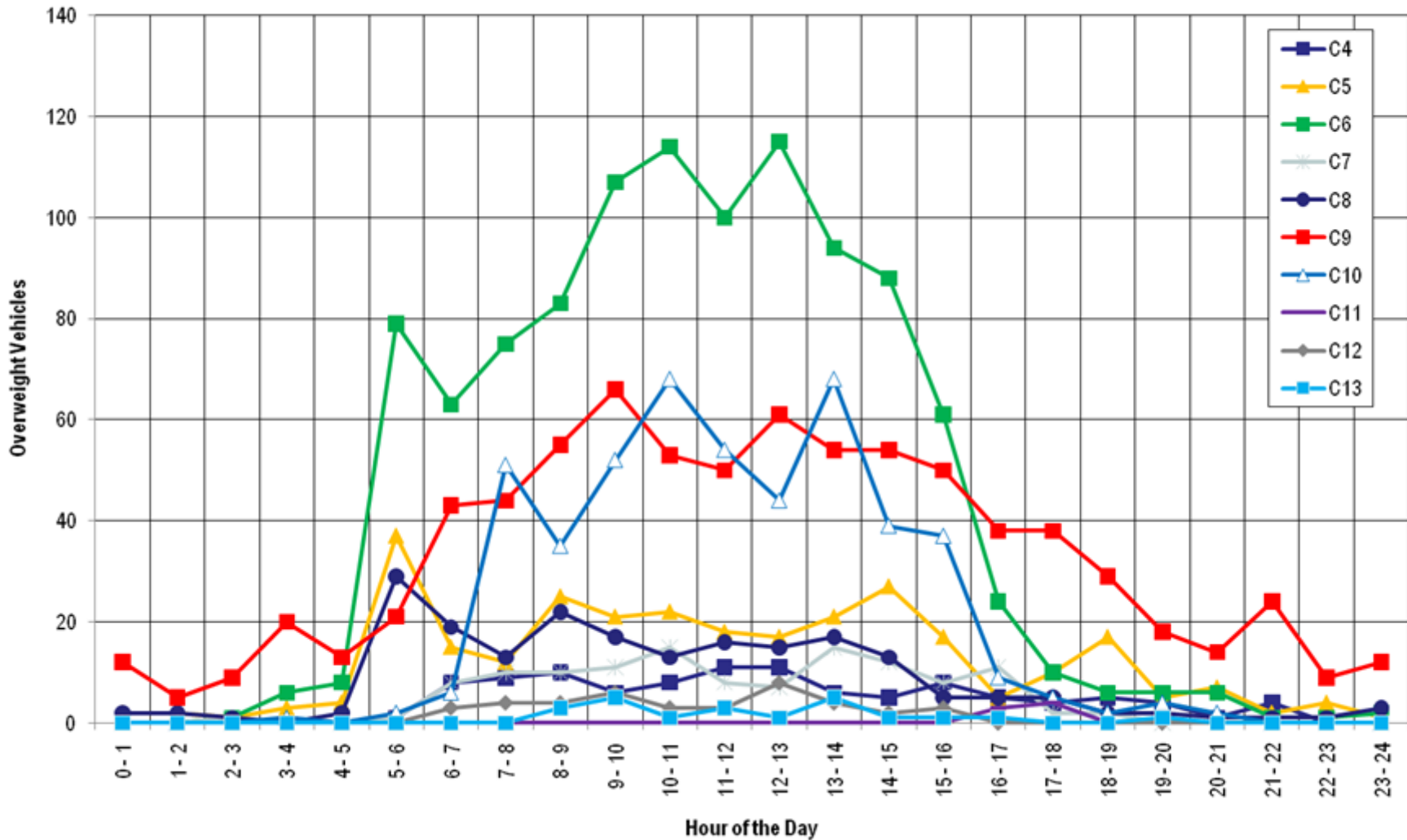
- 88,000# Gross Vehicle Weight w/o permit

- Don't know permit status (\$30K program change)

