

# Commercial Motor Vehicle Brake-Related Research

Commercial Motor Vehicle Roadside Technology  
Corridor Safety Technology Showcase

October 14, 2010



*Commercial Motor Vehicle Roadside Technology Corridor*



# Overview

- Correlation Study
- Level-1/PBBT Analysis Tool (LPAT)
- Mainline Brake Assessment
- Other Research Efforts

# Correlation Study

		PBBT Test	
		Pass	Fail
Level-1 Inspection	Pass	51.93%	8.77%
	Fail	26.67%	12.63%

*Statistics above based on a sample of 570 CMVs selected by enforcement personnel according to normal enforcement protocols.*

- Level-1 and PBBT data collected for hundreds of CMVs
  - Comparison of Level-1 and PBBT Out of Service (OOS) rates
  - Examination of typical OOS rates
  - Analyses to encourage more widespread use of PBBT

# Level-1 PBBT Analysis Tool (LPAT)



## NAS Level 1 Inspection/PBBT Analysis Tool

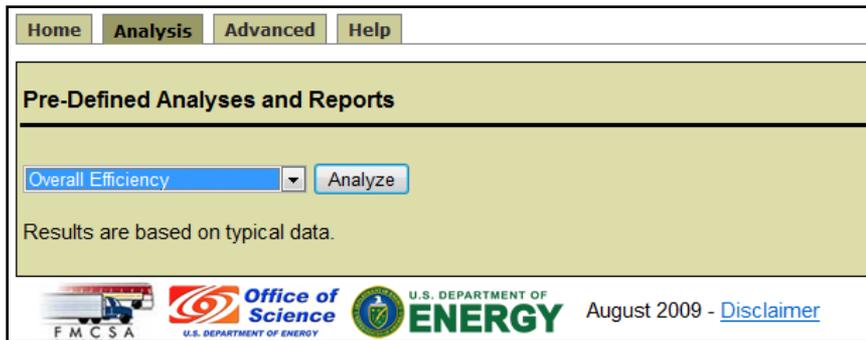
[Home](#) [Analysis](#) [Advanced](#) [Help](#)

### Introduction

The North American Standard (NAS) Level 1 Inspection and Performance Based Brake Tester (PBBT) Correlation Analysis Tool (LPAT) was designed to help analyze and research the correlation between the Performance Based Brake Tester and traditional NAS Level 1 Inspections. It offers the ability to analyze the data separately or in correlation to one another. Please login to view the rest of the site.

- “Beta” tool to facilitate various analyses
  - Common pre-defined analyses for basic users
  - Flexible user-defined analysis tool for researchers

# LPAT – Sample Pre-Defined Analysis



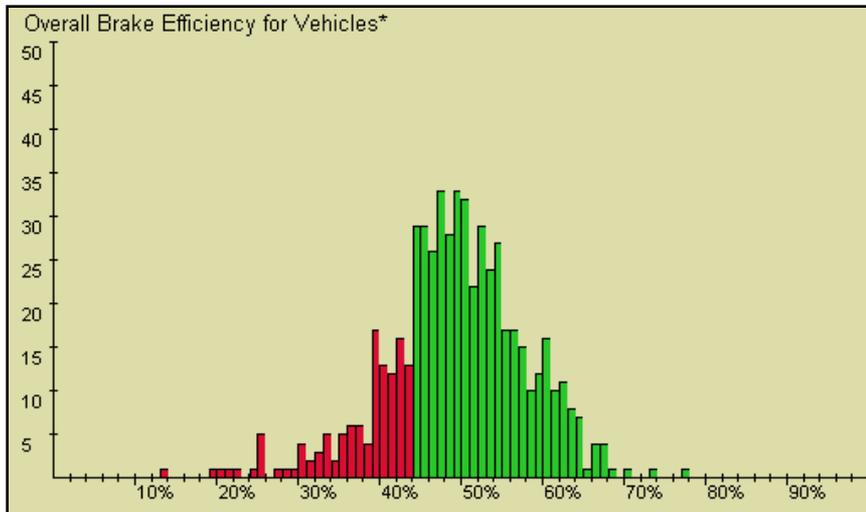
Home Analysis Advanced Help

Pre-Defined Analyses and Reports

Overall Efficiency Analyze

Results are based on typical data.