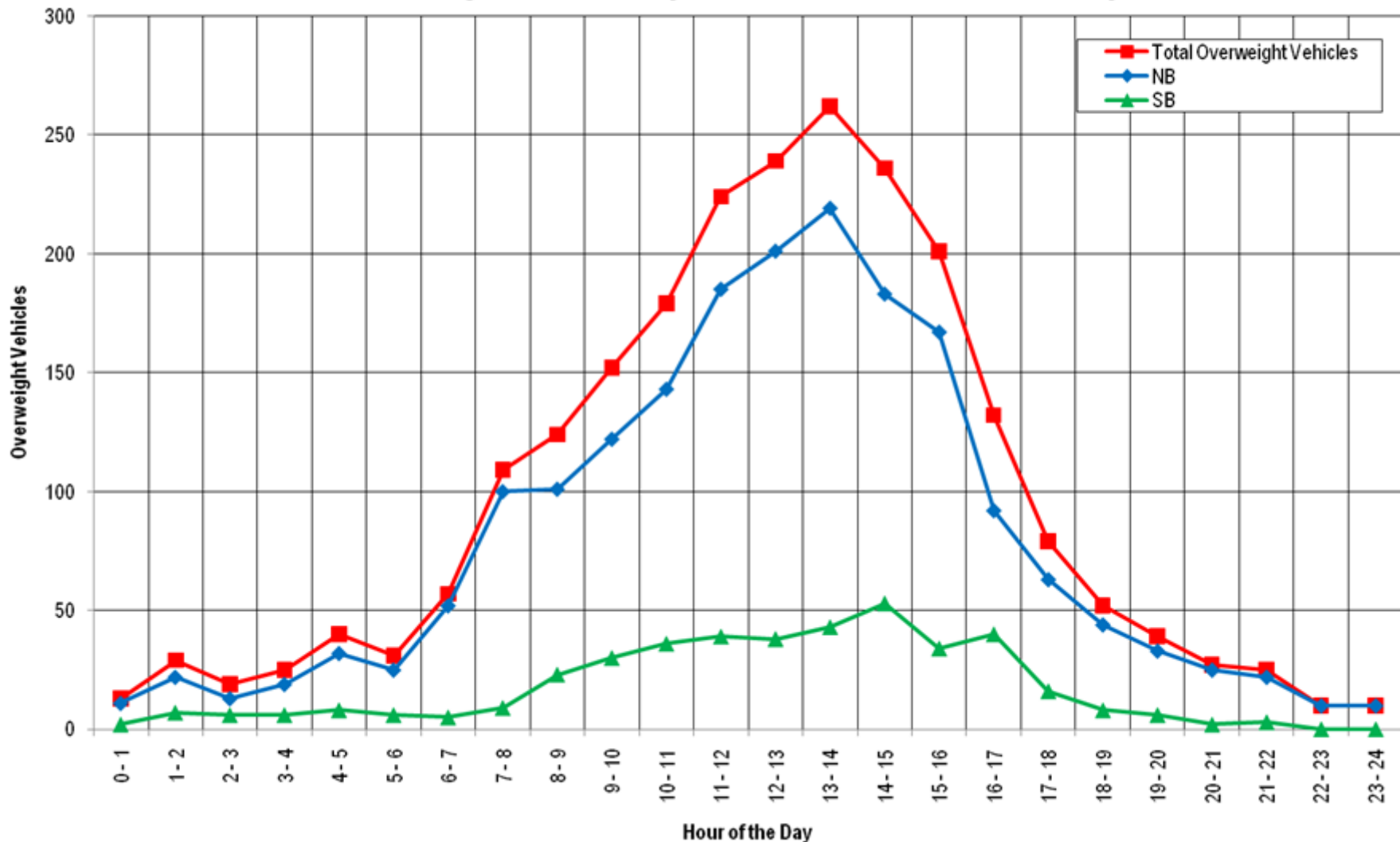
- Day of the week, hourly, directional, and by class



Overweight Vehicle by Class vs. Hour of the Day



Overweight Vehicles by Direction vs. Hour of the Day





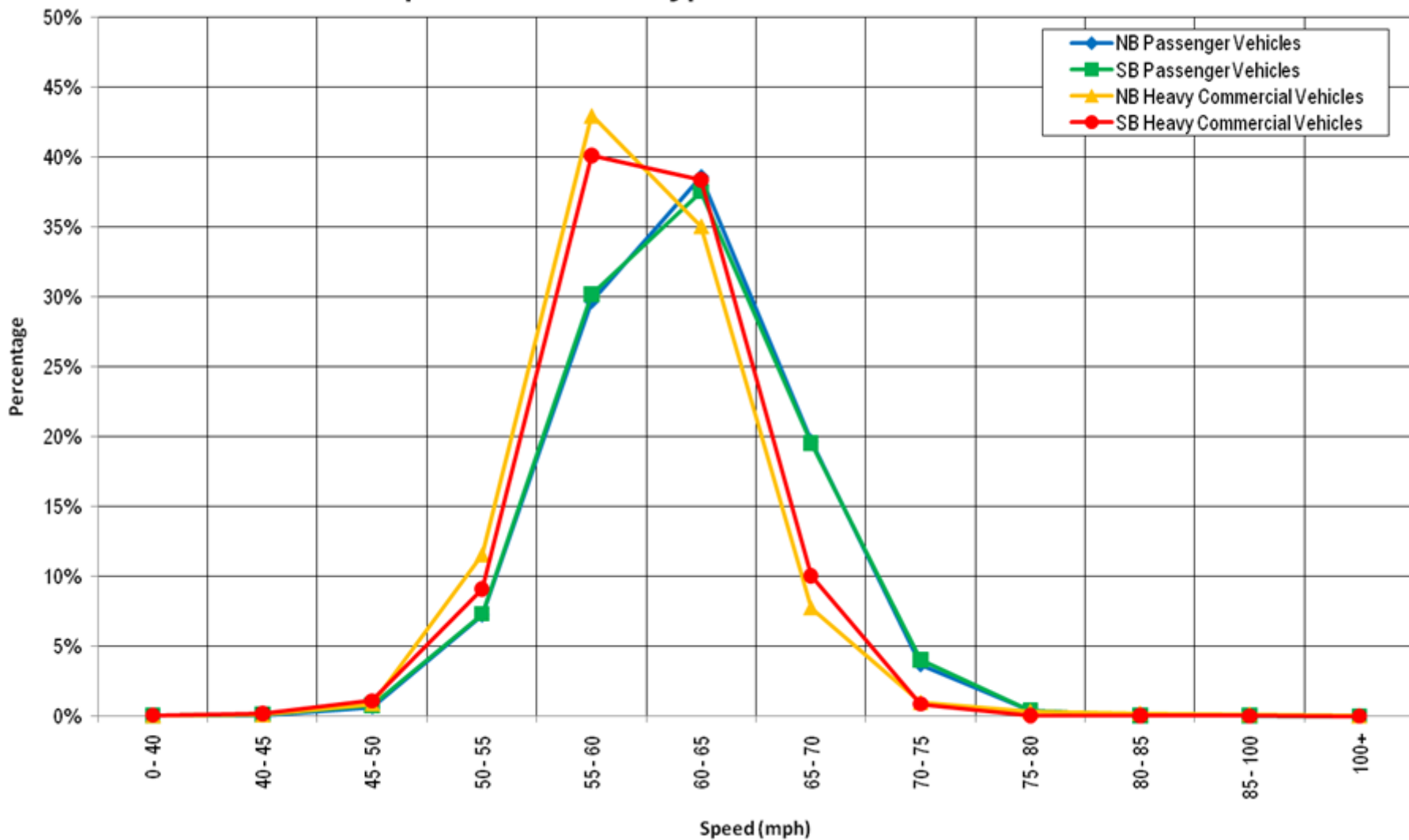
ENFORCEMENT

Speed Data

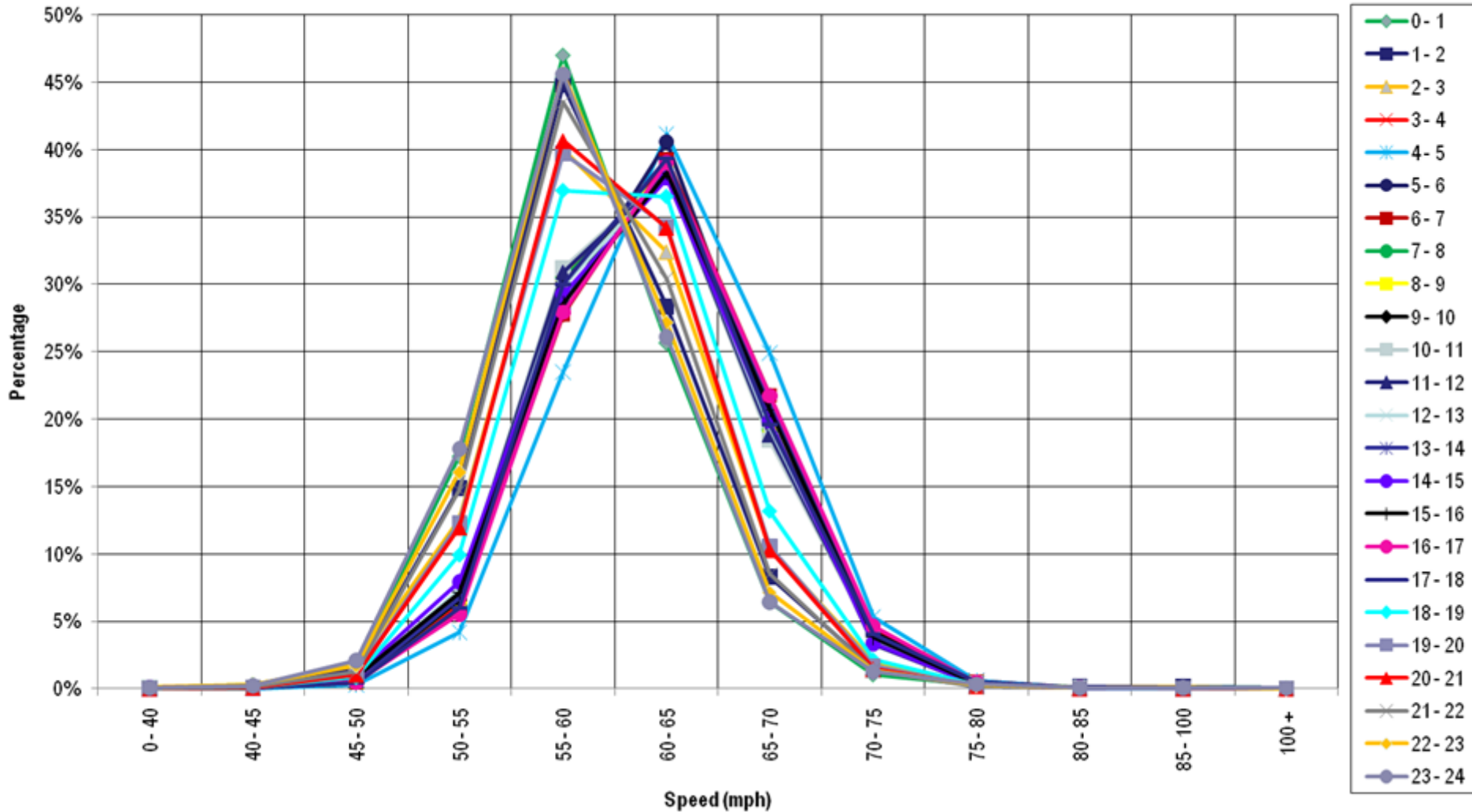
- Vehicle Class
- Day of the week
- Hour of the Day
- Top 20 Speeders
- Differences on 2-lane and 4-lane
 - 2-Lanes not much differences
 - 4-Lanes can be differences