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- Distribution of Overall Brake Efficiency
  - General pass/fail information
    - About 1/5 of the 570 vehicles tested failed the PBBT.
  - Effect of altering BE requirements (from 43.5%)
    - For a minimum BE of 50% , over 1/2 of CMVs tested would fail.

# LPAT – Sample User-Defined Analysis

- Comparing Level-1 OOS rates for different vehicle sizes
  - 2-Axle vehicles: 9.62%
  - 5-Axle vehicles: 46.88%

**NAS Level 1 Inspection and PBBT Analysis Tool**

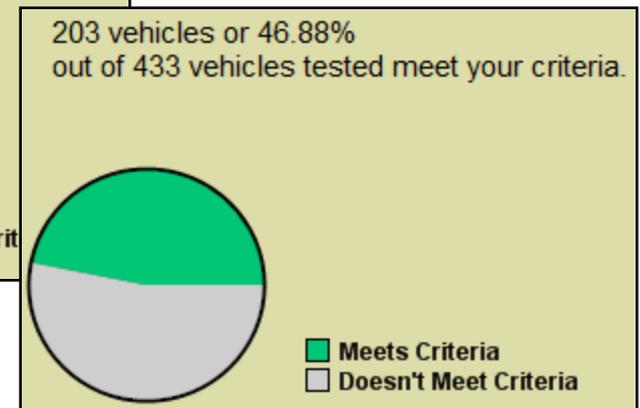
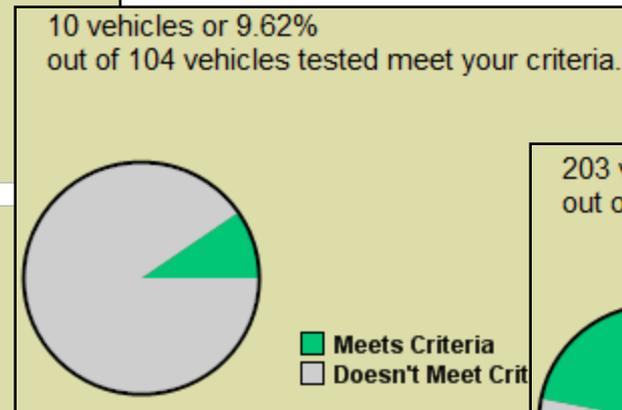
**Select Data Source:**  
Category:

**Select General Criteria:**  
Limit Analysis to a Specified Location:  
 All Axles  Right  Left  
No. of Axles:   \*  
Date Range (MM-DD-YYYY):  -   \*

**Select Level 1 Inspection Criteria:**  
Pass or Fail:   \*  
Violation Category:  
 Brake System Violation  \*  
 Air System Violation  \*  
 Driver Violation  \*  
Specific Violation:  \*

**Select PBBT Criteria:**  
Pass or Fail:   \*  
Brake Efficiency:   % -  %  \*  
(GVW) Weight:   lbs -  lbs  \*  
Model Year (YYYY):   \*

\* Check the box to define the reference population for calculating percentages by all of these characteristics and logic. See Help for more info.  
\*\* Location does not apply to Level 1 Inspection Pass-Fail or PBBT Age Criteria.



# Mainline Brake Assessment

- Assessment of randomly-selected CMVs from the mainline
- Statewide effort including both fixed and temporary inspection stations



# Mainline Brake Assessment

## Methodology

- Officer turns off PrePass to direct vehicles into inspection station
- A random fourth vehicle is selected from the mainline
- The vehicle is given a full Level-1 inspection



# Mainline Brake Assessment

## Results

	Total Vehicles Inspected	Overall OOS Rate	Vehicle OOS Rate	Driver OOS Rate
<b>Greene Co. PBBT</b>	348	25.00%		
<b>Greene Co. Inspection Station</b>	348	70.69%	67.82%	12.93%
<b>Coffee Co. Inspection Station</b>	143	16.78%	9.79%	8.39%
<b>Knox Co. Inspection Station</b>	132	28.79%	21.97%	9.09%
<b>Haywood Co. Inspection Station</b>	101	37.63%	36.63%	6.93%
<b>Robertson Co. Inspection Station</b>	94	23.40%	21.27%	2.13%

National Vehicle OOS Rate: 19.29%

National Driver OOS Rate: 5.3%

<http://ai.fmcsa.dot.gov/SafetyProgram/spRptRoadside.aspx?rpt=RDOOS>