Speed vs. Vehicle Type and Direction of Travel



Speed vs. Hour of the Day





•Bridge Bridge, Materials, and Freight

- Total Gross Weight by Class
- Super Heavyweight Vehicles

•Materials

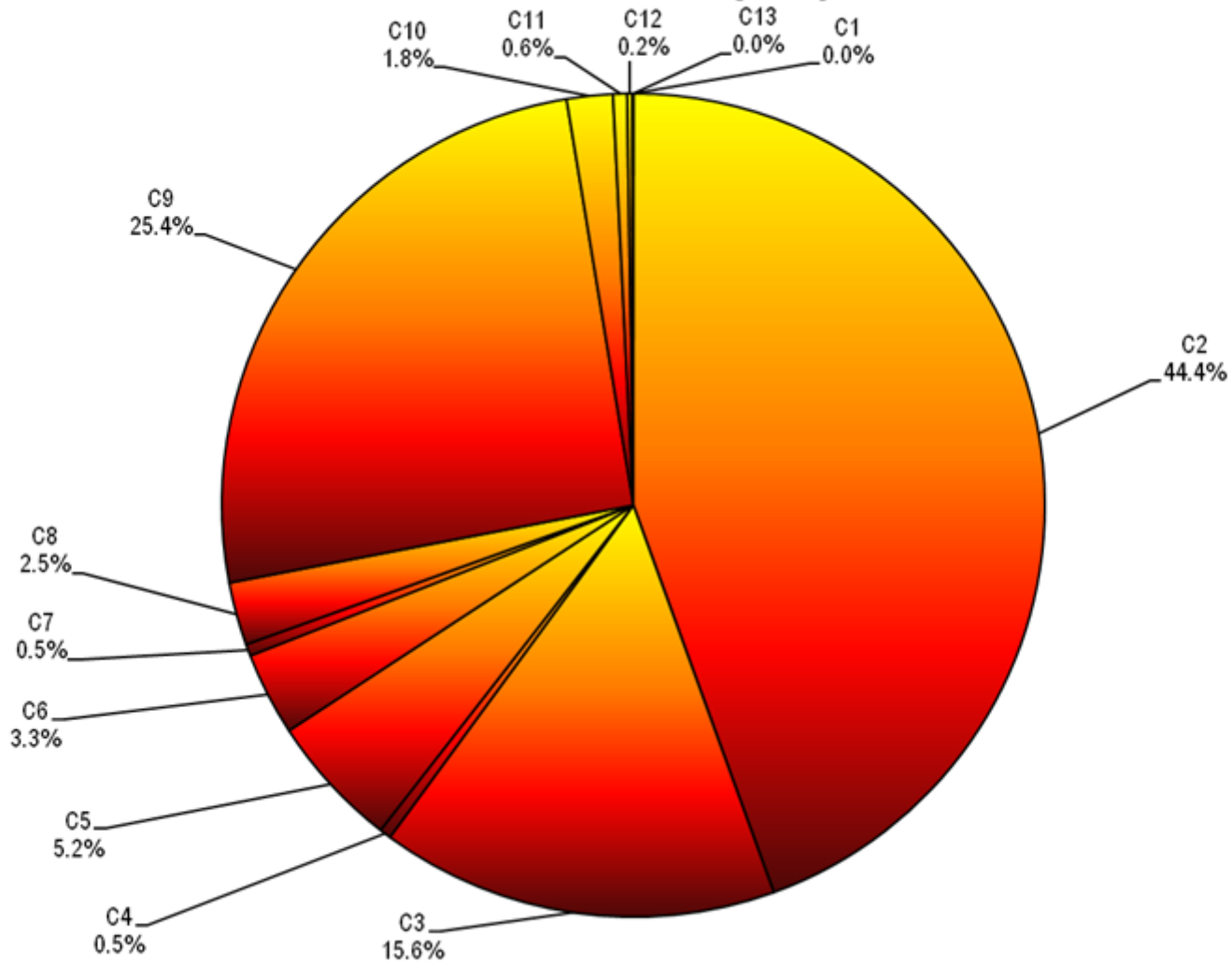
- ESALs by lane
- Overweight vehicles shortening pavement design life

•Freight

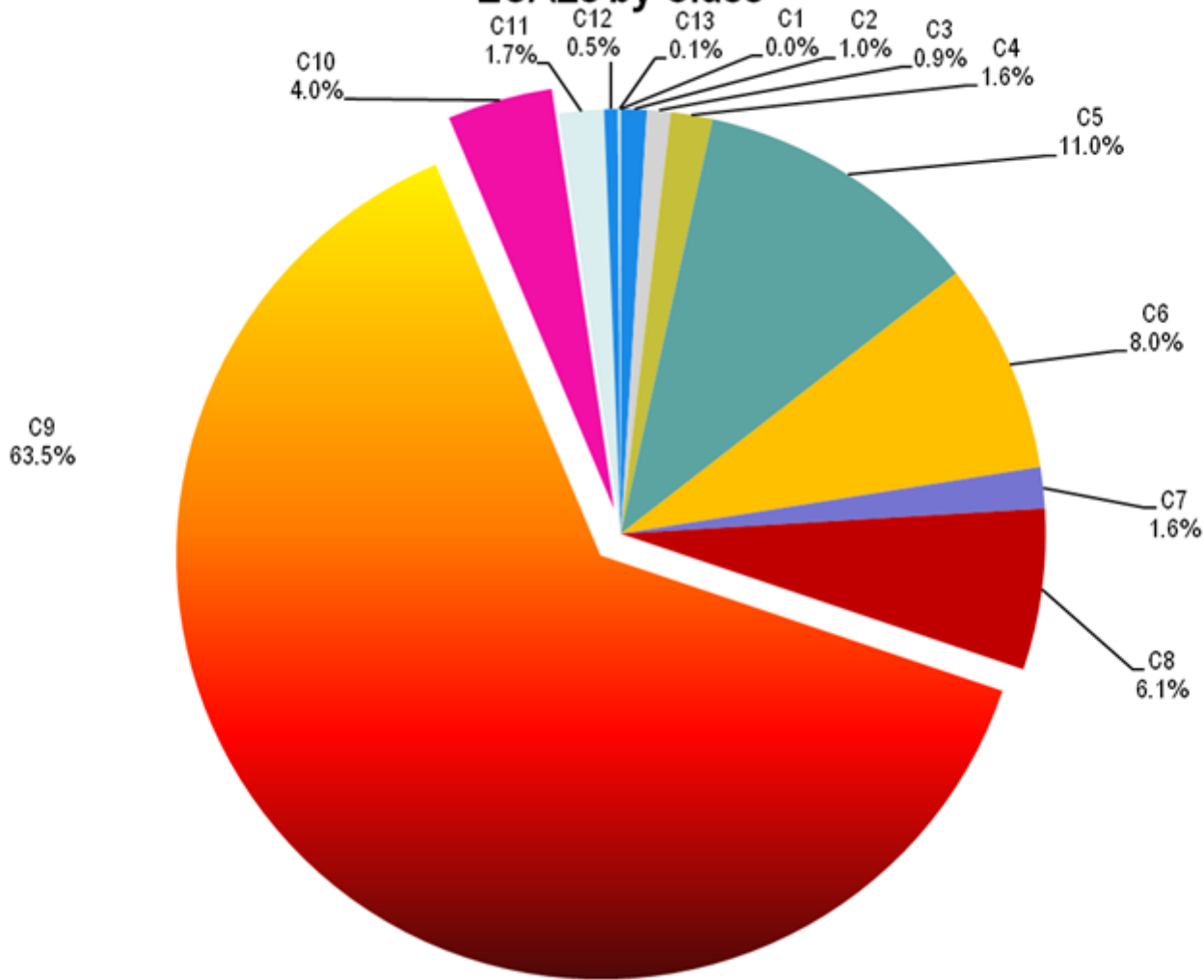
- Number of trucks by class
- Number and percentage of empties
- Freight tonnage by direction



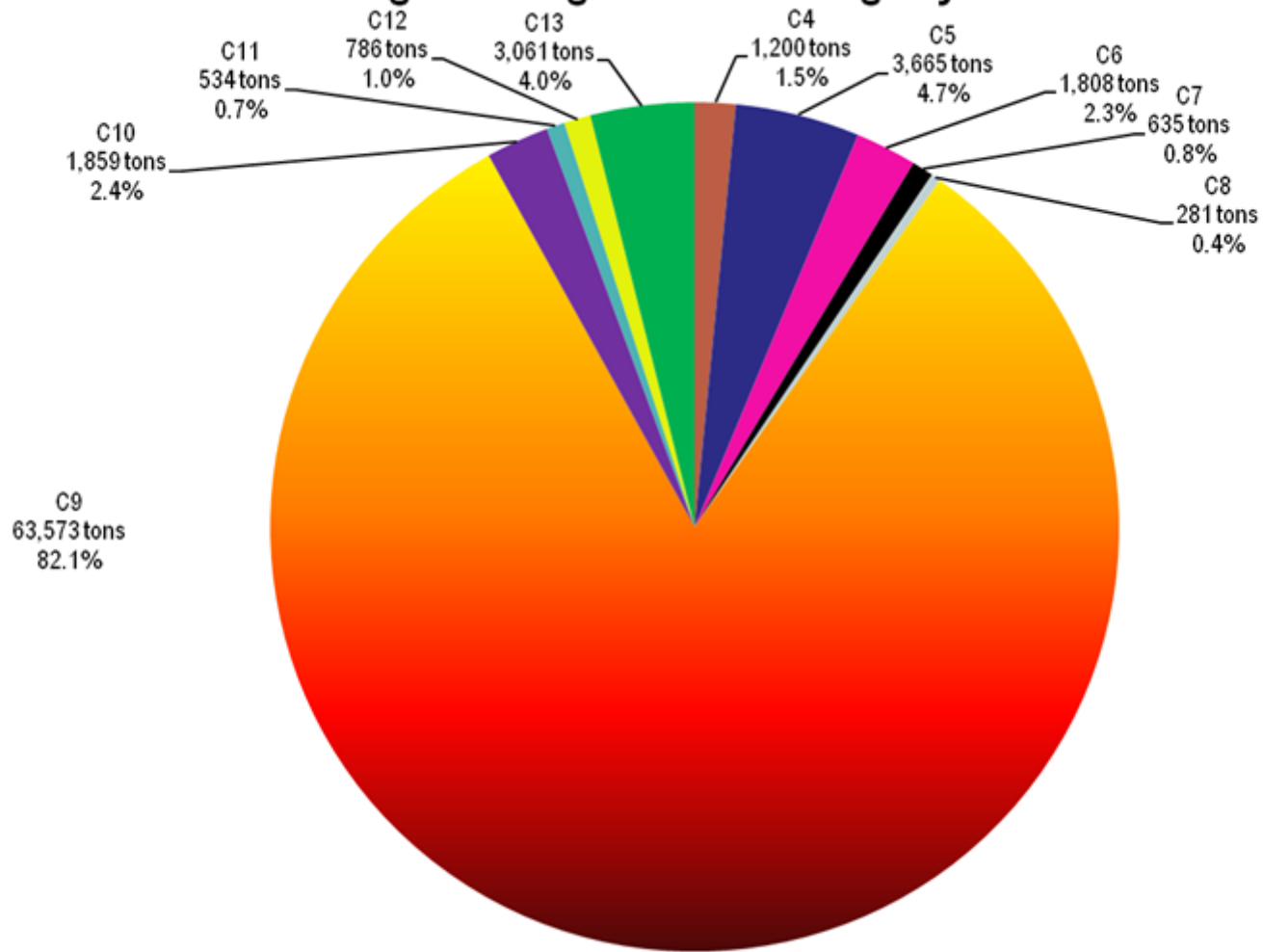
Total Gross Vehicle Weight by Class



ESALs by Class



Freight Tonnage and Percentage by Class



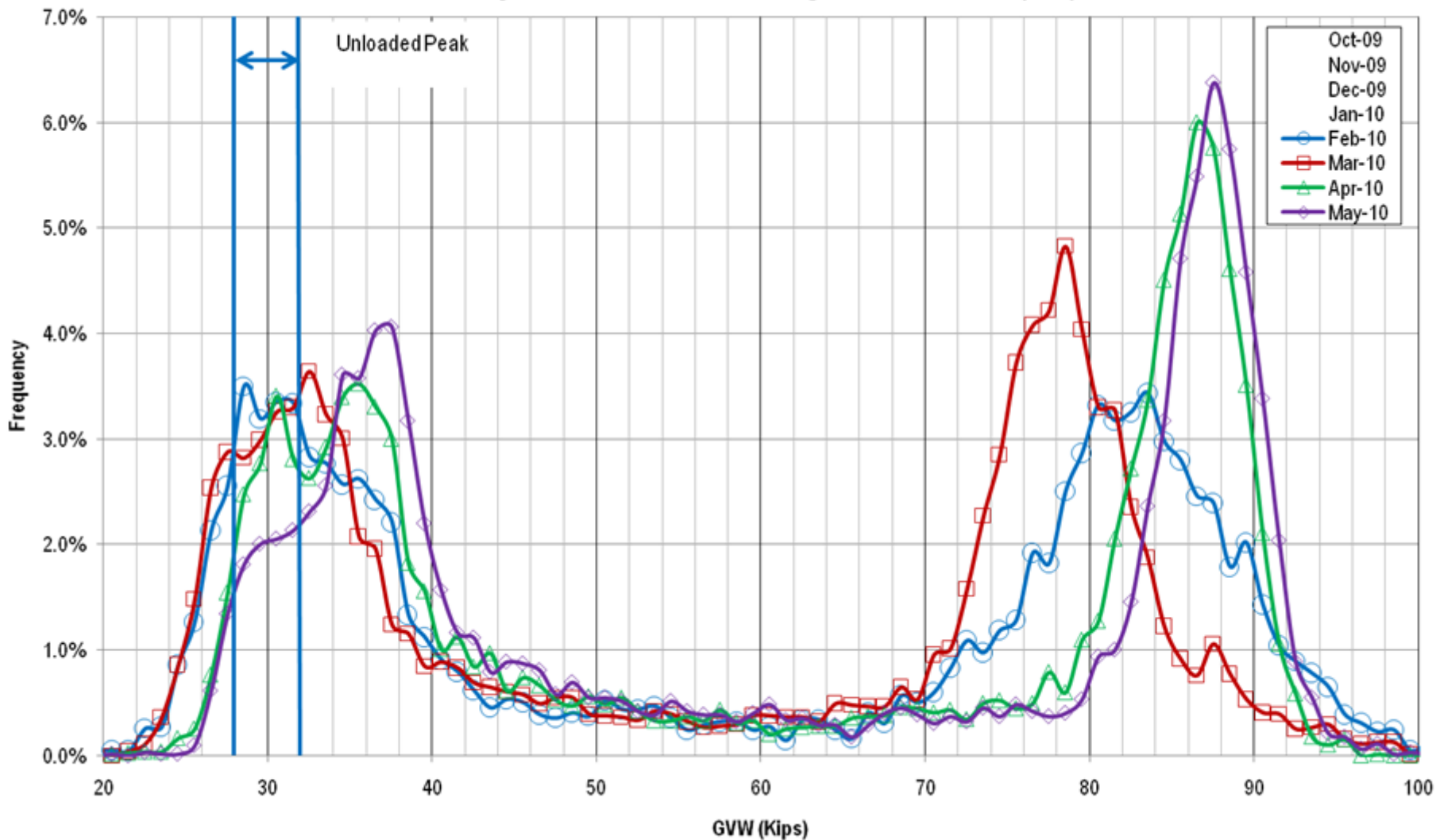


CALIBRATION

- Goal is twice a year (frost in and out of the ground)
- Monthly review lane by lane of histogram of Class 9's GVW distribution
- Review average front axle weights of Class 2's, 3's, and 9's by lane
- Review average GVW of Class 2's and 3's by lane
- Future Class 2's and 3's without trailers
- Develop post-processing software



Monthly Class 9 GVW Histogram - Lane 1 (EB)





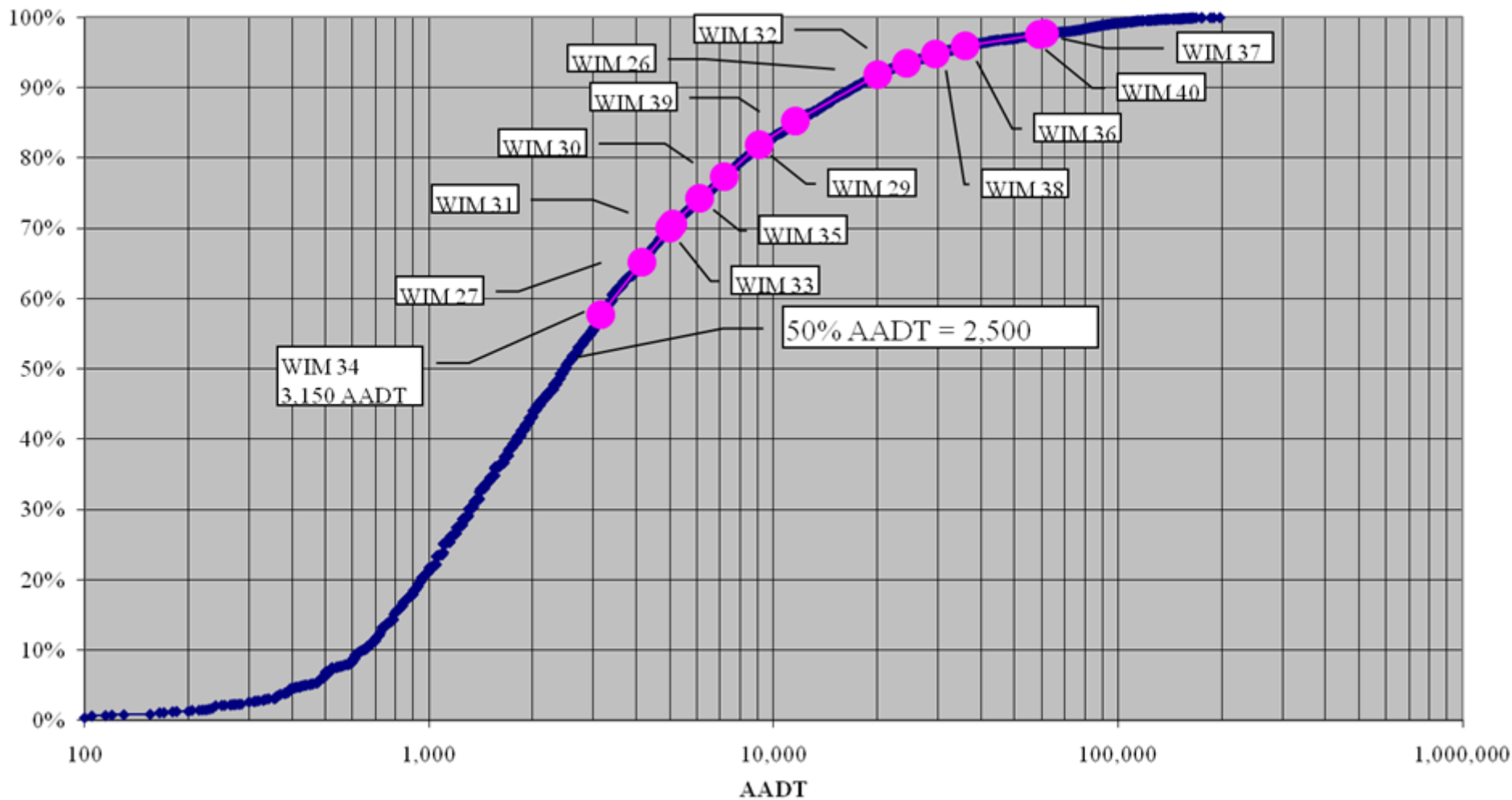
Future Goals

Additional WIM Sites

- 3 more on Interstates to cover Intrastate Commerce
- Replace existing systems before they fail
- More on lower volume and at additional functional classes
- Fracture critical Bridges or at major river crossings
- Freight corridors



WIM Sites vs. AADT on Minnesota Road





Future Goals (cont.)

Reporting

- Find more uses for the per vehicle information
 - Traffic wants per vehicle information for speed enforcement
- Additional Vehicle classes and review current classes
 - Windmills (Super Heavyweight Loads)
 - Farm equipment (MnROAD research project)
- Be responsive to needs of the different users
 - Meet with them as necessary and request feedback from them





Future Goals (cont.)

Reporting (cont.)

- Automate more of the report
- Annual Report

Research

- Implementation of Data Warehouse – Prof. Kwon at UMD
 - Additional Reports
- Portable WIM – Prof. Kwon at UMD
- WIM Data Quality – Prof. Davis at U of M
 - WIM Calibration
 - Traffic Data Editing Procedures (Pooled Fund Study)





Portable WIM Testing at MnROAD





Questions?

Ben Timerson, (651) 366-3855

Mn/DOT Weight Data & Engineering Coordination

benjamin.timerson@state.mn.us

WIM Reports

http://www.dot.state.mn.us/traffic/data/html/wim_reports.html

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